

"This is a magnificent, creative, scholarly—indeed a noble—book and one that should be in every investment library and on every practitioner's desk. Like a good doctor, the author diagnoses a serious illness, and then provides a prescription for how to alleviate it."

Victor Niederhoffer, Chief Speculator,
Manchester Investments

Aswath Damodaran

Investment Fables

Exposing the
Myths of "Can't Miss"
Investment Strategies

Investment Fables Tall Tales about Stocks

Fable: A brief fictitious story embodying a moral and using persons, animals or inanimate objects as characters; A falsehood or lie (Webster's Dictionary)

As investors, you have all been on the receiving end of sales pitches from brokers, friends and investment advisors about stocks that they claim will deliver spectacular returns. These stories not only sound persuasive and reasonable but are also backed up by evidence - anecdotal, in some cases, and statistical, in others - that the strategies work. When you try to implement them for your investments, though, you seldom can match their success on paper. All too often, you end up with buyer's remorse, poorer for the experience and promising yourselves that you will not fall for the allure of these stories again. All too often, you forget the lessons of past mistakes and are easy prey for the next big stock story.

While there are literally hundreds of schemes to beat the market in circulation, they are all variants of about a dozen basic themes that have been around for as long as there have been stocks to buy and sell. These broad themes are modified, given new names and marketed as new and different investment strategies by salespeople to a new generation of investors. There must be something in these stories that appeals to investor instincts and to human weaknesses - greed, fear and hubris, to name but three- to give them the staying power that they do. This book is an exploration of the appeal of these stories, why so many fall for them and fail with them, and what it may take to win with each of them.

As you will see, with each story, there is a kernel of truth that makes it believable and a base in financial theory that allows proponents to claim to have a solid rationale. Each chapter will begin with an examination of the basis for each investment story and the theory that would justify its adoption. Why bother with the theory? Not only will it give you perspective on what makes each story work, but it will also allow you to identify potential weaknesses with the story.

If you have been on the receiving end of one of these investment stories, you probably have also been told of studies that back them up and you are offered evidence of their potency. It should come as no surprise, given the source, that most of these studies give you only a portion of the truth. As you will see in this book, every investment

strategy ever devised has succeeded for some periods and with some stocks, but the complete picture requires an assessment of whether it works over long periods and with a wide cross section of stocks. That is why you will see a review of the existing empirical evidence, drawn from both believers and skeptics, on each strategy and some of the potential problems with each.

With every investment strategy, investors also grapple with the question of what adopting that strategy will mean in terms of investment choices. If you adopt a strategy of buying low PE stocks, you have to make a judgment of what represents a low PE ratio and what types of stocks have low PE ratios? If you believe that your best investments are in small companies you have to decide how to measure the size of companies - sales, market capitalization etc.- and what level would represent a small company. You will be presented with rules of thumb, that a PE of 8 is cheap or that a company with a market capitalization less than \$ 100 million is small, but these rules of thumb can be dangerous as markets themselves change over time. To provide a frame of reference, this book will examine the distribution of various measures - PE, price to book and market capitalization, to name a few- across the entire market. This should then allow you to get a sense of differences across the market and to develop portfolio standards.

The best test of any strategy is to apply it to the market and to peruse the portfolio that you would have ended up with as a result of following it. This book will attempt to do this with each of the broad strategies examined and you can ask yourself whether you would be comfortable investing in the stocks that make up this portfolio. If you are not, it is a warning sign that this strategy may not be appropriate for you. If you are a careful investor, putting this portfolio under a microscope will allow you to probe the strategy for weaknesses and examine what you can do to minimize the damage.

It is worth emphasizing what this book is about and what it will not try to do. It is not about promoting or debunking investment strategies, since there are plenty of analysts and brokers who do the former and lots of cynics, many from academia, who do the latter. But it is about providing a full picture of each investment strategy, so that you can make your own judgments about what works and what does not. It is not about giving you the answers to every investment question that has ever been asked; no one can have the foresight to do this. But it is about providing you with the ammunition to ask the right

questions when confronted with promoters of these strategies. It is not a book for pessimists who are convinced that picking stocks is an exercise in futility, but it is a book for optimists who want to figure out how to make active strategies pay off and how to use them prudently. It is not about things you cannot and should not do while investing but it is about things you can and should do as an investor to improve your odds for success.

As long as there have been financial markets, there have been mountebanks and frauds luring investors into get-rich schemes that ultimately fail. In the aftermath of these failings, you are often tempted to turn to the courts and to governments to protect you from yourselves. The best antidote, though, to an unscrupulous sales pitch about "stocks that cannot lose" or to a "get rich quickly" scheme is a skeptical and informed investor. I hope this book helps in this endeavor.

CHAPTER 1

INTRODUCTION

Investing is full of stories that sound good when they are told but don't hold up under close scrutiny. Consider a few: Buy stock in good companies and the returns will surely follow. Buy after bad news. Buy after good news. Stocks always win in the long term. Follow the insiders. Buy stocks with big dividends. Buy stocks that have gone down the most. Go with stocks that have gone up the most. What makes these stories alluring is that there is a kernel of truth to each one of these stories but none of them is foolproof. You will examine these and other investment sales pitches in this book, consider the potential downside with each and how you might be able to modify each one to reduce downside risk.

The Power of the Story

Human beings are much more likely to be swayed by a good story than they are by graphs and numbers. The most effective sales pitches to investors tell a compelling story, backed up by anecdotal evidence. But what makes a story compelling in the first place? Investment stories are convincing not only because they are told well but also because they draw on several common factors:

- ❑ Most good investment stories appeal to a fundamental component of human nature, whether it be greed, hope, fear or envy. In fact, what often sets apart successful investment salespeople from unsuccessful ones is their uncanny ability to gauge an investor's weak spots and create a story to take advantage of them.
- ❑ Good investment stories are also backed up by the evidence, at least as presented by the storyteller. As you will see in this book, though, the evidence may only tell part of the story and much of what is presented as incontrovertible proof of the efficacy of an investment strategy falls apart on closer examination.

In each of the chapters that follow, you will see the rationale that allows the stories presented in this book to resonate with investors through the ages. As you read these sections, you will undoubtedly remember stories you have been told by your broker, investment advisor or neighbor that are variants.

Categorizing Investment Stories

Investment stories come in all forms. Some are designed to appeal to investors who do not like to take risk, and they generally talk about low risk ways to play the stock market. Others are oriented towards risk seekers who want to get rich quickly; these stories emphasize the potential upside and hardly ever talk about risk. Still others are structured for

those who believe that you can get something for nothing if you are smarter or better prepared than others in the market. Finally, there are stories for the optimists who believe that you always win in the long term. In this section, you will get a preview of the stories that will be examined in detail in the coming chapters.

Stories for the Risk Averse

Some investors are born risk averse whereas others become risk averse because of circumstances – an insecure job or impending retirement can make you far more concerned about losing money. Still others are scared into risk aversion by an extended bear market. Whatever the reason for the risk aversion, the investment stories that sell the best to these investors emphasize low risk strategies while promising much higher returns than they are making currently on their safe investments.

High Dividend Stocks

Risk averse investors generally prefer the safety of government or high grade corporate bonds to the riskiness of stocks. They feel more secure with bonds, knowing that they can count on these bonds delivering income in the form of coupons while they hold them and that the principal invested in these bonds is intact. To attract these investors to stocks, you have to try to offer them comparable income and safety, while also providing them a premium for taking the additional risk. Stocks that pay high dividends are attractive to risk averse investors because they resemble bonds in terms of generating income with the added bonus of price appreciation. The dividends on some stocks are higher than the coupons you earn on safe bonds and while the principal invested in stocks is not protected in the same way that the principal invested in bonds is, the risk can be alleviated if the company paying the dividend is large and has substantial assets.

Stocks with low price earnings ratios

Stocks that trade at low multiples of earnings have historically been viewed as both cheap and as safe equity investments. While you can see why a stock that trades at 5 times earnings is considered cheap, why would it be classified as safe? The presumption is that the firm will continue to make these earnings in the long term and this earnings power should provide a floor on the price. In fact, value investors like Ben Graham have long argued that buying stocks with low PE ratios is a low risk, high return strategy. For investors who are concerned about the risk in equities, this strategy seems to offer a low risk way of entering the stock market.

Stocks that trade at less than book value

A close relative of the low PE stock in the cheap stock family is the stock that trades at below book value. To some investors, the book value of a stock is not only the accountant's measure of how much the equity in a firm is worth, but is also a more reliable measure of a stock's worth than the market price, set by investors swayed by fads and fancies. Thus, a stock that trades at less than book value is viewed as an undervalued stock. To some risk averse investors, who believe that book value is equivalent to liquidation value, stocks that trade at below book value also come with what they see as back-up insurance. If the stock price does not go up, the firm should be able to liquidate its assets and deliver the (higher) book value.

Stable Earnings Companies

For many investors, the risk of investing in the equity of a company is tied to the uncertainty there is about the company's capacity to earn money in the future. Even the best run companies can have earnings that are volatile and unpredictable earnings. Consequently, if you could invest in a company that has stable and predictable earnings, you could essentially combine the benefits of stock ownership with the reliability of bonds. How would a company achieve this earnings stability? It could do so by diversifying into multiple businesses (countries) and becoming a conglomerate (multinational); bad times in one business (country) would then be offset by good times in another, leading to more stable earnings over time. It could draw on a variety of products now available in financial markets – futures, options and other derivatives – to protect itself against interest rate, currency or commodity price risk and thus make its earnings more predictable. In its least benign form, the earnings stability can be purely cosmetic, created by accounting ploys and sleight of hand.

Stories for the Risk Seeker

In buoyant markets, investors often seek out risk, hoping to make high returns to compensate. Not surprisingly, they are not interested in stocks that look like bonds. Instead, they want to find companies that provide the best upside potential even though they might be risky. The investment stories that work best for them are the ones that emphasize risk, but present them as a chance to make a killing (upside risk) rather than as a danger (downside risk).

Great companies

Buy good companies, you are told, and the returns will follow. While the definition of good can vary from investor to investor and from investment publication to publication, most definitions of good companies revolve around financial yardsticks. Companies that earn high accounting rates of return and have done well for their stockholders in the past usually qualify. In recent years, a new category has been created with good defined more broadly to include social benefits. A good company with this broader definition would be one that does well for its stockholders, employees, customers and society at the same time. The rationale for investing in these companies is that the superior management of these companies will find ways to turn threats into opportunities, leading to dual benefits – higher returns and lower risk.

Growth Stocks

If you put your money into the companies with the highest earnings growth in the market, you are playing the segment of the market that is most likely to have an exponential payoff (or meltdown). While growth stocks do not offer much in terms of dividends, usually trade at high multiples of earnings and are usually risky, risk seeking investors are not fazed by any of these concerns. They buy stocks for price appreciation rather than dividends, and their view is that the high earnings multiples will only translate into even higher prices as the earnings grow over time. To the skeptic's question of what happens if the growth does not manifest itself, these investors will respond that they have the skill to pick the right companies – companies that have found the key to sustainable, long term growth.

Loser Stocks

Stocks that have fallen dramatically in the recent past offer interesting opportunities for investors who are willing to take risk. While these companies generally have serious problems – some have incompetent management, others have too much debt and still others have made strategic missteps – the argument used to justify investing in them is that they have fallen so much that they cannot fall much more. Risk seeking investors, who believe that markets have over reacted to bad news and pushed prices down too far, buy these stocks hoping that stock prices bounce back.

Hidden Bargains

To the bargain hunters, the best stocks to buy are the ones that few other investors are aware of. In a market like the United States, where there are thousands of professional

money managers and analysts tracking stocks, this may see like a tall order, but there are thousands of stocks in smaller companies that are neither tracked by analysts nor held by institutions. The ranks of these ignored stocks are swelled each year by initial public offerings that bring new firms into the market place. The hope of finding the next great growth company – a Microsoft or a Cisco – before anyone else does drives many risk seeking investors to forage through these smaller, less followed segments of the market, looking for young and promising companies. In fact, some investors with more funds at their disposal try to get in even earlier in the process by being venture capitalists and private equity investors in small, private businesses. If they pick the right businesses to invest in, they can cash out when these businesses eventually go public.

Stories for the Greedy

In any listing of human vices, greed usually finds itself somewhere near the top. Philosophers and priests have inveighed against greed through the ages, but it is also the fuel that drives financial markets. The demand for stocks would be limited in a world where investors were not greedy for higher returns. Not surprisingly, those selling investment stories have also recognized that even a subtle appeal to the greed of investors is sufficient to get them interested. The investment stories that play to greed share a common theme: they allow you to believe that you can get something for nothing.

Get on the fast track

Growth companies can be good investments in the long term but it usually takes a long time for a small firm to grow into a big one. For impatient investors who want their payoff now, the wait can seem endless. Some firms accelerate the growth process by acquiring other companies, in their own and in other businesses. By paying for these acquisitions with new stock issues, these firms can speed the process even further. Investors are attracted to these companies for two reasons: The first is that they are usually the newsmakers in any market; acquisitions attract a great deal of press attention. The second is that the limitations of acquisition accounting often make these firms look much better than their peer group; in fact, with the right accounting treatment the growth can be made to look close to costless.¹ Investors play both sides of the acquisition game, with some buying acquisitive companies, hoping to ride their growth to high payoffs, whereas others try to

¹ With pooling accounting, which was legal until very recently, companies that used stock to acquire other companies were not required to show the cost of their acquisitions in their financial statements. Instead, they were allowed to show just the book value of the assets of the acquired companies.

invest in potential target companies, hoping to gain a share of the premium paid on the acquisition.

No money down, no risk, big profits

Every investor dreams of finding the investment equivalent of a free lunch – an investment with no risk and high returns (at least relative to what you could have earned on a bona fide riskless investment like a government bond). For these “arbitrage” opportunities to exist, you have to find two identical investments that are priced differently at the same point in time by markets and a guarantee that the prices will converge over time. Not surprisingly, these pure arbitrage opportunities are rare and are most likely to exist in futures and options markets. Even in those markets, they are accessible only to a few investors with low transactions costs and superior execution capabilities. You are far more likely to find near arbitrage opportunities, where you have two assets that are not quite identical, trading at different prices and speculative arbitrage, which is more speculation than arbitrage. Since there is no guarantee of price convergence, these investments will remain risky even to the most sophisticated investors and become even riskier when a significant portion of the investment comes from borrowing.

Go with the flow: Momentum Strategies

To some investors, a low risk and high return strategy is to buy stocks that are going up and to go along for the ride. Implicit in this strategy is the assumption that there is significant momentum in stock prices: stocks that go up will continue to go up and stocks that go down will continue to go down. Chartists and technical analysts have used chart patterns - trend lines, support lines and resistance lines, to name but three - for decades to both decipher the trend and, just as importantly, to get advance notice of a shift in the trend. After all, the momentum that brought you profits can very quickly turn against you. In recent years, momentum investors have also expanded their analysis to include trading volume. A stock that surges on high trading volume has both price and volume momentum and is considered a better investment than one that goes up on low trading volume.

Stories for the Hopeful

No matter how poor their past investment choices have been, some investors seem all too willing to forget the past and to try yet again to find a way of beating the average investor. For some, the hope for success rests on finding and following the right investment experts, investing in the stocks they pick. For others, the hope comes from an almost religious belief that stocks always win in the long term and that all you need to succeed is patience.

Just follow the experts

There is no shortage of experts, self-anointed or otherwise, in financial markets. There are equity research analysts, touting their superior access to information and management, making recommendations on which stocks to buy and sell. You have insiders at firms, from chief executive officers to board members, acting as cheerleaders in public but telling us far more about what they really think about their companies when they buy and sell stock in them. There are investment newsletters and advisory services, too many to keep track off, each claiming to have found the secret formula for great stock picking. For some investors, who are confused by the cacophony of contradictory views on markets and the volume of news about stocks, these experts offer welcome solace by taking on the responsibility of picking the right stocks.

Stocks always win in the long term

It has almost become conventional wisdom in the United States that the stock market may have a bad year or even a string of bad years but that stocks always win in the long term. Take any ten-year period in market history, you will be told, and stocks have done better than government bonds or bills. If you buy into this reasoning and you have a long time horizon, you would put all of your money in stocks since they will earn more for you than less risky alternatives over long periods. Of course, you can augment your returns if you can invest in stocks only in the good years and avoid them in the bad years. There are dozens of indicators, from the winner of the Super Bowl to the level of interest rates, that claim to tell you when to get into stocks and when to get out. The payoff to timing markets correctly is so large that everyone who invests in the stock markets, individual or institutional, tries to do it at one point in time or the other.

Deconstructing an Investment Story

Every investment story outlined in this book has been around for decades. Part of the reason is that each story has a kernel of truth in it. Consider, for example, the rationale for buying stocks that trade at low multiples of earnings. They are more likely to be cheap, you will be told. This makes sense to investors, not only because it is intuitive, but also because it is often backed up by evidence. Over the last seven decades, for instance, a portfolio of stocks with low PE ratios would have outperformed a portfolio of stocks with high PE ratios by almost 7% a year. Given the claims and counter claims that make investing so confusing, it is important that you take each story apart methodically, looking at both its strong and weak points. In this section, the steps in the process that will be adopted in each chapter to analyze each story will be laid out.

I. Isolating the kernel of truth: Theoretical Roots

Most investment story tellers claim to have contempt for theorists. They believe that theory is for academics and other ivory tower residents, who do not have to make investment choices for a living. The irony is that every investment story that has survived in the long term has done so because it is firmly rooted in financial theory. After all, you can use a valuation model to illustrate why stocks that trade at low multiples of earnings may be cheap and why companies with good management should trade at much higher values.

You will begin by examining the theoretical foundations for every story in this book. For instance, if your sales pitch is that stocks that have gone up the most in the past are more likely to continue going up – the classic momentum story – what types of assumptions would you have to make about investors and markets for this to happen? While this may seem like a diversion, there are three reasons why understanding the underlying theory is useful:

- Even if you think that you have discovered the ultimate investment strategy, you should be curious about what makes the strategy work. This will allow you to modify and adjust the strategy as the world changes. For instance, if you believe that stocks exhibit price momentum because investors learn slowly about new information, you may have to modify the strategy to reflect the fact that news reaches investors far more quickly today than it did a decade ago or earlier.
- No investment strategy works all the time. Understanding the theory will help you determine the periods where a strategy is most likely to work and when it is most likely to fail. If you view stocks with high dividends as an attractive alternative to bonds, for instance, the attraction should get even stronger in periods when interest rates on bonds are low.
- Every strategy also has its weak spots. By beginning with the theory and working forward, you can identify what you need to worry about most as an investor with each investment story and how you might be able to control for your concerns. For instance, using a valuation model to assess the price earnings ratio will lead you very quickly to the two primary concerns that you should have when investing in stocks with low PE ratios – that they will not have much growth in earnings to offer and that they may be very risky.

If you lack a quantitative bent, rest assured that the theory needed to illustrate the investment stories is simple.

II. Getting the full picture: Looking at the Evidence

The sheer magnitude of data that you have available on financial markets going back a century can be both a boon and a bane to investors. On the one hand, having the data available allows you to test almost any investment proposition that you want to. On the other hand, if you wanted to push a point of view, such as the notion that high growth companies are better investments than low growth companies, you can find backing for this view in some periods of market history and with some stocks. Given that almost all evidence that is presented for or against investment strategies comes with some bias, each of the chapters in this book will attempt to do the following:

- *Look at the viability of each strategy in the long term across the broadest cross section of stocks:* Rather than look at small sub samples of stocks over arbitrary time periods, you will look at all stocks listed in the United States over the longest period for which data is available. Thus, to examine whether stocks that trade at a discount on book value are, on average, good investments over time, you will look at the returns an investor would have earned on all stocks with this characteristic from 1926 to the present. As you will see, some highly touted strategies do break down when they are exposed to this level of scrutiny.
- *Look at sub-periods of history to see when the strategy has succeeded and when it has failed:* Every strategy in this book has good periods, where it has generated substantial returns and bad periods, where it has failed. If you adopt an investment strategy of buying stocks with low price earnings ratios, you will find that there are some sub-periods in history where this strategy does much better than others. By taking a closer look at market conditions – interest rates and GDP growth, for example – during these periods, you may be able to fine tune your strategy and make it more effective.
- *Put the returns from the strategy under a microscope to see if they can be explained by chance:* Strategies that are built around holding stocks deliver volatile returns, beating the market by large amounts in some years and underperforming badly in others. Consequently, you have to be careful in how you read the final results of your analysis. For instance, if you do find that stocks in small companies deliver 2% more in returns each year, on average, than larger companies, over a ten-year period, it is possible that this extra return can be explained purely by chance. Luckily, there are statistical tests available that allow you to assess whether this is the case.

As a final note, every strategy examined in this book has been tested before by both advocates and skeptics of the strategy. While some of these studies are dated, you can get a fuller picture of whether a strategy works by looking at these different points of view.²

III. Developing a frame of reference: Crunching the Numbers

Investment strategies are often based upon rules of thumb – eight times earnings is cheap, a stock that trades at a PE that is less than its expected growth rate is cheap etc. – and these rules have wide appeal among investors. After all, with more than 7000 listed stocks traded in the United States, investors are faced with an overwhelming amount of information. With this information overload, any rule that makes life simpler is welcomed. While there may be good reasons to adopt rules of thumb when investing, there are costs associated with using them as well:

Rules of thumb developed in a market can quickly become outmoded as market conditions change or in a different market: Consider, for instance, the rule of thumb that stocks trading at less than eight times earnings is cheap. While this may have made sense when the rule was developed in the 1960s, about half of all stocks in the United States traded at less than 8 times earnings in 1981 (making it too loose a definition of cheap) and less than 10% of all stocks did so in 1997 (making it too tight a definition in that year).

Rules of thumb are no substitute for the whole picture: Investors who use rules of thumb as a substitute for the whole picture can sometimes miss useful and important information that they could have used to better their strategies.

But how can you consolidate and make sense of the information that is available on so many different stocks? With each investment strategy, you will be presented with how the measures used in that strategy vary across the market at the time this book was written. For instance, you will look at the distribution of earnings growth across companies in the United States – how many companies in the market have earnings growth greater than 25%, between 20 and 25% etc.- when you analyze a strategy of buying high growth companies. Since these values will undoubtedly change in the months and years to come, the numbers will be updated and provided to readers on the web site for the book.

To get a true sense of an investment strategy and whether you would want to adopt it, you should also take a look at the portfolio of stocks that would emerge from this strategy. With each strategy in this book, you will do this looking across all of your investment choices at the time. If your strategy is to invest in low PE stocks, for instance,

² The other studies will be referenced in the footnotes of each chapter. If you are interested, you can trace the source articles and read them.

you will see the portfolio of the 100 stocks that had the lowest PE ratios in the United States at the end of 2002. There are at least two reasons for doing this:

- *Beyond anecdotal evidence:* By going beyond the anecdotal evidence, you will get a fuller picture of both the strengths and weaknesses of each strategy. You will find, for instance, that the typical low PE stock is not a mature, safe company (as is often claimed by its proponents) but a small, risky company that you have never heard off before.
- *Risk Testing:* For an investment strategy to work for you, you have to be comfortable with the portfolio that emerges with that strategy. The only way you can see if this is true is by looking at the list of stocks that would qualify as good stocks with each strategy.

IV. Probing for Weaknesses: The Rest of the Story

Every investment story has its strong points and its weak ones. While you can rest assured that you will be given a detailed analysis of the strengths, proponents of the strategy almost never talk about its weaknesses. To use an investment strategy effectively, though, you need to be just as informed about its limitations as you are about its potential promise.

Towards the end of every chapter in this book, you will examine everything that can potentially go wrong with each strategy using the portfolio that emerges from that strategy as your basis. Consider, for instance, the 100 stocks with the lowest PE ratios that would have been your portfolio with a low PE strategy. If one of the concerns you have is that low PE companies are more risky than the rest of the market, you can compare the riskiness of the portfolio of low PE stocks to the riskiness of the rest of the market (and) examine how many stocks you will lose in your portfolio if you want to avoid the riskiest stocks in the market (in the top quartile, for example).

If you have multiple concerns about a strategy and you eliminate stocks from your portfolio as a result of each concern, you may very well find that yourself with very few stocks left in your final portfolio. In the process, though, you will learn about where each strategy breaks down.

V. Lessons for Investors

If the message you take away from this book is that you cannot succeed with any investment strategy, it will have failed in its mission. Each strategy has potential for success, if it matches your risk preferences and time horizon, and if you are careful about how you use it. At the end of every chapter, the lessons of the chapter – positive as well as negative – will be summarized and presented as a series of screens that you can adopt to increase your

odds of success. Consider, for instance, a strategy of investing in companies with low price earnings ratios. After presenting the perils associated with this strategy – low PE ratio companies can have unsustainable earnings, low growth and high risk – you will consider a series of screens that you can use to construct a portfolio of low PE stocks with sustainable earnings, reasonable growth and limited exposure to risk. The portfolio that emerges using these screens will be presented at the end of each chapter. You should not consider this investment advice, since stock prices and fundamentals will have changed by the time you read this book. Instead, you should view this as an ongoing process that you can use to find the best stocks for you in any market at any point in time.

Conclusion

Investment stories have been around for as long as you have had financial markets and they show remarkable longevity. The same stories are recycled with each generation of investors and presented as new and different by their proponents. The stories that will be examined in the chapters to come have been laid out and categorized by the human emotion that makes each one so compelling; some stories appeal to the fearful (risk averse), others the hopeful and still other to the greedy. The process that will be used in each chapter to examine each of the investment stories is also laid out, starting with the story, followed by the theoretical foundations and the evidence on its effectiveness (or lack thereof) and closing with its potential weaknesses (and ways of protecting yourself against them).

CHAPTER 2

HIGH DIVIDEND STOCKS: BONDS WITH PRICE APPRECIATION?**Sam's Lost Dividends**

Once upon a time, there lived a happy and carefree retiree named Sam. Sam was in good health and thoroughly enjoyed having nothing to do. His only regret was that his hard-earned money was invested in treasury bonds, earning a measly rate of 3% a year. One day, Sam's friend, Joe, who liked to offer unsolicited investment advice, suggested that Sam take his money out of bonds and invest in stocks. When Sam demurred, saying that he did not like to take risk and that he needed the cash income from his bonds, Joe gave him a list of 10 companies that paid high dividends. "Buy these stocks", he said, "and you will get the best of both worlds – the income of a bond and the upside potential of stocks". Sam did so and was rewarded for a while with a portfolio of stocks that delivered a dividend yield of 5%, leaving him a happy person.

Barely a year later, troubles started when Sam did not receive the dividend check from one of his companies. When he called the company, he was told that they had run into financial trouble and were suspending dividend payments. Sam, to his surprise, found out that even companies that have paid dividends for decades are not legally obligated to keep paying them. Sam also found that four of the companies in his portfolio called themselves real estate investment trusts, though he was not quite sure what they did. He found out soon enough when the entire real investment trust sector dropped 30% in the course of a week, pulling down the value of his portfolio. Much as he tried to tell himself that it was only a paper loss and that he could continue to receive dividends, he felt uncomfortable with the knowledge that he had less savings now than when he started with his portfolio. Finally, Sam also noticed that the remaining six stocks in his portfolio reported little or no earnings growth from period to period. By the end of the third year, his portfolio had dropped in value and the dividend yield had declined to 2.5%. Chastened by his losses, Sam sold his stocks and put his money back into bonds. And he never listened to Joe again.

Moral of the story: High dividends do not a bond make.

If you are an investor who abhors risk, you probably prefer to invest your money in treasury bonds or safe corporate bonds, rather than stocks, because bonds offer a guaranteed income stream in the form of coupons. The trade off is that bonds have limited potential for price appreciation. A bond's price may increase, as interest rates go down, but most of the money you make on your investment must come from the coupons you receive over the bond's life. Notwithstanding your aversion to risk, you may sometimes be induced

to invest in stocks by what seems like an unbeatable combination – a stock that delivers dividends that are comparable to the coupons on bonds with the possibility of price appreciation. In this chapter, you will consider why some stocks pay high dividends, whether such dividends can be compared the coupons paid on bonds and the dangers that can sometimes lurk in these stocks.

The core of the story

When you buy a stock, your potential return comes from two sources. The first is the dividend that you expect the stock to pay over time and the second is the expected price appreciation you see in the stock. The dividends you will receive from investing in stocks will generally be lower than what you would have earned as coupons if you had invested the same amount in bonds and this sets up the classic trade off between bonds and stocks. You earn much higher current income on a bond but your potential for price appreciation is much greater with equity. Bonds are less risky but equities offer higher expected returns. But what if you could find stocks that deliver dividends that are comparable to the coupons paid on bonds? There are two different arguments made by those who believe that such stocks are good investments.

- *The Optimist Pitch: “You have the Best of Both Worlds”*: In this pitch, you are told that you can get the best of both bond and equity investments when you buy high dividend stocks. Summarizing the pitch: *These are stocks that deliver dividends that are comparable and, in some cases, higher than coupons on bonds. Buy these stocks and you can count on receiving the dividends for the long term. If the stock price goes up, it is an added bonus. If it does not, you still earn more in dividends than you would have earned by investing in bonds.* In fact, this story is bolstered by the fact that many stocks that pay high dividends are safer, larger companies where the potential risk is low.
- *The Pessimist Pitch: “Defensive Investments”*: This is the pitch that gains resonance in bear markets. In an environment where investors have seen their equity portfolios wither as the stock market declines, stocks that pay high dividends offer solace. Summarizing this argument: *Even though these stocks may lose value like other stocks, investors holding on to them can still count on receiving the dividends.* In fact, during crises, there is a general flight to safety that occurs across all markets. While it manifests itself immediately as a shift from stocks to government bonds, it also shows up within equity markets as investors shift from higher risk stocks (often high growth companies that pay no or little dividends) to low risk stocks (often stable companies that pay high dividends).

These sales pitches have the most appeal to investors who are not only risk averse but also count on their portfolios to deliver a steady stream of income. It should come as no surprise that older investors, often retired, are the most receptive audience.

The Theory: Dividends and Value

Can paying more in dividends make a company a more attractive investment? There is a surprising degree of disagreement about the answer to this question in corporate financial theory. One of the most widely circulated propositions in corporate finance – the Miller-Modigliani theorem – states that dividends are neutral and cannot affect returns.¹ How, you might wonder, is this possible? When a company pays more in dividends every year, say 4% of the stock price rather than the 2% it pays currently, does that not increase the total return? Not in a Miller-Modigliani world. In this world, the expected price appreciation on this stock will drop by exactly the same amount as the dividend increase, say from 10% to 8%, leaving you with a total return of 12%. While there remain numerous adherents to this view, there are theorists who disagree by noting that a firm may signal its confidence in its future earnings by increasing dividends. Accordingly, stock prices will increase when dividends are increased and drop when dividends are cut. To complete the discussion, there are still others who argue that dividends expose investors to higher taxes and thus should reduce value. Thus, dividends can increase, decrease or have no effect on value, depending upon which of these three arguments you subscribe to.

Dividends do not matter: The Miller Modigliani Theorem

The basis of the argument that dividends don't matter is simple. Firms that pay more dividends will offer less price appreciation and deliver the same total return to stockholders. This is because a firm's value comes from the investments it makes – plant, equipment and other real assets, for example – and whether these investments deliver high or low returns. If a firm that pays more in dividends can issue new shares in the market, raise equity and take exactly the same investments it would have made if it had not paid the dividend, its overall value should be unaffected by its dividend policy. After all, the assets it owns and the earnings it generates are the same whether it pays a large dividend or not.

You, as an investor, will also need to be indifferent between receiving dividends and capital gains for this proposition to hold. After all, if you are taxed at a higher rate on dividends than on capital gains, you will be less happy with the higher dividends, even

¹ Miller, M. and F. Modigliani, 1961, *Dividend Policy, Growth and the Valuation of Shares*, Journal of Business, 411-433.

though your total returns will be the same, simply because you will have to pay more in taxes. For dividends to not matter, you either have to no taxes or pay the same taxes on dividends and capital gains.

The assumptions needed to arrive at the proposition that dividends do not affect value may seem so restrictive that you will be tempted to reject it without testing it; after all, it is not costless to issue new stock and dividends and capital gains have historically not been taxed at the same rate. That would be a mistake, however, because the theory does contain a valuable message for investors: *A firm that invests in poor projects that make sub-standard returns cannot hope to increase its value to investors by just offering them higher dividends. Alternatively, a firm with great investments may be able to sustain its value even if it does not pay any dividends.*

Dividends are bad: The Tax Argument

Dividends have historically been treated less favorably than capital gains by the tax authorities in the United States. For much of the last century, dividends have been treated as ordinary income and taxed at rates much higher than price appreciation, which has been treated and taxed as capital gains. Consequently, dividend payments create a tax disadvantage for investors and should reduce the returns to stockholders after personal taxes. Stockholders should respond by reducing the stock prices of the firms making these payments, relative to firms that do not pay dividends. In this scenario, firms will be better off either retaining the money they would have paid out as dividends or repurchasing stock.

The double taxation of dividends — once at the corporate level and once at the investor level — has not been addressed directly in U.S. tax law until very recently², but it has been dealt with in other countries in a couple of ways. In some countries, like Britain, individual investors are allowed a tax credit for the corporate taxes paid on cash flows paid to them as dividends. In other countries, like Germany, the portion of the earnings paid out as dividends are taxed at a lower rate than the portion reinvested back into the firm.

Dividends are good: The Clientele and Signaling Stories

Notwithstanding the tax disadvantages, many firms continue to pay dividends and investors in these firms typically view such payments favorably. There are some academics and practitioners who argue that dividends are good and can increase firm value and provide at least three reasons.

² In early 2003, President Bush presented tax reform that essentially exempted all dividends from personal taxes. After negotiations, a compromise bill was ultimately passed in May 2003 reducing the tax rate on dividends to 15% - the same rate that capital gains will be taxed at.

- *Some investors like dividends.* These investors may not be paying much in taxes and consequently do not care about the tax disadvantage associated with dividends. Or they might need and value the cash flow generated by the dividend payment. Why do they not sell stock to raise the cash they need? The transactions costs and the difficulty of breaking up small holdings³ and selling unit shares may make selling small amounts of stock infeasible. Given the vast diversity of individual and institutional investors in the market, it is not surprising that, over time, stockholders tend to invest in firms whose dividend policies match their preferences. Stockholders in high tax brackets who do not need the cash flow from dividend payments tend to invest in companies that pay low or no dividends. By contrast, stockholders in low tax brackets who need the cash from dividend payments will usually invest in companies with high dividends. This clustering of stockholders in companies with dividend policies that match their preferences is called the *cliente effect* and may explain why some companies not only pay dividends but increase them over time.
- *Markets view dividends as signals:* Financial markets examine every action a firm takes for implications for the future. When firms announce changes in dividend policy, they are conveying information to markets, whether they intend to or not. By increasing dividends, firms commit to paying these dividends in the long term. Their willingness to make this commitment indicates to investors that they believe they have the capacity to generate these cash flows in the long term. This positive signal should therefore lead investors to increase the stock price. Decreasing dividends is a negative signal, largely because firms are reluctant to cut dividends. Thus, when a firm takes this action, markets see it as an indication that this firm is in substantial and long-term financial trouble. Consequently, such actions lead to a drop in stock prices.
- *Some managers cannot be trusted with cash:* Not all companies have good investments and competent management. If a firm's investment prospects are poor and its managers are not viewed as careful custodians of stockholder wealth, paying dividends will reduce the cash in the firm and thus the likelihood of wasteful investments.

Looking at the Evidence

Over the last few decades, researchers have explored whether buying stocks based upon their dividend payments is a good strategy. Some of these studies look at the broad

³ Consider a stockholder who owns 100 shares trading at \$ 20 per share, on which she receives a dividend of \$0.50 per share. If the firm did not pay a dividend, the stockholder would have to sell 2.5 shares of stock to raise the \$ 5 that would have come from the dividend.

question of whether stocks with higher dividend yields deliver higher total returns. If the dividend story holds up, you would expect stocks with high dividend yields to also earn high returns. Others take a more focused approach of looking at only those stocks that have the highest dividend yields. One example is the Dow Dogs strategy, where you buy the 10 stocks in the Dow 30 that have the highest dividend yields. In recent years, a third strategy of buying stocks that have the biggest increases in dividends (rather than the highest dividends) has also been tested. In this section, the empirical evidence that has accumulated on all of these fronts will be presented.

Do higher yield stocks earn higher returns?

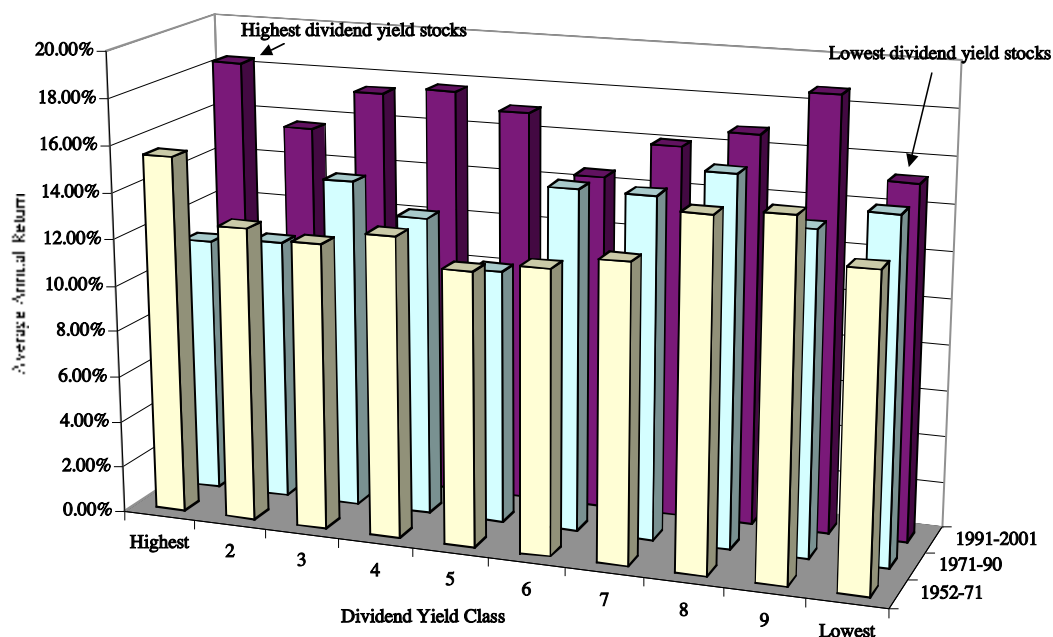
The dividend yield is usually computed by dividing the dividends per share by the current stock price. Thus, it is defined to be-

$$\text{Dividend yield} = \text{Annual dividends per share} / \text{Current Stock price}$$

However, there are variations in how the annual dividends per share are computed, leading to different estimates of the dividend yield for the same stock. Some use the dividends paid in the last financial year, others use dividends paid over the last four quarters and there are some who use expected dividends per share over the next financial year. If higher dividends make stocks more attractive investments, stocks with higher dividend yields should generate higher returns than stocks with lower dividend yields.

Over the last four decades, researchers have tried to examine whether higher dividend yield stocks are superior investments. The simplest way to test this hypothesis is to create portfolios of stocks based upon their dividend yields and examine returns on these portfolios over long periods. In Figure 2.1, the average annual returns – these include price appreciation and dividend yields – are computed on ten portfolios created based upon dividend yields at the beginning of every year from 1952 and 2001. Looking at sub-periods, the highest dividend yield portfolio earned an annual return of about 16% between 1952 and 1971, about 3% more than the returns on the lowest dividend yield portfolio. During this period, the lowest returns were earned by the firms in the intermediate dividend yield classes. Between 1971 and 1990, the lowest dividend yield stocks earned a higher annual return than the highest dividend yield stocks. Between 1991 and 2001, the advantage shifts back to higher dividend yield stocks. Over the entire period, higher dividend yield stocks generate a slightly higher annual return than lower dividend yield stocks.

Figure 2.1: Returns on Dividend Yield Classes - 1952 - 2001

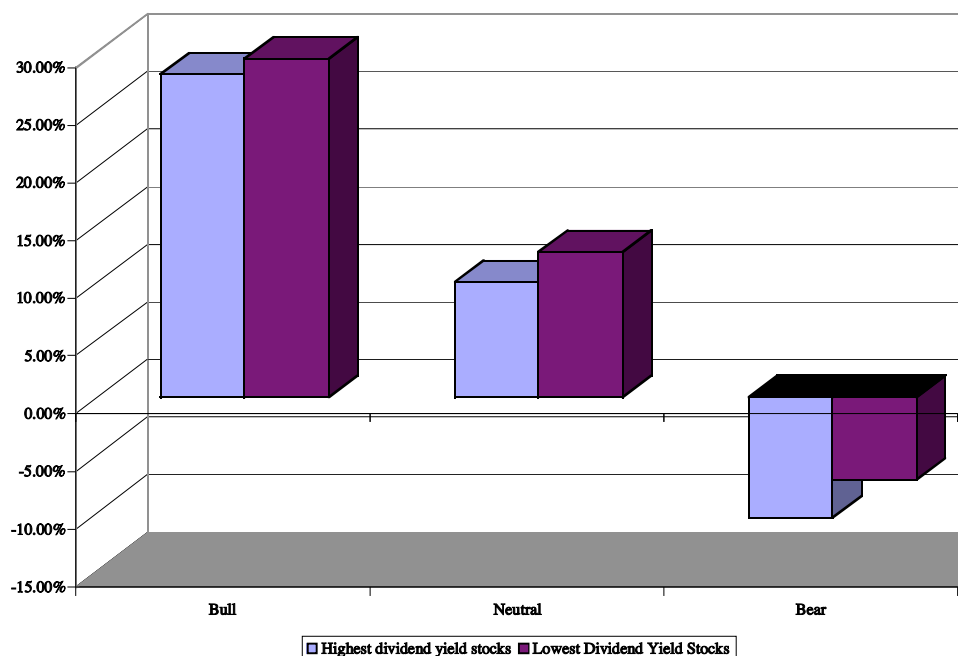


Data from Ken French at Dartmouth. The stocks were categorized into classes based upon the dividend yields at the beginning of each year and the annual returns in the following year were calculated. This figure represents the average annual return over the period.

What are you to make of this shifting in advantage across periods? First, you should consider the volatility a cautionary note. A strategy of investing in high dividend yield stocks would have delivered mixed results over the sub-periods, working well in some periods and not in others. Second, you could look at the periods where high dividend yield stocks did best and try to find common factors that may help you fine-tune this strategy. For instance, high dividend stocks may behave much like bonds in periods of high inflation and rising interest rates and lose value. This would explain why they underperformed the rest of the market between 1971 and 1990.

In a test of whether high dividend stocks are good defensive investments, you can see whether high dividend paying stocks hold up better than non-dividend paying stocks during bear markets. Using data from 1927 to 2001, the returns on highest dividend yield stocks (top 20%) were compared to returns on the lowest dividend yield stocks (bottom 20%) in bull market years (where total market return exceeded 10%), bear market years (where total market return was negative) and neutral years (where total market return was between 0 and 10%). The results are summarized in Figure 2.2:

Figure 2.2: Are high dividend yield stocks better defensive investments?



Data from French. These are the average annual returns on high dividend yield and low dividend yield stocks in bull market years (stocks up more than 10%), neutral market years (stocks up between 0 and 10%) and bear market years (stocks down for the year).

There is little evidence for the claim that high dividend stocks are better defensive investments, especially in bear markets. Between 1927 and 2001, high dividend yield stocks actually delivered more negative total returns than low dividend yield stocks during bear markets.

The Dividend Dogs

An extreme version of a high dividend portfolio is the strategy of investing in the “Dow Dogs”, the ten stocks with the highest dividend yields in the Dow 30. Proponents of this strategy claim that they generate high returns from it, but they base this claim on a comparison of the returns that you would have made on the strategy to what you would have made investing in the Dow 30. For instance, a web site dedicated to this strategy (dogsofthedow.com) claims that you would have earned 17.7% a year from 1973 to 2002 investing in the ten highest dividend yield stocks in the Dow, a much higher return than the 11.9% you would have made on the rest of the Dow.

Not only is this comparison an extraordinarily narrow one – after all, there are several thousands stocks that are not part of the Dow - but it can be misleading. Many of the Dow Dog stocks are riskier than the rest of the Dow 30 stocks, and the higher returns they make could be just compensation for the higher risk. In addition, any investor investing

over these stocks over the periods covered (the sixties and the seventies) would have faced a substantial tax liability from the high dividends. It should come as no surprise that those studies that do control for the risk differences and factor in the tax effects conclude that the superior performance of the Dow Dog stocks is a mirage.⁴

Perhaps, the best test of a strategy is to look at the stocks that would be picked based upon the strategy and ask yourself whether you would be comfortable with these stocks. After ranking the Dow 30 stocks by dividend yield, in May 2003, the following stocks emerged as the Dow Dogs:

Table 2.1: Dow Dogs : May 2003

<i>Company</i>	<i>Price</i>	<i>Yield</i>
Altria	42.31	6.05%
General Motors	33.26	6.01%
Eastman Kodak	30.28	5.94%
SBC Communications	25.15	4.49%
JP Morgan Chase	30.9	4.40%
AT&T	19.25	3.90%
DuPont	40.99	3.42%
Honeywell	24.47	3.06%
ExxonMobil	35.98	2.78%
General Electric	27.64	2.75%

As an investor considering this portfolio, you should ask yourself the following questions:

1. Would you want your entire wealth to be invested in only ten stocks, two of which are telecomm companies? From the standpoint of spreading your risks and diversifying, this does not seem prudent.

⁴ McQueen, G., K. Shields and S.R. Thorley, 1997, *Does the Dow-10 Investment Strategy beat the Dow statistically and economically?* Financial Analysts Journal, July/August, 66-72. This study examined this strategy and concluded that while the raw returns from buying the top dividend paying stocks is higher than the rest of the index, adjusting for risk and taxes eliminates all of the excess return. A study by Hirschey (Hirschey, M., 2000, The "Dogs of the Dow" Myth, Financial Review, v35, 1-15.) in 2000 also indicates that there are no excess returns from this strategy after you adjust for risk.

2. Why would ten of the most highly followed stocks in the world be so seriously misvalued by investors? In other words, why are other investors not seeing the same opportunities that you do in these stocks?
3. Many of the stocks on this list have at least one big concern weighing them down – Altria (the former Philip Morris) has tobacco lawsuits and J.P. Morgan Chase faced legal problems associated with Enron. Will these companies continue to pay their dividends if these concerns turn into financial liabilities?

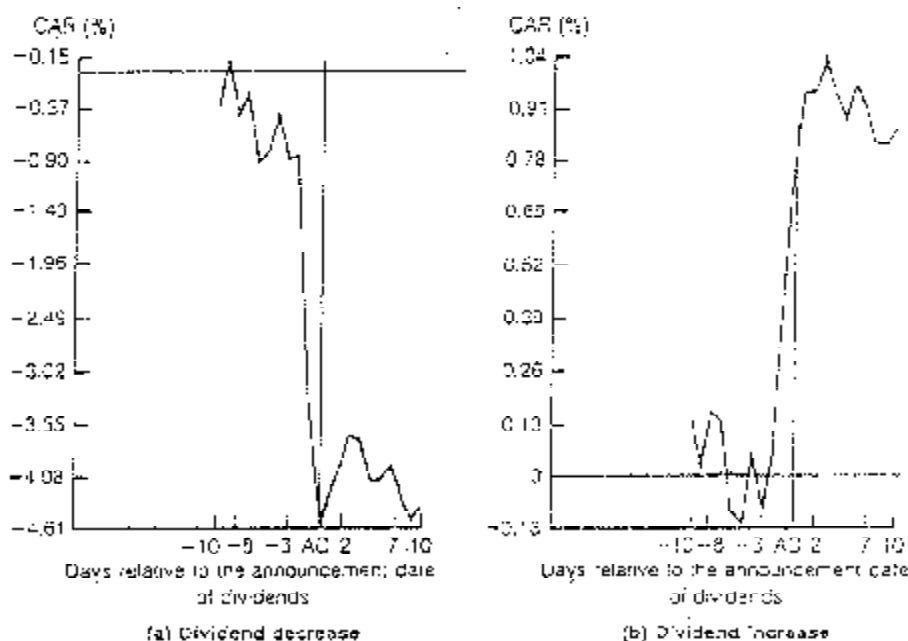
You may very well conclude that the reward is worth the risk, but that should not be a conclusion made in haste and without analysis.

Dividend Increases

In a different version of the dividend story, stocks that have increased their dividends over time are viewed as better investments than stocks than stocks than stocks where dividends have been stagnant or gone down. There are two ways in which this proposition has been tested. The first set of studies has examined the stock price reaction when a company announces an increase or a cut in dividends. The consensus from this research is that stock prices increase when dividends are increased and drop when dividends are cut. Figure 2.3 looks at what happens to stock prices of companies that announce dividend increases and decreases.⁵

⁵ Aharony, J. and I. Swary, 1981, *Quarterly Dividends and Earnings Announcements and Stockholders' Returns: An Empirical Analysis*, Journal of Finance, Vol 36, 1-12.

Figure 2.3: Stock Price Reaction to Dividend Changes: U.S. companies



Source study: Aharony and Swary. They looked at hundreds of dividend announcements made by firms in the 1970s in this study.

When dividends are cut, stock prices drop by about 4.5%, on average, whereas stock prices increase about 1%, on average, on the announcement of a dividend increase. The asymmetry between the two responses can be explained by the fact that far more firms increase dividends than decrease dividends in a typical year.

The second set of studies document the longer-term returns on portfolios constructed of companies that increase their dividends the most. Here, the results are mixed. After the initial price jolt created by the dividend increase, there is some evidence of continued price increases⁶ for a few weeks after the announcement but the price increase is modest. In other words, buying stocks that have boosted dividends recently does not deliver higher returns in the long term.

⁶ Michaely, R, R.H. Thaler and K.L. Womack, 1995, *Price Reactions to Dividend Initiations and Omissions: Overreaction or Drift?* Journal of Finance, v50, 573-608. This study looked at returns on stocks that increase dividends in the months after the dividend increase and concludes that stocks that increase dividends continue to do well whereas stocks that decrease dividends are poor investments.

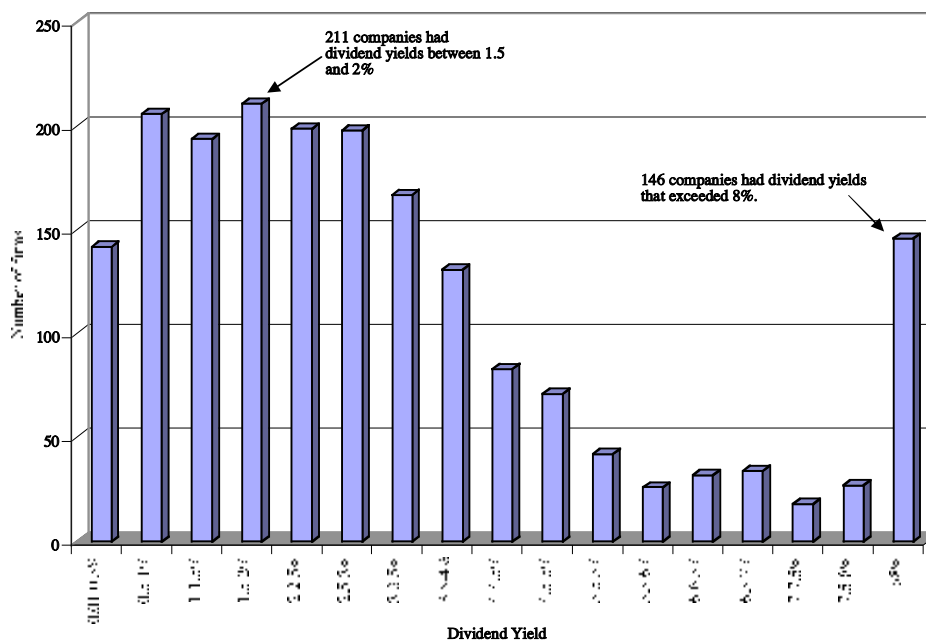
Crunching the numbers

For purposes of analysis, accept the argument that stocks that have high dividend yields are good investments. In this section, you will begin by first looking at dividend yields across companies in the United States to see what would comprise a low or a high dividend yield, and then at changes in dividend yields for the entire market over time. You will then look at the stocks that would have been identified as potential investments in the United States in October 2002, based upon their dividend yields.

Dividend Yields: Across Companies and Over Time

What is a typical dividend yield for a company and how has it changed over time? It is worth answering this question before you consider investment strategies based upon it. In Figure 2.4, the distribution of dividend yields on companies that pay dividends in the United States in October 2002 is presented.

Figure 2.4: Dividend Yields across U.S. Stocks



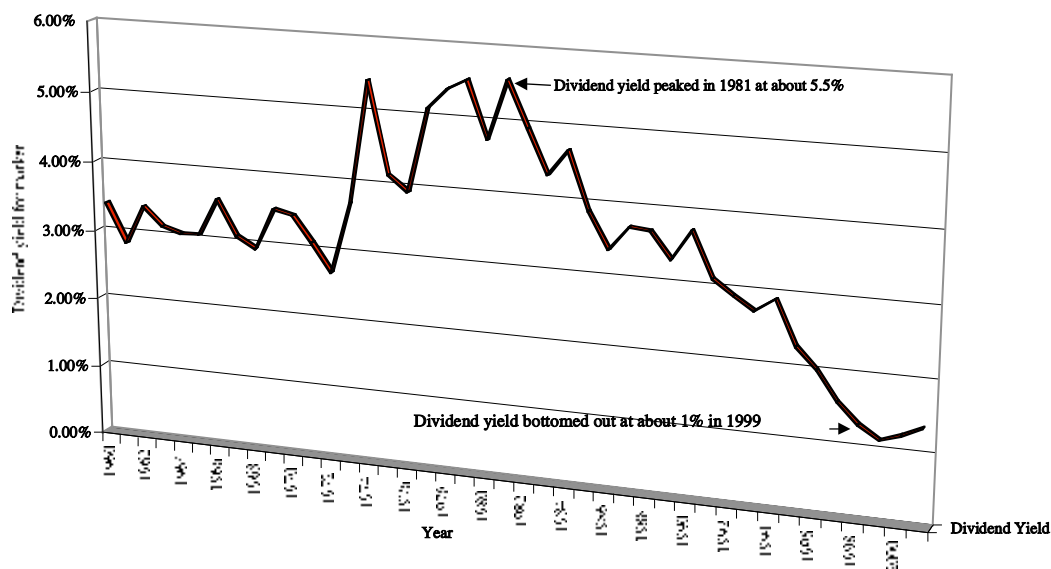
Data from Value Line. The dividend yield for each stock is the annual dividends per share over the last four quarters divided by the stock price at the time of the analysis.

The first and perhaps most interesting statistic is the number of companies that do not pay dividends. Of the 7100 companies in the sample, 5173 did not pay dividends. The second is the variation in dividend yields among the companies that pay dividends. While the average dividend yield across stocks that pay dividends is about 3.32%, this number is

pushed upwards by the presence of a few companies that have very high dividend yields (8% or more). A more meaningful statistic is the median dividend yield among dividend paying stocks, which is 2.54%.

Much has been said about how dividends paid by U.S. stocks have decreased over time. In Figure 2.5, the dividend yield for U.S. stocks from 1960 to 2001 is reported:

Figure 2.5: Dividend Yields in the United States: 1960 - 2001

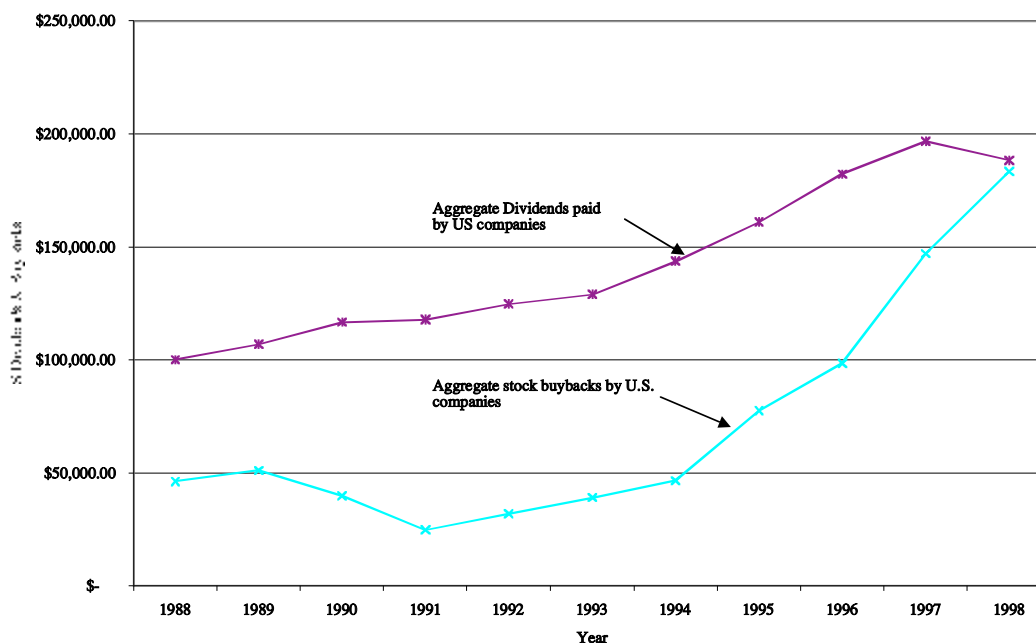


Data from Bloomberg. This is the average dividend yield across all U.S. stocks at the end of every year from 1960 to 2001.

The dividend yield for U.S. stocks dropped from 3-4% in the 1950s to 1-2% in the late 1990s. Even with the drop in stock prices from 1999 to 2002, the dividend yield remained low at 1.37% at the end of 2001.

There is one important aspect of corporate behavior that is missed when you focus on dividends alone. During the 1980s and 1990s, companies increasingly turned to stock buybacks as a way of returning cash to stockholders. In Figure 2.6, the aggregate dividends paid and aggregate stock buybacks for U.S. firms from 1989 to 1998, is reported.

Figure 2.6: Stock Buybacks and Dividends: Aggregate for US Firms - 1989-98



Data from Compustat. The stock buybacks and dividends represent the aggregate dollar values across all U.S. companies.

Note that almost as much cash was returned in the form of stock buybacks in 1998 as was paid out in dividends that year. Since this represents a quantum leap over buybacks ten years prior, adding it to the dividend yield to come up with a consolidated measure of cash returned to stockholders may provide you with a more reasonable measure of cash payouts than looking at just the dividend yield.

Sector Differences in Dividend Policy

There are clear differences in dividend policy across sectors. In some sectors such as banking and utilities, it has long been customary for firms to pay out large dividends relative both to earnings (dividend payout ratios) and to market value (dividend yields). In other sectors, such as technology, firms have traditionally paid out little or no dividends. In Table 2.2, the 5 sectors with the highest and lowest dividend yields in the United States in October 2002 are listed.

Table 2.2: Sectors with high and low dividend yields

Lowest Dividend Paying Sectors		Highest Dividend Paying Sectors	
Industry	Average yield	Industry	Average yield
Biotechnology	0.00%	Bank	2.22%

E-Commerce	0.00%	Petroleum	2.41%
Internet	0.00%	Maritime	2.61%
Semiconductor Cap Eq	0.00%	Water Utility	2.69%
Telecom. Equipment	0.00%	Chemical (Basic)	2.99%
Educational Services	0.02%	Electric Utility	4.11%
Cable TV	0.04%	Natural Gas	4.40%
Wireless Networking	0.06%	Tobacco	5.48%
Information Services	0.07%	Investment Cos	6.30%
Computer Software	0.07%	R.E.I.T.	6.63%

These differences across sectors matter for two reasons. First, what comprises a high or low dividend yield may depend upon the sector. Thus, a dividend yield of 2% may be viewed as a low yield for an electric utility but would be a high yield for a software firm. Second, picking the stocks that have the highest dividend yields in the market will result in a portfolio that is over-weighted in financial service, utility and real estate investment trusts (REIT) stocks. While this is not necessarily a negative, investors have to be aware of this fact when they construct these portfolios.

As noted earlier in this chapter, different dividend policies attract different clientele. Not surprisingly, investors who buy stocks in high dividend paying sectors tend to view more dividends as a good thing and to reward companies that pay higher dividends. The same cannot be said about investors who buy technology or biotechnology stocks.

Why do some sectors pay more in dividends than others? While part of the reason may lie in the history of these sectors, a great deal of the differences in dividend policy can be explained by differences in fundamentals. Sectors with higher growth potential and more volatile earnings tend to pay less in dividends, especially relative to market value. Firms in these sectors often have to reinvest their earnings to grow and are also wary of paying out dividends that they may not be able to sustain. Sectors with more stable income and less growth potential tend to pay more dividends. Real estate investment trusts offer a special case since they are required by statute to pay 95% of their earnings in dividends.⁷

⁷ Real estate investment trusts do not have to pay corporate taxes but they are required to pay high dividends.

A Portfolio of High Dividend Stocks

The best way to understand what a portfolio driven by high dividend yields would look like is to construct one and then analyze its characteristics. Looking across the 7100 companies for which information was available in October 2002, you can develop a list of the 100 companies with the highest dividend yields. The portfolio is presented in Table 2.3. Given the discussion about differences in dividend policy across sectors, it should come as no surprise that a few sectors are disproportionately represented in this sector. Real estate investment trusts represent 40% of the stocks in the portfolio with utilities (electric and gas) and financial service firms (banks, investment companies and insurance) representing about 20% each.

Another striking aspect of this table is the magnitude of the dividend yields. Many of these stocks have dividend yields in excess of 10%. Since the treasury bond rate was about 4% in October 2002 and investment grade corporate bonds were yielding in the 5-6% range, you can see the allure of these stocks to investors in search of high cash yields on their investments. It is worth noting, however, that the dividends represent dividends paid over the last financial year whereas the stock price is the current price. The price will therefore reflect more updated information about the firm. If bad news has come out about the firm recently, the price will have dropped and the resulting dividend yield will be high. This is especially so for the stocks with dividend yields of 20% or higher. Investors should exercise due diligence by examining more recent news releases before they plunge into these stocks.

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The Rest of the story

There are three key considerations that you have to take into account in adopting a high-dividend strategy. The first is that some stocks with high dividend yields may be paying much more in dividends than they can afford. It is only a matter of time, then, before the dividends are cut. The second is that any firm that pays a substantial portion of its earnings as dividends is reinvesting less and can therefore expect to grow at a much lower rate in the future. Thus, you often have to trade off higher dividend yields for lower earnings growth in the future. The third is that you as an investor will have a much greater tax cost on this strategy, since dividends are taxed at a higher rate than capital gains.

Unsustainable Dividends

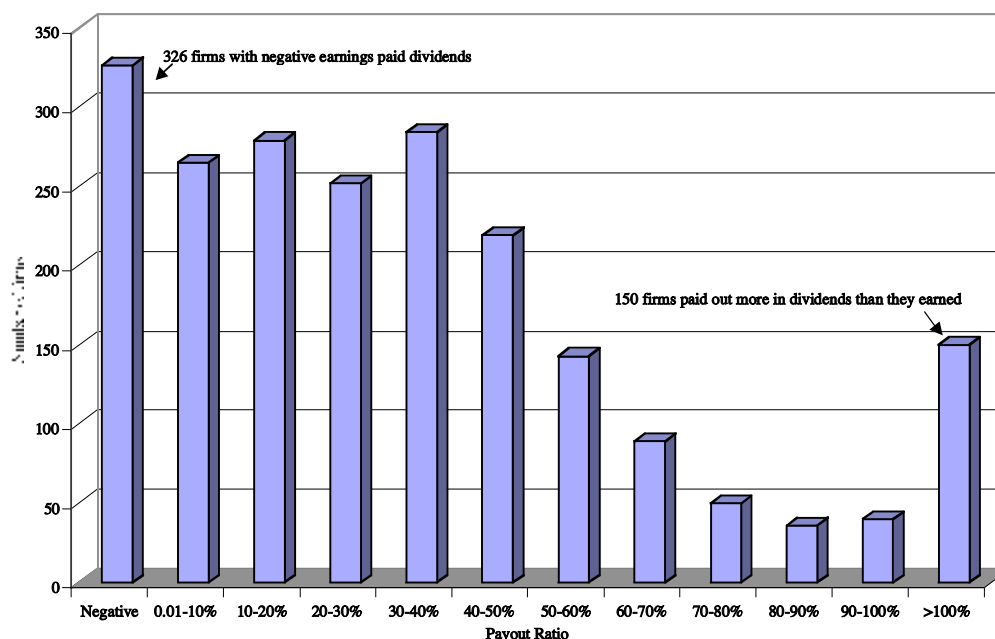
While investors may buy stocks that pay high dividends as substitutes for bonds, there is one significant difference. A conventional bond offers a promised coupon; in other words, when you buy a bond with a coupon rate of 8%, the issuer contractually promises to pay \$ 80 a year for the lifetime of the bond. While issuers can default, they cannot arbitrarily decide to reduce this payment. In contrast, a company does not contractually promise to maintain or increase its dividends. Thus, a company that pays a \$ 2 dividend this year can reduce the dividend or even eliminate it if it so chooses. While investors may view this action with disappointment and sell the stock (causing the price to drop), they cannot force the company to pay dividends.

What are the implications for investors? A stock with a high dividend may be an attractive investment but only if the dividends can be sustained. How do you know whether dividends are sustainable? There are three approaches. The first and simplest one compares dividends to earnings in the most recent period to see if too much is being paid out. The second approach modifies the first one to allow for the fact that earnings are volatile. It compares dividends paid to normalized or average earnings over time to make the same judgment. The third approach tries to measure how much the company could have paid in dividends, allowing for the reality that companies often cannot pay out their entire earnings in dividends when they have to reinvest to grow.

Comparisons to Actual or Normalized Earnings

The first and simpler approach to evaluating the sustainability of dividends is to compare the dividends paid in the most recent period to the earnings in the period. The ratio of dividends to earnings is the payout ratio and Figure 2.7 below presents the distribution of dividend payout ratios in the most recent financial year for U.S stocks in October 2002.

Figure 2.7: Dividend Payout Ratios - U.S. Stocks in October 2002



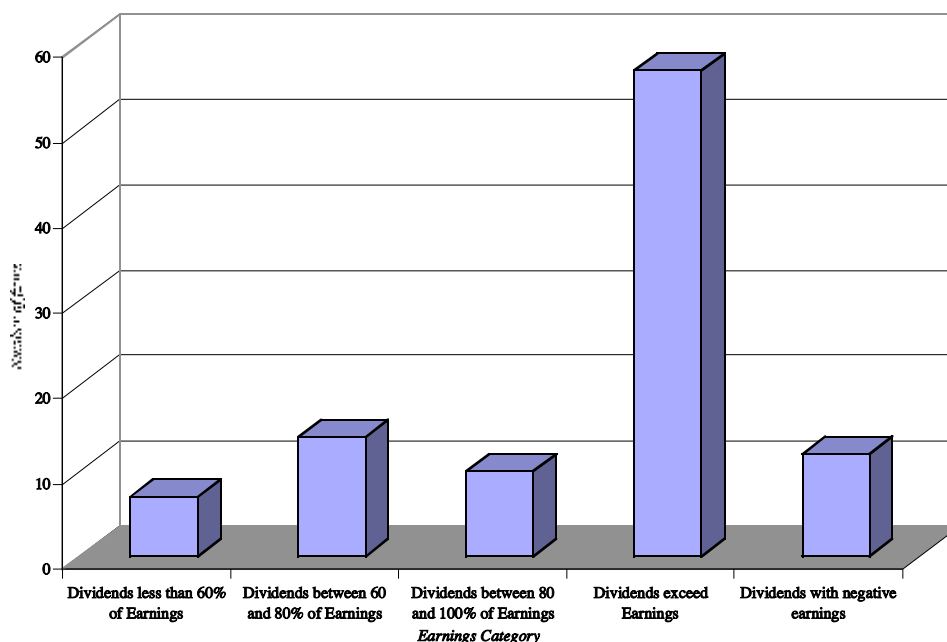
Data from Value Line: The payout ratio is the dollar dividend paid out as a percent of the net income. If the net income is negative, the payout ratio cannot be calculated.

A firm that has a dividend payout ratio greater than 100% paid out more than its earnings as dividends at least in the most recent financial year. If its earnings do not recover promptly, this is clearly unsustainable for the long term and can have significant accounting and economic consequences. From an accounting standpoint, this action will reduce the book value of equity in the firm. From an economic standpoint, the firm is not only not reinvesting back into the business but is reducing its asset base, thus reducing its capacity to grow in the future.

While avoiding firms that pay out more than what they are earning as dividends may be an obvious strategy, you could impose tighter constraints. For instance, some conservative investors and financial advisors suggest that you avoid firms that pay out more than a certain percent of their earnings – two thirds (or a payout ratio of 67%) is a commonly used rule of thumb. While these constraints are usually arbitrary, they reflect the fact that earnings are volatile and that dividends in firms that pay out more than the cut-off payout ratio are at risk.

Revisit the sample of the 100 companies with the highest dividend yields (from Table 2.3) and compare annual dividends to trailing earnings - earnings in the most recent four quarters. Figure 2.8 summarizes the findings:

Figure 2.8: Dividends versus Earnings



Data from Value Line: The dividends for each company were compared to the earnings for the company.

Of the 100 firms in the portfolio, 57 had dividends that exceeded their earnings over the last four quarters and 12 paid dividends even though they had losses for the year.

There are some analysts who would accuse you of being excessively cautious in your analysis. They would argue that trailing 12-month earnings are depressed because of poor overall economic growth and that you should be comparing dividends to earnings in a normal year or sustainable earnings. One simple modification they would recommend is looking at average earnings over some past period, say five years. While you can accept the logic of the argument, this is a conservative investment strategy and it seems prudent to use the toughest test that you can for whether dividends are sustainable.

Returning to the list, it is quite clear that using the cutoff of 67% for the payout ratio would prune the portfolio down to about 15 firms. Even using a liberal cutoff point of 80% for the dividend payout ratio prunes the portfolio down to only 21 companies, which are listed in Table 2.4 below:

Table 2.4: Firms with high dividend yields and payout ratios below 80%

Company	Annual Dividends per Share	Trailing 12-month EPS	Payout Ratio
MicroFinancial Inc	\$0.20	\$1.26	15.87%
Telesp Celular	\$0.15	\$0.90	16.67%

Dynegy Inc. 'A'	\$0.30	\$1.46	20.55%
AES Corp.	\$0.25	\$1.17	21.37%
El Paso Corp.	\$0.87	\$2.93	29.69%
Mission West Properties	\$0.96	\$2.52	38.10%
Koger Equity Inc.	\$1.40	\$2.94	47.62%
R.J. Reynolds Tobacco	\$3.80	\$6.32	60.13%
TECO Energy	\$1.42	\$2.31	61.47%
Advanced Tobacco	\$0.05	\$0.08	62.50%
Apex Mortgage Capital	\$2.00	\$3.11	64.31%
Permian Basin Rty Tr	\$0.56	\$0.85	65.88%
Williams Coal Sm Gs	\$0.88	\$1.33	66.17%
Public Serv. Enterprise	\$2.16	\$3.20	67.50%
Allegheny Energy	\$1.72	\$2.51	68.53%
CMS Energy Corp.	\$0.72	\$1.04	69.23%
MFA Mortgage	\$1.12	\$1.58	70.89%
Aquila Inc.	\$0.70	\$0.95	73.68%
UIL Holdings	\$2.88	\$3.77	76.39%
NorthWestern Corp.	\$1.27	\$1.62	78.40%
Redwood Trust Inc	\$2.52	\$3.18	79.25%

Even within this sample, there are some warning signals that should be heeded. First, consider the numerous energy companies that make the list. Since this portfolio was constructed in the aftermath of the accounting debacle at Enron, the possibility that the stated earnings at these firms may also be contaminated is one reason why stock prices are depressed. If the earnings at these companies are over stated, their dividends will have to be cut in future periods. Second, note that there are a couple of tobacco companies that also make the list. For these firms, the specter of large judgments in lawsuits overhangs the earnings; a few such judgments may very well result in the elimination or reduction of dividends. Note, though, that you are not arguing that these stocks should be avoided but that you need to do your homework before buying these stocks. In practical terms, you would need to examine the financial statements of the energy companies on this list to see if there are signs of Enronitis – the hiding of liabilities or mysterious (and unsustainable) earnings. You may very well conclude that the market's fears are misplaced and that these stocks are good investments. With tobacco companies, you will need to do a similar analysis on potential tobacco liabilities.

Comparisons to Potential Dividends

While comparing dividends to earnings may provide a simple way of measuring whether dividends are sustainable, it is not a complete test for two reasons.

Earnings are not cash flows: Accountants measure earnings by subtracting accounting expenses from revenues. To the extent that some of these expenses are non-cash expenses (depreciation and amortization, for instance) and because accrual accounting (which is what is used in corporate accounting statements) does not always yield the same results as cash accounting, accounting earnings can be very different from cash flows.

Firms may have reinvestment needs: Even if earnings roughly approximate cash flows, firms may not be able to pay them out in dividends. This is because firms often have to reinvest to maintain assets and these capital investments (which do not show up in income statements) will reduce cash flows.

For dividends to be truly sustainable, the cash flows left over after capital expenditures have to be greater than the dividends.

How can you measure the cashflows available for dividends? One measure is the free cashflow to equity, which measures cash left over after meeting reinvestment needs. To measure the cashflow to equity, you begin with the net income and make the following adjustments:

You add back non-cash accounting expenses such as depreciation and amortization. You subtract out capital expenditures since they represent a cash drain on the firm. While some analysts draw a distinction between non-discretionary and discretionary capital expenditures, you will consider all such expenditures in computing free cashflows to equity.

You will subtract out the change in non-cash working capital to arrive at the cash flow. Thus, an increase in working capital (inventory or accounts receivable, for instance) will reduce cash flows whereas a decrease in working capital will increase cashflows. Making this adjustment essentially converts accrual earnings to cash earnings.

You will subtract out the net cashflow resulting from debt. Debt repayments represent cash outflows whereas new debt represents cash inflows. The difference between the two should affect your cashflow to equity.

Free Cashflow to Equity (FCFE) = Net Income + Depreciation and Amortization – Capital Expenditures – Change in non-cash working capital – (Debt Repayments – New Debt issues)

Note that the net cashflow from debt can be positive if debt issues exceed debt repayments. Conservative analysts who do not want dividends to be funded by net debt issues often compute a conservative version of free cashflow to equity, which ignores net debt cashflows:

$$\text{Conservative FCFE} = \text{Net Income} + \text{Depreciation and Amortization} - \text{Capital Expenditures} - \text{Change in non-cash working capital}$$

While you can compute the FCFE using information in the income statement and the balance sheet, you can also obtain it from the statement of cashflows.

How would the 21 firms that had payout ratios less than 80% in table 2.4 look like if you compared dividends to FCFE? To answer this question, the FCFE was computed using the conservative approach (not factoring in new debt issues). Table 2.5 summarizes the findings:

Table 2.5: Dividends versus FCFE for firms with payout ratio < 80%

<i>Company</i>	<i>DPS</i>	<i>EPS</i>	<i>FCFE/share</i>
MicroFinancial Inc	\$0.20	\$1.26	\$2.25
Telesp Celular Participacoes	\$0.15	\$0.90	\$0.14
Dynegy Inc. 'A'	\$0.30	\$1.46	-\$2.67
AES Corp.	\$0.25	\$1.17	-\$3.17
El Paso Corp.	\$0.87	\$2.93	-\$7.17
Mission West Pptys	\$0.96	\$2.52	\$3.31
Koger Equity Inc.	\$1.40	\$2.94	\$3.12
R.J. Reynolds Tobacco	\$3.80	\$6.32	\$10.75
TECO Energy	\$1.42	\$2.31	-\$2.47
Advanced Tobacco Products	\$0.05	\$0.08	\$0.08
Apex Mortgage Capital	\$2.00	\$3.11	\$3.11
Permian Basin Rty Tr	\$0.56	\$0.85	\$1.05
Williams Coal Sm Gs	\$0.88	\$1.33	\$1.33
Public Serv. Enterprise	\$2.16	\$3.20	-\$4.24
Allegheny Energy	\$1.72	\$2.51	\$1.36
CMS Energy Corp.	\$0.72	\$1.04	-\$4.46
MFA Mortgage	\$1.12	\$1.58	\$1.63
Aquila Inc.	\$0.70	\$0.95	-\$1.23
UIL Holdings	\$2.88	\$3.77	\$7.22
NorthWestern Corp.	\$1.27	\$1.62	\$2.54
Redwood Trust Inc	\$2.52	\$3.18	\$2.98

The real estate investment trusts and tobacco companies look even better on the question of dividend sustainability when dividends are compared to free cashflows to equity. R.J. Reynolds, for instance, has free cashflows to equity of \$10.75 per share and pays out \$3.80 in dividends, suggesting a large buffer for dividend payments. Concerns about lawsuits and legislation may still sway you in your final investment decision. The biggest divergence between earnings per share and FCFE shows up with the energy firms. All of the energy firms have substantially lower free cashflows to equity than earnings per share; five of them have negative free cashflows to equity. Since FCFE represent cash available for dividends,

how, you might wonder, can they afford to pay the dividends that they do? In the late 1990s, energy firms borrowed money (on and off the books) and made equity issues to fund dividend payments. As a result, they became highly levered. The conclusion you would draw is that these firms cannot sustain these dividends. This is also true, albeit to a lesser degree for Telesp Cellular.

Low Growth

As a firm increases the dividends it pays to stockholders, it is reinvesting less of its earnings back into its business. In the long term, this has to translate into lower growth in earnings per share.⁸ In fact, the long term sustainable growth rate in earnings per share for a firm can be written as a function of its payout ratio and the quality of its investments (measured by its return on equity):

Expected Long-term Growth rate in earnings per share = (1- Payout ratio) (Return on equity)

To illustrate, a firm that pays out 40% of its earnings as dividends and earns a 20% return on equity can expect to see its earnings per share grow 12% a year in the long term.

Expected growth rate in earnings per share = $(1 - .40) (.20) = .12$ or 12%

Investors who invest in companies that pay high dividends have to accept a trade off. These firms will generally have much lower expected growth rates in earnings.

Consider again the sample of high dividend paying stocks in Table 2.5 that have sustainable dividends –the firms that have dividends that exceed free cashflows to equity were eliminated. In Table 2.6, the sustainable growth rates in these firms are estimated and compared to analyst estimates of expected growth:

Table 2.6: Fundamental and Analyst Estimates of Growth for firms with sustainable dividends

<i>Company Name</i>	<i>ROE</i>	<i>Payout Ratio</i>	<i>Expected Growth</i>	<i>Analyst Estimate of 5-year growth</i>
MicroFinancial Inc	1.71%	15.87%	1.44%	NA
Mission West Ptyys	6.55%	38.10%	4.05%	NA
Koger Equity Inc.	7.66%	47.62%	4.01%	NA
R.J. Reynolds Tobacco	2.81%	60.13%	1.12%	5.50%
Advanced Tobacco	10.53%	62.50%	3.95%	NA

⁸ You can still maintain high growth in net income by issuing new equity, but this action will increase the number of shares outstanding.

Apex Mortgage Capital	4.53%	64.31%	1.62%	NA
Permian Basin Rty Tr	4.16%	65.88%	1.42%	NA
Williams Coal Sm Gs	5.44%	66.17%	1.84%	NA
Allegheny Energy	-1.25%	68.53%	-0.39%	3.00%
MFA Mortgage	3.38%	70.89%	0.98%	NA
UIL Holdings	1.81%	76.39%	0.43%	3.80%
NorthWestern Corp.	3.74%	78.40%	0.81%	2.70%
Redwood Trust Inc	5.35%	79.25%	1.11%	NA

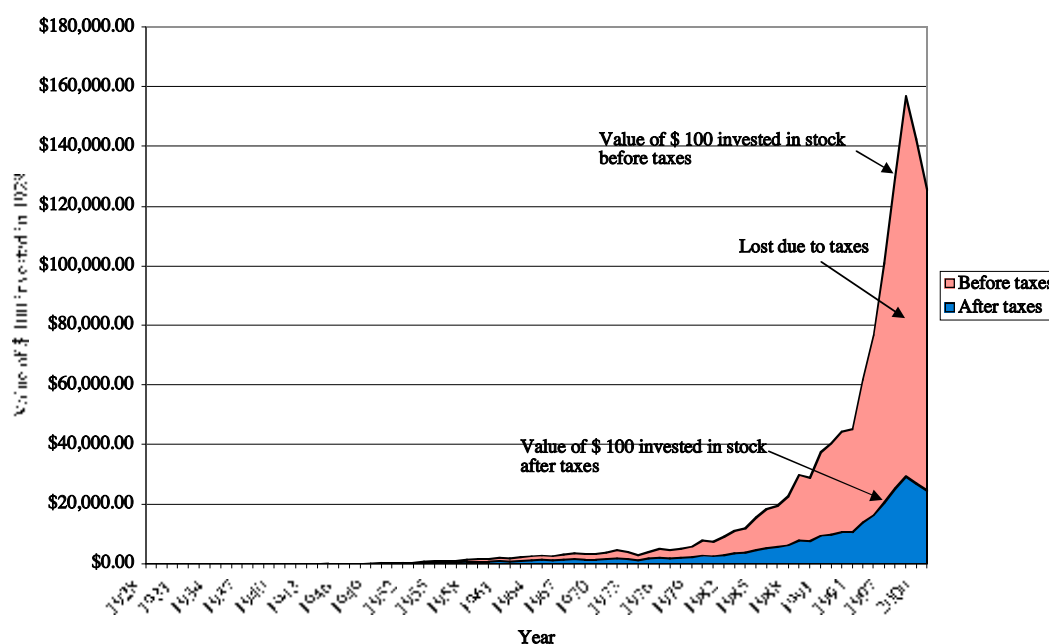
The fundamental growth rates are low for every one of the firms, partly because these firms have high payout ratios and partly because of low returns on equity on their investments. For those firms where analyst estimates of growth are available, the expected growth rates in earnings per share over the next 5 years are low. In fact, if you require firms to have expected fundamental growth rates of 3% or higher, the only three firms that make the final cut are two real estate investment trusts – Mission West Properties and Koger Equity- and one tobacco firm – Advanced Tobacco. In summary, screening firms for sustainability of dividends and for reasonable growth rates in earnings reduces the original sample of 100 firms to 3 firms.

Taxes

As has often been said, the only two things that are certain in life are taxes and death. While investors may get a chance to pause and admire the pre-tax returns they make on their investment portfolios, they can spend only the returns that they have left after taxes. Strategies that yield attractive pre-tax returns can generate sub-standard after tax returns.

How big of a drag are taxes on investment returns? An examination of the returns on the U.S. stock market and on government bonds indicates that stocks have generated much higher returns than treasury bills or bonds. Thus, \$ 100 invested in stocks in 1928 would have grown to \$ 125,599, by the end of 2001, significantly higher than what your portfolio would have been worth if invested in T.Bills (\$1,713) or T.Bonds (\$3,587). This is impressive but it is also before taxes and transactions costs. For the moment, consider the effects of taxes on these returns. Assume that the investor buying these stocks faced a tax rate of 35% on dividends and 20% on capital gains over this period. To compute the effect of taxes on returns, you do have to consider how often this investor trades. If you assume that he turns over his entire portfolio at the end of each year, he would have to pay taxes on both dividends and the price appreciation each year. Figure 2.9 shows the effect on the portfolio value over the period and the effect of taxes on the ending portfolio:

Figure 2.9: Value of \$ 100 invested in Stocks: Before and After Taxes



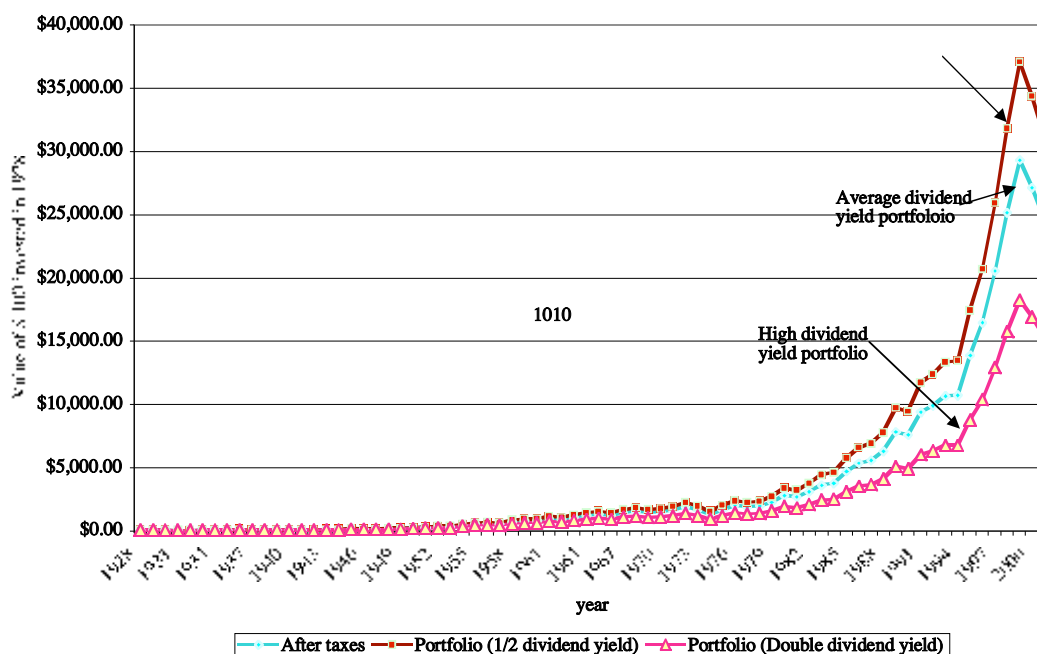
Data from Federal Reserve: The graph measures the cumulated value of \$ 100 invested in stock in 1928, including dividends and price appreciation.

Note that introducing taxes into returns reducing the ending value of the portfolio by more than two thirds from \$125,598 to \$39,623.

If taxes affect all investments, you may wonder why its effect is emphasized with a high dividend strategy. While the taxes on capital gains can be deferred by not trading on your winners, the taxes on dividends have to be paid each period that you receive dividends. Thus, a strategy of investing in stocks that have higher dividend yields than average will result in less flexibility when it comes to tax timing and more taxes, at least relative to investing in low dividend yield stocks for the long term. This is illustrated in figure 2.10 for an investor by contrasting the performance of a portfolio with a dividend yield half that of the market each year to one with twice the dividend yield, keeping the total returns constant.⁹

⁹ To provide an example, the average dividend yield across all stocks in 1996 was 3.20% and the total return was 23.82%. The half dividend yield portfolio was estimated to have a dividend yield of 1.60% and a price appreciation of 22.22% for a total return of 23.82%. The double dividend yield portfolio had a dividend yield of 6.40% and a price appreciation of 17.42% for a total return of 23.82%.

Figure 2.10: Value of \$ 100 invested in stocks in 1928 & Dividend Yields



Data from Federal Reserve: The graphs represent the cumulated value of \$ 100 invested in 1928 in each of the three portfolios (high dividend yield, average dividend yield and low dividend yield)

Note that the portfolio of stocks with half the dividend yield of the market has an ending value of just over \$ 30,000 in 2001, whereas one with a dividend yield twice that of the market has an ending value of roughly half that amount. An investor interested in building up a portfolio over time may find that much of the “excess return” analysts claim to find with high dividend yield portfolios may be dissipated by the higher tax liabilities created.

Does this tax liability make a strategy of buying stocks that pay high dividends a poor one for an investor who faces high tax rates? Not necessarily, for two reasons. The first is that the return may still be higher after you pay the additional taxes on this strategy. The second is that different parts of the same investor’s portfolio are treated differently for tax purposes. Even a high-tax rate investor is allowed to accumulate funds in pension plans and delay or defer taxes until retirement. Investing your pension plan in high dividend paying stocks then gives you the benefits of the strategy without the tax costs.

One of the perils of looking at the past is that you can miss significant changes in the world. Much of what has been in this section about the tax disadvantages of dividends may now truly be history since new tax legislation, signed into law in May 2003, reduced the tax rate on dividends to 15% and set it equal to the tax rate on capital gains. The tax

disadvantage of dividends has clearly been much reduced if not eliminated. This will not only affect the values of dividend paying stocks but it will also change the way many companies view dividends. In the early part of 2003, technology firms like Microsoft and Oracle, which had never been paid dividends, announced that they would start paying dividends again.

Lessons for Investors

Consider the lessons of this chapter. Stocks that pay high dividends have historically delivered higher returns than stocks than the rest of the market, and stocks that increase dividends see their stock prices go up. On the other hand, stocks that pay high dividends grow earnings far more slowly (thus delivering less in price appreciation) and are often unable to sustain dividends in the long term. The last section demonstrates the attrition in a high dividend portfolio once you begin to ask questions about the sustainability of dividends and expected growth rates. You began with a sample of the 100 companies that had the highest dividend yields but 79 of these firms were eliminated either because they had negative earnings or because their dividend payout ratios exceeded 80%. Of the remaining 21 firms, eight firms were eliminated because they had negative free cashflows to equity or because their dividends exceeded their free cashflows to equity. Of the 13 firms left, only three had expected growth rates greater than 3%.

Looking at the process, you would have been better served if you had not begun the process by looking at the highest dividend yield paying stocks and instead looked for stocks that met multiple criteria – high dividends, sustainable earnings and reasonable growth rates in earnings per share – across all traded stocks. For instance, you could screen all US stocks for those stocks that have the following characteristics:

Dividend yields that exceed the treasury bond rate: The treasury bond rate offers a useful measure for comparison since it represents what you would earn on a riskless investment. If you can buy stocks that deliver dividend yields that exceed this rate, and you can keep earnings these dividends forever, you would not even need price appreciation on the stock to break even on the investments.

Dividend payout ratios that are less than a cutoff: Earlier in the chapter, fairly arbitrary cutoffs ranging from 67 to 80% were considered. The idea behind this constraint is to eliminate firms that are paying out more in dividends than they can sustain.

Reasonable expected growth in earnings per share: If you want price appreciation in addition to high dividends, the companies you invest in have to be able to grow earnings. Though it is unrealistic to expect high dividend yield stocks to grow

earnings in the double digits, you can require earnings growth that matches overall growth in the economy.

In October 2002, you could screen for firms with dividend yields that exceed 4% (the treasury bond rate at the time of the analysis), dividend payout ratios less than 60%, dividends less than FCFE and expected growth rate in EPS over the next five years greater than 4%. Since real estate investment trusts are structured so differently from other firms, you should eliminate them from the sample as well. The resulting portfolio of 30 companies is presented in the appendix.

This portfolio is much more diverse in terms of industries represented than the original sample of 100 firms with the highest dividend yields. While the average dividend yield on the portfolio is lower than the original portfolio, the dividends are much more sustainable and the firms do have some growth potential.

Conclusion

Stocks that pay high dividends seem to offer an unbeatable combination of continuing income (dividends) and potential price appreciation. Their allure increases in bear markets as equities decline in value. The empirical evidence also seems to provide some support for the proposition that stocks with higher dividend yields generate higher returns for investors over the long term.

What are the potential dangers of investing in stocks with high dividends? The first is that dividends, unlike coupons on bonds, are not promised cashflows. A dividend that is too high, relative to the earnings and cashflows generated by a firm, is unsustainable and will have to be cut sooner rather than later. In addition, the tax laws treat dividends much less favorably than capital gains, and over long periods, the tax bite out of returns can be substantial. Finally, high dividend payouts often translate into low expected growth rates in earnings.

In summary, a strategy of buying high dividend stocks historically has made the most sense for investors with low tax rates or for investments that are tax exempt, like pension funds. With the changes in the tax law, more investors may find this strategy to be attractive. If you adopt such a strategy, you should screen high dividend paying stocks for sustainability (by looking at dividend payout ratios and free cashflows to equity) and reasonable earnings growth.

Appendix: Firms that pass the dividend screens – October 2002

Stocks with dividend yields > 4%, dividend payout ratios < 60%, dividends < FCFE and expected EPS growth > 4%

<i>Company Name</i>	<i>Industry</i>	<i>Stock Price</i>	<i>Dividend per Share</i>	<i>Dividend Yield</i>	<i>Dividend Payout</i>	<i>FCFE/share</i>	<i>Estimated EPS growth</i>
Alexander & Baldwin	MARITIME	\$23.37	\$0.90	4.11%	54.01%	\$1.08	9.00%
AmSouth Bancorp.	BANK	\$19.86	\$0.88	4.39%	58.10%	\$1.64	8.00%
Arch Chemicals	CHEMSPEC	\$17.15	\$0.80	4.68%	0.00%	\$0.82	5.00%
Banco Santander ADR	EUROPEAN	\$6.06	\$0.29	5.30%	52.89%	\$0.47	10.50%
Bay St Bancorp	BANK	\$19.01	\$0.88	4.64%	19.89%	\$1.29	8.00%
Books-A-Million	RETAILSP	\$3.26	\$0.41	11.95%	0.00%	\$0.48	12.00%
Citizens Banking	BANK	\$23.41	\$1.14	4.75%	52.65%	\$2.12	8.00%
Cleco Corp.	UTILCENT	\$12.20	\$0.90	7.97%	56.77%	\$2.01	6.50%
Colonial BncGrp. 'A'	BANK	\$12.05	\$0.52	4.29%	43.71%	\$1.20	9.00%
Comerica Inc.	BANKMID	\$42.10	\$1.92	4.82%	37.31%	\$3.61	9.50%
Commonwealth Industries	MINING	\$5.90	\$0.20	4.44%	52.52%	\$0.48	15.00%
Electronic Data Sys.	SOFTWARE	\$13.72	\$0.60	4.38%	25.13%	\$3.09	13.00%
Equity Inns Inc.	HOTELGAM	\$5.23	\$0.52	8.92%	0.00%	\$0.67	5.00%
FirstEnergy Corp.	UTILCENT	\$30.13	\$1.50	5.70%	55.94%	\$2.88	9.00%
FirstMerit Corp.	BANKMID	\$22.16	\$1.00	4.73%	48.96%	\$2.00	9.50%
Goodrich Corp.	DEFENSE	\$16.74	\$0.80	4.51%	37.12%	\$2.85	7.00%
Goodyear Tire	TIRE	\$9.18	\$0.48	5.85%	0.00%	\$0.79	34.00%
May Dept. Stores	RETAIL	\$24.60	\$0.95	4.04%	42.07%	\$1.63	5.00%
Merchants Bancshares Inc.	BANK	\$22.08	\$0.96	4.24%	34.85%	\$2.12	10.00%
MicroFinancial Inc	FINANCL	\$2.09	\$0.20	11.77%	14.88%	\$2.26	7.50%
NICOR Inc.	GASDISTR	\$29.61	\$1.84	6.63%	57.81%	\$2.26	7.00%
Petroleo Brasileiro ADR	OILINTEG	\$12.25	\$0.52	5.47%	48.75%	\$0.89	10.00%
Philip Morris	TOBACCO	\$42.65	\$2.56	6.63%	55.71%	\$4.64	9.00%
Provident Bankshares	BANK	\$22.39	\$0.86	4.10%	45.85%	\$1.80	9.50%
Quaker Chemical	CHEMSPEC	\$19.55	\$0.84	4.34%	54.49%	\$1.31	8.00%

Snap-on Inc.	MACHINE	\$26.00	\$0.96	4.07%	52.11%	\$2.13	4.50%
Standex Int'l	DIVERSIF	\$19.72	\$0.84	4.43%	49.54%	\$1.92	9.50%
Tasty Baking	FOODPROC	\$11.59	\$0.48	4.33%	52.09%	\$0.80	8.00%
Tupperware Corp.	HOUSEPRD	\$15.95	\$0.88	5.23%	54.26%	\$1.42	7.50%
Westar Energy	UTILCENT	\$10.47	\$1.20	11.96%	-216.34%	\$5.59	16.00%

CHAPTER 3

THIS STOCK IS SO CHEAP! THE LOW PRICE EARNINGS STORY

Graham's Disciple

Jeremy was a value investor, and he had disdain for investors who chased growth stocks and paid exorbitant prices for them. Reading Forbes one day, Jeremy was excited to see the results of an academic study that showed that you could do much better than the market by buying stocks with low price earnings ratios, an approach highly favored by other value investors. Getting on Yahoo! Finance, Jeremy looked for stocks that traded at price earnings ratios less than 8 (a number he had heard on CNBC was a good rule of thumb to use for low PE stocks) and was surprised to find dozens. Not having the money to invest in all of them, he picked the first 20 stocks and bought them.

In the year after his investments, instead of the steady stream of great returns that the academic study had promised, Jeremy found himself badly trailing the market. His friends who had bought technology stocks all were doing much better than he and they mocked him. Taking a closer look at his depleted portfolio, Jeremy found that instead of the safe, solid companies that he had expected to hold, many of his companies were small risky companies with wide swings in earnings. He also discovered that the stocks he picked were unusually prone to reporting accounting irregularities and scandals. Disillusioned, Jeremy decided that value investing was not all it was made out to be and shifted all of his money into a high growth mutual fund.

Moral: A stock that trades at a low PE is not always cheap, and the long term can be a long time coming.

Investors have used price earnings ratios as a measure of how expensive or cheap a stock is for decades. A stock that trades at a low multiple of earnings is often characterized as cheap, and there are rules of thumb that investment advisors and analysts have developed over time. Some analysts use absolute measures – for instance, stocks that trade at less than 8 times earnings are considered cheap – whereas other analysts use relative measures – for example, stocks that trade at less than half the price earnings ratio of the market are cheap. In some cases, the comparison is to the market and in other cases it is to the sector in which the firm operates.

In this chapter, you consider whether price earnings ratios are good indicators of value and whether a strategy of buying stocks with low price earnings ratios generates high returns. As you will see, a stock with a low price earnings ratio may not be under valued and that strategies that focus on just price earnings ratios may fail because they ignore the

growth potential and risk in a firm. A firm that trades at a low price earnings ratio because it has little or no prospects for growth in the future and is exposed to a great deal of risk is not a bargain.

The core of the story

How do you determine if a stock is cheap? You could look at the price of a stock; but stock prices can be easily altered by changing the number of shares outstanding. You can halve your stock price (roughly) with a two for one stock split (where you double the number of shares) but the stock does not get any cheaper. While some investors may fall for the pitch that a stock that trades for pennies is cheap, most investors are wary enough to see the trap. Dividing the price by the earnings is one way of leveling the playing field so that high priced and low priced stocks can be compared. The use of low PE ratios in investment strategies is widespread and there are several justifications offered for the practice:

- *Value investors buy low PE stocks:* Investors in the value investing school have historically measured value using the price earnings (PE) ratio. Thus, when comparing across stocks, a stock that trades at five times earnings is viewed as cheaper than one that trades at ten times earnings.
- *A low PE stock is an attractive alternative to investing in bonds:* For those investors who prefer to compare what they make on stocks to what they can make on bonds, there is another reason for looking for stocks with low price earnings ratios. The earnings yield (which is the inverse of the price earnings ratio, i.e., the earnings per share divided by the current stock price) on these stocks is usually high relative to the yield on bonds. To illustrate, a stock with a PE ratio of 8 has an earnings yield of 12.5%, which may provide an attractive alternative to treasury bonds yielding only 4%.
- *Stocks that trade at low PE ratios relative to their peer group must be mispriced:* Since price earnings ratios vary across sectors, with stocks in some sectors consistently trading at lower PE ratios than stocks in other sectors, you could compare the PE ratio of a stock to the average PE ratio of stocks in the sector in which the firm operates to make a judgment on its value. Thus, a technology stock that trades at 15 times earnings may be considered cheap because the average PE ratio for technology stocks is 22, whereas an electric utility that trades at 10 times earnings can be viewed as expensive because the average PE ratio for utilities is only 7.

The Theory: Determinants of PE Ratio

Investors have always used earnings multiples to judge investments. The simplicity and intuitive appeal of the price earnings ratio makes it an attractive choice in applications ranging from pricing initial public offerings to making judgments on investments, but the price earnings ratio is related to a firm's fundamentals. As you will see in this section, a low PE ratio by itself does not indicate an undervalued stock.

What is the PE ratio?

The price earnings ratio is the ratio obtained by dividing the market price per share by the earnings per share over a period.

$$PE = \frac{\text{Market Price per share}}{\text{Earnings per share}}$$

The PE ratio is usually estimated using the current price per share in the numerator and the earnings per share in the denominator.

The biggest problem with PE ratios is the variations on earnings per share used in computing the multiple. The most common measure of the PE ratios divides the current price by the earnings per share in the most recent financial year; this yields the *current PE*. Others prefer to compute a more updated measure of earnings per share by adding up the earnings per share in each of the last four quarter and dividing the price by this measure of earnings per share using it to compute a *trailing PE ratio*. Some analysts go even further and use expected earnings per share in the next financial year in the denominator and compute a *forward PE ratio*. Earnings per share can also be compute before or after extraordinary items and based upon actual shares outstanding (primary) or all shares that will be outstanding if managers exercise the options that they have been granted (fully diluted). In other words, you should not be surprised to see different PE ratios reported for the same firm at the same point in time by different sources. In addition, you should be specific about your definition of a PE ratio if you decide to construct an investment strategy that revolves around its value.

A Primer on Accounting Earnings

Before you look at whether the price earnings ratio can be used as a measure of the cheapness of a stock, you do need to consider how earnings are measured in financial statements. Accountants use the income statement to provide information about a firm's operating activities over a specific time period. In this section, you will examine the principles underlying earnings measurement in accounting, and the methods that they are put into practice.

Two primary principles underlie the measurement of accounting earnings and profitability. The first is the principle of accrual accounting. In accrual accounting, the revenue from selling a good or service is recognized in the period in which the good is sold or the service is performed (in whole or substantially). A corresponding effort is made on the expense side to match¹ expenses to revenues. This is in contrast to cash accounting, where revenues are recognized when payment is received and expenses are recorded when they are paid. As a consequence, a firm may report high accrual earnings but its cash earnings may be substantially lower (or even negative) or the reverse can apply.

The second principle is the categorization of expenses into operating, financing and capital expenses. Operating expenses are expenses that, at least in theory, provide benefits only for the current period; the cost of labor and materials expended to create products that are sold in the current period is a good example. Financing expenses are expenses arising from the non-equity financing used to raise capital for the business; the most common example is interest expenses. Capital expenses are expenses that are expected to generate benefits over multiple periods; for instance, the cost of buying land and buildings is treated as a capital expense.

Operating expenses are subtracted from revenues in the current period to arrive at a measure of operating earnings from the firm. Financing expenses are subtracted from operating earnings to estimate earnings to equity investors or net income. Capital expenses are written off over their useful life (in terms of generating benefits) as depreciation or amortization. Figure 3.1 presents the breakdown for a typical income statement:

¹ If a cost (such as an administrative cost) cannot be easily linked with a particular revenues, it is usually recognized as an expense in the period in which it is consumed.

Income Statement

Gross revenues from sale of products or services	Revenues
Expenses associates with generating revenues. Included in these expenses is the depreciarion and amortization of capital expenses from prior years	- Operating Expenses
Operating income for the period	= Operating Income
Expenses associated with borrowing and other financing	- Financial Expenses
Taxes due on taxable income	- Taxes
Earnings to Common & Preferred Equity for Current Period	= Net Income before extraordinary items
Profits and Losses not associated with operations	- (+) Extraordinary Losses (Profits)
Profits or losses associated with changes in accounting rules	- Income Changes Associated with Accounting Changes
Dividends paid to preferred stockholders	- Preferred Dividends
	= Net Income to Common Stockholders

Figure 3.1 – Income Statement

This is the general format for all income statements. There are variations in income statements are put together across different businesses.

While the principles governing the measurement of earnings are straightforward, firms do have discretion on a number of different elements, such as:

Revenue recognition: When firms sell products that generate revenues over multiple years, conservative firms spread revenues over time but aggressive firms may show revenues in the initial year. Microsoft, for example, has had a history of being conservative in its recording of revenues from its program updates (Windows 98, Windows 2000 etc.). On the other hand, telecommunication firms, in their zeal to

pump up revenue growth, in the late 1990s were often aggressive in recording revenues early.

Operating versus Capital expenses: There are some expenses that fall in a gray area between operating and capital expenses. Consider the expenses incurred by a cable company to attract new subscribers. Companies that are more aggressive could legitimately argue that the benefits of these new subscribers will be felt over many years and spread these expenses over time. At the same time, conservative companies will expense the entire amount in the year in which the expense is incurred.

Depreciation and Amortization: While capital expenses are written off over time as depreciation or amortization charges, firms continue to have discretion in how much and how quickly they depreciate assets, at least for reporting purposes. Here again, more aggressive firms can report higher earnings by adopting depreciation and amortization schedules that result in smaller charges against earnings.

The bottom line, though, is that while the same accounting standards may apply to all firms, the fidelity to these standards can vary across firms, making it difficult to compare earnings (and price earnings ratios) across firms. If you are not careful, you can very easily conclude that firms that are more aggressive in measuring earnings are cheaper than firms that are more conservative. The problem gets worse when you are comparing the earnings of firms in different markets – Japan, Germany and US, for example - with different accounting standards.

Determinants of PE ratios

The simplest model for valuing a stock is to assume that the value of the stock is the present value of the expected future dividends. Since equity in publicly traded firms could potentially last forever, this present value can be computed fairly simply if you assume that the dividends paid by a firm will grow at a constant rate forever. In this model, which is called the Gordon Growth Model, the value of equity can be written as:

$$\text{Value per share today} = \frac{\text{Expected Dividend per share next year}}{\text{Cost of Equity} - \text{Expected Growth Rate}}$$

The cost of equity is the rate of return that investors in the stock require, given its risk. As a simple example, consider investing in stock in Consolidated Edison, the utility that serves much of New York city. The stock is expected to pay a dividend of \$2.20 per share next year (out of expected earnings per share of \$3.30) the cost of equity for the firm is 8% and the expected growth rate in perpetuity is 3%. The value per share can be written as:

$$\text{Value per share of Con Ed} = \frac{\$2.20}{(.08 - .03)} = \$44.00 \text{ per share}$$

Generations of students in valuation classes have looked at this model and some of them have thrown up their hands in despair. How, they wonder, can you value firms that do not pay dividends, like Microsoft? And what do you do when the expected growth rate is higher than the cost of equity, rendering the value negative? There are simple answers to both questions. The first is that a growth rate that can be maintained forever cannot be greater than the growth rate of the economy. Thus, an expected growth rate that is 15% would be incompatible with this model; in fact, the expected growth rate has to be less than the 4-5% that even the most optimistic forecasters believe that the economy (US or global) can grow at in the long term.² The second is that firms that are growing at these stable growth rates should have cash available to return to their stockholders; most firms that pay no dividends do so because they have to reinvest back into their businesses to generate high growth.

To get from this model for value to one for the price earnings ratio, you will divide both sides of the equation by the expected earnings per share next year. When you do, you obtain the discounted cash flow equation specifying the forward PE ratio for a stable growth firm.

$$\begin{aligned} \frac{\text{Value per share today}}{\text{Expected EPS next year}} &= \text{Forward PE} = \frac{\text{Expected Dividend per share/ Expected EPS}}{\text{Cost of Equity - Expected Growth Rate}} \\ &= \frac{\text{Expected Payout Ratio}}{(\text{Cost of Equity} - \text{Expected Growth Rate})} \end{aligned}$$

To illustrate with Con Ed, using the numbers from the previous paragraph, you get the following:

$$\text{Forward PE for Con Ed} = (\$2.20/\$3.30)/(.08-.04) = 16.67$$

The PE ratio will increase as the expected growth rate increases; higher growth firms should have higher PE ratios, which makes intuitive sense. The PE ratio will be lower if the firm is a high-risk firm and has a high cost of equity. Finally, the PE ratio will increase as the payout ratio increases, for any given growth rate. In other words, firms that are more efficient about generating growth (by earning a higher return on equity) will trade at higher multiples of earnings.

The price-earnings ratio for a high growth firm can also be related to fundamentals. When you work through the algebra, which is more tedious than difficult, the variables that

² If this sounds high, it is because it is stated in nominal terms. In real terms, the growth rate is only 2-2.5%.

determine the price earnings ratio remain the same – the risk of the company, the expected growth rate and the payout ratio, with the only difference being that these variables have to be estimated separately for each growth phase.³ In the special case where you expect a stock to grow at a high rate for the next few years and grow at a stable rate after that, you would estimate the payout ratio, cost of equity and expected growth rate in the high growth period and the stable growth period. This approach is general enough to be applied to any firm, even one that is not paying dividends right now

Looking at the determinants of price earnings ratios, it should be quite clear that a low price earnings ratio, by itself, signifies little. If you expect low growth in earnings (or even negative growth) and there is high risk in a firm's earnings, you should pay a low multiple of earnings for the firm. For a firm to be under valued, you need to get a mismatch – a low price earnings ratio without the stigma of high risk or poor growth. Later in this chapter, you will examine a portfolio of a low PE stocks to see if you can separate the firms that have low PE ratios and are fairly valued or even over valued from firms that have low PE ratios that may be attractive investments.

Looking at the Evidence

Do portfolios of stocks with low price earnings ratios outperform the market? The answer to this question is central to this chapter and you will look at the performance of stocks with low PE ratios over the last few decades in this section.

Ben Graham and Value Screening

Many value investors claim to trace their antecedents to Ben Graham and to use the book on Security Analysis that he co-authored with David Dodd, in 1934 as their investment bible.⁴ It was in the first edition of this book that Ben Graham put his mind to converting his views on markets to specific screens that could be used to find under valued stocks. While the numbers in the screens did change slightly from edition to edition, they preserved their original form and are summarized below:

1. Earnings to price ratio that is double the AAA bond yield.
2. PE of the stock has to less than 40% of the average PE for all stocks over the last 5 years.
3. Dividend Yield > Two-thirds of the AAA Corporate Bond Yield

³ If you are interested, you can look up the determinants of the PE ratio for a high growth firm in: Damodaran, A, *Investment Valuation*, John Wiley and Sons.

⁴ Graham, B. and D. Dodd, 1934, *Security Analysis*. McGraw Hill.

4. Price < Two-thirds of Tangible Book Value⁵
5. Price < Two-thirds of Net Current Asset Value (NCAV), where net current asset value is defined as liquid current assets including cash minus current liabilities
6. Debt-Equity Ratio (Book Value) has to be less than one.
7. Current Assets > Twice Current Liabilities
8. Debt < Twice Net Current Assets
9. Historical Growth in EPS (over last 10 years) > 7%
10. No more than two years of declining earnings over the previous ten years.

Note that the first screen is a price earnings ratio screen. Only stocks with low price earnings ratios would have a chance of passing this screen. It is interesting the many of the remaining screens are designed to eliminate those stocks that have low PE ratios for the wrong reasons – low growth and high risk.

How well do Ben Graham's screens work when it comes picking stocks? Henry Oppenheimer studied the portfolios obtained from these screens from 1974 to 1981 and concluded that you could have made an annual return well in excess of the market.⁶ Academics have tested individual screens – low PE ratios and high dividend yields to name two – in recent years and have found that they deliver higher returns. Mark Hulbert, who evaluates the performance of investment newsletters, found newsletters than espoused to follow Graham did much better than other newsletters. The only jarring note is that an attempt to convert the screens into a mutual fund that would deliver high returns did fail. In the 1970s, an investor named James Rea was convinced enough of the value of these screens that he founded a fund called the Rea-Graham fund, which would invest in stocks based upon the Graham screens. While it had some initial successes, the fund floundered during the 1980s and early 1990s and was ranked in the bottom quartile for performance.

Low PE Stocks versus Rest of the Market

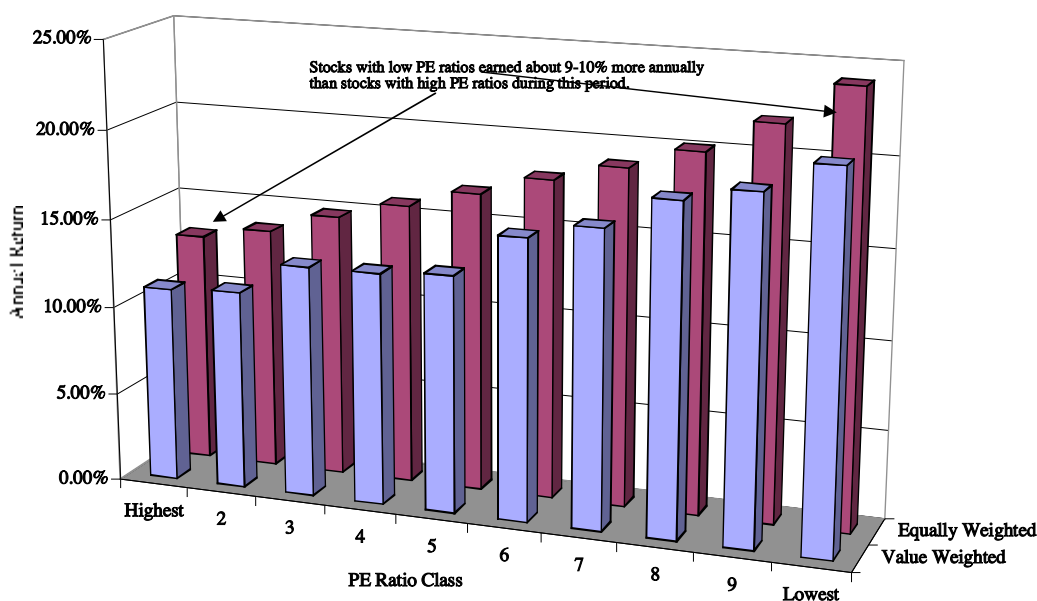
Studies that have looked at the relationship between PE ratios and excess returns have consistently found that stocks with low PE ratios earn significantly higher returns than stocks with high PE ratios over long time horizons. Since some the research is more than two decades old and the results vary widely depending upon the sampling period, it might be best to review the raw data and look at the longest time period for which data is available.

⁵ Tangible Book value is computed by subtracting the value of intangible assets such as goodwill from the total book value.

⁶ Oppenheimer, H R. 1984, *A Test of Ben Graham's Stock Selection Criteria*, (September/October): vol. 40, no. 5 , 68-74.

In Figure 3.2, you begin by looking at the annual returns that would have been earned by U.S. stocks categorized into ten classes based upon PE ratios from 1952 to 2001. The stocks were categorized based upon their PE ratios at the start of each year and the total return, inclusive of dividends and price appreciation, was computed for each of the ten portfolios over the year.

Figure 3.2: PE Ratios and Stock Returns - 1952 -2001



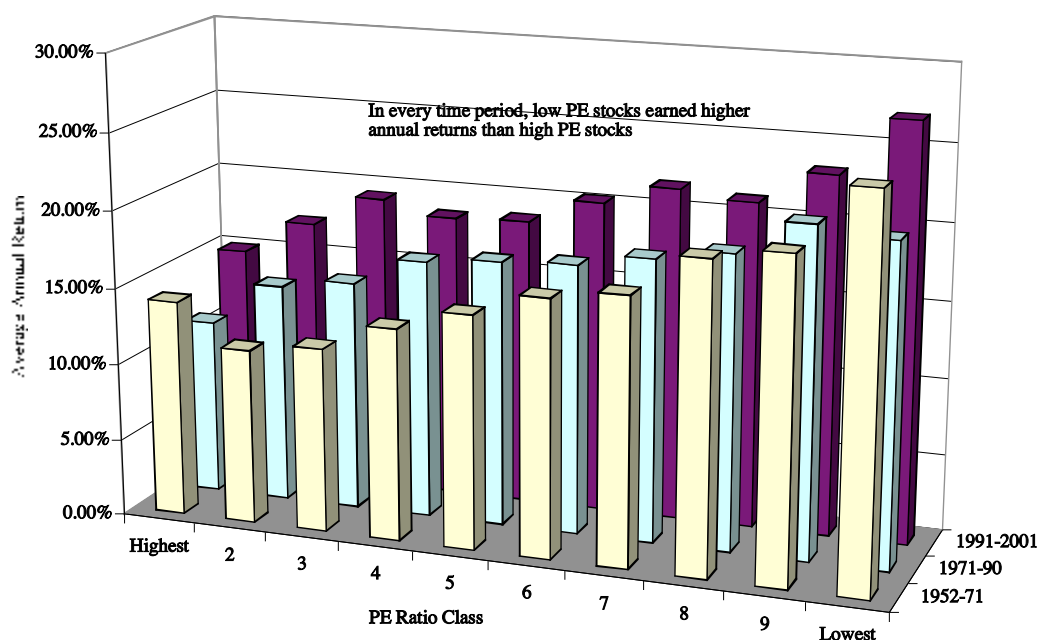
Data from Fama/French. Stocks in the United States were categorized based upon their PE ratios at the beginning of each year from 1928 to 2001 and returns were computed for each portfolio in the following year.

On average, the stocks in the lowest PE ratio classes earned almost twice the returns of the stocks in the highest PE ratio classes. To examine how sensitive these conclusions were to how the portfolios were constructed, you can look at two constructs. In the first, equally weighted portfolios were constructed, where an equal amount of money was put into each firm in each portfolio. In the second, more was invested in the firms with higher market value and less in the smaller firms to create value weighted portfolios. The results were slightly more favorable with the equally weighted portfolio, with the lowest PE ratio stocks earning an average annual return of 24.11% and the highest PE ratio stocks earning 13.03%. With the value-weighted portfolios, the corresponding numbers were 20.85% and

11% respectively. In both cases, though, low PE stocks clearly outperformed high PE stocks as investments.

To examine if there are differences in sub-periods, the annual returns from 1952 to 1971, 1972 to 1990 and 1991 to 2001 for stocks in each PE ratio portfolio are reported in Figure 3.3. Again, the portfolios were created based upon PE ratios at the beginning of each year and returns were measured over the course of the year.

Figure 3.3: Returns on PE Ratio Classes - 1952 - 2001



Data from Fama/French. The annual returns are computed for stocks in different PE ratio classes for sub-periods of history.

Firms in the lowest PE ratio class earned 10% more each year than the stocks in the high PE class between 1952 and 1971, about 9% more each year between 1971 and 1990 and about 12% more each year between 1991 and 2001. In other words, there is no visible decline in the returns earned by low PE stocks in recent years.

Thus, the evidence is overwhelming that low PE stocks earn higher returns than high PE stocks over long periods. Those studies that adjust for differences in risk across stocks confirm that low PE stocks continue to earn higher returns after adjusting for risk. Since the portfolios examined in the last section were constructed using only stocks listed in the United States, it is also worth noting that the excess returns earned by low PE ratio stocks also show up in other international markets.

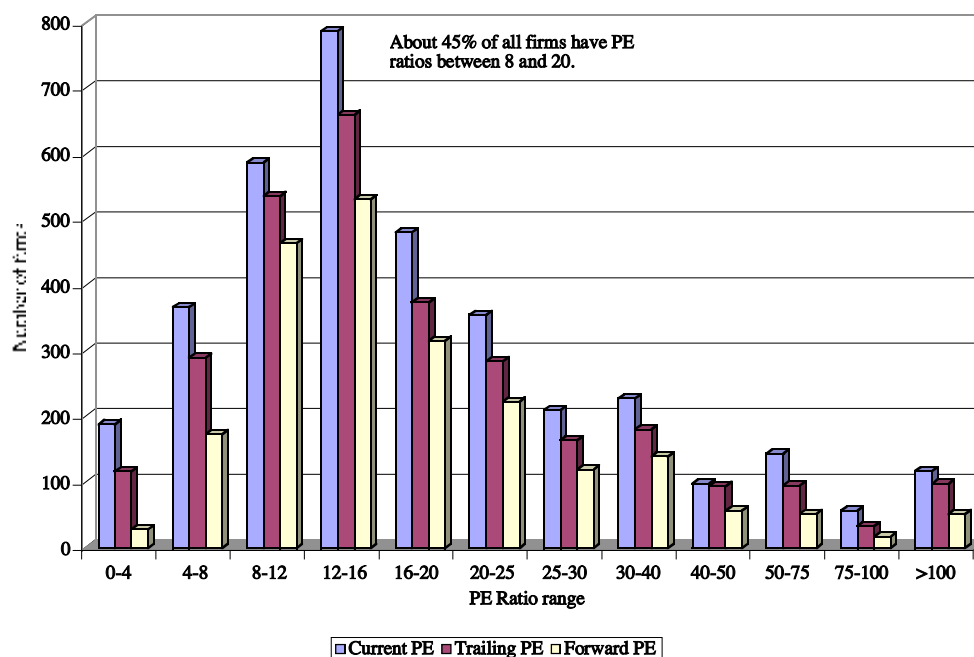
Crunching the Numbers

Earlier in this chapter, reference was made to a rule of thumb that a stock that trades at a PE ratio less than 8 is cheap. While there are numerous benchmarks such as these in the market, you should be wary of these numbers. Many of them are outdated and have no basis in fact. In this section, you will begin by looking at the distribution of PE ratios across the market to get a sense of what would comprise a high, low or average PE ratio. You will then follow up by looking at how PE ratios vary across different sectors and also how they have changed over time. Finally, you will construct a portfolio of stocks with the lowest PE ratios in the market, with the intention of examining it more closely for potential flaws in the strategy.

PE Ratios across the Market

While there are numerous rules of thumb when it comes to PE ratios, it is impossible to assess whether they make sense without looking at how PE ratios vary across stocks in the market. Figure 3.4 presents the distribution of PE ratios for all U.S. stocks in September 2002. The current PE, trailing PE and forward PE ratios are all presented in this figure.

Figure 3.4: PE Ratios across the Market - October 2002



Data from Value Line: The number of firms in the United that fall within each PE ratio class for stocks is reported.

Looking at this distribution, you can see that while there are a large number of companies with PE ratios between 8 and 20, there are also a significant number of companies with PE ratios well in excess of 100. Some of these companies are high growth companies that trade at high prices relative to current earnings, because investors expect their earnings to grow substantially in the future. Some of these companies are cyclical companies whose earnings have dropped as a consequence of a recession. Since investors expect their earnings to bounce back as the economy recovers, the price earnings ratio is high. At the other extreme are companies whose PE ratios are 8 or less. In October 2002, these firms would be considered cheap if you looked at just the PE ratio. A final point about these PE ratios relates to companies where the PE ratio could not be computed because earnings per share were negative. In the sample, which included 7102 companies, 3489 companies had negative earnings in the most recent financial year and current PE ratios could not be computed for them. With trailing and forward earnings, you continue to lose about 40% of the overall sample for the same reason.

The fact that PE ratios cannot be less than zero but can take on very high values has consequences when you compute statistics. The average PE ratio, which is computed by averaging across all companies, will be pushed up by the extreme high values. A far more meaningful statistic would be the median PE; half of all companies will have PE ratios less than this value and half of all companies will have PE ratios that are higher than this value. Table 3.1 presents summary statistics on both measures of the price earnings ratio starting with the mean and the standard deviation, and including the median, 10th and 90th percentile values.

Table 3.1: Summary Statistics – PE Ratios for U.S. Stocks

	<i>Current PE</i>	<i>Trailing PE</i>	<i>Forward PE</i>
Mean	31.08	30.99	23.44
Median	15.30	15.00	14.99
Minimum	0.01	0.01	0.90
Maximum	7103.00	6589.00	1081.00
90th percentile	69.02	53.74	36.86
10th percentile	4.22	5.69	7.94

Looking at all three measures of the PE ratio, the average is consistently higher than the median, reflecting the fact that PE ratios can be very high numbers but cannot be less than zero. It is not surprising that analysts wishing to sell you stocks often use the pitch that the PE ratio for the stock is below the average for the industry. An effective retort would be to ask them whether the PE ratio for the stock is less than the median for the industry.

PE Ratios across sectors

Price earnings ratio can vary widely across sectors and what comprises a low PE ratio in one sector can be a high PE ratio in another. In Table 3.2, the 10 sectors with the lowest and the highest average PE ratios (current) in the United States in October 2002 are listed.

Table 3.2: Highest and Lowest PE Ratio Sectors

<i>Industry Name</i>	<i>Average PE</i>	<i>Industry Name</i>	<i>Average PE</i>
Power	6.94	Newspaper	41.14
Steel (Integrated)	7.98	Entertainment	41.43
Homebuilding	9.46	Telecom. Services	43.14
Electric Utility	10.18	Precision Instrument	44.17
Auto Parts	10.75	Semiconductor	47.10
Tobacco	10.82	Publishing	49.06
Insurance (Life)	10.90	E-Commerce	50.32
Apparel	11.18	Cable TV	53.49
Home Appliance	11.70	Wireless Networking	60.49
Thrift	11.97	Chemical (Basic)	60.76

What are the reasons for the vast divergences in PE ratios across sectors? The fundamentals that were outlined earlier as the determinants of PE – growth, risk and payout (return on equity) – provide the explanation. In general, the sectors with the lowest PE ratios offer not only the lowest expected growth but also have low returns on equity. The sectors with the highest PE ratios offer higher expected growth and higher returns on equity, albeit with more risk. Table 3.3 contrasts measures of growth, risk and return on equity for the two groups – the ten sectors with the highest PE ratios and the ten with the lowest.

Table 3.3: Comparisons on Fundamentals – High PE versus Low PE sectors

	<i>Risk Measures</i>		<i>Expected Growth in</i>		<i>Returns</i>	
	<i>Beta</i>	<i>Standard Deviation</i>	<i>EPS - Next 5 years</i>	<i>Revenues - next 5 years</i>	<i>ROIC</i>	<i>ROE</i>
Low PE sectors	0.61	0.48	11.61%	5.56%	7.64%	9.30%
High PE sectors	1.76	0.84	17.01%	7.65%	14.66%	16.50%

^a ROIC: Return on invested capital ; ROE = Return on Equity

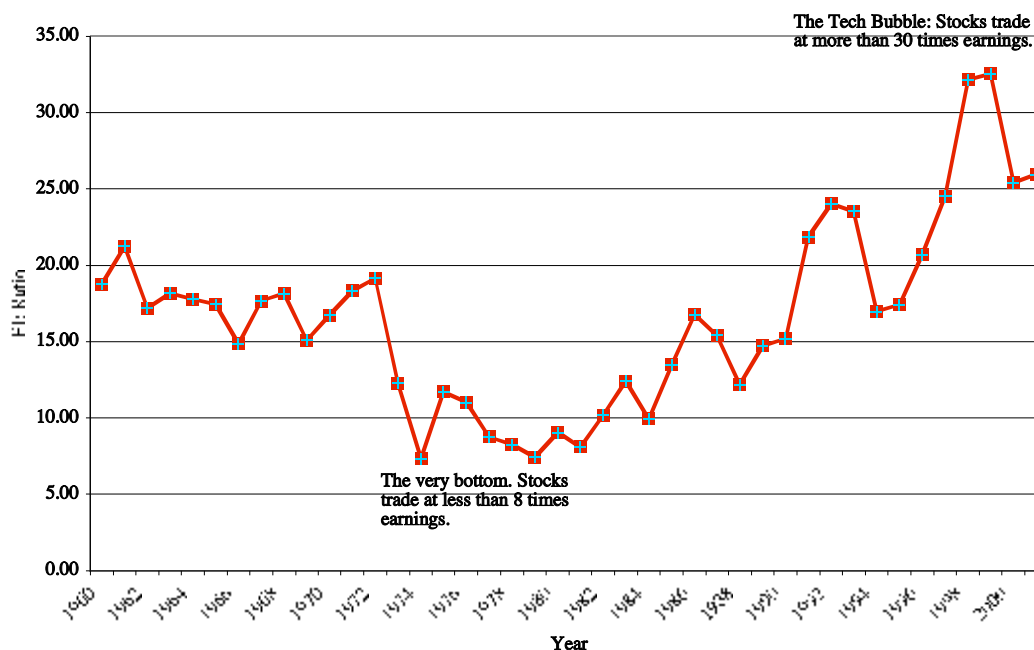
In making the estimates of return on capital and return on equity, the averages over the last 5 years were used to overcome the depressed earnings (and returns on equity) caused by the

recession in 2002. Note that the lowest PE sectors have lower projected growth in earnings and revenues and lower project returns than the highest PE sectors.

PE Ratio across time

A PE ratio of 12 can be considered low in today's market but it would have been high in the equity market of 1981. As PE ratios change over time, the criteria for what comprises a low or a high PE will also change. Consequently, the average PE ratio for all stocks in the United States is examined in Figure 3.5:

Figure 3.5: PE Ratio for S&P: 1960 -2001



Data from Bloomberg: This is the average PE ratio across all U.S. stocks at the end of each year from 1960 to 2002.

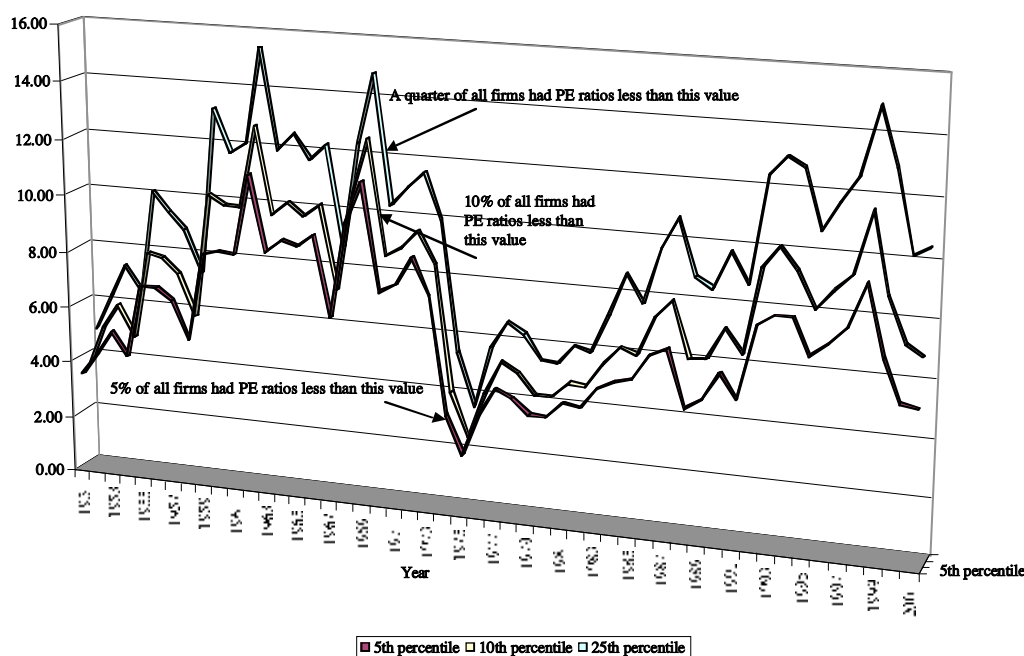
Note that the PE ratios have varied significantly over time, reaching a low of about 7 in 1975 and climbing to a high of 33 at the market peak in 1999.

What causes PE ratios to change over time? The very same factors that determine the PE ratios of individual companies – cash flows, growth and cost of equity – also determine the PE ratios for individual companies. PE ratios were low in the mid 1970s because economic growth was dragged down by the oil embargo and subsequent inflation in the United States and because nominal interest rates were high. In fact, the period between 1975 and 1981 when PE ratios remained low represents a period when government bond rates in the United States reach double digits for the first time in history. The decline

in interest rates in the 1990s accompanied by rapid economic growth and higher productivity in the 1990s contributed to making PE ratios in that decade much higher.

As PE ratios changes over time, the determination of what comprises a low PE will also change. In Figure 3.6, you examine the PE ratios that would have represented the 5th, 10th and 25th percentile of all stocks listed on the New York Stock Exchange every year from 1951 to 2001.

Figure 3.6: PE Ratio: Cut offs over time



Data from Fama/French. The 10th, 50th and 90th percentile of PE ratios across all U.S. stocks is reported for each year.

In 1975, the low point for PE ratios for U.S. stocks, 5% of all stocks had PE ratios less than 2.18, 10% of all stocks had PE ratios less than 2.64 and 25% of all stocks had PE ratios less than 3.56. In contrast, in 1998, 5% of stocks had PE ratios less than 9.42, 10% had PE ratios less than 11.64 and 25% had PE ratios less than 14.88. This is why rules of thumb (PE less than 8 is cheap!) have to be taken with a grain of salt. While it would have been factual in 1998, it would not have in 1975 since more than half of all stocks traded at PE ratios lower than 8 in that year.

A Low PE portfolio

If you decided to adopt a strategy of buying low PE stocks, what would your portfolio look like? The only way to answer this question is to create such a portfolio.

Assume you begin with the all listed U.S. stocks and screen for the stocks with the lowest PE ratios. You have three measures of the PE ratio for each company – the PE based upon earnings in the most recent financial year (current PE), the PE based upon earnings in the most recent four quarters (trailing PE) and the PE based upon expected earnings in the next financial year (forward PE). Each measure has its adherents and there is information in each. Erring on the side of conservatism, you can look for stocks that have PE ratios less than 10 on all three measures. The resulting portfolio in October 2002 is presented in table 3.4.

Taking a closer look at the portfolio, there were 116 stocks in the market (out of an overall sample of 7000+ companies) that met the criteria of having current, trailing and forward price earnings ratios all less than 10. The portfolio is fairly diversified, though utility and financial service stocks are disproportionately represented.

Table 3.4: Stocks with PE Ratios less than 10: United States – October 2002

Company Name	Industry	Current PE	Trailing PE	Forward PE	Company Name	Industry	Current PE	Trailing PE	Forward PE
Acclaim Entertainment	ENT TECH	7.45	3.88	5.73	Kroger Co.	GROCERY	9.70	9.70	7.87
AES Corp.	POWER	0.70	0.70	1.31	Lafarge No. America	CEMENT	8.59	7.53	7.70
Aftermarket Tech	AUTO-OEM	8.14	6.44	6.29	L and America Finl Group	FINANCL	6.29	5.79	6.52
Allegheny Energy	UTILEAST	1.22	1.74	2.68	Lennar Corp.	HOMEBUILD	8.54	7.98	6.65
Allied Waste	ENVIRONM	6.93	6.81	6.57	M.D.C. Holdings	HOMEBUILD	6.22	6.27	6.15
Allmerica Financial	INSRPTY	2.57	4.91	3.23	Magna Int'l 'A'	AUTO-OEM	8.51	8.42	8.52
Amer. Axle	AUTO-OEM	9.53	7.59	7.31	Marathon Oil Corp.	OILINTEG	5.12	8.07	9.41
Aquila Inc.	UTILCENT	2.83	5.55	6.81	May Dept. Stores	RETAIL	9.60	9.60	9.80
Argosy Gaming	HOTELGAM	8.18	6.30	7.16	McDermott Int'l	DIVERSIF	5.69	5.69	3.59
Ashland Inc.	OILINTEG	4.27	8.76	7.59	Metro One Telecom	INDUSRV	8.02	7.91	3.94
Astoria Financial	THRIFT	9.66	9.66	7.88	MGIC Investment	FINANCL	6.96	6.81	6.34
Bally Total Fitness	RECREATE	2.75	2.84	3.01	MicroFinancial Inc	FINANCL	1.34	1.34	3.17
Beverly Enterprises	MEDSERV	4.75	4.84	4.30	Mirant Corp.	POWER	0.68	0.77	1.33
Building Materials	BUILDSUP	6.16	6.16	7.02	Nash Finch Co.	FOODWHOL	7.52	6.00	5.73
CAE Inc.	DEFENSE	5.76	5.76	6.60	Nationwide Fin'l	INSLIFE	8.02	8.20	7.77
Calpine Corp.	POWER	1.16	1.40	2.31	Nautilus Group Inc..	RETAILSP	7.17	5.49	5.18
Can. Imperial Bank	BANKCAN	7.62	7.62	8.55	New Century Financial	FINANCL	9.94	4.21	3.44
Centex Corp.	HOMEBUILD	7.02	6.80	5.61	Petroleo Brasileiro ADR	OILINTEG	2.97	2.97	3.23
Chromcraft Revington	FURNITUR	7.11	7.47	6.84	Petroleum Geo ADR	OILFIELD	3.15	3.65	2.35
Cleco Corp.	UTILCENT	7.34	6.81	7.87	Philip Morris	TOBACCO	9.59	8.58	9.17
CMS Energy Corp.	UTILCENT	5.92	6.90	5.48	Pinnacle West Capital	UTILWEST	6.67	6.67	8.23
CryoLife Inc.	MEDSUPPL	6.01	6.01	4.19	PMI Group	INSRPTY	8.71	8.71	7.29
Del Monte Foods	FOODPROC	8.23	8.23	8.47	PNM Resources	UTILWEST	4.97	6.60	9.60
Dixie Group	TEXTILE	0.00	9.33	6.22	Precision Castparts	DEFENSE	5.44	5.41	6.55
Dominion Homes Inc	HOMEBUILD	7.14	5.04	5.55	Public Serv. Enterprise	UTILEAST	5.62	6.49	6.01
Downey Financial	THRIFT	8.46	9.14	9.76	Pulte Homes	HOMEBUILD	8.49	7.10	6.20
DPL Inc.	UTILCENT	8.34	8.34	9.22	Quaker Fabric	TEXTILE	9.16	7.23	7.34
Duke Energy	UTILEAST	7.78	8.27	7.65	Quanta Services	INDUSRV	1.89	1.89	4.21
Dura Automotive 'A'	AUTO-OEM	5.99	5.90	3.62	R.J. Reynolds Tobacco	TOBACCO	8.03	5.99	5.65
Dynegy Inc. 'A'	GASDIVRS	0.46	0.56	3.87	Radian Group Inc	FINANCL	9.39	8.46	7.80
El Paso Electric	UTILWEST	8.17	8.17	9.43	Radiologix Inc	MEDSERV	7.35	6.67	7.77

Electronic Data Sys.	SOFTWARE	5.84	5.14	4.37	Republic Bancorp Inc	KY CI A	BANK	9.87	8.64	9.09
ENDESA ADR	FGNEUTIL	8.13	9.77	8.01	Ryland Group		HOMEBUILD	7.21	6.26	6.87
ePlus inc	INTERNET	7.70	7.87	7.80	Salton Inc.		HOUSEPRD	2.76	2.76	6.52
Federated Dept. Stores	RETAIL	9.62	9.05	8.63	Sears Roebuck		RETAIL	7.77	7.13	4.69
Fidelity Nat'l Fin'l	FINANCL	9.09	7.26	6.48	Shaw Group		METALFAB	8.90	6.31	5.84
First Amer Corp	FINANCL	9.03	8.11	9.55	Sola Int'l		MEDSUPPL	6.95	7.27	9.23
FirstFed Fin'l-CA	THRIFT	8.90	8.96	9.28	Sprint Corp.		TELESERV	8.47	8.47	8.85
Fleming Cos.	FOODWHOL	2.47	2.47	2.23	Stillwater Mining		GOLDSILV	3.25	3.25	5.28
Flowserve Corp.	MACHINE	8.78	6.88	5.31	SUPERVALU INC.		FOODWHOL	9.02	8.19	7.03
Foot Locker	RETAILSP	9.48	8.94	8.53	TECO Energy		UTILEAST	5.71	5.71	5.79
Gadzooks Inc	RETAILSP	7.58	6.74	7.02	Telefonos de Mexico ADR		TELEFGN	8.04	8.04	8.03
Genesco Inc.	SHOE	7.15	7.61	9.02	Toll Brothers		HOMEBUILD	6.51	6.18	6.66
Gerber Scientific	INSTRMNT	9.29	9.29	5.69	Tommy Hilfiger		APPAREL	5.76	6.67	5.50
Goodrich Corp.	DEFENSE	5.92	5.92	6.78	Trans World Entertain		RETAILSP	7.50	7.50	7.52
Greater Bay Bancorp	BANK	8.24	6.33	6.45	Triumph Group Inc		INSTRMNT	8.41	8.92	7.94
Green Mountain Pwr.	UTILEAST	7.78	7.78	9.43	TXU Corp.		UTILCENT	3.58	3.19	2.70
Group 1 Automotive	RETAILSP	8.89	8.89	6.93	Tyco Int'l Ltd.		DIVERSIF	5.01	5.00	7.52
Gulfmark Offshore	MARITIME	7.09	9.88	8.78	UIL Holdings		UTILEAST	7.08	7.88	8.35
Handleman Co.	RECREATE	5.87	5.78	5.74	United Rentals		MACHINE	3.96	3.96	3.11
Haverly Furniture	RETAILSP	9.70	8.40	9.45	Universal Amern Finl Corp		INSLIFE	8.99	9.76	8.31
HEALTHSOUTH Corp.	MEDSERV	4.41	4.41	3.84	Universal Corp.		TOBACCO	8.35	8.35	8.62
Helen of Troy Ltd.	COSMETIC	9.01	9.01	7.27	URS Corp.		INDUSRV	7.37	6.24	7.37
Household Int'l	FINANCL	6.59	7.06	4.52	Warrantech Corp.		INDUSRV	7.59	5.61	3.00
Imperial Chem. ADR	CHEMDIV	7.01	7.01	8.97	Westar Energy		UTILCENT	0.00	3.34	9.43
InterTAN Inc.	RETAILSP	9.00	9.00	8.59	Westpoint Stevens		TEXTILE	0.00	5.29	1.60
KB Home	HOMEBUILD	8.51	7.13	6.32	Whirlpool Corp.		APPLIANC	8.41	7.49	7.13
					World Acceptance		FINANCL	6.45	6.10	6.98

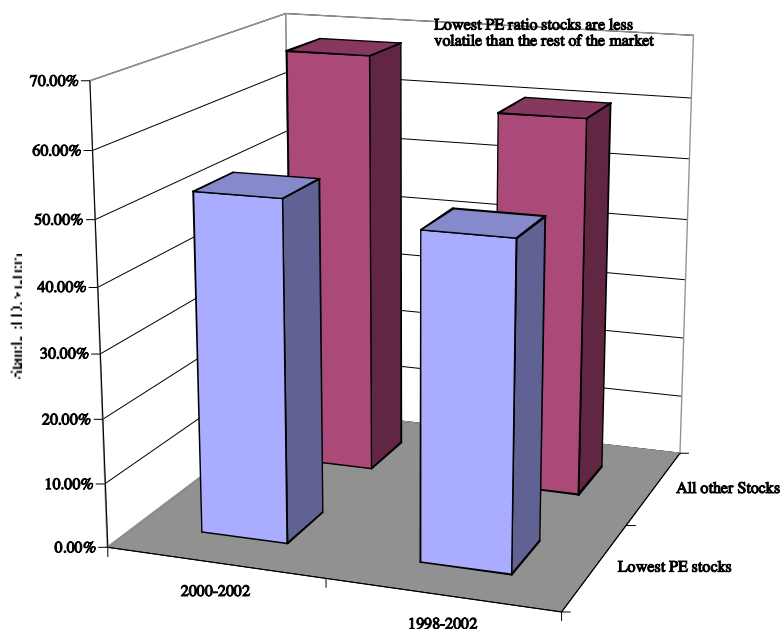
The Rest of the Story

Given the high returns that low PE ratio stocks earn, should you rush out and buy such stocks? While such a portfolio may include a number of under valued companies, it may also contain other less desirable companies for several reasons. First, not all earnings are of equal quality. In recent years, some firms have used accounting sleight of hand and one-time income to report higher earnings. You would expect these firms to trade at lower price earnings ratios than other firms. Second, even if the earnings are not skewed by accounting choices the earnings can be volatile and the low PE ratio may reflect this higher risk associated with investing in a stock. Third, a low PE ratio can also indicate that a firm's growth prospects have run out. Consequently, it could be a poor investment.

Risk and PE Ratios

In the earlier section, you compared the returns of stocks with low price earnings ratios to other stocks in the market over long period and concluded that low PE stocks do earn higher returns, on average. It is possible, however, that these stocks are riskier than average and that the extra return is just fair compensation for the additional risk. The simplest measure of risk you could consider is stock price volatility, measured with a standard deviation in stock prices over a prior period. Consider the portfolio of low PE stocks that you constructed at the end of the last section. The standard deviation in stock prices was computed for each stock in the portfolio. In Figure 3.7, the average standard deviation for the low PE portfolio is compared with the standard deviation of all stocks in the market for a three-year and a five-year period.

Figure 3.7: Standard Deviation in Stock Prices

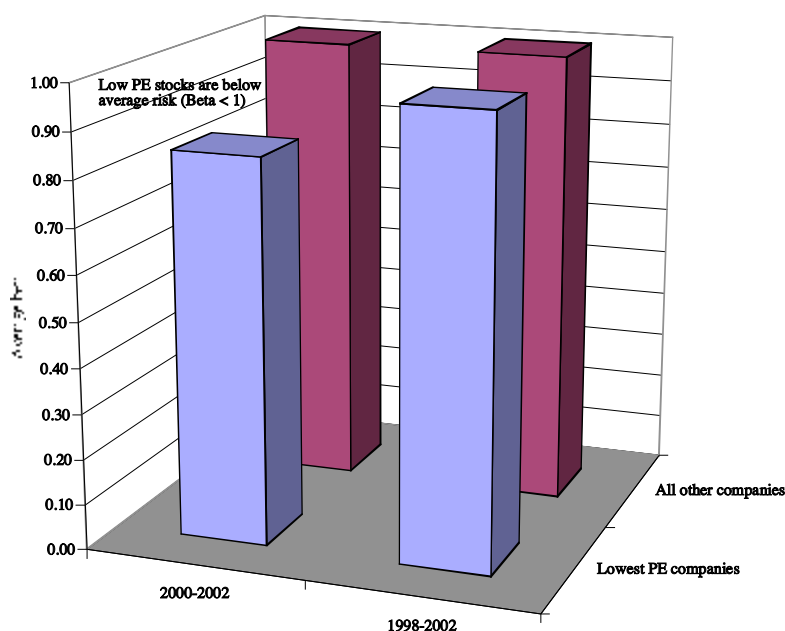


Data from Value Line: The average standard deviation in weekly stock prices over three and five years is reported.

Surprisingly, the lowest PE stocks are, on average, less volatile than the highest PE stocks though there are some stocks in the low PE portfolio that are more volatile than average.

Some studies try to control for risk by estimating excess returns that adjust for risk. To do so, though, they have to use a risk and return model, which measures the risk in investments and evaluates their expected returns, given the measured risk. For instance, some researchers have used the capital asset pricing model and estimated the betas of low PE and high PE portfolios. They come to the same conclusion that the analyses that do not adjust for risk come to – that low PE ratio stocks earn much higher returns, after adjusting for beta risk, than high PE ratio stocks. Consequently, the beta was computed for each of the stocks in the low PE portfolio and the average was contrasted for the portfolio with the average for all other stocks in Figure 3.8:

Figure 3.8: Betas of Low PE Ratio companies



Data from Value Line. This the average beta (computed over 5 years of weekly returns) across stocks in the portfolio.

On this measure of risk as well, the low PE ratio portfolio fares well, with the average beta of low PE stocks being lower than the average PE for the rest of the market.

While the average beta and standard deviation of the low PE portfolio is lower than the average for the rest of the market, it is still prudent to screen stocks in the portfolio for risk. You could, for instance, eliminate all firms that would fall in the top quintile of listed stocks in terms of risk – beta or standard deviation. Looking at stocks listed in October 2002, this would have yielded cut-off values of 1.25 for beta and 80% for standard deviation. Removing firms with betas greater than 1.25 or standard deviations that exceed 80% from the sample reduces the number of stocks in the portfolio from 115 to 91. Table 3.5 list the 24 firms removed as a result of failing the risk screen.

Table 3.5: Firms removed from low PE portfolio – Risk Test

Company Name	Industry	Beta	Standard Deviation
Beverly Enterprises	MEDSERV	1.27	75.58%
Allmerica Financial	INSPRPTY	1.31	49.50%
Precision Castparts	DEFENSE	1.33	52.58%

Federated Dept. Stores	RETAIL	1.34	46.00%
Telefonos de Mexico ADR	TELEFGN	1.4	43.74%
Petroleum Geo ADR	OILFIELD	1.4	74.49%
Shaw Group	METALFAB	1.44	69.20%
United Rentals	MACHINE	1.68	58.13%
Flowserve Corp.	MACHINE	1.71	54.84%
InterTAN Inc.	RETAILSP	1.73	61.29%
Dynegy Inc. 'A'	GASDIVRS	1.78	77.24%
Tyco Int'l Ltd.	DIVERSIF	1.87	60.57%
Stillwater Mining	GOLDSILV	1.87	65.61%
Salton Inc.	HOUSEPRD	2.05	73.57%
CryoLife Inc.	MEDSUPPL	-0.34	81.08%
Dura Automotive 'A'	AUTO-OEM	2.35	81.56%
Quanta Services	INDUSRV	2.48	82.67%
Calpine Corp.	POWER	1.95	85.18%
Metro One Telecom	INDUSRV	1.74	86.70%
AES Corp.	POWER	2.26	89.64%
Aftermarket Tech	AUTO-OEM	1.02	100.83%
ePlus inc	INTERNET	1.57	113.77%
Westpoint Stevens	TEXTILE	0.74	126.22%
Acclaim Entertainment	ENT TECH	3.33	237.57%

Note that firms are required to pass both risk tests. Thus, there are firms that have betas less than 1.25 (such as Westpoint Stevens) but standard deviations greater than 80% that are eliminated from the portfolio.

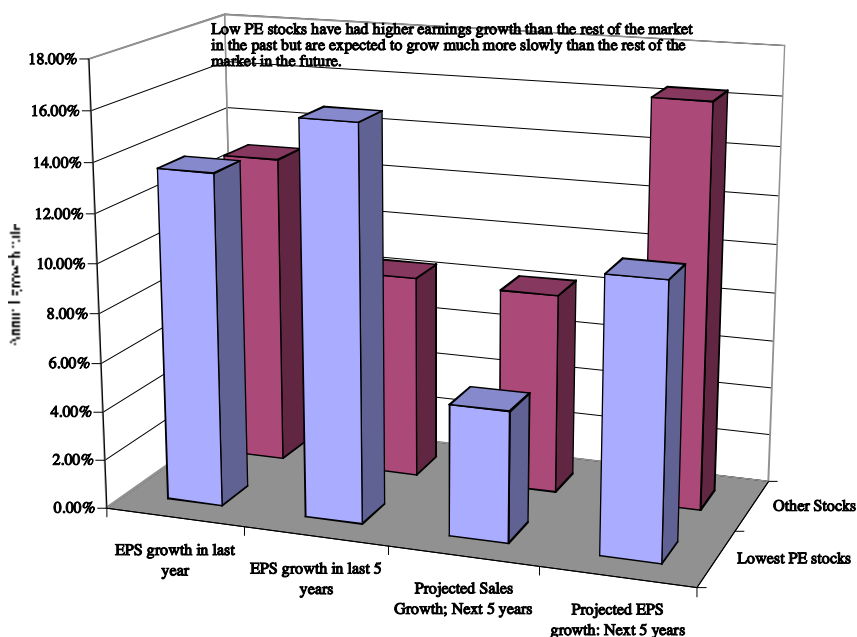
Low Growth and PE Ratios

One reason for a low PE ratio for a stock would be low expected growth. Many low PE ratio companies are in mature businesses where the potential for growth is minimal. If you invest in stocks with low PE ratios, you run the risk of holding stocks with anemic or even negative growth rates. As an investor, therefore, you have to consider whether the trade off of a lower PE ratio for lower growth works in your favor.

As with risk, growth can be measured in many ways. You could look at growth in earnings, over the last few quarters or years, but that would be backward looking. There are stocks whose earnings have stagnated over the last few years, which may be ripe for high

growth, just as there are stocks whose earnings have gone up sharply in the last few years that have little or no expected growth in the future. It is to avoid this peering into the past that investors often prefer to focus on expected growth in earnings in the future. Estimates of this growth rate are available for different forecast periods from analysts and are often averaged and summarized (across analysts) by services such as I/B/E/S or Zacks. The average past and expected growth rates in earnings per share for firms in the low PE portfolio are computed and compared to the same statistics for the rest of the market in October 2002 in Figure 3.9:

Figure 3.9: Growth Rates - Lowest PE stocks versus Other stocks



Data from Value Line: The projected sales and EPS growth for the next 5 years comes from analyst forecasts.

The earnings of the lowest PE ratio stocks have grown faster than the earnings of other stocks, if you look back in time (one year or five years). However, the projected growth in both sales and earnings is much lower for the low PE ratio stocks, indicating that this may be a potential problem with the portfolio and a partial explanation for why these stocks trade at lower values. Consequently, you should consider screening the portfolio of low PE stocks for those with low or negative growth rates. Introducing a minimum expected growth rate of 10% in expected earnings reduces the sample of low PE stocks by 52 firms. A minimum expected growth rate of 5% would reduce the sample by 27 firms. If you believe that analyst estimates tend to be too optimistic and introduce an additional constraint

that historical growth in earnings would also have to exceed 5%, you would lose another 18 firms from the sample. Table 3.6 summarizes the 41 firms that are eliminated by introducing a dual growth constraint – a historical earnings per share growth rate that exceeds 5% and analyst projected earnings per share growth greater than 5%.

Table 3.6: Firms removed from low PE portfolio – Growth Test

<i>Company Name</i>	<i>Ticker Symbol</i>	<i>Projected EPS Growth</i>	<i>EPS Growth - Last 5 years</i>
<i>Removed because projected growth less than 5%</i>			
Aquila Inc.	ILA	-10.00%	7.00%
CMS Energy Corp.	CMS	-4.00%	-0.50%
PNM Resources	PNM	-1.50%	11.50%
UIL Holdings	UIL	-1.00%	4.00%
Trans World Entertain	TWMC	-0.50%	0.00%
Stillwater Mining	SWC	0.50%	0.00%
Allegheny Energy	AYE	1.00%	8.50%
Allmerica Financial	AFC	1.00%	11.50%
Marathon Oil Corp.	MRO	1.00%	28.00%
Imperial Chem. ADR	ICI	1.50%	-3.50%
Pinnacle West Capital	PNW	2.00%	9.00%
El Paso Electric	EE	2.50%	15.50%
Salton Inc.	SFP	2.50%	72.50%
Calpine Corp.	CPN	3.50%	0.00%
Sprint Corp.	FON	3.50%	0.00%
Ashland Inc.	ASH	3.50%	14.50%
Universal Corp.	UVV	3.50%	15.50%
Westpoint Stevens	WXS	4.00%	0.00%
ENDESA ADR	ELE	4.00%	1.00%
Quanta Services	PWR	4.50%	0.00%
TECO Energy	TE	4.50%	4.50%
Lafarge No. America	LAF	4.50%	17.50%
Del Monte Foods	DLM	5.00%	0.00%
May Dept. Stores	MAY	5.00%	6.00%
Tommy Hilfiger	TOM	5.00%	15.00%
Precision Castparts	PCP	5.00%	20.50%
AES Corp.	AES	5.00%	28.50%
<i>Removed because historical growth less than 5%</i>			
Westar Energy	WR	16.00%	-25.50%
Green Mountain Pwr.	GMP	20.50%	-19.50%
Petroleum Geo ADR	PGO	15.00%	-14.50%
Beverly Enterprises	BEV	9.50%	-12.50%
Gerber Scientific	GRB	14.00%	-9.50%
Quaker Fabric	QFAB	18.17%	-5.50%

Sola Int'l	SOL	6.00%	-3.50%
Nash Finch Co.	NAFC	17.50%	-3.50%
Aftermarket Tech	ATAC	8.50%	2.00%
TXU Corp.	TXU	9.50%	2.00%
Electronic Data Sys.	EDS	13.00%	2.50%
Chromcraft Revington	CRC	13.00%	4.00%
Gadzooks Inc	GADZ	18.33%	5.00%

Earnings Quality and PE Ratios

With its focus on earnings per share, PE ratios put you at the mercy of the accountants who measure these earnings. If you assumed that accountants make mistakes but that they work within established accounting standards to estimate earnings without bias, you would be able to use PE ratios without qualms. In the aftermath of the accounting scandals of recent years, you could argue that accounting earnings is susceptible to manipulation. If earnings are high not because of a firm's operating efficiency but because of one-time items such as gains from divestiture or questionable items such as income from pension funds, you should discount these earnings more (leading to lower PE ratios).

How can you screen stocks to eliminate those with questionable earnings? It is difficult to do, since you learn of troubles after they occur. You could, however, look for clues that have historically accompanied earnings manipulation. One would be frequent earnings restatements by firms, especially when such restatements disproportionately reduce earnings.⁷ Another would be the repeated use of one-time charges to reduce earnings. For example, Xerox had large one-time charges that reduced or eliminated earnings every single financial year during the 1990s. A third is a disconnect between revenue growth and earnings growth. While it is entirely possible for firms to report high earnings growth when revenue growth is low for a year or two, it is difficult to see how any firms can continue to grow earnings 20% a year, year after year, if their revenues growth is only 5% a year.

Lessons for Investors

The primary lesson of this chapter is that firms that have low price earnings ratios may be neither under valued nor good investments. If you combine that with the fact that the primary culprits for low PE ratios are low growth and high risk, it is clear that you want a portfolio of stocks with low PE ratios, high quality earnings with potential for growth and

⁷ When firms restate earnings, they have to file an amended financial statement with the SEC. One easy way of finding firms that have done repeated restatements is to examine the SEC filings data online and to count the number of restatements over a period (three to five years).

low risk. The key then becomes coming up with the screens that will allow you to bring all of these needs into the portfolio.

- (a) *Low PE ratios*: There are two decisions you need to make here. The first is the measure of PE that you will be using. Not only do you have to decide whether you will use current, trailing or forward PE, but you will also have to make a choice on whether you want to use primary or diluted earnings. The second decision you have to make is on what cut-off you will use for a low PE ratio. In other words, will you pick all stocks with PE ratios less than 12 or only those with PE ratios less than 8? As noted earlier in the chapter, what comprises a low PE ratio is relative. In other words, a PE ratio of 12 is low in a market where the median PE is 25 but will be high in a market where the median PE is 7. To scale your choices to the level of the market, you can use the 10th or 20th percentile as the cut-off for a low PE ratio; which one you pick will depend upon how stringent your other screens are and how many stocks you would like to have in your final portfolio.
- (b) *Low Risk*: Here again, you have two judgments to make. The first is the measure of risk that you will use to screen firms. The standard deviation in stock prices and betas were used as screens in the last section, but there are other quantitative measures of risk that you could also consider. You could use the debt equity ratio to measure the risk from financial leverage. In addition, there are qualitative measures of risk. Standard and Poor's, for instance, assigns a letter grade for stocks that resembles the ratings that they assign corporate bonds. An A rated equity, by S &P's measure, is much safer than a BBB rated equity. The second is the level of risk at which you will screen out stocks. With standard deviation, for instance, will you screen out all stocks that have standard deviations that exceed the median or average for the market or will you set a lower standard?
- (c) *Reasonable expected growth in earnings*: While it is unlikely that you will find companies with low PE ratios and high expected growth rates, you can set a threshold level for growth. You could eliminate all firms, for instance, whose expected growth rate in earnings is less than 5%. How do you come up with this cutoff? You could look at the entire market and use the median or average growth rate of the market as an index.
- (d) *Quality of Earnings*: This is perhaps the toughest and most time intensive test to meet. To do it right, you would need to examine the financial statements of each of the firms that make it through the prior screens in detail, and over several years. If you want simpler tests, you could eliminate firms where you have doubts about earnings quality. For instance, you could remove firms that have

- ❑ Repeatedly restated earnings over the last few years: Repeated restatements of earnings can be a sign of underlying accounting problems at firms.
- ❑ Grown through acquisitions rather than internal investments: Companies that go through acquisitions are much more likely to have one-time charges (like restructuring expenses) and non-cash charges (such as goodwill amortization) that make current earnings less reliable.
- ❑ Significant option grants or profits from one-time deals: One time profits complicate the search for “normalized earnings” and large option grants can make forecasting per share numbers very difficult.

Taking into account these screens, stocks that passed the following screens were considered in October 2002:

- ❑ PE ratios (current, trailing and forward) less than 12 (the 20th percentile at the time of the screening).
- ❑ Betas that are less than one and standard deviations in stock prices over the last 5 years of less than 60% (which was the median standard deviation across all traded stocks). To control for the fact that some of these firms may have too much debt, any firms that had debt that exceeded 60% of their book capital were eliminated.
- ❑ Expected growth in earnings per share (from analyst estimates) over the next 5 years greater than 5% and historical growth rates in earnings per share (over the last 5 years) that exceed 5%.

In addition, any firms that had restated earnings⁸ over the previous 5 years or had more than two large⁹ restructuring charges over the previous five years were eliminated. The resulting portfolio of 27 stocks is summarized in the appendix at the end of this chapter. The portfolio is well diversified and come from 23 different industries, as defined by Value Line.

Conclusion

The conventional wisdom is that low PE stocks are cheap and represent good value. That is backed up by empirical evidence that shows low PE stocks earning healthy

⁸ When a company restates earnings, it has to file an amended 10K with the Securities and Exchange commission (SEC). The SEC web site was checked for the number of amended 10Ks over the last 5 years for any firms that passed the PE, growth and risk screens.

⁹ A large charge is one that exceeded 20% of the pre—charge income of the firm. Thus, for a firm with \$ 1 billion in pre-charge income, a restructuring charge that is greater than \$ 200 million would have been viewed as a large charge.

premiums over high PE stocks. If you relate price earnings ratios back to fundamentals, however, low PE ratios can also be indicative of high risk and low future growth rates. In this chapter, this linkage was made explicit by creating a portfolio of low PE stocks and eliminating those stocks that fail the risk and growth tests. Of the 115 stocks that had trailing, current and forward PE ratios that were less than 10, more than 60% of the sample would have been removed because they had above-average risk or below-average growth.

In summary, a strategy of investing in stocks just based upon their low price earnings ratios can be dangerous. A more nuanced strategy of investing in low PE ratio stocks with reasonable growth and below-average risk offers more promise, but only if you are a long-term investor.

Appendix: Companies that pass PE Tests in the United States: October 2002

Identification		PE Ratios			Risk Measures		EPS Growth				
Company Name	Ticker	Industry	Current PE	Trailing PE	Forward PE	Beta	Std. Dev'n	Debt/Capital	Growth Last 5 years	Projected Growth: next 5 years	Options as % of shares
Washington Federal	WFSL	Thrift	11.22	10.90	10.89	0.90	32.84%	0.00%	7.50%	11.50%	0.00%
CEC Entertainment	CEC	Restaurant	10.28	11.30	9.65	0.90	38.87%	13.36%	65.00%	17.00%	2.57%
Magna Int'l 'A'	MGA	Auto Parts	8.77	9.30	8.44	0.90	27.78%	24.01%	9.50%	10.50%	17.21%
Bank of Nova Scotia	BNS.TO	Bank (Canadian)	10.65	10.80	10.05	0.90	24.71%	29.40%	15.00%	10.00%	1.68%
Centex Construction	CXP	Cement & Aggregates	9.87	10.90	9.04	0.75	38.04%	29.89%	20.50%	8.50%	0.38%
Zions Bancorp.	ZION	Bank	11.46	11.60	10.83	0.95	31.70%	30.94%	15.00%	11.50%	1.07%
Nat'l Bank of Canada	NA.TO	Bank (Canadian)	10.09	11.50	9.38	0.80	22.60%	31.25%	13.00%	9.50%	0.48%
V.F. Corp.	VFC	Apparel	11.03	11.20	10.72	0.90	35.17%	31.76%	6.50%	8.50%	3.11%
Right Management	RMCI	Human Resources	8.97	9.30	8.69	0.60	53.97%	35.38%	9.00%	23.50%	9.19%
Tredegar Corp.	TG	Chemical (Specialty)	9.46	11.40	8.64	0.80	43.01%	35.63%	16.50%	14.00%	1.90%
Ryan's Family	RYAN	Restaurant	9.00	9.70	8.70	0.75	34.50%	35.97%	15.00%	14.00%	3.53%
Loews Corp.	LTR	Financial Svcs. (Div.)	8.12	10.60	6.71	0.90	37.83%	39.40%	5.50%	8.00%	0.00%
Building Materials	BMHC	Retail Building Supply	7.66	7.60	7.25	0.85	39.13%	40.80%	7.50%	8.00%	0.85%
Ameron Int'l	AMN	Building Materials	7.23	7.10	6.78	0.75	33.63%	42.33%	14.50%	5.00%	3.18%
IHOP Corp.	IHP	Restaurant	10.86	12.00	9.87	0.85	32.28%	43.17%	15.00%	12.00%	1.77%
Universal Forest	UFPI	Building Materials	9.60	9.80	8.46	0.75	32.67%	43.28%	14.00%	12.00%	2.91%
TBC Corp.	TBCC	Tire & Rubber	9.88	9.90	9.29	0.85	45.08%	43.84%	7.00%	10.00%	1.84%
Haverty Furniture	HVT	Retail (Special Lines)	10.57	10.20	9.70	0.85	51.68%	45.48%	17.50%	14.00%	2.39%
Brown Shoe	BWS	Shoe	9.52	10.90	9.05	0.75	51.55%	45.73%	9.00%	8.00%	1.97%
Philip Morris	MO	Tobacco	9.02	9.10	8.94	0.65	36.31%	50.60%	10.50%	9.00%	0.00%
Smithfield Foods	SFD	Food Processing	11.77	11.00	9.93	0.90	39.34%	52.06%	26.00%	10.00%	2.15%
Sealed Air	SEE	Packaging	7.17	7.00	6.93	0.75	53.38%	52.12%	5.50%	15.00%	0.00%
SUPERVALU INC.	SVU	Food Wholesalers	8.21	8.70	7.31	0.75	37.58%	54.11%	8.00%	10.00%	0.81%
Duke Energy	DUK	Electric Utility (East)	8.79	11.00	8.48	0.70	36.49%	55.13%	6.00%	7.50%	0.70%

Safeway Inc.	SWY	Grocery	8.16	8.90	7.75	0.75	31.68%	55.68%	25.00%	12.00%	1.97%
Hovnanian Enterpr.	HOV	Homebuilding	8.19	10.40	8.45	0.95	52.20%	57.91%	22.00%	22.50%	3.70%
CAE Inc.	CAE.TO	Aerospace/Defense	8.92	7.50	6.86	0.75	59.44%	59.97%	17.50%	12.00%	1.17%

CHAPTER 4

LESS THAN BOOK VALUE! WHAT A BARGAIN?

How Helga learned to mistrust accountants

Helga, a psychologist, had always wanted to be an accountant. She bemoaned the fact that her discipline was subjective and lacked precision, and wished that she could work in a field where there were clear rules and principles. One day, she read an article in the *Wall Street Journal* on Global Telecom, whose stock, the report said, was trading at half of its book value. From her limited knowledge of accounting, Helga knew that book value represented the accountant's estimate of what the equity in the bank was worth. "If a stock is trading at less than book value, it must be cheap," she exclaimed, as she invested heavily in the stock.

Convinced that she was secure in her investment, Helga waited for the stock price to move up to the book value of equity. Instead, it moved down. When she took a closer look at Global Telecom, she learned that its management had a terrible reputation and that it had either lost money or made very little every year for the last 10 years. Helga still kept her faith in the accounting value, convinced that, at worst, someone would buy the firm for the book value. At the end of the year, her hopes were dashed. The accountants announced that they were writing down the book value of the equity to reflect poor investments that the firm had made in the past. The stock price no longer was lower than the book value, but the book value had come down to the price rather than the other way around. Helga never yearned to be an accountant again.

Moral: The book value is an opinion and not a fact.

The book value of equity is the accountant's measure of what equity in a firm is worth. While the credibility of accountants has declined over the last few years, there are many who continue to believe that accountants provide not only a more conservative but also a more realistic measure of what equity is truly worth than financial markets which they view as subject to irrational buying and selling. A logical consequence of this view is that stocks that trade at substantially less than book value are under valued and those that trade at more than book value are over valued. As you will see in this chapter, while this may sometimes be true, there are many stocks that deserve to trade at less than book value either because they have poor investments or high risk or both.

The Core of the Story

The notion that stocks that trade at less than book value are undervalued has been around for decades. It has been used as a value screen by investors and portfolio manager. Services that track mutual funds (Morningstar, Value Line and Lipper) have used it as their basis for categorizing funds into value and growth funds – value funds invest in stocks with low price to book value ratios and growth funds in stocks with high price to book value ratios. As with PE ratios, rules of thumb abound – stocks that trade at less than book value are under valued, whereas stocks that trade at more than twice book value are overvalued.

Why does this story carry so much weight with investors? There are several reasons and two are considered below:

- *Markets are less reliable than accountants when it comes to estimating value:* If you believe that markets are both volatile and irrational, and combine this with a trust in the inherently conservative nature of accounting estimates of value, it follows logically that you would put more weight on accounting estimate of values (book value) than on market estimates of the same (market value). Thus, when a firm trades at less than book value, you will be inclined to believe that it is markets that have a mistaken estimate of value rather than accountants.
- *Book value is liquidation value:* In addition to the trust that some investors have in accountants' estimates of value, there is also the embedded belief that a firm, if liquidated, would fetch its book value. If this is the case, proponents argue, a stock that trades at less than book value is a bargain to someone who can liquidate its assets and pay off its debt. As investors, you can piggyback on such investors and gain as the stock price approaches book value.

The Theory: Price to Book Ratios and Fundamentals

In Chapter 3, you examined the variables that affect the price earnings ratio, by going back to a simple valuation model and deriving the determinants of the multiple. You will follow the same path with price to book ratios. You will begin again with the definition of the price to book ratio (and any variants thereof) and then evaluate the variables that may cause some companies to have high price to book ratios and others to have low price to book ratios.

Defining the Price to Book Ratio

The price to book ratio is the ratio obtained by dividing the market price per share by the book value per share at a point in time.

$$\text{PBV} = \text{Price to Book} = \frac{\text{Market Price per share}}{\text{Book Value per share}}$$


The price to book ratio is usually estimated using the current price per share in the numerator and the book value per share in the denominator. The book value per share is the book value of equity divided by the number of shares outstanding. There are far fewer variants of price to book ratios than there are in price earnings ratios. It is true that you can still compute book value of equity per share based upon the actual number of shares outstanding (primary book value per share) or upon potential shares outstanding, assuming that options get exercised (diluted book value per share). However, you do not have the variants on current, trailing and forward values as you did for price earnings ratio. It is conventional to use as updated a measure of book value of equity per share as you can get. If firms report earnings annually, this will be based upon the equity in the last annual report. If firms report on a quarterly basis, you can use the equity from the most recent quarterly balance sheet.

How accountants measure book value

To understand book value, you should start with the *balance sheet*, shown in Figure 4.1, which summarizes the assets owned by a firm, the value of these assets and the mix of financing, debt and equity, used to finance these assets at a point in time.

Figure 4.1: The Balance Sheet

Assets		Liabilities	
Long Lived Real Assets	Fixed Assets	Current Liabilities	Short-term liabilities of the firm
Short-lived Assets	Current Assets	Debt	Debt obligations of firm
Investments in securities & assets of other firms	Financial Investments	Other Liabilities	Other long-term obligations
Assets which are not physical, like patents & trademarks	Intangible Assets	Equity	Equity investment in firm



This is the accounting estimate of
book value of equity

While this is the conventional format for balance sheets in the United States, there are mild variations in how they are set up elsewhere in the globe. In parts of Asia, the assets are shown on the right hand side and liabilities on the left hand side. German companies consolidate pension fund assets and liabilities in corporate balance sheets.

What is an asset? An asset is any resource that has the potential to either generate future cash inflows or reduce future cash outflows. While that is a general definition broad enough to cover almost any kind of asset, accountants add a caveat that for a resource to be an asset,

a firm has to have acquired it in a prior transaction and be able to quantify future benefits with reasonable precision. The accounting view of asset value is to a great extent grounded in the notion of **historical cost**, which is the original cost of the asset, adjusted upwards for improvements made to the asset since purchase and downwards for the loss in value associated with the aging of the asset. This historical cost is called the **book value**. This is especially true of fixed assets, such as land, building and equipment. While accountants are more amenable to revaluing current assets, such as inventory and accounts receivable, and some marketable securities at current market values, a process called marking to market, the book value of all assets on a balance sheet often will bear little or no resemblance to their market value.

Since assets are valued based upon historical cost, the liabilities suffer from the same absence of updating. Thus, the debt shown on a firm's balance sheet represents the original amount borrowed from banks or bondholders, rather than an updated market value. What about the book value of equity? The value of equity shown on the balance sheet reflects the original proceeds received by the firm when it issued the equity, augmented by any earnings made since (or reduced by losses, if any) and reduced by any dividends paid out during the period. While these three items go into what you can call the book value of equity, a few other items also end up in this estimate.

1. When companies buy back stock for short periods, with the intent of reissuing the stock or using it to cover option exercises, they are allowed to show the repurchased stock as treasury stock, which reduces the book value of equity. Firms are not allowed to keep treasury stock on the books for extended periods and have to reduce their book value of equity by the value of repurchased stock in the case of actions such as stock buybacks. Since these buybacks occur at the current market price, they can result in significant reductions in the book value of equity.
2. Firms that have significant losses over extended periods or carry out massive stock buybacks can end up with negative book values of equity.
3. If a firm has substantial amount invested in marketable securities, any unrealized gain or loss in marketable securities that are classified as available-for-sale is shown as an increase or decrease in the book value of equity in the balance sheet.

As part of their financial statements, firms provide a summary of changes in shareholders equity during the period, where all the changes that occurred to the accounting (book value) measure of equity value are summarized.

As with earnings, firms can influence the book value of their assets by their decisions on whether to expense or capitalize items – when items are expensed they do not show up as assets. Even when an expense is capitalized, the choice of depreciation method

can affect an asset's book value; firms that use accelerated depreciation – where more depreciation is claimed in the early years and less in the later years – will report lower book values for assets. Firms can have an even bigger impact on the book value of equity when they take restructuring or one-time charges. In summary, any investment approach based upon book value of equity has to grapple with these issues and the price to book ratio may not be a good indicator of value for many companies.

Determinants of PBV ratios

Consider again the model presented in the last chapter for valuing a stock in a firm where the dividends paid will grow at a constant rate forever. In this model, the value of equity can be written as:

$$\text{Value per share today} = \frac{\text{Expected Dividend per share next year}}{\text{Cost of Equity} - \text{Expected Growth Rate}}$$

As a simple example, consider investing in stock in Consolidated Edison, the utility that serves much of New York City. The stock is expected to pay a dividend of \$2.20 per share next year (out of expected earnings per share of \$3.30) the cost of equity for the firm is 8% and the expected growth rate in perpetuity is 3%. The value per share can be written as:

$$\text{Value per share of Con Ed} = \frac{\$2.20}{(.08 - .03)} = \$44.00 \text{ per share}$$

To get from this model for value per share to one for the price to book ratio, you will divide both sides of the equation by the book value of equity per share today. When you do, you obtain the discounted cash flow equation specifying the price to book ratio for a stable growth firm.

$$\begin{aligned} \frac{\text{Value per share today}}{\text{Book value of equity today}} &= \text{PBV} = \frac{\frac{\text{Expected Dividend per share}}{\text{Cost of Equity} - \text{Expected Growth Rate}}}{\text{Book Value of Equity per share today}} \\ &= \frac{\frac{\text{Expected Dividend per share}}{\text{Expected EPS next year}} * \frac{\text{Expected EPS next year}}{\text{Book Value of Equity per share today}}}{\text{Cost of Equity} - \text{Expected Growth Rate}} \\ &= \frac{\text{Expected Payout Ratio} * \text{Return on Equity}}{(\text{Cost of Equity} - \text{Expected Growth Rate})} \end{aligned}$$

Consider again the example of Con Ed introduced in the last chapter. Recapping the facts, the stock is expected to pay a dividend of \$2.20 per share next year out of expected earnings per share of \$3.30), the cost of equity is 8% and the expected growth rate in

perpetuity is 3%. In addition, assume that the book value of equity per share currently is \$33. You can estimate the price to book ratio for Con Ed:

$$\begin{aligned} &\text{Price to Book Ratio for Con Ed} \\ &= \frac{\text{Expected Payout Ratio} * \text{Return on Equity}}{(\text{Cost of Equity} - \text{Expected Growth Rate})} \\ &= \frac{(2.20/3.30) * (3.30/33)}{(.08 - .03)} = 1.33 \end{aligned}$$

The price to book ratio (PBV) will increase as the expected growth rate increases; higher growth firms should have higher PBV ratios, which makes intuitive sense. The price to book ratio will be lower if the firm is a high-risk firm and has a high cost of equity. The price to book ratio will increase as the payout ratio increases, for any given growth rate; firms that are more efficient about generating growth (by earning a higher return on equity) will trade at higher multiples of book value. In fact, substituting in the equation for payout into this equation:

Payout ratio = $1 - g/\text{Return on Equity}$

$$\begin{aligned} \text{Price to Book Ratio} &= \frac{(1 - g/\text{Return on Equity}) * \text{Return on Equity}}{(\text{Cost of Equity} - g)} \\ &= \frac{(\text{Return on Equity} - g)}{(\text{Cost of Equity} - g)} \end{aligned}$$

The key determinant of price to book ratios is the difference between a firm's return on equity and its cost of equity. Firms that are expected to consistently earn less on their investments (return on equity) than you would require them to earn given their risk (cost of equity) should trade at less than book value.

As noted in the last chapter, this analysis can be easily extended to cover a firm in high growth. The equation will become more complicated but the determinants of price to book ratios remain the same – return on equity, expected growth, payout ratios and cost of equity. A company whose stock is trading at a discount on its book value is not necessarily cheap. In particular, you should expect companies that have low returns on equity, high risk and low growth potential to trade at low price to book ratios. If you want to find under valued companies then, you have to find mismatches – low or average risk companies that trade at low price to book ratios while maintaining reasonable returns on equity.

Looking at the Evidence

Some investors argue that stocks that trade at low price-book value ratios are under valued and there are several studies that seem to back a strategy of buying such stocks. You

will begin by looking at the relationship between returns and price to book ratios across long time periods in the United States and extend the analysis to consider other markets.

Evidence from the United States

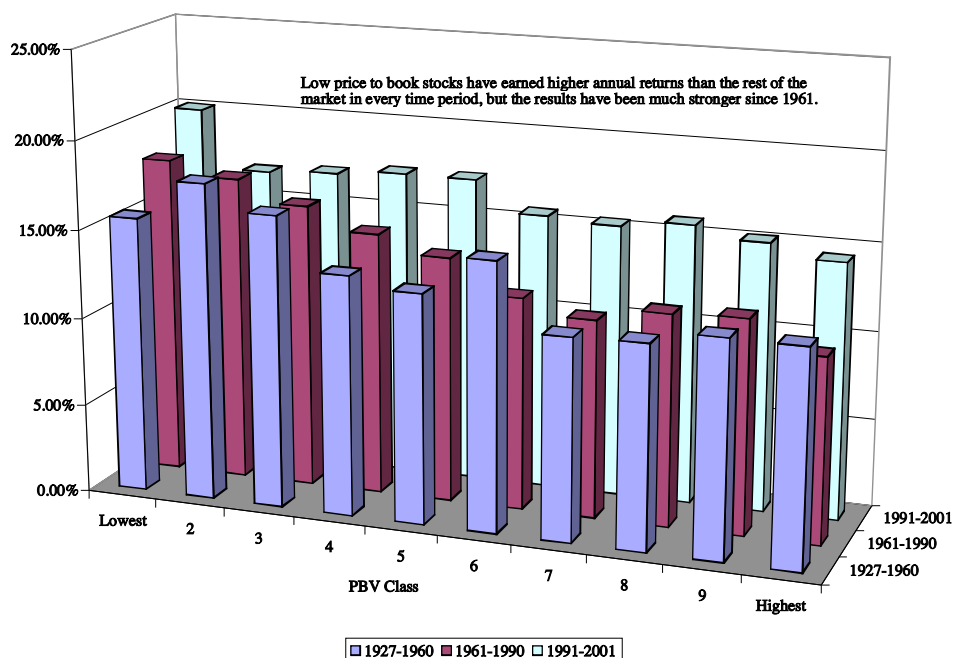
The simplest way to test whether low price to book stocks are good investments is to look at the returns that these stocks earn, relative to other stocks in the market. An examination of stock returns in the United States between 1973 and 1984 found that the strategy of picking stocks with high book/price ratios (low price-book values) would have yielded an excess return of 4.5% a year.¹ In another analysis of stock returns between 1963 and 1990 firms were classified on the basis of price to book ratios into twelve portfolios, and firms in the highest price to book value class earned an average monthly return of 0.30%, while firms in the lowest price to book value class earned an average monthly return of 1.83% for the 1963-90 period.²

This research was updated to consider how well a strategy of buying low price to book value stocks would have done in from 1991-2001 and compared these returns to returns in earlier time periods. To make the comparison, the annual returns on ten portfolios created based upon price to book ratios at the end of the previous year were computed. The results are summarized in Figure 4.2.

¹ Rosenberg, B., K. Reid, and R. Lanstein, 1985, *Persuasive Evidence of Market Inefficiency*, Journal of Portfolio Management, v11, 9-17.

² Fama, E.F. and K.R. French, 1992, *The Cross-Section of Expected Returns*, Journal of Finance, v47, 427-466. This study is an examination of the effectiveness of different risk and return models in finance. It found that price to book explained more of the variation across stock returns than any other fundamental variable, including market capitalization.

Figure 4.2: PBV Classes and Returns - 1927-2001

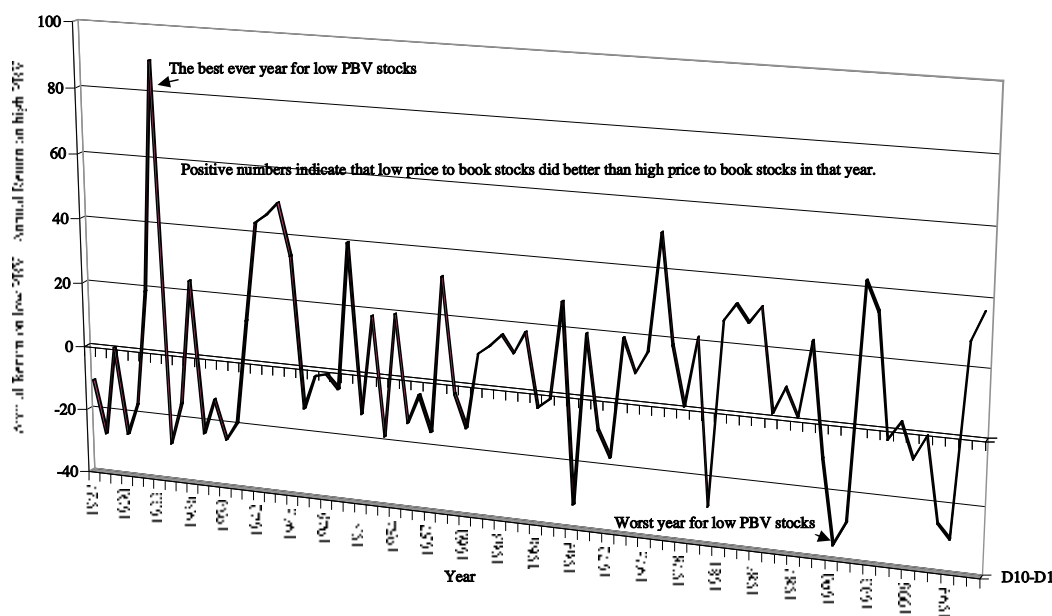


Data from Fama./French. The stocks were categorized based upon the ratio of price to book value at the beginning of each year and the annual returns were measured over the next year. The average annual return across each period is reported.

In each of the three sub-periods that you looked at stock returns, the lowest price to book stocks earned higher returns than the stocks with higher price to book ratios. In the 1927-1960 period, the difference in annual returns between the lowest price to book stock portfolio and the highest was 3.48%. In the 1961-1990 sub-period, the difference in returns between these two portfolios expanded to 7.57%. In the 1991-2001 period, the lowest price to book stocks continued to earn a premium of 5.72% over the highest price to book stocks. Thus, the higher returns earned by low price to book stocks have persisted over long periods.

As noted with price earnings ratios though, these findings should not be taken as an indication that low price to book ratio stocks earn higher returns than higher price to book stocks in every period. Figure 4.3 reports on the difference between the lowest price to book and highest price to book portfolio, by year, from 1960 to 2001.

Figure 4.3: Lowest versus Highest Price to Book Stocks - 1927-2001



From Fama/French. This is the difference between the annual return on the lowest PBV stocks (bottom 10%) and the highest PBV stocks (top 10%).

While low price to book stocks have outperformed high price to book stocks, on average, there have been extended periods when they have underperformed as well. In fact, looking at the time periods where low price to book stocks have performed best – early in the 1930s, during the second world war, in the last 1970s and early in the 1990s – you can draw the conclusion that low price to book stocks perform best when the overall market is in the doldrums, reflecting their status as defensive stocks.

A concern in investing is transactions costs. One study examined the question of whether low price to book stocks generate excess returns after transactions costs.³ The authors found that after adjusting for 1.0 percent transaction costs and annual rebalancing, investors would have outperformed the market by 4.82 percent over the 1963-1988 period, if they had invested in securities from small firms with low price to book ratios. They concluded that the optimal time period for rebalancing these portfolios, where the payoff to updating exceeded the transactions costs, was 2 years.

³ Patrick Dennis, Steven B. Perfect, Karl N. Snow, and Kenneth W. Wiles, "The Effects of Rebalancing on Size and Book-to-Market Ratio Portfolio Returns," *Financial Analysts Journal*, May-June 1995.

Evidence from outside the United States

The finding that low price to book stocks earn higher returns than high price to book stocks over extended periods is not unique to the United States. An analysis in 1991 found that the book-to-market ratio had a strong role in explaining the cross-section of average returns on Japanese stocks⁴. Extending the evaluation of price-book value ratios across other international markets, stocks with low price-book value ratios earned excess returns in every market that was examined between 1981 and 1992.⁵ The annualized estimates of the return differential earned by stocks with low price-book value ratios, over the market index, in each of the markets studied is listed in Table 4.1:

Table 4.1: Return Premia for low Price to Book Portfolio by Country

<i>Country</i>	<i>Added Return to low P/BV portfolio</i>
France	3.26%
Germany	1.39%
Switzerland	1.17%
U.K	1.09%
Japan	3.43%
U.S.	1.06%
Europe	1.30%
Global	1.88%

Extending this analysis to emerging markets, a study of Korean stocks uncovered the same relationship between low price to book stocks and high returns.⁶

Thus, a strategy of buying low price to book value stocks seems to hold out much promise. Why don't more investors use it then, you might ask? You will consider some of the possible problems with this strategy in the next section and screens that can be added on to remove these problems.

⁴ Chan, L.K., Y. Hamao, and J. Lakonishok, 1991, *Fundamentals and Stock Returns in Japan*, Journal of Finance. v46. 1739-1789. They concluded that low price to book value stocks in Japan earned a considerable premium over high price to book value stocks.

⁵ Capaul, C., I. Rowley and W.F. Sharpe, 1993, *International Value and Growth Stock Returns*, Financial Analysts Journal, 27-36.

⁶ Sandip Mukherji, Manjeet S. Dhatt, and Yong H. Kim, *A Fundamental Analysis of Korean Stock Returns*, Financial Analysts Journal, May/June 1997.

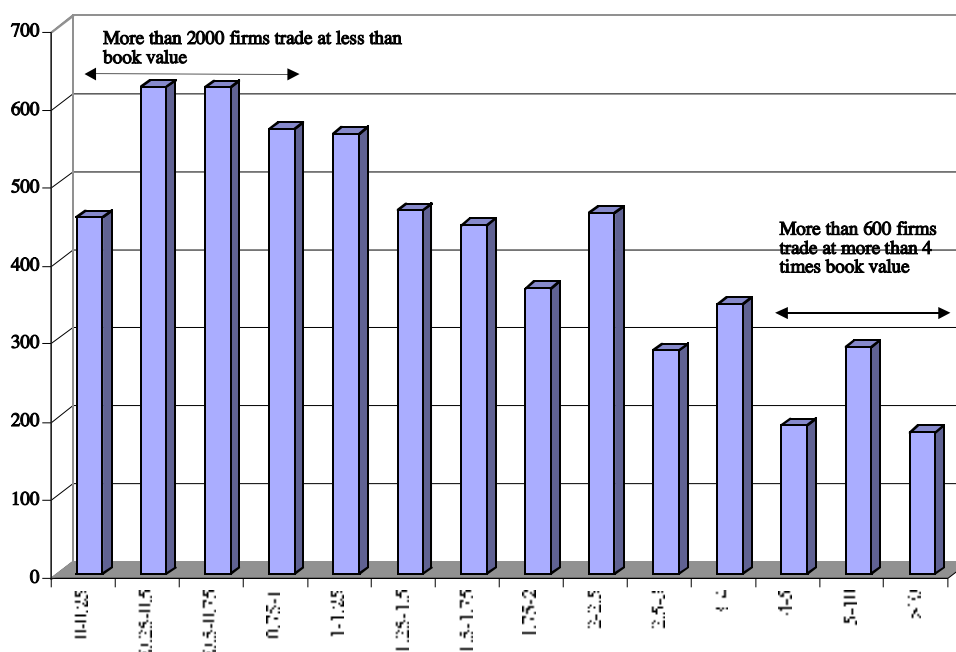
Crunching the Numbers

In this section, you will begin by looking at the distribution of price to book ratios across companies in the United States and then consider differences in price to book ratios across sectors. Finally, you will generate a portfolio of stocks that have the lowest price to book ratios in the market, with the intention of taking a closer look at these stocks in the next section.

Distribution of Price to Book Ratios across the market

To get a sense of what comprises a high, low or average price to book value ratio, the ratio was computed for every firm listed in the United States and Figure 4.4 summarizes the distribution of price to book ratios in October 2002.

Figure 4.4: Price to Book Ratios : U.S. Companies - October 2002



Data from Value Line. The number of firms in the U.S. market that trade in each price to book ratio class is reported.

The average price to book ratio across all U.S. stocks in October 2002 was 3.05, but this number is skewed by the presence of about 600 firms that trade at price to book ratios that exceed 4. A more meaningful measure is the median price to book ratio of 1.30; roughly half of all U.S. firms trade at price to book ratios that are less than this value.

Another point worth making about price to book ratios is that there are firms with negative book values of equity – the result of continuously losing money – where price to

book ratios cannot be computed. In this sample of 7102 firms, there were 1229 firms where this occurred. In contrast, though, 2045 firms had negative earnings and PE ratios could not be computed for them.

Price to Book Ratios by Sector

Price to book ratios vary widely across different sectors of the market. In some sectors, a large percent of stocks trade at below book value. In others, it is not uncommon to see stocks trading at 5 to 10 times book value. To examine differences in price to book ratios across sectors, the average price to book ratio was computed, by sector, for all firms in the United States in October 2002. Table 4.2 lists the ten sectors with the highest and lowest price to book ratios:

Table 4.2: Sectors with the Highest and Lowest Price to Book Ratios

<i>Lowest Price to Book Sectors</i>		<i>Highest Price to Book Sectors</i>	
<i>Industry Name</i>	<i>Price to Book</i>	<i>Industry Name</i>	<i>Price to Book</i>
Power	0.30	Biotechnology	4.27
Investment Co. (Foreign)	0.63	Educational Services	4.50
Maritime	0.74	Trucking/Transp. Leasing	4.51
Entertainment	0.83	Information Services	4.83
Electric Utility (West)	0.86	Pharmacy Services	4.84
Steel (Integrated)	0.87	Drug	5.84
R.E.I.T.	0.89	Medical Supplies	5.85
Foreign Telecom.	0.94	Beverage (Alcoholic)	6.04
Textile	0.98	Beverage (Soft Drink)	6.67
Tire & Rubber	0.99	Household Products	7.99

Why are there such large differences across sectors? The answer lies in the earlier analysis of the fundamentals that determine price to book ratios. In particular, you should expect that companies with high risk, low growth and, most importantly, low returns on equity to trade at low price to book ratios. In table 4.3, the average returns on equity, expected growth rates and market debt to capital ratios for the ten sectors with the highest and lowest price to book ratios are presented.

Table 4.3: Fundamentals of low price to book versus high price to book sectors

	<i>ROE</i>	<i>Beta</i>	<i>Debt to Capital</i>	<i>Expected growth rate</i>
Low PBV Sectors	1.90%	0.93	50.99%	12.28%

High PBV Sectors	13.16%	0.89	10.33%	20.13%
------------------	--------	------	--------	--------

The results conform to expectations. The sectors with the lowest price to book ratios have average returns on equity well below those of the sectors with the highest price to book ratios, are exposed to more risk (especially financial leverage) and have much lower projected growth rates. In other words, there are good reasons why there are large differences in price to book ratios across sectors.

There is one more point that needs to be made about price to book ratios. Since book values are based upon accounting judgments, it should come as no surprise that the highest price to book ratios are in sectors where the most important assets are kept off the books. In particular, the expensing of research and development expenses at biotechnology and drug companies results in an book values being understated at these firms. For beverage and household product companies, the most important asset is often brand name, which is both intangible and not reflected in balance sheets. This, in turn, may explain why these companies report high returns on equity and trade at high price to book ratios.

A Low Price to Book Portfolio

If you picked the stocks that trade at the lowest price to book ratios in the market, what would you portfolio look like? To answer this question, all listed stocks in the United States in October 2002 that had a traded price available for them and positive book values of equity were examined. The price to book ratios were computed for each of the firms in this sample of 5883 firms, The 195 firms that trade at less than 40% of their book value of equity are listed in Table 4.4.

Table 4.4: Stocks with the lowest price to book ratios: October 2002 – United States

[illegible]

The Rest of the Story

There are stocks that trade at low prices, relative to book value, that are not under valued. As noted earlier in the chapter, low price to book ratios can be attributed to high risk or low returns on equity. In this section, you will consider the characteristics of the stocks in the low price to book portfolio and examine potential problems for investment strategies.

High Risk Stocks

Is it possible that the higher returns earned by low price to book stocks can be explained by the fact that they are riskier than average? Some of the studies referenced in the last section attempted to test for this hypothesis by computing returns adjusted for risk – excess returns. The earlier ones did so by estimating the betas and returns after adjusting for differences in betas for low price to book stocks and concluded that these stocks still made excess returns. Thus, stocks with low price to book value ratios earn excess returns relative to high price to book stocks, if you use conventional measures of risk and return, such as betas.

In recent years, other researchers have argued that these conventional measures of risk are imperfect and incomplete. Low price-book value ratios may operate as a measure of risk, since firms with prices well below book value are more likely to be in financial trouble and go out of business. Investors therefore have to evaluate whether the additional returns made by such firms justifies the additional risk taken on by investing in them.

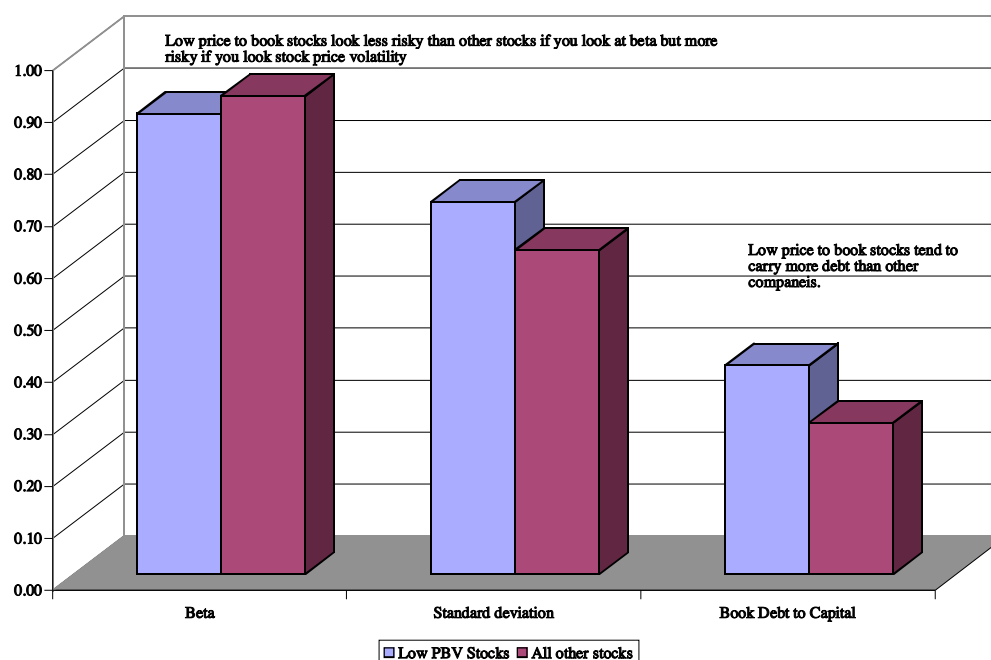
In Figure 4.5, you compare how stocks in the low price to book ratio portfolio that you constructed at the end of the last section measure up against the rest of the market on three measures of risk.

Beta: Beta operates as a standardized measure of how a stock moves with the market. A beta greater than one indicates a stock with above-average risk.

Standard deviation in stock prices over the past 3 years: Unlike beta, which measures how a stock moves with the market, the standard deviation is a measure of stock price volatility.

Ratio of total debt to book value of capital: This is computed by dividing the total book value debt (short term and long term) by the book value of both debt and equity (capital). It is a measure of how much a firm owes and is of importance if you are concerned about distress and bankruptcy.

Figure 4.5: Low PBV versus Other Stocks



Data from Value Line. The averages are reported for the low price to book portfolio and the market on three variables – the beta and standard deviation estimated over 3 years and the ratio of book debt to book capital.

Low price to book stocks do not look excessively risky on a beta basis since the average beta across these stocks is slightly lower than the average beta across all other stocks. They do look more risky than other stocks on the two other measures of risk – stock price volatility and debt to capital ratios.

To screen the low price to book portfolios and remove stocks with excessive risk exposure, you can screen the stocks on all three measures of risk, using different levels of the measure for screens. The number of stocks that you will lose as a result of each of these screens is listed in Table 4.5:

Table 4.5: Stocks Screened for Risk

<i>Screen</i>	<i>Number of firms that fail screen</i>
Beta less than 1	162
Beta less than 1.25	129
Beta less than 1.5	93
Standard deviation less than 60%	169
Standard deviation less than 70%	152

Standard deviation less than 80%	127
Debt ratio less than 50%	61
Debt ratio less than 60%	47
Debt ratio less than 70%	21

A large number of the 195 stocks in the portfolio, are lost when the standard deviation and beta screens are employed. Fewer firms are lost with a debt to capital ratio screen. If you adopt a composite risk measure that includes all three screens - stocks with betas that are less than 1.5, standard deviations in stock prices that are lower than 80% and debt to capital ratios smaller than 70%- the number of stocks in the low price to book portfolio drops to 51 stocks.

Low Priced Stocks

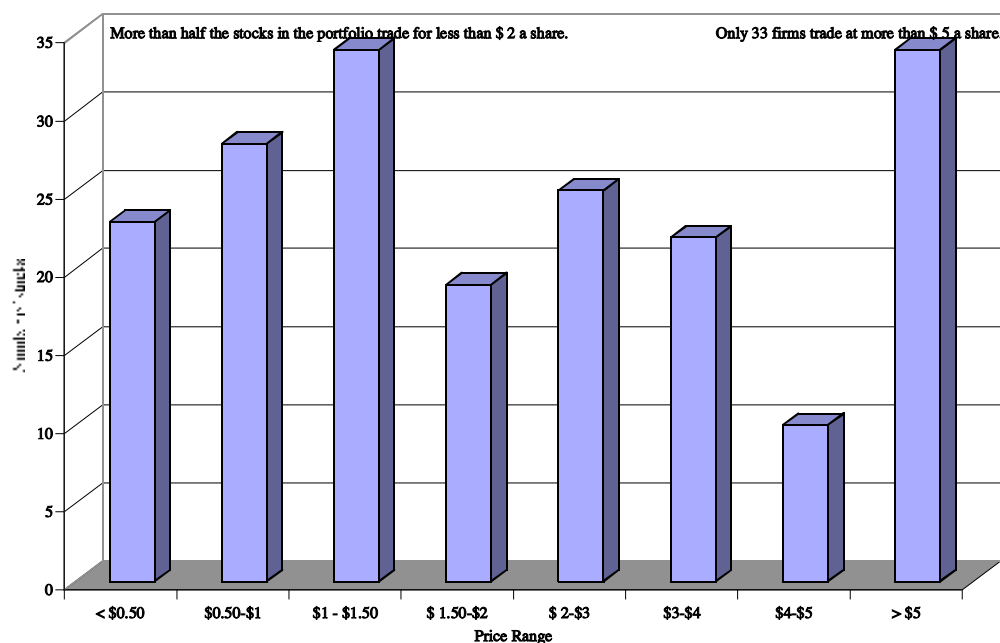
Stocks that trade at low price to book ratios often do so because their stock prices have dropped precipitously. It should come as no surprise that a large number of low price to book ratio stocks trade at very low prices and that many trade at less than a dollar per share. Why would this matter? The transactions costs associated with buying stocks that trade at low prices is often much higher than average or high priced stocks for three reasons:

- a. The brokerage costs associated with buying stocks is generally a fixed cost for even lots (lots of 100 shares) and this cost will increase as a percent of the investment as stock prices drop. If you trade through a broker who charges you \$ 30 for an even lot trade, the brokerage commission would increase from .3% of your investment, if you were buying 100 shares at \$ 100 per share, to 3% if you were buying 100 shares at \$ 10 per share to 30% if you were buying 100 shares at \$ 1 per share. Institutional and individual investors may be able to negotiate a reduction in brokerage costs as they increase the number of shares they buy but the costs will still increase as stock prices drop.
- b. As stock prices drop below a certain level, institutional investors will often abandon a stock. This will reduce the liquidity in the stock and increase the price impact that you have when you trade a stock. You will push up the stock price as you buy and down as you sell, even with small trades.
- c. The spread between the bid price (at which you can sell the stock) and the ask price (at which you can buy) tends to become a larger percent of the stock price as the price drops. The loss of liquidity as investors flee the stock exacerbates the problem.

How big are the transactions costs associated with buying low priced stock? If you consider all three components of the cost – the commissions, the bid-ask spread and the price impact, the – the total costs can easily exceed 25% of your investment for stock trading at less than one dollar and 15% for stock trading at less than two dollars. Since you can spread these costs out over time, the drag on your returns will be smaller the longer your time horizon. An investor with a ten-year horizon, for instance, will be able to spread the cost over ten years, making a 25% up-front cost into a 2.5% cost per year.

The portfolio of low price to book stocks is examined in Figure 4.6, with stocks categorized based upon price levels, and the number of stocks that trade at different price levels is reported:

Figure 4.6: Price per share - Low PBV Portfolio



Data from Value Line. Many institutional investors avoid stocks that trade at less than \$5 per share, because the transactions costs are so high.

Note that 50 stocks, roughly a quarter of the entire portfolio, trade at less than a dollar a share and another 50 stocks trade at between \$1 and \$2. If you invested in this portfolio, you would face substantial transactions costs and it is likely that these costs will wipe out any advantages to this strategy, at least in the short term.

It does make sense to screen the stocks in this portfolio for stock price levels. In Table 4.6, the number of companies that would survive a variety of price screens in the low price to book portfolio are listed.

Table 4.6: Price level Screens and low Price to Book Stocks

<i>Screen</i>	<i>Number of firms that fail screen</i>
Price greater than \$ 10	186
Price greater than \$ 5	160
Price greater than \$ 2	104

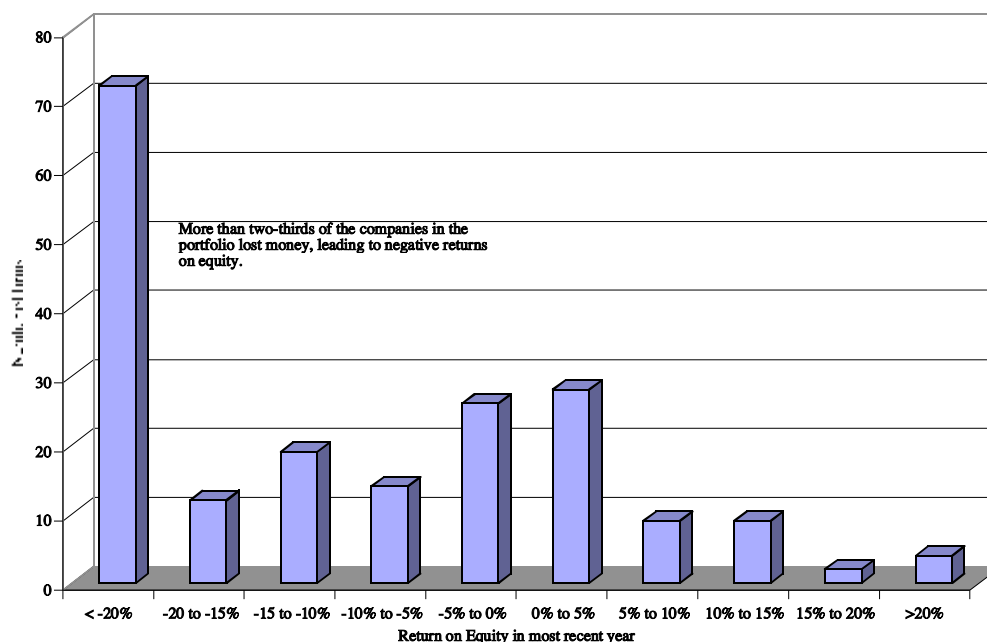
Which of these screens should you adopt? Your screens will have to become stricter (higher stock price minimums) as your time horizon becomes shorter. Assuming a five-year time horizon, you should use at least a \$ 2 minimum price screen. Consolidating this screen with the risk screens in the last section, the portfolio of 195 stocks that you began the analysis with would have dropped to 39 firms.

Poor Projects: Low Return on Equity

The most significant limitation of a strategy of buying low price to book value stocks is that the low book value multiples may be well deserved if companies earn and are expected to continue earning low returns on equity. In fact, the relationship between price to book value ratios and returns on equity was considered earlier in this chapter. Stocks with low returns on equity should trade a low price to book value ratios. In summary, then, as an investor you would want stocks with low price to book ratios that also had reasonable (if not high) returns on equity and limited exposure to risk.

Considering the low price to book portfolio of 195 stocks again, the returns on equity at these companies in the most recent year were examined. Figure 4.7 presents the distribution of returns on equity across these stocks:

Figure 4.7: ROE for low Price to Book Stocks



Data from Value Line. The return on equity for each company is computed by dividing the net income in the most recent four quarters by the book value of equity at the beginning of the year.

It is quite clear that a large number of stocks in this portfolio are coming off a woeful earnings year. In fact, 143 of the 198 firms had negative returns on equity and 71 of these firms had returns on equity that were -20% or worse. If you compare the returns on equity on these firms to the average return on equity (of about 10%) for the entire U.S. market, only 15 firms in the sample did better than average. It is true that one year's return on equity can be misleading, especially when the most recent financial year (2001) was a recession year. You could have looked at average returns on equity over the last five years, but it is unlikely to change the overall conclusion. Stocks with low price to book ratios trade at the levels they do because they have low or negative returns on equity.

Any investor interested in a low price to book strategy would be well served applying a return on equity test to the portfolio. Table 4.7 summarizes the number of stocks that would have made the cut with a number of return on equity screens:

Table 4.7: Return on Equity Screens and low Price to Book Stocks

Screen	Number of firms that fail screen
ROE greater than 0%	143
ROE greater than 5%	171

ROE greater than 10%	180
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If you require a minimum return on equity of 10% in conjunction with the minimum price constraint (\$2) and eliminate firms that are excessively risky (beta >1.5; standard deviation > 80% or debt to capital ratios that exceed 70%), you are left with only 7 firms from the original sample of 195 firms. These firms are listed in Table 4.8:

Table 4.8: Low Price to Book Stocks that meet price level, growth and ROE tests

<i>Company Name</i>	<i>Price</i>	<i>PBV</i>	<i>ROE</i>	<i>Beta</i>	<i>Standard Deviation</i>	<i>Debt/Capital</i>
R.J. Reynolds Tobacco	\$42.20	0.44	7.41%	0.70	44.01%	17.26%
McDermott Int'l	\$3.16	0.29	5.06%	1.25	74.42%	28.69%
Healthsouth Corp.	\$4.72	0.38	8.59%	1.25	67.81%	44.36%
Bally Total Fitness	\$6.92	0.39	13.67%	1.20	48.64%	56.47%
Allegheny Energy	\$5.86	0.20	11.77%	0.80	40.56%	64.05%
Westar Energy	\$10.47	0.39	11.79%	0.50	0.00%	64.87%
MicroFinancial Inc	\$2.09	0.20	14.74%	0.75	46.20%	65.20%

Even among these 7 firms, there are potential red flags. With R.J. Reynolds, it takes the form of potential liabilities in lawsuits associated with tobacco, and with the energy companies, it is the overhang of accounting scandals (at other energy companies such as Enron).

Lessons for Investors

If low price to book value ratio stocks are riskier than average or have lower returns on equity, a more discerning strategy would require you to find mismatches – stocks with low price to book ratios, low risk and high returns on equity. If you used debt ratios as a proxy for default risk and the accounting return on equity in the last year as the proxy for the returns that will be earned on equity in the future, you would expect companies with low price to book value ratios, low default risk and high return on equity to be undervalued.

This proposition was partially tested by screening all NYSE stocks from 1981 to 1990, on the basis of both price-book value ratios and returns on equity at the end of each year and creating two portfolios - an 'undervalued' portfolio with low price-book value ratios (in bottom quartile of all stocks) and high returns on equity (in top quartile of all stocks) and an overvalued portfolio with high price-book value ratios (in top quartile of all stocks) and low returns on equity (in bottom quartile of all stocks)- each year, and then estimating excess returns on each portfolio in the following year. Table 4.9 summarizes returns on these two portfolios for each year from 1982 to 1991.

Table 4.9: Returns on Mismatched Portfolios: Price to Book and ROE

<i>Year</i>	<i>Undervalued Portfolio</i>	<i>Overvalued Portfolio</i>	<i>S & P 500</i>
1982	37.64%	14.64%	40.35%
1983	34.89%	3.07%	0.68%
1984	20.52%	-28.82%	15.43%
1985	46.55%	30.22%	30.97%
1986	33.61%	0.60%	24.44%
1987	-8.80%	-0.56%	-2.69%
1988	23.52%	7.21%	9.67%
1989	37.50%	16.55%	18.11%
1990	-26.71%	-10.98%	6.18%
1991	74.22%	28.76%	31.74%
<i>1982-91</i>	<i>25.60%</i>	<i>10.61%</i>	<i>17.49%</i>

The undervalued portfolios significantly outperformed the overvalued portfolios in eight out of ten years, earning an average of 14.99% more per year between 1982 and 1991, and also had an average return significantly higher than the S&P 500. While default risk was not adjusted for in this test, you could easily add it as a third variable in the screening process.

Going back the entire sample of stocks, a series of screens were constructed to devise a portfolio that meets multiple criteria in October 2002:

Step 1: Only stocks with price to book ratios that were less than 0.80 were considered. This screen is a little looser than the one used to get the 195 stocks in the previous section but it allows you to use tighter screens for risk and return on equity.

Step 2: To control for risk, all firms that have betas greater than 1.5 or debt to capital ratios (in market value terms) that exceeded 70% were eliminated. The market value test was adopted instead of the book value test because it is a stricter test for these stocks where the market value of equity is less than the book value of equity. Screening for stocks with low standard deviations was considered but relatively few firms were eliminated. Hence, this screen was not included.

Step 3: To control for price level, all firms that trade at prices less than \$3 were eliminated. This test again is slightly stricter than the \$2 minimum price level test that was used in the last section, but it will reduce the overall transactions costs of the strategy.

Step 4: To screen for a minimum return on equity, all firms that had returns on equity of less than 8% in the most recent financial year were eliminated. This is looser than the 10% screen used in the prior section.

The resulting portfolio of 53 stocks is included in the appendix.

Conclusion

There are many investors who believe that stocks that trade at a discount on their book values are bargains. Their argument is based upon the belief that the book value of equity represents a more reliable measure of what the equity of the firm is worth or that book value is a measure of liquidation value. The empirical evidence seems to back them since low price to book ratio stocks have historically earned much higher returns than the rest of the market. The peril in this strategy is that book value is an accounting measure and that it may have nothing to do with either the value of the assets that the firm possesses or what it will receive in liquidation from these assets. In particular, accounting decisions on depreciation and whether to capitalize or expense an item can have significant effects on book value as will decisions on buying back stock or taking restructuring charges.

Looking at the fundamentals that determine value, you should expect firms with high risk, poor growth prospects and negative or low returns on equity to trade at low price to book ratios. These firms are not under valued. As an investor, you should therefore be looking for stocks that trade at low prices relative to their book values without the contaminants of high risk or poor returns on projects. In this chapter, you considered how best to accomplish this by screening low price to book stocks for risk exposure and project returns. The resulting portfolio should allow investors much of the upside of a low price to book strategy while protecting them from some of the downside.

Appendix: Undervalued Stocks with Price to Book Screens

<i>Company Name</i>	<i>Ticker Symbol</i>	<i>Price</i>	<i>PBV</i>	<i>ROE</i>	<i>Market Debt Ratio</i>	<i>Beta</i>
Aecon Group Inc	ARE.TO	\$4.59	0.74	20.81%	52.11%	0.55
AirNet Systems Inc	ANS	\$4.70	0.71	9.49%	38.82%	0.85
Amer. Pacific	APFC	\$8.42	0.56	10.95%	41.94%	0.50
Americas Car Mart Inc	CRMT	\$13.68	0.72	15.06%	35.46%	0.80
Anangel-American Shipholdings	ASIPF	\$5.00	0.46	9.92%	63.89%	0.45
Andersons Inc	ANDE	\$12.70	0.68	9.29%	67.81%	0.45
Atl. Tele- Network	ANK	\$14.45	0.74	15.61%	10.38%	0.70
Badger Paper Mills Inc.	BPMI	\$7.24	0.34	18.81%	41.52%	0.75
Building Materials	BMHC	\$14.06	0.62	8.78%	50.39%	0.85
California First Natl Bancorp	CFNB	\$10.75	0.76	11.96%	56.93%	0.75
Carver Bancorp Inc	CNY	\$10.89	0.58	8.60%	0.00%	0.70
Cascades Inc.	CAS.TO	\$15.32	0.74	13.35%	47.47%	0.80
Chromcraft Revington	CRC	\$13.47	0.76	8.73%	0.00%	0.50
CKF Bancorp Inc	CKFB	\$18.61	0.75	8.17%	0.00%	0.55
Classic Bancshares	CLAS	\$24.49	0.75	10.00%	0.00%	0.40
Clean Harbors	CLHB	\$15.80	0.64	12.09%	33.23%	0.55
Cont'l Materials Corp	CUO	\$26.10	0.71	13.49%	26.21%	0.50
Department 56 Inc.	DFS	\$13.51	0.72	10.18%	34.29%	0.95
Everlast Worldwide Inc	EVST	\$4.12	0.53	16.37%	33.10%	1.25
Finlay Enterprises Inc	FNLY	\$11.96	0.69	12.42%	64.52%	0.95
First Cash Inc.	FCFS	\$10.05	0.76	10.81%	31.32%	0.65
Hampshire Group Ltd.	HAMP	\$20.40	0.47	12.58%	22.93%	0.60
Harris Steel	HSG/A.TO	\$23.00	0.69	16.52%	2.27%	0.45
Hawthorne Fin'L Corp.	HTHR	\$28.50	0.78	14.42%	19.82%	0.70
Ilx Inc	ILX	\$6.10	0.55	8.65%	65.50%	0.50
Integramed Amer Inc	INMD	\$5.83	0.41	20.95%	13.58%	1.05
Jos A Bank Clothiers Inc	JOSB	\$22.80	0.72	12.48%	10.83%	0.95
Korea Electric ADR	KEP	\$8.78	0.66	13.60%	66.44%	1.00
Lakes Entertainment Inc.	LACO	\$6.03	0.48	14.86%	12.62%	0.85
Logansport Finl Corp	LOGN	\$17.00	0.77	8.03%	7.44%	0.45
Maxcor Finl Group Inc	MAXF	\$6.09	0.6	30.92%	1.46%	0.90
McGraw-Hill Ryerson Ltd.	MHR.TO	\$32.00	0.67	12.17%	0.00%	0.50

National Sec Group Inc	NSEC	\$14.88	0.68	9.20%	5.30%	0.50
Northwest Pipe Co	NWPX	\$14.46	0.78	9.39%	40.70%	0.50
Novamerican Steel	TONS	\$6.84	0.51	8.04%	59.92%	0.40
Nutraceutical Intl	NUTR	\$9.75	0.49	10.75%	23.32%	0.95
O.I. Corp.	OICO	\$4.06	0.73	12.65%	0.00%	0.40
Ohio Casualty	OCAS	\$13.19	0.64	12.19%	0.00%	0.75
Old Dominion Freight	ODFL	\$25.48	0.65	8.71%	33.98%	0.60
Paulson Capital	PLCC	\$4.80	0.49	21.24%	0.09%	0.95
PC Mall Inc	MALL	\$4.05	0.48	10.19%	9.75%	1.45
Q.E.P. Company Inc	QEPC	\$4.06	0.56	8.94%	65.75%	0.60
Racing Champions	RACN	\$15.50	0.63	12.84%	23.29%	1.35
Reitmans (Canada) Ltd.	RET.TO	\$23.50	0.79	11.94%	0.00%	0.45
Seaboard Corp.	SEB	\$230.00	0.59	10.11%	52.75%	0.65
Sportsmans Guide Inc	SGDE	\$7.17	0.56	16.84%	0.04%	0.95
Stackpole Ltd.	SKD.TO	\$23.05	0.75	9.11%	11.99%	0.75
Stratasys Inc	SSYS	\$8.30	0.66	8.02%	5.66%	0.75
Supreme Inds Inc.	STS	\$4.50	0.72	8.91%	25.87%	0.80
Todd Shipyard Cp Del	TOD	\$14.20	0.67	10.63%	0.00%	0.50
Todhunter Int'l	THT	\$10.70	0.7	10.13%	51.57%	0.40
Tommy Hilfiger	TOM	\$7.28	0.77	8.98%	48.50%	1.30
United Auto Group	UAG	\$13.37	0.67	8.67%	65.84%	1.20

CHAPTER 5

STABLE EARNINGS, BETTER INVESTMENT?

Larry's Riskless Stock Strategy

Larry had always wanted to invest in stocks but had considered them too risky. Having thought long and hard about why stocks were risky, Larry concluded that the culprit was volatility in earnings. He was convinced that he could construct a portfolio of stocks with stable earnings that would deliver high returns without the risk. Without much effort, Larry was able to identify the companies that had reported the least volatility in their earnings over the previous five years in each sector, and he put his money in the stocks.

Even as he bought the stocks, he found that many of them were pricey, trading at high multiples of earnings, suggesting that other investors had come to the same conclusion as Larry about the low risk and high quality of these stocks. Having bought the stocks, he also noticed that stock prices were volatile at some of these companies, even though their earnings were stable. One of the stocks in Larry's portfolio was a gold mining stock and when gold prices jumped because of a crisis in the Middle East, Larry noticed that the company did not report higher earnings, even though other gold mining companies did. When he confronted management about this, they admitted they used gold futures contracts to hedge risk. While these contracts reduced their exposure to downside risk, it also reduced their upside profits. When Larry assessed the end results of his portfolio, he found that he had still been exposed to risk and had relatively little to show for it. Larry's search for a free lunch had come to an end.

Moral: No downside, no upside.

When you invest in a firm, you are exposed to the risk that the firm's underlying business or businesses may go through rough times and that the earnings and stock price of the firm will reflect these downturns. This will be the case even when a firm dominates its business and the business itself is viewed as a good one. To counter this, some firms diversify into multiple businesses, in the process spreading their risk exposure and reducing the likelihood of sharp downturns in earnings. GE provides a good example in the United States and the same can be said for many European firms. In recent years, firms have also diversified geographically to reduce their risk from a downturn in the local economy. In the 1980s, Coca Cola used this strategy to deliver higher earnings even in the midst of stagnant growth in the beverage market in the United States. The argument that diversifying reduces

risk seems incontestable, but does it follow that investing in diversified companies is a good strategy? Some investors seem to think so.

There are some undiversified firms, however, that manage to report stable earnings even in the presence of economic turmoil. This stability sometimes comes from using financial derivatives to hedge risk and in some cases, through accounting choices. Do smoother earnings streams translate into higher values? Does the markets treat firms differently depending upon how they smooth out earnings? These are the questions that will be addressed in this chapter.

The Core of the Story

Equities are riskier than bonds because equity earnings represent what is left over after everyone else has been paid and is thus are more volatile than operating earnings. But what if you could make your equity earnings more stable? The stock in your firm should become safer and potentially a better investment. As the argument goes, if you can make returns on stocks in these companies that are comparable to what you would make on stocks in more firms in more volatile earnings, you could argue that you are getting the best of both worlds - high returns and low risk. There are three elements to this story.

- *Stocks with stable earnings are less risky than stocks with volatile earnings:* For this story to work, you have to accept the idea that volatility in equity earnings is a good measure of equity risk. Luckily for those who use this story, that is not a difficult sell. The alternative measures of risk used in finance such as stock price volatility or betas are all market-based measures. To those investors who do not trust markets – they feel that markets are subject to mood swings and speculation, for instance – earnings stability or the lack thereof seems to provide a more dependable measure of equity risk.
- *Stocks with more stable earnings generate less volatile returns for stockholders:* According to this argument, firms with stable earnings are less likely to roil markets with earnings announcements that surprise investors. The resulting price stability should make the returns on these stocks much more predictable than returns on the rest of the market, especially if the firm takes advantage of its more stable earnings to pay larger dividends every period.
- *Stocks with more stable earnings tend to be underpriced by markets:* This is perhaps the toughest portion of the argument to sustain. One reason given is that companies with stable earnings are often boring companies that don't make the news, and that investors in search of fads and stars are not interested in them. As a

result, stable earnings companies will be underpriced relative to companies with more volatile histories.

Measuring Earnings Stability

There are three broad choices you have when it comes to measuring the stability or volatility of earnings. The first and perhaps most direct measure is to look at the variability in earnings over time. At one extreme, you would have stocks that deliver the same dollar earnings year after years and thus exhibit no volatility in earnings. At the other, you would have companies whose earnings fluctuate wildly from huge profits to large losses, creating high variance in earnings. The problem with this measure is that the variability in dollar earnings will be greater for companies with higher dollar earnings and lower for companies with smaller dollar earnings. To alleviate the bias created when you work with dollar earnings, you could look at the percentage changes in earnings from period to period and look for companies that exhibit low variance in these changes. By doing this, you are shifting away from stable earnings to stable growth rates in earnings. While this measure has statistical appeal, it has a significant problem that it shares with the prior measure. It treats increases in earnings and decreases in earnings equivalently, when it comes to measuring risk.¹ Generally, investors do not consider increases in earnings as risky; it is declines in earnings that worry them. The third measure of earnings stability focuses only on earnings decreases. A firm that reports higher earnings each year, relative to earnings in the prior year, year after year, would be viewed as safe firm. On the other hand, firms that report increases in earnings in some years and decreases in others would be viewed as risky. In fact, you could construct a measure of variance in earnings that looks at only decreases – this is called semi-variance.

Once you have chosen your measure of earnings stability, you have to decide on the earnings number that you will focus on. Here, you have several choices. You can estimate the variance in operating income, which is before interest expenses and non-operating items. While there are obvious benefits to this, it can be a misleading measure of earnings variability, if you are considering the risk associated with buying stock and the firm has substantial debt. When it comes to income to equity investors, you can look at net income, which is the aggregate income left over for equity investors, or you can examine earnings per share, which adjusts for changes in the number of shares outstanding. The advantage of

¹ To illustrate, a firm with percentages changes in earnings of +5%, -5% and +5% over three years will be classified as having more stable earnings than a firm that reports percentage changes in earnings of +5%, +15% and +25% over three years.

the latter is that it allows you to separate firms that grow their net income by issuing new shares and investing those funds and those that grow earnings by reinvesting internal funds. Other things remaining equal, the latter should be more valuable than the former.

The Theory: Earnings Stability and Value

While it may seem intuitive that companies with more stable earnings should be worth more than otherwise similar companies with volatile earnings, the link between earnings stability and value is weak. In this section, you will begin by considering how having a diversified portfolio can color your views about risk and close by examining whether earnings stability can pay off as higher value for a firm.

Diversification and Risk

Investors have always been told that putting your eggs in one basket (or all your money in one stock) is a dangerous thing to do. In fact, the argument for diversification is at the core of modern portfolio theory. As Nobel prizewinner, Harry Markowitz, noted in his path-breaking paper on portfolio risk, if stocks do not move in tandem (and they do not), a portfolio's risk can be lower than the risk of the individual stocks that go into it.

If you are a diversified investor, you are concerned primarily about the value of your portfolio and the variance in its value. Consequently, you measure the risk of an investment by looking at how it will change the overall risk of your portfolio. In fact, most risk and return models in finance are built on the premise that the investors who set prices by trading in large quantities are diversified and that only the risk added on by a stock to a diversified portfolio (called non-diversifiable or market risk) is rewarded by the market. What does this have to do with earnings stability and its payoff (or lack thereof)? You could construct a portfolio of 50 firms each of whose earnings are volatile. If the earnings volatility in these firms comes from factors that are specific to their operations or management, it is entirely possible that the composite earnings to the portfolio will be stable. If this is the case, you as an investor would not discount the value of an individual firm, just because the firm's earnings are volatile. Nor would you pay a premium for a firm, just because its earnings are stable.

So, when will more stable earnings generate higher value for a firm? The first scenario is when the earnings stability translates into lower market risk; in other words, the earnings of the firm serve to stabilize the composite earnings of the portfolio. The second scenario is when investors are not well diversified and assess the risk of firms as stand-alone investments rather than as part of a portfolio.

Stable Earnings, Risk and Value

To make a link between stable earnings and value, consider the simple discounted cash flow model that was used in the last two chapters to assess value. In that model, where dividends grow at a constant rate forever, you can write the value of a stock as:

$$\text{Value per share today} = \frac{\text{Expected Dividend per share next year}}{\text{Cost of Equity} - \text{Expected Growth Rate}}$$

The cost of equity is based upon your assessment of the risk in the equity. For stable earnings to affect value, you would first need to make the risk of the equity a function of earnings stability, with the cost of equity being lower for firms with more stable earnings and higher for firms with volatile earnings. If you follow conventional risk and return models in finance and assume diversified investors, the cost of equity will be higher for firms with more market risk and lower for firms with less. If you adopt these models, you will have to establish that the market risk is higher for firms with more volatile earnings.

Once you link the cost of equity to earnings stability, you can show, other things remaining equal, that firms with more stable earnings for any given level of dividends and growth will be valued more highly. But can you hold other things constant? To have stable earnings, you often have to enter more mature and safer businesses with little or no growth potential. In this case, earnings stability creates a tradeoff between less risk (a lower cost of equity) and lower growth (which lowers the expected growth rate). It is possible that your stock can become less valuable as you make earnings more stable, if the value of the growth you give up exceeds value created by becoming a safer firm.

The trade off becomes even more negative if you give up growth to have more stable earnings but more stable earnings do not reduce market risk. In this case, the growth rate will decline, the cost of equity will remain unchanged and your value will decrease as earnings stability increase.

Looking at the Evidence

There are a number of ways in which firms attempt to make earnings less volatile. Some firms have stable earnings because they are in predictable and safe businesses, with little or no competition. Others seek stable earnings through a strategy of diversifying into multiple businesses, hoping that higher income in some will compensate for lower income in others. In a variation of this theme, firms also diversify geographically, with the intent of balancing higher income from some countries against lower income from others. Still other firms use the wide range of options and futures contracts that are now available to reduce or even eliminate their risk exposure. Finally, there are firms that use accounting devices and choices to smooth out volatile earnings; this phenomenon, called earnings management,

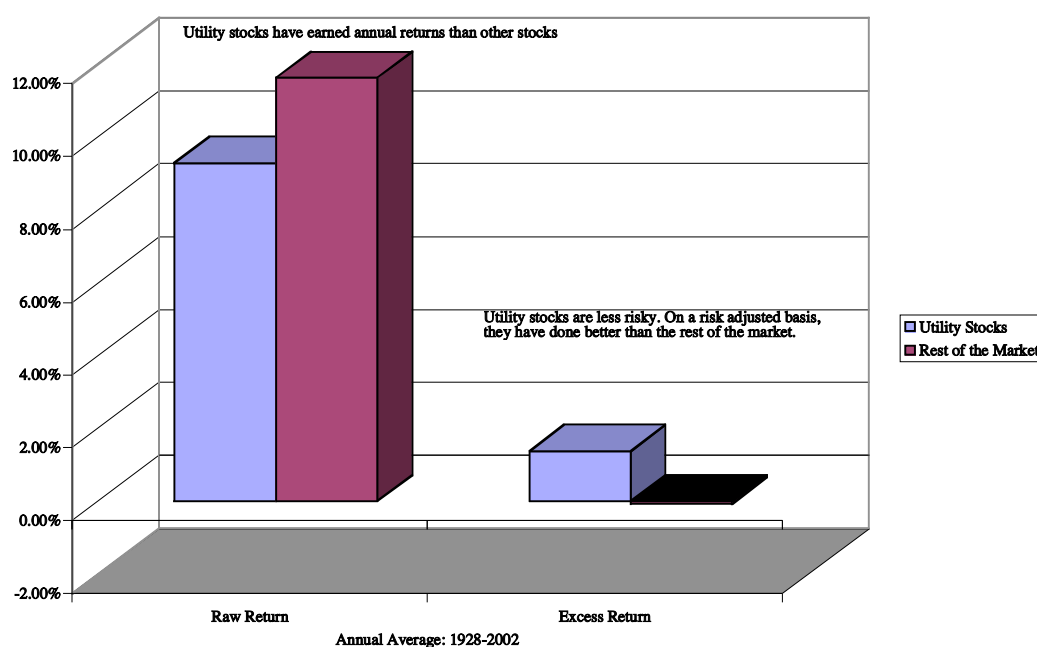
acquired quite a following in the 1990s. The consequences of each of these approaches to reducing earnings volatility in this section for stock prices and returns will be assessed.

Stable Businesses with no competition

For several decades, utility stocks (phone, water and power companies) were prized by risk averse investors for their steady earnings and high dividends. In fact, these firms were able to afford to pay out the high dividends that they did because their earnings were so predictable. The reasons for the stable earnings were not difficult to uncover. These stocks were regulated monopolies that provided basic and necessary services. The fact that their products and services were non-discretionary insulated them from overall economic conditions and the absence of competition gave them secure revenues. In return for the absence of competition, these firms gave up pricing power to the regulatory authorities.

The key question for investors, though, is not whether utility stocks have more stable earnings than other companies, but whether such stable earnings translate into higher stock returns. A simple way of examining this question is to compare the returns earned by utility stocks to returns earned on the overall market. Figure 5.1 contains this comparison:

Figure 5.1: Utility Stocks versus Rest of the Market



Data from Federal Reserve. The risk adjusted returns are computed by comparing the annual return to the expected return given the betas of these stocks.

The average annual returns on utility stocks are lower than the average annual returns on the overall market but this comparison may not be fair to utility stocks. After all, they are less

risky than the rest of the market and the returns they earn should be adjusted for risk. Figure 5.1 also contains a comparison of risk-adjusted returns on utility stocks to the returns on the market. In this comparison, utility stocks perform much better, earning an excess return of about 1.4% a year over the last 50 years. It is worth noting that this result mirrors the findings on high dividend yield stocks (which include a disproportionate number of utility stocks) and many of the caveats about that strategy apply to this one as well. In particular, this strategy is likely to generate higher tax liabilities and will require a long time horizon to pay off.

Diversified Business Mix: The Allure of Conglomerates

Every company, no matter how well run, will be exposed to the risk that the sector it is in can go through hard times. Thus, Intel will be affected by a downturn in the semiconductor business and Microsoft by a decline in the demand for computer software. To insulate against this sector risk, a firm can try to diversify into multiple businesses and become a conglomerate. For the last few decades, strategists have gone back and forth on whether becoming a conglomerate creates or destroys value. In the 1960s and through much of the 1970s, the view was that conglomerates created value, relative to their individual pieces, because you could pool of the strengths of the individual firms to create a more powerful firm. A hidden subtext to many of these arguments was the premise that conglomerates were less risky and more valuable than their individual components, because they were able to diversify away risk. Financial theorists pointed out that the fallacy in this argument by noting that individual investors could have accomplished the same diversification at far lower cost. Later, the argument shifted to one of superior management transferring its skills to poorly managed firms in different businesses, and creating often unnamed synergies.

Researchers have approached this question from a different perspective. They have looked at the question of whether conglomerates trade at a premium or discount to their parts. To make this judgment, they value the pieces of a conglomerate, using the typical multiple at which independent firms in the business trade at. Thus, you could break GE down into nine parts, and value each part based upon what other firms in the business trade at. You can then add up the values of the parts and compare it to the value of the conglomerate. In this comparison, the evidence seems to indicate that conglomerates trade at significant discounts (ranging from 5-10%, depending upon the study) to their piecewise

values.² While one can contest the magnitude of these discounts on estimation grounds – it is difficult to estimate the true earnings of GE Capital, given allocations and other pooled costs – it is clear that some multi-business firms would be worth more as individual businesses. If conglomerate earnings are more stable than the earnings of stand-alone firms, why is there a conglomerate discount? There are at least two reasons. The first is that a conglomerate is often created by one firm paying large premiums over market value to acquire other publicly traded firms. This overpayment drains more value than the stable earnings may create in value. The second is that conglomerates often suffer from a lack of focus and poor management; divisions of conglomerates under perform their stand-alone competition.

While a conglomerate discount may exist, the question of whether investing in conglomerates generates promising returns for investors still has not been addressed. The overall evidence suggests not but there may be a silver lining. If you invest in conglomerates that break up into individual pieces, through divestitures and spin offs, you may be able to capture the increase in value as the conglomerate discount disappears. In other words, you stand to make more money when conglomerates break up than when they are built up.

Global Diversification

An alternative to business diversification (which creates conglomerates) is geographical diversification. By having operations in multiple countries, a firm may be able to offset a decline in business in one country with an increase in another. The net effect should be a reduction in the variability of operating earnings. There is, though, at least one confounding factor at work here that does not apply to business diversification. As your operations spread out over different countries, your earnings will be exposed for foreign currency risk; a U.S. company will find its earnings affected by the strengthening or weakening of the dollar. You can, however, partially protect your earnings from this risk by using futures and options contracts.

Again, there are two basic questions that you need to address in the context of global diversification. The first is whether such diversification results in more stable earnings and the second is whether investing in globally diversified companies generates higher or lower returns. An examination of Swedish firms that diversify globally concluded that

² Lang, Larry H.P., and René M. Stulz, 1994, *Tobin's q, corporate diversification, and firm performance*, Journal of Political Economy 102, 1248–1280.

geographical diversification does increase value, unlike industrial diversification.³ This is consistent with the findings of another study in the United States.⁴ The effect is small, though, and investing in a firm is already globally diversified yields little in terms of excess returns. You would need to invest in companies just before they embark on global diversification to gain any potential benefits.

The Risk Hedgers

A number of external factors, including interest rates, commodity prices and exchange rates, can affect the revenues, earnings and value of a firm. Thus, even the best managed airline may see its profits decline if oil prices go up. In recent years, firms have been able to hedge a significant portion of this risk, using financial instruments and products. In this section, you will consider two questions. The first relates to whether firms should try to manage this risk. The second looks at the payoff to investors to risk management.

Should project risk be managed?

Firms are exposed to a multitude of macroeconomic risks in their investments. Sometimes shifts in interest rates and exchange rates can augment income and sometimes they can reduce it. Thus, a portion of the variation in earnings over time for any firm can be attributed to these risks. The manager can leave the firm exposed to these risks and assume that its stockholders in the firm will be able to diversify away the risk, or the manager can hedge the risk, using a variety of financial instruments.

To evaluate whether a firm should try to manage or hedge its exposure to this risk, you need to consider three factors. The first is the magnitude of the risk and the impact that it can have on the overall firm's earnings and value. For instance, variation in oil prices may be responsible for 30% of the volatility of earnings for an airline but only 5% of the variation in earnings at a steel company. Since large shifts in earnings can cause serious problems for firms (including defaulting on debt and going bankrupt), firms should be more likely to hedge large risks than small ones. The second factor is the extent to which different investments the firm may have in different parts of the world may result in diversification of some or a great portion of the risk. For instance, Coca Cola and Citicorp, with operations in dozens of countries, might find that exchange rate movements in some

³ Pramborg, B., *Derivatives Hedging, Geographical Diversification and Firm Value*, Working Paper, Stockholm University.

⁴ Allayannis and Weston, 2000, *Exchange Rate Hedging: Financial versus Operational Strategies*, American Economic Review.

countries that reduce value may be offset by favorable movements in other countries. If firms such as these hedge risk in each country, they will be doing so unnecessarily. The third factor is the degree to which investors in the firm can diversify away the risk on their own, by holding portfolios that include stocks that are affected both positively and negatively by exchange rate movements. Firms such as the Home Depot and Boeing, which have a base of well diversified investors, may find it cheaper not to hedge risk and to allow it to pass through to their investors, who will diversify it away at far less expense.

In addition, you need to consider the cost of managing risk. Hedging risk exposure is cheaper for some types of risk (exchange rate, interest rate) than for others (political risk) and for shorter periods than for longer ones. Other things remaining equal, the greater the cost of hedging risk, the less likely firms will be to hedge. In summary, then, a small, closely held firm considering a large project (relative to the firm's current size) should try to manage project risk. A firm with a diversified investor base, with operations in multiple countries, should be less inclined to manage project risk.

How do you manage project risk?

Assume now that you are a firm that should be managing project risk and that you are considering the different alternatives available to you to do so. When firms decide to manage risk, they have a variety of choices. They can use futures contracts, forward contracts, and options to manage interest rate, exchange rate, and commodity price risk; and insurance products to manage event risk (such as the eventuality of a revolution). They can also manage risk by choosing the financing for the project wisely.

- The simplest way of hedging some of the risk on a project is to choose financing instruments with cash flows that mirror the cash flows on the project. Thus, WalMart can use a loan denominated in Mexican pesos to finance its retail expansion in Mexico. If the peso depreciates, its assets (the stores in Mexico) will be worth less, but so will its liabilities (the loan), leaving it less affected by the exchange rate movement. Matching financing to the assets can only partially reduce risk, but it is generally a low cost or no cost option for risk management. All firms should therefore try to do this as much as they feasibly can.
- The most widely used products in risk management are futures, forwards, options and swaps. These are generally categorized as derivative products, since they derive their value from an underlying asset that is traded. Today, you can buy futures and options contracts to hedge away commodity price risk, currency risk and interest rate risk, to name just a few.

- The alternative route to risk management is to buy insurance to cover specific event risk. Just as a homeowner buys insurance on his or her house to protect against the eventuality of fire or other damage, companies can buy insurance to protect their assets against possible loss. In fact, it can be argued that, in spite of the attention given to the use of derivatives in risk management, traditional insurance remains the primary vehicle for managing risk. Insurance does not eliminate risk. Rather, it shifts the risk from the firm buying the insurance to the insurance firm selling it but doing so may provide a benefit to both sides, for a number of reasons. First, the insurance company may be able to create a portfolio of risks, thereby gaining diversification benefits that the self-insured firm itself cannot obtain. Second, the insurance company might acquire the expertise to evaluate risk and process claims more efficiently as a consequence of its repeated exposure to that risk. Third, insurance companies might provide other services, such as inspection and safety services, that benefit both sides. While a third party could arguably provide the same service, the insurance company has an incentive to ensure the quality of the service.

The Payoff to Risk Management

Firms can use a variety of products to manage risk, and by doing so, they can reduce the variability in their earnings. But do investors in these firms reap benefits, as a consequence? An evaluation⁵ of firms that use foreign currency derivatives to hedge exchange rate risk concluded that they have both smoother earnings and trade at higher values⁶. A subsequent examination suggests that most of the benefit comes from hedging short-term transaction risk and there seems to be little gained from hedging translation exposure (which also affects earnings).⁷ Another strand of the research looks at why some firms hedge risk more than others and uncover interesting factors. Many firms that use derivatives to manage risk often do so to reduce tax liabilities, maintain required investments and to alleviate the fear of financial distress. At the same time, managerial risk aversion also

⁵ Allyannis and Weston, 2000, *Exchange Rate Hedging: Financial versus Operational Strategies*, American Economic Review.

⁶ To standardize value, the authors looked at the market value as a percent of book value. Companies that hedged foreign currency risk using derivatives traded at higher market values, relative to book value, than companies that did not.

⁷ Pramborg, B., 2002, *Derivatives Hedging, Geographical Diversification and Firm Value*, Working Paper, Stockholm University.

plays a role in whether derivatives get used. Studies indicate that managers are more likely to use derivatives when they hold a larger percent of the outstanding stock in a company.

In summary, the evidence indicates that there is a payoff to managing risk and that firms that manage risk are more highly valued than firms that do not. Two notes of caution are in order, though. The first is that the payoff is a small one and it is unlikely that investors will even notice unless they look closely. The second is that payoff occurs when these firms switch to using the risk management products and not subsequently.

The Earnings Smoothers

Firms have become particularly adept at meeting and beating analyst estimates of earnings each quarter. While beating earnings estimates can be viewed as a positive development, some firms adopt accounting techniques that are questionable to accomplish this objective. When valuing these firms, you have to correct operating income for these accounting manipulations to arrive at the correct operating income.

The Phenomenon of Managed Earnings

In the 1990s, firms like Microsoft and Intel set the pattern for technology firms. In fact, Microsoft beat analyst estimates of earnings in 39 of the 40 quarters during the decade and Intel posted a record almost as impressive. Other technology firms followed in their footsteps in trying to deliver earnings that were higher than analyst estimates by at least a few pennies. The evidence is overwhelming that the phenomenon is spreading. For an unprecedented 18 quarters in a row from 1996 to 2000, more firms beat consensus earnings estimates than missed them.⁸ In another indication of the management of earnings, the gap between the earnings reported by firms to the Internal Revenue Service and that reported to equity investors has been growing over the last decade.

Given that these analyst estimates are expectations, what does this tell you? One possibility is that analysts consistently under estimate earnings and never learn from their mistakes. While this is a possibility, it seems extremely unlikely to persist over an entire decade. The other is that technology firms particularly have far more discretion in how they measure and report earnings and are using this discretion to beat estimates. In particular, the treatment of research expenses as operating expenses gives these firms an advantage when it comes to managing earnings.

Does managing earnings really increase a firm's stock price? It might be possible to beat analysts' estimates quarter after quarter, but are markets as gullible? They are not, and

⁸ These estimates are obtained from I/B/E/S, a service that consolidates earnings estimates from analysts.

the advent of “whispered earnings estimates” is in reaction to the consistent delivery of earnings that are above expectations. What are whispered earnings? Whispered earnings are implicit earnings estimates that firms like Intel and Microsoft have to beat to surprise the market and these estimates are usually a few cents higher than analyst estimates. For instance, on April 10, 1997, Intel reported earnings per share of \$2.10 per share, higher than analyst estimates of \$2.06 per share, but saw its stock price drop 5 points, because the whispered earnings estimate had been \$2.15. In other words, markets had built into expectations the amount by which Intel had beaten earnings estimates historically.

Techniques for Managing Earnings

How do firms manage earnings? One aspect of good earnings management is the care and nurturing of analyst expectations, a practice that Microsoft perfected during the 1990s. Executives at the firm monitored analyst estimates of earnings and stepped in to lower expectations when they believed that the estimates were too high.⁹ There are several other techniques that are used and you will consider some of the most common ones in this section. Not all the techniques are harmful to the firm and some may indeed be considered prudent management.

1. *Planning ahead:* Firms can plan investments and asset sales to keep earnings rising smoothly.
2. *Revenue Recognition:* Firms have some leeway when it comes when revenues have to be recognized. As an example, Microsoft, in 1995, adopted an extremely conservative approach to accounting for revenues from its sale of Windows 95 and chose not to show large chunks of revenues that they were entitled (though not obligated) to show.¹⁰ In fact, the firm had accumulated \$1.1 billion in unearned revenues by the end of 1996 that it could borrow on to supplement earnings in weaker quarter.
3. *Book revenues early:* In an opposite phenomenon, firms sometimes ship products during the final days of a weak quarter to distributors and retailers and record the revenues. Consider the case of MicroStrategy, a technology firm that went public in 1998. In the last two quarters of 1999, the firm reported revenue growth of 20% and 27% respectively, but much of that growth was attributable to large deals announced

⁹ Microsoft preserved its credibility with analysts by also letting them know when their estimates were too low. Firms that are consistently pessimistic in their analyst presentations lose their credibility and consequently their effectiveness in managing earnings.

¹⁰ Firms that bought Windows 95 in 1995 also bought the right to upgrades and support in 1996 and 1997. Microsoft could have shown these as revenues in 1995.

just days before each quarter ended. In a more elaborate variant of this strategy, two technology firms, both of which need to boost revenues, can enter into a transaction swapping revenues.¹¹

4. *Capitalize operating expenses*: Just as with revenue recognition, firms are given some discretion in whether they classify expenses as operating or capital expenses, especially for items like software R&D. AOL's practice of capitalizing and writing off the cost of the CDs and disks it provided with magazines, for instance, allowed it to report positive earnings through much of the late 1990s.
5. *Write offs*: A major restructuring charge can result in lower income in the current period, but it provides two benefits to the firm taking it. Since operating earnings are reported both before and after the restructuring charge, it allows the firm to separate the expense from operations. It also makes beating earnings easier in future quarters. To see how restructuring can boost earnings, consider the case of IBM. By writing off old plants and equipment in the year they are closed, IBM was able to drop depreciation expenses to 5% of revenue in 1996 from an average of 7% in 1990-94. The difference, in 1996 revenue, was \$1.64 billion, or 18% of the company's \$9.02 billion in pretax profit last year. Technology firms have been particularly adept at writing off a large portion of acquisition costs as "in-process R&D" to register increases in earnings in subsequent quarters. Lev and Deng (1997) studied 389 firms that wrote off in-process R&D between 1990 and 1996; these write offs amounted, on average, to 72% of the purchase price on these acquisitions and increased the acquiring firm's earnings 22% in the fourth quarter after the acquisition.¹²
6. *Use reserves*: Firms are allowed to build up reserves for bad debts, product returns and other potential losses. Some firms are conservative in their estimates in good years and use the excess reserves that they have built up during these years to smooth out earnings in other years.
7. *Income from Investments*: Firms with substantial holdings of marketable securities or investments in other firms often have these investments recorded on their books at values well below their market values. Thus, liquidating these investments can

¹¹ Forbes magazine carried an article on March 6, 2000, on MicroStrategy, with this excerpt: "On Oct. 4 MicroStrategy and NCR announced what they described as a \$52.5 million licensing and technology agreement. NCR agreed to pay MicroStrategy \$27.5 million to license its software. MicroStrategy bought an NCR unit that had been a competitor for what was then \$14 million in stock and agreed to pay \$11 million cash for a data warehousing system. MicroStrategy reported \$17.5 million of the licensing money as revenue in the third quarter, which had closed four days earlier.

¹² Only 3 firms wrote off in-process R&D during the prior decade (1980-89).

result in large capital gains, which can boost income in the period. Technology firms such as Intel have used this route to beat earnings estimates.

Is there a payoff to managing earnings?

Firms generally manage earnings because they believe that they will be rewarded by markets for delivering earnings that are smoother and come in consistently above analyst estimates. As evidence, the point to the success of firms like Microsoft and Intel and the brutal punishment meted out, especially at technology firms, for firms that do not deliver expectations. Many financial managers also seem to believe that investors take earnings numbers at face value and work at delivering bottom lines that reflect this belief. This may explain why any attempts by the Financial Accounting Standards Board (FASB) to change the way earnings are measured are fought with vigor, even when the changes make sense. For instance, any attempts by FASB to value the options granted by these firms to their managers at a fair value and charging them against earnings or change the way to mergers are accounted for have been consistently opposed by technology firms. It may also be in the best interests of the managers of firms to manage earnings. Managers know that they are more likely to be fired when earnings drop significantly, relative to prior periods. Furthermore, there are firms where managerial compensation is still built around profit targets and meeting these targets can lead to lucrative bonuses.

Whatever the reason for managed earnings, there are questions that you need to answer. The first is whether firms that manage earnings trade at higher multiples of earnings than otherwise similar firms that do not resort to this practice. A study of the relationship between price to book value ratios and earnings stability concludes that stocks with lower earnings volatility trade at higher values and finds that this is true even when the earnings stability reflects accounting choices rather than operating stability; firms where earnings are stable but cashflows remain volatile continue to trade at higher values.¹³

Crunching the Numbers

In this section, you will begin by looking at the distribution of earnings volatility across the market. Specifically, you will consider what a high earnings volatility firm would look like and contrast it with a firm with stable earnings. The section is concluded by creating a portfolio of stocks that pass the “stable earnings’ test.

¹³ Barnes, R., *Earnings Volatility and Market Valuation*, London Business School, Working Paper.

Earnings Volatility across the Market

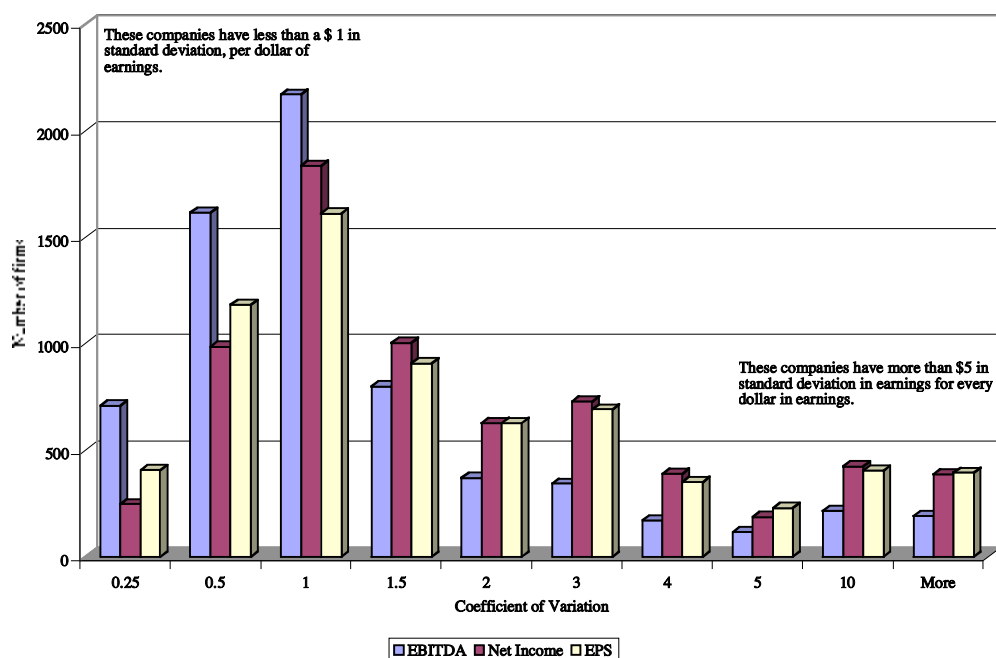
As noted early in the chapter, there is no one accepted measure of earnings volatility. While you could construct statistical measures of volatility – standard deviation or variance in earnings – you would still have to standardize the numbers to make them comparable across firms. Having considered and rejected a number of different approaches to standardization, the coefficient of variation in earnings, estimated by dividing the standard deviation in earnings between 1997 and 2001 by the absolute value of average earnings during that period, was used to measure earnings volatility.

$$\text{Coefficient of variation in earnings} = \frac{\text{Standard Deviation in Earnings}}{\text{Absolute value (Average Earnings over the period)}}$$

To provide an example, consider a firm that had earnings per share of \$ 1.75, \$ 1.00, \$2.25 and \$ 3.00 each year for the last 4 years. The standard deviation across these four values is \$0.84 and the average earning per share is \$ 2.00, resulting in a coefficient of variation of 0.42. You are converting the standard deviation in earnings to a standard deviation per dollar of earnings; this firm has a standard deviation of 42 cents per dollar of earnings. Since the average earnings can be negative over the period, you have to use the absolute value of earnings to get a meaningful number.

Since you need a few years of data for the standard deviation to be meaningful, all active publicly traded firms in the United States with at least 5 years of earnings information available, ending in 2001, were considered as the overall sample. The coefficient of variation in three measures of earnings – earnings before interest, taxes and depreciation (EBITDA), net income and earnings per share – was computed for each firm. Figure 5.2 presents the distribution of values across the market:

Figure 5.2: Coefficient of Variation in Earnings- U.S. Companies in October 2002

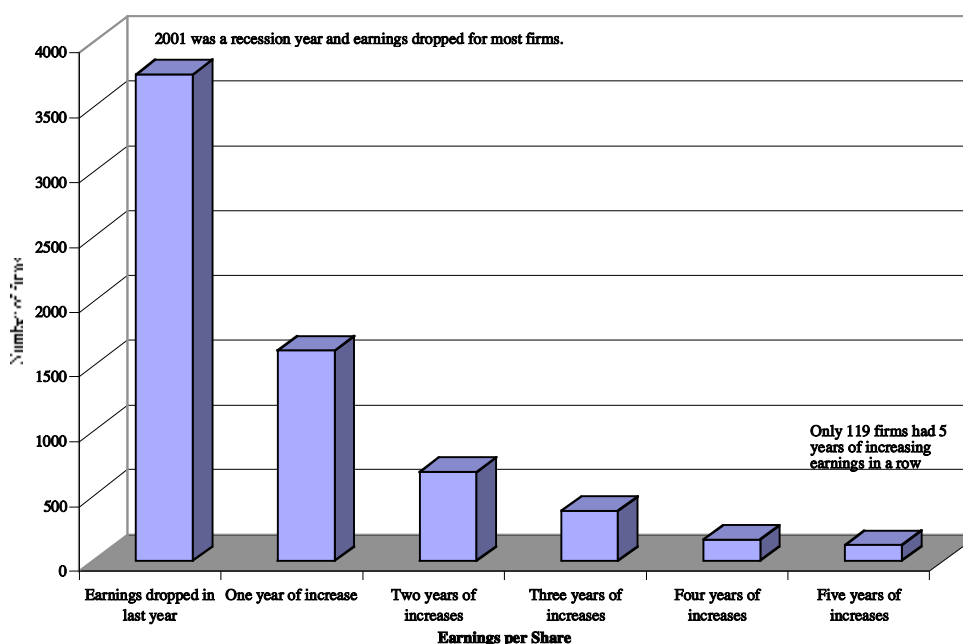


Data from Compustat. The coefficient of variation is obtained by dividing the standard deviation in earnings over five years by the average earnings over the period.

Of the 6700 firms that had earnings data for 5 years or more, about two thirds of all firms have standard deviations of less than a dollar for every dollar of EBITDA and about half of all firms have standard deviations of less than a dollar for every dollar of net income or EPS. In other words, the volatility in equity earnings (net income and earnings per share) is greater than the volatility in operating income or cashflow.

A more intuitive measure of earnings stability is the number of consecutive years of earnings increases; presumably a firm that has reported increasing earnings every year for the last 5 years has more predictable (and safer) earnings than a firm whose earnings have gone up and down over the same period. Figure 5.3 presents the number of firms, with earnings per share available for at least 5 years, that have reported increasing earnings per share every year for the last 5 years, the last 4 years and so on.

Figure 5.3: Consecutive Years of Earnings Increases: U.S. Companies through 2001



Data from Compustat. Looking across all U.S. companies through 2001, this is the number of firms that had reported rising earnings each year over the previous 5 years, 4 years, 3 years etc.

It should come as no surprise, given that the economy slowed in 2001, that the vast majority of firms reported earnings decreases in 2001. Even in this challenging environment, though, 119 firms reported increasing earnings per share each year for the last 5 years and 158 firms reported increasing earnings per share each year for the last 4 years.

A Portfolio of Stable Earnings Companies

To create a portfolio of stable earnings companies, all firms with at least five years of earnings data were examined and the coefficient of variation in earnings per share for each firm was computed. In addition to looking for firms with low coefficients of variation in earnings, two additional tests were imposed. The first was that the firm did not report a loss in any of the last five years. The second was that the earnings per share had increased each year for at least the last two years. Incorporating a cap on the coefficient of variation of 0.25 generated a portfolio of 120 companies. This portfolio is presented in Table 5.1:

Taking a closer look at the portfolio, you can see that financial service companies are disproportionately represented, representing about 25% of the stocks in the portfolio.

The Rest of the Story

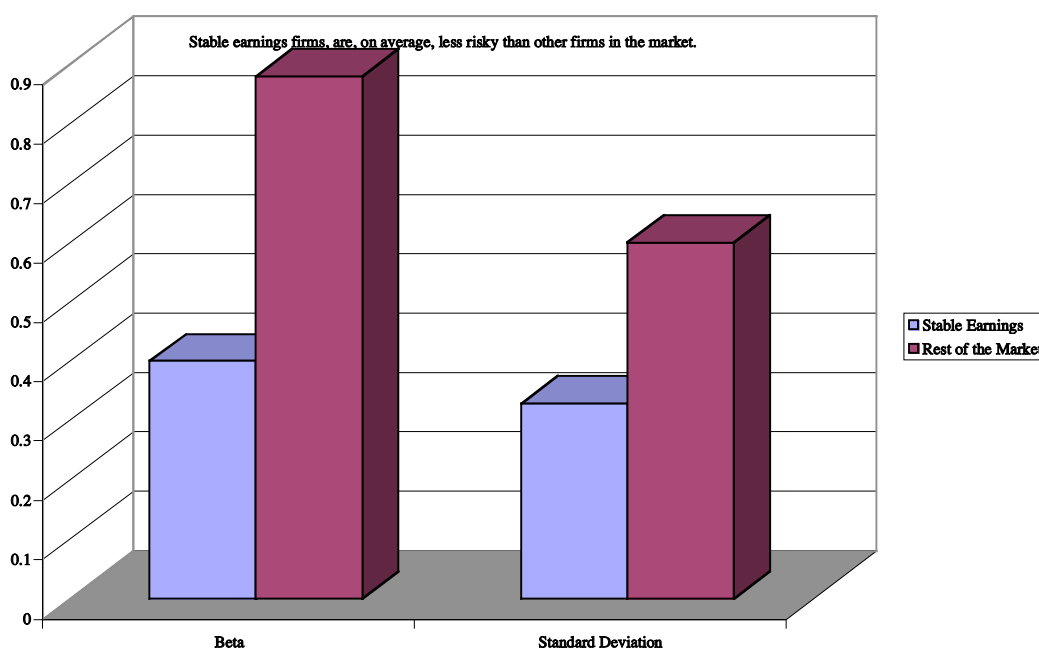
Are stable earnings companies safer investments and, more importantly, better investments than companies with more volatile earnings? To answer these questions, you need to consider four potential weaknesses in a stable earnings company strategy. The first is that companies with stable earnings can still be volatile investments. The second is that companies with stable earnings may offer little growth potential, thus creating a tradeoff between stable earnings and high growth. The third is that companies may use accounting games to make their earnings look more stable. The fourth is that stable earnings companies may be priced right and provide little opportunity for high returns.

Stable Earnings, Risky Investment?

A company with stable earnings may not necessarily represent a stable investment. This is because stock prices are affected by far more than earnings news from the company. Non-earnings news about growth prospects and management changes, macroeconomic news about interest rates and economic growth and information released by competitors in the same business can all cause prices to move even when earnings do not. An investor ultimately measures risk based upon stock price movement and a stock with stable earnings and a volatile price path would still be categorized as risky.

You can look at two stock price based measures of risk for the companies in the stable earnings portfolio – the beta which measures how these stocks move with the market and the standard deviation in stock prices over the previous five years. To provide a contrast, the differences between the averages for these two measures for the stable earnings portfolio and for the market are examined in Figure 5.4

Figure 5.4: Stable Earnings versus Rest of Market - Risk Comparison



Data from Value Line: The average beta and standard deviation, estimated over the previous 3 years, is reported for firms in the stable earnings portfolio and for the rest of the market.

Companies with stable earnings are less volatile and have much lower betas, on average, than other companies in the rest of the market. There are, however, a few firms in the sample of stable earnings companies with high betas (>1.25) and standard deviations that exceed the average for the market (approximately 60%). If you introduce these risk levels as screens and eliminate firms with stable earnings that have betas that exceed 1.25 or betas that exceed 60%, you lose eight firms out of the initial sample of 100 firms and these firms are listed in Table 5.2.

Table 5.2: Stable Earnings Firms that fail Risk Test

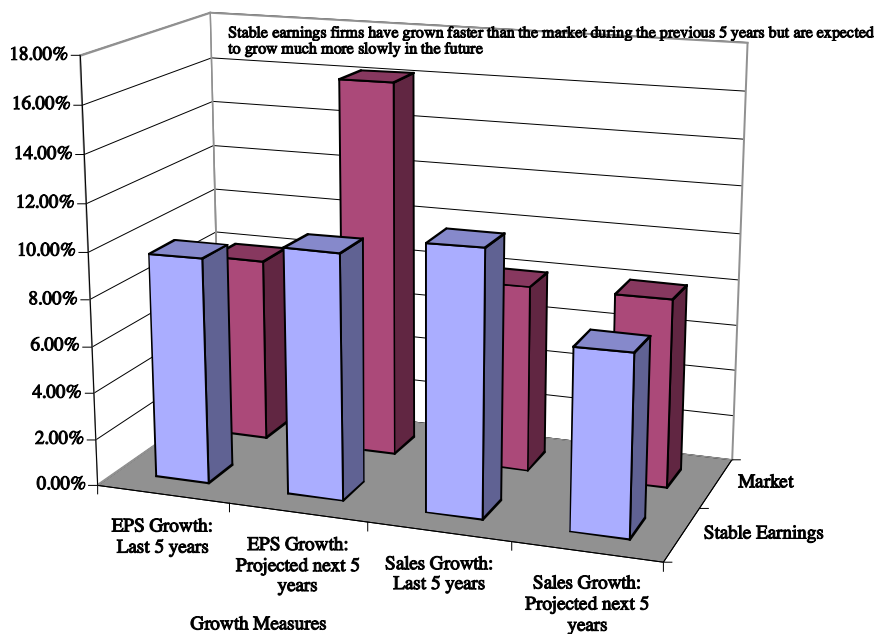
<i>Company Name</i>	<i>Ticker Symbol</i>	<i>Beta 5-Year</i>	<i>Std Dev 5-Year</i>
Northern Trust Corp.	NTRS	1.28	31.4
Home Depot	HD	1.29	36.73
Progen Industries Limited	PGLAF	0.48	62.38
Fresh Choice	SALD	0.62	70.72
SpectRx Inc	SPRX	0.73	70.82
Cambridge Heart Inc	CAMH	1.86	79.28
CopyTele Inc.	COPY	1.48	96.29
Affymetrix Inc.	AFFX	1.84	97.54

Giving up on Growth Opportunities

While it is true that lower risk companies, other things remaining equal, should be worth more than higher risk companies, it is also true that investors often have to trade off lower risk for lower growth. While it would be unrealistic to expect companies that have stable earnings to also have high growth, you should be wary about companies with stable earnings that report no or very low growth. After all, a stock that delivers the same earnings year after year begins to look like a bond and will be priced as such.

How does the portfolio of stable earnings companies compiled at the end of the last section measure up against the rest of the market, when it comes to earnings growth? The average growth in earnings per share and revenues over the last five years and the projected growth in earnings per share (as estimated by analysts) over the next five years for the companies in the portfolio and for the rest of the market were estimated. Figure 5.5 presents the comparison:

Figure 5.5: Stable Earnings Firms versus Market - Growth



Data from Value Line. The projected growth rates in earnings and sales are from analyst projections.

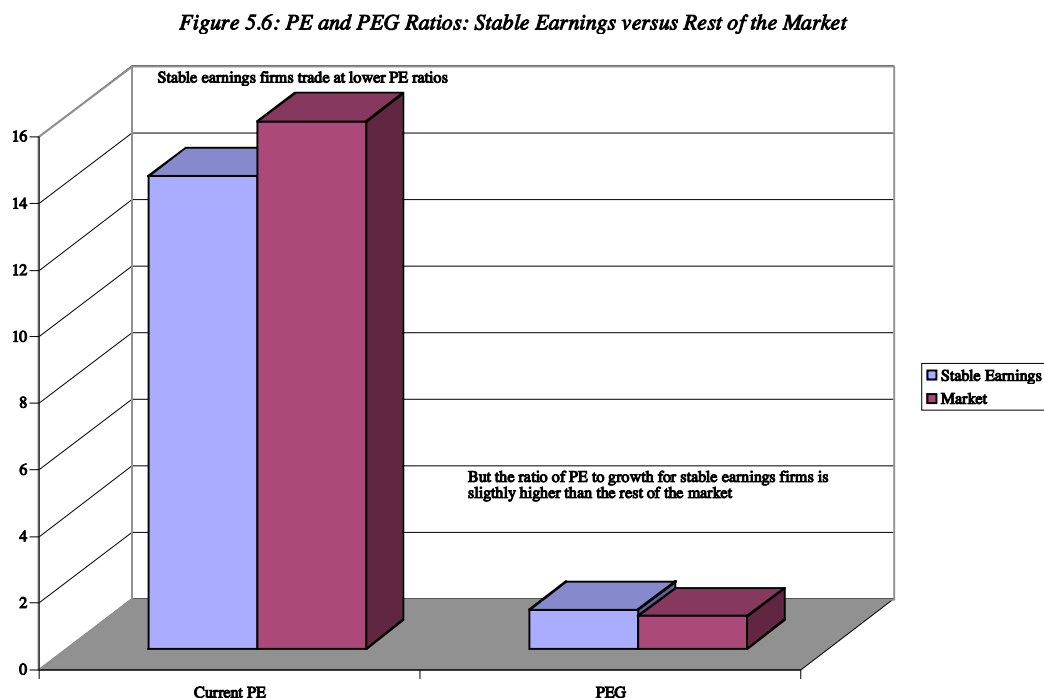
The stable earnings companies have had higher growth in earnings per share and sales than companies in the rest of the market over the previous five years. However, the projected growth over the next five years is lower in both earnings per share and sales for the stable earnings firms, which suggests that investors do bear a cost when they buy stable earnings companies.

To ensure that the stocks in the portfolio register at least some growth, all firms that had projected growth in earnings per share for the next five years of less than 5% were eliminated. With this screen, you lose 38 firms out of the remaining 92 stocks in the portfolio. With a growth rate screen of 10% or higher in earnings per share for the next five years, you would have eliminated another 20 firms from the sample.

Priced Right?

Even if you do find a stock with stable earnings and adequate expected growth, there is no guarantee that this stock will be a good investment, if it is not priced right. In other words, if you pay a high multiple of earnings because of the earnings stability and growth, you may very well neutralize the advantages that drew you to this stock in the first place.

The price earnings ratios, using current earnings, for the stocks in the stable earnings portfolio and also the ratio of the PE to the expected growth rate (called the PEG ratio) were computed. Figure 5.6 compares the average PE and PEG ratio for the stocks in the stable earnings portfolio and the rest of the market.



Data from Value Line. The price earnings ratio is the current price divided by current EPS and the PEG ratio is the ratio of current PE to expected growth in earnings per share over the next 5 years.

The stable earnings firms have slightly lower PE ratios than firms in the rest of the market but trade at higher PEG ratios.

To screen for stocks that may be over priced, all firms that trade at PE ratios that exceed 15 and PEG ratios greater than 1 were eliminated. If used in conjunction with the risk and growth screens outlined in the prior parts of this section, the portfolio shrinks to 8 firms. The firms listed in Table 5.3 pass all of the tests – have growth that exceeds 5%, betas less than 1.25, standard deviations less than 60%, PE ratios less than 15 and PEG ratios less than one.

Table 5.3: Stable Earnings Firms with low risk, growth potential and reasonable pricing

<i>Company Name</i>	<i>Projected Growth Rate</i>	<i>Current PE</i>	<i>PEG ratio</i>	<i>Beta 5-Year</i>	<i>Std Dev 5-Year</i>
Prima Energy Corp.	23.50%	12.25	0.52	0.53	52.37
First BanCorp PR	14.00%	11.43	0.82	0.44	30.37
R & G Financial Corp	12.00%	10.25	0.85	0.48	40.22
Sempra Energy	7.50%	6.84	0.91	0.66	38.16
Dominion Resources	15.50%	14.35	0.93	0.26	24.61
Public Svc Enter.	6.00%	5.62	0.94	0.26	29.94
BOK Financial	15.10%	14.40	0.95	0.53	26.08
Allied Capital Corp.	11.00%	10.71	0.97	0.81	31.45

The firms are primarily utilities and financial service firms.

Earnings Quality

Firms that manage to report stable earnings while having volatile operations may be using accounting ploys to smooth out earnings. If this is the case, the volatility cannot be hidden forever and investors who buy stocks in these firms are likely to wake up to large (and unpleasant surprises) sooner rather than later.

Since it would be impractical to look at each firm's financial statements over time to detect earnings smoothing, a simpler test was used. In addition to the coefficient of variation in earnings, the coefficient of variation in earnings before interest, taxes, depreciation and amortization (EBITDA) was used. Since the latter is a general measure of operating cashflows, you could argue that firms that report stable earnings while reporting much more volatile cashflows are indulging in accounting sleight of hand and should not be treated as stable earnings companies. When applied to this portfolio, there is some evidence that at least some of the stocks in the portfolio are guilty of earnings management. These are the firms that report high standard deviations in EBITDA while also reporting low standard deviations in earnings per share.

Lessons for Investors

Not all firms that report stable earnings are good investments. At the minimum, you need to consider whether these firms offer any growth potential, whether earnings stability translates into price stability and finally, whether the market is pricing these stocks correctly. It is no bargain to buy a stock with stable earnings, low or no growth, substantial price volatility and a high price earnings ratio. Reverting back to the sample of all firms in the United States, the following screens were used:

- The coefficient of variation in earnings per share has to be in the bottom 10% of the overall sample: You can use alternate measures of earnings stability to make this judgment but the argument for using earnings per share rather than net income or operating income were presented earlier in the chapter. You can also add on additional screens such as the requirement that earnings have increased every year for the last few years.
- The beta of the stock has to be less than 1.25 and the standard deviation in stock prices over the last 3 years has to be less than 60%. While it is unlikely that many stable earnings companies will be high risk, there will be some companies where prices remain volatile even as earnings are stable. The risk screens will eliminate these firms.
- The price earnings ratio has to be less than 15. Buying a great company at too high a price is no bargain. Consequently, you need to make sure that you are not paying a premium for earnings stability that you are not willing to pay.
- The expected growth rate in earnings per share over the next 5 years has to be 10% or higher. Earnings growth is always a bonus. A company with stable and growing earnings is clearly a better investment than one with stable and stagnant earnings.

The resulting portfolio of 37 companies, compiled based upon data available in January 2003, is reported in the appendix.

Conclusion

Firms that report a steady and stable stream of positive earnings per share are considered by some investors to be good investments because they are safe. Both the theoretical backing and the empirical evidence for this proposition are weak. Firms that pay a large price (on risk management products or acquisitions) to reduce or eliminate risk that investors could have diversified away at no cost are doing a disservice to their stockholders. Stable earnings notwithstanding, you should not expect these firms to be great investments. In this chapter, this issue was considered by first looking at how best to measure earnings volatility. When you construct a portfolio of stocks that have the most stable earnings, other

problems show up. The first is that some of these firms, notwithstanding their earnings stability, have high stock price volatility and seem risky. The second is that a substantial number of these firms have low or negative growth rates. Finally, many of the remaining firms trade at high PE ratios and do not seem to be bargains at prevailing prices.

Appendix: Stable Earnings, Growth Potential and Low Risk

<i>Company Name</i>	<i>Ticker Symbol</i>	<i>Earnings Predictability</i>	<i>Stock Price</i>	<i>Current EPS</i>	<i>Current P/E Ratio</i>	<i>Beta</i>	<i>Standard Deviation</i>	<i>Expected growth in EPS: Next 5 years</i>
Ametek Inc.	AME	95	\$38.49	\$2.66	14.47	0.90	33.24%	11.50%
Applebee's Int'l	APPB	100	\$23.19	\$1.58	14.68	0.95	40.35%	14.50%
Baxter Int'l Inc.	BAX	100	\$28.00	\$2.06	13.59	0.70	32.56%	14.50%
BB&T Corp.	BBT	95	\$36.99	\$2.89	12.80	1.05	27.01%	12.00%
BJ's Wholesale Club	BJ	95	\$18.30	\$2.09	8.76	0.95	37.65%	12.50%
City National Corp.	CYN	95	\$43.99	\$3.69	11.92	1.00	28.92%	14.50%
Fannie Mae	FNM	100	\$64.33	\$6.52	9.87	0.95	31.71%	11.00%
First Midwest Bancorp	FMBI	100	\$26.71	\$1.91	13.98	0.85	19.98%	11.50%
Fortune Brands	FO	90	\$46.51	\$3.29	14.14	0.90	30.64%	14.50%
Freddie Mac	FRE	100	\$59.05	\$5.31	11.12	1.00	28.76%	12.00%
Gen'l Electric	GE	100	\$24.35	\$1.72	14.16	1.30	30.47%	11.00%
Golden West Fin'l	GDW	90	\$71.81	\$5.98	12.01	0.90	32.21%	16.00%
Horton D.R.	DHI	90	\$17.35	\$3.10	5.60	1.35	42.39%	17.50%
Household Int'l	HI	100	\$27.81	\$4.79	5.81	1.45	36.90%	11.50%
IHOP Corp.	IHP	100	\$24.00	\$2.05	11.71	0.80	30.49%	11.50%
Johnson Controls	JCI	95	\$80.17	\$6.67	12.02	1.00	29.13%	11.00%
Kroger Co.	KR	100	\$15.45	\$1.66	9.31	0.95	31.68%	12.50%
Lincoln Elec Hldgs.	LECO	90	\$23.15	\$1.86	12.45	0.75	37.04%	11.00%
Magna Int'l 'A'	MGA	95	\$56.15	\$6.49	8.65	0.90	27.29%	10.50%
Moog Inc. 'A'	MOG/A	95	\$31.04	\$2.67	11.63	0.80	50.50%	10.50%
North Fork Bancorp	NFB	90	\$33.74	\$2.60	12.98	1.05	26.36%	12.50%
PMI Group	PMI	100	\$30.04	\$3.97	7.57	1.05	39.16%	12.00%
Polaris Inds.	PII	100	\$58.60	\$4.60	12.74	1.00	33.72%	12.00%
Popular Inc.	BPOP	100	\$33.80	\$2.68	12.61	0.85	29.27%	12.00%

Roslyn Bancorp	RSLN	90	\$18.03	\$1.85	9.75	1.00	30.14%	14.50%
Ruby Tuesday	RI	95	\$17.29	\$1.35	12.81	0.80	39.72%	19.00%
Ryan's Family	RYAN	100	\$11.35	\$1.16	9.78	0.70	34.86%	11.50%
Safeway Inc.	SWY	95	\$23.36	\$2.57	9.09	0.80	31.50%	12.00%
SouthTrust Corp.	SOTR	100	\$24.85	\$1.89	13.15	1.00	32.02%	11.00%
TCF Financial	TCB	90	\$43.69	\$3.30	13.24	1.05	28.52%	12.50%
Teleflex Inc.	TFX	95	\$42.89	\$3.13	13.70	0.95	32.89%	10.50%
Universal Forest	UFPI	90	\$21.32	\$2.08	10.25	0.80	34.15%	12.00%
Washington Federal	WFSL	90	\$24.85	\$2.32	10.71	0.90	32.91%	11.50%
WellPoint Health Ntwks	WLP	95	\$71.16	\$4.85	14.67	0.80	29.66%	21.50%
Wendy's Int'l	WEN	95	\$27.07	\$1.95	13.88	0.60	34.37%	14.50%
Zions Bancorp.	ZION	100	\$39.35	\$3.82	10.30	1.05	31.19%	10.50%

CHAPTER 6

 IN SEARCH OF EXCELLENCE! ARE GOOD COMPANIES GOOD INVESTMENTS?

Petra's Search for Excellence

Petra was an avid reader of management strategy books and she was convinced that she had found a way to make money on stocks. After all, the strategy books she read often had case studies about the best managed and the worst managed companies, and the skills (or lack thereof) of the managers in these firms. All she had to do was find the best run companies in the market and put her money in them and the returns would surely follow. In a stroke of luck, Petra found a listing of the 20 best companies in the United States in *Fortune* magazine and it was not long before she had all 20 stocks in her portfolio. As she bought the stocks, Petra did notice three things. One was that the stocks traded at lofty multiples of earnings, relative to their competitors. The second was that these stocks were widely held by mutual funds and pension funds. The third was that equity research analysts expected these companies to continue to deliver high earnings growth in the future, which Petra took as a good sign.

A year later, Petra was disappointed. While most of the companies in her portfolio were still considered well run and well managed, the stocks had not done well. In fact, she found the market reacting negatively to what she considered good news from these companies; an increase in earnings of 25% was often categorized as bad news because investors were expecting a growth rate of 35%. Worse still, two of the companies in her portfolio fell off their pedestals when their managers were revealed as inept rather than superior. On these two stocks, Petra lost a lot of money. Having learned her lesson, Petra has decided to switch her portfolio to the 20 worst companies in the United States for next year.

Motto: When you are considered the best, very good is not good enough.

Buy companies with good products and good management and the investment returns will come. This is a story that you have heard over and over from the most impeccable sources. Warren Buffett, for instance, has been noted as saying that he buys businesses and not stocks. As with other investment stories, this one resonates because it is both intuitive and reasonable. After all, who can argue with the proposition that well managed companies should be worth more than poorly managed firms? As you will see in this chapter, the story becomes much more complicated when you frame the question differently. Will you make more money investing in companies that are viewed as well

managed and good companies or in companies that have poor reputations? In this chapter, you will consider why you may not and what precautions you need to take when putting into practice such a strategy.

The Core of the Story

It seems so intuitive that good companies with superior management should be better investments in the long term that investors often do not need much convincing when they are presented with the argument. Consider some reasons given for buying good companies:

- *History backs you up:* If you look at a portfolio of companies that have done well in the stock market over long periods, you inevitably will find well-managed companies that have succeeded by offering needed products to their customers. Based upon this, there are some investors and investment advisors who argue that you should put your money into companies with good products and management and that you will reap the rewards from this investment over long periods. Better management, you are told, will deliver higher earnings growth over time while finding new investment opportunities for their firms.
- *Well managed companies are less risky:* There is a secondary reason that is offered for buying well-managed companies. If one of the risks you face when investing in companies is that managers may make poor or ill-timed decisions that reduce value, this risk should be lower for companies with good management. The combination of higher growth and lower risk should be a winning one over time.

What is a good company?

It is difficult to get consensus on what makes for a good company since there are so many dimensions on which you can measure excellence. There are many who measure excellence in terms of financial results; good companies earn high returns on their investments and reinvest their funds wisely. There are some who believe that good companies have managers who listen and respond to their stockholders' best interests and that corporate governance is the key. Finally, there are still others who believe that good companies respond not just to stockholders but also to other stakeholders including their customers, employees and society. Thus, you can have companies that make it on one list and not another. For instance, GE delivered superb financial results under Jack Welch but corporate governance was weak at the company. Conversely, Ben and Jerry's was ranked highly for social responsibility in the 1990s but faced financial disaster during the period.

Financial Performance

The simplest and most direct measure of how good a company is and how well it is run by its' management is the firm's financial performance. A well run company should raise capital as cheaply as it can, husband the capital that it has to invest well and find worthwhile investments for the capital. In the process, it should enrich investors in the company.

Most measurements of company quality try to measure its success on all of these dimensions. To evaluate the company's success at raising and investing capital, you can look at the return it earns on invested capital and the cost of that capital. The difference between the two is a measure of the excess return that the firm makes and reflects its competitive advantages. In the 1990s, for instance, a dollar measure of this excess return called economic value added acquired a significant following among both managers and consultants. It was defined as follows:

Economic Value Added = (Return on invested capital – Cost of capital) (Capital Invested)

For instance, the economic value added for a firm with a return on capital of 15%, a cost of capital of 10% and \$ 100 million in capital invested would be:

Economic Value Added = (15% - 10%) (100) = \$ 5 million

A positive economic value added would indicate that a company was earning more than its cost of capital and the magnitude of the value would indicate how much excess value the firm created over the period. The advantage of this measure over a percentage spread is that it rewards firms that earn high excess returns on large capital investments, since it is much more difficult to do,

To estimate the quality of a company's stock as an investment is easier to do. You can measure the return that you would have made from holding the stock over a prior period by adding up the price appreciation and the dividends on the stock, but by itself, this will indicate little since you have to control for market performance during the period. You will have to compare this return to what you would have made investing in the market on a stock of equivalent risk during the same period. This risk adjusted return will indicate whether the stock earned more or less than it should have, given what the market did during the period and the riskiness of the stock.

Corporate Governance

Managers in publicly traded firms often forget that they run these firms for the stockholders and instead view their enterprises as persona fiefdoms. One measure of corporate excellence is the degree to which managers are responsive to stockholders. More responsive firms should be viewed more favorably by markets than less responsive firms.

How can you best measure management responsiveness? Looking at what managers say is close to useless since almost every one of them claims to have to the best interests of stockholders at heart. Nor is it easy to find clues in what managers do. One practical alternative is to look at how the board of directors for a firm is put together and how much power top managers are willing to cede to the board. Some CEOs employ the tactics used by Worldcom and Enron and put together boards of crony directors, with little or no time to oversee what managers are doing. Alternatively, others find groups of well-informed experts who will keep them on their toes and ask them tough questions.

In recent years, Business Week has ranked the boards of directors of large U.S. corporations based upon a number of criteria. They consider the number of directors on the board, the number of insiders (employees or consultants) on the board, whether the CEO is the chairman of the board, whether the board meets independently on a regular basis without the CEO to assess performance and set compensation and whether directors owned sufficient stock in the firm in making their judgments. For example, in 1997, the best ranked corporate board was at Campbell Soup where there was only one insider on the board, compensation decisions were made independent of the CEO and every director was required to buy at least 3000 shares in the firm. The worst ranked board in 1997 was at Disney, where Michael Eisner packed the board with pliant directors, seven of the seventeen directors were insiders and the CEO not only chaired the board but also was part of the committee for setting compensation. The Business Week list of the best and worst boards in 2002, with reasons for the ranking, is provided in Table 6.1 below:

Table 6.1: Rankings of Boards of Directions in 2002: Business Week

<i>Best Boards</i>	<i>Worst Boards</i>
1. <i>3M</i> : Only 1 insider on a nine-person board. No directors with business ties to CEO.	1. <i>Apple</i> : Conflicts of interest as CEO of Apple sits on boards of companies whose CEOs are on Apple's board.
2. <i>Apria Healthcare</i> : Three shareholder activists on board. CEO is not chairman of board.	2. <i>Conseco</i> : Board does not meet without the CEO present.
3. <i>Colgate Palmolive</i> : Directors own substantial stock and do not sit on very many other boards.	3. <i>Dillard's</i> : Seven directors (including CEO's children) have connections to the company.
4. <i>GE</i> : Recently added champion of corporate governance to board. Questions exist about Welch's retirement package.	4. <i>Gap</i> : Substantial self-dealing and interlocking directorships
5. <i>Home Depot</i> : Only 2 insiders on 12-member board. Independent directors meet regularly without management.	4. <i>Kmart</i> : Passive board as company sinks deeper into trouble.

6. <i>Intel</i> : No insiders and has a lead director to act as counter weight to CEO.	5. <i>Qwest</i> : No outside director has experience in Qwest's core business.
7. <i>Johnson & Johnson</i> : Directors own significant amounts of stock and do not sit on more than 4 boards.	6. <i>Tyson Foods</i> : Of 15 board members, ten have ties to the company.
8. <i>Medtronics</i> : Directors hold regular meetings without CEO.	7. <i>Xerox</i> : Too many directors sit on too many boards.
9. <i>Pfizer</i> : No executives sit on audit, nominating or compensation committees.	
10. <i>Texas Instruments</i> : Directors are well invested in company.	

Source: Business Week

In the aftermath of the corporate scandals of 2002, where investors in many companies discovered that errant boards had allowed CEOs to run loose, there are other services that have woken up to the need to assess corporate governance. Undoubtedly, *Business Week* will have competition as these services devise their own measures of corporate governance at companies.

Social Responsibility

While stockholders have a critical stake in the well being of firms, there are other groups that are affected by decisions made by managers; employees and customers, for instance, can be affected adversely by decisions that make stockholders better off and society overall can bear a cost for decisions that enrich stockholders. In fact, proponents of what is called the balanced scorecard have argued that traditional financial analysis gives too much weight to what companies do for their stockholders and too little to what they provide other stakeholders in the firm. A good firm, they argue, does well financially for its stockholders while also generating benefits for employees, customers and society.

If you accept this argument, you are then faced with a practical question of how best to measure these benefits generated for society. While attempts have been made to quantify these benefits, the fact that many of these benefits are qualitative indicates that any measurement of social responsibility will be both qualitative and subjective. In fact, most rankings of firms as corporate citizens are based upon surveys, some of the general public and some of other firms in their peer group. Consider, for instance, how Fortune comes up with its widely publicized list of the ten most admired firms each year. The Hay Group, which is the consultant firm that does the rankings, takes the ten largest companies (by revenues) in 58 industries, including large subsidiaries of foreign-owned companies. They

then ask 10,000 executives, directors, and securities analysts to select the ten companies they admire most in any industry. They also were asked to rate the companies in their own industries based eight criteria: Innovation, financial soundness, employee talent, use of corporate assets, long-term investment value, social responsibility, quality of management, and quality of products and services. To arrive at each company's final score, which determines its ranking in its industry group, they average the scores that survey respondents gave it on these eight criteria. The ten most admired firms of 2002 are listed in Table 6.2 below:

Table 6.2: Most Admired Firms in 2002: Fortune Magazine Survey

<i>Ranking</i>	<i>Company</i>
1	General Electric
2	Southwest Airlines
3	Wal-Mart Stores
4	Microsoft
5	Berkshire Hathaway
6	Home Depot
7	Johnson & Johnson
8	FedEx
9	Citigroup
10	Intel

Source: Fortune Magazine

This list appeared early in 2002. A couple of the firms on the list ran into rough weather during the course of the year – Citigroup for its role in the Enron disaster and GE for some of its financial decisions and Jack Welch's pay packets. It is very likely that one or both firms will not make the 2003 list.

The Theory: Building Quality into Value

Companies with good management and superior products should have higher values than companies without these attributes. There are few who would take exception to this statement. In fact, most valuation approaches incorporate these effects into the inputs and the resulting value reflects these inputs.

Inputs in a DCF valuation

The value of any firm is a function of the cash flows generated by that firm from its existing investments, the expected growth in these cash flows and the cost of coming up

with the capital needed for the investments. There are several places in valuation where you get to reward companies that have good managers and that have made good investment choices:

- ❑ The obvious place to start is with current earnings. Firms with good projects and superior managers should report higher earnings from their existing investments. These higher earnings should increase value.
- ❑ The growth in earnings for a company are a function of how much the company reinvests back into its business and how well it chooses its investments. A firm that is able to find more investment opportunities that generate high returns will have a higher growth rate and a higher value.
- ❑ At some point in time, every company becomes a mature business earning its cost of capital (and nothing more) and growing at rates lower than the economy. A company that makes the right strategic decision and builds up substantial competitive advantages may be able to delay or defer this day of reckoning. The resulting high growth can increase value.
- ❑ Finally, companies with good managers may be able to reduce the cost of funding their assets (the cost of capital) by altering the mix of debt and equity and the type of debt they use.

As an example, companies like Microsoft and Wal-Mart are highly regarded because they seem to be able to continue to grow earnings at healthy rates, notwithstanding their sizes. If you consider this the result of superior management, you may value them on the assumption that they will continue to grow and earn high returns. This, in turn, will increase their values.

By incorporating the effects of good management and products into your valuation, you can avoid one of the biggest dangers in valuing firms, which is that story telling can be used to justify growth rates that are neither reasonable nor sustainable. Thus, you might be told that a dotcom retailer will grow at 60% a year because the online retailing market is huge and that Coca Cola will grow 20% a year because it has a great brand name. While there is some truth in these stories, a consideration of how these qualitative views translate into the quantitative elements of growth is an essential step towards consistent valuations.

Can different investors consider the same qualitative factors and come to different conclusions about the implications for returns on capital, margins, reinvestment rates, and, consequently, growth? Absolutely. In fact, you would expect differences in opinion about the future and different estimates of value. In a good discounted cash flow valuation, the fact that a firm is better managed or has a stronger brand name should be incorporated into the inputs and eventually into value. There is no rationale for adding extra premiums for good management.

EVA and Excess Return Models

In an earlier section, economic value added was defined as a function of three inputs – the return on invested capital, the cost of capital and the capital invested in the firm. To see the connection between economic value added and firm value, consider a simple formulation of firm value in terms of the capital invested in existing assets and the excess returns that you expect to make on these assets and new investments in the future:

$\text{Firm Value} = \text{Capital Invested currently} + \text{Present value of expected EVA in future years}$

The value of a firm is the sum of the capital invested in assets in place and the present value of all future economic value added by the firm.

Consider a firm that has existing assets in which it has capital invested of \$100 million. Assume that this firm expects to generate \$ 15 million in after-tax operating income on this investment and that it faces a cost of capital of 10% in perpetuity. You can estimate the economic value added each year by using these inputs:

$\text{Economic Value Added} = \$ 15 \text{ million} - .10 * \$ 100 \text{ million} = \$ 5 \text{ million}$

The value of the firm can be estimated from these inputs by first estimating the present value of expected economic value added over time. Since the \$ 5 million in EVA is expected to last forever and the cost of capital is 10%, the present value is:

$\text{Present value of economic value added} = 5/.10 = \$ 50 \text{ million}$

Adding this on to the existing capital invested in the firm of \$ 100 million generates a firm value of \$ 150 million.

$\text{Value of firm} = \text{Capital Invested} + \text{PV of Economic Value Added}$
 $= 100 + 50 = \$ 150 \text{ million}$

The calculations become a little more complicated when you expect the firm to take projects in the future that will generate excess returns but the basic structure of the valuation will remain intact. The key insight, though, should be that the way you create value as a firm is by generating returns in excess of your cost of capital. Thus, a firm that grows at a substantial rate by taking investments on which it earns its cost of capital will become a larger but not necessarily a more valuable firm. Another way of presenting these results is in terms of Market Value Added (MVA). The market value added, in this case, is the difference between the firm value of \$150 million and the capital invested of \$100 million, which yields \$50 million. This value will be positive only if the return on capital is greater than the cost of capital and will be an increasing function of the spread between the two numbers. Conversely, the number will be negative if the return on capital is less than the cost of capital.

If you conclude that the ultimate payoff to having better management or a superior product or a more effective board of directors is in a higher and more sustainable excess

return, you can see that the value of a firm with these characteristics will be higher than the value of an otherwise similar firm without these characteristics.

Looking at the Evidence

Given the many and often divergent definitions of a good company, it should not be surprising that the evidence also has to be categorized based upon the definition used. You will begin this section by looking at the evidence on the relationship between the excess returns earned on projects by firms and returns earned on the stocks of these firms. You will follow up by examining whether stronger corporate governance or social consciousness translates into higher stock returns for investors. You will close the section by examining how services that rank companies based upon quality, presumably using a combination of factors, do when it comes to finding good investments.

Project Quality and Stock Returns

Will increasing economic value added cause market value to increase? While an increase in economic value added will generally lead to an increase in firm value, it may or may not increase the stock price. This is because the market has built into its expectations of future economic value added. Thus, a firm like Microsoft is priced on the assumption that it will earn large and increasing economic value added over time. Whether a firm's market value increases or decreases on the announcement of higher economic value added will depend in large part on what the expected change in economic value added was. For mature firms, where the market might have expected no increase or even a decrease in economic value added, the announcement of an increase will be good news and cause the market value to increase. For firms that are perceived to have good growth opportunities and are expected to report an increase in economic value added, the market value will decline if the announced increase in economic value added does not measure up to expectations. This should be no surprise to investors, who have recognized this phenomenon with earnings per share for decades; the earnings announcements of firms are judged against expectations and the earnings surprise is what drives prices.

You would therefore not expect any correlation between the magnitude of the economic value added and stock returns or even between the change in economic value added and stock returns. Stocks that report the biggest increases in economic value added should not necessarily earn high returns for their stockholders.¹ These hypotheses are

¹ Kramer, J.R. and G. Pushner, 1997, *An Empirical Analysis of Economic Value Added as a proxy for Market Value Added*, Financial Practice and Education, v7, 41-49. This study found that differences in operating income (NOPAT) explained differences in market value better than differences in EVA. In 1996,

confirmed by a study done by Richard Bernstein at Merrill Lynch, who examined the relationship between EVA and stock returns.

A portfolio of the 50 firms which had the highest absolute levels of economic value added earned an annual return on 12.9% between February 1987 and February 1997, while the S&P index returned 13.1% a year over the same period.²

A portfolio of the 50 firms that had the highest growth rates in economic value added over the previous year earned an annual return of 12.8% over the same time period.³

In short, investing in companies just because they earned large excess returns last year or increased their excess returns the most in the last year is not a winning strategy.

The Payoff to Corporate Governance

Are companies with stronger boards of directors and corporate governance principles better investments than firms without these characteristics? While the overall evidence on this question is mixed, it is quite clear that stock prices generally go up when firms move to give their stockholders more power.

Consider first the evidence on the link between the board of directors and value. Research indicates that firms with smaller and more activist boards trade at higher values, relative to companies with larger and passive boards. Price and Waterhouse, in an examination of corporate governance across countries, conclude that firms in countries with stronger corporate governance trade at a significant premium over companies in countries without weak governance.⁴ However, there is little supportive evidence for the proposition that buying stock in companies with stronger corporate governance generates higher returns.

The studies that provide the most promising leads for a strategy of investing in companies based upon corporate governance principles are the ones that look at actions that strengthen or weaken corporate governance and the consequence for stock prices. For instance, the stock prices of companies go down when they adopt strict new anti-takeover amendments or change the voting rights on shares to give incumbent managers more voting power, both actions that weaken corporate governance. In contrast, stock prices tend to go up when managers are replaced or when a proxy fight is announced, actions that strengthen corporate governance.

O'Byrne, S.F. (*EVA and Market Value*, Journal of Applied Corporate Finance, v9(1), 116-125), however, found that changes in EVA explained more than 55% of changes in market value over 5-year periods.

² See Quantitative Viewpoint, Merrill Lynch, December 19, 1997.

³ See Quantitative Viewpoint, Merrill Lynch, February 3, 1998.

⁴ Price Waterhouse, *The Opacity Index*, www.pricewaterhouse.com.

The Payoff to Social Responsibility

In the last decade, a large number of funds have been created to cater to investors who want to avoid companies that they deem socially irresponsible. While the definition of social responsibility varies from fund to fund, the managers of these funds all argue that investing in “ethical” companies will generate higher returns in the long term. Arrayed against them are others who believe that constraining your investment choices will result in lower returns, not higher.

In a finding that is bound to leave both groups dissatisfied, an examination of 103 ethical funds in the United States, UK and Germany from 1990 to 2001 found no significant differences in excess returns between these funds and conventional funds.⁵ That is bad news for those investors who had invested in these funds, expecting a economic payoff to social responsibility. It is, however, good news for those investors who invested in these funds for altruistic reasons, fully expecting to pay a price for their social commitment.

Broader Definitions of Good Companies

All of the research quoted above can be faulted for taking too narrow a view of what comprises a good company, i.e., that good companies earn excess returns or that they have more effective boards or are more socially responsible. You can argue that good companies may have all of these characteristics and that using a richer definition of good companies may yield better results for investors.

Investing in Excellent Companies

Tom Peters, in his widely read book on excellent companies a few years ago, outlined some of the qualities that he felt separated excellent companies from the rest of the market.⁶ Without contesting his standards, Michelle Clayman went through the perverse exercise of finding companies that failed on each of the criteria for excellence – a group of unexcellent companies and contrasting them with a group of excellent companies. Table 6.4 below provides summary statistics for both groups:⁷

Table 6.4: Excellent versus Unexcellent Companies – Financial Comparison

	<i>Excellent companies</i>	<i>Unexcellent companies</i>
Growth in assets	10.74%	4.77%

⁵ Bauer, R., K. Koedijk and R. Otten, 2002, *International Evidence on Ethical Mutual Fund Performance and Investment Style*, Working paper, SSRN.

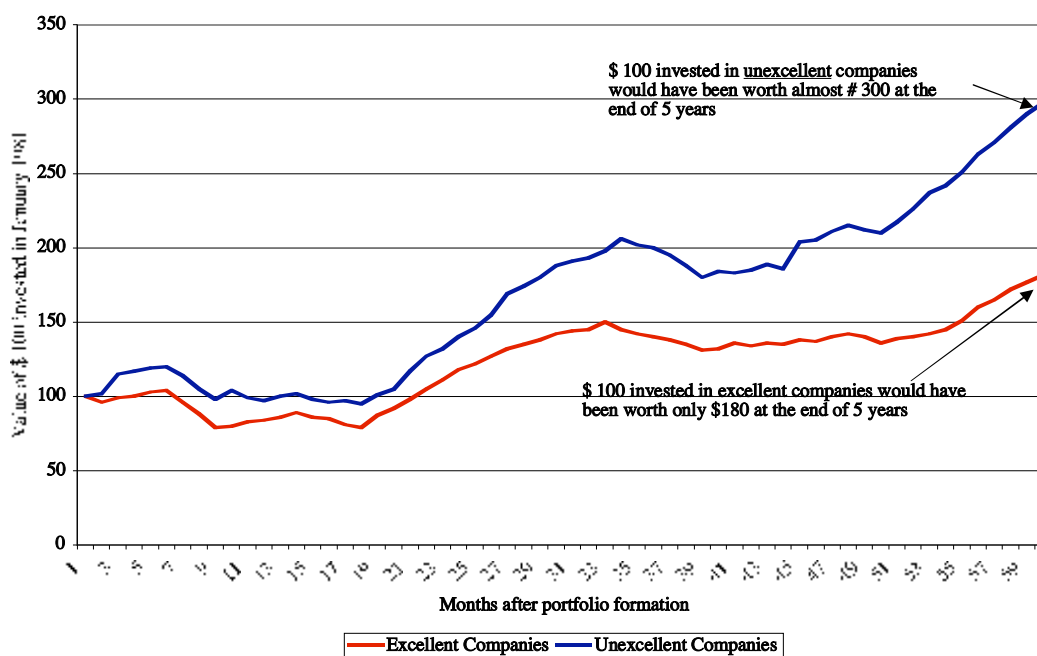
⁶ Peters, T.. 1988, *In Search of Excellence: Lessons form America's Best Run Companies*, Warner Books.

⁷ Clayman, Michelle, *Excellence revisited*, Financial Analysts Journal, May/June 1994, pg 61-66.

Growth in equity	9.37%	3.91%
Return on Capital	10.65%	1.68%
Return on Equity	12.92%	-15.96%
Net Margin	6.40%	1.35%

The excellent companies clearly are in much better financial shape and are more profitable than the unexcellent companies, but are they better investments? Figure 6.1 contrasts the returns would have made on these companies versus the excellent ones.

Figure 6.1: Excellent versus Unexcellent Companies

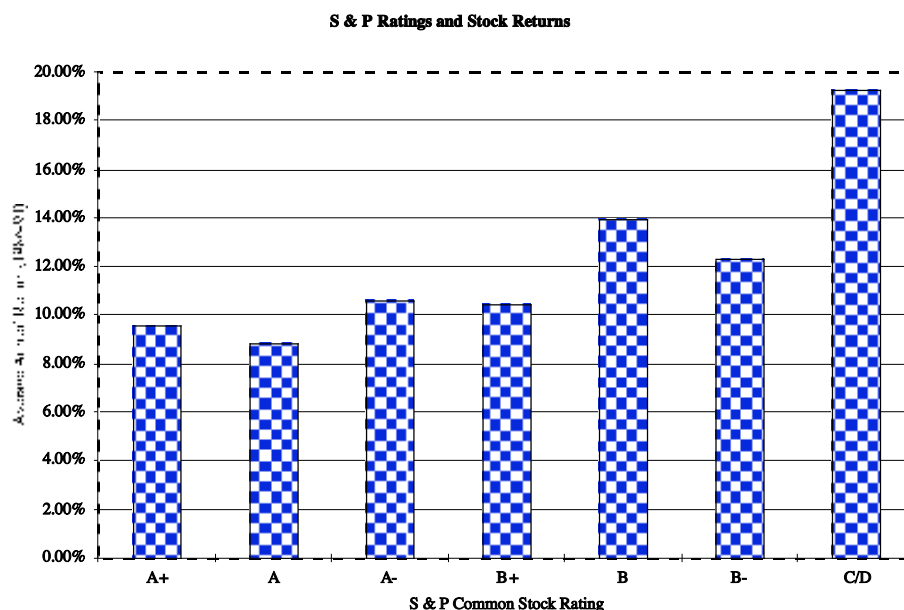


Data from study by Clayman. The figure graphs the value of \$ 100 invested in excellent and unexcellent companies in the 60 months after categorization.

The excellent companies may be in better shape financially but the unexcellent companies would have been much better investments at least over the time period considered (1981-1985). An investment of \$ 100 in unexcellent companies in 1981 would have grown to \$ 298 by 1986, whereas \$ 100 invested in excellent companies would have grown to only \$ 182. While this study did not control for risk, it does present some evidence that good companies are not necessarily good investments, whereas bad companies can sometimes be excellent investments.

S&P Stock Ratings

Standard and Poor's, the ratings agency, assigns quality ratings to stocks that resemble its bond ratings. Thus, an A rated stock, according to S&P, is a higher quality stock than a B+ rated stock, and the ratings are based upon financial measures (such as profitability ratios and financial leverage) as well as S&P's subjective ratings of the company. Figure 6.2 summarizes the returns earned by stocks in different ratings classes; the lowest rated stocks had the highest returns and the highest rated stocks had the lowest returns.



Data on ratings from S&P. The annual returns are reported for stocks in each ratings class.

Again, these findings are not definitive because the higher returns for lower rated companies may well reflect the higher perceived risk in these companies, but it indicates that investors who bought the highest ranked stocks, expecting to earn higher returns, would have been sorely disappointed.

Fortune Rankings

An earlier section described how Fortune magazine comes up with its list of most admired companies each year. In the process, Fortune also reports on the scores (based upon the survey of executives and analysts) for 500 companies. A study looked at the returns that you would have made investing in the 50 most admired and the 50 least admired firms on the Fortune list each year from 1983 to 1995. The results are promising. The most

admired firms earn a return of 125% in the 5 years after the portfolios are created in contrast the return of 80% earned by the least admired firms. These differences persist even after you adjust for risk and the differences in firm characteristics. The most admired portfolio did better than the least admired portfolio in 8 out of the 11 years in the sample.

These results are in contrast to those obtained from looking at excellent and S&P rated companies. One possible explanation is that Fortune does incorporate more qualitative factors in its rankings, through its survey. These qualitative inputs may be the source of the added value. Whatever the explanation, it does offer hope for investors in high quality firm that coming up with a composite measure of quality may provide a payoff in terms of higher returns.

Crunching the Numbers

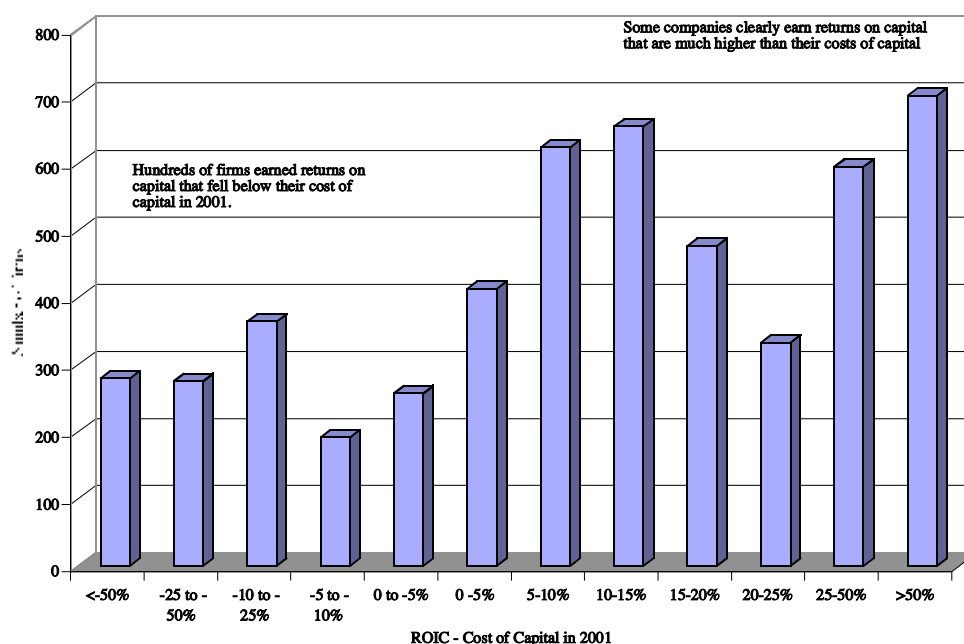
Looking at how companies vary across the market when it comes to excess returns may provide you with insight into what characterizes good companies. You will begin by looking at the distribution of excess returns and economic value added across companies in the United States. You will then consider alternate measures of company quality and the companies that make the list with each measure.

Across the Market

The financial indicator that is most closely tied to the quality of a company's management is excess return earned by the company on its investments, i.e., the difference between the return on invested capital and the cost of raising that capital. Embedded in this measure are all of the aspects of management. The capacity to take good investments is reflected in the return on capital and the optimal use of the different sources of capital should result in a lower cost of capital.

While a return on capital that exceeds the cost of capital will generate a positive excess return, there are firms that earn huge premiums over the cost of capital. At the other extreme, there are also firms that earn very large negative returns on capital while facing high costs of capital. Figure 6.3 presents the distribution of excess returns earned in 2001 by firms in the United States.

Figure 6.3: Excess Return: Distribution across U.S. Stocks - October 2002



Data from Value Line. The excess return is the different between the return on capital (book value) and the cost of capital during the most recent year.

You should note that this represents one year's numbers; the year in this graph is 2001. In this case, the recession during the year affected the earnings (and returns on capital) of many cyclical firms, resulting in negative excess returns for those firms. Notwithstanding this limitation, the divergence between firms in terms of excess returns is striking.

There are also wide differences in excess returns across sectors. Table 6.5 lists the sectors that generated the most positive and the most negative excess returns in 2001.

Table 6.5 Highest and Lowest Excess Return Sectors

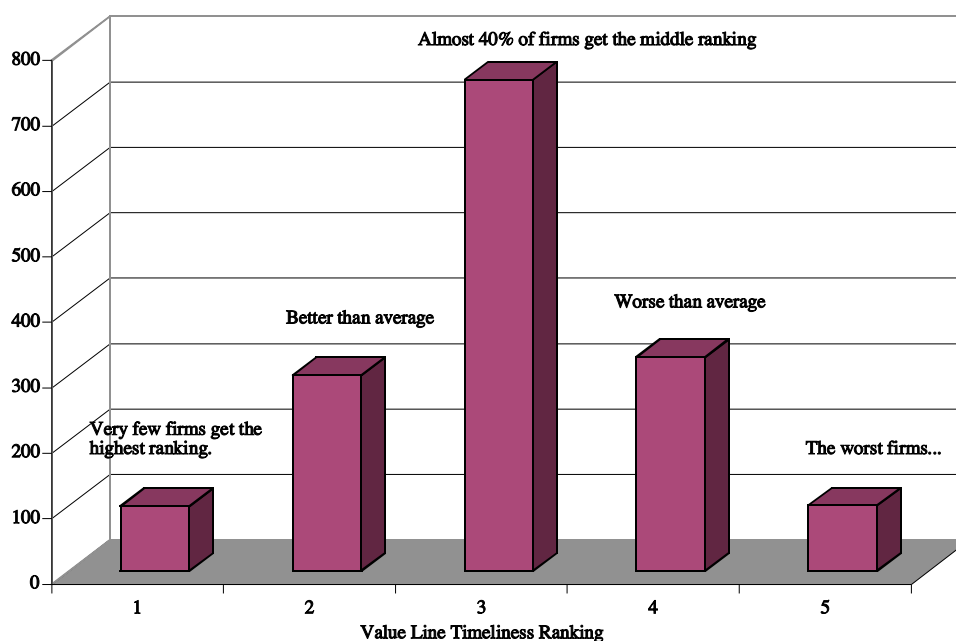
Industry	ROC - Cost of Capital	Industry	ROC - Cost of Capital
Internet	-32.76%	Beverage (Soft Drink)	13.94%
E-Commerce	-17.78%	Home Appliance	14.10%
Wireless Networking	-11.80%	Medical Supplies	15.42%
Entertainment Tech	-8.07%	Electrical Equipment	15.79%
Telecom. Equipment	-8.00%	Semiconductor Cap Eq	16.33%
Insurance (Prop/Casualty)	-7.11%	Beverage (Alcoholic)	17.12%
Investment Co. (Foreign)	-6.85%	Petroleum (Integrated)	17.46%

Healthcare Info Systems	-3.77%	Household Products	19.53%
Entertainment	-2.46%	Petroleum (Producing)	19.92%
Manuf. Housing/Rec Veh	-1.28%	Toiletries/Cosmetics	20.30%
R.E.I.T.	-1.04%	Tobacco	24.47%
Cable TV	-0.63%	Drug	24.93%

A closer look at these sectors provides clues on both the biases and the limitations of the excess return measure. Younger sectors, where firms are early in the life cycle, such as e-commerce and wireless networking tend to have very negative excess returns whereas sectors with significant barriers to entry – brand names with beverages and household products, and patents with drugs, for instance – have the most positive excess returns.

To counterbalance the bias created by looking at excess returns in the most recent year alone, you can look at more qualitative measures of good companies. Many widely publicized ranking measures such as *Fortune*'s most admired companies were considered and rejected because they cover only a limited number of firms; *Fortune*, for example, ranks only 500 companies. In contrast, the measure chosen, which is Value Line's Timeliness Ranking, covers approximately 1700 companies and has been around for more than three decades. In fact, it has been widely researched and has proven to be exceptionally successful as a predictor of stock returns over that period. Value Line analysts considers a variety of factors including profitability, earnings growth and earnings momentum in coming up with its timeliness ranks which go from 1 for the best (most timely) stocks to 5 for the worst (least timely) stocks. Figure 6.4 presents the number of firms in the Value Line sample that made each ranking.

Figure 6.4: Value Line Timeliness Ranks



Data from Value Line: This table represents the number of firms that Value Line categorizes in each timeliness class – 1 is best and 5 is worst.

As you can see from Figure 6.4, roughly half the firms that Value Line follows are categorized as average, having a timeliness ranking of 3. Less than 100 firms are assigned the top ranking of 1 and an equivalent number are assigned the worst ranking.

A Superior Company List

The competing measures of company quality make it difficult to construct a portfolio of good companies. You could go with the companies that generated the highest percentage excess returns last year, but you run the risk of creating a portfolio of tiny companies (with substantial risk); note that it is easier for a small firm to earn a 50% return on capital than it is a larger firm. To counter this, you could go with a portfolio of companies with the highest EVA. Since EVA is a dollar value, this will bias you towards very large companies that generate excess return and there is the danger that you are putting all your weight on financial performance in one year and ignoring qualitative factors.

You can meld the quantitative and the qualitative measures by looking for firms that generated economic value added of at least \$ 50 million in the most recent financial year (which is 2001) while generating excess returns of at least 5% and maintaining a Value Line timeliness ranking of 1. Table 6.6 contains a listing of the companies that met both criteria

and it is the “good company” portfolio that will be put under the microscope in the next section.

Table 6.6: Firms with EVA > \$50 million and Timeliness = 1

<i>Company Name</i>	<i>Excess Return</i>	<i>EVA</i>	<i>Company Name</i>	<i>Excess Return</i>	<i>EVA</i>
Dean Foods	5.55%	\$280.10	eBay Inc.	24.27%	\$178.11
MGM Mirage	7.82%	\$610.87	Charles River	24.67%	\$95.65
Coca-Cola Ent.	8.14%	\$1,197.72	ITT Industries	24.72%	\$550.82
Walter Inds.	9.36%	\$240.59	Reebok Int'l	25.64%	\$171.71
AnnTaylor Stores	10.24%	\$71.85	IDEXX Labs.	26.40%	\$60.88
Nissan ADR	10.73%	\$4,323.34	Winn-Dixie	26.94%	\$373.02
KB Home	11.04%	\$277.90	Moore Corp.	27.10%	\$114.28
Jo-Ann Stores	11.56%	\$50.32	Lincare Holdings	27.41%	\$261.41
PepsiAmericas	11.76%	\$317.98	Education Mgmt.	28.13%	\$81.27
Dentsply Int'l	12.03%	\$157.27	Bio-Rad Labs. 'A'	28.63%	\$124.57
Mandalay Resort	12.22%	\$410.25	Anheuser-Busch	29.97%	\$2,962.04
Moog Inc. 'A'	12.48%	\$74.22	Procter & Gamble	30.04%	\$7,514.72
Constellation Brands	12.92%	\$307.04	Williams-Sonoma	32.92%	\$160.95
Harrah's	13.10%	\$620.06	Fossil Inc.	33.43%	\$69.25
STERIS Corp.	13.22%	\$78.21	First Health	35.85%	\$186.59
SICOR Inc.	14.10%	\$58.11	Patterson Dental	36.28%	\$132.71
Hovnanian	14.23%	\$125.55	Dial Corp.	37.71%	\$187.70
Quanex Corp.	14.53%	\$68.36	Sysco Corp.	38.59%	\$1,218.96
Stericycle Inc.	15.95%	\$79.68	Forest Labs.	40.90%	\$414.55
Watts Inds. 'A'	16.05%	\$58.44	Int'l Game Tech.	42.40%	\$386.49
Alliant Techsys	16.12%	\$228.99	Techne Corp.	43.04%	\$54.87
Schein (Henry)	16.71%	\$125.08	UnitedHealth	43.14%	\$1,581.15
PETsMART Inc.	18.66%	\$98.89	Block (H&R)	45.45%	\$845.93
RARE Hospitality	19.39%	\$50.68	Winnebago	47.29%	\$53.76
Universal Health	19.39%	\$292.11	Varian Medical	47.66%	\$111.58
Career Education	19.90%	\$70.97	Electronic Arts	51.68%	\$227.13
Amer. Axle	20.10%	\$281.46	Ross Stores	53.03%	\$267.33
Ball Corp.	20.12%	\$298.84	Humana Inc.	63.67%	\$334.55
Lennar Corp.	20.52%	\$622.60	CDW Computer	64.59%	\$248.20
Fisher Scientific	21.89%	\$214.53	Chico's FAS	69.61%	\$68.17
Dollar General	22.09%	\$315.66	Right Mgmt.	74.04%	\$51.89

Michaels Stores	22.45%	\$186.67	Polaris Inds.	76.33%	\$165.18
AutoZone Inc.	23.06%	\$480.64	NVR Inc.	79.42%	\$356.98
Tenet Healthcare	23.14%	\$2,197.94	Apollo Group `A'	171.27%	\$183.58
Whole Foods	23.18%	\$153.96			
Fortune Brands	23.18%	\$705.54			
Express Scripts	23.62%	\$236.32			

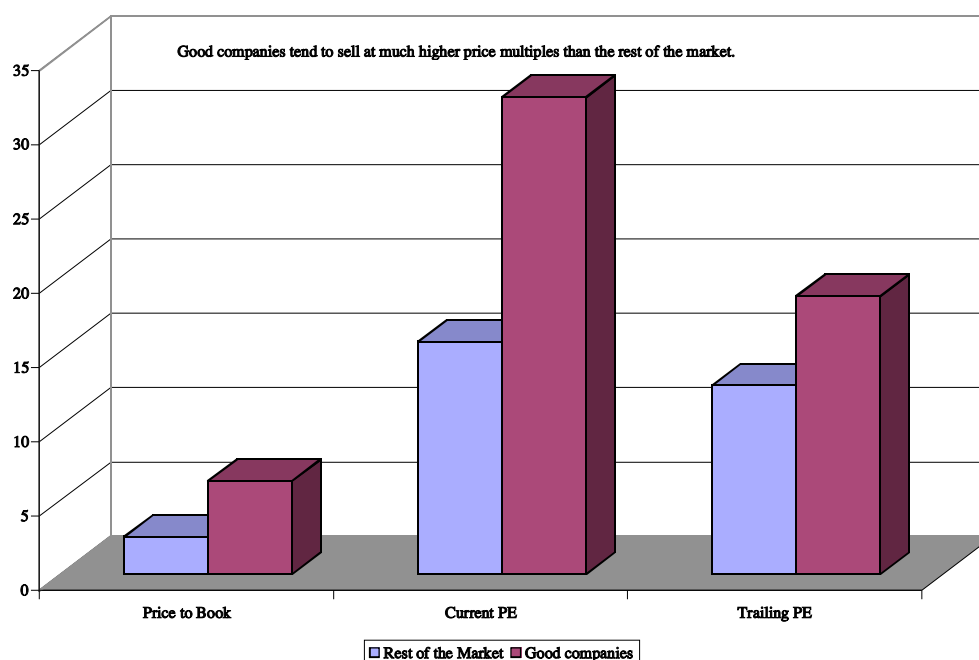
The Rest of the Story

Any investment strategy that is based upon buying well-run, high quality companies and expecting the growth in earnings in these companies to carry prices higher can be dangerous, since the current price of the company may already reflect the quality of the management and the firm. If the current price is right (and the market is paying a premium for quality), the biggest danger is that the firm loses its luster over time, and that the premium paid will dissipate. If the market is exaggerating the value of quality management, this strategy can lead to poor returns even if the firm delivers its expected growth. It is only when markets under estimate the value of firm quality that this strategy stands a chance of making excess returns.

Failing the Expectations Game

A good company can be a bad investment if it is priced too high. The key to understanding this seeming contradiction is to recognize that, while investing, you are playing the expectations game. If investors expect a company to be superbly managed and price it accordingly, they will have to mark it down if the management happens to be only good (and not superb). By looking at the multiple of earnings that you are paying for a company, relative to its peer group, you can measure the expectations that are being built into the price. It is prudent to avoid companies where expectations have been set too high (multiples are high), even if the company is a good company. Figure 6.5 compares the average PE and price to book ratios for the sample of good companies constructed in the last section and the rest of the market.

Figure 6.5: Pricing Differences: Good companies vs Market



Data from Value Line. The average value of each multiple is reported for both the good company portfolio and the rest of the market.

The market is clearly paying a premium for the companies that were categorized as good, with each of the multiples considered. With current PE, good companies trade at about twice the average for the rest of the market and with current price to book ratios, they trade at about two and half times the average for the market. The difference is smaller but still significant with forward PE ratios.

To eliminate companies where the pricing is too rich (high) from your sample of 71 good companies, pricing screens are introduced. If companies with price to book ratios that exceed 4 or current PE ratios of greater than 25 are removed from the sample, the portfolio declines to the 21 companies listed in Table 6.7.

Table 6.7: Good Companies that pass the pricing test

<i>Company Name</i>	<i>Ticker Symbol</i>	<i>Industry</i>	<i>Price to Book</i>	<i>Current PE</i>
KB Home	KBH	HOMEBUILD	1.67	8.51
Lennar Corp.	LEN	HOMEBUILD	2.15	8.54
Amer. Axle	AXL	AUTO-OEM	2.05	9.53
Nissan Motor ADR	NSANY	AUTO	2.59	11.26
Walter Inds.	WLT	DIVERSIF	1.16	11.85

Reebok Int'l	RBK	SHOE	2.06	14.41
Moog Inc. 'A'	MOG/A	DEFENSE	1.75	14.76
Watts Inds. 'A'	WTS	MACHINE	1.83	15.16
Winn-Dixie Stores	WIN	GROCERY	2.79	15.46
Constellation Brands	STZ	ALCO-BEV	2.25	15.56
Hovnanian Enterpr. 'A'	HOV	HOMEBUILD	2.78	16.41
Fossil Inc.	FOSL	RETAILSP	3.07	17.42
RARE Hospitality	RARE	RESTRNT	2.19	19.60
Fortune Brands	FO	DIVERSIF	3.51	19.69
Humana Inc.	HUM	MEDSERV	1.56	20.08
Quanex Corp.	NX	STEEL	2.14	20.78
Harrah's Entertain.	HET	HOTELGAM	3.60	20.99
Mandalay Resort Group	MBG	HOTELGAM	2.13	21.13
SICOR Inc.	SCRI	DRUG	3.53	22.74
Bio-Rad Labs. 'A'	BIO	MEDSUPPL	3.66	23.53
MGM Mirage	MGG	HOTELGAM	2.12	24.02
PepsiAmericas Inc.	PAS	BEVERAGE	1.57	24.94

Imposing tighter screens, a price to book screen of 2.5, for example, will reduce the portfolio even further.

Mean Reversion

Even if good companies are fairly priced, given current performance, you have to consider the possibility that companies change over time. In fact, there is a strong tendency on the part of companies to move towards the average over time. This process is called mean reversion and can be damaging for investors in companies that are considered well above average (as is the case with the portfolio of good companies). If these companies tend towards the average, the pricing is bound to follow.

Screening your portfolio for mean reversion is much more difficult to do than screening for over pricing but there are two potential screens. The first is a pricing screen. You could buy good companies only if they are priced like average companies. In practical terms, this would imply that you would buy good companies only when they trade at price earnings or price to book ratios that are lower than the average PE or price to book ratios for the sectors in which they operate. The second is to buy only companies that have sustained their standing for long periods, with the argument that they must possess strengths that do not dissipate easily. In practical terms, using EVA and Value Line timeliness rankings, you

would buy only companies that have maintained a positive EVA exceeding \$ 50 million each year for the last three years and a Value Line timeliness ranking of one in each of these years.

To screen the portfolio of good companies for mean reversion, companies that traded at current PE ratios that were less than the average current PE for each of their industry groups were eliminated. Table 6.8 applies the industry average current PE test to the sample of 21 firms that made the general pricing screens:

Table 6.8: Industry Average Pricing Tests

<i>Company Name</i>	<i>Ticker Symbol</i>	<i>Industry</i>	<i>Current PE</i>	<i>Industry Average Current PE</i>
KB Home	KBH	HOMEBUILD	8.51	13.84
Lennar Corp.	LEN	HOMEBUILD	8.54	13.84
Amer. Axle	AXL	AUTO-OEM	9.53	16.29
Nissan Motor ADR	NSANY	AUTO	11.26	18.83
Walter Inds.	WLT	DIVERSIF	11.85	16.43
Reebok Int'l	RBK	SHOE	14.41	23.30
Moog Inc. 'A'	MOG/A	DEFENSE	14.76	24.40
Watts Inds. 'A'	WTS	MACHINE	15.16	22.91
Winn-Dixie Stores	WIN	GROCERY	15.46	14.95
Constellation Brands	STZ	ALCO-BEV	15.56	23.97
Hovnanian Enterpr.	HOV	HOMEBUILD	16.41	13.84
Fossil Inc.	FOSL	RETAILSP	17.42	27.63
RARE Hospitality	RARE	RESTRNT	19.60	22.77
Fortune Brands	FO	DIVERSIF	19.69	16.43
Humana Inc.	HUM	MEDSERV	20.08	32.43
Quanex Corp.	NX	STEEL	20.78	52.29
Harrah's Entertain.	HET	HOTELGAM	20.99	23.59
Mandalay Resort Group	MBG	HOTELGAM	21.13	23.59
SICOR Inc.	SCRI	DRUG	22.74	24.20
Bio-Rad Labs. 'A'	BIO	MEDSUPPL	23.53	27.77
MGM Mirage	MGG	HOTELGAM	24.02	23.59
PepsiAmericas Inc.	PAS	BEVERAGE	24.94	34.64

The four firms that fail the test are highlighted, leaving you with a sample of 17 firms that pass both the pricing and the mean reversion tests.

Lessons for Investors

The most succinct description that can be provided for an effective “good company” strategy is that you want to buy good companies that are not being recognized by the market as such. Given that good companies outperform their peers and have superior financial results, how is it possible to keep them a secret? The answer may lie in the market reaction to short term events. First, markets sometimes over react to disappointing news from good companies, even though the news may not have really have significant long term value consequences. For instance, assume that Coca Cola reports lower earnings per share because of foreign currency movements (stronger dollar reduces the value of foreign earnings) while also reporting strong operating results (higher revenues, more units sold etc.). If the market price for Coca Cola drops dramatically, it would represent an over reaction since exchange rate effects tend to smooth out over time. You may be able to buy the stock at a bargain price, before it bounces back up. Second, entire sectors or even markets may be marked down in response to bad news about a few companies in the sector or market. In 2002, for example, all energy companies lost a significant proportion of value because of disastrous happenings at a few of them (Enron and WorldCom). If there are well managed energy companies in the sector, as there inevitably will be, you may be able to get them at a low price when the sector is down. The same can be said for well managed and well run companies in emerging markets that fluctuate as a result of political and economic trouble at the country level. In 2002, for instance, exceptionally well run Brazilian companies lost 40 to 50% of their value because of Brazil’s perceived instability. You could have loaded up your portfolio of these firms and benefited from the bounce back, as investors recognize their mistake.

To create a portfolio of well-managed companies that are trading at bargain prices, a series of screens were imposed:

1. EVA > \$ 50 million in 2001: This screens for companies that meet the financial test of earning excess returns on capital invested in projects.
2. Value Line Timeliness Ranking of 1 or 2 in October 2002: Expanding the ranking to allow firms with a ranking of 2 into the sample is required because only 99 firms have timeliness rankings of 1. This will allow you to make your other screens much more stringent.
3. Price to Book ratio less than 2.5: This eliminates firms that trade at price to book ratios that are substantially higher than the market.
4. PE ratio less than industry average current PE: In addition to finding companies that are reasonably priced, you want to ensure that you have downside protection if your

company starts moving towards the average company in the sector in terms of performance.

The resulting portfolio of 61 companies is provided in the appendix.

Conclusion

Companies that are well managed and well run should be worth more than companies without these characteristics, but that does not necessarily make them good investments. For a company to be a good investment, you need to buy it at the right price. Much of what was said in this chapter is directed towards putting this into practice.

What comprises a good company? Given the many dimensions on which you look at firms – financial performance, corporate governance and social consciousness – it is not surprising that different services and entities have widely divergent lists of quality companies. Assuming that you create a composite measure that weights all these factors and comes up with a list of companies, you will need to follow up and screen these companies for reasonable pricing. You will also need to be aware of the long-term tendency that companies have to move towards the industry average and protect yourself against this phenomenon.

Appendix: Good Companies with reasonable pricing

<i>Company Name</i>	<i>Ticker Symbol</i>	<i>Industry</i>	<i>EVA</i>	<i>Price to Book</i>	<i>Projected Growth Rate</i>	<i>Current PE</i>	<i>Industry average PE</i>
Omnicare Inc.	OCR	DRUGSTOR	\$154.81	1.71	19.50%	21.99	57.31
Quanex Corp.	NX	STEEL	\$68.36	2.14	11.50%	20.78	52.59
Hercules Inc.	HPC	CHEMSPEC	\$332.42	1.48	8.50%	0.00	23.48
Sunrise Asst. Living	SRZ	MEDSERV	\$84.03	1.14	24.00%	9.87	32.42
Korea Electric ADR	KEP	FGNEUTIL	\$5,046.16	0.57	7.50%	4.22	26.29
Cendant Corp.	CD	FINANCL	\$1,225.77	1.67	16.50%	12.12	34.14
Crown Cork	CCK	PACKAGE	\$528.85	1.07	23.00%	0.00	21.44
ShopKo Stores	SKO	RETAIL	\$122.82	0.52	4.00%	12.78	30.08
US Oncology Inc.	USON	MEDSERV	\$125.38	1.15	14.50%	15.62	32.42
PacifiCare Health	PHSY	MEDSERV	\$171.78	0.44	2.50%	15.85	32.42
Owens-Illinois	OI	PACKAGE	\$636.25	1.02	2.00%	4.88	21.44
AutoNation Inc.	AN	RETAIL.SP	\$266.62	0.89	17.00%	11.71	27.63
Burlington Coat	BCF	RETAIL.SP	\$90.90	1.16	8.00%	12.55	27.63
Brown Shoe	BWS	SHOE	\$58.36	1.11	8.00%	10.02	23.30
Russell Corp.	RML	APPAREL	\$91.31	1.02	7.50%	12.75	25.87
Pep Boys	PBY	RETAIL.SP	\$117.30	0.87	20.00%	14.84	27.63
Humana Inc.	HUM	MEDSERV	\$334.55	1.56	21.50%	20.08	32.42
Dress Barn	DBRN	RETAIL.SP	\$63.02	1.88	9.00%	15.78	27.63
Norsk Hydro ADR	NHY	CHEMDIV	\$3,107.41	1.16	9.50%	10.98	22.24

PepsiAmericas Inc.	PAS	BEVERAGE	\$317.98	1.57	19.00%	24.94	34.64
Moog Inc. 'A'	MOG/A	DEFENSE	\$74.22	1.75	10.50%	14.76	24.40
IKON Office Solution	IKN	OFFICE	\$142.25	0.75	15.00%	14.36	23.62
Reebok Int'l	RBK	SHOE	\$171.71	2.06	15.00%	14.41	23.30
Global Imaging Sys.	GISX	OFFICE	\$60.35	2.13	16.00%	14.92	23.62
Jones Apparel Group	JNY	APPAREL	\$340.06	2.14	11.00%	17.30	25.87
Constellation Brands	STZ	ALCO-BEV	\$307.04	2.25	16.00%	15.56	23.97
Paxar Corp.	PXR	ELECTRNX	\$52.04	2.05	12.50%	18.01	26.09
Universal Forest	UFPI	BUILDING	\$64.01	1.32	12.00%	9.23	17.01
Watts Inds. 'A'	WTS	MACHINE	\$58.44	1.83	14.00%	15.16	22.91
Republic Services	RSG	ENVIRONM	\$409.77	1.83	11.00%	15.17	22.75
Dillard's Inc.	DDS	RETAIL	\$178.60	0.56	16.50%	22.79	30.08
Centex Corp.	CTX	HOMEBILD	\$444.67	1.27	17.00%	7.02	13.84
Amer. Axle	AXL	AUTO-OEM	\$281.46	2.05	14.50%	9.53	16.29
Ryland Group	RYL	HOMEBILD	\$226.34	1.75	15.50%	7.21	13.84
Ralcorp Holdings	RAH	FOODPROC	\$77.16	1.59	15.50%	16.04	21.78
Kerzner Int'l Ltd.	KZL	HOTELGAM	\$60.64	0.98	9.00%	17.96	23.59
Pulte Homes	PHM	HOMEBILD	\$282.63	1.13	15.00%	8.49	13.84
KB Home	KBH	HOMEBILD	\$277.90	1.67	15.00%	8.51	13.84
Lennar Corp.	LEN	HOMEBILD	\$622.60	2.15	18.50%	8.54	13.84
Coors (Adolph) 'B'	RKY	ALCO-BEV	\$250.65	2.36	12.50%	18.74	23.97
Pactiv Corp.	PTV	PACKAGE	\$395.74	1.60	17.00%	16.38	21.44

Walter Inds.	WLT	DIVERSIF	\$240.59	1.16	20.00%	11.85	16.43
Int'l Speedway 'A'	ISCA	RECREATE	\$131.27	1.88	15.50%	22.28	26.84
Honda Motor ADR	HMC	AUTO	\$4,514.05	2.02	11.50%	14.33	18.83
Beazer Homes USA	BZH	HOMEBUILD	\$116.93	2.20	17.50%	10.22	13.84
Harris Corp.	HRS	ELECTRNX	\$62.91	1.62	15.00%	22.49	26.09
Horton D.R.	DHI	HOMEBUILD	\$265.60	2.14	17.50%	10.47	13.84
RARE Hospitality	RARE	RESTRNT	\$50.68	2.19	15.50%	19.60	22.77
Exelon Corp.	EXC	UTILEAST	\$4,153.18	1.77	10.50%	9.93	12.99
Manor Care	HCR	MEDSERV	\$323.75	1.94	19.50%	29.60	32.42
BorgWarner	BWA	AUTO-OEM	\$196.46	1.06	8.50%	13.70	16.29
Union Pacific	UNP	RAILROAD	\$2,060.02	1.56	10.00%	15.44	17.93
Mandalay Resort Group	MBG	HOTELGAM	\$410.25	2.13	17.50%	21.13	23.59
Albertson's Inc.	ABS	GROCERY	\$2,200.98	1.72	7.50%	12.81	14.95
Johnson Controls	JCI	AUTO-OEM	\$1,167.42	2.47	11.00%	14.80	16.29
Lear Corp.	LEA	AUTO-OEM	\$759.97	1.53	15.50%	14.87	16.29
Toro Co.	TTC	APPLIANC	\$96.60	2.11	13.00%	14.31	15.58
Teleflex Inc.	TFX	DIVERSIF	\$198.77	2.21	10.50%	15.28	16.43
AnnTaylor Stores	ANN	RETAILSP	\$71.85	1.72	16.00%	26.74	27.63
La-Z-Boy Inc.	LZB	FURNITUR	\$101.50	1.82	10.50%	17.25	17.97
Raytheon Co.	RTN	DEFENSE	\$1,175.28	1.04	21.00%	23.98	24.40

CHAPTER 7

U.S. STEEL, IBM AND MICROSOFT: THE GROWTH STORY!**Imelda's growing portfolio**

Imelda it was a conservative investor whose investment in the Vanguard 500 Index fund grew steadily from year to year, but she was jealous of Martha, her neighbor. Martha's portfolio doubled last year and Martha lorded it over Imelda. "Your portfolio is so boring", she would say, "How do you expect to get rich with it?" Finally, Imelda asked Martha for some advice and Martha told her the secret of her success. She suggested that Imelda buy growth stocks. When Imelda protested that these stocks seemed highly priced, Martha told her not to worry. Earnings would grow next year and the high price earnings ratio would help, not hurt. Finally convinced, Imelda invested her money in the biggest growth companies she could find.

Unfortunately for Imelda, the next year was an awful year for the market, with the market dropping 20%. Imelda's portfolio did much worse. Some of her companies did report higher earnings, but not enough to keep markets happy, and their stock prices tumbled. Other companies went from making money to losing money, as the economy slowed. Imelda lost more than half her portfolio and her only consolation was that Martha did even worse. Chastened, Imelda sold her growth stocks and put her money back into the index fund.

Moral: Growth often comes with a hefty price tag.

Growth stocks are exciting and investors who seek to make extraordinary returns are drawn to them for that reason. If you succeed at picking the right growth companies to buy, your payoffs can be huge. An investor who bought Microsoft and Cisco when they were small growth companies would have seen her investment grow fifty-fold over a decade. Does it follow then that a strategy of investing in stocks with high growth rates will deliver high returns? As you will see in this chapter, succeeding at growth investing is very difficult to do for several reasons. The first is that growth can often be a mirage, since very few growth companies consistently deliver growth. The second is that not all growth is created equal; while some growth is value creating, some growth is value destroying. Finally, even the most attractive growth in the world may not be worth it if you pay too much for it.

The Core of the Story

The sales pitch for growth stocks is easiest to make in buoyant markets when investors believe that growth is not only likely but also inevitable. In such optimistic times,

investors are willing to listen to growth stories and there are at least two themes they will hear:

- *If you want big payoffs, buy growth stocks:* If you want cash flows today, buy bonds. The allure of equity is that companies can grow over time, doubling or tripling revenues and earnings. While you may not receive an immediate payoff in the form of dividends from such growth, you will share in the success as the value of your stockholding increases. For the high returns that can make your small portfolio into a large one and you from a poor to a wealthy individual, you should be buying growth companies.
- *If you buy the right growth companies, there is no additional risk:* Anticipating your concerns that growth companies are riskier than mature companies, proponents of growth stocks will argue that there is no additional risk if you pick the right growth companies to put your money in. After all, there are companies like Coca Cola, Microsoft and WalMart that seem to have found the key to delivering consistent growth. If you can find common patterns or themes across these companies, you can look for them in the younger growth companies of today.
- *Buying growth stocks is more tax efficient:* Historically, price appreciation has been taxed at much lower rates than dividends. Since the bulk of the returns on high growth stocks take the form of price appreciation, not only can you delay paying until you sell your stock taxes but when you do, you will pay less.

If you are not risk averse and seek high returns, you will be drawn to growth stocks as investments, in the hope of hitting the equivalent of a jackpot in your portfolio. A more moderate version of this story works for those who worry about paying too much up front for growth stocks. If you buy growth stocks at a reasonable price, what you receive as value from the higher growth will more than cover what you paid for the stock. This strategy, often titled GARP (Growth at a reasonable price) underlies the strategies of many growth investing icons like Peter Lynch.

The Theory: Growth and Value

A company that is expected to have high growth in earnings in the future should generally be worth more than a firm without this growth. Holding everything else constant, increasing growth increases value. But everything else cannot be held constant. To grow faster, you generally have to reinvest more back into your business and it is this requirement that creates a distinction between what can be termed “value creating growth” and “value destroying growth”. Distinguishing between the two is central to a good growth investing strategy.

Growth in a Discounted Cashflow Valuation

While no one will contest the proposition that growth is valuable, it is possible to pay too much for growth. In this section, you will first look at the fundamental determinants of growth and then extend this discussion to look at the value of growth in both a discounted cashflow model and in relative valuation.

Determinants of Growth

When you are attempting to estimate the expected growth in earnings for a firm, you tend to look at the firm's past history (historical growth in earnings) and what analysts following the firm estimate for expected growth in earnings in the future. With both historical and analyst estimates, growth is a variable that affects value but is divorced from the operating details of the firm. The soundest way of incorporating growth into value is to make it a function of how much a firm reinvests for future growth and the quality of its reinvestment. As noted in the last chapter, the expected growth in operating earnings for a firm is the product of the reinvestment rate (the proportion of after-tax operating income that is reinvested back into new assets, long term as well as short term) and the return on capital the firm makes on its investments.

Expected Growth Rate in operating income = Reinvestment Rate * Return on Capital

This formulation can be extended fairly simply to growth in earnings per share or net income by using equity measures of how much firms reinvest and how well they do it. For instance, you could look at the proportion of net income, rather than operating income, that is invested back into the business, and the return made on just the equity investment in the project. The former is called the retention rate, whereas the latter is the return on equity.

Expected Growth Rate in Equity income = Retention Ratio * Return on Equity

Why link growth to these fundamentals? It is useful at two levels. The first is in bringing home the point that growth is never costless. To grow faster, you have to reinvest more, which leaves less available to return as dividends or stock buybacks. The second is that it allows you to draw the line between the type of growth that creates value and the type of growth that can destroy value.

The Value of Growth in a Discounted Cashflow Model

To keep the analysis simple, start with the simple perpetual growth model that was used in the earlier chapters. Assume that you have a firm that is expected to have \$ 100 million in net income next year, a return on equity of 10% and a cost of equity of 10%. Assume further that you expect earnings to grow 3% a year forever. To value the value of equity, you first need to estimate how much this company will have to reinvest to be able to maintain its 3% growth rate:

$$\begin{aligned}\text{Retention Ratio} &= \text{Expected growth rate in equity earnings} / \text{Return on equity} \\ &= 3\% / 10\% = 30\%\end{aligned}$$

In other words, this company will be able to pay out 70% of its earnings each year. The value of the equity can then be written as:

$$\begin{aligned}\text{Value of Equity} &= \text{Net Income} * \text{Payout ratio} / (\text{Cost of equity} - \text{Expected Growth rate}) \\ &= 100 * 0.70 / (.10 - .03) = \$ 1,000 \text{ million}\end{aligned}$$

A useful follow-up question to ask is what would happen to the value of the equity of this company if the earnings were not expected to grow at all in perpetuity (i.e., earnings were expected to be \$ 100 million each year forever). First, consider the retention ratio that you would need to maintain a 0% growth rate:

$$\text{Retention Ratio} = 0\% / 10\% = 0\%$$

Since this firm can afford to pay out 100% of its earnings as dividends, you can value the equity in the firm as follows:

$$\begin{aligned}\text{Value of Equity} &= \text{Net Income} * \text{Payout ratio} / (\text{Cost of equity} - \text{Expected Growth rate}) \\ &= 100 * 1.00 / .10 = \$ 1,000 \text{ million}\end{aligned}$$

In other words, the growth in this firm does not add to the value of the equity in the firm.

If growth increases earnings, why is not affecting value? The mystery is easily solved if you consider the relationship between the return on equity and the cost of equity. If, as in this case, a firm's return on equity is equal to its cost of equity, what it gains from growth (in terms of higher earnings in the future) will be exactly offset by what it pays to get that growth (in terms of reinvestment needed to sustain that growth).

When will growth create value? Assume, in the prior example, that the firm had a return on equity of 15% instead of 10% (while maintaining a cost of equity of 10%), and that it was able to grow its earnings 3% a year in perpetuity. The retention ratio and equity value are computed below:

$$\text{Retention Ratio} = 3\% / 15\% = 20\%$$

$$\text{Value of Equity} = 100 * .80 / (.10 - .03) = \$1,143 \text{ million}$$

Here, growth increases the value of equity by \$143 million but only because the firm earns more than its cost of equity.

In the final example, assume that the firm earns a return on equity of 6% on its investments and earnings grows 3% a year in perpetuity:

$$\text{Retention Ratio} = 3\% / 6\% = 50\%$$

$$\text{Value of Equity} = 100 * .50 / (.10 - .03) = \$714 \text{ million}$$

Here growth reduces the value of equity by \$286 million because the firm earns less than its cost of equity on its investments.

The key ingredient in analyzing whether growth increases or decreases value is the quality of a firm's investments, where quality is measured by the return made on those investments relative to the cost of funding them. In general, firms that earn a return on equity (capital) that is greater than their cost of equity (capital) will generate value for their investors. In contrast, firms that earn a return on equity (capital) that is less than their cost of equity (capital) will destroy value, and at an increasing rate as growth accelerates. All too often, investors miss this link because they focus on the growth in proverbial bottom line, which is accounting earnings and pay little attention to how efficiently the growth is being generated. Not surprisingly, companies that report high earnings growth see their stock prices rise over time. At some point in time, though, there will be a reckoning and when it occurs, it will leave disappointed investors in its wake.

The Value of Growth in a Relative Valuation

Many investors prefer to use multiples such as the price earnings or price to book ratio to assess firms, rather than discounted cash flow models. The price-earnings ratio for a high growth firm can also be related to fundamentals and the conclusions parallel those you reached in the last section. If you hold all else constant, a company with a higher expected growth rate in earnings should trade at a higher PE ratio than a company with a lower growth rate in earnings. But if you do not hold all else constant, the relationship between PE and growth becomes more complicated:

- If you compare two companies with similar growth rates and risk profiles but with different returns on equity, you should expect the company with the higher return on equity to trade at a much higher multiple of earnings. This follows directly from the discussion in the last section of the relationship between the efficiency with which firms generate growth and its effect on value. Firms with higher returns on equity are generating growth far more efficiently (by reinvesting less for the same growth) than firms with lower returns on equity.
- If you compare two companies with similar growth and returns on equity, but with different exposures to risk, you should expect the company with the greater exposure to risk to trade at a lower multiple of earnings. This is because the higher risk leads to higher discount rates, which in turn reduce the value of future growth.

The interrelationship between growth, return on equity and risk suggests that investors should be cautious about using rules of thumb for value. For instance, a widely used rule of thumb is that a stock that trades at a PE ratio less than its expected growth rate is under valued. While this may be true for an average risk stock, it will not hold for a high risk stock (which should trade at a much lower PE ratio).

Looking at the Evidence

Are growth companies better or worse investments than mature companies? This question has been answered in a variety of ways. For instance, there are researchers who looked at whether investing in stocks with high PE ratios generates high returns; these stocks often tend to be high growth companies. Others have adopted a more nuanced approach, where they examine whether stocks with high earnings growth that are reasonably priced do better than the market.

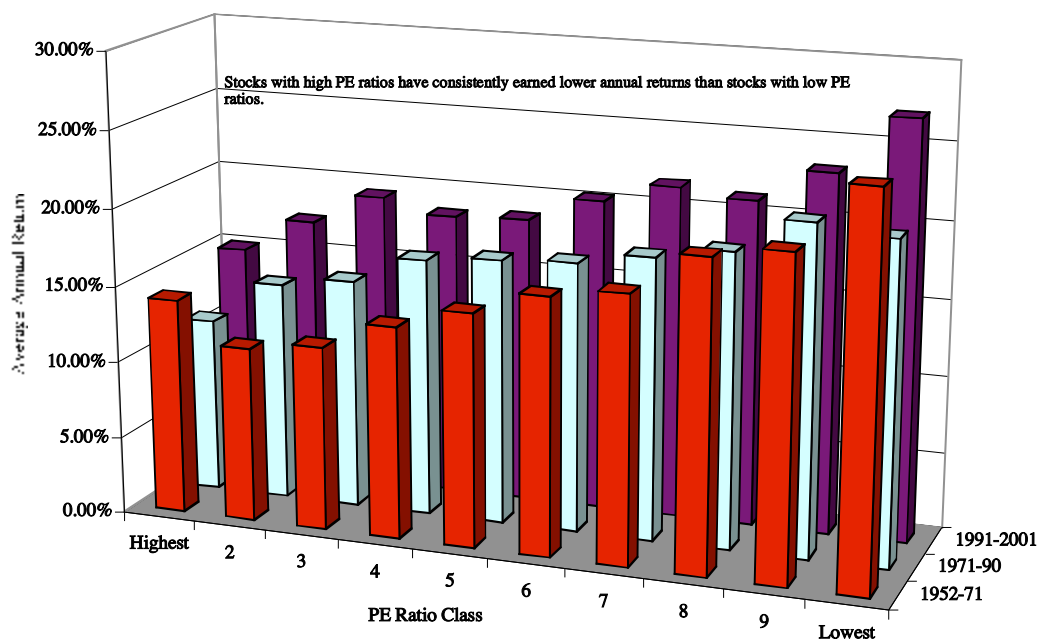
High PE Strategy

The easiest growth strategy, albeit the riskiest, is to buy the stocks with the highest PE ratios on the market, on the assumption that these are growth companies where the growth will deliver the excess returns in the future.

The Overall Evidence

The overall evidence on buying stocks with high PE ratios is grim. As noted in Chapter 3, when looking at stocks, a strategy of buying low PE ratio stocks seems to outperform one of buying high PE ratio stocks by significant margins. Figure 7.1 presents the difference in annual returns from buying low PE stock and high PE stock portfolios from 1952 to 2001. Note that these stocks were picked based upon their PE ratios at the beginning of each year and the returns represent the returns over the following year.

Figure 7.1: Returns on PE Ratio Classes - 1952 - 2001



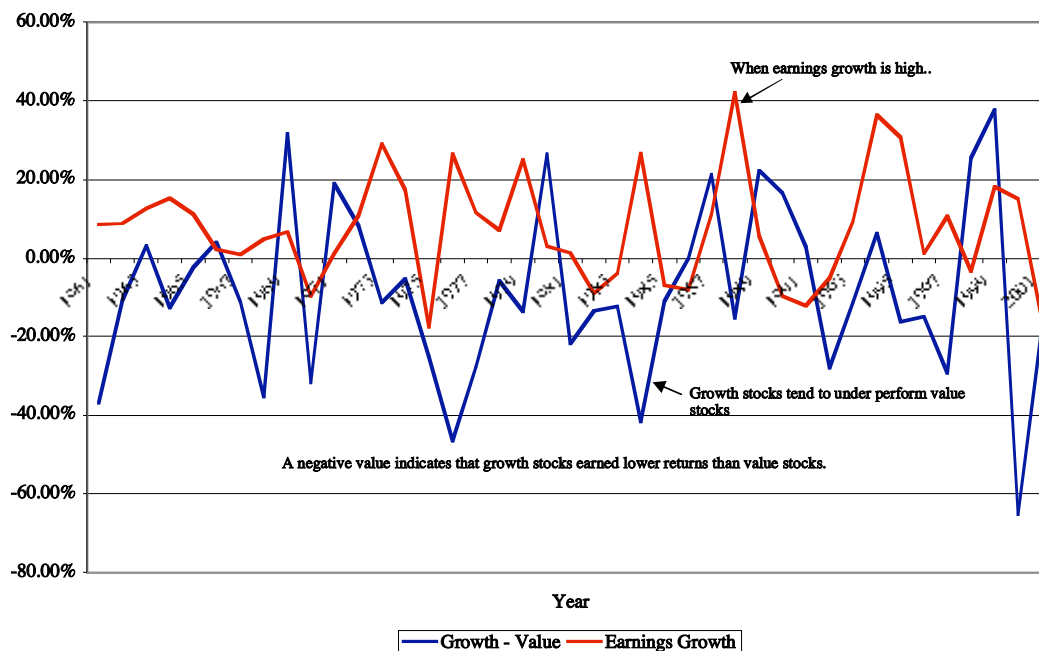
Data from Fama/French. The stocks were categorized into classes based upon their PE ratios at the beginning of each year and the returns were measured over the year.

The returns are computed using two different assumptions. In the equally weighted approach, an equal amount was invested in each stock in each portfolio whereas in the value weighted approach, the investments were proportional to the market values of the firms. On both an equally-weighted and a value-weighted basis, high PE stocks have under performed low PE ratio stocks. In fact, it is this consistent under performance of high PE stocks that has led to the value investing bias that you often see in both academic and practitioner research.

The Growth Investors' Case

Given this sorry performance, what you might wonder attracts investors to this strategy? The answer lies in cycles. There have been extended time periods where high PE stocks seem to outperform low PE stocks. For instance, growth investing seems to do much better when the earnings growth in the market is low and value investing tends to do much better when earnings growth is high. In Figure 7.2, you can see the difference between a low PE and a high PE portfolio and the growth in earnings in each period:

Figure 7.2: Relative Performance of Growth and Value versus Earnings Growth

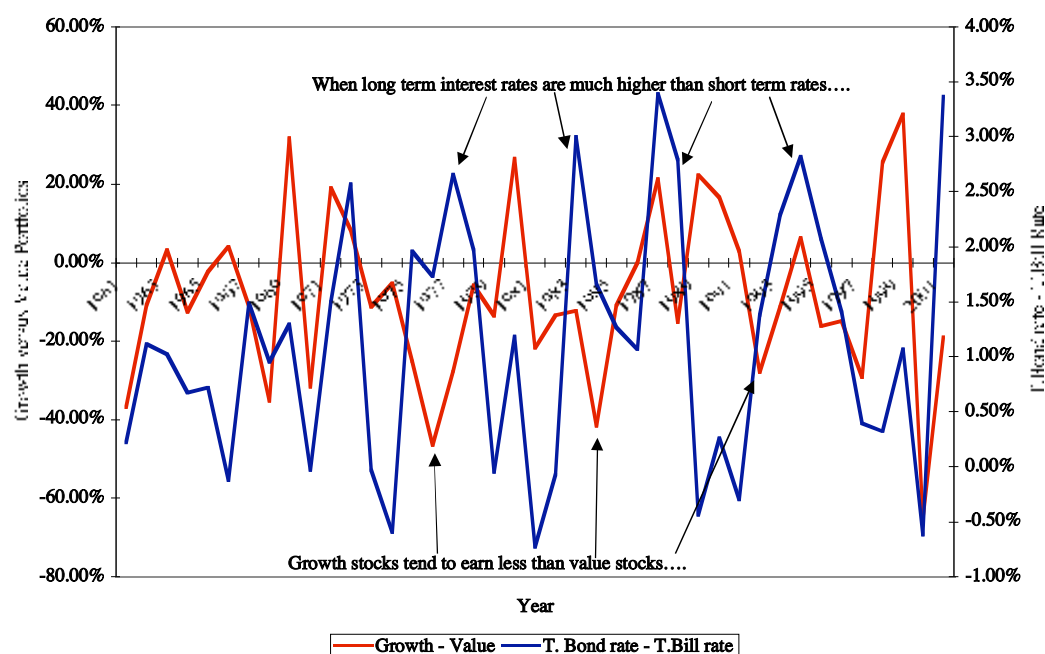


Data from Fama/French. The difference in annual returns between stocks with the highest PE ratios (growth stocks) and stocks with lowest PE ratios (value stocks) is reported in the figure.

The performance of growth stocks versus value stocks is measured by looking at the difference between the returns earned on a portfolio of stocks in the top ten percent in terms of PE (growth stocks) and a portfolio of stocks in the lowest ten percent (value stocks). Thus, a positive value indicates that high PE stocks outperformed low PE stocks in that year. Growth investing does best in years when earnings growth is low. This may be due to the fact that growth stocks are more desirable in these periods, because they are scarcer; if earnings growth is low for the market, there will be fewer companies with high expected earnings growth. By the same token, when all companies are reporting high earnings growth, investors seem to be unwilling to pay a premium for growth.

Growth investing also seems to do much better when long-term interest rates are close to or lower than short term interest rates (downward sloping yield curve) and value investing does much better when long term interest rates are higher than short term rates (upward sloping yield curve). Figure 7.3 presents the relationship between the slope of the yield curve and the performance of growth investing.

Figure 7.3: Relative Performance of Growth Stocks versus Yield Curve



Data from Fama/French. The difference in annual returns between stocks with the highest PE ratios (growth stocks) and stocks with the lowest PE ratios (value stocks) is plotted against the difference between long term and short term rates.

The most interesting evidence on growth investing, however, lies in the percent of active money managers who beat their respective indices. When measured against their respective indices, active growth investors seem to beat growth indices more often than active value investors beat value indices. In a paper on mutual funds in 1995, Burt Malkiel provides additional evidence¹ on this phenomenon. He notes that between 1981 and 1995, the average actively managed value fund outperformed the average actively managed growth fund by only 16 basis points a year, while the value index outperformed a growth index by 47 basis points a year. He attributes the 32 basis point difference to the contribution of active growth managers, relative to value managers.

Growth at a Reasonable Price (GARP) Strategies

There are many growth investors who would blanch at the strategy of buying high PE stocks. Their mission, they would argue, is to buy high growth stocks where growth is undervalued. To find these stocks, they have developed a number of strategies where you

¹ Malkiel, B.G., 1995, *Returns from Investing in Equity Mutual Funds 1971 to 1991*, Journal of Finance, v50, 549-572.

consider both expected growth and the current pricing of the stock. You will consider two of these strategies in this section – buying stocks with a PE less than the expected growth rate or buying stocks with a low ratio of PE to growth (called a PEG ratio).

PE less than Growth Rate

The simplest GARP strategy is to buy stocks that trade at a PE ratio less than the expected growth rate. Thus, a stock that has a PE ratio of 12 and an expected growth rate of 8% would be viewed as overvalued, whereas a stock with a PE of 40 and an expected growth rate of 50% would be viewed as undervalued. While this strategy clearly has the benefit of simplicity, it can be dangerous for several reasons.

Interest rate effect: Since growth creates earnings in the future, the value of growth is a present value. In other words, the expected future earnings will be discounted back to the present by investors who want to assess its value. The value created by any given growth rate will be greater when interest rates are low (which makes the present values higher) than when interest rates are high. Thus, the stock with a PE of 40 and an expected growth rate of 50% when interest rates are 7% may find itself with a PE of 60 if interest rates drop to 5% but growth remains unchanged. It is not surprising, therefore, that portfolio managers who use this strategy not only find far more attractive stocks when interest rates are high but also find many emerging market stocks (where interest rates tend to be higher) to be bargains. The effect on interest rates on the relationship between PE and growth can be best illustrated by looking at the percent of firms that trade at less than their expected growth rate as a function of the treasury bond rate. In 1981, when treasury bond rates hit 12%, more than 65% of firms traded at PE ratios less than their expected growth rates. In 1991, when rates had dropped to about 8%, the percent of stocks trading at less than the expected growth rate also dropped to about 45%. By the end of the nineties, with the treasury bond rate dropping to 5%, the percent of stocks that traded at less than the expected growth rate had dropped to about 25%.

Growth Rate Estimates: When this strategy is used for a large number of stocks, you have no choice but to use the growth rate estimates of others. In some cases, the consensus growth rates estimated by all analysts following a firm are obtained from a data service and used. When you do this, you have to wonder both about the differences in the quality of the growth estimates across different analysts and the comparability. Given that these estimated growth rates are at most for five years, you may penalize companies that have expected growth for much longer periods by focusing just on the 5-year rate.

It is also possible that in low interest rate scenarios, very few stocks pass this screen and that you will end up with little to invest in.

PEG Ratios

An alternative approach that seems to offer more flexibility than just comparing the PE ratio to expected growth rates is to look at the ratio of the PE ratio to expected growth. This ratio is called the PEG ratio and is widely used by analysts and portfolio managers following growth companies.

Defining the PEG Ratio

The PEG ratio is defined to be the price earnings ratio divided by the expected growth rate in earnings per share:

$$\text{PEG ratio} = \frac{\text{PE ratio}}{\text{Expected Growth Rate}}$$

For instance, a firm with a PE ratio of 40 and a growth rate of 50% is estimated to have a PEG ratio of 0.80. There are some who argue that only stocks with PEG ratios less than one are desirable, but this strategy is equivalent to the strategy of comparing the PE to the expected growth rate.

Consistency requires the growth rate used in this estimate be the growth rate in earnings per share. Given the many definitions of the PE ratio, which one should you use to estimate the PEG ratio? The answer depends upon the base on which the expected growth rate is computed. If the expected growth rate in earnings per share is based upon earnings in the most recent year (current earnings), the PE ratio that should be used is the current PE ratio. If it based upon trailing earnings, the PE ratio used should be the trailing PE ratio. The forward PE ratio should generally not be used in this computation, since it may result in a double counting of growth.² Building upon the theme of uniformity, the PEG ratio should be estimated using the same growth estimates for all firms in the sample. You should not, for instance, use 5-year growth rates for some firms and 1-year growth rates for others. One way of ensuring uniformity is to use the same source for earnings growth estimates for all the firms in the group. For instance, both I/B/E/S and Zacks are information services that provide consensus estimates from analysts of earnings per share growth over the next five years for most U.S. firms.

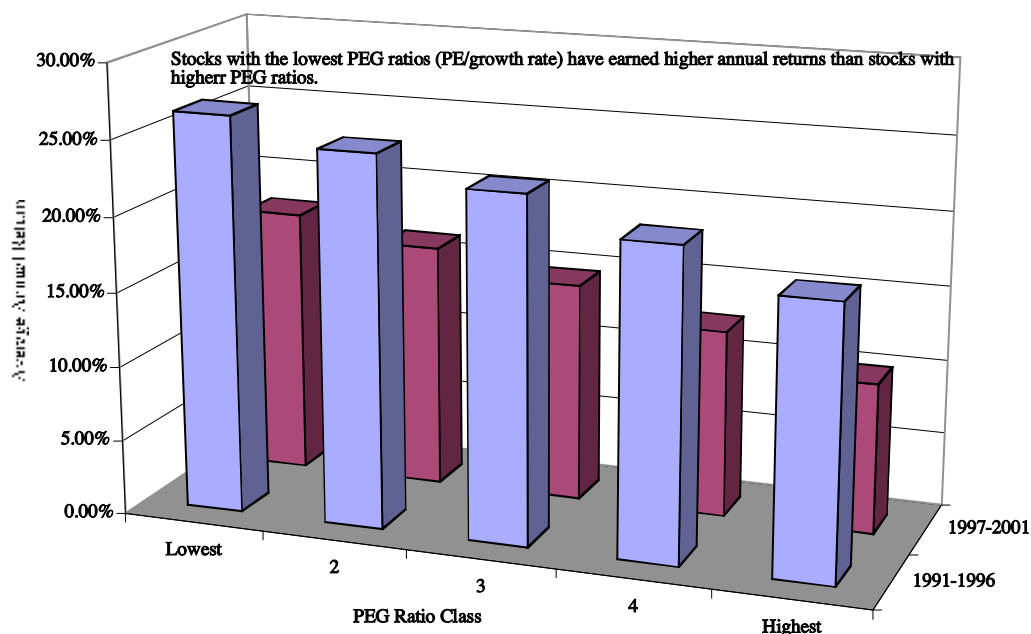
² If the forward earnings are high because of high growth in the next year, and this high growth results in a high growth rate for the next 5 years, you will understate your PEG ratio.

Using the PEG Ratio

How do analysts use PEG ratios? A stock with a low PEG ratio is considered cheap, because you are paying less for the growth. It is viewed as a growth neutral measure that can be used to compare stocks with different expected growth rates. In a study concluded in 1998, Morgan Stanley found that a strategy of buying stocks with low PEG ratios yielded returns that were significantly higher than what you would have made on the S&P 500. They came to this conclusion by looking at the 1000 largest stocks on the U.S. and Canadian exchanges each year from January 1986 through March 1998, and categorizing them into deciles based upon the PEG ratio. They found that the 100 stocks with the lowest PEG ratios earned an annual return of 18.7% during the period, much higher than the market return of about 16.8% over the period. While no mention was made of risk adjustment, Morgan Stanley argued that the return difference was larger than could be justified by any risk adjustment.

This study was updated to examine how this strategy would have done from 1991 to 2001, creating five portfolios at the end of each year based upon the PEG ratio and examining the returns in the following year. Figure 7.4 summarizes the average annual returns on PEG ratios classes in the 1991-1996 and 1997-2001 time periods.

Figure 7.4: PEG Ratios and Annual Returns



Data from Value Line. Stocks were categorized based upon the PEG ratios at the start of each year (PE divided by expected growth rate in earnings over the next five years).

A strategy of investing in low PEG ratio stocks would have generated an average return about 3% higher than the average returns on a high PEG ratio portfolio, before adjusting for risk, during both time periods. Before you decide to adopt this strategy, though, this analysis found that low PEG ratio stocks are, on average, about 20% riskier than high PEG ratio stocks. In fact, adjusting the average returns on these portfolios for risk eliminates all of the excess returns.

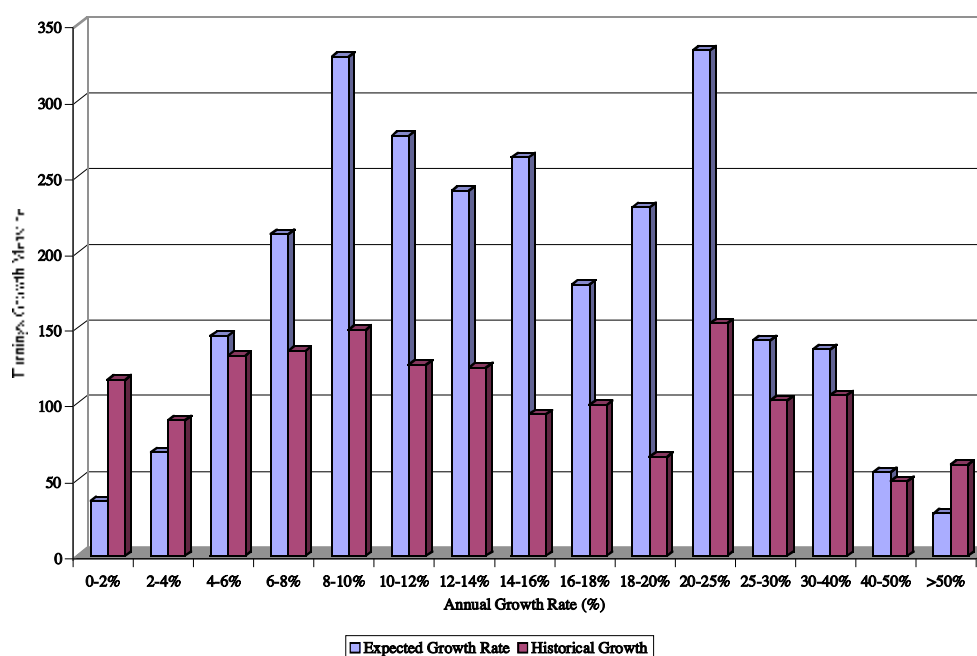
Crunching the Numbers

How different are growth rates across the market and what is a high growth rate? To answer these questions, you will need to look at the entire market and look at both past growth in earnings and expected future earnings growth rates. A legitimate follow up question to this would be to wonder how the market prices growth; this question is answered by comparing the PE ratios for companies with different expected growth rates.

Across the Market

In a market as large and diverse as the United States, it should come as no surprise that there are large differences in earnings growth across companies. This is true whether you look at past growth in earnings (historical growth) or at expected future growth. In Figure 7.5, you can see the distribution of earnings growth across U.S. companies for both past and future growth in earnings per share in early 2002.

Figure 7.5: Earnings Growth: Past and Future



Data from Value Line. Past earnings growth is growth in earning per share over previous five years. Expected earnings growth is from analyst estimates.

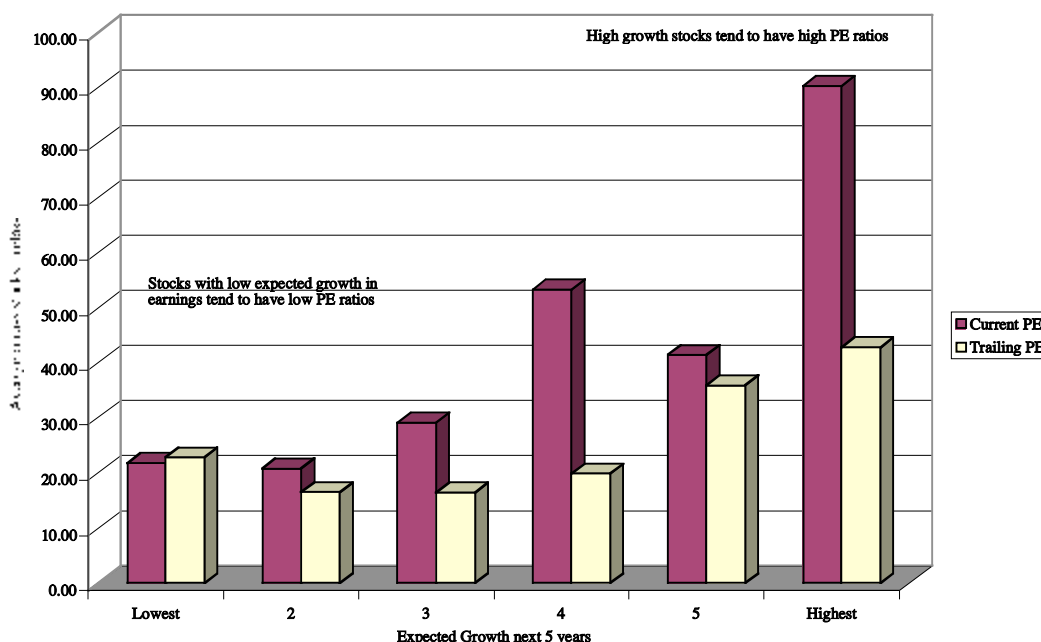
The expected earnings growth rates are obtained from I/B/E/S, a data service that reports on analyst forecasts, and represents the projected annual growth rate in earnings per share over the next five years. The median projected earnings growth rate is about 15% but there are firms with projected growth rates in excess of 50%. The past growth rate is the growth in earnings per share from 1997 to 2001 and the median for this growth rate is about 12%. There are a large number of firms where you cannot compute one or more of these growth rates. For instance, you cannot obtain projected growth rates for firms that are not tracked by analysts – smaller, less liquid firms are particularly susceptible to this problem. Similarly, you cannot estimate historical growth rates for firms with negative earnings per share or for firms that have not been listed for five years.

These growth rates do change over time, as both the economy and the market changes. During the economic boom period of the late 1990s, earnings growth rates rose across the spectrum, but the rise was greatest for technology stocks. A stock with expected earnings growth of 25% a year for the next 5 years may not have made the cut as a high growth stock during this period. In early 2003, after 3 years of economic stagnation and in much more subdued financial markets, a stock with earnings growth of 15% a year for the next five years would have qualified as a high growth stock.

The Value of Growth

Given the differences in earnings growth across U.S. companies chronicled in the last section, how does the market value these differences? Even if you accept the conventional wisdom that higher growth companies have higher prices for any given level of current earnings, you are still faced with the question of how much higher. To answer this question, companies were categorized into six classes based upon projected earnings growth over the next five years and then the average price earnings ratios – current and trailing – were estimated for firms in each class in early 2002. The results are reported in Figure 7.6. The market clearly values expected earnings growth, since high growth companies have substantially higher PE ratios than low growth companies.

Figure 7.6: PE Ratios and Projected Growth -US Stocks in October 2002



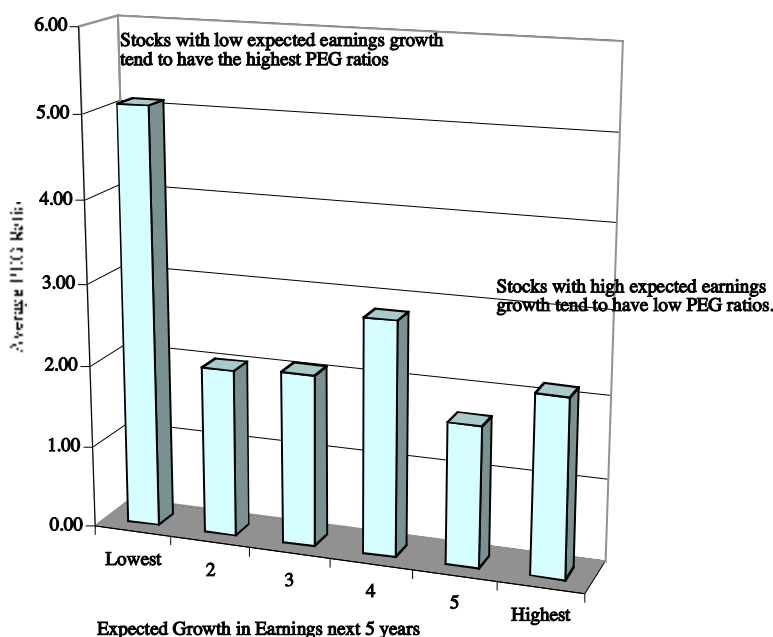
Data from Value Line. The expected growth rate in earnings per share is for the next five years and is from analyst estimates. The PE ratio is a current PE.

Why do these pricing differences matter? If you adopt a strategy of buying high earnings growth companies, you are likely to be paying very high multiples of earnings when you buy them. Even if the earnings growth comes to fruition, it is not clear that you will come out ahead as an investor because of the rich pricing.

As noted in the last section, you can look for companies that trade at low PE ratios, relative to their expected growth rate. This low PEG ratio can be viewed as “growth at a reasonable price.” In Figure 7.7, the average PEG ratios are reported for the six growth

classes used to analyze PE ratios in Figure 7.6. Unlike PE ratios, higher growth companies do not have higher PEG ratios. In fact, there is a tendency for PEG ratios to become lower as expected growth increases and not higher. This is because the price does not increase proportionately as growth increases; as the growth rate doubles from 10% to 20%, the PE increases but it does not double. However, it is the lowest growth stocks where this bias in PEG ratios is most visible; note that PEG ratios are more than twice as high as they are for the highest growth companies.

Figure 7.7: PEG Ratios by Growth Class



Data from Value Line. Stocks were categorized based upon expected earnings growth over next 5 years into five classes. The average PEG ratios of firms in each class is reported.

A High Growth Portfolio

As Figure 7.6 makes clear, investing in a portfolio of companies with high earnings growth can expose you to the serious danger of overpaying. To avoid this problem, a portfolio of high growth companies was created using two cutoff criteria:

- Expected growth in earnings per share over next five years > 15%: This will eliminate any firms with negative earnings and also firms that are not tracked by analysts.
- PEG ratios < 0.5: By restricting the PEG ratio, you reduce the likelihood of overpaying for stocks.

The resulting portfolio of 98 companies is listed in Table 7.3. The portfolio is surprisingly diverse and includes companies from 31 different businesses. The key question, though, is whether there are hidden problems that you might be confronted with in this portfolio.

Table 7.3: High Growth Firms with Low PEG Ratios- US in October 2002

Company Name	Ticker Symbol	Industry	Company Name	Ticker Symbol	Industry
Optical Communication Prods	OCPI	TELEQUIP	AmeriCredit Corp.	ACF	FINANCL
Petroleum Geo ADR	PGO	OILFIELD	ClearOne Communications Inc	CLRO	TELEQUIP
Mail-Well Inc.	MWL	OFFICE	TTM Technologies Inc	TTMI	ELECTRNX
Carrizo Oil & Gas	CRZO	OILPROD	First Cash Inc.	FCFS	FINANCL
SRI/Surgical Express Inc	STRC	MEDSUPPL	Wet Seal 'A'	WTSLSA	RETAILSP
Houston Expl Co	THX	OILPROD	Flowserve Corp.	FLS	MACHINE
Comtech Telecomm.	CMTL	TELEQUIP	Charlotte Russe Holding Inc	CHIC	RETAILSP
United Rentals	URI	MACHINE	Newpark Resources	NR	OILFIELD
Ryland Group	RYL	HOMEBUILD	QLT Inc.	QLT.TO	DRUG
HEALTHSOUTH Corp.	HRC	MEDSERV	Sunrise Asst. Living	SRZ	MEDSERV
Brigham Exploration Co	BEXP	OILPROD	Smart & Final	SMF	GROCERY
Skechers U.S.A.	SKX	SHOE	CryoLife Inc.	CRY	MEDSUPPL
Rockford Corporation	ROFO	ELECTRNX	ECTel Limited	ECTX	TELESERV
Metro One Telecom	MTON	INDUSRV	Gulfmark Offshore	GMRK	MARITIME
Centex Corp.	CTX	HOMEBUILD	Ace Cash Express Inc.	AACE	FINANCL
Acclaim Entertainment	AKLM	ENT TECH	Hanover Compressor	HC	OILFIELD
Nash Finch Co.	NAFC	FOODWHOL	Steelcloud Co	SCLD	COMPUTER
Tweeter Home	TWTR	RETAILSP	Grey Wolf Inc.	GW	OILFIELD
Quaker Fabric	QFAB	TEXTILE	MEDAMICUS INC	MEDM	MEDSUPPL
Radiologix Inc	RGX	MEDSERV	AsiaInfo Holdings Inc	ASIA	INTERNET
Gadzooks Inc	GADZ	RETAILSP	Amedisys Inc	AMED	MEDSERV
D & K Healthcare Resources	DKWD	DRUGSTOR	Sanchez Computer Assoc	SCAI	SOFTWARE
MSC Software	MNS	SOFTWARE	TRC Cos.	TRR	ENVIRONM
Lennar Corp.	LEN	HOMEBUILD	Administrast Inc	ASF	HUMAN
Entegris Inc	ENTG	SEMICOND	Nautilus Group Inc.	NLS	RETAILSP
Varian Semiconductor Equip	VSEA	SEMICOND	Performance Tech Inc	PTIX	TELESERV
TTI Team Telecom Intl	TTIL	TELEFGN	Advent Software Inc	ADVS	SOFTWARE
Seitel Inc.	SEI	INFOSER	Rubio's Restaurants Inc	RUBO	RESTRNT
XETA Corp.	XETA	TELEQUIP	U.S. Energy Sys Inc	USEY	UTILEAST
Global Power Equipment Group	GEG	MACHINE	NVIDIA Corp.	NVDA	SEMICOND
Norstan Inc.	NRRD	TELESERV	Superior Energy Svcs	SPN	OILFIELD
Innotrac Corp	INOC	INDUSRV	Famous Dave's of America	DAVE	RESTRNT
Orthodontic Centers	OCA	MEDSERV	First Horizon Pharmaceutical	FHRX	DRUG
Shaw Group	SGR	METALFAB	Integra LifeSciences Corp	IART	MEDSUPPL
Sportsmans Guide Inc	SGDE	RETAILSP	Culp Inc.	CFI	TEXTILE
Green Mountain Pwr.	GMP	UTILEAST	Fischer Imaging Corp.	FIMGE	MEDSUPPL
NVR Inc.	NVR	HOMEBUILD	Sierra Pacific Res.	SRP	UTILWEST
Microsemi Corporation	MSCC	ELECTRNX	Edge Petroleum	EPEX	OILPROD
Universal Electronics	UEIC	ELECTRNX	Tripos Inc	TRPS	SOFTWARE
Micromuse Inc	MUSE	SOFTWARE	National-Oilwell Inc	NOI	OILFIELD
Sonic Automotive	SAH	RETAILSP	University of Phoenix Online	UOPX	EDUC
Somera Communications Inc	SMRA	TELEQUIP	PAREXEL Int'l	PRXL	DRUG
Ohio Casualty	OCAS	INSRPRTY	Century Casinos Inc	CNTY	HOTELGAM
Meridian Resource Corp	TMR	OILINTEG	Cholestech Corp.	CTEC	MEDSUPPL
LTX Corp.	LTX	INSTRMNT	Lam Research	LRCX	SEMI-EQP
Fleming Cos.	FLM	FOODWHOL	Warrantech Corp.	WTEC	INDUSRV
EXFO Electro-Optical Engr	EXFO	TELESERV	McDermott Int'l	MDR	DIVERSIF
Atlantic Coast Airlines	ACAI	AIRTRANS	DaVita Inc.	DVA	MEDSERV
Mobile Mini Inc	MINI	METALFAB	Labor Ready Inc	LRW	HUMAN

The Rest of the Story

There are three potential dangers in growth investing strategies. The first is that finding companies where growth in earnings will be high in future periods may be difficult to do. Neither past growth nor analyst estimates of growth seem to be reliable forecasters of expected growth in earnings. The second problem relates back to a point made at the beginning of the chapter; growth can destroy value if it is generated by investing in projects with low returns. Third, you often find that high growth companies are also exposed to high risk; the benefits of growth may very well be wiped out by the presence of high risk.

Identifying growth companies

You generally look at past growth in earnings or analyst estimates of growth in earnings in the future when you are trying to identify companies that will have high growth in earnings in the future. Unfortunately, both measures have their limitations when it comes to this task.

Past and Future Growth in Earnings

Is the growth rate in the past a good indicator of growth in the future? Not necessarily. Past growth rates are useful in forecasting future growth, but there are two problems.

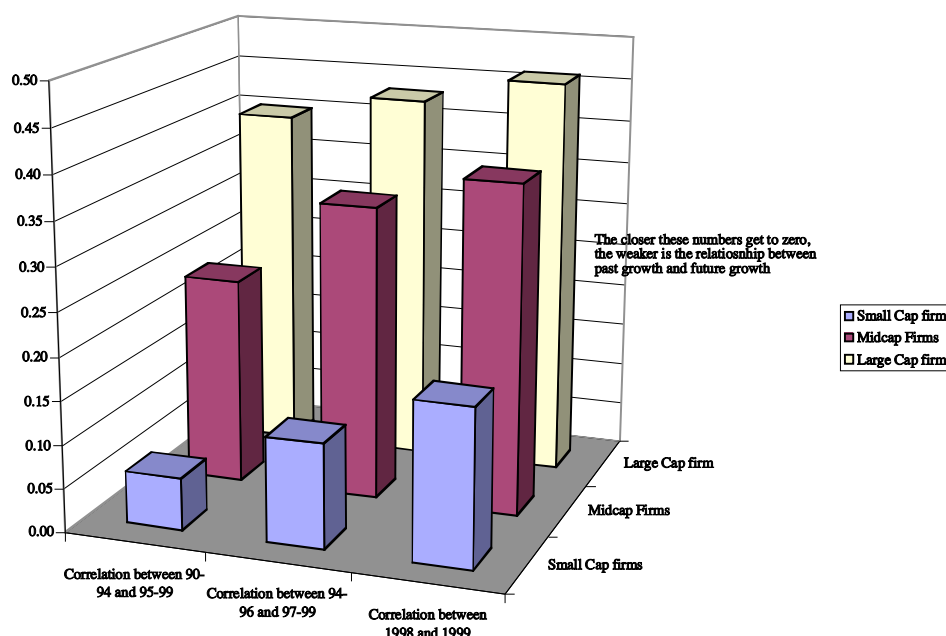
Past growth rates are extremely volatile and are not very good predictors of future growth. In an examination of earnings growth at U.S. companies in the prior decade in 1960, Little coined the term "Higgledy Piggledy Growth" because he found little evidence that firms that grew fast in one period continued to grow fast in the next period.³ In the process of examining the relationship between growth rates in earnings in consecutive periods of different length, he frequently found negative correlations between growth rates in the two periods and the average correlation across the two periods was close to zero (0.02).⁴ If past growth in earnings is not a reliable indicator of future growth at many firms, it becomes even less so at smaller firms. The growth rates at smaller firms tend to be even more volatile than growth rates at other firms in the market. The correlation between growth rates in earnings

³ Little, I.M.D., 1962, *Higgledy Piggledy Growth*, Institute of Statistics, Oxford.

⁴ A correlation of 1 would indicate that companies with high earnings growth in the last period can be guaranteed to have earnings growth in the next period. A zero correlation indicates no relationship whereas a negative correlation suggests that high earnings growth are more likely to be followed by low earnings growth.

in consecutive time periods (five-year, three-year and one-year) for firms in the United States, categorized by market value, is reported in Figure 7.8.

Figure 7.8: Correlations in Earnings Growth by Market Capitalization



Data from Compustat. The correlation is computed between earnings in consecutive time periods.

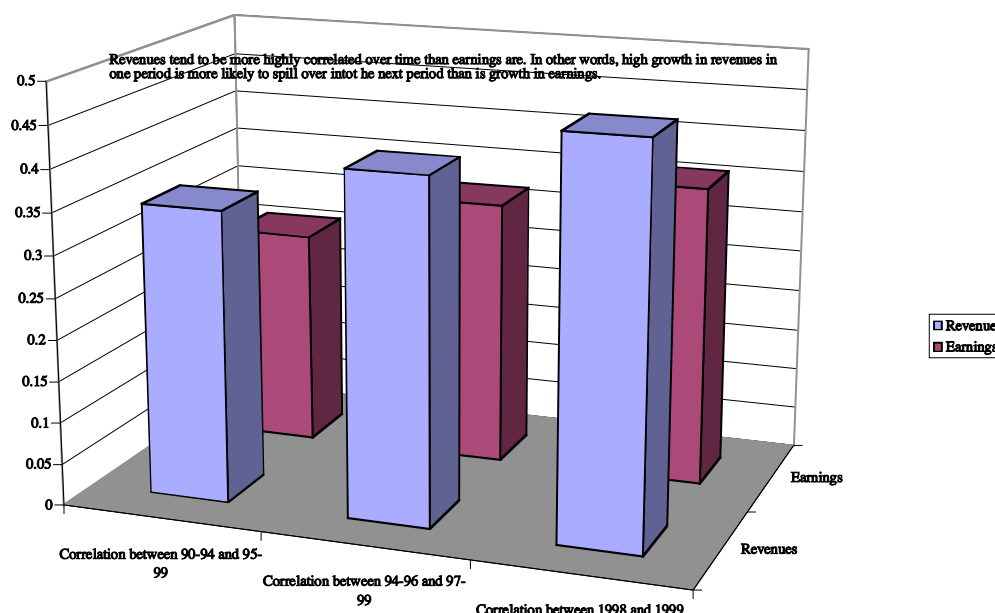
While the correlations tend to be higher across the board for one-year growth rates than for 3-year or 5-year growth rates in earnings, they are also consistently lower for smaller firms than they are for the rest of the market. This would suggest that you should be more cautious about using past growth in earnings as a forecast of future growth at these firms.

The second problem is that there is earnings growth rates at firms tends to revert back the average for the market. In other words, companies that are growing fast will see their growth rates decline towards the market average whereas below average growth companies will see their growth rates increase. This tendency is chronicled by Dreman and Lufkin who track companies in the highest and lowest earnings growth classes for five years after the portfolios are formed. While the highest earnings growth companies have an average growth rate which is 20% higher than the average growth rate for the lowest earnings growth companies in the year the portfolio is formed, the difference is close to zero five years later.

If past earnings growth is not a reliable indicator of future earnings growth, what are the alternatives? One is to use analyst forecasts of growth that will be considered in the next

section, but this is an option only available for firms that are tracked by analysts. The other is to use past revenue growth as your measure of growth rather than earnings growth. In general, revenue growth tends to be more persistent and predictable than earnings growth. This is because accounting choices have a far smaller effect on revenues than they do on earnings. Figure 7.9 compares the correlations in revenue and earnings growth over one-year, three-year and five-year periods at U.S. firms.

Figure 7.9: Correlation in Revenues and Earnings



Data from Compustat. The correlations are computed only for those firms that have enough historical data on earnings and revenues.

Revenue growth is consistently more correlated over time than earnings growth. The implication is that historical growth in revenues is a far more useful number when it comes to forecasting future growth than historical growth in earnings.

Consider the portfolio of high growth companies that was constructed at the last section. While this portfolio was constructed using analyst forecasts of growth in earnings, you could consider an additional test. If you accept the notion that companies with high revenue growth in the past are more likely to sustain growth in earnings in the future, you could screen the portfolio to eliminate firms that have had low revenue growth in the past. Using a cut off of 10% for revenue growth over in the last five years, you would eliminate 24 firms out of the portfolio of 98 firms.

Analyst Estimates of Growth

Value is ultimately driven by future growth and not by past growth. It seems reasonable to argue, therefore, that you would be better served investing in stocks where expected growth in earnings is high. Here, you do run into a practical problem. In a market as large as the United States, you cannot estimate expected growth rates for each firm in the market. Instead, you have to rely on analyst estimates of expected growth. That information, though, is freely accessible now to most investors and you could buy stocks with high expected growth rates in earnings. But will such a strategy generate excess returns?

Consider what you would need for this strategy to be successful. First, analysts have to be fairly proficient at forecasting long-term earnings growth. Second, the market price should not already reflect or overprice this growth. If it does, your portfolio of high growth companies will not generate excess returns. On both conditions, the evidence works against the strategy. When it comes to forecasting growth, analysts have a tendency to overestimate growth and the mistakes they make are highest for long-term forecasts. In fact, some studies find that using historical earnings growth can match or even outperform analyst estimates when it comes to long term growth. As for pricing growth, markets historically have been more likely to over price growth than under price it, especially during periods of high earnings growth for the market.

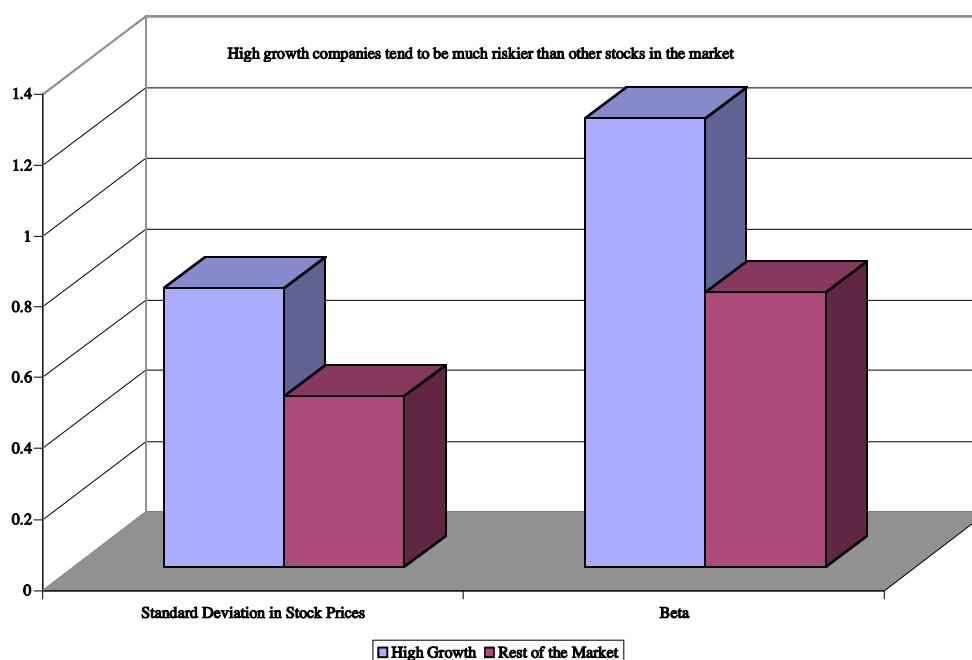
There is one potential screen that you could use to capture the uncertainty analysts feel about expected growth. The data services that track analyst forecasts report not only the average of analyst estimates of forecasted growth for a given company but also the degree of disagreement among analysts. It should stand to reason that the average growth rate will be much less reliable for firms where analysts disagree more about future growth than for firms where there is a high degree of consensus.

Risk

Not all growth stocks are risky, but growth stocks do tend to be more volatile and risky than stock in mature companies. This should not be surprising since you are investing on expectations of the future with growth companies whereas you are basing your analysis of mature companies on investments already made. The practical consequence for investors is that a portfolio of high growth companies can expose them to significant risk.

You can see the contrast between high growth and stable companies when you contrast how the portfolio of high growth companies constructed in the last section measures up against the rest of the market. Figure 7.10 presents the difference on two measures of risk – standard deviation in stock prices and beta over the previous three years – between the two groups of companies.

Figure 7.10: Risk Differences - High Growth vs Rest of the Market



Data from Value Line. The beta and standard deviation using three years of returns is computed for the firm in the portfolio and for the rest of the market.

High Growth companies are much more risky on both measures of risk. Their stock prices tend to be much more volatile and they have significantly higher betas.

You could screen the high growth portfolio to eliminate companies that have unduly high exposures to risk. If you eliminate firms that have standard deviations in stock prices that exceed 80% or betas that are greater than 1.25, you would reduce the portfolio from 74 firms (after the screen of past revenue growth > 10%) to 23 firms. The 23 firms are listed in Table 7.4 below:

Table 7.4; Firms that pass revenue growth and risk screens

Company Name	Ticker Symbol	Industry	Beta	Standard deviation	Revenue Growth
Sierra Pacific Res.	SRP	UTILWEST	0.61	47.99	13.00%
Ryland Group	RYL	HOMEBUILD	0.93	45.4	13.50%
TRC Cos.	TRR	ENVIRONM	1.15	61.85	14.00%
Centex Corp.	CTX	HOMEBUILD	1.01	42.05	14.00%
Newpark Resources	NR	OILFIELD	0.73	54.37	14.50%
Gulfmark Offshore	GMRK	MARITIME	0.95	65.34	15.50%

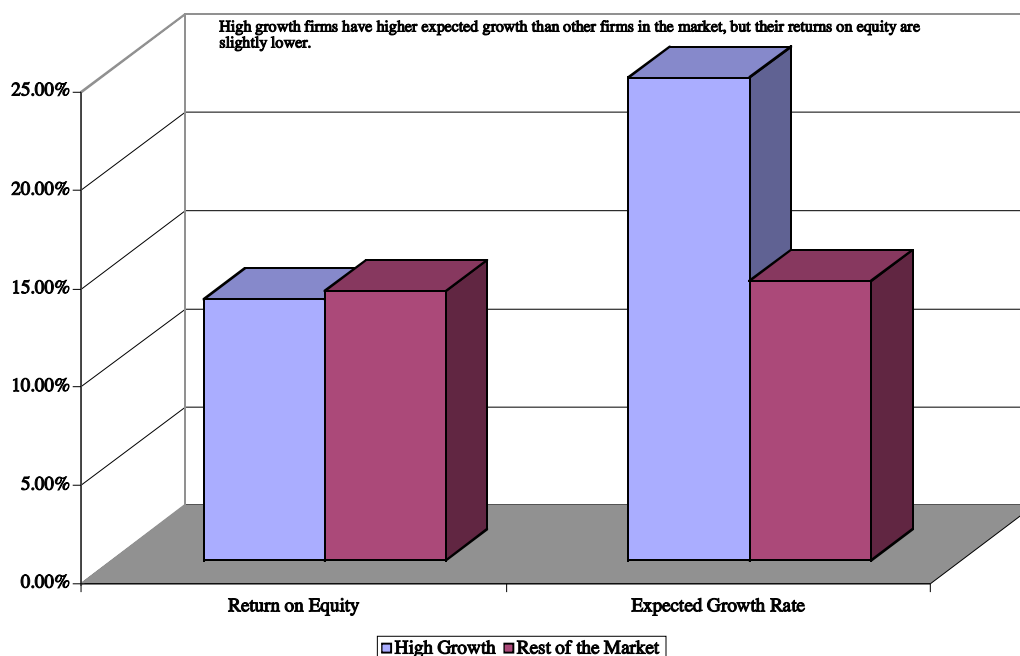
Mail-Well Inc.	MWL	OFFICE	1.44	70.75	16.50%
SRI/Surgical Express Inc	STRC	MEDSUPPL	-0.15	57.92	17.50%
Comtech Telecomm.	CMTL	TELEQUIP	0.96	72.59	18.50%
D & K Healthcare Resources	DKWD	DRUGSTOR	1.16	79.37	19.00%
Wet Seal `A'	WTSLA	RETAILSP	1.03	78.87	19.50%
Gadzooks Inc	GADZ	RETAILSP	0.81	65.15	19.50%
Ace Cash Express Inc.	AACE	FINANCL	0.32	35.22	21.00%
Lennar Corp.	LEN	HOMEBUILD	0.71	38.1	24.50%
Shaw Group	SGR	METALFAB	1.44	69.2	25.00%
Meridian Resource Corp	TMR	OILINTEG	0.94	70.82	25.50%
Houston Expl Co	THX	OILPROD	0.62	48.53	27.00%
Cholestech Corp.	CTEC	MEDSUPPL	1	75.77	29.00%
NVR Inc.	NVR	HOMEBUILD	0.59	49.11	34.00%
DaVita Inc.	DVA	MEDSERV	0.78	70.12	34.00%
Labor Ready Inc	LRW	HUMAN	-1.65	62.62	41.50%
QLT Inc.	QLT.TO	DRUG	1.21	72.38	52.50%
Famous Dave's of America	DAVE	RESTRNT	1.14	61.3	54.00%

Poor Quality Growth

In the section that related value and growth, it was noted that higher growth can sometimes destroy rather than create value, if the growth is generated by investing in assets that earn returns less than the costs of equity. A prudent investor should therefore consider not just the level of expected growth but also the quality of this growth.

The simplest measure of the quality of growth is the difference between the return on equity and the cost of equity. Other things remaining equal, you can argue that firms that earn higher returns on equity have higher quality growth than companies with lower returns on equity. In Figure 7.11, the average return on equity earned by firms in the high growth portfolio in the most recent year is contrasted with the average return on equity earned by the rest of the market.

Figure 7.11: Quality of Growth: High Growth vs Rest of Market



Data from Compustat. The expected growth rate in earnings per share for the next five years is from analyst forecasts and the return on equity is the net income divided by the book value of equity.

On average, the high growth firms have a slightly lower return on equity than the rest of the market, which is surprising given the large advantage they have on expected growth rates. This suggests that there are firms in the high growth portfolio with low or negative returns on equity. If you added a condition that firms in the high growth portfolio would need to earn at least a 10% return on equity to be good investments, the portfolio of 23 firms listed in table 7.4 shrinks to 12 companies and they are listed in Table 7.5:

Table 7.5: Firms that pass revenue growth, risk and quality growth screens

<i>Company Name</i>	<i>Ticker Symbol</i>	<i>ROE</i>	<i>Projected Growth Rate</i>	<i>Current PE</i>	<i>Sales Growth 5-Year</i>	<i>Beta Year</i>	<i>3-Std Dev 3-Year</i>
Ryland Group	RYL	27.93%	15.50%	7.21	13.5	0.93	45.4
Centex Corp.	CTX	18.65%	17.00%	7.02	14	1.01	42.05
TRC Cos.	TRR	14.03%	25.00%	12.37	14	1.15	61.85
Gulfmark Offshore	GMRK	20.39%	25.00%	7.09	15.5	0.95	65.34
D & K Healthcare Resources	DKWD	10.81%	18.43%	5.86	19	1.16	79.37

Ace Cash Express Inc.	AACE	15.28%	25.00%	8.31	21	0.32	35.22
Lennar Corp.	LEN	26.96%	18.50%	8.54	24.5	0.71	38.1
Shaw Group	SGR	14.42%	20.00%	8.90	25	1.44	69.2
Houston Expl Co	THX	12.33%	15.00%	7.49	27	0.62	48.53
Cholestech Corp.	CTEC	15.53%	40.00%	14.52	29	1	75.77
DaVita Inc.	DVA	21.74%	52.00%	15.90	34	0.78	70.12

Lessons for Investors

A strategy of investing in high growth companies, based solely upon past earnings growth or analyst projections of growth can be dangerous for several reasons. You will need to screen this portfolio to make sure that you are not overpaying for the growth, that the growth can be sustained, that the risk exposure is not excessive and that it is high quality growth. To accomplish these objectives, the universe of U.S. companies was screened using the following criteria:

- *Growth Screens:* Only companies with projected earnings growth greater than 15% over the next 5 years were considered for the portfolio. This does eliminate smaller firms that are not followed by analysts but expected future growth is too critical an input for this strategy to be based solely on past earnings growth.
- *Pricing Screens:* Only companies with PE ratios less than the expected earnings growth (PEG <1) were considered for this portfolio. While this is not as strict a screen as the one used earlier in this chapter, it conforms to a widely used standard for pricing (i.e., that stocks that trade at PE ratios that are less than expected growth rates are underpriced)
- *Sustainability of Growth:* While there is no simple test for sustainability, the evidence seems to indicate that companies with high revenue growth in the past are more likely to sustain this growth in the future. Consequently, only firms with revenue growth of more than 10% a year over the last five years were considered.
- *Risk Exposure:* To keep the risk in the portfolio under reasonable bounds, only firms with betas less than 1.25 and standard deviations in stock prices less than 80% were considered for the analysis.
- *High Quality Growth:* Only firms with returns on equity that exceeded 15% in the most recent financial year were considered for the final portfolio. This is stricter than the standard used in the last section but high quality growth is an important factor in the ultimate success of this strategy.

The portfolio of 27 stocks that made it through these screens in January 2003 is listed in the appendix.

Conclusion

Every investor dreams about buying a young growth company and riding the growth to huge returns. There is no denying that growth can add value to a company but it is not always true that higher growth translates into higher value. The value of a company will increase as expected growth increases, but only if that growth is generated by investing in assets that earn high returns on equity.

Even if a company's growth is expected to be value generating, its stock may not be a good investment if the market has over priced growth. In other words, even the best growth company can be a bad investment if you pay too high a price and if the actual growth does not measure up to your high expectations. The essence of successful growth investing is to buy high growth companies at reasonable prices. In fact, a prudent growth investor will consider not only the magnitude of expected growth but also the sustainability of this growth rate – there is a tendency for high growth rates to converge towards normal levels over time – and the quality of this growth. Since growth companies tend to be risky, you will also need to control for risk in designing your portfolio.

Appendix: High Growth Companies with sustainable, high quality growth, low risk and low pricing

Company Name	Ticker Symbol	Stock Price	Current Ratio	P/E	Beta	Std Dev Year	3-Proj EPS Growth Rate	Return on Common Equity	Sales Growth Year
AutoZone Inc.	AZO	70.65	15.1		0.95	39.43	18	62.12	24.5
Barr Labs.	BRL	65.09	16.6		0.95	46.9	19	31.55	20.5
Bio-Rad Labs. 'A'	BIO	38.7	13.58		0.85	52.12	25.5	15.56	12
Biovail Corp.	BVF	26.41	13.34		1.35	54.86	23.5	17.13	46.5
Block (H&R)	HRB	40.2	13.01		1.1	33.48	15.5	31.72	24
Cardinal Health	CAH	59.19	18.5		0.9	28.13	19	18.98	12
Catalina Marketing	POS	18.5	15.68		1.05	39.32	16	24.27	25
CEC Entertainment	CEC	30.7	11.9		0.85	40.47	16	18.96	13
Centex Corp.	CTX	50.2	6.04		1.2	41.03	17	18.05	14
Darden Restaurants	DRI	20.45	13.91		0.8	40.93	16	20.92	11
DaVita Inc.	DVA	24.67	12.21		0.95	69.9	59.5	19.47	34
Enzon Inc.	ENZN	16.72	13.38		1.75	62.27	41	19.28	15
Express Scripts 'A'	ESRX	48.04	16.57		1.05	58.35	26.5	15.03	57
GTECH Holdings	GTK	27.86	11.1		0.85	39.63	18	41.81	11
Harrah's Entertain.	HET	39.6	12.65		1.05	32.54	19	17.13	15
Health Mgmt. Assoc.	HMA	17.9	16.27		0.95	44.11	17.5	15.55	22
Lennar Corp.	LEN	51.6	6.44		1.3	38.39	18.5	25.18	24.5
Lincare Holdings	LNCR	31.62	16.47		0.75	50.33	21.5	19.6	21.5
Lowe's Cos.	LOW	37.5	19.95		1.25	40.22	22	15.33	17.5
Manitowoc Co.	MTW	25.5	11.18		1.2	44.52	15.5	18.52	22
NVR Inc.	NVR	326.5	8.55		1.2	46.76	21	67.82	34
Oxford Health Plans	OHP	36.45	9.8		1.25	42.81	19	63.38	13
Ryland Group	RYL	33.35	5.21		1.35	45.55	15.5	24.24	13.5
Sonic Corp.	SONC	20.49	16.01		0.8	31.72	18	20.67	19

UnitedHealth Group	UNH	83.5	17.77	0.75	25.52	23.5	23.46	30
Universal Health Sv. `B'	UHS	45.1	15.34	0.75	41.17	19	16.21	19
WellPoint Health Ntwks	WLP	71.16	14.67	0.8	29.66	21.5	19.44	30.5

CHAPTER 8

THE WORST IS BEHIND YOU! THE CONTRARIAN STORY**The Last Rational Investor**

Jack was a loner with little faith in human nature. He was convinced that the rest of the world was irrational and becoming increasingly so, and he felt that herd behavior was the rule rather than the exception. As he read about a sell off on a blue chip company after an earnings report that fell short of expectations caused the stock to drop to \$8 from its 52-week high of \$45, he told himself that the stock could not go down much further. After all, the company had been around 50 years and had once been considered a market bell weather. He called his broker and bought 1000 shares at \$8, convinced that it was only a matter of time before it bounced back. A few weeks later he checked the price again and the stock was down to \$5, and he bought 1000 shares more, believing even more strongly that a rebound was just around the corner. Two months later, the stock had hit \$2, and without a hint of self-doubt, Jack bought 1000 shares more and waited for his payoff. Four days later, the company announced that its CEO had resigned and that the stock had been delisted. The only consolation for Jack was that the stock price had finally hit zero and would not go down any further.

Moral: The crowd is more often right than wrong.

Guessing when a stock has hit bottom is the source of much talk on Wall Street and it is often the basis for investment strategies. Contrarian investors are often willing to buy a stock after a sustained price decline on the expectation of a rebound. Their belief is that a stock that has dropped 80 to 90% from its peak is much more likely to be a bargain to investors. In this chapter, you will explore the underpinnings of this strategy and any potential limitations. As you will see, bottom fishing can be lucrative but it can also be dangerous and only investors with the fortitude to withstand reversals succeed with it.

The Core of the Story

By their very nature, contrarians come in all forms. Some draw on investor psychology to make their judgments and others rely on their instincts. They all agree that the stocks that gone down the most over the recent past are often the best investments. At the risk of over simplifying the arguments used by contrarians, here are two:

- *It is always darkest before dawn.* The best time to buy a stock is not when good news comes out about it but after a spate of bad news has pushed the price down, making it a bargain. The story rests on the assumption that the average investor tends to over react

to news – good as well as bad – and that investors who are a little less driven by emotion (presumably you and I as contrarians) can take advantage of this irrationality. The story sells well, at least in the abstract, to those who have the least faith in human rationality. The assumption that investors over react ties in neatly with the widely held view that crowds are driven by emotion and can be swayed by peer pressure to irrational acts. This view is reinforced in financial markets by the bubbles in prices – from the South Sea Bubble in the 1600s to dot-com companies in the 1990s – that show up at regular intervals.

- *Lower priced stocks are cheaper:* There is another and less rational factor behind the contrarian story. Stocks that have gone down a lot often trade at low prices and there is a feeling among some investors that a lower priced stock is cheaper than one that is highly priced. Thus, a stock that has dropped from \$ 30 to \$ 3 looks cheaper on an absolute basis to many investors and penny stocks (stocks that trade at well below a dollar) are absolute bargains. The danger, of course, is that the value of this stock (which is what you should be comparing the price to) might have dropped from \$35 to \$1 during the same period.

The Theory

To understand the contrarian impulse, you first need to establish a link between prices and information. As new information comes out about a company, its stock price will undoubtedly move but by how much, and what would constitute an over reaction? This section begins by answering these questions. It then considers an alternative view, which is that prices are not predictable and follow a random walk; this would represent a rejection of the notion that markets over react to new information. The section closes with an examination of the psychological underpinnings of contrarian investing. In other words, what is it about human behavior that leads to over reaction in the first place?

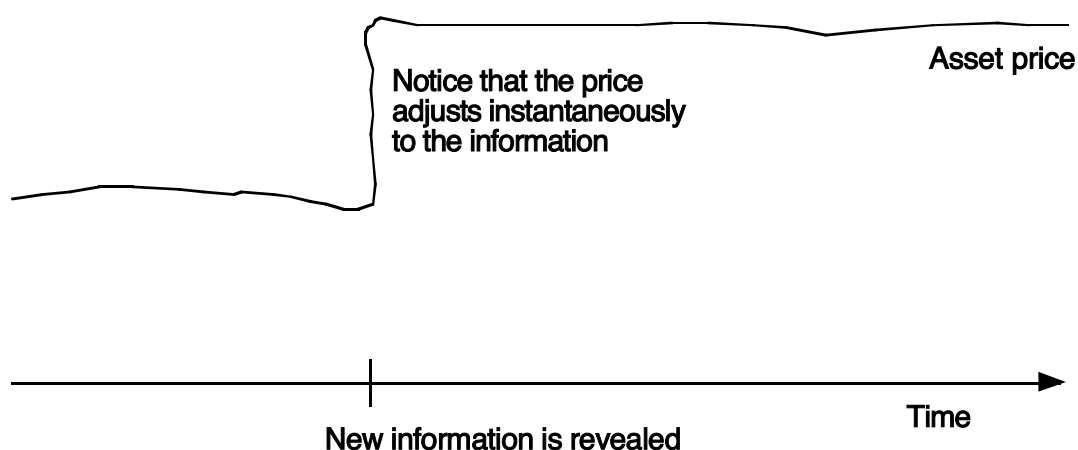
Information and Price

Any debate about whether markets over react to new information has to begin with a discussion of the relationship between prices and information. After all, in every market, new information will cause stock prices to move; unexpected good news will generally push up stock prices whereas unexpected bad news will cause prices to drop. If markets make mistakes in their assessments, the prices will be different from the true values of the underlying assets.

If you define market efficiency in terms of how much the price of an asset deviates from its true value, the smaller and less persistent the deviations are, the more efficient a

market is. Market efficiency does not require that the market price be equal to true value at every point in time. All it requires is that errors in the market price be unbiased, i.e., prices can be greater than or less than true value, as long as these deviations are random. Another way of assessing market efficiency is to look at how quickly and how well markets react to new information. The value of an asset should change when new information that affects any of the inputs into value – the cash flows, the growth or the risk – reaches the market. In an efficient market, the price of the asset will adjust instantaneously and, on average, correctly to the new information, Figure 8.1 illustrates the impact of unexpectedly good news on the stock price in an efficient market.

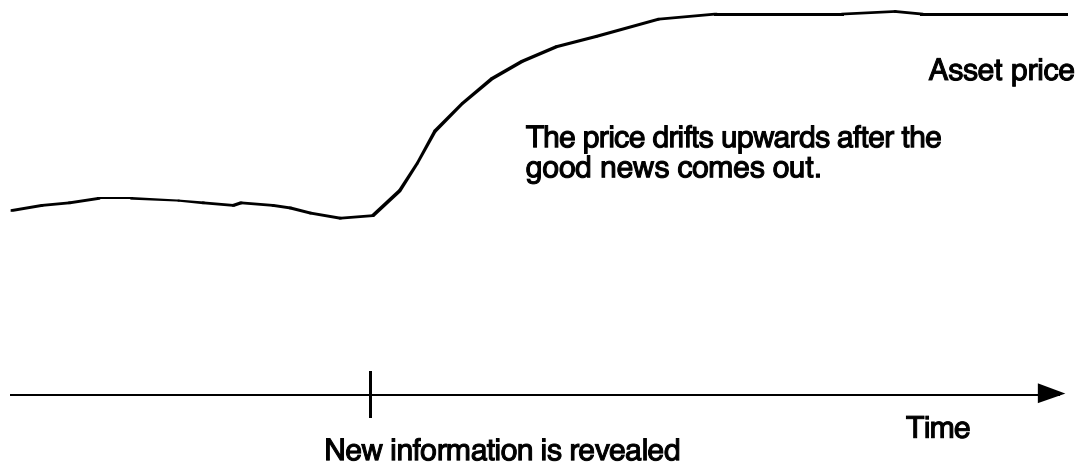
Figure 8.1: Price Adjustment in an Efficient Market



The key, though, is that it is not good news per se that causes the price to increase but unexpectedly good news. In other words, a company that reports a 20% growth in earnings may see its stock price go down if investors expected it to report a 30% growth in earnings, whereas a company that reports a 10% drop in earnings may see its stock price go up if investors expected earnings to drop by 20%.

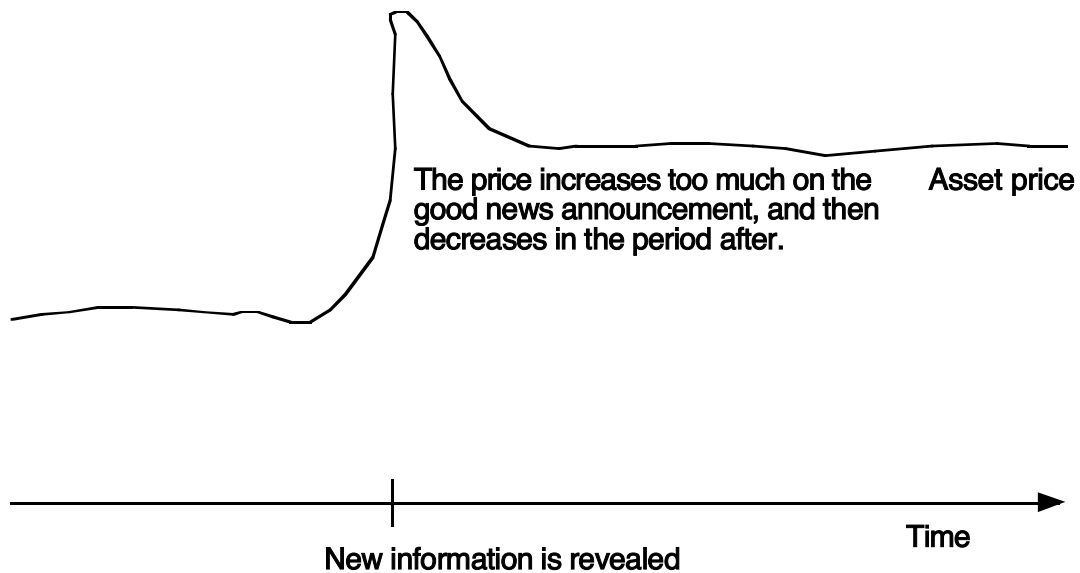
The adjustment will be slower if investors are slow in assessing the impact of the information on value. In Figure 8.2, the price of an asset adjusting slowly to good news is shown. The gradual increase in stock prices (called a price drift) that you observe after the information arrives is indicative of a slow learning market.

Figure 8.2 A Slow Learning Market



In contrast, the market could adjust instantaneously to the new information but overestimate the effect of the information on value. Then, the price of the asset will increase by more than it should, given the effect of the good news on value, or drop by more than it should, with bad news. Figure 8.3 shows the drift in prices in the opposite direction, after the initial reaction.

Figure 8.3: An Overreacting Market



Contrarian investors buy into this view of the world. They believe that investors are more likely to over react than to under react and that large price movements in one direction will be followed by price movements in the other. Hence, they hold the conviction that you

should buy stocks that have been knocked down the most in the market, since these are the stocks where prices are most likely to increase in the future.

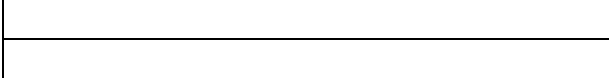
The Random Walk World

For four decades, academics have argued that investment strategies that are based upon the presumption that markets over react or under react are designed to fail because market prices follow a “random walk”. In fact, Burton Malkiel’s influential tome on investing, which outlines this argument most persuasively, is called “A Random Walk down Wall Street”.

To understand the argument for a random walk, you have to begin with the presumption that investors at any point in time estimate the value of an asset based upon expectations of the future, and that these expectations are both unbiased and rational, given the information that investors have at that point in time. Under these conditions, the price of the asset changes only as new information comes out about it. If the market price at any point in time is an unbiased estimate of value, the next piece of information that comes out about the asset should be just as likely to contain good news as bad.¹ It therefore follows that the next price change is just as likely to be positive as it is likely to be negative. The implication of course is that each price change will be independent of the previous one, and that knowing an asset’s price history will not help form better predictions of future price changes. Figure 8.4 summarizes the assumptions.

¹ If the probability of good news is greater than the probability of bad news, the price should increase before the news comes out. Technically, it is the expected value of the next information release is zero.

Figure 8.4: Information and Price Changes in a Rational Market

Information	All information about the firm is publicly available and traded on.	New information comes out about the firm.
		
	Current	Next period
Market Expectations	Investors form unbiased expectations about the future	Since expectations are unbiased, there is a 50% chance of good or bad news.
Price Assessment	Stock price is an unbiased estimate of the value of the stock.	The price changes in accordance with the information. If it contains good (bad) news, relative to expectations, the stock price will increase (decrease).
Implications for Investors	No approach or model will allow us to identify under or over valued assets.	Reflecting the 50/50 chance of the news being good or bad, there is an equal probability of a price increase and a price decrease.

While the random walk is not magic, there are two prerequisites for it to hold. The first is that investors are rational and form unbiased expectations of the future, based upon all of the information that is available to them at the time. If expectations are set too low or set too high consistently – in other words, investors are too optimistic or too pessimistic – information will no longer have an equal chance of containing good or bad news, and prices will not follow a random walk. The second is that price changes are caused by new information. If investors can cause prices to change by just trading, even in the absence of information, you can have price changes in the same direction rather than a random walk.

The Basis for Contrarian Investing

Why would markets over react to new information? If it happens consistently, the roots have to lie in human psychology. There are three reasons generally provided by students of human behavior:

- *Overweighting of most recent information:* Researchers in experimental psychology suggest that people tend to overweight recent information and underweight prior data in revising their beliefs when confronted with new information. Thus, a firm that reports bad earnings in the current period is excessively punished for that report even though its overall fundamentals may look good.
- *Panic:* Other researchers argue that a few investors tend to panic when confronted with new information, and that they take the rest of the market with them.
- *Inability to deal with complex information:* Proponents of this point of view argue that while markets do a reasonably good job of assessing the impact of simple

information (decreased earnings, for instance), they are not adept at assessing the impact of complex information (a major restructuring). In the latter case, markets may over react to the information because of their inability to process the news well. If markets overreact, it follows that large price movements in one direction will be followed by large price movements in the opposite direction. In addition, the more extreme the initial price movement, the greater will be the subsequent adjustment. If markets overreact, the road to investment success seems clear. You buy assets when others are most bearish about the future and selling, and sell assets when other investors are most optimistic and buying. If your assumption about market overreaction is correct, you should make money as markets correct themselves over time.

Looking at the Evidence

The debate about whether markets over react to new information or follow a random walk will never be resolved with theoretical arguments. Both sides are entrenched in their views and are unlikely to be swayed by arguments from the other side. You can, however, look at the empirical evidence to see which hypothesis is more justified by the evidence. In this section, you will look at two sets of studies that may shed light on this question. The first group examines whether price changes in one period are related to price changes in prior periods and indirectly answer the question of whether markets reverse themselves over time. The second group tries to directly answer the question by examining whether investing in stocks that have gone down the most over a recent period is a worthwhile strategy.

Serial Correlation

If today is a big up day for a stock, what does this tell you about tomorrow? There are three different points of view. The first is that the momentum from today will carry into tomorrow, and that tomorrow is more likely to be an up day than a down day. The second is that there will be the proverbial profit taking as investors cash in their profits and that the resulting correction will make it more likely that tomorrow will be a down day. The third is that each day you begin anew, with new information and new worries, and that what happened today has no implications for what will happen tomorrow.

Statistically, the serial correlation measures the relationship between price changes in consecutive time periods, whether hourly, daily or weekly, and is a measure of how much the price change in any period depends upon the price change over the previous time period. A serial correlation of zero would therefore imply that price changes in consecutive time periods are uncorrelated with each other, and can thus be viewed as a rejection of the hypothesis that investors can learn about future price changes from past ones. A serial

correlation that is positive, and statistically significant, could be viewed as evidence of price momentum in markets, and would suggest that returns in a period are more likely to be positive (negative) if the prior period's returns were positive (negative). A serial correlation which is negative, and statistically significant, could be evidence of price reversals, and would be consistent with a market where positive returns are more likely to follow negative returns and vice versa. In other words, it would be consistent with the contrarian investing strategy described in this chapter.

From the viewpoint of investment strategy, serial correlations can sometimes be exploited to earn excess returns. A positive serial correlation would be exploited by a strategy of buying after stock prices go up and selling after stock prices go down. A negative serial correlation would suggest a strategy of buying after stock prices go down and selling after stock prices go up. Since these strategies generate transactions costs, the correlations have to be large enough to allow investors to generate profits to cover these costs. It is therefore entirely possible that there be serial correlation in returns, without any opportunity to earn excess returns for most investors.

The earliest studies of serial correlation all looked at large U.S. stocks and concluded that the serial correlation in stock prices was small.² One of the first in 1965, for instance, found that 8 of the 30 stocks listed in the Dow had negative serial correlations and that most of the serial correlations were close to zero. Other research confirms these findings – of very low correlation, positive or negative - not only for smaller stocks in the United States, but also for other markets. While these correlations may be statistically different from zero, it is unlikely that there is enough correlation in short-period returns to generate excess returns, after you adjust for transactions costs.

While most of the earlier analyses of price behavior focused on shorter return intervals, more attention has been paid to price movements over longer periods (six months to five-year) in recent years. Here, there is an interesting dichotomy in the results. When long term is defined as months rather than years, there seems to be a tendency towards positive serial correlation – stocks that have gone up in the last six months tend to continue to go up for the next six months, whereas stocks that have gone down in the last six months tend to continue to go down. The momentum effect is just as strong in the European

² Alexander, S.S., 1964, *Price Movements in Speculative Markets: Trends or Random Walks*, in *The Random Character of Stock Market Prices*, MIT Press. Cootner, P.H., 1962, *Stock Prices: Random versus Systematic Changes*, *Industrial Management Review*, v3, 24-45. and Fama, E.F., 1965, *The Behavior of Stock Market Prices*, *Journal of Business*, v38, pp 34-105.. All three studies estimated serial correlation in stock prices. Given the difficulty of obtaining data, they worked with small samples over short periods.

markets, though it seems to be weaker in emerging markets.³ What may cause this momentum? One potential explanation is that mutual funds are more likely to buy past winners and dump past losers, thus generating the price momentum.⁴ Thus, there is no evidence to back up contrarian investing strategies when you look at shorter time horizons from a few days to a few months.

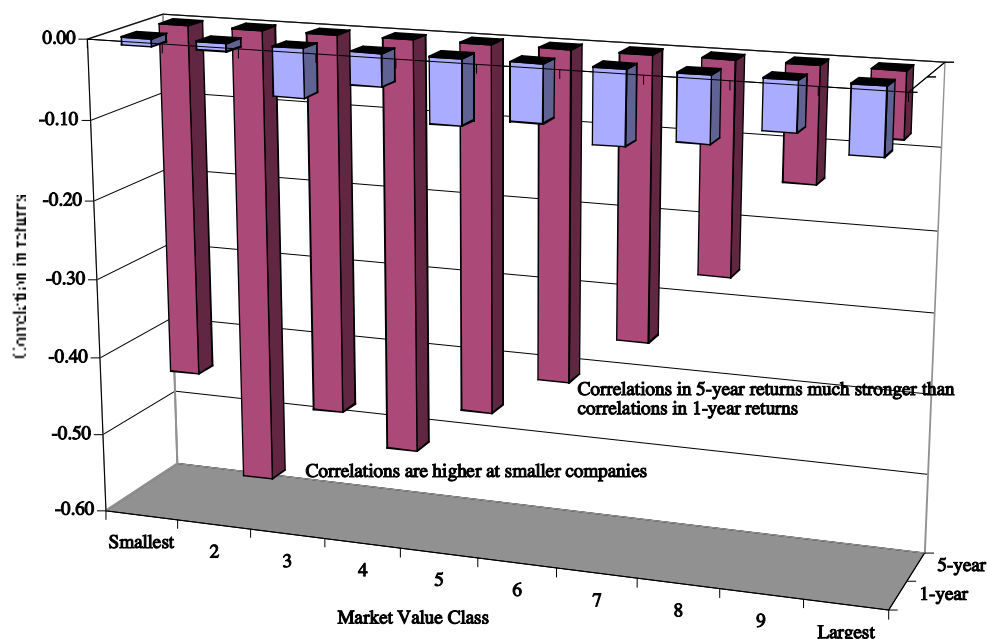
However, when long term is defined in terms of years, there is substantial negative correlation in returns, suggesting that markets reverse themselves over very long periods. Fama and French examined five-year returns on stocks from 1941 to 1985 and present evidence of this phenomenon.⁵ They found that serial correlation is more negative in five-year returns than in one-year returns, and is much more negative for smaller stocks rather than larger stocks. Figure 8.5 summarizes one-year and five-years serial correlation by size class for stocks on the New York Stock Exchange.

³ Rouwenhorst, G.K., 1998, *International Momentum Strategies*, Journal of Finance, v53, 267-284. He studied 12 European markets and found evidence of momentum in each market. In 1999, he presented evidence of momentum in emerging markets. Bekaert,, G., C.B. Erb, C.R. Harvey and T.E. Viskanta. 1997, *What matters for emerging market equity investments*, Emerging Markets Quarterly (Summer 1997), 17-46. This study finds that momentum investing is not consistently profitable in emerging markets.

⁴ Grinblatt, M., S. Titman and R. Wermers, 1995, *Momentum Investment Strategies, Portfolio Performance, and Herding: A Study of Mutual Fund Behavior*, American Economic Review, v85, 1088-1105..

⁵ Fama, E.F. and K.R. French, 1992, *The Cross-Section of Expected Returns*, Journal of Finance, v47, 427-466.

Figure 8.5: One year and Five year Correlations: Market Value Class: 1941- 1985



Data from Fama/French. These are the average correlations in consecutive time periods for firms in each market value class (from smallest to largest).

With the smallest stocks, there is very strong evidence that extended periods of positive returns are followed by extended periods of negative returns and vice versa. This phenomenon has also been examined in other markets, and the findings have been similar. There is evidence stocks reverse themselves over long time periods.

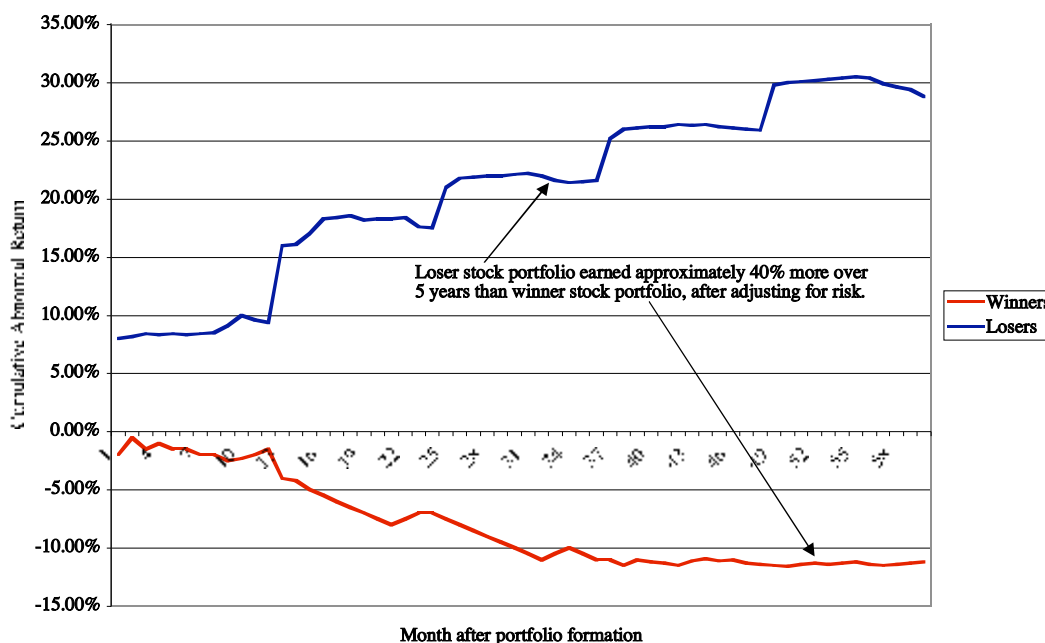
What are the overall implications for contrarian investing? The first and most important one is that you need to be a long-term investor for it to have any chance of working for you. The second is that it is more likely to pay off for smaller companies, in terms of market capitalization than larger companies.

Loser Stocks

How would a strategy of buying the stocks that have gone down the most over the last few years perform? To isolate the effect of price reversals on the extreme portfolios, a study constructed a winner portfolio of 35 stocks, which had gone up the most over the prior year, and a loser portfolio of 35 stocks, which had gone down the most over the prior year, at the

end of each year from 1933 to 1978,⁶ The returns were estimated for the sixty months following the creation of the portfolios. Figure 8.6 graphs the returns on both the loser and winner portfolios:

Figure 8.6: Cumulative Abnormal Returns - Winners versus Losers



Data from a study by DeBondt and Thaler. The portfolios represent the 35 best performing stocks (winners) and the 35 worst performing stocks (losers) and the returns represent the cumulated return on both portfolios over the next 60 months.

This analysis suggests that an investor who bought the 35 biggest losers over the previous year and held for five years would have generated a cumulative return of approximately extra return of 30% over the market and about 40% relative to an investor who bought the winner portfolio.

This evidence is consistent with market overreaction and suggests that a simple strategy of buying stocks that have gone down the most over the last year or years may yield excess returns over the long term. Since the strategy relies entirely on past prices, you could argue that this strategy shares more with charting – consider it a long-term contrarian indicator – than it does with value investing.

⁶ DeBondt, W.F.M. & R. Thaler, 1985, *Does the Stock Market Overreact?*, Journal of Finance, v40, pp 793-805.

There are many, academics as well as practitioners, who suggest that these findings may be interesting but that they overstate potential returns on 'loser' portfolios for several reasons:

There is evidence that loser portfolios are more likely to contain low priced stocks (selling for less than \$5), which generate higher transactions costs and are also more likely to offer heavily skewed returns, i.e., the excess returns come from a few stocks making phenomenal returns rather than from consistent performance.

Studies also seem to find loser portfolios created every December earn significantly higher returns than portfolios created every June. This suggests an interaction between this strategy and tax loss selling by investors. Since stocks that have gone down the most are likely to be sold towards the end of each tax year (which ends in December for most individuals) by investors, their prices may be pushed down by the tax loss selling.

There seems to be a size effect when it comes to the differential returns. When you do not control for firm size, the loser stocks outperform the winner stocks, but when you match losers and winners of comparable market value, the only month in which the loser stocks outperform the winner stocks is January.⁷

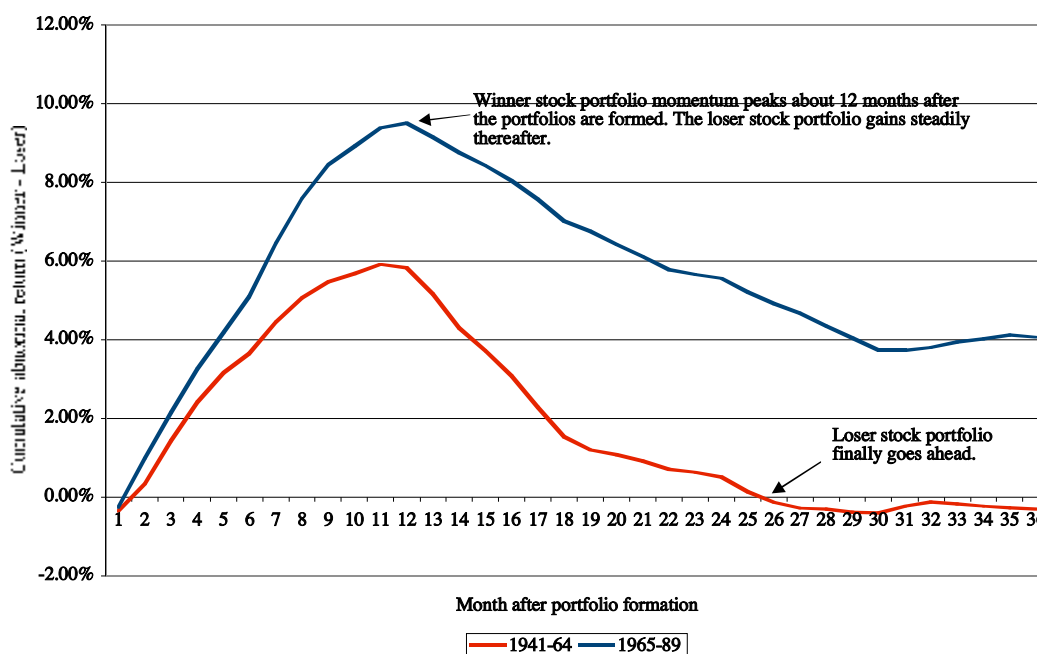
The final point to be made relates to time horizon. As noted in the section on serial correlation, while there may be evidence of price reversals in long periods (3 to 5 years), there is evidence of price momentum – losing stocks are more likely to keep losing and winning stocks to keep winning – if you consider shorter periods (six months to a year). An analysis⁸ referenced earlier in support of price momentum identified how important time horizon for a loser stock strategy by tracking the difference between winner and loser portfolios by the number of months that you held the portfolios.⁹ The findings are summarized in Figure 8.7:

⁷ Zarowin, P., 1990, *Size, Seasonality and Stock Market Overreaction*, Journal of Financial and Quantitative Analysis, v25, 113-125.

⁸ Jegadeesh, N. and S. Titman, 1993, *Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency*, Journal-of-Finance; 48(1), 65-91.

⁹ The definition of winner and loser portfolios is slightly different in this study, relative to the one graphed in figure 8.6. The portfolios were created, based upon returns over the six months prior to the creation of the portfolios.

Figure 8.7: Differential Returns - Winner versus Loser Portfolios



Data from a study by Jegadeesh and Titman. The cumulative difference in returns between winner and loser portfolios is tracked month by month for each period.

There are two interesting findings in this graph. The first is that the winner portfolio actually outperforms the loser portfolio in the first 12 months after the portfolios are created. The second is that while loser stocks start gaining ground on winning stocks after 12 monthly, it took them 28 months in the 1941-64 time period to get ahead of them and the loser portfolio does not start outperforming the winner portfolio even with a 36-month time horizon in the 1965-89 time period. The payoff to buying losing companies depends very heavily on whether you have to capacity to hold these stocks for long time periods.

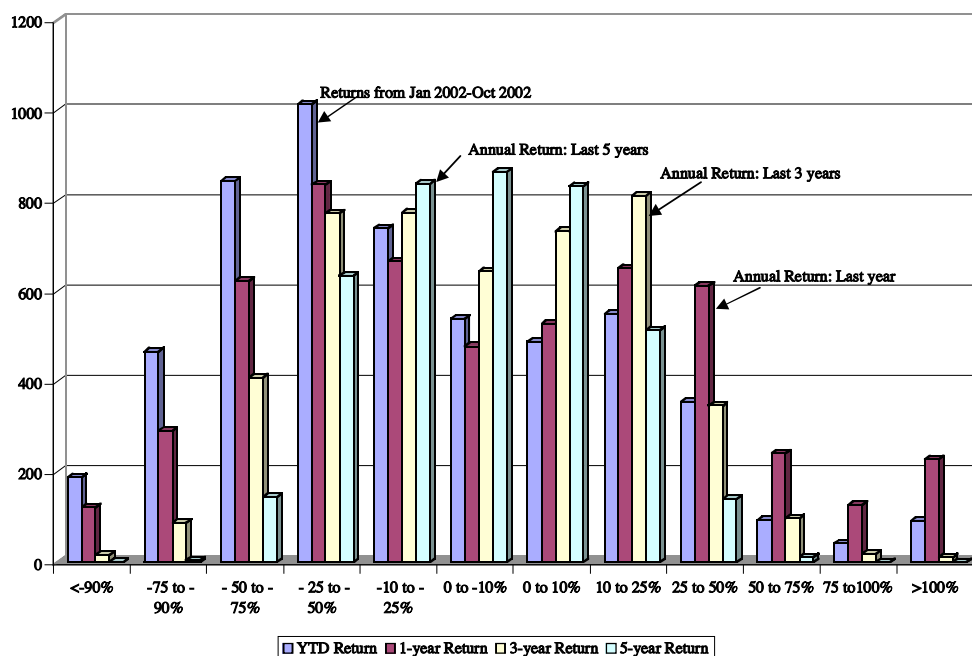
Crunching the Numbers

How much does a stock have to go down for it to be categorized a “loser stock”? The answer will vary depending upon the time period that you look at the market. In a period of rising stock prices, a 40% drop in the stock price may qualify a stock to be a “loser”. However, in a period where the entire market is down 15 or 20%, a drop of 80% or more may be necessary for a stock to drop to the bottom of the scale. In this section, you will look at the distribution of returns across stocks in the market as well as significant differences in returns across sectors.

Across the Market

To identify stocks that are the worst performers in the market in any period, you have to make two judgments. The first relates to the length of the period that you will use to compute returns. The worst performers over the last year may not be the worst performers over the last six months or the last five years. The second factor that will affect your choices is what you define as the market. The worst performers in the S&P 500 may not even make the list if you were looking at the worst performers across all equity markets in the United States. In Figure 8.8, the distribution of annualized returns across all listed stocks in the United States is presented for four different time periods – January through October 2002 (9 months), October 2001 to October 2002 (1-year), October 1999 to October 2002 (3 years) and October 1997 to October 2002 (5 years).

Figure 8.8: Distribution of Historical Returns



Data from Value Line. The number of stocks with annual returns that fall into each return class is graphed.

Note that the overall stock market had negative returns over each of the time periods and the distribution reflects this. More stocks have negative than positive returns and this tendency is accentuated when you look at the shorter time periods (9 month, 1 year) because markets did far worse during these shorter periods.

The other interesting point is the magnitude of the negative returns earned by some stocks. It should be enduring testimony about the riskiness of stocks that some stocks lost

90% or more of their value in nine months (as did about 200 stocks between October 2001 and October 2002). One reason the number of stocks that have negative returns of this magnitude drop off with the longer time periods is because stocks that lose more than 90% of their value year after year generally cease to trade.

The Sector Effect

As markets move up and down, there are entire sectors that go up and down by much more or less than the market. This is sometimes because of fundamentals – individual sectors can do much better or worse than the overall economy – and sometimes because of investor psychology; keep in mind the rush to new economy companies in the last 1990s and away from them in early 2001. Why might this matter? If you have a strategy of buying stocks that have gone down the most over a period and some sectors do far worse than others, your portfolio, for better or worse, will be over-represented with stocks from those sectors.

As with individual stocks, the best and worst sectors shift depending upon the time period that you look at returns. In Table 8.1, the sectors that did the best and worst during the 12 month period from October 2001 to October 2002 are listed.

Table 8.1: Best and Worst Performing Sectors: Oct 2001-Oct 2002

<i>Industry Name</i>	<i>1-year Return</i>	<i>Industry Name</i>	<i>1-year Return</i>
Household Products	22.86	Power	-73.07
Recreation	23.79	Wireless Networking	-48.25
Auto Parts	25.35	Cable TV	-45.51
Thrift	25.79	Telecom. Equipment	-40.62
Trucking/Transp. Leasing	26.26	Semiconductor Cap Eq	-40.24
Homebuilding	28.91	Drug	-35.47
Hotel/Gaming	29.96	Telecom. Services	-32.55
Furn./Home Furnishings	35.37	E-Commerce	-28.67
Retail Building Supply	37.13	Biotechnology	-26.25
Precious Metals	157.10	Electrical Equipment	-23.01

The best performing sector was precious metals, which was borne upwards by the increase in gold prices during the period. The contrast between the ten best and worst performing sector returns is striking, with the best performing sectors all showing returns greater than 20% while stocks in the worst performing sectors dropped by more than 20% over the same period.

If you extend the period to five years from October 1997 to October 2002, the worst performing sectors are technology and telecommunication, where you would have lost on average more than 18% a year each year for the five years. It is worth noting that these were the high-flying sectors of the market boom of the 1990s and would have undoubtedly ranked at the top if you had considered a prior five-year period. Table 8.2 lists the best and worst performing sectors from October 1997 to October 2002.

Table 8.2: Best and Worst Performing Sectors – Oct 1997- Oct 2002

<i>Industry Name</i>	<i>Total Return 5- year</i>	<i>Industry Name</i>	<i>Total Return 5-Year</i>
Canadian Energy	3.82	Wireless Networking	-27.44
Bank (Canadian)	4.59	Internet	-22.47
Thrift	4.64	Telecom. Services	-22.30
Bank	4.78	Telecom. Equipment	-22.03
Bank (Midwest)	5.27	Computer & Peripherals	-21.30
Electric Utility (East)	6.64	Coal	-20.91
Pharmacy Services	7.05	Steel (Integrated)	-19.63
Tobacco	7.27	Computer Software & Svcs	-19.51
Retail Building Supply	8.29	Semiconductor	-19.38
Water Utility	15.05	Healthcare Info Systems	-18.30

If you were a contrarian, constructing a portfolio of loser stocks in October 2002, you should not be surprised to see technology and telecommunication companies dominating the list.

A Portfolio of Losers

To construct a portfolio of loser stocks, you first need to choose a period over which you will estimate returns. While you can make a case for returns over longer time periods, much of the empirical research is built around returns over one year. In keeping with this, the 300 worst performing stocks in the United States between October 2001 and October 2002 were selected. In a preview of a potential problem with this strategy, 166 of these stocks traded at prices less than a dollar. Since the transactions costs of buying these stocks is likely to be very high, only the 134 stocks that traded for more than a dollar were included in the portfolio and they are summarized in Table 8.3. As anticipated, the sectors that were identified as the worst performing sectors in Table 8.2 are over represented in this portfolio.

Table 8.3: Loser Stocks (October 2001 to October 2002)

[illegible]

The Rest of the Story

While loser stocks seem to earn above-average returns if held for long periods, there are clear dangers with this investment strategy. The first is the proliferation of low priced stocks in the portfolio results in high transactions costs for investors. The second is that loser stocks may be exposed to more risk, both in terms of price volatility and in terms of high financial leverage – loser stocks tends to have higher debt ratios. The third is that negative returns usually happen for a reason. If that reason, whether it be poor management or a loss of market share, is not fixed, there may be no catalyst for prices to increase in the future.

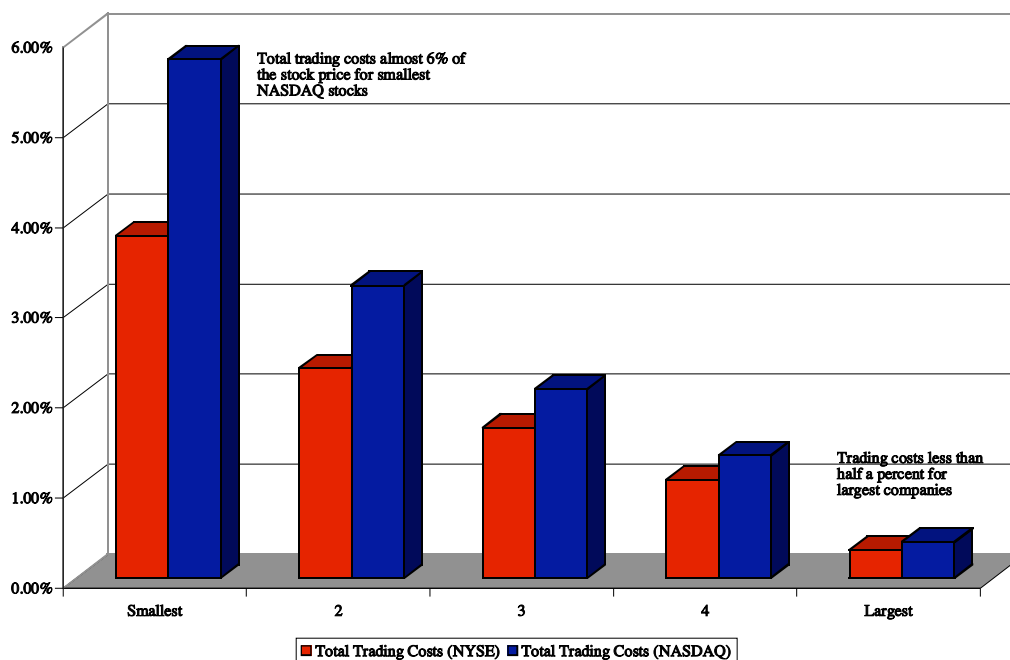
Transactions Costs

The first and perhaps biggest problem with a strategy of investing in loser stocks is that many of these stocks trade at low prices. The transactions costs associated with buying and selling these stocks is high for at least three reasons:

- ❑ The bid-ask spread in these stocks is high, relative to the stock price. Thus, a bid-ask spread of 50 cents would be only 1% of the price for a \$ 50 stock but would be 20% of a stock trading at \$2.50.
- ❑ The commissions and other fixed trading costs also rise as a percent of the investment as the stock price drops. The brokerage commissions will be substantially higher if you buy 10,000 shares at \$ 2 per share than if you buy 1,000 shares at \$ 20 per share.
- ❑ As stock prices drop, institutional investors tend to flee, reducing volatility and trading volume and increasing the transactions costs further.

Though the portfolio of stocks in table 8.3 was constrained to include only stocks that trade at more than a dollar, the average stock price of stocks in that portfolio is only \$3.36 whereas the average stock price in the rest of the market is more than \$26. In addition, the market capitalization of loser stocks is much lower at \$ 388 million than the average market capitalization of stocks in the rest of the market, which is about \$1.7 billion. The combination of low stock prices and small market capitalizations will push up transactions costs when constructing this portfolio. Figure 8.9 provides a measure of the magnitude of the trading costs you face with small market cap companies as opposed to large ones.

Figure 8.9: Total Trading Costs by Market Capitalization



Data from a study by Kothare and Laux. These costs include brokerage commissions, price impact and the bid-ask spread.

The total trading costs, including the bid-ask spread and commission costs, can amount to more than 5% of the stock price for companies in the smallest market capitalization class. The costs will undoubtedly be even larger if these are low priced stocks.¹⁰

What should the minimum price be when creating this portfolio? If you adopt a cut-off of \$5 for the stock price, only 26 of the 147 companies in the portfolio survive. They are listed in Table 8.4:

Table 8.4: Loser Stocks trading at more than \$ 5 per share

Company Name	Ticker Symbol	Industry	Stock Price
DVI Inc.	DVI	MEDSERV	\$6.30
Power Corp.	POW.TO	FINANCL	\$36.85
Footstar Inc.	FTS	RETAILSP	\$7.56
Electronic Data Sys.	EDS	SOFTWARE	\$13.72
National Service Ind.	NSI	DIVERSIF	\$5.75

¹⁰ Kothare, M. and P.A. Laux , 1995, *Trading Costs and the Trading Systems for NASDAQ stocks*, Financial Analysts Journal, March/April 1995.

Fleming Cos.	FLM	FOODWHOL	\$6.14
Sepracor Inc.	SEPR	DRUG	\$7.81
Neose Technologies	NTEC	BIOTECH	\$7.52
ImClone Systems	IMCL	DRUG	\$7.79
Allmerica Financial	AFC	INSPRPTY	\$8.14
CSG Systems Int'l	CSGS	INDUSRV	\$11.39
El Paso Corp.	EP	GASDIVRS	\$7.61
AMR Corp.	AMR	AIRTRANS	\$5.15
PDI Inc.	PDII	INDUSRV	\$5.91
Administaff Inc	ASF	HUMAN	\$5.42
PerkinElmer Inc.	PKI	INSTRMNT	\$5.00
EPCOS AG	EPC	ELECTRNX	\$9.28
Polycom Inc.	PLCM	TELEQUIP	\$9.85
Amdocs Ltd.	DOX	INDUSRV	\$6.93
Cubist Pharm Inc	CBST	DRUG	\$6.83
TriQuint Semic.	TQNT	SEMICOND	\$5.07
Genesis Microchip Inc	GNSS	ELECTRNX	\$9.87
Microsemi Corporation	MSCC	ELECTRNX	\$6.85
VeriSign Inc.	VRSN	INTERNET	\$7.91
AmeriCredit Corp.	ACF	FINANCL	\$6.98
Med-Design Corp	MEDC	MEDSUPPL	\$5.23

Volatility and Default Risk

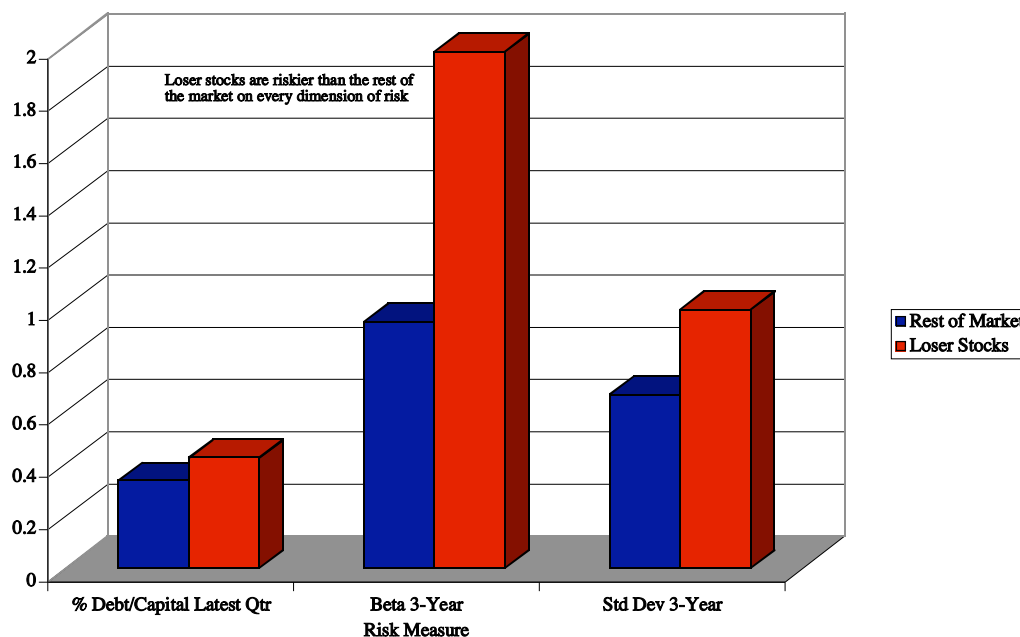
Stocks that have dropped substantially over the last year are often riskier than other stocks. One reason is that at lower stock prices, volatility increases¹¹. The second is that sudden and precipitous declines in stock prices often increase financial leverage and default risk.¹²

¹¹ A stock trading at \$ 2 a share will generally have higher percent volatility in prices and returns than a stock trading at \$ 20 a share. There is no theoretical reason for this but it remains an empirical reality.

¹² Consider a company with \$ 1 billion in debt and \$ 1 billion in equity. If the value of equity drops by 80%, you will generally see this company's debt ratio increase from 50% to a much higher value, since the debt value will not drop as much as equity. In fact, if the debt value does not change, the debt ratio will become 83.33%.

In Figure 8.10 you can see the contrast on three measures of risk – beta, standard deviation in stock prices and debt to capital ratios– between the firms in the loser portfolio and the rest of the market:

Figure 8.10: Loser Stocks versus Rest of the Market: Risk Measures



Data from Value Line. The average beta and standard deviation over the previous 3 years and the book debt to capital ratio is presented for loser stocks and the rest of the market.

On all three measures on risk, but especially on the price-based measures (beta and standard deviation), loser stocks are far riskier than stocks in the rest of the market.

You could screen the 26 stocks that made it through the price screen (\$5 or higher) for excessive risk. In fact, if you do include constraints that stocks with annual standard deviations that exceed 80% (which would eliminate firms in the top 25% in terms of this measure), betas than exceed 1.25 and market debt to capital ratios less than 80%, only three firms remain and they are listed in Table 8.5:

Table 8.5: Loser Stocks with price > \$5 and reasonable risk exposure

<i>Company Name</i>	<i>Stock Price</i>	<i>Standard Deviation</i>	<i>Beta</i>	<i>Debt/Capital</i>
Power Corp.	\$36.85	50.07%	0.64	16.43%
Electronic Data Sys.	\$13.72	55.03%	1.24	41.81%
Footstar Inc.	\$7.56	50.53%	0.10	47.95%

The dramatic drop off in the number of stocks in the portfolio when you impose minimum price limits and risk constraints suggests that a loser stock strategy may be difficult to put into practice even for believers in its contrarian roots.

Catalysts for Improvement

The final and perhaps most difficult factor to consider when buying loser stocks is whether the underlying problems that caused the negative returns have been remedied. While you may not be able to probe the internal workings of each of the firms that you consider for your portfolio, you can look for actions that improve the odds for success:

- ❑ *Change in Management:* You could, for instance, check to see if the management of the firm has changed recently. Presumably, a new management team will be more inclined to admit to mistakes made in the past and to fix them.
- ❑ *Restructuring Actions:* You could also screen for recent restructuring decisions made by the firm including divestitures and acquisitions that change the business mix.
- ❑ *Activist Investors:* Managers at firms in trouble often need pressure brought on them by activist investors; pension funds and individual investors often take positions in troubled companies and push for change. The presence of one or more of such investors at a firm can be viewed as a promising sign.
- ❑ *Survival:* To fix problems that may be long term and structural, firms need time as their ally. They are more likely to get this time if the threat of financial default does not hang over their heads. Restricting your holdings to companies that have manageable debt loads, in addition to acting as a risk screen, also increases the odds of survival.
- ❑ *Trends in profitability:* While the long term trends in profitability for loser stocks are likely to be negative, you may be able to find positive signs in short term trends. You could, for instance, invest only in companies that have reported positive earnings in the last quarter. While one quarter does not make for a turn-around, it may signal that the company has put some of its troubles behind it.

Lessons for Investors

Buying stocks just because they have gone down in the recent past may look like a winning strategy on paper but there are significant associated risks. If you are a prudent investor, with a long time horizon and a contrarian investment philosophy, you should want to buy loser stocks with controllable transactions costs and limited exposure to risk. To achieve these goals, you could consider screening all U.S. stocks for the following:

- ❑ *Past Returns*: Only stocks in the bottom quartile in terms of returns over the last year will be considered for this portfolio. This is a much more relaxed screen than the one used earlier in the chapter (where the 500 stocks with the most negative returns out of 7000) were picked. However, it will then allow for stricter screens for risk and transactions costs.
- ❑ *Transactions Costs*: To reduce the overall transactions costs on the portfolio, only stocks that trade at prices greater than \$5 are considered.
- ❑ *Risk*: Stocks with standard deviations greater than 80%, betas greater than 1.25 or debt to capital ratios that exceed 50% are eliminated from the sample. The first two operate purely as risk screens and the last one is a screen for both risk and survival.
- ❑ *Catalyst for improvement*: Only stocks that report positive earnings in the most recent quarter and increased earnings over the prior period are considered for the overall portfolio. The rationale is that stocks that are making money are not only less risky but also have more freedom to make the changes that need to be made to become healthy companies.

The resulting portfolio of 20 stocks, obtained by screening all U.S. companies in January 2003 is listed in the appendix.

Conclusion

There are many contrarian investors who believe that buying stocks that have done badly in the recent past is a good strategy. This strategy is predicated on the belief that investors over react to new information and push down stock prices too much after bad news (a bad earnings announcement, a cut in dividends) and up too much after good news. The empirical evidence seems to bear out this belief. Studies indicate that stocks that have gone down the most over a recent period generate high returns if held for long periods. However, these stocks also tend to trade at low prices and transactions costs are high with this strategy. These stocks are also riskier than average.

If you want to succeed with this strategy, you have to begin with a long time horizon and a strong stomach for volatility. You will have to construct your portfolio with care to reduce your exposure to both transaction costs and risk. You will often find yourself losing before you begin winning. Even then, this is not a foolproof or a riskless strategy.

Appendix: Loser Stocks trading at more than \$ 5 and with limited exposure to risk and default

<i>Company Name</i>	<i>Ticker Symbol</i>	<i>Industry Name</i>	<i>Stock Price</i>	<i>Total Return 1-Year</i>	<i>Beta 3-Year</i>	<i>Std Dev 3-Year</i>	<i>EPS Latest Qtr</i>	<i>Market debt to capital</i>
Almost Family Inc	AFAM	Medical Services	6.56	-55.23%	0.07	56.66%	0.12	46.85%
Ambassadors Intl Inc	AMIE	Industrial Services	9.18	-57.17%	0.4	52.76%	0.02	0.22%
BJ's Wholesale Club	BJ	Retail Store	15.52	-58.50%	0.73	37.70%	0.38	8.40%
CAE Inc.	CAE.TO	Aerospace/Defense	5.18	-55.19%	1.21	60.03%	0.11	40.56%
Convergys Corp.	CVG	Industrial Services	12.59	-59.59%	1.12	46.25%	0.34	5.06%
Crawford & Co. 'B'	CRD/B	Financial Svcs (Div.)	5.05	-55.55%	0.32	56.68%	0.11	21.48%
Cytec Corp.	CYTC	Medical Supplies	10.81	-60.92%	0.95	66.52%	0.11	0.00%
Enzon Inc.	ENZN	Drug	17.8	-70.29%	1.01	60.11%	0.29	33.46%
Fab Industries	FIT	Textile	8.9	-55.22%	0.22	49.33%	0.19	0.71%
Footstar Inc.	FTS	Retail (Special Lines)	9.42	-77.76%	-0.05	51.38%	0.69	42.70%
Kendle Intl Inc	KNDL	Medical Services	8.52	-56.35%	0.52	65.58%	0.16	12.71%
Ohio Art Co	OAR	Recreation	17	-55.96%	0.19	59.26%	1.18	31.05%
On Assignment	ASGN	Human Resources	7.5	-62.91%	1.17	61.87%	0.14	0.00%
QLT Inc.	QLT.TO	Drug	12.33	-66.91%	1.11	71.34%	0.13	0.00%
SRI/Surgical Express Inc	STRC	Medical Supplies	5.02	-64.56%	-0.33	65.68%	0.05	40.78%
Tenet Healthcare	THC	Medical Services	18.22	-58.11%	-0.38	46.65%	0.68	30.45%
THQ Inc.	THQI	Entertainment Tech	12.2	-58.99%	0.68	67.04%	0.12	0.00%

TRC Cos.	TRR	Environmental	13.99	-60.61%	0.67	66.06%	0.26	11.72%
Vans Inc.	VANS	Shoe	5.06	-55.42%	0.52	51.73%	0.3	7.64%
Veritas DGC Inc	VTs	Oilfield Svcs/Equip.	7.65	-57.30%	1.21	64.72%	0.05	34.93%

CHAPTER 9

THE NEXT BIG THING! NEW BUSINESSES AND YOUNG COMPANIES**In search of bargains**

Gus prided himself on finding bargains. He had bypassed realtors and found a cheap apartment to rent in New York City by contacting landlords directly. He filled it with antiques that he found in small furniture stores at bargain prices. He ate only in restaurants that had never been reviewed by *The New York Times*, based upon word of mouth and his own research. Heartened by his success at finding bargains, Gus decided to apply the same strategy to his investments. He began by looking for stocks in small companies that were not followed by equity research analysts at any of the major investment banks. He expanded his search to look at companies that were planning initial public offerings and requesting shares in them; lacking the time to do analysis, he chose a dozen at random. He even considered investing some of his money in a friend's new venture that sounded promising.

Even as he made his investments, he noticed that he paid much more than the listed price; his broker mentioned something about a large bid-ask spread. In the weeks after he bought the stocks, he also noted that there were days when these stocks never traded and the prices remained static. He also noticed the stock prices moved a great deal when his news announcements were made and that prices were more likely to drop than go up. When he tried to sell some of the stocks on which he had made money, he found himself getting less in proceeds than he expected. Gus decided that his strategy which worked so well with apartments, furniture and restaurants did not work as well with stocks and he was not sure why. He blamed his broker.

Moral: A bargain can sometimes be very expensive

Chapter 7 looked at a strategy of investing in publicly traded companies with good growth prospects. While the payoff to picking the right growth companies can be high, it is difficult to acquire these companies at reasonable prices once they are recognized as high growth companies. There are some investors who believe that the best investment opportunities are in small companies that are not followed by analysts or in firms before they become publicly traded. They argue that investing in young firms and in new business, either when they are private businesses or when they first go public, is the best way to generate high returns. In this chapter, the potential payoff (and costs) associated with these strategies will be explored.

The Core of the Story

It is the dream of every investor to find undiscovered gems to invest in -- small companies with great business models that other investors have either not found yet or are ignoring. Some investors attempt to put this into practice by looking for bargains among small companies that are lightly held by institutional investors and not followed by analysts. Other investors try to beat the market by buying stocks at or shortly after they go public, arguing that these are the stocks that will be the growth stocks of the future. Still other investors with more resources under their control make their investments in promising private companies in the form of venture capital or private equity investments, hoping to ride their success to wealth.

While investors in small publicly traded companies, initial public offerings and in private businesses may adopt very different strategies and have different views of the markets, they do share some common beliefs.

- *Firms that are lightly or not followed by institutions and analysts are most likely to be misvalued:* As firms become larger, they attract institutional investors and analysts. While these investors and analysts are not infallible, they are also adept at digging up information about the firms they follow and invest in, making it less likely that these firms will be dramatically misvalued. By focusing your attention on firms where there are no public investors (private firms and initial public offerings) or on firms where there are relatively few large investors, you hope to increase the payoff to good research. Stated in terms of market efficiency, you believe that you are more likely to find pockets of inefficiency in these parts of the market.
- *Good independent research can help you separate the winners from the losers:* Even if you buy into the notion that stocks that are lightly followed are more likely to be misvalued, you need to be able to separate the stocks that are under valued from those that are over valued. By collecting information on and researching lightly followed firms -- private companies for private equity investments, firms just before initial public offerings and lightly followed publicly traded firms -- you can gain advantages over other investors and increase your exposure to the upside while limiting downside risk.

In other words, these strategies all share the belief that the best bargains are most likely to be found off the beaten track.

The Theory

Is there a theoretical basis for believing that an investment strategy focused on private firms, initial public offerings or smaller, less followed companies will generate high

returns? You could legitimately argue that these firms are likely to be riskier than larger, more established firms and that you should expect to earn higher returns over long periods. This, by itself, would not be justification enough for such a strategy since you would have to show not just high returns but excess returns, i.e., the returns should be higher than what you would expect given the higher risk.

Additional Risk

What are the sources of additional risk of investing in private or small, publicly traded companies? First, you will generally have far less information available about these companies at the time of your investment than you would with larger companies. Second, a greater portion of the value of these firms will come from future growth and a smaller portion from existing assets; the former is inherently more uncertain. Third, investments in private or smaller, publicly traded companies are likely to be less liquid than investments in large, publicly traded companies. Getting in and out of these investments is therefore a much more expensive proposition.

Information Risk

The first and biggest risk in this investment strategy is the paucity and unreliability of information on the companies you invest in. There is far less information provided by private firms than by publicly traded ones; there are no SEC requirements or filing with private businesses. Notwithstanding the limitations of the accounting standards that cover publicly traded firms, they generate numbers that are comparable across companies. Private companies, on the other hand, use very different accounting standards, making it difficult to make comparisons. When investing, you also draw on private information – information generated by others following a firm. This information will not be available for private firms, will be available only in bits and pieces for smaller publicly traded companies and will be widely available on larger publicly traded firms.

Does the fact that there is less information available on private or small firms make them riskier and does it follow then that you should expect to make higher returns when investing in them? While the answer may seem to be obviously yes, there is a surprising amount of disagreement among theorists on this issue. There are many theorists who concede that there is more uncertainty associated with investing in smaller and private firms but who also then go on to posit that much of this risk can be diversified away in a portfolio. They argue that a portfolio of small or private companies will be far less risky than the individual companies that go into that portfolio. In their view, diversified investors would therefore not view these investments as riskier and the expected returns will reflect this judgment.

There are two levels at which you can contest this sanguine view of risk. The first is that investors in private companies or small companies may not be able to diversify easily. For instance, private equity and venture capital investments tend to be concentrated in a few sectors at any point in time. The second is that information risk may not be diversifiable even for investors who have the capacity to diversify. This is because the news that is not revealed about companies is more likely to be bad news than good news; firms after all have the incentive to let the world know when they are doing better than expected. Consequently, even in large portfolios of private or small companies, surprises are more likely to contain bad news than good.

Growth Risk

You invest in younger and smaller companies expecting them to grow faster in the future. While you may base your decisions on substantial research, growth is inherently unpredictable. Of every 100 growth companies that are started, relatively few reach the public market, and among those that reach the public market, even fewer live up to their promise and deliver high growth for extended periods. In other words, you may invest in 999 companies before you invest in a Microsoft (if you ever do).

While you cannot pick the companies that will win this growth game with any precision, you can demand a higher return when investing in companies with greater growth potential as opposed to companies that derive most of their value from existing assets. You can consider the additional return that you demand for the former a risk premium for the unpredictability of growth.

Marketability and Liquidity

All too often, you buy a stock and you have buyer's remorse. If the stock is publicly traded and liquid, you will bear a relatively small cost if you turn around and sell a minute after you buy. First, you will have to pay the trading commissions on both sides of the trade but in these days of discount brokerage houses, this will be in the tens of dollars rather than the hundreds. Second, you will have to bear the cost of the bid-ask spread; even if the stock price has not changed in the minute since you bought the stock, you will receive less when you sell the stock (the bid price) than you paid when you bought the stock (the ask price). For a large publicly traded stock, this too will be small as a percent of the price.

If the stock is small and lightly traded, the cost of changing your mind increases. The commission may not be much higher but the difference between the bid price and the ask price will be a higher percent of the stock price. Furthermore, you can affect prices as you trade pushing prices up as you buy and down as you sell.

With a private company, these costs get larger still. Since there is no ready market for your stake in the company, you will often have to seek out an interested buyer who will often pay you far less than what you paid for the stake because of the illiquidity of the investment. The middlemen in this process also take far more of your money for arranging the transaction than middlemen in the publicly traded asset markets.

How do you reflect this illiquidity risk in your investment strategy? With publicly traded stocks, you will be willing to pay far less for illiquid stocks than liquid stocks, pushing up their expected returns. After all, you need to be compensated for your expected transactions costs. With private companies, it is even more explicit. It is common practice among those who value private companies to apply what is called an “illiquidity discount”, ranging from 20 to 30%, to the estimated value. Thus, a private company which is valued at \$ 10 million may fetch only \$ 7 to \$ 8 million when put up for a sale.

Potential for Excess Return

The discussion in the last section suggests that investments in private or small, illiquid companies should have higher expected returns than investments in larger, more liquid companies. Does this make the former better investments? Not necessarily, since the argument for the higher returns is based upon the presumption that these stocks are more risky. For investing in smaller or private companies to be a good investment strategy, you would need to present arguments that the expected returns will be even higher than those called for by the higher risk. There are several reasons that are offered for why this may happen:

1. *Bigger payoff to information collection and analysis with neglected stocks:* You can argue that the payoff to collecting and analyzing information will be greatest for firms where there is less information and analysis in the public domain. In other words, you are more likely to find bargains among these stocks.
1. *Absence of institutional investors:* This reinforces the first point. Since institutional investors often have more resources at their command (analysts, information databases etc.), you can categorize them as informed investors. To the extent that you are more likely to lose when you trade with someone who has more information than you do, you have a better chance of success in trading in smaller, less followed stocks or in private companies.
1. *Investor fear of the unknown:* There may also be an element of irrationality driving the pricing of smaller companies. Investors are more likely to stay with the known and the familiar (usually bigger companies that are widely held) and away from smaller, less followed investments. During periods of market turmoil, this may lead

to a flight away from the latter, driving prices down well below what you would view as fair.

If you conclude for any or all of the reasons above that you can earn much higher returns than justified by the risk you are taking when investing in smaller companies, the next step becomes examining whether the evidence supports such a strategy.

Looking at the Evidence

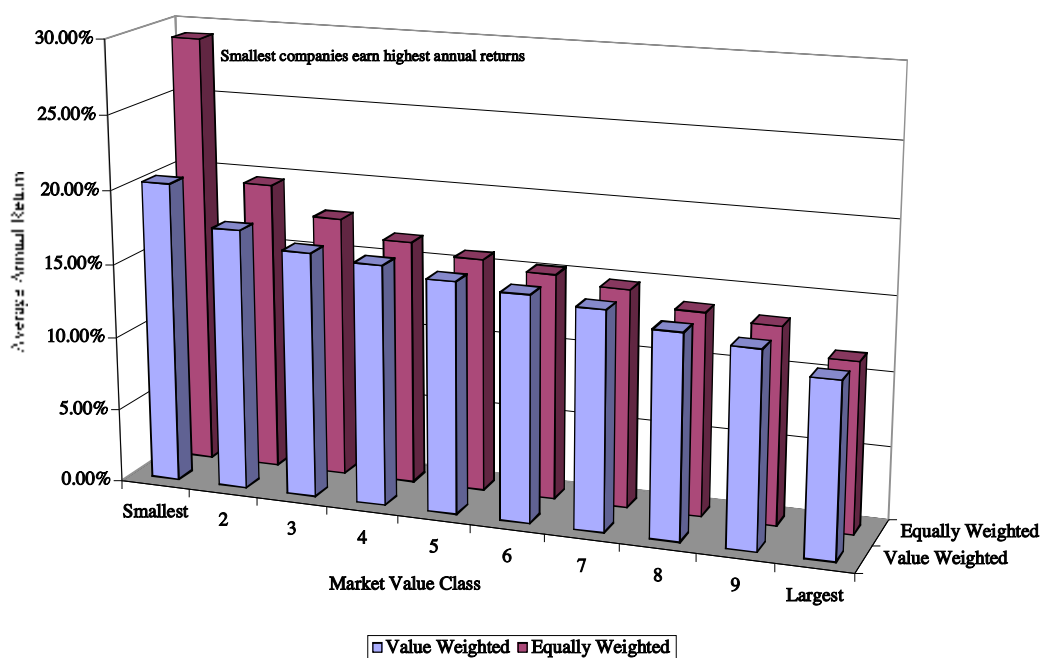
In this section, you will examine the evidence that has accumulated over the last few decades on the efficacy or otherwise of investment strategies oriented around younger and smaller companies. In the first section, the returns from investing in smaller, publicly traded companies are compared to the returns of investing in larger, publicly traded firms. In the second section, the payoff to investing in stocks as they go public is examined, both around the offering date and after the offering. In the third section, you will look at whether investing in private companies (in the form of venture capital or private equity) generates high returns.

Small Companies

There are thousands of publicly traded stocks listed on the major exchanges, and they vary widely in terms of size. There are firms like GE and Microsoft whose values run into the hundreds of billions at one extreme, but there are also publicly traded firms whose values are measured in the tens of millions at the other end. In fact, there are unlisted publicly trade companies whose values can be measured in millions. Would a strategy of investing in the smallest publicly traded companies work? Studies have consistently found that smaller firms (in terms of market value of equity) earn higher returns than larger firms of equivalent risk. Figure 9.1 summarizes annual returns for stocks in ten market value classes, for the period from 1927 to 2001.¹ The portfolios were reconstructed at the end of each year, based upon the market values of stock at that point in time, and held for the subsequent year. The returns are computed both on value weighted (where the amount invested in each company is proportional to its market capitalization) and equally weighted (where the same amount is invested in each company in a portfolio) portfolios.

¹ These annual returns were obtained from the annual returns data set maintained by Ken French and Gene Fama on market value classes.

Figure 9.1: Annual Returns by Market Value Class - 1927 - 2001

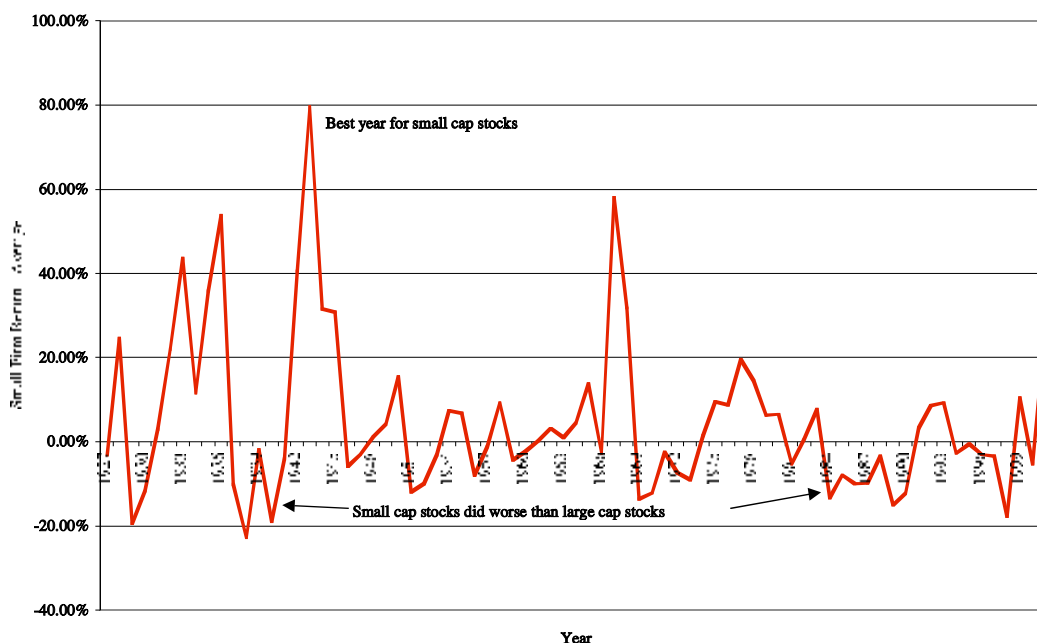


Data from Fama/French. Firms were categorized at the beginning of each year into ten classes based upon market capitalization. The returns were computed over the year on each portfolio.

If you look at value weighted portfolios, the smallest stocks earned an annual return of about 20% over the period as contrasted with the largest stocks which earned an annual return of 11.74%. If you use an equally weighted portfolio, the small firm premium is much larger, an indication that the premium is being earned by the smallest stocks. In other words, to capture this premium, you would have to invest in the very smallest companies in the market. Nevertheless, these results are impressive and provide a rationale for the portfolio managers who focus on buying small cap stocks.

On average, have small cap stocks outperformed large cap stocks over this period? Absolutely, but, success from this strategy is by no means guaranteed in every time period. While small capitalization (small cap) stocks have done better than large capitalization (large cap) stocks in more periods than not, there have been extended periods where small cap stocks have underperformed large cap stocks. Figure 9.2 graphs the premium earned by small cap stocks over large cap stocks each year from 1927 to 2001.

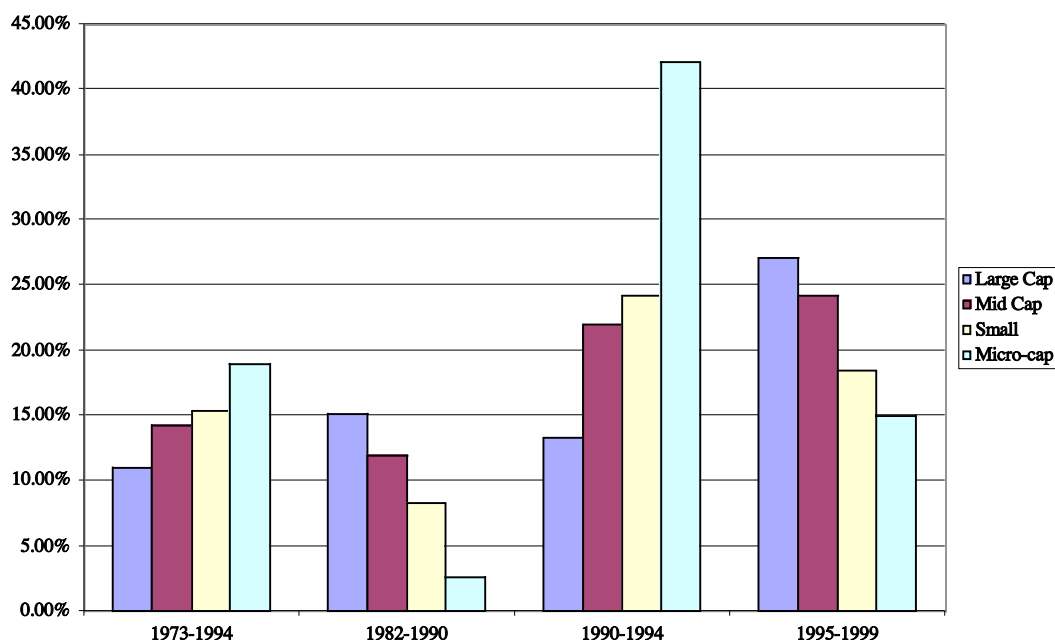
Figure 9.2: Small Firm Premium over time- 1927 -2001



Data from Fama/French. This is the difference between the annual returns on the smallest stocks (bottom 10%) and the largest market cap stocks (top 10%)

Note that the premium is negative in a significant number of years – small stocks earned lower returns than large stocks in those years. In fact, during the 1980s, large market cap stocks outperformed small cap stocks by a significant amount, creating a debate about whether this was a long term shift in the small stock premium or just a temporary dip. On the one side, Jeremy Siegel argues in his book on the long-term performance of stocks that the small stock premium can be almost entirely attributed to the performance of small stocks in the late 1970s.² Since this was a decade with high inflation, could the small stock premium have something to do with inflation? On the other side are small cap portfolio managers, arguing that the events of the 1980s were an aberration and that the small stock premium would return. On cue, the small stock premium returned in the 1990s, as can be seen in Figure 9.3:

² Siegel, J., 1998, *Stocks for the Long Run*, McGraw Hill, New York.

Small Cap Effect over Time

Data from Pradhuman. The categorizations are based upon Merrill Lynch's definition of microcap, small, mid-cap and large cap stocks.

A number of researchers have tried to take a closer look at the small cap effect to see where the premium comes from.³ The following are some of the conclusions:

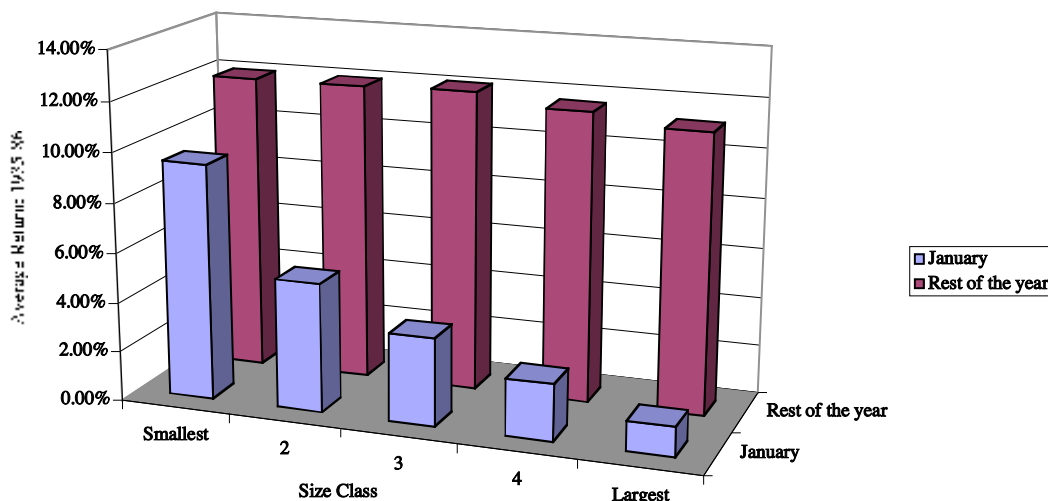
The small cap effect is greatest in the micro-cap companies, i.e., the really small companies. In fact, many of these companies have market capitalizations of \$250 million or lower. All too often these are also companies that have low priced and illiquid stocks, not followed by equity research analysts.

A significant proportion of the small cap premium is earned in January.⁴ Figure 9.4 presents the contrast between small cap and large cap companies in January and for the rest of the year between 1935 and 1986:

³ Pradhuman, S., 2000, *Small Cap Dynamics*, Bloomberg Press.

⁴ Chopra, N, and J. Ritter, 1989, *Portfolio Rebalancing and the Turn-of-the-year Effect*, Journal of Finance, v44. 149-166.

Figure 9.4: The Small Firm Effect in January



Data is from study by Chopra and Ritter. The returns are computed in January and the rest of the year for stocks categorized based upon market capitalization.

In fact, you cannot reject the hypothesis that there is no small cap premium from February to December.

There is evidence of a small firm premium in markets outside the United States as well. Studies find small cap premiums of about 7% from 1955 to 1984 in the United Kingdom,⁵ 8.8% in France and a much smaller size effect in Germany⁶ and a premium of 5.1% for Japanese stocks between 1971 and 1988.⁷

Small cap stocks seem to do better when short term interest rates are high relative to long term rates and when inflation is high. This may account for their superior performance during the 1970s.

⁵ Dimson, E. and P.R. Marsh, 1986, *Event Studies and the Size Effect: The Case of UK Press Recommendations*, Journal of Financial Economics, v17, 113-142.

⁶ Fama, E.F. and K.R. French, 1998, *Value versus Growth: The International Evidence*, Journal of Finance, v53, 1975-1999.

⁷ Chan, L.K., Y. Hamao, and J. Lakonishok, 1991, *Fundamentals and Stock Returns in Japan*, Journal of Finance, v46, 1739-1789.

Can you attribute the small cap premium to the fact that smaller companies are not tracked as frequently by equity research analysts as larger companies? There has been some research that have looked at the relationship between annual returns and company following (number of analysts and institutional holdings). They find evidence that returns tend to increase as the number of analysts following a stock decreases and that this effect remains even after you control for the fact that small companies are more likely to have fewer analysts.

Initial Public Offerings

In an initial public offering, a private firm make the transition to being a publicly traded firm by offering shares to the public. In contrast with equity issues by companies that are already publicly traded, where there is already a market price for the stock that acts as an anchor, an initial public offering has to be priced by an investment banker based upon perceptions of demand and supply. There are some investors who believe that they can exploit both the uncertainty in the process and the biases brought to the pricing by investment bankers to make high returns.

The Process of an Initial Public Offering

When a private firm becomes publicly traded, the primary benefit it gains is increased access to financial markets and to capital for projects. This access to new capital is a significant gain for high growth businesses, with large and lucrative investment opportunities. A secondary benefit is that the owners of the private firm are able to cash in on their success by attaching a market value to their holdings. These benefits have to be weighed against the potential costs of being publicly traded. The most significant of these costs is the loss of control that may ensue from being a publicly traded firm. Other costs associated with being a publicly traded firm are the information disclosure requirements and the legal requirements⁸.

Assuming that the benefits outweigh the costs, there are four steps involved in an initial public offering. The first is to choose an investment banker to take your firm public and this choice is usually based upon reputation and marketing skills. In most initial public offerings, this investment banker underwrites the issue and guarantees a specified price for the stock. This investment banker then puts together a group of several banks (called a syndicate) to spread the risk of the offering and to increase marketing reach. The second step is to assess the value of the company and to set issue details. The pricing of the

⁸ The costs are two fold. One is the cost of producing and publicizing the information itself. The other is the loss of control over how much information to reveal to the market and when to reveal it.

offering is usually based upon comparable firms that are publicly traded⁹ and by sounding out potential buyers of the stock and seeing how much they would be willing to pay. The third step is meeting the legal requirements of the Securities and Exchange Commission (SEC) and filing a prospectus that describes the company and what the issuing company plans to do with the issue proceeds. The final step is to allocate the stock to those who apply to buy it at the offering price. If the demand for the stock exceeds the supply (which will happen if the offering price is set too low), you will have to ration the shares. If the supply exceeds the demand, the investment banker will have to fulfill the underwriting guarantee and buy the remaining stock at the offering price.

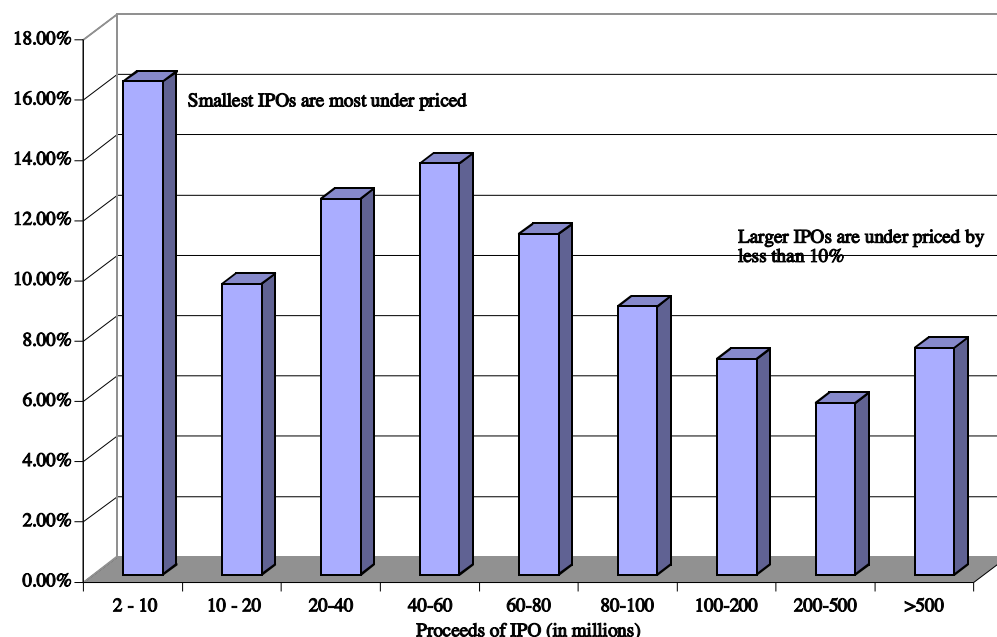
Initial Public Offerings: Pricing and Investment Strategies

How well do investment bankers price initial public offerings (IPO)? One way to measure this is to compare the price when the stock first starts trading to the offering price. While precise estimates vary from year to year, the average initial public offering seems to be under priced by 10-15%. The under pricing also seems to be greater for smaller public offerings. An examination of the under pricing as a function of the issue proceeds for 1767 IPOs between 1990 and 1994 yielded the results that are presented in Figure 9.5 below¹⁰:

⁹ One common approach is to use the average multiple of earnings or revenues that comparable firms trade at in the market to price the initial public offering's shares.

¹⁰ Lee, I., S. Lockhead, J.R. Ritter and Q. Zhao, 1996, *The Costs of Raising Capital*, Journal of Financial Research, v19, 59-74.

Figure 9.5: Average Initial Return and Issue Size



Data from a study by Lee, Lockhead, Ritter and Zhao. The initial return is the return you would have made if you had been able to subscribe at the offer price and sell at the price at the end of the first day of trading.

The smaller the issue, the greater the underpricing – the smallest offerings often are underpriced by more than 17% but the underpricing is much smaller for the larger issues.

You can break down initial public offerings on other dimensions to examine the reasons for the underpricing. A survey of the research on initial public offerings¹¹ provides a comprehensive summary of both the hypotheses on why the under pricing occurs and the empirical evidence on it. A few of his findings are summarized below:

The average initial return is 15.8% across a sample of 13,308 initial public offerings. However, about 15% of all initial public offerings are over priced. In other words, the stock price drops from the initial offering price on the date of the offering. Thus, investing in IPOs is by no means a riskless or guaranteed profits strategy, even if you receive your requested allotment in every one at the offering price.

Initial public offerings where the offering price is revised upwards prior to the offering are more likely to be under priced than initial public offerings where the

¹¹ Ritter, J.R., 1998, *Initial Public Offerings*, Contemporary Finance Digest, v2, 5-31.

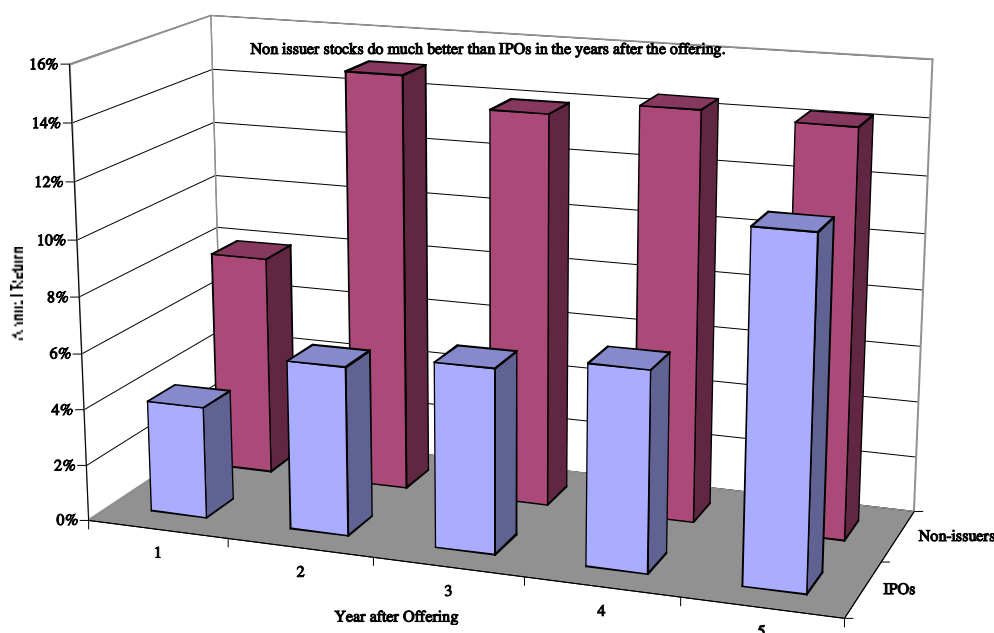
offering price is revised downwards. Table 9.1 below contrasts the initial returns and the percent of offerings that were under priced for both classes from 1991 to 1996.

Table 9.1: Average Initial Return – Offering Price Revision

<i>Offering price</i>	<i>Number of IPOs</i>	<i>Average initial return</i>	<i>% of offerings underpriced</i>
Revised down	708	3.54%	53%
Revised up	642	30.22%	95%

While the evidence that initial public offerings go up on the offering date is strong, it is not clear that these stocks are good investments in the years after. One study¹² tracked returns on 5821 IPOs in the five years after the offerings and contrasted them with returns on non-issuing firms of equivalent risk and size. Their results are presented in Figure 9.6:

Figure 9.6: Post Issue Returns - IPOs versus Non IPOs



Data from Loughran and Ritter. The annual returns in each year after the initial public offering are compared to the returns you would have made investing in non-issuers.

Note that the IPO firms consistently under perform the non-issuing firms and that the under performance is greatest in the first few years after the offering. While this phenomenon is less pronounced for larger initial public offerings, it still persists. What is the significance

¹² Loughran, T. and J.R. Ritter, 1995, *The New Issues Puzzle*, Journal of Finance, v50, 23-51.

of this finding? The returns made by investors who buy initial public offerings will depend upon their time horizons – holding these stocks too long may wipe out any gains made around the offering date.

Private Companies

In venture capital investing, you provide equity financing to small and often risky businesses in return for a share of the ownership of the firm. The size of your ownership share will depend upon two factors. First, at the minimum, you will demand an ownership share based upon how much capital you contribute to the firm, relative to total firm value. For instance, if you provide \$ 2 million and the estimated value of the firm is \$10 million, you will expect to own at least 20% of the firm. Second, if the business can raise the funds from other sources, its bargaining position will be stronger, and it may be able to reduce your share down to a small premium over the minimum specified above. If a business has no other options available to raise the equity financing, however, its bargaining position is considerably weaker, and the owner of the business will have to give up a disproportionate share of the ownership to get the required funding. In general, the capacity to raise funds from alternative sources or to go public will increase with the size of the firm and decrease with the uncertainty about its future prospects. Thus, smaller and riskier businesses are more likely to seek venture capital and are also more likely to be asked to give up a greater share of the value of the firm when receiving the venture capital.

The Market for Private Equity and Venture Capital

Until a few decades ago, venture capital was provided by a relatively small number of individuals. They tended to specialize in a sector, invest in relatively few firms and take an active role in the operations of these firms. In recent decades, though, as the market for venture capital has increased, you have seen three categories emerge.

The first are venture capital funds that trace their lineage back to the 1950s. One of the first was American Research and Development that provided seed money for the founding of Digital Equipment. During the 1960s and 1970s, these funds multiplied and helped start and expand companies such as Intel and Apple that were then taken public. The second are leveraged buyout funds that developed during the 1980s, using substantial amounts of debt to take over publicly traded firms and make them private firms. The publicity they generated – positive as well as negative – in the form of personalities, books and movies helped shaped the public's view of all acquisitions for a generation.¹³ More

¹³ Movies like *Wall Street* and *Other People's Money* and books like *Barbarians at the Gate* were based upon raiders who did leveraged buyouts for a living.

recently, you have seen the growth of private equity funds that pool the wealth of individual investors and invest in private firms that show promise. This has allowed investors to invest in private businesses without either giving up diversification or taking an active role in managing these firms. Pension funds and institutional investors, attracted by the high returns earned by investments in private firms, have also set aside portions of their overall portfolios to invest in private equity.

Venture capital can prove useful at different stages of a private firm's existence. *Seed-money venture capital or angel financing*, for instance, is provided to start-up firms that want to test a concept or develop a new product, while *start-up venture capital* allows firms that have established products and concepts to develop and market them. Additional rounds of venture capital allow private firms that have more established products and markets to expand.

Most private equity funds are structured as private limited partnerships, where the managers of the fund are the general partners and the investors in the fund – both individual and institutional – are limited partners. The general partners hold on to the power on when and where to invest, and are generously compensated, with annual compensation ranging from 1.5% to 2.5% of the total capital invested and significant performance bonuses. Partnerships typically last from 10 to 12 years and limited partners have to agree to make capital commitments for periods of 5 to 7 years.

The Payoff to Venture Capital and Private Equity Investing

Note that the act of seeking and receiving venture capital is voluntary, and both sides enter into the relationship with the hope of gaining from it. The business gains access to funds that would not have been available otherwise; these funds in turn might enable the firm to bridge the gap until it can become a publicly traded firm. The venture capitalist might contribute management and organizational skills to the venture and provide the credibility needed for the business to raise more financing. The venture capitalist also might provide the know-how needed for the firm to eventually make a public offering of its equity. The venture capitalist gains as well. If the venture capitalist picks the right businesses to fund and provides good management skills and advice, there can be large returns on the initial investment. While the venture capitalist may reap returns from the private business itself, the largest payoff occurs if and when the business goes public and the venture capitalist is able to convert his or her stake into cash at the market price.

How well do venture capital and private equity investors do, relative to the market? There is clearly anecdotal evidence that some private equity investors do very well on individual deals and over time. There are also periods of time when private equity investing

collectively earns extraordinary returns. During the 1990s, for instance, venture capital funds earned an average return of 29.5%, compared to the S&P 500's annual return of 15.1%, but there are three potential problems with this comparison. The first is that the appropriate comparison would really be to the NASDAQ, which boomed during the 1990s and contained companies much like those in a venture capital portfolio – young technology firms. The second and related point is that these returns (both on the venture capital funds and the NASDAQ) are before you adjust for the substantial risk associated with the types of companies in their portfolios. The third is that the returns on the venture capital funds themselves are suspect because they are based upon assessments of value (often made by the venture capitalists) of non-traded investments. In fact, many of these venture capital funds were forced to confront both the risk and self-assessment issues in 2000 and 2001 as many of their investments, especially in new technology businesses, were written down to true value. From September 2000 to September 2001, for instance, venture capital funds lost 32% of their value, private equity funds lost 21% and buyout funds lost 16% of their value.

When you look at the longer period returns on private equity investing over the last two decades what emerges is the sobering evidence that venture capital does yield returns but not of the magnitude that some investors expect. Venture Economics, a data service that tracks the returns on private equity investments reported the following short term and long term returns on private equity investments as of September 2001:

Table 9.2. Venture Economics' US Private Equity Performance Index (PEPI)
Returns as of September 30, 2001 (in percent)

<i>Fund Type</i>	<i>1 Yr</i>	<i>3 Yr</i>	<i>5 Yr</i>	<i>10 Yr</i>	<i>20 Yr</i>
Early/Seed Venture Capital	-36.3	81	53.9	33	21.5
Balanced Venture Capital	-30.9	45.9	33.2	24	16.2
Later Stage Venture Capital	-25.9	27.8	22.2	24.5	17
All Venture Capital	-32.4	53.9	37.9	27.4	18.2
All Buyouts	-16.1	2.9	8.1	12.7	15.6
Mezzanine	3.9	10	10.1	11.8	11.3
All Private Equity	-21.4	16.5	17.9	18.8	16.9
S&P 500	-15.3	13.6	14.8	15.6	13.9

On average, private equity and venture capital funds have outperformed the S&P 500 but the difference is surprisingly small. Between 1991 and 2001, for instance, all private equity funds earned an annual average return only 3.2% higher than the S&P 500 over the same

period. Given the high risk associated with these investments, that does not seem like a significant excess return.

Crunching the Numbers

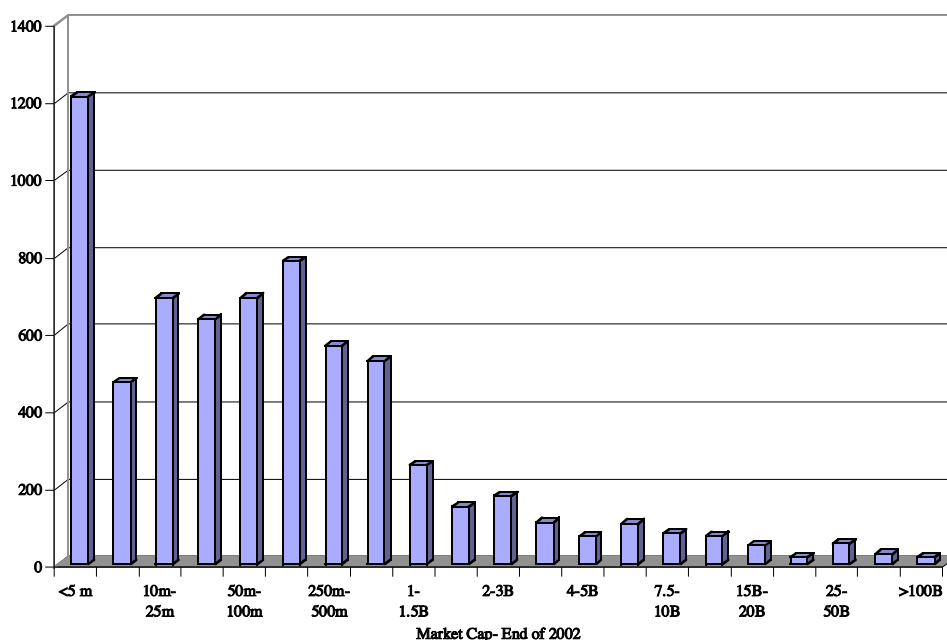
The evidence presented in the last section suggest that investing in smaller, less followed companies or in private businesses can generate a payoff for investors. In this section, you will first look at differences in market capitalization and institutional following across publicly traded firms, then at the initial public offerings in a recent quarter and finally at the portfolios that would emerge if you decided to put these investment strategies into practice.

Market Capitalization

What comprises a small-cap company? The answer will vary widely depending upon who you ask and the universe of stocks that they invest in. For an investor who restricts his investments to S&P 500 companies, a billion dollar company may be a small company. For an investor who looks at smaller stocks on the NASDAQ, the cutoff will be much lower. It will also shift as the market goes up and down. At the peak of the stock market in 1999, there were dozens of companies trading at market capitalizations that exceeded \$ 100 billion. In 2002, after three years of a bear market, there were only a handful left.

The best way of assessing the differences that make for small and large companies is to look at the distribution of market capitalizations across the market. Figure 9.7 presents the number of listed firms in the United States that fall into different market capitalization classes at the end of 2002.

Figure 9.7: Market Cap Distribution

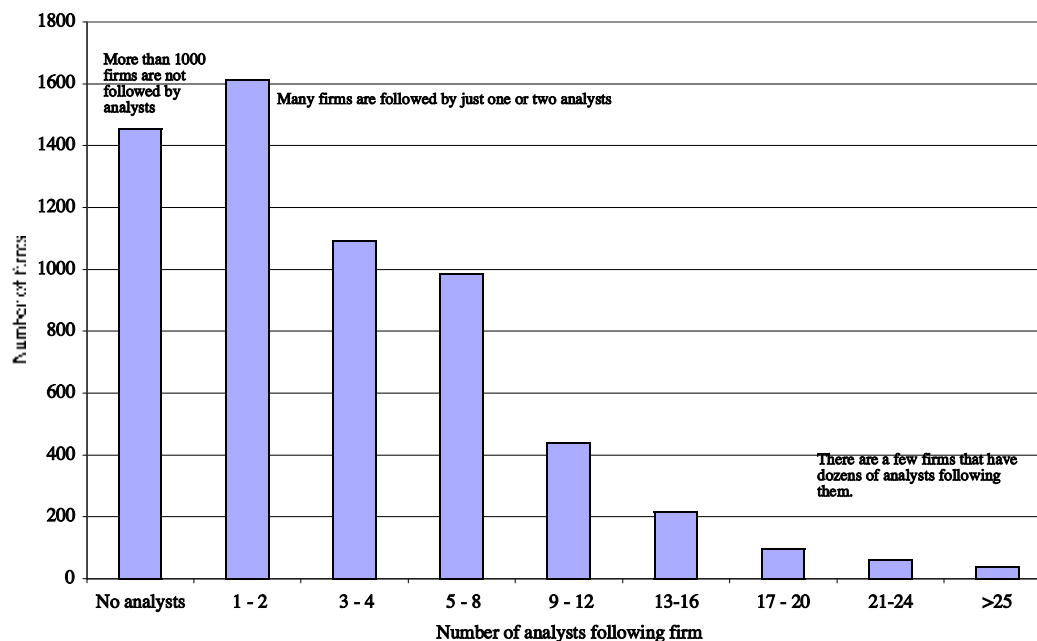


Data from Value Line. The number of firms in each market capitalization class is reported.

Note the extraordinary number of firms (more than 1200) that had market capitalizations that were less than \$ 5 million. This represents the convergence of two phenomena – the large number of small companies that went public in the 1990s and the dramatic fall in value at these companies as the technology bubble burst. In fact, you can safely argue that a large number of the smallest companies will cease to exist as publicly traded entities in the near future. If you adopt commonly used criteria for small cap (\$250 million and less, for instance), you would find more than two thirds of all listed companies being classified as small cap.

If small is difficult to define, lightly followed is even more so. One measure of following is the number of analysts who follow a company. Many of these analysts work for investment banks or for portfolio managers. In Figure 9.8, the distribution of firms, categorized by number of analysts tracking them in early 2003, is provided.

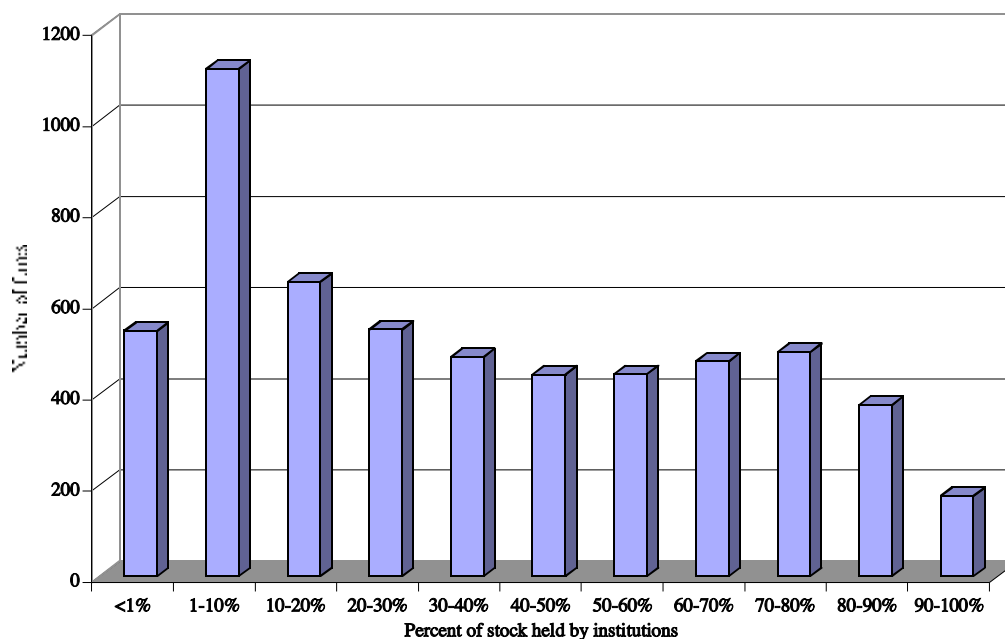
Figure 9.8: Number of analysts estimating earnings per share: U.S. firms in January 2003



Data from Zacks. These are sell side analysts tracking each company in January 2003.

Note again that about 1400 firms have no analysts tracking them and that 1800 are tracked by a lone analyst. Another measure of following is investment by institutional investors – mutual funds and pension funds. Figure 9.9 categorizes companies by the percent of stock held by institutions in early 2003.

Figure 9.9: Institutional Holdings as % of Stock



Data from Value Line. This is the percent of stock held by institutional investors, which include mutual funds and pension funds, as a percent of the outstanding stock in a company.

While institutions may dominate the holdings of some firms, there are a large number of firms where institutions hold less than 10% of the outstanding stock.

Bringing together all three measures – market capitalization, analyst following and institutional ownership – it should come as no surprise that there is an overlap across these measures. Small market cap companies are less likely to be held by institutions or followed by analysts. However, there are some small cap companies with high institutional ownership and analyst following.

Initial Public Offerings

The number of IPOs varies fairly widely from period to period, depending largely upon market mood and receptivity. In the fourth quarter of 2002, for instance, there were 21 initial public offerings made with a collective market value of \$3.7 billion. The breakdown of the sectors to which these 21 companies belonged to is provided in Table 9.3:

Table 9.3: IPOs by Sector in Fourth Quarter 2002

Sector	Number of IPOs	Percent of offerings
Insurance	4	19.00%
Banking	3	14.30%

Computer Software & Services	2	9.50%
Leisure	2	9.50%
Health Products & Services	2	9.50%
Computer Hardware	1	4.80%
Real Estate	1	4.80%
Specialty Retail	1	4.80%
Metals & Mining	1	4.80%
Diversified Services	1	4.80%
Energy	1	4.80%
Manufacturing	1	4.80%
Financial Services	1	4.80%

In contrast, 26 companies went public in the fourth quarter of 2001 with a collective market value of \$ 10 billion. At the height of the boom in the stock market in the late 1990s, hundreds of companies were going public every year with a cumulative market value running into tens of billions of dollars.

How well did the 21 companies that went public in the fourth quarter of 2002 do for investors? Table 9.4 reports on the offer price and the price at the end of the quarter for each of these companies and measures the return over the quarter.

Table 9.4: Returns for Quarter- IPOs in Fourth Quarter 2002

<i>Company Name</i>	<i>Offer Price</i>	<i>Close Price</i>	<i>Return</i>
Dick's Sporting Goods, Inc.	\$12.00	\$19.20	60%
Montpelier Re Holdings Ltd.	\$20.00	\$28.80	44%
Portfolio Recovery Associates, Inc.	\$13.00	\$18.25	40%
VistaCare, Inc.	\$12.00	\$16.01	33%
Chicago Mercantile Exchange Holdings Inc.	\$35.00	\$43.66	25%
IMPAC Medical Systems, Inc.	\$15.00	\$18.52	23%
Newcastle Investment Corp.	\$13.00	\$15.97	23%
Safety Holdings, Inc.	\$12.00	\$14.38	20%
U.S.I. Holdings Corporation	\$10.00	\$11.75	18%
Platinum Underwriters Holdings, Ltd.	\$22.50	\$26.35	17%
Taylor Capital Group, Inc.	\$16.50	\$18.60	13%
Commercial Capital Bancorp, Inc.	\$8.00	\$8.87	11%
Natural Resource Partners L.P.	\$20.00	\$20.70	4%
Wynn Resorts, Limited	\$13.00	\$13.11	1%
Constar International Inc.	\$12.00	\$11.75	-2%
WellChoice, Inc.	\$25.00	\$23.95	-4%
Harrington West Financial Group, Inc.	\$12.00	\$11.25	-6%
Martin Midstream Partners L.P.	\$19.00	\$17.75	-7%
Seagate Technology Holdings	\$12.00	\$10.73	-11%

Cosí, Inc.	\$7.00	\$5.56	-21%
SI International, Inc.	\$14.00	\$10.81	-23%

It is worth emphasizing that you would not have earned these returns by buying the stock on the first trading day, since the first traded price was very different from the offering price for some of them. Consider, for instance, Table 9.5 that lists the offer price and the price at the end of the first trading day for most of the companies listed in the last table.

Table 9.5: First Day Price Movement – IPOs in Fourth quarter 2002

<i>Company</i>	<i>Offer Price</i>	<i>First day close</i>	<i>Return</i>
VistaCare, Inc.	\$12.00	\$15.05	25%
Chicago Mercantile Exchange Holdings Inc.	\$35.00	\$42.90	23%
Portfolio Recovery Associates, Inc.	\$13.00	\$15.45	19%
IMPAC Medical Systems, Inc.	\$15.00	\$17.72	18%
Montpelier Re Holdings Ltd.	\$20.00	\$23.50	18%
Platinum Underwriters Holdings, Ltd.	\$22.50	\$24.99	11%
Dick's Sporting Goods, Inc.	\$12.00	\$13.15	10%
WellChoice, Inc.	\$25.00	\$27.20	9%
Cosí, Inc.	\$7.00	\$7.60	9%
Safety Holdings, Inc.	\$12.00	\$12.90	8%
Martin Midstream Partners L.P.	\$19.00	\$17.70	-7%
Seagate Technology Holdings	\$12.00	\$11.50	-4%
Newcastle Investment Corp.	\$13.00	\$12.50	-4%
Natural Resource Partners L.P.	\$20.00	\$19.40	-3%
Constar International Inc.	\$12.00	\$11.85	-1%

When underwriters under price IPOs, as they have VistaCare, investors may gain from the underpricing but the issuing companies lose out. The difference between the proceeds raised from the offer price and the proceeds that could have been raised if the issue had been priced right is called “money left on the table”. Table 9.6 summarizes the cash left on the table at some of the IPOs listed above.

Table 9.6: Cash on Table – IPOs in Fourth Quarter 2002

<i>Issuing Company</i>	<i>Investment Bank</i>	<i>Offer Price</i>	<i>Offer Proceeds</i>	<i>Traded Price</i>	<i>Traded Proceeds</i>	<i>Cash on Table</i>
Platinum Underwriters Holdings, Ltd.	Goldman, Sachs & Co.	\$22.50	\$675.90	\$25.00	\$751.00	\$75.10
WellChoice, Inc.	Credit Suisse First Boston	\$25.00	\$346.50	\$28.50	\$395.00	\$48.50
Montpelier Re Holdings Ltd.	Morgan Stanley	\$20.00	\$190.50	\$22.00	\$209.50	\$19.00
Chicago Mercantile Exchange Holdings	Morgan Stanley	\$35.00	\$166.30	\$39.00	\$185.30	\$19.00

VistaCare, Inc.	Lehman Brothers	\$12.00	\$72.00	\$13.05	\$78.30	\$6.30
Portfolio Recovery Associates, Inc.	William Blair & Company	\$13.00	\$45.10	\$14.75	\$51.20	\$6.10
Taylor Capital Group, Inc.	Keefe, Bruyette & Woods, Inc.	\$16.50	\$45.80	\$17.75	\$49.30	\$3.50
Cosí, Inc.	William Blair & Company	\$7.00	\$38.90	\$7.50	\$41.70	\$2.80
IMPAC Medical Systems, Inc.	Thomas Weisel Partners LLC	\$15.00	\$32.80	\$16.05	\$35.10	\$2.30
Dick's Sporting Goods, Inc.	Merrill Lynch	\$12.00	\$87.50	\$12.25	\$89.30	\$1.80

In summary, even in a slow quarter like the one examined, there is evidence that investment bankers continue to under price initial public offerings and that some investors at least gain from this under pricing.

Private Equity Investments

Obtaining information on individual private equity deals is more difficult to get than information on initial public offerings. You can get a measure of the overall success of private equity investment by looking at money flows into and out of private equity funds. In 2002, a total of \$21.179 billion was invested by venture capitalists in 3011 deals. In contrast, more than \$200 billion was invested in 8221 deals in 2000. Table 9.7 summarizes the deal flow in venture capital from 1992 to 2002.

Table 9.7: Venture Capital Investments – Number and Dollar value of Deals

<i>Year</i>	<i>Companies</i>	<i>Deals</i>	<i>Investment(\$Millions)</i>
1992	1065	1415	3594.6
1993	955	1212	3876.3
1994	992	1241	4202.2
1995	1583	1902	7683
1996	2126	2660	11598.2
1997	2612	3251	15548.7
1998	3495	4208	21525.4
1999	4514	5686	55136
2000	6478	8221	106556.5
2001	3878	4712	41296.5
2002	2495	3011	21179

Not surprisingly, venture capital funds flow most to firms in high growth sectors. Table 9.8 breaks deals down by sector in the fourth quarter of 2002:

Table 9.8: Venture Capital Investments by Sector- 2002

<i>Sector</i>	<i>Companies</i>	<i>Deals</i>	<i>Investment(\$M)</i>
Software	183	183	869.3
Telecommunications	79	79	561.8

Biotechnology	61	61	474.4
Medical Devices and Equipment	57	57	486.1
Networking and Equipment	48	48	467.7
Industrial/Energy	38	38	140.7
IT Services	33	33	217.7
Media and Entertainment	32	32	142.4
Semiconductors	28	28	242.7
Business Products and Services	27	27	81
Computers and Peripherals	26	26	134
Consumer Products and Services	18	18	68.4
Healthcare Services	17	17	98.2
Financial Services	17	17	52
Retailing/Distribution	16	16	61.6
Electronics/Instrumentation	11	11	53
Other	1	1	2
Total	692	692	4152.9

The vast majority of the deals were in software and technology (both medical and other). The deals were even more skewed towards technology in earlier years.

A Portfolio of Small Cap, Lightly Followed Stocks

Based upon the information provided in the last section, you could go about constructing a portfolio of small-cap, lightly followed stocks using the following criteria:

Market Capitalization Cut-off: As you can see from figure 9.7, even a maximum market cap of \$ 10 million would yield more than a thousand firms. Since many of these firms with small market capitalizations are likely to be either in trouble or difficult to even buy stock in, a minimum market capitalization of \$ 10 million will be required. The maximum market capitalization is set at \$ 50 million to allow for other constraints to be built into this portfolio.

Analyst Following: Only firms that are not followed by any analysts will be considered for the portfolio. Though this may seem severe, there are (as figure 9.8 brings forth) enough publicly traded firms that are not followed by any analysts.

Institutional Ownership: If the institutional ownership in a firm exceeds 5%, it will not be considered for the portfolio. Here again, the fact that small firms tend to have low institutional holdings allows the imposition of this constraint.

Stock Price Minimum: Since trading stocks that sell for less than a dollar can be prohibitively expensive, only stocks that trade for more than a dollar are considered for this portfolio.

Combining these screens – market cap less than \$ 50 million but greater than \$ 10 million, no analysts following the stock, institutional ownership less than 5% of the stock and a minimum stock price of \$ 1 - generates a portfolio of 122 companies. Table 9.9 lists the stocks.

Taking a closer look at this portfolio, you should not be surprised to see no familiar names, since these are not widely followed companies. What is surprising, though, is the diversity of businesses that these firms operate in. Contrary to popular opinion, small companies are not predominantly technology firms but include conventional manufacturing and service companies.

Table 9.9: Portfolio of Small, Lightly Followed Companies – End of 2002

Company Name	Industry	Company Name	Industry	Company Name	Industry
American Bio-Medica Corp.	MEDSERV	Rhocrp Inc.	BAVK	Hebert Hrl Corp	FINANCL
B & H Ocean Carriers	PAIRTIME	Cowditz Bancorp	BAVK	Beta Oil and Gas Inc	OILPROD
Williams Industries Inc.	MACHINE	Calearbury Plc Hldg Corp	HOTELGAM	Income Med Corp	MEDSUPPL
Capital Title Group Inc.	INSURERS	Codorus Valley Bancorp	BAVK	ASTA Funding Inc	FINANCL
American Ecology Corp.	ENVIRONM	National Sec Group Inc	IT/SLITC	Quotasmith.com Inc	INDUSRV
Educational Development	PUBLIS+I	Chad Therapeutics	MEDSUPPL	Credito Beta Corp	OILPROD
Merrill Merchants Bancshares I	BANK	Rig Foot Fin	FINANCL	Creative Host Sys	FOODWHOL
Welco Enterprises Inc.	SHCE	Elamex S.A. De C.V. CL J	ELECTRX	Cardiotech and Inc	MEDSERV
Citizens First Fin	THIRIT	Tap-It Pacific	APPAREL	Amerigon Life 'A'	AUTO-DEM
FIRST REGIONAL BANCORP	BAVK	Ca-mel Container Sys. Ltd.	PACKAGE	Boston Life Sciences Inc.	DRUG
Idolitti Brands	FOODPROC	Hallfax Corp.	SOFTWARE	Computer Motion	MEDSUPPL
BF Enterprises	BANK	1ST TDL DANCORP OILCO	BAVK	Acru Oclans Curr	GASDISTR
Midsouth Bancorp	BANK	Abnhal Adams Natl Hnch	BAVK	Global Payment Tech	FINANCL
Jameson Inns Inc	FOOTELGAM	Barnwell Industries	OILPROD	Tauiln Power Dist	RECREATE
CDH MURKITY F.ML CORP VA	BANK	ML Macadamia Orchards LP	FOODPROC	Canada Southern Petroleum Ltd	CANEMRGY
Guaranty Bancshares Inc. Tex	BANK	Antenna TV S A	ENTRTAIN	Verisel Inc.	RETAILSP
Panplex-Sidney Finl	THIRIT	Puone Brothers	MEDSUPPL	Mastermart Technologies	SOFTWARE
Falmouth Bancorp	BANK	Tn'l Remote Imaging	APPAREL	Century Casinos Inc	HOTELGAM
Unitec Hrl Corp Minn	THIRIT	Aristotle Corp NEW	IASTRMNT	Imntech and Inc	DRUG
RGC Resources Inc	GASDISTR	Boston Biomeica	FOODWHOL	Insightful Corp	SOFTWARE
Chesca Bancorp	BANK	Amcon Distributing Co.	SEMICOND	MetGum Inc	SOFTWARE
Gundrich Petro Corp.	OIL PROD	Catalyst Semiconductor Inc	PAPER	I-Hwy Corp	MEDSERV
Capital Environmental Resource	ENVIRONM	Impreso.com	CHEM/SPEC	Dynetek Inc	SOFTWARE
Elmer's Restaurants Inc	RESTAUNT	Crystal Systems	MEDSUPPL	Jacada Ltd.	SOFTWARE
DWYER GROUP INC	DIVERSIF	Valley Forge Scientific Corp.	TRUCKING	NFON Systems Inc.	SOFTWARE
Nicholas Financial Inc	FINANCL	C2 Inc	RETAILSP	Optibase Ltd	COMPUTER
LIFEWAY FOODS	FOODPROC	Innowo Group	FINANCL	Parinetech Inc	DRUG
Annapolis Natl Bancorp Inc	BANK	Ameritrans Cap Corp	HOUSEPRD	Cryo-Cell Intl Inc	MEDSERV
Laser-Pacfic Media Corp.	RECFATE	Leather Factory Inc.	OIL PROD	IPAC: Technologies Corp	COMPUTER
Community Rk Shs Ind Inc	BAVK	Durable Pacle Pet & Min	MEDSUPPL	Pacific Internet Limited	TVTRNFT
Birmingham Utilities Inc.	WATER	Food Technology Service Inc.	SOFTWARE	Delaire Sys Inc	TELESERV
Dynamic Materials	BUILDING	Ravanti Corp	CHEM/DIV	Dialysis Corp Amer	MEDSERV
Energy West Inc.	GASDISTR	Coherent Technologies Inc.	MEDSERV	FOCUS ENHANCEMENTS	SOFTWARE
Golden Enterprise Ltd	FOODPROC	Palat n Technologies Inc	ENVIRONM	Infinity Inc	SOFTWARE
American First Apt Inv I P	RETAIL-SP	CECO Environmentalta	ELECTRX	Carticom Corp	SOFTWARE
Gallery Of History Inc.	BANK	Micronetics Wireless	FOODPROC	New York Health Care	SOFTWARE
Sussex Bancorp	INDUSRV	Vita Inc. Prods	ELECTRX	Ross Systems Inc.	WIRELESS
VS+ Corp.	TELESERV	AMERICAN TECHNOLOGY	PACKAGE	Extended Systems	SOFTWARE
Qovista Communications Inc	FOODWHOL	Rotronics Mfg Inc	ELECTRX		
Pizza Inn Inc.	DRUG	XATA CORP	FINANCL		
Transgene SA		TFC Enterprises	ELECTRX		
		TRANS INDS INC	ELECTRX		

The Rest of the Story

There are three separate strategies that have been presented in this chapter for investing in younger, higher growth company. The first and perhaps least risky strategy is to invest in small, publicly traded companies that are not widely followed by analysts. The second and potentially riskier strategy is to invest in stocks at the time or just after an initial public offering. The third and riskiest strategy is to invest in young private companies before they go public. Each of these strategies may show promise but each also comes with potential problems.

Small and Lightly Followed Stocks

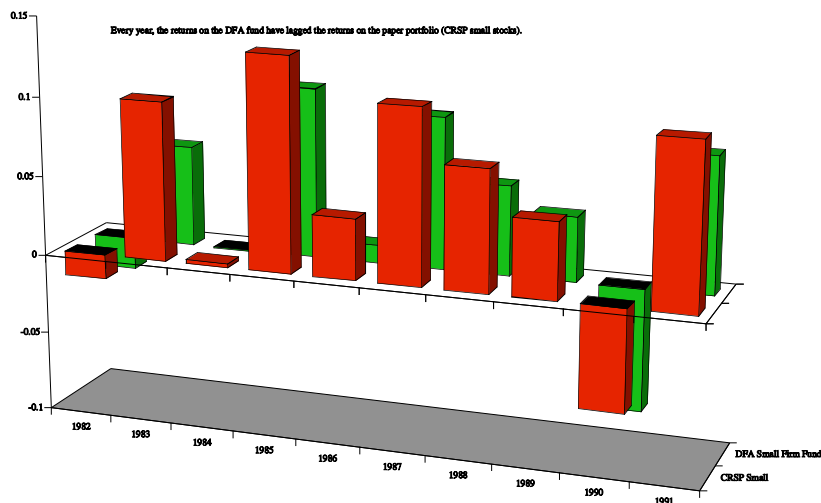
The persistence of the small stock premium has led many to argue that what looks like a premium in studies comes the failure to allow for transactions costs and to adequately measure risk in firms. There is truth in these arguments, though it is unclear whether the small stock premium would disappear even if they were considered.

Transactions Costs

The transactions costs of investing in small stocks are significantly higher than the transactions costs of investing in larger stocks. The bid-ask spread as a percent of the stock price is higher for smaller companies. In addition the price impact from trading is also higher for small cap stocks because they are less liquid; you will tend to drive the price up as you buy and down as you sell, especially with larger orders. Can the difference in transactions costs overwhelm the small cap premium? The answer has to depend upon both the size of your portfolio and your time horizon. With short time horizons, the transactions costs can wipe out any perceived excess returns associated with small cap companies. With longer time horizons, though, you can spread the costs over your holding period and the excess returns may persist. A larger portfolio can help you reduce some transactions costs (brokerage and commission costs) but may increase other transactions costs (price impact).

In a telling illustration of the difficulties associated with replicating the small firm premiums that are observed in the research in real time, the returns on a hypothetical small firm portfolio (CRSP Small Stocks) are compared with the actual returns on a small firm mutual fund (DFA Small Stock Fund), which passively invests in the same small stocks in Figure 9.10:

Figure 9.10: Returns on CRSP Small Stocks versus DFA Small Stock Fund

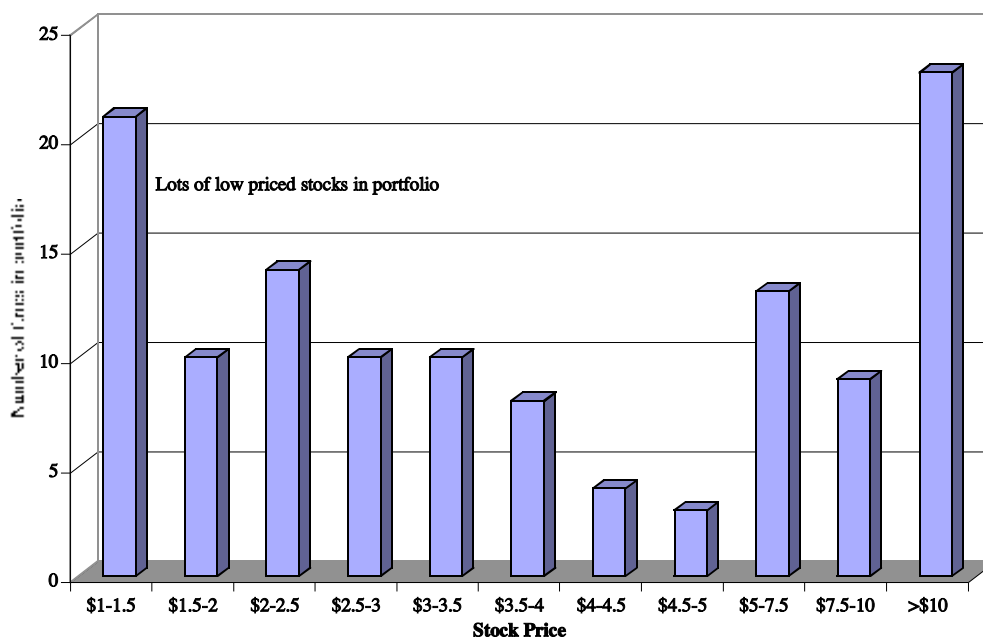


Data from Morningstar and CRSP. The returns in each year from the DFA mutual fund and from the hypothetical small stock portfolio of CRSP are reported.

Note that the returns on the DFA fund consistently lag the returns on the hypothetical portfolio by about 2%, reflecting the transactions and execution costs faced by the fund.

Consider now the lightly followed, small cap portfolio in table 9.9. While only stocks with a price of more than a dollar were considered for this portfolio, there are a large number of low priced stocks in the portfolio. In Figure 9.11, the stocks in the portfolio are broken down by the level of the stock price:

Figure 9.11: Stock Prices in Small Cap Portfolio



Data from Value Line. The number of small cap stocks that fall into each price class is reported.

About two thirds of the stocks in the portfolio trade at less than \$5 a share, a level at which transactions costs tend to mount. In fact, if you invested only in stocks that trade above \$10, you would reduce the number of stocks in the portfolio by about 80%.

Failure to consider liquidity and estimation risk

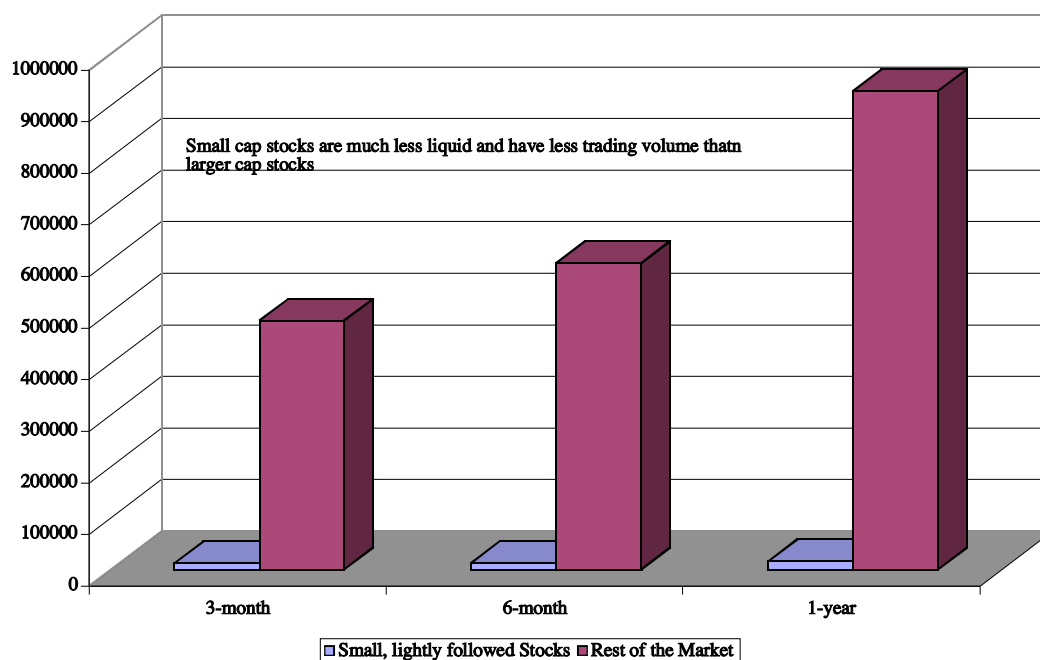
Many of the studies that uncover a small cap premium measure the risk of stocks use conventional risk and return models to measure and control for risk. It is entirely possible that these models under estimate the true risk of small stocks. Thus, the small firm premium may really reflect the failure of risk and return models in finance. The additional risk associated with small stocks may come from several sources. First, the estimation risk associated with estimates of risk parameters for small firms is much greater than the estimation risk associated with risk parameters for larger firms. The small firm premium may be a reward for this additional estimation risk.¹⁴ Second, there may be much greater liquidity risk associated with investing in small companies. This risk (which is also partially

¹⁴ The problem with this argument is that it does not allow for the fact that estimation risk cuts both ways – some betas will be underestimated and some will be overestimated – and should be diversifiable.

responsible for the higher transactions costs noted in the previous section) is not captured in conventional risk and return models.

One measure of the liquidity of stocks is the trading volume on the stocks. On this measure, you can see that lightly followed, small cap stocks are much less liquid than the rest of the market. In Figure 9.12, the trading volume over three months, six months and a year is compared for the stocks in the small cap portfolio with the trading volume in the rest of the market.

Figure 9.12: Trading Volume: Small Cap versus Rest of the Market



Data from Value Line. This is the average trading volume, in number of shares traded, for small firms and the rest of the market.

Clearly, there is far less trading volume, both in terms of number of shares outstanding and dollar trading volume. Even small orders can cause the price of the stock to move, reducing any potential returns.

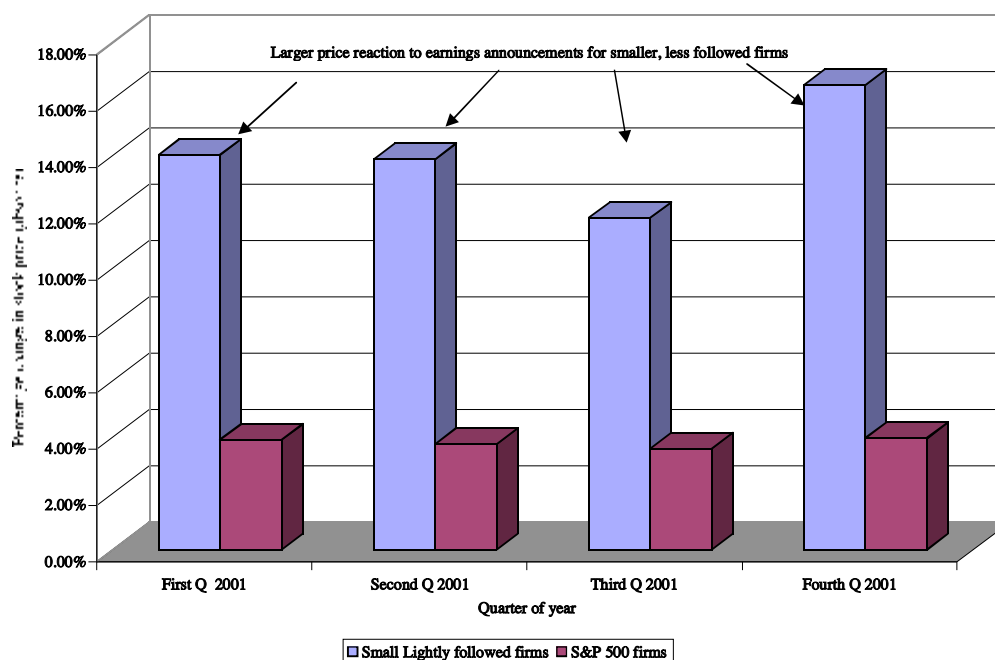
Assume that you decide to screen the small-cap portfolio for minimal trading and invest only in those firms where the annual trading volume exceeds the number of shares outstanding in the firm. With this screen, you would reduce the size of your portfolio by about 50%. In fact, combining this screen with a requirement that stock prices exceed \$ 5 would reduce the number of stocks in this portfolio from 122 firms to 25 firms.

Information Risk

A strategy of investing in smaller firms that are less followed by analysts and not widely held by institutions can expose you to information risk. You will be far more dependent on the firm that you are investing in to provide you with information and you will not have the luxury of analysts investigating the firm's weaknesses and providing you with advance warnings of coming surprises.

How will this information risk manifest itself? You are more likely to see larger price reactions to earnings and dividend announcements made by smaller, less followed firms than by firms that are widely followed. This is clearly visible in Figure 9.13, where the percentage price change (up or down) in reaction to quarterly earnings announcements in 2001 is graphed for the firms in the small cap, lightly followed portfolio listed in Table 9.9 and compared to the same measure for firms in the S&P 500.

Figure 9.13: Price Reaction to Earnings Announcements



Data from Compustat and CRSP. This is the absolute change (either an increase or a decrease) in stock price, stated in percent terms, on the day of the earnings announcement.

There are two points that need to be made about this graph. First, these represent the size of the price changes. In other words, this graph indicates that you are more likely to see big price moves on earnings reports for smaller, less followed firms but it does not tell you in which direction; stocks are more likely to both go up a lot and go down a lot for these firms.

Second, the percentage changes in prices may be skewed upwards for the smaller firms because the stock prices at these firms are also lower.

How would you screen for this risk? You could go through the tedious task of looking at the stock price reaction to earnings reports in the past for each firm in the sample and only investing in stocks where the price reaction is muted. A less technical but less burdensome way of reducing your risk exposure is to only invest in companies with stable and growing earnings, on the assumption that you are less likely to be surprised with these firms.

Initial Public Offerings

A strategy of investing in initial public offerings looks promising if you look at the average returns that you can earn from investing in initial public offerings at the offer price. There are, however, two catches. The first is that the allotment process is skewed towards over priced offerings and away from under priced offerings; you will get all the shares you ask for in the former and far fewer than you wanted in the latter. The second is that the market for initial public offerings goes through hot and cold phases – lots of IPOs in some years followed by very few in others. If you are dependent upon IPOs for the bulk of your portfolio, you will find yourself with slim pickings in the latter periods.

The Allotment Process

If initial public offerings, on average, are under priced, an obvious investment strategy is to subscribe a large number of initial public offerings and to construct a portfolio based upon allotments of these offerings. There is, however, a bias in the allotment process that may prevent this portfolio from earning the excess returns you see in the research. When you subscribe to initial public offerings, the number of shares that you are allotted will depend upon whether and by how much the offering is under priced. If it is significantly under priced, you will get only a fraction of the shares that you requested. On the other hand, if the offering is correctly priced or over priced, you will get all of the shares that you requested. Thus, your portfolio will have fewer shares than you want in under priced initial public offering and more shares than you want in overpriced offerings. You can see this if you consider the 21 companies that made initial public offerings in the last quarter of 2002. If you had applied for \$10,000 worth of shares in each of these companies, you would have received your entire allotment in the five companies where the offering price was greater than the market price. In the remaining companies, you would have received less than your requested number of shares, with the lowest allotment being in companies like Vista Care that were most undervalued.

There are two ways in which you can win this allotment game. The first is to be the beneficiary of a biased allotment system, where the investment bank gives you more than your share of your requested shares in under priced offerings. While this is illegal in the United States¹⁵, it is legal in many other countries in the world. The second and more legitimate way is to develop an analytical system that allows you to separate under priced from over priced offerings, using public information contained in the prospectus and other SEC filings. You would then request shares in only those offerings that you have identified as under priced. If you are reasonably accurate, you should end up with a portfolio that more closely resembles (or even beats) the hypothetical portfolios created across all initial public offerings.

The IPO Cycle

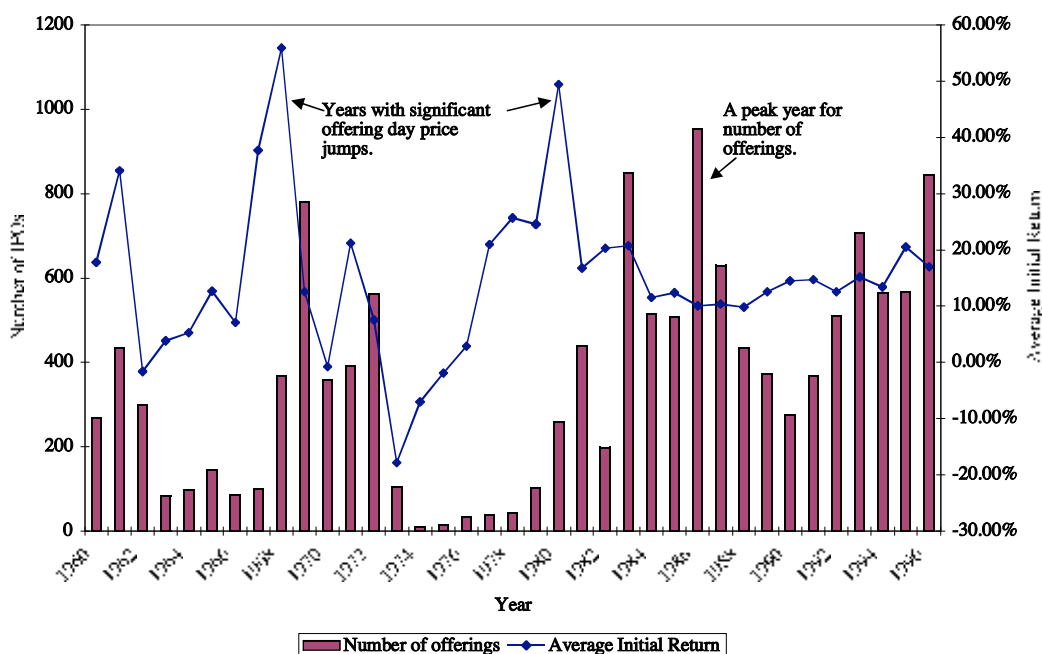
Initial public offerings ebb and flow with the overall market. There are periods where the market is flooded with initial public offerings and periods where there are almost no offerings. Contrast, for instance, the salad days of the late 1990s, when firms went public at an extraordinary pace to 2001, when the number slowed to a trickle. In addition, the initial public offerings during any period tend to share a common sector focus. For instance, the bulk of the initial public offerings during 1999 were of young technology firms. This does create two problems for investment strategies that focus exclusively on initial public offerings. The first is that your portfolio will not be diversified in periods of plenty, and will be over weighted in whichever sector is in favor at that point in time. The second is that there will be extended periods where you will find nothing to invest in, because there are few or no initial public offerings.

One comprehensive examination¹⁶ of IPOs provides a summary of the number of offerings made each year from 1960 to 1996 and the average initial returns on those offerings. His results are summarized in Figure 9.14:

¹⁵ Notwithstanding restrictions on this practice, investment banks in the 1990s used allotments in initial public offerings as a lead into other business with clients. Thus, large portfolio managers often were given more than their fair share of initial public offerings that were in demand.

¹⁶ Ritter, J.R., 1998, *Initial Public Offerings*, Contemporary Finance Digest, v2, 5-31.

Figure 9.14: Number of IPOs and Average Initial Return



Data from Ritter. The number of offerings each year and the return on the first offering day is reported.

Note that the number of offerings drops to almost zero in the early 1970s and the returns to the offerings drops as well. A portfolio manager who focused only on initial public offerings would have gone out of business in that period.

The number of offerings in the fourth quarter of 2002 illustrates the IPO cycle. The 21 companies that went public in that quarter represents a dramatic drop off from the 178 companies that went public in the fourth quarter in 1999. The shift in sector focus is also significant. While 75% of the offerings in the fourth quarter of 1999 were technology companies, only one technology company made an initial public offering in the fourth quarter of 2002.

Private Companies

Many of the problems associated with the small firm strategy that were listed earlier in this section are magnified when investing in private companies:

- *Transactions costs and liquidity:* The transactions costs associated with private equity investments can be substantial. Not only do you have to do due diligence on your potential equity investments, meeting managers and gauging their plans, but you also bear a substantial cost when you exit these investments. If you change your

mind and want to get out of an investment you made recently, you will find yourself receiving far less than you paid for that investment.

- *Information Risk:* As with small publicly traded firms, small private companies can hold back on important information. If you, as a private equity investor, do not do your homework, what you do not know can easily hurt you.

There is another point worth making about private equity and venture capital investments. Even the modest average returns that you saw reported for the entire sector are pushed up by the presence of a few investments that make very high returns. Most private equity and venture capital investments fail, and the median (rather than the average return) indicate this propensity. Consider, for instance, the glory years of 1997 through 1999. The conventional wisdom is that private equity investments did well in those years. In 1999, the weighted-average internal rate of return on private equity investments was 119%, but the median return in that year was 2.9%. The median trailed the average badly in 1997 and 1998, as well.

As the stock market declined between 2000 and 2002, private equity and venture capital opportunities also dropped off. This can be partially explained by the weaker economy that prevailed during those years. However, it also illustrates the dependence of private equity investors on a vibrant stock market to exit their investments – the highest returns in private equity come from companies that can be taken public.

Lessons for Investors

The problems that you face when you invest in smaller, lightly followed companies, initial public offerings and private equity investments are often similar, though they may vary in degree. While you cannot ever insulate a portfolio of such companies from risk, you can try to screen for obvious problems.

If you are constructing a portfolio of smaller, lightly followed companies, these are some of the screens to consider:

- *Small but not too small:* If you want to invest in small companies, but want to avoid tiny companies that may be delisted, you should specify both a maximum market capitalization and a minimum market capitalization. For instance, you could invest in companies with a market capitalization below \$ 100 million but above \$ 10 million. As your portfolio becomes larger, you may need to revise these screens, increasing both the maximum and minimum market capitalization to meet your needs.
- *Liquidity and transactions costs:* The simplest test for liquidity is the stock price level (a minimum price of \$5 is a good standard) and trading volume (annual volume that exceeds shares outstanding). An alternative measure of liquidity is the

float – the shares that are actually available for trading as a percent of the outstanding stock. You could restrict yourself only to stocks with sufficient float for you to be able to trade easily.

- *Pricing screens:* If the argument for investing in small companies is that they are more likely to be misvalued than larger, heavily followed companies, you want to screen further to make sure that you end up with the most undervalued companies rather than the most overvalued. One simple way of putting this in practice is to invest only in companies that trade at low PE ratios; you could, for instance, require stocks to trade at PE ratios less than 10.

The portfolio of 18 companies that met all of these criteria – market capitalization more than \$ 10 million but less than \$ 100 million, a stock price of at least \$ 5, annual trading volume that exceeds the number of shares outstanding and PE ratios less than 10 is listed in appendix 1.

If you are considering investing in initial public offerings, you should try to do at least of the following:

- *Play the allotment game well:* The key to winning the IPO game is getting more shares in under priced IPOs and less shares (or no shares) in over priced IPOs. Assuming that you will not be given preferential allotments by investment banks, this will require that you not only read the prospectuses filed by these companies but that you try to do preliminary valuations of the companies.
- *Consider mixing this strategy with another more diverse one:* Since a strategy of investing in IPOs can lead to years of plenty followed by years with few or no offerings, and since even in good years, offerings tend to be concentrated in a few sectors, you may want to combine this strategy with another, more diverse one. For instance, you could invest 75% of your portfolio in small, lightly followed, publicly traded companies and 25% in initial public offerings.
- *Be disciplined:* The evidence on IPOs suggests that any price run-up that occurs after initial public offering dissipates if you hold the stock for too long. In fact, these stocks do not generate high returns if you hold them for extended periods (more than a year) after the initial public offerings.

If you are interested in private equity or venture capital, you have to begin with the recognition that you cannot do this directly as an individual investor. You will have to choose a private equity fund that will accept your investment – most private equity funds have substantial minimum investment constraints. In choosing a private equity fund, you should consider past performance – a good track record would indicate that the fund picks the right firms to invest in – and risk – high risk funds can quickly go from success to peril.

Finally, you should expect to pay far more in management fees and expenses and have restrictions imposed on your investment.

Conclusion

The allure of investing in hidden gems – businesses that other investors have not discovered or have ignored - underlies all of the investment strategies described in this chapter. The strategy of investing in smaller, less followed companies is the strategy that is most accessible to individual investors. By putting your money in companies with small market capitalization that are lightly held by institutions and not followed by analysts, you may be able to generate higher returns. Whether these higher returns are just compensation for the higher risk of these stocks – they are less liquid and information may not be as freely available – or excess returns is the key question that investors have to answer while following this strategy. Your odds of success improve if you can focus on stocks, with lower transactions costs and more stable earnings that are priced attractively.

A more risky strategy is investing in companies as they go public by bidding for shares in these companies at the initial public offerings. While the empirical evidence suggests that these stocks are generally under priced (by about 10-15%), this strategy has three problems. The first is that you are likely to get all the shares you request in companies that are over priced and less than your requested number in under priced companies. Thus, your final portfolio will earn lower returns than the empirical evidence suggests. The second problem is that a strategy of investing in only IPOs will have to be short term (almost all of the price jump occurs on the first day of trading and can dissipate if you hold the stock too long) and result in portfolios that are overweighted in the hot IPO sectors (technology in 1999, for instance). Finally, the number of IPOs in a year reflects the market mood, dropping off significantly in bear markets and rising in bull markets. As an investor, you may very well find nothing to invest in when confronted with a cold market and too many offerings to look through in hot markets.

The riskiest strategy discussed in this chapter is investing in businesses before they go public, and then nurturing them to the point where they can be acquired or go public (at which point you cash out on your investment). This is what private equity and venture capital investors do. Since this strategy requires screening (you have to look at private businesses to decide which ones to invest in) and active monitoring (to ensure that your investment in the business is not being wasted), it is beyond the reach of most individual investors. There are private equity and venture capital funds that do have the resources to screen and monitor investments, but they meet with varied success. Relatively few funds generate high returns and it is not clear that even these funds can sustain their success.

Appendix 1: Small Cap Companies that are lightly followed – January 2003

<i>Company Name</i>	<i>Ticker Symbol</i>	<i>Industry Name</i>	<i>Stock Price</i>	<i>P/E Trailing 12 Mo</i>	<i>Market Cap \$ (Mil)</i>	<i>% Institutional Holdings</i>	<i>Volume</i>
American Community Bancshares	ACBA	Bank	\$8.30	10.80	\$25.00	1.06	1200
ASTA Funding Inc	ASFI	Financial Svcs. (Div.)	\$14.91	6.60	\$64.10	3.06	3800
B & H Ocean Carriers	BHO	Maritime	\$7.11	2.90	\$29.10	0.32	100
BFC Financial Corp	BFCFA	Financial Svcs. (Div.)	\$5.25	4.90	\$44.80	0.86	1100
Britton & Koontz Capital	BKBK	Bank	\$14.61	9.50	\$30.40	4.59	100
Community Bancorp Inc	CMBC	Bank	\$9.20	12.00	\$34.40	1.73	5600
Crescent Banking Co	CSNT	Bank	\$16.90	4.00	\$37.60	2.59	400
ECB Bancorp Inc	ECBE	Bank	\$19.51	12.00	\$38.80	0.72	1300
F.M.S. Financial	FMCO	Thrift	\$12.73	10.80	\$85.60	1.39	200
Hungarian Tel & Cable Corp	HTC	Telecom. Services	\$7.90	8.00	\$89.70	0.62	2700
Monarch Cement Co	MCEM	Cement & Aggregates	\$18.15	9.30	\$75.50	3.73	400
NORTECH SYST	NSYS	Electronics	\$6.85	7.50	\$18.60	3.56	9700
Pelican Financial Inc	PFI	Bank	\$5.72	2.40	\$25.50	3.98	100
RGC Resources Inc	RGCO	Natural Gas (Distrib.)	\$19.49	11.90	\$38.00	3.06	900
Security Cap Corp	SCC	Retail (Special Lines)	\$6.50	11.30	\$46.40	0.1	2400
Thousand Trails Inc.	TRV	Recreation	\$9.20	5.70	\$63.20	4.3	800
Washington Savings Bank FSB	WSB	Thrift	\$8.93	11.90	\$40.10	4.09	2300
WVS Financial Corp	WVFC	Thrift	\$15.94	9.50	\$41.70	1.24	500

CHAPTER 10

MERGERS AND RETURNS! THE ACQUISITIVE COMPANY

The Hare and the Tortoise Revisited

Peter was an impatient man. His portfolio was full of solid stocks that grew slowly but steadily every year and delivered decent returns but Peter was not satisfied. As he scanned the journal for news about the stocks he owned, he noticed that the companies that made the news every day were the ones that grew threw acquisitions. Led by CEOs who were larger than life, these companies grew at exponential rates by gobbling up their competition and embarking into new and different businesses. Reading about these acquisitions, Peter was struck by how much analysts liked these companies and their dynamic strategies. Tired of the staid management of the companies in which he owned stock, Peter sold off all his existing investments and invested heavily in the acquisitive companies that made the news.

For a few months, his strategy looked like it was paying off. The companies continued to post striking growth rates in revenues and earnings, and their stock prices outpaced the market as analysts continued to reward them with strong buy recommendations. The troubles began with a news story about an accounting restatement at one of the companies; its acquisitions, it turned out, had not been properly accounted for and the earnings of the company from previous years were adjusted downwards. Not surprisingly, its stock price fell but it was the ripple effect on the other companies that hurt Peter's portfolio. Many of the other companies in his portfolio had used the same accounting techniques as the company in trouble, and rumors of accounting troubles filled the air. As the stock prices in these companies plummeted, the CEOs went from heroes to villains and the analysts who until very recently had been so optimistic about these companies turned on them with a vengeance. Peter, sadder and wiser from the experience, sold his stocks and put his money back into boring companies.

Moral: Slow and Steady beats Growth in haste.

Growth does not come easily to companies. For a firm to grow rapidly it has to not only find a large number of new investments but these investments have to pay off quickly. Firms that are in a hurry to grow do not want to wait for this payoff to occur. Instead, they try to grow by acquiring other companies. Since they can fund these acquisitions by issuing new stock, there is no real limit (other than what the market will bear) on how many acquisitions these firm can do or how quickly they can grow, especially in buoyant markets.

Small companies adopting this strategy can very quickly become large companies, and in the process, may make their investors wealthy.

Acquisitions are large news events and get substantial coverage in the financial press. The announcements of acquisitions cause price convulsions, and it is not surprising that there are investment strategies based upon them. Some investors make their bets on acquiring companies, hoping to ride the growth that comes from acquisitions and other related benefits (synergy, for instance) to high returns. Other investors try to make money by investing in target companies either before or after acquisitions are announced. In this chapter, you will look at the potential for both strategies and some of the dangers involved.

The Core of the Story

There are different arguments made for investing in acquiring companies and target companies. Consider first the arguments that are made for investing in acquisitive companies.

Invest in small companies that have found a way to speed the growth process. Through the last four decades and especially in the last one, companies like WorldCom, Tyco and Cisco adopted strategies that were built around acquisitions to accelerate the growth process. WorldCom, a small telecomm company, showed that size does not have to be an impediment when it acquired MCI, which was several times its size in the late 1990s. Tyco acquired companies in different businesses, rapidly expanding its business mix and changing its character as a company during the same period. Most famously, Cisco went from being a small company in the early 1990s to briefly being the largest market cap company in the world in 1999, with a market capitalization close to \$ 500 billion. Investors in all three companies earned extraordinary returns during the period on the money that they had invested in these companies.

High Growth and it is cheap (at least in your accounting statements): To understand why investors were attracted to acquisitive companies, you have to begin by first recognizing that most investors like to see growth in earnings and most do not care whether that growth comes from internal investments or from acquisitions. You have to follow this up by understanding how acquisitions are accounted for in accounting statements. If accounting rules allow firms to show the benefits of the growth from acquisitions, in the form of higher revenues and earnings, but hide (at least partially) the costs of the acquisitions, it should come as no surprise that acquisitive companies can look very good on a number of accounting dimensions. Earnings and revenues will grow rapidly while little additional investment is made in

capital (at least as measured in the financial statements). For several decades in the United States, firms were allowed to use “pooling” to account for acquisitions, if they qualified on a number of dimensions.¹ If an acquisition qualified for pooling treatment, only the book value of the assets of the company that was acquired was shown in the balance sheet and not the market value represented by the acquisition price. Thus if \$ 10 billion was paid for a company with a book value of \$ 1 billion, the new assets would show up with a value of \$ 1 billion (the book value) on the balance sheet but the extra \$ 9 billion that was paid would essentially disappear into the footnotes.

The CEO as genius: One common feature that you often find in acquisitive companies is a high profile CEO, with a gift for self-promotion – Bernie Ebbers at WorldCom, Dennis Kozlowski at Tyco and Jack Welch at GE come to mind. This provides the second rationale that is often provided to investors for buying these companies. These CEOs, you will be told, are geniuses at the acquisitions game, often able to acquire companies at low prices and turn them around to deliver high values.

What about investing in target companies? After all, the real price surge that you see on acquisitions is in the companies that are acquired rather than in the acquiring firms. Not surprisingly, investment strategies built around target firms claim to have found a way to identify these firms before the announcements:

Private Sources: The most common sales pitch, of course, is that private (and reliable) sources have provided information on an upcoming acquisition. If the sales pitch is true, it is almost certainly illegal, since any persons who have this information (employees at the companies, or the investment bankers involved in the deal) would be classified as insiders by the SEC. If it is not true, you are just chasing another rumor in the market.

Analytical models: Some investors argue that you can use analytical devices or metrics to identify potential takeover targets. These metrics can range from sudden increases in trading volume (indicating that someone is accumulating large numbers of shares in the company) to fundamentals (low PE ratios and poor management). While not every potential target will be taken over, you can still generate high returns even if a small proportion of the firms you invest in get taken over.

¹ One requirement to qualify for pooling was that an acquisition had to be financed entirely with stock. Another is that you face restrictions on selling the assets of the acquired firm in the year after the acquisition.

Other investors settle for a less ambitious strategy of investing in companies after they have become targets in acquisitions, hoping to make money as the transaction price is finalized or from a bidding war (between two acquirers).

The Theory: Acquisitions and Value

If an acquisition creates value, it is possible that both the acquiring and acquired firm stockholders can walk away with more money in their pockets after the transaction. Even if an acquisition can create value, though, the division of value between stockholders of the acquiring and acquiring firms will depend critically on the acquisition price. If an acquiring company pays too much for a target firm, relative to value created in the acquisition, its stock price will go down, but target company stockholders will gain proportionately.

Acquisitions and Value Creation

Can a firm create value by acquiring other firms? While taking a skeptical view of this proposition, you can, at least in theory, see ways in which acquisitions and mergers can increase value. A company can acquire companies that are undervalued by the market and take advantage of market mistakes, thus playing the role of a canny portfolio manager. A merger can work by creating synergy, a rationale much used and misused in acquisitions. Finally, a firm can also create value by buying poorly managed, poorly run firms and turning them around. In this section, each of these value-creating motivations will be described.

Acquire undervalued firms

If markets make mistakes in pricing companies, an acquirer can conceivably buy a company at a bargain price, relative to its value. The acquirer can then gain the difference between the value and the purchase price. For this strategy to work, however, three basic components need to come together:

1. *A capacity to find firms that trade at less than their true value:* This capacity would require either access to better information than is available to other investors in the market, or a better analytical tools than those used by other market participants.
2. *Access to the funds that will be needed to complete the acquisition:* Knowing a firm is undervalued does not necessarily imply having capital easily available to carry out the acquisition. Access to capital depends upon the size of the acquirer – large firms will have more access to capital markets and to internal funds than smaller firms or individuals – and upon the acquirer's track record – a history of success at identifying and acquiring under valued firms will make subsequent acquisitions easier.

3. *Skill in execution*: If the acquirer, in the process of the acquisition, drives the stock price up to and beyond the estimated value, there will be no value gain from the acquisition. To illustrate, assume that the estimated value for a firm is \$ 100 million, and that the current market price is \$ 75 million. In acquiring this firm, the acquirer will have to pay a premium. If that premium exceeds 33% of the market price, the price exceeds the estimated value, and the acquisition will not create any value for the acquirer.

While the strategy of buying under valued firms has a great deal of intuitive appeal, it is daunting, especially when acquiring publicly traded firms in reasonably efficient markets, where the premiums paid on market prices can very quickly eliminate the valuation surplus. The odds are better in less efficient markets or when acquiring private businesses.

Create Operating or Financial Synergy

The reason most commonly given as an explanation for the significant premiums paid in most acquisitions is synergy. Synergy is the potential additional value from combining two firms. Synergies can either come from operations or they can be financial.

Operating synergies are those synergies that allow firms to increase their operating income, to increase growth or to do both. You would categorize operating synergies into four types:

Economies of scale that may arise from the merger, allowing the combined firm to become more cost-efficient and profitable. These are most likely to occur when you have two firms in the same business merging to create a larger firm.

Greater pricing power from reduced competition and higher market share, which should result in higher margins and operating income. For this to occur, the competition has to be weak and fragmented, relative to the firm created in the merger.

Combination of different functional strengths, as would be the case when a firm with strong marketing skills acquires a firm with a good product line. This presumes that the combined firm will retain both strengths and that the strengths will carry over into the new business.

Higher growth in new or existing markets, arising from the combination of the two firms. For instance, this would be case when a US consumer products firm acquires an emerging market firm, with an established distribution network and brand name recognition, and uses these strengths to increase sales of its products.

Operating synergies can increase profit margins and expected growth, and through these increase the value of the firms involved in the merger or acquisition.

With financial synergies, the payoff can take the form of either higher cash flows or a lower cost of capital. Included are the following:

A combination of a firm with excess cash, or *cash slack*, (and limited project opportunities) and a firm with high-return projects (and insufficient cash to fund them) can yield a payoff in terms of higher value for the combined firm. The increase in value comes from the investments that will be taken with the excess cash that otherwise would not have been taken. This synergy is likely to show up most often when large firms acquire smaller firms, or when publicly traded firms acquire private businesses.

Debt capacity can increase, because when two firms combine, their earnings and cash flows may become more stable and predictable. This, in turn, allows them to borrow more than they could have as individual entities, which creates a tax benefit for the combined firm. This tax benefit can either be shown as higher cash flows, or take the form of a lower cost of capital for the combined firm.

Tax benefits can arise either from the acquisition taking advantage of tax laws or from the use of losses to shelter income. Thus, a profitable firm that acquires a money-losing firm may be able to use the losses of the latter to reduce its tax burden.

Clearly, there is potential for synergy in many mergers. The more important issues are whether that synergy can be valued and, if so, how to value it.

Take over poorly managed firms and change management

Some firms are not managed well and others often believe they can run these firms better than the current managers. Acquiring poorly managed firms and removing existing managers, or at least changing existing management policies and practices, should make these firms more valuable, allowing the acquirer to claim the increase in value. This value increase is often termed the *value of control*.

While this story can be used to justify large premiums over the market price, the potential for its success rests on the following:

The poor performance of the firm being acquired should be attributable to the existing management of the firm, rather than to market or industry factors that are not under management control.

The acquisition has to be followed by a change in management practices, and the change has to increase value. Actions that increase value increase cash flows from existing assets, increase expected growth rates or reduce the cost of capital.

The market price of the acquisition should reflect the status quo, i.e., the current management of the firm and their poor business practices. If the market price already

has the control premium built into it, there is little potential for the acquirer to earn the premium.

In the last two decades, corporate control has been increasingly cited as a reason for hostile acquisitions.

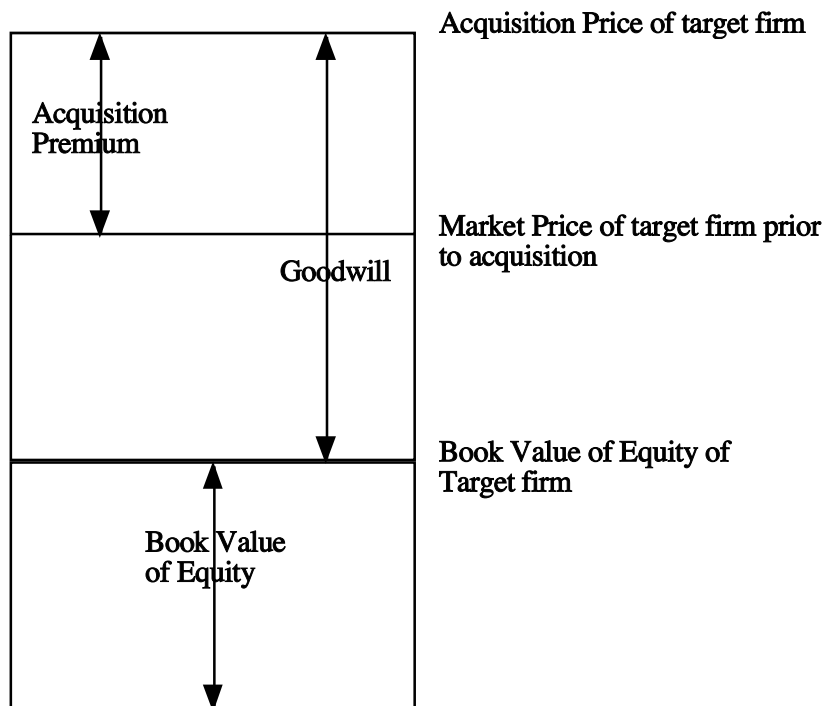
Acquisitions and Value Division

Acquisitions can be friendly or hostile events. In a friendly acquisition, the managers of the target firm welcome the acquisition and, in some cases, seek it out. In a hostile acquisition, the target firm's management does not want to be acquired. The acquiring firm offers a price higher than the target firm's market price prior to the acquisition and invites stockholders in the target firm to tender their shares for the price.

In either friendly or hostile acquisitions, the difference between the acquisition price and the market price prior to the acquisition is called the *acquisition premium*. The *acquisition price*, in the context of mergers, is the price that will be paid by the acquiring firm for each of the target firm's shares. This price is usually based upon negotiations between the acquiring firm and the target firm's managers. In a tender offer, it is the price at which the acquiring firm receives enough shares to gain control of the target firm. This price may be higher than the initial price offered by the acquirer, if there are other firms bidding for the same target firm or if an insufficient number of stockholders tender at that initial price. For instance, in 1991, AT&T initially offered to buy NCR for \$ 80 per share, a premium of \$ 25 over the stock price at the time of the offer. AT&T ultimately paid \$ 110 per share to complete the acquisition. There is one final comparison that can be made, and that is between the price paid on the acquisition and the accounting book value of the equity in the firm being acquired. This difference will be recorded as goodwill on the acquiring firm's books and written off in subsequent years². Figure 10.1 presents the break down of the acquisition price into these component parts.

² With the new accounting laws, the amortization of goodwill is based upon accounting estimates of the value of the acquired assets. If they feel that the value has been sufficiently impaired, the acquiring company can be forced to write off goodwill early.

Figure 10.1: Breaking down the Acquisition Price



The difference between the market value and the book value is usually categorized as goodwill. In some cases, though, you are allowed to write up the book value of the target firm at the time of the acquisition.

As a stockholder in an acquiring firm, you ultimately will gain or lose on an acquisition based not upon whether the acquisition creates value or not, but upon how much is paid for the acquired firm. The easiest way to see this is to think of an acquisition as a large project. If a company invests \$ 100 million in a project and gets back only \$90 million in value from the investment, its value will decrease by \$ 10 million. If a company acquires another company and pays more than it will get back in cash flows (inclusive of synergy, control and other benefits listed in the last section), its value will also drop by the amount of the overpayment.

Consider an example. Company A, with a market value of \$30 million, decides to buy company B with a market value of \$ 20 million and it believes that it can generate \$ 5 million in value from synergy. If company A can acquire company B for less than \$25 million, the stockholders of both companies will gain from the acquisition. If the acquisition price is \$ 25 million, the stockholders of company A will neither gain nor lose and company B's stockholders will gain the entire value of the synergy. If company A pays more than

\$25 million for company B, the stock price in company A will drop by the amount of the overpayment and company B's stockholders will gain proportionately.

Evidence

In this section, you will begin with an analysis of how the announcement of an acquisition affects the market price of the target and acquiring firms on the day of the acquisition, and follow up by looking at the post-acquisition performance (operating and stock price) of acquiring firms.

The Acquisition Date

The big price movements associated with acquisitions occur around the date the acquisition is announced and not when it is actually consummated, which may occur several months later. While much of the attention in acquisitions is focused on the target firms, what happens to the acquiring firm is just as interesting, if not more so.

Target Firms

The evidence indicates that the stockholders of target firms are the clear winners in takeovers — they earn significant returns³ not only around the announcement of the acquisitions, but also in the weeks leading up to it. In 1983, a review of thirteen studies that look at returns around takeover announcements and reported an average return of 30% to target stockholders in successful tender offers and 20% to target stockholders in successful mergers.⁴ An examination in 1988 of 663 tender offers made between 1962 and 1985 and noted that premiums averaged 19% in the 1960s, 35% in the 1970s and 30% between 1980 and 1985.⁵ The price behavior of a typical target firm in an acquisition is illustrated in Figure 10.2, from one of the studies,⁶ in the 10 days before, the day of and the 10 days after an acquisition announcement.

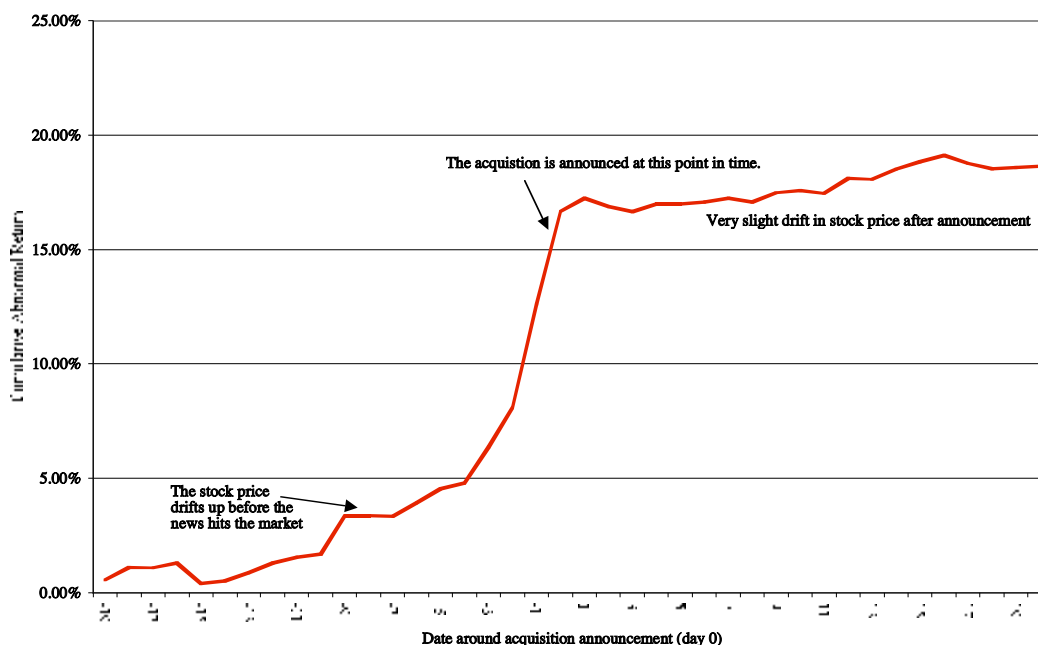
³ The excess returns around takeover announcements to target firms are so large that using different risk and return models seems to have no effect on the overall conclusions.

⁴ Jensen, M.C. and R.S. Ruback, 1983, *The Market for Corporate Control*, Journal of Financial Economics, v11, 5-50.

⁵ Jarrell, G.A., J.A. Brickley and J.M. Netter, 1988, *The Market for Corporate Control: The Empirical Evidence since 1980*, Journal of Economic Perspectives, v2, 49-68.

⁶ See Dennis and McConnell, 1986, *Corporate Mergers and Security Returns*, Journal of Financial Economics, v16, 143-188.

Figure 10.2: Cumulative Excess Return to Target Company Stock

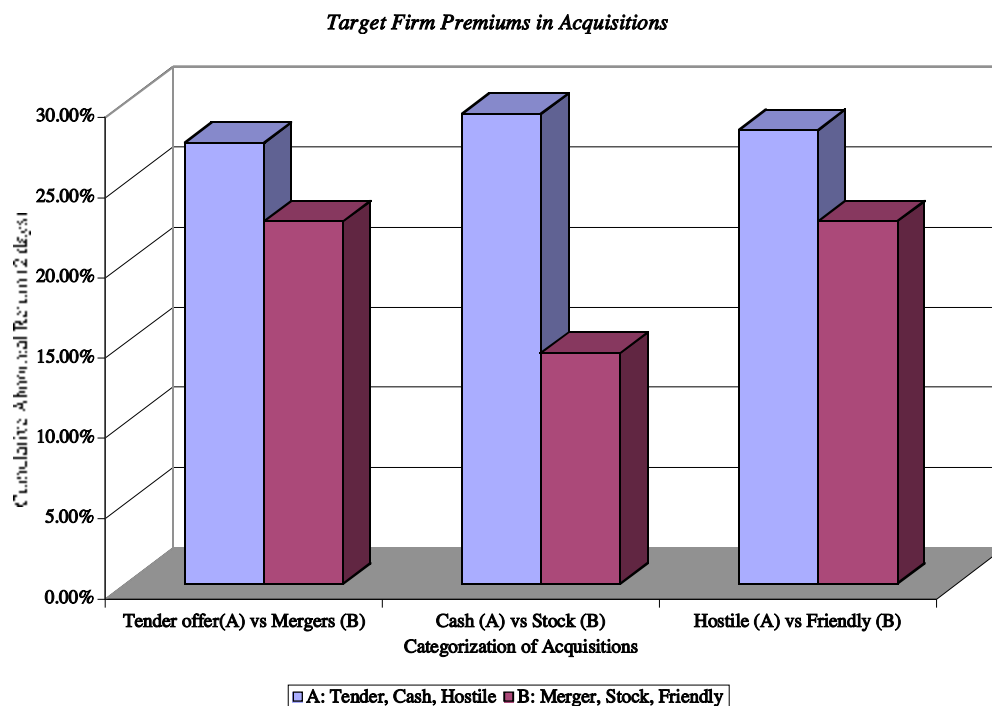


Data from Dennis and McConnell. The returns on the target firm stock is cumulated around the date of the acquisition.

Note that about half the premium associated with the acquisition is already incorporated in the price by the time the acquisition is announced. This suggests that news about acquisitions is leaked to some investors before it reaches the market, and these investors trade ahead of the announcement. On the acquisition date, there is an additional jump in the stock price but little evidence of prices drifting up thereafter.

If you categorize acquisitions based upon how the acquiring firm pays for them, you find that the stock prices of target firms tend to do much better on the announcement of cash-based acquisitions (where the acquirer uses cash only to pay for the acquired company's stock) than stock based acquisitions. The premiums in hostile acquisitions are larger than the premiums on friendly mergers and the premium on tender offers is slightly higher than the premium on mergers. Figure 10.3 provides an illustration of the magnitude of the differences:⁷,

⁷ Huang and Walkling (1987), *Acquisition Announcements and Abnormal Returns*, Journal of Financial Economic, v19, 329-350.



Data from Huang and Walkling. These are the cumulated returns for target firm stockholders in different types of acquisitions.

No matter how you categorize acquisitions, stockholders in target firms have little reason to complain since they walk away with healthy price gains.

Bidding Firms

The effect of takeover announcements on bidder firm stock prices is not as clear cut as it is for target firms. The survey of mergers in 1983 reported that stock prices increase about 4% for bidding firms around tender offers and find no evidence of price movement around mergers.⁸ An examination of tender offers from 1962 to 1985, note a decline in returns to bidding firm stockholders from 4.4% in the 1960s to 2% in the 1970s to -1% in the 1980s.⁹ Other research indicates that the stock prices of bidding firms drop in about half of all acquisitions around the announcement of takeovers, suggesting that investors are skeptical about the perceived value of these takeovers in a significant number of cases.

⁸ Jensen, M.C. and R.S. Ruback, 1983, *The Market for Corporate Control*, Journal of Financial Economics, v11, 5-50.

⁹ Jarrell, G.A., J.A. Brickley and J.M. Netter, 1988, *The Market for Corporate Control: The Empirical Evidence since 1980*, Journal of Economic Perspectives, v2, 49-68.

Considering the evidence, it is quite clear that bidding firm stockholders often do not share the enthusiasm that managers in these firms have about mergers and acquisitions. While managers would argue that this is because they are not privy to the information that is available only to insiders, you will see later in this chapter that many mergers fail and that stockholders are perhaps more prescient than managers.

Does the market value synergy?

Synergy is a stated motive in many mergers and acquisitions. An examination of the motives behind 77 acquisitions in 1985 and 1986 reported that operating synergy was the primary motive in one-third of these takeovers.¹⁰ A number of studies examine whether synergy exists and, if it does, how much it is worth. If synergy is perceived to exist in a takeover, the value of the combined firm should be greater than the sum of the values of the bidding and target firms, operating independently. For example, assume that you have acquiring company A, trading at a total value of \$ 150 million before an acquisition, and target company B, trading at a total value of \$ 100 million. If these companies merge and there is synergy, the value of the combined company after the merger should be greater than \$250 million. Thus, if the combined company trades at a value of \$275 million, the synergy in this merger is being valued at \$25 million.

Examinations of stock returns around merger announcements generally conclude that the value of the combined firm does increase in most takeovers and that the increase is significant. An examination in 1988 of 236 inter-firms tender offers between 1963 and 1984 reported that the combined value of the target and bidder firms increased 7.48% (\$117 million in 1984 dollars), on average, on the announcement of the merger.¹¹ This result has to be interpreted with caution, however, since the increase in the value of the combined firm after a merger is also consistent with a number of other hypotheses explaining acquisitions, including under valuation and a change in corporate control. It is thus a weak test of the synergy hypothesis.

From Announcement to Action

Note that the studies presented above all look at the date on which an acquisition is announced and not at the actual transaction date that may be several weeks of even months

¹⁰ Bhidé, A., 1989, *The Causes and Consequences of Hostile Takeovers*, Journal of Applied Corporate Finance, v2, 36-59.

¹¹ Bradley, M., A. Desai and E.H. Kim, 1988, *Synergistic Gains from Corporate Acquisitions and their Division between the Stockholders of Target and Acquiring Firms*, Journal of Financial Economics, v21, 3-40.

later. There are clearly several things that can change between the two dates. In some acquisitions a new bidder shows up and a bidding war commences, pushing the price of the target company well above the initial offering price. Some acquisitions fail, either because the target firms fight off bidders using legal and financial devices or because the acquiring firms develops cold feet and withdraws its bid. Finally, in other acquisitions, the bidding firm is forced to raise its price because it has difficulty accumulating a controlling stake at the stated price.

Multiple Bidders

When a firm acquires multiple bidders, it is almost always good news for the target company's stockholders and bad news for the bidding company's stockholders. The premiums paid for target firms are generally much higher when there are multiple bidders and there is evidence that the stock of the bidding firm that wins the bidding war is more likely to go down than up when it succeeds. However, the bidding firm that fails in an acquisition bid, is also often punished. One analysis of failed mergers reports significant drops in stock prices (of approximately 8%) for bidder firm stockholders who lose out to a rival bidder within 180 trading days of the announcement, and no excess returns when no rival bidder exists.¹²

Failed Bids

Bids can fail either because the target firm in a hostile acquisition manages to fight off the acquisition or because the bidding firm changes its mind. In both cases, the stock of the bidding firm suffers on the announcement of the failure. The target firm stock price will also fall in both cases, but not to the levels before the acquisition attempt was made. Investors seem to reassess the value of firms when they become targets of acquisitions, on the assumption that the bidding firm has some information that the rest of the market does not or that there will be other bidders down the road. An examination the effects of takeover failures on target firm stockholders concluded that while the initial reaction to the announcement of the failure is negative, albeit small, a substantial number of target firms are taken over within 60 days of the first takeover is failing, earning significant excess returns (50% to 66%).

¹² Bradley, M., A. Desai and E.H. Kim, 1983, *The Rationale behind Interfirm Tender Offers*, Journal of Financial Economics, v11, 183-206.

Merger or Risk Arbitrage

There are some investors, mostly institutional, who believe that they can make money after a hostile acquisition is announced by buying stocks in target companies. As noted in the last section, the stock price of a target company jumps on the announcement of a takeover. However, it trades at a discount usually to the price offered by the acquiring company. The difference between the post-announcement price and the offer price is called the arbitrage spread, and there are investors who try to profit off this spread in a strategy called merger or risk arbitrage. If the merger succeeds, the investor captures the arbitrage spreads, but if it fails, he or she could make a substantial loss. In a more sophisticated variant in stock mergers (where shares of the acquiring company are exchanged for shares in the target company), the arbitrageur will sell short the acquiring firm's stock in addition to buying the target firm's stock.

The strategy is clearly mislabeled as risk arbitrage since there are no guaranteed profits (which is what arbitrage requires) and it is not quite clear why the prefix "risk" is attached to it. Notwithstanding this quarrel with terminology, you can examine whether risk arbitrage delivers the kinds of returns you often hear about anecdotally, and if it does, is it compensation for risk (that the merger may not go through) or is it an excess return? A sample of 4750 mergers and acquisitions was used to answer this question.¹³ This analysis concludes that there are excess returns associated with buying target companies after acquisition announcements of about 9.25% annually, but that you lose about two thirds of these excess returns if you factor in transactions costs and the price impact that you have when you trade (especially on the less liquid companies).

While the overall strategy returns look attractive, the results also point to one unappealing aspect of this strategy. The strategy earns moderate positive returns much of the time, but earns large negative returns when it fails. Does this make it a bad strategy? Not at all, but it points to the dangers of risk arbitrage when it is restricted to a few big-name takeover stocks (as it often is)- an investor who adopts this strategy is generally just one big failure away from going under. If he or she borrows money to pursue this strategy, the risks are magnified.

After the Acquisition

There is substantial research examining the extent to which mergers and acquisitions succeed or fail after the deals are made. The general conclusion is that mergers often fail to

¹³ Mitchell, M., and T. Pulvino, 2001. *Characteristics of risk in risk arbitrage*. Journal of Finance, v56, 2135-2175.

deliver on their promises of efficiency and synergy, and even those that do deliver seldom create value for the acquirers' stockholders.

The existence of synergy generally implies that the combined firm will become more profitable or grow at a faster rate after the merger than will the firms operating separately. A test of synergy is to evaluate whether merged firms improve their performance (profitability and growth) *relative to their competitors*, after takeovers. McKinsey and Co. examined 58 acquisition programs between 1972 and 1983 for evidence on two questions: (1) Did the return on the amount invested in the acquisitions exceed the cost of capital? (2) Did the acquisitions help the parent companies outperform the competition? They concluded that 28 of the 58 programs failed both tests, and six failed at least one test. In a follow-up study of 115 mergers in the U.K. and the U.S. in the 1990s, McKinsey concluded that 60% of the transactions earned returns on capital less than the cost of capital, and that only 23% earned excess returns.¹⁴ In 1999, KPMG examined 700 of the most expensive deals between 1996 and 1998 and concluded that only 17% created value for the combined firm, 30% were value neutral and 53% destroyed value.¹⁵

An examination of the eight largest bank mergers in 1995 concluded that only two (Chase/Chemical, First Chicago/NBD) subsequently outperformed the bank-stock index.¹⁶ The largest, Wells Fargo's acquisition of First Interstate, was a significant failure. In an incisive book on the topic in 1996 titled "The Synergy Trap," Sirower took a detailed look at the promises and failures of synergy and drew the gloomy conclusion that synergy is often promised but seldom delivered.¹⁷

The most damaging piece of evidence on the outcome of acquisitions is the large number of acquisitions that are reversed within fairly short time periods. An analysis¹⁸ in 1990 noted that 20.2% of the acquisitions made between 1982 and 1986 were divested by 1988. A study published in 1992 found that 44% of the mergers studied were reversed, largely because the acquirer paid too much or because the operations of the two firms did

¹⁴ This study was referenced in an article titled "Merger Mayhem" that appeared in *Barrons* on April 20, 1998.

¹⁵ KPMG measured the success at creating value by comparing the post-deal stock price performance of the combined firm to the performance of the relevant industry segment for a year after the deal was completed.

¹⁶ This study was done by Keefe, Bruyette and Woods, an investment bank. It was referenced in an article titled "Merger Mayhem" in *Barrons*, April 20, 1998.

¹⁷ Sirower, M.L., 1996, *The Synergy Trap*, Simon & Schuster.

¹⁸ Mitchell, M.L. and K. Lehn, 1990, *Do Bad Bidders make Good Targets?*, Journal of Applied Corporate Finance, Vol 3, 60-69.

not mesh.¹⁹ Studies that have tracked acquisitions for longer time periods (ten years or more) have found the divestiture rate of acquisitions rises to almost 50%, suggesting that few firms enjoy the promised benefits from acquisitions. The bottom line on synergy is that it exists in relatively few mergers and that it often does not measure up to expectations.

Crunching the Numbers

Acquisitions come in such different forms that it is difficult to profile a typical acquisition. In the first part of this section, you will begin by looking across acquisitions to see if you can find common patterns to successes and failures. In the second part, you will try to construct a portfolio of acquiring companies as well as a portfolio of potential target companies.

Acquiring and Acquired Firms

Is there a typical acquiring company? On the other side of the transaction, is there a typical target firm? If you want to construct an investment strategy that revolves around acquisitions, you have to attempt to at least answer these questions.

Acquiring Firms

Are there common characteristics shared by acquiring firms and especially by successful acquiring firms? If you look at a small sample of acquisitions or even all the acquisitions done during the course of a year, you will be hard pressed to find any commonalities across acquirers. Researchers, however, have looked at hundreds of acquisitions over long periods and they have identified some common features shared by successful acquirers over time:

Firms that acquire firms of *similar size* (often called mergers of equals) seem to have a lower probability of succeeding than firms that focus on acquiring much smaller firms.²⁰ Thus the odds of success would be greater for GE, which acquired dozens of small companies each year during the 1990s, than with the merger of AOL and Time Warner, two companies with very large market capitalizations.

Firms that are motivated by *cost savings* when doing acquisitions seem to have a better chance of succeeding than firms are motivated by growth hopes or expectations. This is especially so when the cost savings are concrete and planned for at the time of the

¹⁹ Kaplan, S. and M.S. Weisbach, 1992, *The Success of Acquisitions: The Evidence from Divestitures*, Journal of Finance, v47, 107-138.

²⁰ This might well reflect the fact that failures of mergers of equal are much more visible than failures of the small firm/large firm combinations.

acquisition. Some of the most successful mergers of the 1990s involved banks that merged to save money and gain economies of scale.

Acquisition programs that focus on buying *small private businesses* for consolidations have had more success than acquisition programs that concentrate on acquiring publicly traded firms. Firms like Service Industries (funeral homes), Blockbuster Video (video rental stores) and Browning Ferris (waste disposal businesses) all grew by acquiring small private firms.

On the issue of synergy, the KPMG evaluation²¹ of the 700 largest deals from 1996 to 1998 concludes the following:

- Firms that evaluate synergy carefully before an acquisition are 28% more likely to succeed than firms that do not.
- Cost-saving synergies associated with reducing the number of employees are more likely to be accomplished than new product development or R&D synergies. For instance, only a quarter to a third of firms succeeded on the latter, whereas 66% of firms were able to reduce headcount after mergers.

Some research finds improvements in operating efficiency after mergers, especially hostile ones²². An examination in 1992 concluded that the median post-acquisition cash flow returns improve for firms involved in mergers, though 25% of merged firms lag industry averages after transactions.²³ In 1999, another study examined 197 transactions between 1982 and 1987 and categorized the firms based upon whether the management is replaced (123 firms) at the time of the transaction, and the motive for the transaction.²⁴ The conclusions are that:

On average, in the five years after the transaction, merged firms earned 2.1% more than the industry average.

Almost all this excess return occurred in cases where the CEO of the target firm is replaced within one year of the merger. These firms earned 3.1% more than the

²¹ KPMG, 1999, *Unlocking Shareholder Value: The Keys to Success*, KPMG Global Research Report.

²² A study by Healy, Palepu and Ruback (1989) looked at the post-merger performance of 50 large mergers from 1979 to 1983 and concluded that merged firms improved their operating performance (defined as EBITDA/Sales) relative to their industries.

²³ Healy, P.M., K.G. Palepu and R.S. Ruback, 1992, *Does Corporate Performance improve after Mergers?*, Journal of Financial Economics, v31, 135-176.

²⁴ Parrino, J.D. and R.S. Harris, *Takeovers, Management Replacement and Post-Acquisition Operating Performance: Some Evidence from the 1980s*, Journal of Applied Corporate Finance, v11, 88-97.

industry average, whereas firms, whereas when the CEO of the target firm continued in place the merged firm did not do better than the industry

In addition, a few studies examine whether acquiring related businesses (i.e., synergy-driven acquisitions) provides better returns than acquiring unrelated business (i.e., conglomerate mergers) and come to conflicting conclusions with no consensus.²⁵ An examination of 260 stock swap transactions and categorized the mergers as either a conglomerate or a 'same-industry' transactions.²⁶ They found no evidence of wealth benefits for either stockholders or bondholders in conglomerate transactions. However, they did find significant net gains for both stockholders and bondholders in the case of mergers of related firms.

Target Firms

Looking at the stock price reaction of target firms both immediately prior to and immediately after the acquisition announcement, it is quite clear that the money to be made in acquisitions comes from investing in firms before they become targets rather than after. Absent inside information, is this doable? There may be a way, and the answer lies in looking at firms that typically become target firms. Since the motivations in hostile and friendly acquisitions are very different, it should come as no surprise that the typical target firm in a hostile acquisition is very different from the typical target firm in a friendly takeover. The typical target firm in a hostile takeover has the following characteristics:²⁷

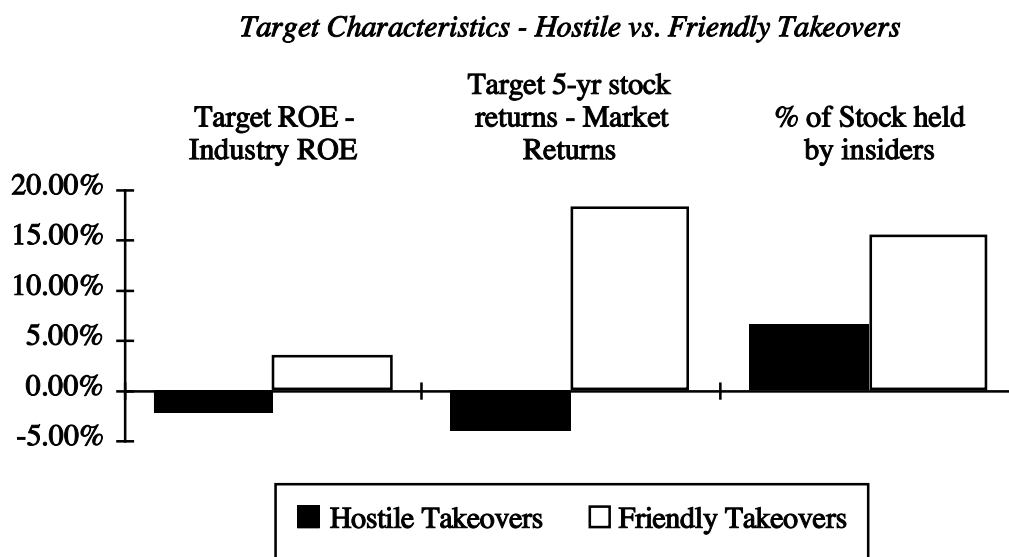
- (1) It has *under performed other stocks in its industry* and the overall market, in terms of returns to its stockholders in the years preceding the takeover.
- (2) It has been *less profitable than firms in its industry* in the years preceding the takeover.
- (3) It has a *much lower stock holding* by insiders than do firms in its peer groups.

²⁵ See Michel, A. and I. Shaked, 1984, *Does Business Diversification affect Performance?*, Financial Management, Vvol 13, 5-14 and Dubofsky, P. and P.R. Varadarajan, 1987, *Diversification and Measures of Performance: Additional Empirical Evidence*, Academy of Management Journal, 597-608. These studies find that diversification-driven mergers do better than synergy-driven mergers, in terms of risk-adjusted returns. Varadarajan, P.R., and V. Ramanujam, 1987, *Diversification and Performance: A Reexamination using a new two-dimensional conceptualization of diversity in firms*, Academy of Management Journal, Vol 30, 369-380. find evidence to the contrary.

²⁶ Nail, L.A. , W.L. Megginson and C. Maquieira, 1998, *Wealth Creation versus Wealth Redistributions in Pure Stock-for-Stock Mergers*, Journal of Financial Economics, v48, 3-33.

²⁷ Bhidé, A., 1989, *The Causes and Consequences of Hostile Takeovers*, Journal of Applied Corporate Finance, v2, 36-59.

A comparison of target firms in hostile and friendly takeovers illustrates their differences. His findings are summarized in Figure 10.4.



Data from Bhidé. This study compared the characteristics of target firms in friendly takeovers to those in hostile takeovers in the year of the takeover.

As you can see, target firms in hostile takeovers have earned a 2.2% lower return on equity, on average, than other firms in their industry; they have earned returns for their stockholders that are 4% lower than the market; and only 6.5% of their stock is held by insiders.

There is also evidence that these firms make significant changes in the way they operate after hostile takeovers. The study cited above examined the consequences of hostile takeovers and noted the following changes:

1. Many of the hostile takeovers were followed by an increase in debt, which resulted in a downgrading of the debt. The debt was quickly reduced with proceeds from the sale of assets, however.
2. There was no significant change in the amount of capital investment in these firms.
3. Almost 60% of the takeovers were followed by significant divestitures, in which half or more of the firm was divested. The overwhelming majority of the divestitures were units in business areas unrelated to the company's core business (i.e., they constituted reversal of corporate diversification done in earlier time periods).
4. There were significant management changes in 17 of the 19 hostile takeovers, with the replacement of the entire corporate management team in seven of the takeovers.

Thus, contrary to popular view²⁸, most hostile takeovers are not followed by the acquirer stripping the assets of the target firm and leading it to ruin. Instead, target firms refocus on their core businesses and often improve their operating performance.

Creating Portfolios

As an investor, you may find the evidence on successful acquiring and typical target firms interesting but not particularly relevant since they all represent mergers from the past. How, you may wonder, can you make money off an acquisition that occurred a decade ago? You cannot but you can use the evidence to construct portfolio of potential acquirers and target firms today.

A Portfolio of Acquiring Firms

To construct a portfolio of acquiring firms, you have to look at history and examine the sources of growth for individual firms. For instance, table 10.1 reports on the most acquisitive companies in the United States between 2000 and 2002, based upon the dollar value of the acquisitions:

Table 10.1: Most Acquisitive Companies – United States: 2000-2002

<i>Company</i>	<i>Industry</i>	<i>Total acquisitions</i>	<i>Total value (\$ million)</i>
Comcast Corp.	Broadcasting	8	47,680.80
Citigroup Inc.	Banking & finance	18	21,350.50
General Electric Co.	Aerospace, aircraft & defense, banking & finance	71	\$19,725.00
Tyco International Ltd.	Electrical equipment	19	16,882.20
Johnson & Johnson	Toiletries & cosmetics	11	14,062.00
Nestle SA	Food processing	8	11,266.80
AOL Time Warner Inc.	Computer services, leisure & entertainment	13	8,984.20
AT&T Corp.	Communications	9	5,616.20
Schlumberger Ltd.	Energy services	9	5,242.90
Berkshire Hathaway Inc.	Insurance	13	4,776.00
J.P. Morgan Chase & Co.	Banking & finance	12	4,442.40
Cendant Corp.	Miscellaneous services	33	3,797.80

²⁸ Even if it is not the popular view, it is the populist view that has found credence in Hollywood, in movies like *Wall Street*, *Barbarians at the Gate* and *Other People's Money*.

BB&T Corp.	Banking & finance	23	3,098.70
Solelectron Corp.	Electronics	12	2,496.40
Calpine Corp.	Electric, gas, water & sanitary services	9	2,494.80
Microsoft Corp.	Computer software, supplies & services	8	2,402.20
Intel Corp.	Electronics	11	1,943.10
VeriSign Inc.	Computer software, supplies & services	8	1,647.90
Interpublic Group of Cos.	Miscellaneous services	12	1,605.30
NRG Energy Inc.	Electric, gas, water & sanitary services	10	1,510.70
SPX Corp.	Fabricated metal products	10	1,447.90
Baxter International Inc.	Drugs, medical supplies & equipment	8	1,185.20
Danaher Corp.	Industrial & farm equipment & machinery	11	1,075.40

Source: www.mergerstat.com

Note the wide range of industries from which the acquisitive companies are drawn and the number of deals made by some of them. GE, for instance, bought 71 companies in this two-year period, though they tended to be smaller on average than the 8 companies bought by Comcast during the same time period.

There is clearly a bias towards larger firms introduced when you rank firms based on the dollar value of acquisitions. To get a true sense of how much of each of these acquiring companies relies on acquisitions for growth, you would also have to scale the value of the acquisitions by the value of the acquirers. For example, the \$2.4 billion spent by Microsoft on acquisitions was less than 1% of overall market value while AT&T's acquisition spending of \$5.6 billion is about 20% of its market value. You could construct a portfolio of acquiring firms, based upon how much acquisitions represent as a fraction of firm value. That portfolio would look very different from the one in table 10.1 and include smaller companies.

A Portfolio of Potential Targets

If you consider the evidence on typical target firms in acquisitions, you could develop a set of screens that incorporate the variables mentioned above. You could, for instance, invest in smaller companies (in market capitalization terms), with low insider holdings, depressed valuations (low price to book ratios or low price earnings ratios) and low returns on equity (relative to their sectors).

To put these screens into practice, potential target firms were categorized as firms with the following characteristics:

Small companies: Since it is easier to acquire smaller companies than larger ones, only firms with market capitalization less than \$ 500 million are considered for this portfolio.

Low Insider holdings: Only firms with insider holdings less than 10% of the outstanding stock are included in the portfolio. In addition, firms with different voting class shares were removed, since they are less likely to be targeted for hostile acquisitions.

Cheap Stocks: Only stocks that trade at a trailing PE ratio less than 12 are considered cheap and worthy of inclusion in the portfolio.

Poor project returns: Only firms that have returns on equity that are 5 percentage points lower than the industry average are included in the portfolio.

The resulting portfolio of 15 firms is listed in Table 10.2.

Table 10.2: Potential Takeover Targets

<i>Company Name</i>	<i>Industry Name</i>	<i>Stock Price</i>	<i>P/E Trailing 12 Mo</i>	<i>Market Cap \$ (Mil)</i>	<i>% Insider Holdings</i>
AMN Healthcare	Human Resources	11.22	9.6	456.6	3.6
Blair Corp.	Retail (Special Lines)	24	9.7	186.2	8.69
Chesapeake Corp.	Packaging & Container	16.13	10.2	228.2	5.6
Cone Mills	Textile	2.01	6.4	48.2	9.3
Crompton Corp.	Chemical (Specialty)	4.03	8.1	443.6	7.6
Culp Inc.	Textile	4.45	6	54.5	4.5
Enesco Group	Retail (Special Lines)	6.91	11.8	90.3	3.8
Information Resources	Information Services	1.32	11.7	41.4	7.1
Int'l Multifoods	Food Processing	19.2	11.6	334.5	5.8
Internet Corp.	Auto Parts	3.58	10.2	91	3.1
Myers Inds.	Diversified Co.	9.57	11	264.5	2.7
SEMCO Energy	Natural Gas (Distrib.)	4.12	7.5	74.3	1.3
ShopKo Stores	Retail Store	10.85	6.7	292.2	3.5
Standard Register	Office Equip/Supplies	14.84	10.6	372.9	2.7
Wellman Inc.	Chemical (Specialty)	9.59	10.8	284.5	6.7

There are clearly no guarantees that any or all of these firms will become targets of hostile takeovers, but the portfolio will generate high returns even if only two or three of the firms become takeover targets.

The Rest of the Story

Assuming that you decide to create a strategy of investing in companies right after acquisitions, what are some of the factors that may undercut your chances of success? The factors to consider will clearly vary depending upon the investment strategy you adopt. If you buy acquisitive firms, you will have to worry about both financial overreach (paying too much for acquisitions) and operational over reach (where you expand too quickly into new businesses putting existing businesses at risk). If you buy potential target firms, you have to allow for the fact that they may never be taken over and that you will be saddled with a portfolio of poor performing stocks.

Investing in the Acquiring Firms

Consider investing in a portfolio of acquisitive firms. Even if you are careful about picking firms that seem to have succeeded with their acquisition strategies, there are a number of possible risks in the strategy.

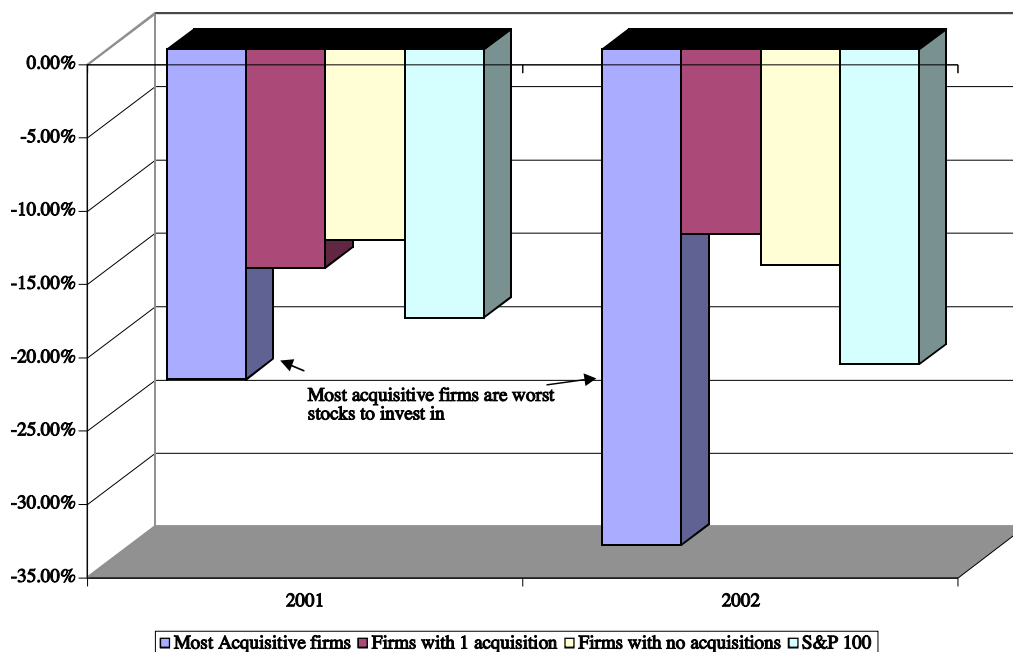
Overpaying on Acquisitions

Past success at acquisitions does not preclude future failures. In fact, a firm that grows successfully through acquisitions will find that its very success often lays the groundwork for future failure. Take, for instance, a firm like Cisco that established a clear record of success in the early 1990s from its acquisition strategy. Starting in 1991, when it had revenues of \$183 million, earnings of \$43 million and a market capitalization of about \$4 billion, Cisco acquired small companies with promising technologies and was able to turn these technologies into great products and earnings growth in short periods. Each year that it succeeded it became a larger firm, both in terms of revenues and market capitalization. To sustain its growth rate, it had to increase both the scale and the number of acquisitions it did each year. By 1999, Cisco had \$12.15 billion in revenues and a market capitalization in excess of \$ 400 billion, and finding enough acquisition to make a dent in its growth rate had become much more difficult to do. The danger to investors is not that this happens but that a firm that has had past success at acquisitions will continue its push towards more acquisitions even in the face of difficulty finding good target firms. In the process, it may well abandon the discipline that made it successful in the first place. You could look at almost every acquisitive firm that has failed and point (at least in hindsight) to the moment when this occurred.

Over time, there is evidence that acquisitive companies have proven to be poor investments, lagging the market in stock returns. Figure 10.5 contrasts the returns in 2000 and 2001 that investors would have earned on the 15 most acquisitive companies in the

S&P 100, based upon acquisitions made between 1998 and 2001 (100 largest market cap firms in the US) with the returns they would have earned on companies that did only one acquisition and companies that did not do any acquisitions.

Figure 10.5: Returns on Acquisitive Firms



Data from Compustat. The most acquisitive firms are the firm that made the most acquisitions (in numbers) in the S&P 500 between 1998 and 2001.

Investors in the most acquisitive firms would have lagged the market and investors in firms that did no acquisitions by more than 10% a year between 2001 and 2002.

How would you screen acquisitive firms to eliminate those that are most likely to overpay? There are several statistics that you can look at. One is the average premium paid by acquiring firms for their acquisitions; firms that pay larger premiums are more likely to have overpaid. The second is to look at the average size of the acquired firms relative to the acquiring firms; again, research indicates that you are more likely to overpay on large acquisitions than on smaller ones. The third is to look at the market reaction to the acquisition announcement; an increase in the acquirer's market price on the acquisition announcement is a much better signal of future success than a decrease.

Accounting Complexity

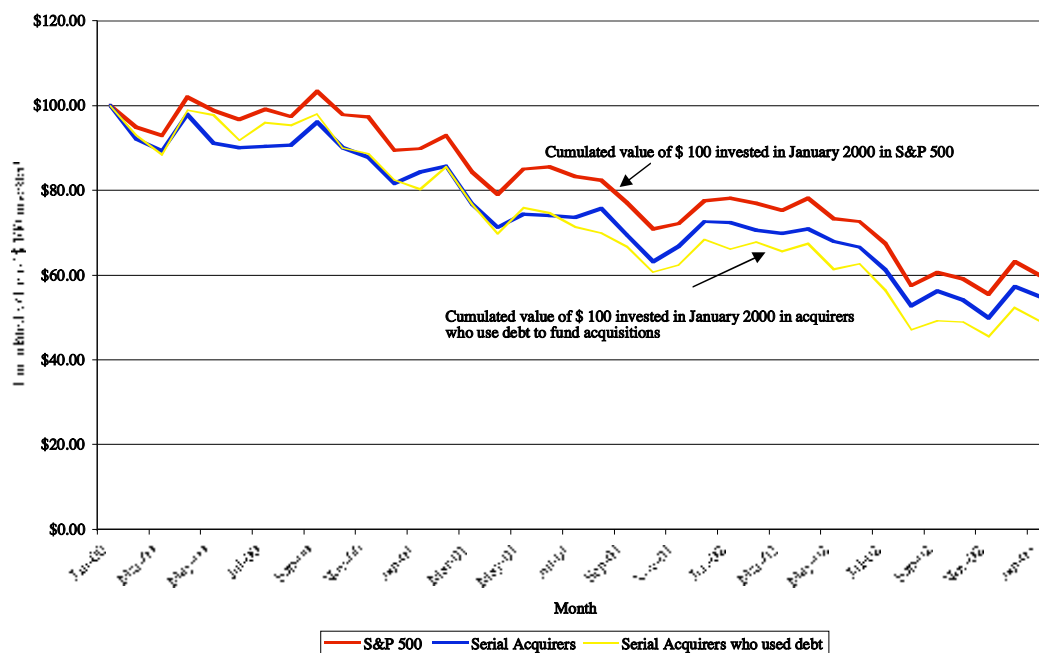
Accounting for acquisitions is much more complicated than accounting for internal investments. To begin with, you have more choices in how you record the transaction. Until 1999, you could structure an acquisition as either a purchase or a pooling, with dramatically different consequences for accounting statements. With a purchase transaction, you show the price of the company that you acquire in your balance sheet but you also create a new asset (goodwill) to record the difference between what you pay for the company and the book value of its assets. With pooling, you do not record the purchase price and instead show only the book value of the assets of the company that you acquire as part of your assets. In 2001, the practice of pooling was finally eliminated but firms still have to deal with goodwill after a transaction. In fact, the accounting standards now require firms to revisit their past acquisitions and write off portions of goodwill, if they feel that they overpaid. AOL Time Warner wrote off \$ 100 billion to reflect the reduction in value of AOL's assets between the time of the merger in 1999 and the write off in 2001.

The most significant evidence that acquisitive firms are more likely to be exposed to accounting problems comes from looking at history. It is telling that of the 10 most acquisitive firms of the 1990s, serious accounting problems were unearthed at 7 firms – Enron, WorldCom, Tyco, Lucent, Cendant, AOL Time Warner and Consecro. In fact, the perception was that some of these firms not only bent the accounting rules but broke them. As an investor, you have to allow for the possibility that acquisitive companies will have financial statements that are more difficult to analyze than companies that do not do acquisitions. In addition, you may find yourself having difficulty with the most fundamental questions that you need answered about any firm such as how much capital is invested in the firm, what returns the firms is making on its investments and how much of the firm's earnings are being reinvested back into the business.

Debt and Dilution

There are two ways in which acquisitive firms pay for acquisitions and both can potentially have negative consequences for investors. One is to issue new stock to fund the acquisition, increasing the number of shares outstanding and reducing earnings per share at least in the near term. The other is to borrow the money to raise the necessary funds, which can increase default risk and over burden the company with interest and principal payments. In fact, Figure 10.6 indicates that the stock performance of serial acquirers who borrow to fund their acquisitions is even worse than the stock performance of serial acquirers who use stock or cash, and that both groups lag the overall market:

Figure 10.6: Acquirers with Debt vs Rest of the Market



Data from CRSP. The cumulative value of \$ 100 invested in stocks with dividends reinvested is reported for each of the three portfolios.

While the conclusions you can draw are constrained by the fact that you are looking at a short and very volatile time period, when the market declined you should clearly be cautious about acquisition strategies based upon debt. One way you can measure this dependence is to look at a firm's debt ratio relative to its peer group. A combination of over dependence on debt and large acquisitions should show up as high financial leverage.

Lack of Focus

Acquisitive firms are more likely to go into businesses unrelated to their primary business than non-acquisitive firms. After all, it takes considerable work and expertise for a steel company to enter the software business on its own but it can acquire a software company and accomplish the same objective quickly. It should come as no surprise that conglomerates are usually created through a series of acquisitions rather than with internal investments in a dozen different business areas. As an investor, though, this temptation to stray into other businesses can be dangerous. Studies generally find that conglomerates trade at a discount, relative to the value of their component parts, which is attributed by some to lack of management focus and by some to waste. Whatever the reason for the discount, you may want to invest only with acquisitive companies that stay within their area of business expertise.

Investing in Target Firms

If you had a mechanism for perfectly identifying target firms before they become targets in acquisitions, you would be able to reap incredible rewards. You would probably also have some very curious agents from the SEC quizzing you about your uncommon success. After all, the only way in which investors have been able to do this historically with any consistency is by having access to inside information. If you are staying on the right side of the law and screening stocks for potential takeover targets, your success rate will be much lower and herein lies the risk to this strategy.

Entrenched Management

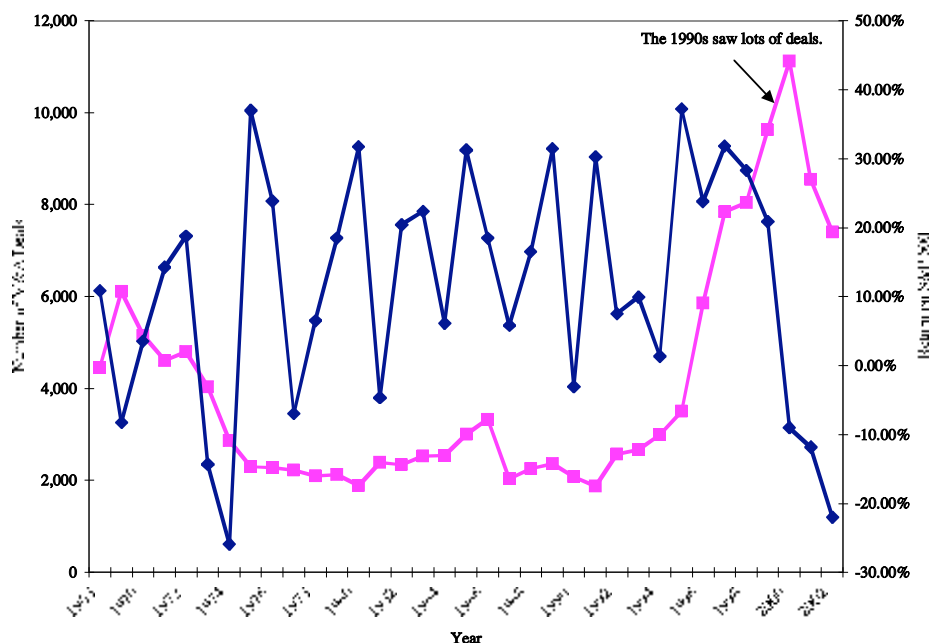
One of the indicators that you use to find potential target firms is poor management. That is why you look for firms which have made poor investments (low returns on equity) and whose stock has underperformed the market and the sector. You buy stock in these firms hoping that the management will change, but what if it does not? You could end up with a portfolio of companies with incompetent management who continue to destroy value while you hold the stock.

Consider the 15 firms listed in Table 10.2 as potential takeover targets. Looking at the past history of these firms, it is quite clear that the factors that make them potential targets have been in place for a number of years. Furthermore, the CEOs of ten of these firms have been in their positions for five years or more. It is difficult to conceive of a quantitative screen that can find firms where managers are not entrenched. You could use a “length of tenure” screen (where you avoid firms where CEOs have been in place for more than five years) or a qualitative screen (where you only invest in firms with boards of directors that are responsive to stockholders). In either case, you will still be left with considerable uncertainty about future success at changing management.

Market Mood

Mergers and acquisitions often track the market, rising in buoyant markets and falling in bear markets. Figure 10.7 graphs the ebb and flow of merger activity between 1968 and 2002:

Figure 10.7: M&A Activity and Stock Returns



Data from Mergerstat. These represent the number of deals made each year.

If you invest in a portfolio of potential target firms, you could very well be blindsided by a shift in market mood that makes rarer both hostile and friendly acquisitions. Another characteristic of acquisition activity is that it tends to be concentrated in a few sectors in each period – telecommunication and technology mergers dominated in the late 1990s – and the sectors shift from period to period.

What are the implications for a strategy of investing in potential acquisitions? The first is that such a strategy is partially based upon your market timing skills (or luck). Even if your portfolio of potential takeover targets is well constructed, the number of firms that actually get taken over may not measure up to expectations if the market mood turns sour. The second is that you have to factor in a sector focus in your portfolio. In other words, you should try to invest far more of your portfolio in stocks in the sectors where consolidation and mergers are occurring the most.

Risk

If you buy firms that are poorly managed and poorly run, your upside comes when someone offers to take over the firm and run it better but there is a downside. These poorly managed firms can also go bankrupt. A portfolio of potential takeover targets will therefore also often have considerable risk exposure. There are a number of dimensions on which you can consider risk:

Financial leverage: A poorly run firm with substantial debt is clearly more at risk than a poorly managed firm without this debt. In fact, of the 15 firms identified as potential takeover targets in Table 10.2, seven firms have debt in excess of 50% of total capital. If these firms begin losing money, they will not survive.

Beta and standard deviation: Stocks that have performed poorly in the past, both in terms of stock and project returns, are usually volatile. The standard deviation of the 15 firms listed in Table 10.2 is about twice the average for the rest of the market; the average beta for these companies is 1.43, again well above the average for the market.

To avoid exposing your portfolio to these risks, you could only invest in firms with low debt ratios and less stock price volatility.

Lessons for Investors

Investment strategies based upon acquisitions may sometimes generate high returns but they come with risks. If you invest in acquisitive companies, hoping to ride growth in revenues and earnings to higher stock prices, you should consider screening for the following characteristics in acquisitive firms.

Start with acquirers who stay focused and disciplined: Acquisitive firms that attempt to stay within their core businesses or play to their key strengths when making acquisitions should be considered better candidates for your portfolio. These firms will also need to maintain that discipline even in the face of pressure from the outside.

And don't overpay for target firms: The key determinant of whether you as an investor gains from acquisitions is the acquisition price. An acquisitive firm that does a good job of valuing synergy and control should then follow up by ensuring that it gets at least a share of these perceived benefits for its stockholders. Acquisitive firms that enter into bidding wars intent to win at any cost usually do, but their stockholders pay the price.

And prudently fund their acquisitions: Acquisitive firms that fund acquisitions without pushing their debt ratios above acceptable levels or viewing their own stock as free currency are likely to be better investments in the long term.

Avoid accounting complexity: Acquisitive firms that try to present the most information they can about acquisitions and that do not play accounting games are much better investments in the long term.

If you adopt these screens, you will find that the best stocks for your portfolio will not be the serial acquirers who make the news with their big deals but the smaller acquirers who do

not make the news. Notwithstanding these screens, you constantly have to monitor the firms you invest in to ensure that they (and their chief executives) are not overreaching.

If you believe that you have a better chance of success by investing in potential takeover targets, the last section suggests possible screens.

Start with poorly managed companies: Your odds of success are greatest with companies where managers not only do a poor job in terms of where they invest resources (return on equity more than 4% below the peer group ROE) but also generate sub-par returns for their investors (stock returns over last year lag peer group returns by more than 5%).

Avoid entrenched managers: Shift your portfolio towards those companies where insiders hold relatively little stock (insider holdings less than 10%), there are no anti-takeover amendments on the books and where the CEO has not consolidated his or her hold on power.

Reduce exposure to Risk: To reduce your exposure to risk, steer away from companies with too much debt (debt to capital ratios that exceed 50%) or high stock price volatility (annualized standard deviation in stock prices exceeds 80%).

Combining these screens, a portfolio of 17 stocks was generated in March 2003. The appendix lists the stocks in the portfolio.

Conclusion

Acquisitions make the news for obvious reasons. They cause stock prices to move dramatically and it is not surprising that investors are attracted to companies involved in acquisitions. Some investors are drawn to acquiring firms, attracted by the rapid growth in earnings and revenues posted by these firms. If there is a lesson to be learnt from history, it is that serial acquirers generally do not make good investments. All too often, they overpay for target firms, expand into businesses they do not understand and over reach by borrowing too much to fund their growth. While they are able to often cover their weaknesses in their financial statements, their problems ultimately catch up with them.

The largest payoff in acquisitions is to those who hold stock in target firms at the time the acquisitions are announced. To earn these returns, though, you have to buy these firms before they become acquisition targets; buying shares after an acquisition is announced is a risky strategy with limited returns. Looking at the typical target firms in past acquisitions, you can develop a set of screens for identifying potential target firms in future acquisitions. They tend to be poorly managed, have low insider ownership and earn poor returns both for their stockholders and on projects.

Appendix: Potential Takeover Targets among US companies – March 2003

<i>Company Name</i>	<i>Ticker Symbol</i>	<i>Industry Name</i>	<i>Stock Price</i>	<i>P/E Trailing 12 Mo</i>	<i>Market Cap \$ (Mil)</i>	<i>% Insider Holdings</i>	<i>% Debt/Capital Latest Qtr</i>	<i>Std Dev 3-Year</i>	<i>Return on Common Equity</i>	<i>Industry Average</i>
Universal Corp.	UVV	Tobacco	37.09	8.7	949.7	1.8	46	34.87	18.14%	35.85%
ICN Pharmaceuticals	ICN	Drug	8.82	9.9	709.1	8.3	38.1	64.3	10.5%	24.29%
Saks Inc.	SKS	Retail Store	7.87	11.1	984.4	9.8	38.9	60.78	1.04%	13.11%
Libbey Inc.	LBY	Household Products	25	10.5	379.3	6.3	44.3	32.18	23.82%	35.46%
Conned Corp.	CNMD	Medical Supplies	16.01	11.8	429.9	8.5	39.8	48.3	8.6%	19.63%
Wellman Inc.	WLM	Chemical (Specialty)	9.59	10.8	284.5	6.7	25.3	47.4	1.36%	10.30%
Blair Corp.	BL	Retail (Special Lines)	24	9.7	186.2	8.69	0.2	38.07	2.24%	10.71%
Information Resources	IRIC	Information Services	1.32	11.7	41.4	7.1	2.8	77.16	2.71%	11.14%
Hughes Supply	HUG	Retail Building Supply	24.8	9.1	509.9	6.6	40.1	48.19	7.41%	15.80%
Building Materials	BMHC	Retail Building Supply	14.25	7.7	174.7	5.9	39.8	40.15	8.78%	15.80%
Myers Inds.	MYE	Diversified Co.	9.57	11	264.5	2.7	47.9	44.4	6.98%	12.51%
Cambrex Corp.	CBM	Chemical (Diversified)	23.7	10.8	550.5	13.5	41.8	36.48	12.96%	17.95%

Phillips-Van Heusen	PVH	Apparel	11.97	11	329.5	4.09	46.3	39.56	9.06%	13.93%
Standard Register	SR	Office Equip/Supplies	14.84	10.6	372.9	2.7	38.5	44.69	6.66%	11.53%
Armor Holdings	AH	Aerospace/Defense	9.92	11.6	287.8	13.7	3.4	48.6	5.96%	10.78%
IHOP Corp.	IHP	Restaurant	23.72	11.2	449.7	9.5	39.8	30.93	12.89%	17.36%
AnnTaylor Stores	ANN	Retail (Special Lines)	19.34	11.1	791.3	3.5	14.7	55.64	6.43%	10.71%

CHAPTER 11

A SURE THING! NO RISK AND SURE PROFITS**The Search for a Free Lunch**

Linda loved getting something for nothing. She shamelessly took advantage of misprinted coupons at grocery stores and freebies at vacation resorts. She wondered whether there was a way she could apply her skills to improving her portfolio performance. Her friend, Brian, was a broker and he suggested that there might be a way to take no risk and make high returns in the stock market. Lots of foreign stocks, he argued, had listings in the United States and some of them traded at much higher prices in the U.S. markets than they did in their local markets. Using his connections, he said he could buy shares cheap in the local market while borrowing the more expensive shares listed in the U.S. market and selling them. A profit was guaranteed, he argued, since the two shares were in the same company.

Linda went along with the plan. Brian bought the shares in an Indonesian company on the Jakarta stock exchange and borrowed and sold shares in the same company in the U.S. market at a price that was 20% higher. He told Linda that the borrowed shares would have to be returned in two months but that the price difference would narrow by then, thus giving her a sure profit. Linda watched the share prices in both the Indonesian and the U.S. market in the days after. When the price difference did not narrow initially, she was not worried. When the price difference was still 20% a month after the trade, she sought out Brian but he reassured her that all was well. Doing her own research, she discovered that the U.S. listing was called an ADR and had always traded at a premium on the local listing, and that an ADR could not be exchanged for a local share. When the difference in prices reached 25%, she told Brian to settle the account to limit her losses, and decided that she her odds were much better with her local grocery store than in the stock market.

Moral: If you see easy money to be made in the stock market, you have not looked hard enough.

Despite being told repeatedly that there are no free lunches, investors never stop looking for them. If you can invest without taking risk and earn more than you could make on government bonds, you have the equivalent of a free lunch in investing. There are both institutional and individual investors who search for these elusive opportunities hoping to find them and mine them for certain profits. These riskless investments that earn more than the riskless rate represent arbitrage opportunities. In this chapter, you will look at arbitrage opportunities in their pure form first, and also in the form in which you are most likely to

encounter them where there is some residual risk. You will also examine why arbitrage opportunities, even when they present themselves, are so difficult to exploit for certain profits.

The Core of the Story

No money down, no risk and unlimited profit! Would you need to be sold on such an opportunity, if it did exist? It would sell itself. Any skeptical investor, though, would view such a sales pitch with derision, having undoubtedly been burnt by similar ones in the past. Such an investor would also want to know the reason why such an opportunity would exist in the first place. For an arbitrage sales pitch to succeed, it has to be accompanied by a reason for its existence and here are a few:

No one else knows about it (yet): This is the pitch to the truly gullible. Every great investment opportunity has to be discovered by someone and that someone conveniently happens to be you. Why the person who discovered this opportunity would share this news with anyone and why you should be the lucky recipient of this largess may not be explained to you but as with any con game, you are made to feel special.

It takes special skill to find it and you can acquire it (cheap): This is the sales pitch for the investor who wants to pay something, but not very much, for that “free” lunch. If you acquire the special skill (which may be a book, software or mantra offered by the purveyor) for a price, you will be able to establish a clear advantage over other investors in the market.

It will last only a short time (and you have to make up your mind quickly): It is true that markets sometimes make mistakes and that these mistakes can lead to arbitrage opportunities for those who happen to be at the right place at the right time. On this investment, that happens to be you if you act immediately.

It will work only for investors with specific characteristics (and you have them): This is perhaps the most effective of the sales pitches because it has the best chance of being true. If you are different from other investors (you have lower transactions costs or a different tax rate), you may very well find that what looks like the right price to others offers riskless profits for you.

The Theory on Arbitrage

To understand what makes for arbitrage, you need to distinguish between three types of arbitrage. The first is *pure arbitrage*, where you have two identical assets with different market prices at the same point in time and the prices will converge at a given point

in time in the future. This type of arbitrage is most likely to occur in derivatives markets – options and futures- and in some parts of the bond market. The second is *near arbitrage*, where you have assets that have identical or almost identical cash flows, trading at different prices, but there is no guarantee that the prices will converge and there exist significant constraints on investors forcing them to do so. The third is *speculative arbitrage*, which is really not arbitrage in the first place. Here, investors take advantage of what they see as mispriced and similar (though not identical) assets, buying the cheaper one and selling the more expensive one. If they are right, the difference should narrow over time, yielding profits. As you will see, the peril of this strategy is that the initial assessment of mispricing is usually based upon a view of the world that may not be justified.

Pure Arbitrage

The requirement that you have two assets with identical cash flows and different market prices makes pure arbitrage elusive. First, identical assets are not common in the real world, especially if you are an equity investor. No two companies are exactly alike, and their stocks are therefore not perfect substitutes. Second, assuming two identical assets exist, you have to wonder why financial markets would allow pricing differences to persist. If in addition, you add the constraint that there is a point in time where the market prices converge, it is not surprising that pure arbitrage is likely to occur very infrequently, and even if it does occur, is likely to be small and fleeting. The conditions that would cause it to occur include the following:

Restrictions on the flow of market information to investors in the market: You may find the same asset trading at different prices in two different markets, if investors in one market cannot observe the price in the other market and vice versa. While this may seem outlandish in these days of CNBC and online trading, it is worth remembering that until a decade or so ago, even in the United State, only a few investors, mostly institutional, had access to real time trading prices and transactions information. In fact, there are still markets in the world where there is little or no transparency about trading and prices.

Restrictions on trading: To eliminate the mispricing, you have to be able to trade. If you are prevented from doing so by market restrictions, you may very well see the mispricing continue. For example, you may need to be able to borrow shares from other investors and sell them (short selling) of stocks to create some arbitrage positions and short sales are restricted or prohibited in many markets.

Futures Arbitrage

A futures contract is a contract to buy a specified asset at a fixed price in a future time period. There are two parties to every futures contract - the seller of the contract, who

agrees to deliver the asset at the specified time in the future, and the buyer of the contract, who agrees to pay a fixed price and take delivery of the asset. Consider, for instance, a 1-year futures contract on gold, priced at \$425 an ounce. If you buy this contract, you are guaranteed delivery of 100 ounces of gold at \$425 an ounce one year from now. If your objective is to be in possession of 100 ounces of gold in one year, you could also accomplish this objective by borrowing money today, buying 100 ounces of gold at the current price (in the spot market) and storing the gold for one year. The second approach (borrowing money and storing gold) will create two additional costs to you as an investor and they are:

- (a) *Interest costs*: Since you have to borrow the money now, you have to pay interest for the period of the borrowing (one year in this case).
- (b) *Storage costs*: If there is a storage cost associated with storing the commodity until the expiration of the futures contract, this cost has to be reflected in the strategy as well. In some cases, there may be a benefit to having physical ownership of the commodity. This benefit is called the convenience yield and will reduce the futures price. The net storage cost is defined to be the difference between the total storage cost and the convenience yield.

Since the two strategies deliver the same end result –ownership of 100 ounces of gold at the end of one year at a cost that you know today – they should cost the same. If they do not, you could potentially generate a riskless profit.

Consider a simple example. Assume that the current spot price of gold is \$ 400 an ounce and that the one-year futures contract on gold continues to be priced at \$ 425 an ounce. You can buy the futures contract and guaranteed that you will be able to buy the gold at \$ 425 an ounce a year from now. Alternatively, you can borrow \$ 400 today, buy an ounce of gold and store it for a year. If you do the latter, you will have to pay interest expenses on your borrowing and the storage cost of gold. If you assume that the annualized riskless interest rate on borrowings is 5% and that the storage cost is \$ 2 an ounce for a year, this strategy will result in a cost of \$422 an ounce:

Cost of futures contract = \$ 425

Cost of borrowing, buying and storing gold = \$ 400 (1.05) + \$ 2 = \$ 422

Since these strategies are equivalent in terms of final results (you will take delivery of 1 ounce of gold a year from now), you can construct an arbitrage position:

Arbitrage position: Borrow \$ 400, buy one ounce of gold and store gold
 Sell a futures contract for \$ 425

At the end of the year, you will deliver the gold to the buyer of the futures contract and receive \$ 425. You will then use the proceeds to pay off the loan with interest (\$420) and

the storage costs (\$2), leaving you with an arbitrage profit of \$ 3 an ounce. To prevent arbitrage, the futures contract will have to trade at \$ 422 an ounce.

This arbitrage is based upon several assumptions. First, investors are assumed to borrow and lend at the same rate, which is the riskless rate. Second, when the futures contract is under priced, it is assumed that the buyer of the futures contract (the arbitrageur) can sell short on the commodity and that he can recover, from the owner of the commodity, the storage costs that are saved as a consequence. To the extent that these assumptions are unrealistic, the bounds on prices within which arbitrage is not feasible expand.

Options Arbitrage

As derivative securities, options differ from futures in a very important respect. They represent rights rather than obligations – calls gives you the right to buy and puts give you the right to sell an underlying asset at a fixed price (called an exercise price). Consequently, a key feature of options is that buyers of options will exercise the options only if it is in their best interests to do so and thus cannot lose more than what was paid for the options. As an example, lets assume that you pay \$ 4 to buy a six-month call option on Microsoft with an exercise price of \$ 50. In effect, you have the right to buy a share of Microsoft at \$ 50 anytime over the next 6 months. Clearly, you will exercise this right only if Microsoft's stock price exceeds \$ 50; the gross profit you will make on exercise will be the difference between the stock price and the exercise price. If Microsoft's stock price drops below \$ 50, you will not exercise your option and you will lose what you paid for the option. With a put with the same exercise price, you get a right to sell a share of Microsoft at \$ 50 and you will exercise only if the stock price drops below \$ 50.

The easiest arbitrage opportunities in the option market exist when options violate simple pricing bounds. No option, for instance, should sell for less than its exercise value.

With a call option: Value of call > Value of Underlying Asset – Strike Price

With a put option: Value of put > Strike Price – Value of Underlying Asset

For instance, a call option with a strike price of \$ 50 on a stock that is currently trading at \$ 60 should never sell for less than \$ 10. If it did, you could make an immediate profit by buying the call for less than \$ 10 and exercising right away to make \$ 10.

In fact, you can tighten these bounds for call options, if you are willing to trade on both the underlying asset and the option and hold your position through the option's expiration. The bounds then become:

With a call option: Value of call > Value of Underlying Asset – Present value of Strike Price

With a put option: Value of put > Present value of Strike Price – Value of Underlying Asset

To see why, consider the call option in the previous example. Assume that you have one year to expiration and that the riskless interest rate is 10%.

Present value of Strike Price = $\$50/1.10 = \45.45

Lower Bound on call value = $\$60 - \$45.45 = \$14.55$

The call has to trade for more than \$14.55. What would happen if it traded for less, say \$12? You would buy the call for \$12, sell short a share of stock for \$60 and invest the net proceeds of \$48 (\$60 – 12) at the riskless rate of 10%. Consider what happens a year from now:

If the stock price > strike price (\$50): You first collect the proceeds from the riskless investment ($\$48(1.10) = \52.80), exercise the option (buy the share at \$50) and return the share to cover your short sale. You will then get to keep the difference of \$2.80.

If the stock price < strike price (\$50): You collect the proceeds from the riskless investment (\$52.80), buy a share in the open market for the prevailing price then (which will be less than \$50) and keep the difference.

In other words, you invest nothing today and are guaranteed a positive payoff in the future. You could construct a similar example with puts.

The arbitrage bounds work best for stocks that do not pay dividends and for options that can be exercised only at expiration (European options). Most options in the real world can be exercised prior to expiration (American options) and are on stocks that pay dividends. Even with these options, though, you should not see short term options trading which violate these bounds by large margins, partly because exercise is so rare even with listed American options and dividends tend to be small. As options become long term and dividends become larger and more uncertain, you may very well find options that violate these pricing bounds, but you may not be able to profit off them.

One of the key insights that revolutionized option pricing in the early 1970s was that a portfolio created by borrowing money and buying the underlying stock, if structured right, could have exactly the same cash flows as a call. This portfolio is called the replicating portfolio. In fact, Fischer Black and Myron Scholes used the arbitrage argument to derive their option-pricing model by noting that since the replicating portfolio and the traded option have the same cash flows, they would have to sell at the same price.¹ If you can buy listed options at a price that is less than what it costs to create the replicating portfolio, you will buy the listed option, sell the replicating portfolio and essentially make a riskless profit,

¹ Black, F. and M. Scholes, 1972, *The Valuation of Option Contracts and a Test of Market Efficiency*, Journal of Finance, Vol 27, 399-417.

since the cashflows on the two positions would offset each other. If the replicating portfolio costs less than the option, you will buy the replicating portfolio and sell the option and lock in your profits.

Near Arbitrage

In near arbitrage, you either have two assets that are very similar but not identical, which are priced differently, or identical assets that are mispriced, but with no guaranteed price convergence. No matter how sophisticated your trading strategies may be in these scenarios, your positions will no longer be riskless. Consider three examples:

- *Same Security, Multiple Markets:* In today's global markets, there are a number of stocks that are listed on more than one market. If you can buy the same stock at one price in one market and simultaneously sell it at a higher price in another market, you can lock in a riskless profit. In the real world, even though the same company may be traded in different markets, it trades in different forms. For instance, many non-US companies trade in the United States as depository receipts (ADRS) while their shares trade on their local markets at the same time. If there are no restrictions on converting ADRs into local shares, then any significant price differences between the two markets should offer profit potential.
- *Closed End Funds:* In a conventional mutual fund, the number of shares increases and decreases as money comes in and leaves the fund, and each share is priced at net asset value – the market value of the securities of the fund divided by the number of shares. Closed end mutual funds differ from other mutual funds in one very important respect. They have a fixed number of shares that trade in the market like other publicly traded companies, and the market price can be different from the net asset value. In other words, a closed end fund can trade for far less or far more than the market value of the securities that it holds at that point in time. If the market price per share of a closed end fund is less than the net asset value per share, there is potential for profits but it is not clear how you would cash in these profits.
- *Convertible Arbitrage:* A convertible bond has two securities embedded in it – a conventional bond and a conversion option on the company's stock. When companies have convertible bonds or convertible preferred stock outstanding in conjunction with common stock, warrants, preferred stock and conventional bonds, it is entirely possible that you could find one of these securities mispriced relative to the other, and be able to construct a near-riskless strategy by combining two or more of the securities in a portfolio.

Pseudo or Speculative Arbitrage

The word arbitrage is used much too loosely in investments and there are a large number of strategies that are characterized as arbitrage, but actually expose investors to significant risk. Consider the following examples:

- *Paired Arbitrage*: In classic arbitrage, you buy an asset at one price and sell an exactly identical asset at a different (and higher) price. In paired arbitrage, you buy one stock (say GM) and sell another stock that you view as very similar (say Ford), and argue that you are not exposed to risk. Clearly, this strategy is not riskless since no two stocks are exactly identical, and even if they were very similar, there is no reason why their prices have to converge.
- *Merger Arbitrage*: In chapter 10, the strategy of buying shares in firms involved in an acquisition, after the acquisition was announced, was described. This strategy is called merger arbitrage, though it is difficult to see why it is called arbitrage in the first place. The profits are not riskless and the strategy is speculative.

Evidence

It should come as no surprise that there are relatively few arbitrage opportunities that have been uncovered by empirical research over the last few decades. In fact, it may surprise some that any such opportunities exist in the first place. As you will see in this section, the evidence on arbitrage opportunities is ambiguous and can be interpreted differently, depending upon your point of view. Believers in efficient markets look at the evidence and argue that they cannot be exploited to make any money, because of transactions costs and execution problems. Those who believe that there are times when markets break down argue that the mispricing of assets can be exploited perhaps not by all investors but by some investors in the market.

Pure Arbitrage

One way to test whether arbitrage opportunities exist is to look at how futures and options contracts are priced by the market. This, by itself, though is weak evidence of arbitrage because you have to trade at these prices to make the riskless profits. The second test of arbitrage is to examine the returns of investors who claim to do arbitrage and see if they succeed.

Futures and Option Markets

If futures and option arbitrage is so simple, you may ask, how in a reasonably efficient market would arbitrage opportunities even exist? In the commodity futures market, for instance, a study in 1983 found little evidence of arbitrage opportunities and those

findings are echoed in more recent studies. In the futures and options markets, there is evidence that indicates that arbitrage is indeed feasible but only to a very small sub-set of investors and for very short periods.² Differences in transactions cost seem to explain most of the differences. Large institutional investors, with close to zero transactions costs and instantaneous access to both the underlying asset and futures markets may be able to find and take advantage of arbitrage opportunities, where individual investors would not. In addition, these investors are also more likely to meet the requirements for arbitrage – being able to borrow at rates close to the riskless rate and sell short on the underlying asset.

Note, though, that the returns are small³ even to these large investors and that arbitrage will not be a reliable source of profits, unless you can establish a competitive advantage on one of three dimensions. First, you can try to establish a transactions cost advantage over other investors, which will be difficult to do since you are competing with other large institutional investors. Second, you may be able to develop an information advantage over other investors by having access to information earlier than others. Again, though much of the information is pricing information and is public. Third, you may find a quirk in the pricing of a particular futures or options contract before others learn about it. The arbitrage possibilities seem to be greatest when futures or options contracts are first introduced on an asset, since investors take time to understand the details of futures pricing. For instance, it took investors a while to learn how to price stock index and treasury bond futures.⁴ Presumably, investors who learnt faster than the market were able to take advantage of the mispricing of futures and options contracts in these early periods and make substantial profits.

Fixed Income Arbitrage

Bonds lend themselves to arbitrage more easily than stocks because they have finite lives and fixed cash flows. This is especially so, when you have government bonds, where the fixed cash flows are also guaranteed. Consider one very simple example. You could replicate a 10-year treasury bond's cash flows by buying zero-coupon treasuries with

² Garbade, K.D. and W.L. Silber, 1983, *Price Movements and Price Discovery in Futures and Cash Markets*, The Review of Economics and Statistics, v115, 289-297.

³ A study of 835 index arbitrage trades on the S&P 500 futures contracts estimated that the average gross profit from such trades was only 0.30%.

⁴ With index futures, it took investors a while to understand the effect of uneven dividends on future prices. With treasury bond futures, the wild card feature (where you are allowed to deliver the cheapest of a menu of bonds) resulted in some early mispricing of futures contracts.

expirations matching those of the coupon payment dates on the treasury bond. For instance, if you invest \$ 1 million in a ten-year treasury bond with an 8% coupon rate, you can expect to get cashflows of \$ 40,000 million every six months for the next 10 years and \$ 1 million at the end of the tenth year. You could have obtained exactly the same cashflows by buying zero-coupon treasuries with face values of \$ 40,000, expiring every six months for the next ten years, and an additional 10-year zero coupon bond with a face value of \$ 1 million. Since the cashflows are identical, you would expect the two positions to trade for the same price. If they do not trade at the same price, you would buy the cheaper position and sell the more expensive one, locking in the profit today and having no cashflow or risk exposure in the future.

With corporate bonds, you have the extra component of default risk. Since no two firms are exactly identical when it comes to default risk, you may be exposed to some risk if you are using corporate bonds issued by different entities. In fact, two bonds issued by the same entity may not be equivalent because of differences in how they are secured and structured. There are some arbitrageurs who argue that bond ratings are a good proxy for default risk, and that buying one AA rated bond and selling another AA rated bond should be riskless, but bond ratings are not perfect proxies for default risk. In fact, you see arbitrage attempted on a wide variety of securities with promised cashflows, such as mortgage backed bonds. While you can hedge away much of the cashflow risk, the nature of the cashflow claims will still leave you exposed to some risk. With mortgage backed bonds, for instance, the unpredictability of prepayments by homeowners has exposed many “riskless” positions to risk.

Is there any evidence that investors are able to find bonds mispriced enough to generate arbitrage profits? An assessment of the treasury strips program – a program allowing investors to break up a treasury bond and sell its individual cash flows – notes that there were potential arbitrage opportunities in these markets in the early years of the program but finds little evidence of trading driven by these opportunities⁵. An analysis of the Spanish bond market may shed some light on this question.⁶ Examining default free and option free bonds in the Spanish market between 1994 and 1998, this study concludes that there were arbitrage opportunities surrounding innovations in financial markets. You would extend these findings to argue that opportunities for arbitrage with bonds are

⁵ Grinblatt, M. and F.A. Longstaff, 2000, *Financial innovation and the role of derivative securities: An empirical analysis of the U.S. treasury's strips program*, Journal of Finance.

⁶ Alejandro Balbás and Susana López, 2001, *Financial innovation and arbitrage in the Spanish bond market*, Working Paper, SSRN.

probably greatest when new types of bonds are introduced – mortgage backed securities in the early 1980s, inflation- indexed treasuries in the late 1990s and the treasury strips program in the late 1980s. As investors become more informed about these bonds and how they should be priced, arbitrage opportunities seem to subside.

Near Arbitrage

Near arbitrage is more likely to occur than pure arbitrage and it can take many forms. In this section, you will look at the evidence accumulated over time on near arbitrage strategies.

Same Security, Multiple Markets

Many large companies such as Royal Dutch, General Electric and Microsoft trade on multiple markets on different continents. Since there are time periods during the day when there is trading occurring on more than one market on the same stock, it is conceivable (though not likely) that you could buy the stock for one price in one market and sell the same stock at the same time for a different (and higher price) in another market. The stock will trade in different currencies, and for this to be a riskless transaction, the trades have to at precisely the same time and you have to eliminate any exchange rate risk by converting the foreign currency proceeds into the domestic currency instantaneously. Your trade profits will also have to cover the different transactions costs in the two markets. There are some exceptional cases, where the same stock trades in different markets in one country. An examination of 84 Czech stocks that trade on the two Czech exchanges – the Prague Stock Exchange (PSE) and the Registration Places System (RMS)- finds that prices adjust slowly across the two markets, and that arbitrage opportunities exist (at least on paper) –the prices in the two markets differ by about 2%.⁷ These arbitrage opportunities seem to increase for less liquid stocks. While the authors consider transactions cost, they do not consider the price impact that trading itself would have on these stocks and whether the arbitrage profits would survive the trading.

Many Asian, Latin American and European companies have American Depositary Receipts (ADRs) listed on the U.S. market. Depositary Receipts are issued or created when investors decide to invest in a non-US. company and contact their brokers to make a purchase. These brokers, through their own international offices or through a local broker in the company's home market, purchase the shares in the local market and request that the shares be delivered to the depository bank's custodian in that country. The broker who

⁷ Swaicki, J. and J. Hric, 2001, *Arbitrage Opportunities in Parallel Markets: The Case of the Czech Republic*, Working Paper, SSRN.

initiated the transaction will convert the US dollars received from the investor into the corresponding foreign currency and pay the local broker for the shares purchased. On the same day that the shares are delivered to the custodian bank, the custodian notifies the depository bank. Upon such notification, Depository Receipts are issued and delivered to the initiating broker, who then delivers the Depository Receipts to the investor. These depository receipts⁸ create a claim equivalent to the one you would have had if you had bought shares in the local market and should therefore trade at a price consistent with the local shares. What makes them different and potentially riskier than the stocks with dual listings is that ADRs are not always directly comparable to the common shares traded locally – one ADR on Telmex, the Mexican telecommunications company, is convertible into 20 Telmex shares. In addition, converting an ADR into local shares can be sometimes costly and time consuming. In some cases, there can be differences in voting rights as well. In spite of these constraints, you would expect the price of an ADR to closely track the price of the shares in the local market, albeit with a currency overlay, since ADRs are denominated in dollars. An examination of the link between ADRs and local share concludes that about 60 to 70% of the variation in ADR prices can be attributed to movements in the underlying share prices and that ADRs overreact to the U.S. market and under react to exchange rates and the underlying stock.⁹ However, investors cannot take advantage of the pricing errors in ADRs because convergence does not occur quickly or in predictable ways. With a longer time horizon and/or the capacity to convert ADRs into local shares, though, you should be able to take advantage of significant pricing differences.

Closed End Funds

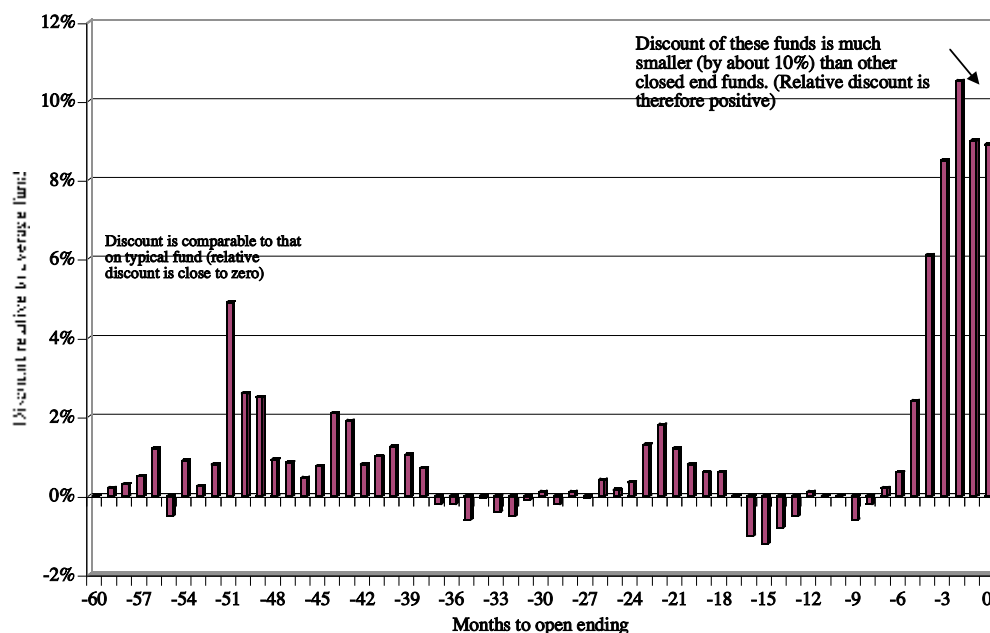
In both the United States and the United Kingdom, closed end mutual funds have shared a very strange characteristic. When they are created, the price is usually set at a premium on the net asset value per share. As closed end funds trade, though, the market price tends to drop below the net asset value and stay there. In any given time period that they have been examined, about 60-70% of closed end funds trade at a discount on the net asset value. Some of these discounts are substantial and exceed 20%.

⁸ Depository receipts can be sponsored by the company, in which case they can be used by the company to raise capital, or unsponsored, in which case they are issued by intermediaries (like banks) to meet market demand.

⁹ Kin, M. A.C. Szakmary and I. Mathur, 2000, *Price Transmission Dynamics between ADRs and Their Underlying Foreign Securities*, Journal of Banking and Finance, v24, 1359-1382.

So what, you might ask? Lots of firms trade at less than the estimated market value of their assets. That might be true, but closed end funds are unique for two reasons. First, the assets are all traded stocks and the market value is therefore known at any point in time and not an estimate. Second, liquidating a closed end fund's assets should not be difficult to do, since the assets are traded stocks or bonds. Thus, liquidation should neither be costly nor time consuming. Given these two conditions, you may wonder why you should not buy closed end funds that trade at a discount and either liquidate them yourself or hope that some one else will liquidate them. Alternatively, you may be able to push a closed-end fund to convert into an open-end fund and see prices converge on net asset value. Figure 11.1 reports on the performance of closed-end funds when they convert to open end, based upon an examination of 94 UK closed-end funds that open ended:¹⁰

Figure 11.1: Relative Discount on Closed End Funds that Open End



Data from Dimson and Minio-Kozerski. These are the average relative discounts of closed end funds that open end in the UK.

Note that as you get closer to the open-ending date (day 0), the discount becomes smaller relative to the average closed-end fund. For instance, the discount goes from being on par with the discount on other funds to being about 10% lower than the typical closed-end fund.

¹⁰ Dimson, E. and C. Minio-Kozerski, 1998, *Closed-end Funds, A Survey*, Working Paper, London Business School.

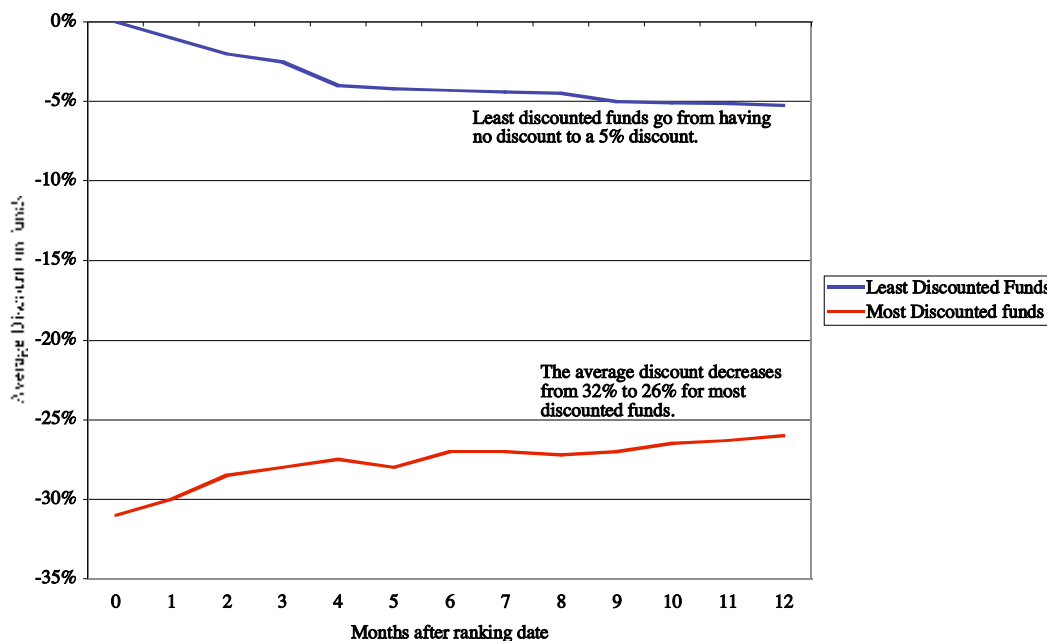
So what is the catch? In practice, taking over a closed-end fund while paying less than net asset value for its shares seems to be very difficult to do for several reasons- some related to corporate governance and some related to market liquidity. There have been a few cases of closed end funds being liquidated, but they remain the exception. What about the strategy of buying discounted funds and hoping that the discount disappears? This strategy is clearly not riskless but it does offer some promise. One of the first studies of this strategy examined closed end funds from 1940 to 1975 and reported that you could earn an annualized excess return of 4% from buying discounted funds.¹¹ An analysis in 1986 reports excess returns from a strategy of buying closed end funds whose discounts had widened and selling funds whose discounts had narrowed – a contrarian strategy applied to closed end funds. An examination of closed end funds reported that funds with a discount of 20% or higher earn about 6% more than other closed end funds.¹² This, as well as research in the UK, seem to indicate a strong reversion to the average in discounts at closed funds. Figure 11.2, which is from a study of the discounts on closed end funds in the UK, tracks relative discounts on the most discounted and least discounted funds over time:¹³

¹¹ Thompson, Rex, 1978, The Information Content of Discounts and Premiums on Closed-End Fund Shares, *Journal of Financial Economics* 6, 151-186.

¹² Pontiff, Jeffrey, 1997, *Excess Volatility and Closed-End Funds*, *American Economic Review* 87, 155-169.

¹³ Minio-Paluello, Carolina, 1998, *The UK Closed-End Fund Discount*, PhD thesis, London Business School

Figure 11.2: Discounts on most discounted and least discounted funds over time



Data from Minio-Paluello. The discounts on the most discounted and least discounted funds are followed for 12 months after the funds are selected.

Note that the discounts on the most discounted funds decrease whereas the discounts on the least discounted funds increase, and the difference narrows over time.

Convertible Arbitrage

In the simplest form of convertible arbitrage, since the conversion option is a call option on the stock, you could construct its equivalent by combining the underlying stock and the treasury bond (a replicating portfolio). Adding a conventional bond to this should create the equivalent of the convertible bond – this is called a synthetic convertible bond. Once you can do this, you can take advantage of differences between the pricing of the convertible bond and synthetic convertible bond and potentially make arbitrage profits. In the more complex forms, when you have warrants, convertible preferred and other options trading simultaneously on a firm, you could look for options that are mispriced relative to each other, and then buy the cheaper option and sell the more expensive one.

Pseudo or Speculative Arbitrage

In Chapter 10, you looked at some of the empirical evidence on merger arbitrage. Summarizing the findings, merger arbitrage does generate healthy returns for investors who

use it but it is certainly not riskless. In fact, it is a strategy where failure can lead to large negative returns while success takes the form of small positive returns. Consider now the evidence on paired arbitrage, where you find two similar stocks that are mispriced relative to each other and buy (sell) the cheaper (more expensive) one. The conventional practice among those who have used paired arbitrage strategy on Wall Street has been to look for two stocks whose prices have historically moved together – i.e., have high correlation over time. This often leads to two stocks in the same sector, such as GM and Ford. Once you have paired the stocks, you compute the spread between them and compare this spread to historic norms. If the spread is too wide, you buy the cheaper stock and short the more expensive stock. In many cases, the strategy is self-financing. For example, assume that Ford has historically traded at a third of GM's price. If Ford is currently trading at \$ 20 and GM is trading at \$ 40, GM is overpriced relative to Ford. You would buy two shares of Ford and sell short one share of GM; this position would be self financing and would require no investment from you. If you are right, and the spread narrows between the shares, you will profit on your paired position.

Can such a simplistic strategy, based entirely upon past prices, make excess returns? In 1999, a study tested a variety of trading rules based upon pairs trading from 1982-1997, using the following process:¹⁴

Screening first for only stocks that traded every day, the authors found a matching partner for each stock by looking for the stock that moved most closely with it.¹⁵ Once they had paired all the stocks, they studied the pairs with the smallest squared deviation separating them.

With each pair, they tracked the normalized prices of each stock and took a position on the pair, if the difference exceeded the historical range by two standard deviations, buying the cheaper stock and selling the more expensive one.

Over the 15 year period, the pairs trading strategy did significantly better than a buy-and-hold strategy. Strategies of investing in the top 20 pairs earned an excess return of about 6% over a 6-month period, and while the returns drop off for the pairs below the top 20, you continue to earn excess returns. When the pairs are constructed by industry group (rather than just based upon historical prices), the excess returns persist but they are smaller.

¹⁴ Gatev, E.G., W.N.Goetzmann and K.G. Rouwenhorst, 1999, *Pairs Trading, Performance of a Relative Value Arbitrage Rule*, Working Paper, SSRN.

¹⁵ To find this stock, they look for the minimum squared difference between the returns of two stocks. If two stocks move in lock step, this difference will be zero.

Controlling for the bid-ask spread in the strategy reduces the excess returns by about a fifth, but the returns are still significant.

While the overall trading strategy looks promising, there are two points worth emphasizing that should also act as cautionary notes about this strategy. The first is that the study quoted above found that the pairs trading strategy created negative returns in about one out of every six periods, and that the difference between pairs often widened before it narrowed. In other words, it is a risky investment strategy that also requires the capacity to trade instantaneously and at low cost. The second is a quote from a well-known quantitative analyst, David Shaw, who bemoaned the fact that by the late 1990s, the pickings for quantitative strategies (like pairs trading) had become slim because so many investment banks were adopting the strategies. As the novelty has worn off, it seems unlikely that the pairs trading will generate the kinds of profits it generated during the 1980s.

Crunching the Numbers

Given the wide range of arbitrage strategies available, your portfolio will look very different depending upon the strategy you pick. In the first part of this section, you will look at one futures market (gold) and one options markets (stock index) to see if you can find any obvious candidates for pure arbitrage. In the second part of this section, portfolios of heavily discounted closed end funds and depository receipts will be constructed and put under the microscope for potential profits.

Futures and Options Arbitrage

Do futures contracts on commodities and financial assets obey the pricing rules preventing arbitrage? Consider, as an illustration, futures contracts on gold, a commodity with small storage costs and a high price. Table 11.1 lists the prices on futures contracts on gold listed on the Chicago Board of trade on April 4, 2003. At the time, the spot price of gold was \$ 324.9 an ounce and the riskless rates are listed in the table. Assuming that the storage costs are zero, the predicted or theoretical prices are estimated as follows:

Theoretical price = Spot price of gold $(1 + \text{Riskless rate})^{\text{Time to expiration}}$

Table 11.1: Gold Futures Contracts: Actual and Predicted Futures Prices

Month	Actual Futures Price	Time to maturity	Riskless rate	Predicted price	Price difference (%)
Apr '03	325.3	0.08333333	1.25%	325.24	0.02%
May '03	325.6	0.16666667	1.26%	325.58	0.01%
Jun '03	326	0.25	1.27%	325.93	0.02%
Aug '03	326.7	0.41666667	1.27%	326.61	0.03%
Oct '03	327.2	0.58333333	1.28%	327.32	-0.04%
Dec '03	327.7	0.75	1.35%	328.18	-0.15%

Feb '04	328.3	0.91666667	1.38%	329.01	-0.22%
Apr '04	328.8	1.08333333	1.41%	329.87	-0.32%
Jun '04	329.3	1.25	1.43%	330.72	-0.43%
Aug '04	330	1.41666667	1.45%	331.59	-0.48%
Oct '04	331.1	1.58333333	1.48%	332.55	-0.44%
Dec '04	331.9	1.75	1.51%	333.53	-0.49%
Feb '05	332.8	1.91666667	1.52%	334.43	-0.49%
Jun '05	334.6	2.25	1.56%	336.42	-0.54%
Dec '05	337.6	2.75	1.50%	338.48	-0.26%
Jun '06	341.6	3.25	1.58%	341.88	-0.08%
Dec '06	346.2	3.75	1.70%	346.10	0.03%
Jun '07	351.1	4.25	1.84%	351.08	0.01%
Dec '07	355.9	4.75	1.93%	355.78	0.03%

Note that the actual prices are very close (within half of one percent) to the theoretical prices for every one of the futures contracts.

As another exercise, Table 11.2 lists call and put options on the S&P 500 with different exercise prices and their prices on April 4, 2003. The spot price of the index at the time that this table was extracted was 876.04.

Table 11.2: S&P 500 Index Options – April 4, 2003

Exercise Price	Calls			Puts		
	April	May	June	April	May	June
865	23.9	35.8	45.1	15.6	27.5	36.8
870	21	32.9	42.2	17.7	29.6	38.9
875	18.3	30.2	39.5	20	31.9	41.2
880	15.8	27.6	36.9	22.5	34.3	43.6
885	13.6	-	34.4	25.3	-	46.1
890	11.6	23	32	28.3	39.7	48.6

There are a number of tests that you can run for simple arbitrage opportunities. Consider, for example, the call and put options due in June 2003. In Table 11.3, the prices of the call and put options are compared to the exercise values of these options.

Table 11.3: Market Prices versus Exercise Values – June 2003 Options

Exercise Price	Calls		Puts	
	Market Price	Simple Exercise: S - K	Market Price	Simple Exercise: K - S
865	\$45.10	\$11.04	\$36.80	\$0.00

870	\$42.20	\$6.04	\$38.90	\$0.00
875	\$39.50	\$1.04	\$41.20	\$0.00
880	\$36.90	\$0.00	\$43.60	\$3.96
885	\$34.40	\$0.00	\$46.10	\$8.96
890	\$32.00	\$0.00	\$48.60	\$13.96

For example, exercising a call option with an exercise price of 865 will generate an exercise value equal to the difference between the current level of the index (876.04) and the exercise price. Exercising a put option with an exercise price of 885 will generate a profit equal to the difference between the exercise price and the current index level. None of the June options trade at less than exercise value. In fact, reverting back to the Table 11.2 that lists out all the traded options on the index, there is not a single option that violates simple arbitrage. While this is a weak test of arbitrage opportunities, you can expand these tests to cover more involved arbitrage opportunities and you will not find any (or at least any that look easy to exploit).

In general, you can scan the futures and options pages every day for weeks without finding obvious arbitrage opportunities. Even if you do find an obvious mispricing, odds are that you are finding a misprint, that you are missing a critical ingredient in your pricing formula or that you cannot execute at that price. In other words, pure arbitrage opportunities if they exist in markets are likely to take on more subtle forms and will require more research.

Depository Receipts

There are hundreds of non-US companies that have depository receipts listed on them in the United States. To find evidence of mispricing in this market, Table 11.4 lists the ADR price and the dollar value of the local listing price of the twenty most liquid ADRS on March 4, 2003:

Table 11.4: Most Liquid ADRs in the United States: April 4, 2003

<i>DR ISSUE</i>	<i>ADR price</i>	<i>Local Share Price (\$)</i>
NOKIA CORPORATION	\$14.70	\$14.71
ERICSSON LM TELEPHONE COMPANY	\$6.99	\$6.98
SAP AG	\$19.82	\$19.83
TAIWAN SEMICONDUCTOR MANUFACTURING CO.	\$7.55	\$7.55
BP PLC	\$39.01	\$38.95
ROYAL DUTCH PETROLEUM CO.	\$42.06	\$42.04
TEVA PHARMACEUTICAL INDUSTRIES LTD	\$44.07	\$44.07

VODAFONE GROUP PLC	\$19.00	\$18.99
AMERICA MOVIL SA DE CV- SERIES 'L'	\$14.50	\$14.52
STMICROELECTRONICS N.V.	\$18.64	\$18.64
TELEFONOS DE MEXICO S.A. DE C.V.-SERIES 'L'	\$30.67	\$30.66
BUSINESS OBJECTS S.A.	\$18.33	\$18.33
GOLD FIELDS LIMITED	\$10.19	\$10.19
TELE NORTE LESTE PARTICIPACOES S.A.	\$9.29	\$9.30
ASTRAZENECA PLC	\$34.85	\$34.86
HSBC	\$52.87	\$52.89
UNITED MICROELECTRONICS CORPORATION	\$3.27	\$3.26
CEMEX S.A. DE CV	\$18.25	\$18.25
ASML HOLDING NV	\$6.91	\$6.91
PETROLEO BRASILEIRO S.A. - PREFERRED	\$15.28	\$15.26

The prices were obtained from the US and the foreign exchange at the same point in time and the local listing price is converted into dollars at the prevailing exchange rate at that time. You can see that the prices are within a cent or two of each other. That should come as no surprise for two reasons. One is that these ADRs can be converted into local shares are relatively low cost. The other is that there is heavy trading in both the local and ADR markets on these shares. Any significant difference between the ADR and the local share price would be almost instantaneously arbitrated.

There are some countries that impose significant restrictions on converting ADRs into local shares. This is true, for instance, with Indian companies that have ADRs listed in the United States. These ADRs often trade at prices that are very different from the local share price. Table 11.5 summarizes the prices in U.S. dollars of some of the most heavily traded Indian companies in the United States.

Table 11.5: ADR and Local Share Prices – Indian Companies

<i>Company</i>	<i>ADR Price</i>	<i>Local Price (Rs)</i>	<i>Local Price (\$)</i>	<i>Premium (Discount)</i>	<i>Market Cap in \$ (Local market)</i>
DR REDDY (RDY)	\$19.60	915.2	\$19.35	1.30%	1,629.60
HDFC BANK (HDB)	\$17.30	240	\$15.35	12.70%	1,427.90
ICICI BANK (IBN)	\$6.60	136.8	\$5.77	14.40%	1,768.60
INFOSYS TECH. (INFY)	\$62.90	4,226.80	\$44.58	41.10%	5,903.70
MTNL (MTE)	\$4.20	97.5	\$4.09	2.60%	1,295.90
SATYAM COMP (SAY)	\$9.10	186	\$7.82	16.40%	1,234.00
SILVERLINE TECH. (SLT)	\$1.50	7.2	\$0.30	400.30%	13
VSNL (VSL)	\$3.40	76.8	\$3.25	4.70%	461.5

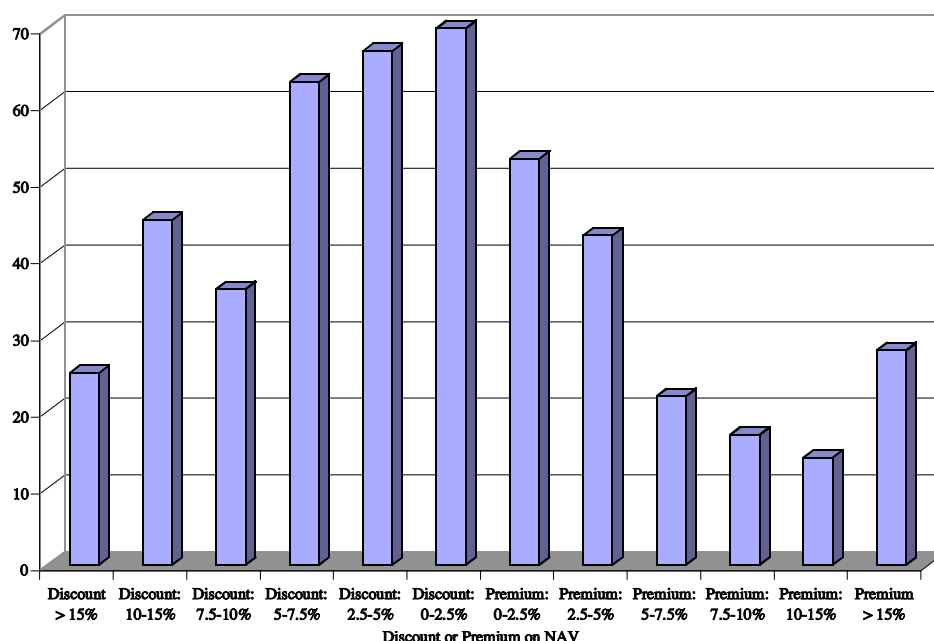
WIPRO (WIT)	\$29.50	1,251.50	\$26.36	11.90%	6,139.70
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Every one of the ADRs trades at a premium on the local share price. For instance, the ADR of Infosys, which is one of India's largest and best known technology companies, trades at a premium of 41% over the local shares. If you were not restricted in terms of trading, you would buy the local shares on the Bombay stock exchange and sell short the ADRs. You could then convert the local shares into ADRs and deliver them, thus capturing the profits.

Closed End Funds

In March 2003, there were hundreds of closed end funds listed in the United States. Figure 11.3 provides the distribution of price to net asset value for all closed end funds in the United States in June 2002.

Figure 11.3: Discounts/Premiums on Closed End Funds- June 2002



Data from Morningstar. This is the discount or premium at which the closed end fund shares trade, relative to net asset value.

Note that almost 70% of the closed end funds trade at a discount to net asset value and that the median discount is about 5%.

Some of these funds trade at significant discounts, and the 20 most heavily discounted funds are listed in table 11.6:

Table 11.6: Most Discounted Closed End Funds in the US – March 2003

<i>Fund Name</i>	<i>Discount</i>	<i>Trading Volume</i>	<i>Assets: \$ Million</i>
Equus II (EQS)	-44.33%	3,881	171
meVC Draper Fisher Jurvetson I (MVC)	-27.77%	36,565	109
Bexil Corporation (BXL)	-25.03%	2,349	9
Indonesia Fund (IF)	-22.28%	28	11
Thai Capital (TF)	-22.20%	473	19
Singapore Fund (SGF)	-20.76%	14,794	66
New Ireland (IRL)	-19.95%	7,517	96
Morgan Funshares (MFUN)	-19.84%	533	6
First Israel (ISL)	-19.64%	5,651	75
New Germany (GF)	-19.27%	39,393	124
Morgan Stanley India Investment Fund (IIF)	-18.61%	32,567	172
Latin America Equity (LAQ)	-17.68%	9,409	89
Latin American Discovery (LDF)	-17.63%	12,821	85
Scudder New Asia (SAF)	-16.80%	11,506	84
Malaysia Fund (MF)	-16.67%	13,049	46
Emerging Mkts Telecommunications (ETF)	-16.61%	12,365	112
Central Securities (CET)	-16.37%	11,511	366
Swiss Helvetia (SWZ)	-16.36%	21,471	287
John Hancock Bank & Thrift (BTO)	-16.29%	189,085	804
Brazil Fund (BZF)	-16.27%	26,316	168

The closed end funds range the spectrum but emerging market funds dominate. If you could buy these funds at their discounted market prices and liquidate their assets at market value, you could generate substantial profits. With the Equus II fund, for instance, you could have bought all of the shares in the fund for about \$ 100 million, sold the marketable securities for \$171 million and claimed a profit of \$ 71 million.

The Rest of the Story

If you are a skeptical investor, you are probably waiting for the other shoe to drop. After all, investing would be easy if arbitrage opportunities abounded. In this section, you will consider why it is so difficult for investors to find and take advantage of arbitrage opportunities.

Pure Arbitrage

The nature of pure arbitrage – two identical assets that are priced differently – makes it likely that it will be short lived. In other words, in a market where investors are on the look out for riskless profits, it is very likely that small pricing differences will be exploited quickly, and in the process, disappear. Consequently, the first two requirements for success

at pure arbitrage are access to real-time prices and instantaneous execution. It is also very likely that the pricing differences in pure arbitrage will be very small – often a fraction of a percent. To make pure arbitrage feasible, therefore, you can add two more conditions. The first is access to borrowing at favorable interest rates, since it can magnify the small pricing differences. Note that many of the arbitrage positions require you to be able to borrow at the riskless rate. The second is economies of scale, with transactions amounting to millions of dollars rather than thousands. Institutions that are successful at pure arbitrage often are able to borrow several times their equity investment at or close to the riskless rate to fund arbitrage transactions, using the guaranteed profits on the transaction as collateral.

With these requirements, it is not surprising that individual investors have generally not been able to succeed at pure arbitrage. Even among institutions, pure arbitrage is feasible only to a few, and even to those, it is a transient source of profits in two senses. First, you cannot count on the existence of pure arbitrage opportunities in the future, since it requires that markets repeat their errors over time. Second, the very fact that some institutions make profits from arbitrage attracts other institutions into the market, reducing the likelihood of future arbitrage profits. To succeed in the long term with arbitrage, you will need to be constantly on the lookout for new arbitrage opportunities.

Near Arbitrage

Studies that have looked at closed end funds, dual listed stocks and convertibles all seem to conclude that there are pockets of inefficiency that can be exploited to make money. However, there is residual risk in all of these strategies, arising sometimes from the fact that the assets are not perfectly identical and sometimes from the fact that there are no mechanisms for forcing the prices to converge.

Not perfectly identical assets

In convertible arbitrage, investors attempt to create synthetic convertibles by combining stocks and bonds issued by the firm and compare the costs of these synthetic convertibles to the prices of actual convertible bonds. While, in theory, synthetic and actual convertible bonds are identical, there can be significant constraints in the real world that prevent this from occurring. First, many firms that issue convertible bonds do not have straight bonds outstanding, and you have to substitute in a straight bond issued by a company with similar default risk. Second, companies can force conversion of convertible bonds, which can wreak havoc on arbitrage positions. Third, convertible bonds have long maturities. Thus, there may be no convergence for long periods, and you have to be able to maintain the arbitrage position over these periods. Fourth, transactions costs and execution problems (associated with trading the different securities) may prevent arbitrage.

What does this imply? You can create what look like an arbitrage position by buying (selling) the convertible bond and selling (buying) the synthetic convertible bond but the differences between the bond and its synthetic counterpart may generate unexpected losses. These losses will be exaggerated when you use borrow money to fund these positions.

Absence of convergence mechanisms

In the last section, you saw evidence of potential arbitrage opportunities in closed end funds and some ADRs. Closed end funds trade at a discount to the market value of the securities that they hold and there are sometimes significant price differences between ADRs and local shares. In both cases, though, you may find yourself stymied in your search for arbitrage by real world constraints.

- With closed end funds, you will need to buy the fund at the discounted market price, liquidate its marketable securities and claim the difference as a certain profit. There are problems at each stage. Many closed end funds are lightly traded and you may very well push the price up to net asset value as you accumulate shares in these funds. Many closed end funds also are tightly controlled and gaining control of them may prove difficult. Even assuming that you do accumulate the shares of the closed end fund at the discounted price and are able to liquidate the assets, you will have to pay capital gains taxes when you sell stocks and these taxes may well wipe out the potential gains. Finally, your transactions costs have to be small enough to leave you with a profit at the end. Note that of the 25 most heavily discounted closed end funds listed in Table 11.6, roughly half were emerging market funds where transactions costs are much higher. It should come as no surprise that so few closed end funds are forced into liquidation.
- With ADRs, there are two potential roadblocks on the way to your arbitrage profits. Consider, for instance, the Infosys ADR that was highlighted in table 11.5. To make a profit, you would have to convert the local shares into ADRs and sell short the ADRs. You would be restricted from doing the former and the ADRs are often very difficult to sell short for long periods. Even if you are able to sell short the ADRs for a few months and you buy the local shares, there is no guarantee that the premium will decrease or disappear over those months and it may, in fact, increase.

Speculative Arbitrage

The fact that the strategies in this section are classified as speculative arbitrage is not meant to be a negative comment on the strategies. These are promising investment strategies that have a history of delivering excess returns but they are not risk free. More ominously, it is easy for those who have successfully done pure arbitrage in the past to drift into near

arbitrage and then into speculative arbitrage as they have funds to invest. In some cases, their success at pure or near arbitrage may bring in funds which require this shift. As they make the shift, though, there are some potential dangers that they have to consider.

Too much leverage (borrowing)

The use of financial leverage has to be scaled to reflect the riskiness of the strategy. With pure arbitrage, you can borrow 100% of what you need to put the strategy into play. In futures arbitrage, for instance, you borrow 100% of the spot price and borrow the commodity. Since there is no risk, the leverage does not create any damage. As you move to near and speculative arbitrage, this leverage has to be reduced. How much it has to be reduced will depend upon both the degree of risk in the strategy and the speed with which you think prices will converge. The more risky a strategy and the less certain you are about convergence, the less debt you should take on.

Price Impact

Speculative arbitrage strategies work best if you can operate without a market impact. As you get more funds to invest and your strategy becomes more visible to others, you run the risk of driving out the very mispricing that attracted you to the market in the first place. In other words, this strategy will work best for smaller investors who can operate under the radar and not very well for larger investors who draw attention to their strategies when they trade.

Small Upside, Big Downside

While it may be dangerous to extrapolate from just two strategies, both merger arbitrage and paired trading share a common characteristic. You win most of the time with both strategies but the returns when you win are modest. You lost infrequently, but your losses are large when they occur. These unequal payoffs can create problems for careless investors. For instance, investors can be lulled by a long string of successes into thinking that their strategies are less risky than they truly are. If they then proceed to borrow more money to fund these strategies, they risk dramatic losses.

Long Term Capital Management

Investors considering speculative arbitrage as their preferred investment philosophy should pay heed to the experiences of Long Term Capital Management (LTCM). The firm, which was founded in the early 1990s by ex-Salomon trader, John Merriweather, promised to bring together the best minds in finance to find and take advantage of arbitrage opportunities around the world. Delivering on the first part of the promise, Merriweather

lured the best bond traders from Salomon and brought on board two Nobel prize winners – Myron Scholes and Bob Merton. In the first few years of its existence, the firm also lived up to the second part of the promise, earning extraordinary returns for the elite of Wall Street. In those years, LTCM was the envy of the rest of the street as it used low cost debt to lever up its capital and invest in pure and near arbitrage opportunities. As the funds at their disposal got larger, the firm had to widen its search to include speculative arbitrage investments. By itself, this would not have been fatal but the firm continued to use the same leverage on these riskier investments as it did on its safe investments. It bet on paired trades in Europe and decreasing spreads in country bond markets, arguing that the sheer number of investments in had in its portfolio would create diversification – if it lost on one investment, it would gain on another. In 1997, the strategy unraveled as collapses in one market (Russia) spread into other markets as well. As the portfolio dropped in value, LTCM found itself facing the downside of its size and high leverage. Unable to unwind its large positions without affecting market prices and facing the pressures of lenders, LTCM faced certain bankruptcy. Fearing that it would bring down other investors in the market, the Federal Reserve engineered a bailout of the firm.

What are the lessons that you can learn from the fiasco? Besides the cynical one that it is good to have friends in high places, you could argue that the fall of LTCM teaches that

(a) Size can be a double-edged sword. While it gives you economies of scale in transactions costs and lowers the cost of funding, it also makes it more difficult for you to unwind positions that you have taken.

(b) Leverage can make low-risk positions into high-risk investments, since small moves in the price can translate into large changes in equity

(c) The most brilliant minds in the world and the best analytical tools cannot insulate you from the vagaries of the market.

In many ways, the rise and fall of Long Term Capital Management should stand as testimony to how even the brightest minds in investing can sometimes either miss or willfully ignore these realities. Long Term Capital Management's eventual undoing can be traced to many causes but the immediate cause was the number of speculative arbitrage positions they put in place – pairs trading, interest rate bets – with tremendous leverage.

Lessons for Investors

This chapter should act as a cautionary note for those investors who believe that they have found the proverbial free lunch in investing. If you seek pure arbitrage – two identical assets that you can buy at different prices and lock in the profits – you will generally not

find it in liquid markets. In illiquid markets, you may come across such mispricing but your transactions costs will have to be small for you to earn arbitrage profits.

Your chances of success are greater if you look for near arbitrage, where you have two assets that are almost identical which are mispriced. If you choose to pursue these opportunities, you will improve your odds of success if you do the following:

- *Identify your differential advantage (if any):* A little introspection may be a valuable first step. You have to identify the special characteristic you possess that will allow you to take advantage of arbitrage opportunities while other investors cannot. If you are an institutional investor, you may have better and more timely information and lower transactions costs than other investors and use this advantage to earn arbitrage profits. If you are a smaller individual investor, your advantage may be that you control the time horizon of your investment and that you do not have to respond to impatient clients.
- *Be aware of the residual risk:* Near arbitrage is not riskless and you need to be aware of both the source and the magnitude of the risk that you are exposed to in your strategy. This will allow you to be realistic in the funding and design of your investment strategies.
- *Use leverage prudently:* Since deviations from arbitrage tend to be small, investors often borrow substantial amounts to magnify their profits. There is a trade off, though, that you have to keep in mind. As you borrow money, you also magnify your risks. The extent to which you use borrowed money has to reflect the risk associated with your investment strategy; the more risk there is, the less you should borrow. Cookbook arbitrage strategies, where you borrow the same amount for all strategies, can be a recipe for disaster.
- *Execute your strategy efficiently:* Arbitrage opportunities tend to be fleeting and you have to execute promptly to take advantage of them. Execution has to be speedy while transactions costs are kept under control, a difficult combination to achieve.

In general, near arbitrage strategies will not work for very small investors or for very large investors. Small investors will be stymied both by transactions costs and execution problems. Very large investors will quickly affect prices when they trade and eliminate excess returns. If you decide to adopt these strategies, you need to refine and focus your strategies on those opportunities where convergence is most likely. For instance, if you decide to try to exploit the discounts of closed-end funds, you should focus on the closed end funds that are most discounted and concentrate especially on funds where there is the potential to bring pressure on management to open end the funds. You should also avoid

funds with substantial illiquid or non-traded stocks in their portfolios, since the net asset values of these funds may be significantly overstated.

If you decide to go after speculative arbitrage opportunities, do so with open eyes. Recognize that there is really nothing riskless about these strategies and that they really represent bets that pricing relationships between assets will return to long term norms. The biggest danger in this strategy is that while you may be right most of the time, you can lose very large amounts when you are wrong. There are two keys to success with speculative arbitrage:

- *Research:* Establishing the long term normal relationship between assets is important, since this is the number to which you assume prices will ultimately converge. This will require not only access to data over long periods but enough statistical skill to separate facts from noise.
- *Downside protection:* Since one losing position can wipe out the profits generated over several winning positions, your expected returns from this strategy will improve dramatically if you can develop signals that allow you to identify and get out of losing positions early.

The overall message will be a disappointment for those investors who still seek free lunches. It is difficult to find and even more difficult to take advantage of arbitrage opportunities, but that is to be expected in a world where there are millions of investors seeking out ways of making money. The good news is that investors who do their homework and work at establishing differential advantages over others can still hope to generate substantial profits from these strategies.

Conclusion

Invest no money, take no risk and make profits. While this sounds like the recipe for a money machine, this is how you can describe pure arbitrage. For pure arbitrage to exist, you need two assets with exactly the same cash flows trading at different prices. Buying the lower priced asset and selling the higher priced asset will allow an investor to lock in the price difference as a certain profit; the cashflows on the two assets exactly offset each other, resulting in a riskless investment. Pure arbitrage opportunities, if they exist, are most likely to be found in futures and options markets, and will almost certainly be small and fleeting. Only investors with significant information or execution advantages are likely to be able to take advantage of them.

In near arbitrage, you have two almost identical assets trading at different prices but there are significant restrictions that prevent the prices of the two from converging. A closed end fund that trades at a significant discount on the market value of the securities that it

owns would be one example. If you could buy the entire fund at the market price and liquidate its securities, you should be able to make a hefty profit. Unfortunately, restrictions on liquidating the fund may reduce you to holding shares in the fund and hoping that the discount gets smaller over time.

Speculative arbitrage, where you have similar but not identical assets trading at prices that are not consistent with their historical norms, provides investors with the illusion of a free lunch. In reality, these are risky positions that generate profits (albeit small ones) most of the time but generate large losses when they fail.

CHAPTER 12

IT'S ALL UPSIDE! THE MOMENTUM STORY

Big Mo'

Martha believed in getting a good start to each day. She was convinced that a day begun well would only get better whereas one begun badly would go downhill. She carried this philosophy into her investing as well. She bought only stocks that had gone up significantly in the months before, believing that the stock's surge would act as inducement for other investors to buy it, thus creating a self fulfilling prophecy. When asked about whether she was worried that the price may have gone up too much, Martha responded that it did not matter to her as long as she could sell to someone else at an even higher price.

Martha noticed that the stocks in her portfolio almost never did as well when she held them as they had before she bought them and that their prices were extraordinarily volatile. She also discovered that even small pieces of bad news sometimes triggered spates of selling in some of her stocks, quickly wiping out any potential gains she may have made in the prior weeks. Much as she wanted to believe that good things led to more good things, the rule did not seem to work for stocks. Disillusioned, she decided that the market was really not a good place to test out her life philosophy.

Moral: You live by the crowd, you will die by it.

Go with the flow. That, in a nutshell, is the momentum story. The underlying theme is that stocks that have gone up in the past are more likely to keep going up than stocks that have gone down in the past. Variations exist, however, in how you measure momentum. Some investors look at the percentage change in stock prices over a period – a week, three months, six months or longer – and buy stocks with the highest percentage increases. Others incorporate trading volume into their investment decisions, arguing that stocks that have gone up on high volume are the best stocks to invest in. Still others build their strategy around earnings announcements, buying stocks after they report better than expected earnings and hoping that the resulting price increases spill over into the following days.

In this chapter, you will look at the basis of the momentum story as well as empirical evidence that has accumulated over time on its effectiveness. You will then create a portfolio of stocks with high momentum – price and volume – and consider the potential risks associated with such a strategy.

The Core of the Story

The momentum story has power because it can be a self-fulfilling prophecy. If investors buy into the momentum story and buy stocks that have gone up in the past, these stocks will go up further. The momentum can continue as long as new investors are attracted to the stock, pushing up demand and prices. Thus, the strongest argument for momentum is herd behavior. In general, there are three reasons given for why investors may indulge in this herd behavior and why you should be able to take advantage of it.

- *Investors learn slowly:* If investors are slow to assess the effects of new information on stock prices, you can see sustained up or down movements in stock prices after news comes out about the stock – up movements after good news and down movements after bad news. The investors who are quickest at assessing the effect of information will profit as investors who are slower at assessing impact gradually come on board.
- *Investors learn by watching other investors:* Some investors learn by watching other investors trade rather than by analyzing fundamentals. If you accept this view of the world, sustained price increases accompanied by high trading volume will attract new investors to a stock.
- *Investors weight the recent past much more than they should:* Psychologists have uncovered fairly strong evidence that human beings tend to weight recent information far more than they should and old information far less than they should. In other words, a positive news announcement by a company can lead to a disproportionately large increase in its stock price as investors react to the announcement.

Momentum stories almost invariably are accompanied with a sense of urgency. You need to get on the momentum bus or it will leave, you are told. Not surprisingly, some investors – individual as well as institutional – climb on, afraid of being left behind.

The Theory

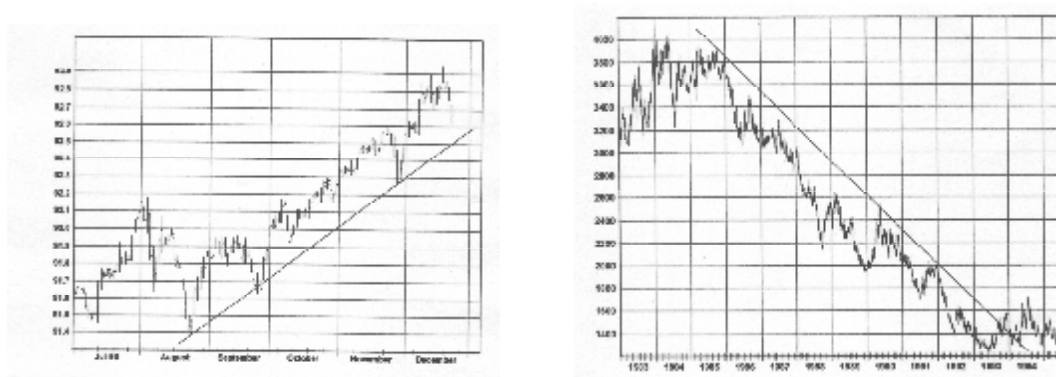
Momentum investing has relatively little theory backing it up, though, as you will see in the next chapter, it has some empirical support. In this section, you will look at some of the measures used by momentum investors and follow up by looking at what you would need to assume about investor behavior for momentum investing to exist.

Measures used by Momentum Investors

Momentum investors firmly believe that the trend is your friend and that it is critical that you look past the day-to-day movements in stock prices at the underlying long-term

trends. The simplest measure of trend is a trend line. Figure 12.1 contains two trend lines – the graph on the left is for a silver futures contracts over the few months of its existence and the graph on the right is for cocoa futures over a much longer time period.

Figure 12.1: Trend Lines



In this silver futures contract to the left, you see an uptrend line, drawn by connecting a series of lows in prices, each one higher than the other. On the right, cocoa prices had been declining over the period in question and a down trend line is drawn by connecting a series of lower highs. As momentum investors, you would buy stocks that are going up and staying above the uptrend line. If the price falls below the uptrend line, it is viewed as a sign that the trend has reversed itself. Conversely, if the price rises above a down trend line, it is considered a bullish sign.

A closely followed momentum measure is called relative strength, which is the ratio of the current price to an average over a longer period (say six months or a year). Stocks that score high on relative strength are therefore stocks that have gone up the most over the period, whereas those that score low are stocks that have gone down. The relative strength can be used either in absolute terms, where only stocks that have gone up over the period would be considered good investments. Alternatively, the relative strength can be compared across stocks, and you invest in stocks that show the highest relative strength – i.e, have gone up the most, relative to other stocks.

These are but two of dozens of technical indicators that are used by momentum investors. Many, like the trend line and relative strength, are based upon past price patterns, but some incorporate trading volume as well.

Models for Momentum

There are two different models that generate momentum in stock prices. The first is an information-based model, where investors learn slowly and the effects of news percolates

slowly into market prices. The second is a trading volume based model, where investors learn from watching other investors trade.

Information Based Model

In an efficient market, the market price of a stock changes instantaneously when new information comes out about it. Rational investors assess the effect of the information on value immediately and the price adjusts to the new value. While investors make mistakes, the mistakes tend to cut both ways, with the price tending to go up too much in some cases and too little in other cases. If this occurs, there will be no patterns in stock prices after information announcements and no information in past prices.

To see how slow learning on the part of markets will translate into price momentum, assume that a firm reports higher earnings than expected. The stock price will rise on the news and continue to increase as investors slowly assess the effects of information on value. This will translate into a price drift upwards after the earnings announcement. With bad news, you will see the reverse. The stock price will drop on the news announcement and continue to drop as investors gradually adjust their assessments of value.

The peril with this story is that it requires irrationality on the part of investors. If it is indeed true that markets take time to adjust to new information, you could earn high returns by buying stocks right after good news announcements and making money as the price drifts upwards. If enough investors do this, the price will adjust immediately and there will be no price drift after the announcement. Similarly, after bad news, you could sell short on stocks and make money as the price continues to trend down. Again, if enough investors follow your lead, the price will drop after the bad news and there will be no price drift. If you believe in momentum investing you have to come up with a good argument for the persistence of price drifts. With bad news, you can argue that many investors (but not you) are restricted from selling short which would effectively prevent them from taking advantage of slow learning markers. With good news, you have to assume that most investors are either blind to obvious investment opportunities or that the transactions costs are so high for these investors that they drown out potential returns from following the strategy.

Trading Volume Model

Investors learn by watching other investors trade. A sophisticated version of a momentum model builds on this theme. An increase in demand for a stock manifests itself in both higher trading volume and increased prices. Other investors observe both the price increase and the higher trading volume and conclude that:

- (a) The investors who are buying the stock have proprietary or inside information that suggests that the stock is a under priced

(b) Continued buying on the stock will sustain the price at least for the short term. These investors then buy the stock, pushing up its price. This, in turn, attracts new investors into the company, thus creating a cycle of trading generating more trading, and price increases begetting more price increases over time. The reverse will occur with price decreases.

While both the trading volume and information stories have the same end result of price momentum, there are at least two differences. The first is that the trading volume will generate price momentum even in the absence of new information coming out about a stock. Since investors get to observe the act of trading and not the motivation for the trading, an investor with no special information about a company can get momentum going just by buying a large block of stock. Other investors will observe the trade, assume that there is information in the trade, and put in their own buy orders. The cascading effect on prices will end only when investors realize that there was no informational basis for the first trade. The second is that momentum measures that flow from this view of the world will have to incorporate both price and volume momentum. In other words, you should expect to see price increases or decreases continue only if they are accompanied by above average trading volume.

Evidence

What is the evidence that market learn slowly? There are three categories of studies that are relevant to answering this question. The first set look at stock prices over time to see if they reveal a tendency to move in the same direction for extended periods of time. The second set look at how markets react to news about the firm – earnings and dividend announcements, for instance – and how prices adjust to the new information. The final set looks at mutual funds and whether there is evidence that mutual funds that have done well in the past continue to do so in the future.

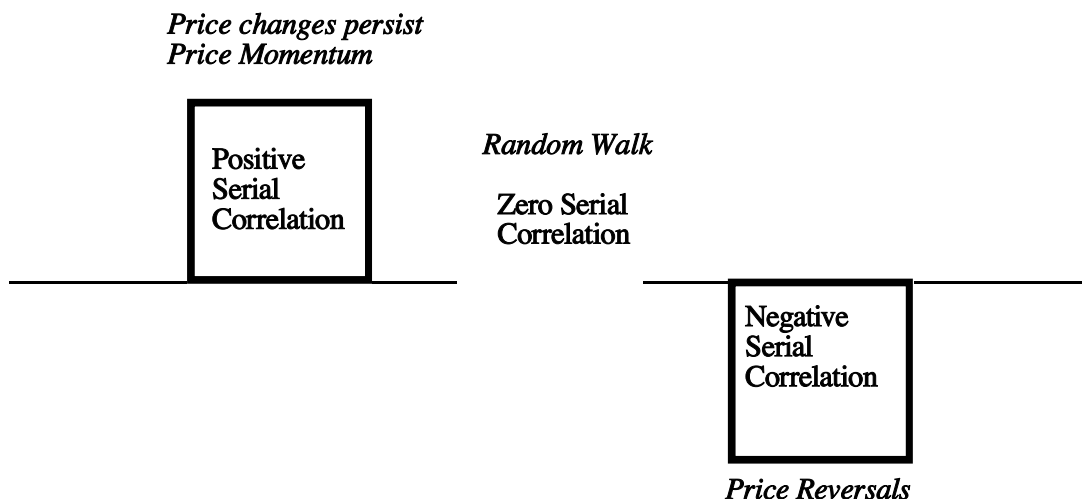
Stock Price Drifts

In Chapter 8, when looking at contrarian investing, you considered the evidence on whether stocks that have go up are more likely to go down in the future. The evidence that was presented on the correlation between price changes in consecutive periods in that chapter is relevant for momentum investing as well. After all, contrarian and momentum investors take opposite views of the world, and evidence supporting of one strategy has to be viewed as rejecting the other.

Price Patterns and Serial Correlation

The serial correlation measures the relationship between price changes in one period and price changes in the next. As noted in Chapter 8, a positive serial correlation would indicate that stocks that have gone up are more likely to continue to go up, whereas a negative serial correlation would indicate that stocks that have gone down are more likely to reverse themselves and go up in the future. Figure 12.2 summarizes these possibilities:

Figure 12.2: Serial Correlation and Price Patterns



As a momentum investor, you would want price changes to be serially correlated but are they? The earliest research on serial correlation, quoted in Chapter 8, finds little evidence of serial correlation in short period (daily and weekly) returns. There is some recent research that finds evidence of serial correlation in stock returns over hourly and daily returns, but the correlation is different for high volume and low volume stocks. With high volume stocks, stock prices are more likely to reverse themselves over short periods, i.e., have negative serial correlation. With low volume stocks, stock prices are more likely to continue to move in the same direction – i.e., have positive serial correlation.² None of this work suggests that you can make money of these correlations. You will see more evidence of the interrelationship between price momentum and volume later in this chapter.

When you look at serial correlation in returns over longer time periods, there is more evidence for both price momentum and reversal, depending upon how long you make the time periods. Jegadeesh and Titman present evidence of price momentum in stock prices

² Conrad, J.S., A. Hameed and C. Niden, 1994, *Volume and Autocovariances in Short-Horizon Individual Security Returns*, Journal of Finance, v49, 1305-1330.

over time periods of up to eight months – stocks that have gone up in the last six months tend to continue to go up whereas stocks that have gone down in the last six months tend to continue to go down. If you define long term as years, the contrarians win the argument and there is clear evidence of price reversals, especially in five-year returns. In other words, stocks that have gone up the most over the last 5 years are more likely to go down in the next five years.

In summary, the evidence on price run ups suggest that momentum strategies can be exceedingly sensitive to how long a period you measure momentum over and how long you plan to hold the stocks you plan to buy. Momentum can be your friend if you hold stocks for a few months, but it can very quickly turn against you if you hold stocks for too long or too short a time period.

Information Announcements

The best support for slow learning markets comes from examinations of how markets react to news reports – earnings and acquisition announcements, for instance. There is evidence that markets continue to adjust to the new information in these reports well after they have come out. For instance, a firm that reports much better than expected earnings will generally see its stock price jump on the announcement and continue to drift upwards for the next few days. The same seems to occur to a target firm in an acquisition. While there are alternative explanations for price drifts, one potential explanation is that markets learn slowly and that it takes them a while to assimilate the information. If the initial news was good – a good earnings report or an earnings upgrade from an analyst – you should expect to see prices continue to go up after the news comes out. If the news was bad, you should expect to see the opposite.

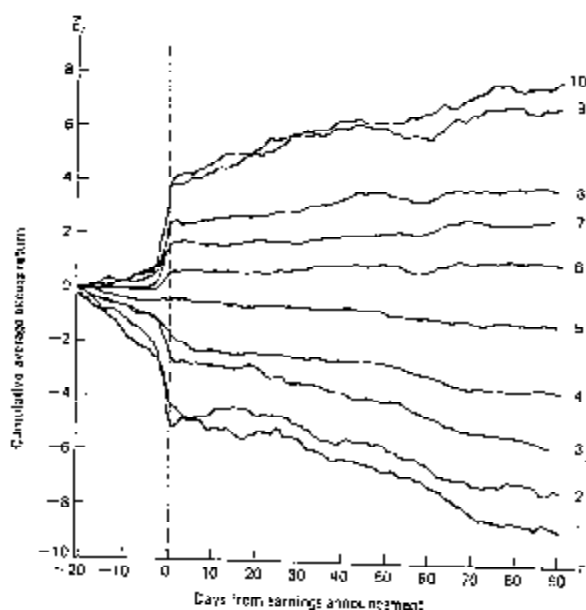
Earnings Announcements

When firms make earnings announcements, they convey information to financial markets about their current and future prospects. The magnitude of the information, and the size of the market reaction, should depend upon how much the earnings report exceeds or falls short of investor expectations. In an efficient market, there should be an instantaneous reaction to the earnings report, if it contains surprising information, and prices should increase following positive surprises and down following negative surprises.

Since actual earnings are compared to investor expectations, one of the key parts of any examination of earnings reports is the measurement of these expectations. Some of the earlier studies used earnings from the same quarter in the prior year as a measure of expected earnings, i.e., firms that report increases in quarter-to-quarter earnings provide positive surprises and those that report decreases in quarter-to-quarter earnings provide

negative surprises. In more recent research, analyst estimates of earnings have been used as a measure of expected earnings, and compared to the actual earnings. Figure 12.3 provides a graph of price reactions to earnings surprises, classified on the basis of magnitude into different classes from 'most negative' earnings reports (Group 1) to 'most positive' earnings reports (Group 10).³

Figure 12.3: Price Reaction to Quarterly Earnings Report



Data from Jones, Latane and Rendleman. Earnings surprises are categorized from biggest negative (1) to biggest positive (10) surprises and returns are computed around date of earnings announcement.

The evidence contained in this graph is consistent with what has been found in most research on earnings announcements -

- (a) The earnings announcement clearly conveys valuable information to financial markets; stock prices go up the most after the most positive announcements (10) and go down the most after the reports that contain the most disappointing earnings (1).
- (b) There is some evidence of a market reaction in the days immediately prior to the earnings announcement which is consistent with the nature of the announcement, i.e., prices tend to go up on the days before positive announcements and down in the

³ Rendleman, R.J., C.P. Jones and H.A. Latane, 1982, *Empirical Anomalies based on Unexpected Earnings and the Importance of Risk Adjustments*, Journal of Financial Economics,

days before negative announcements. This can be viewed either as evidence of insider trading or information leakage.

(c) There is some evidence, albeit weak, of a price drift in the days following an earnings announcement. Thus, a positive report evokes a positive market reaction on the announcement date, and the stock price continues to go up in the days and weeks following the earnings announcement. With negative earnings reports, the stock price drops on the announcement and continues to go down.

While the study quoted above looked at all earnings announcements, there is other research that indicate that the returns associated with earnings surprises are more pronounced with some types of stocks than with others. For instance,

An examination of value and growth stocks found, instance, that the returns in the three days around earnings announcements were much more positive for value stocks (defined as low PE and PBV stocks) than for growth stocks across all earnings announcements – positive as well as negative. This suggests that you are much more likely to get a positive surprise with a value stock than with a growth stock, indicating perhaps that markets tend to be overly optimistic in their expectations for growth companies.⁴

Earnings announcements made by smaller firms seem to have a larger impact on stock prices on the announcement date and prices are more likely to drift after the announcement.

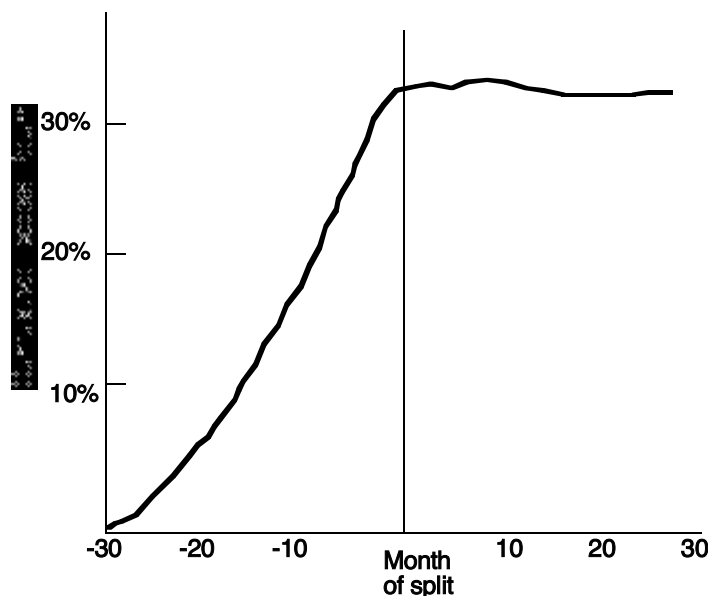
Stock Splits

A stock split increases the number of shares outstanding, without changing the current earnings or cash flows of the firm. As a purely cosmetic event, a stock split should not affect the value of the firm or of outstanding equity. Rather, the price per share will go down to reflect the stock split, since there are more shares outstanding. One of the first event studies examined the stock price reaction to 940 stock splits between 1927 and 1959 by looking at stock returns in the 60 months around the actual split date.⁵

⁴ LaPorta, R., J. Lakonishok, A. Shleifer and R. Vishny, *Good news for Value Stocks: Further Evidence of Market Inefficiency*, NBER Working Paper.

⁵ Fama, Fisher, Jensen and Roll (1969), "The adjustment of stock price to new information", *International Economic Review*, 10, 1-21

Figure 12.4: Market Reaction to Stock Splits



Data from Fama, Fisher, Jensen and Roll. This is the cumulated excess return around in the 30 months before and 30 months after stock splits.

On average, stock splits tended to follow periods of positive returns; this is not surprising, since splits typically follow price run-ups. No evidence was found of excess returns around the splits themselves, suggesting that the splits were neutral events. One of the limitations of the study was its use of monthly return rather than daily returns. More recent studies that look at the daily price reaction to stock splits find a mild positive effect – stock prices go up slightly when splits are announced.⁶ A look at all two for one stock splits between 1975 and 1990 estimated that stock prices increase, on average, 3.38% on the announcement of a stock split and that the announcement effect is much greater for small stocks (10.04%) than for large stocks (1.01%).⁷ Researchers attribute this to a signaling effect – i.e. that only companies that expect their stock prices to go up in the future will announce stock splits.

In recent years, some research has pointed out that stock splits may have an unintended negative effect on stockholders by raising transactions costs. For instance, the

⁶ Charest, G., 1978, *Split Information, Stock Returns and Market Efficiency-I*, Journal of Financial Economics, v6, 265-296. and Grinblatt, M.S., R.W. Masulis and S. Titman, 1984, *The Valuation Effects of Stock Splits and Stock Dividends*, Journal of Financial Economics, v13, 461-490.

⁷ Ikenberry, D.L., G. Rankine and E.K., Stice. 1996. *What Do Stock Splits Really Signal?*, Journal of Financial and Quantitative Analysis, v31, 357-375. They report that stocks that split continue to earn excess returns in the two years after the split – 7.93% in the first year and 12.15% in the second year.

bid-ask spread which is one component of the transactions costs, is a much larger percentage of the price for a \$ 20 stock than it is for a \$40 stock.⁸ There is some evidence of an increase in transactions costs and a decline in trading volume following splits.⁹ This additional cost has to be weighed off against the potential signaling implications of a stock split; investors may view a stock split as a positive signal about future prospects. In an interesting development in the last few years, stocks that have seen their stock prices drop significantly, often to \$ 2 or less, have tried to push their prices back into a reasonable trading range by doing reverse stock splits, where you reduce the number of shares outstanding in the company. These reverse stock splits are sometimes initiated to prevent being delisted, a distinct possibility if your stock price drops below a dollar, and sometimes to reduce transactions costs.¹⁰

Dividend Changes

Financial markets examine every action a firm takes for implications for future cash flows and firm value. When firms announce changes in dividend policy, they are conveying information to markets, whether they intend to or not. An increase in dividends is generally viewed as a positive signal, since firms that make these commitments to investors must believe that they have the capacity to generate these cash flows in the future. Decreasing dividends is a negative signal, largely because firms are reluctant to cut dividends. Thus, when a firm cuts or eliminates dividends, markets see it as an indication that this firm is in substantial and long-term financial trouble. Consequently, such actions lead to a drop in stock prices. The empirical evidence, cited in Chapter 2, concerning price reactions to dividend increases and decreases is consistent, at least on average, with this signaling theory. On average, stock prices go up when dividends are increased and go down when dividends are decreased, though the price reaction to the latter seems much more.¹¹ While the price change on the dividend announcement itself might not offer opportunities for investors (unless they have access to inside information), another study looked at the price drift after dividend changes are announced and found that prices continue to drift up after dividend

⁸ The bid-ask spread refers to the difference between the price at which a security can be bought (the ask price) or the sold (the bid price) at any point in time.

⁹ Copeland, T. E. *Liquidity Changes Following Stock Splits*, Journal of Finance, 1979, v34(1), 115-141.

¹⁰ While there are no comprehensive studies of reverse stock splits yet, the preliminary evidence indicates that they are viewed by the market as bad news – an indication that the firm doing the split does not believe that its earnings and fundamentals will improve in the near term.

¹¹ Aharony, J. and I. Swary, 1981, *Quarterly Dividends and Earnings Announcements and Stockholders' Returns: An Empirical Analysis*, Journal of Finance, Vol 36, 1-12..

increases and drift down after dividend decreases for long periods.¹² Investors may be able to take advantage of this drift and augment returns on their portfolios.

The Confounding Effect of Trading Volume

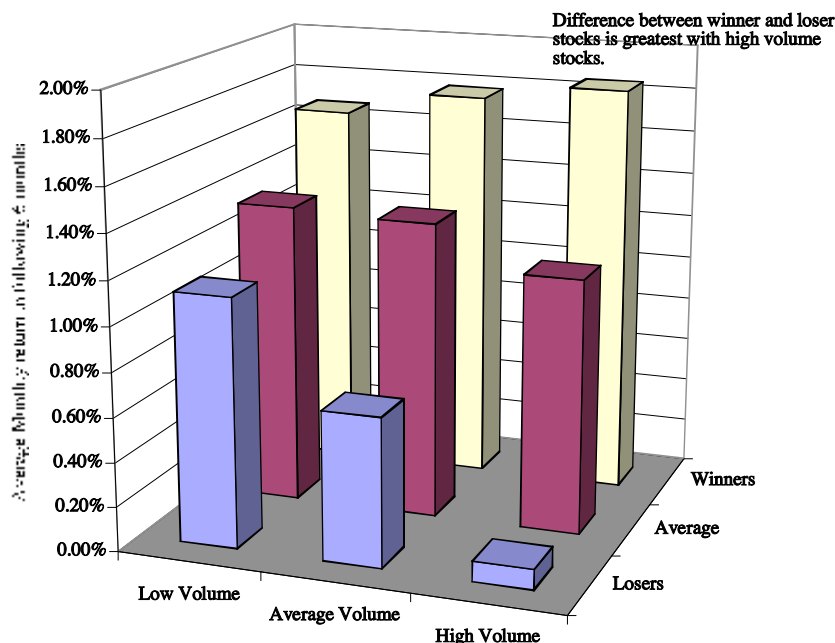
Earlier in the chapter, it was hypothesized that one reason for momentum may be that investors learn by watching other investors trade. As with prices, there is evidence that trading volume carries information about future stock price changes. An analysis in 1998 showed that low volume stocks earned higher returns than high volume stocks, though the researchers attributed the extra return to a liquidity premium on the former.¹³ A more surprising result emerges from a look at the interrelationship between price and trading volume.¹⁴ In particular, the price momentum effect that was documented earlier in the chapter – that stocks that go up are more likely to keep going up and stocks that go down are more likely to keep dropping in the months after – is much more pronounced for high volume stocks. Figure 12.5 classifies stocks based upon how well or badly they have done in the last six months (winners, average and loser stocks) and their trading volume (low, average and high) and looks at returns on these stocks in the following six months.

¹² Michaely, R, R.H. Thaler and K.L. Womack, 1995, *Price Reactions to Dividend Initiations and Omissions: Overreaction or Drift?* Journal of Finance, v50, 573-608.

¹³ Datar, V., N. Naik and R. Radcliffe, 1998, *Liquidity and Asset Returns: An alternative test*, Journal of Financial Markets,

¹⁴ Lee, C.M.C and B. Swaminathan, 1998, *Price Momentum and Trading Volume*, Working Paper, Social Science Research Network.

Figure 12.5: Volume and Price Interaction- NYSE and AMEX stocks - 1965-95



Data from Lee and Swaminathan. The average monthly returns in the six months following the creation of the portfolios is reported.

Note that the price momentum effect is strongest for stocks with high trading volume. In other words, a price increase or decrease that is accompanied by strong volume is more likely to continue into the next period. This result has also been confirmed with shorter period returns – with daily returns, increases in stock prices that are accompanied by high trading volume are more likely to carry over into the next trading day.¹⁵

In summary, the level of trading volume in a stock, changes in volume and volume accompanied by price changes all seem to provide information that investors can use to pick stocks. It is not surprising that trading volume is an integral part of momentum investing.

Momentum in Mutual Funds

While there is little evidence that mutual funds that are ranked highly in one period continue to be ranked highly in the next, there is some evidence that has accumulated about

¹⁵ Stickel and Verrecchia, 1994, *Evidence that trading volume sustains stock price changes*, Financial Analysts Journal, Nov-Dec, 57-67..

the very top ranked mutual funds. A number of studies¹⁶ seem to indicate that mutual funds that earn above-average returns in one period will continue to earn above-average returns in the next period. Burt Malkiel, in his analysis of mutual fund performance over two decades, tests for this “hot hands” phenomenon by looking at the percentage of winners each year who repeat the next year in the 1970s and 1980s. His results are summarized in table 12.1 below:

Table 12.1: Repeat Winners by year – 1971- 1990

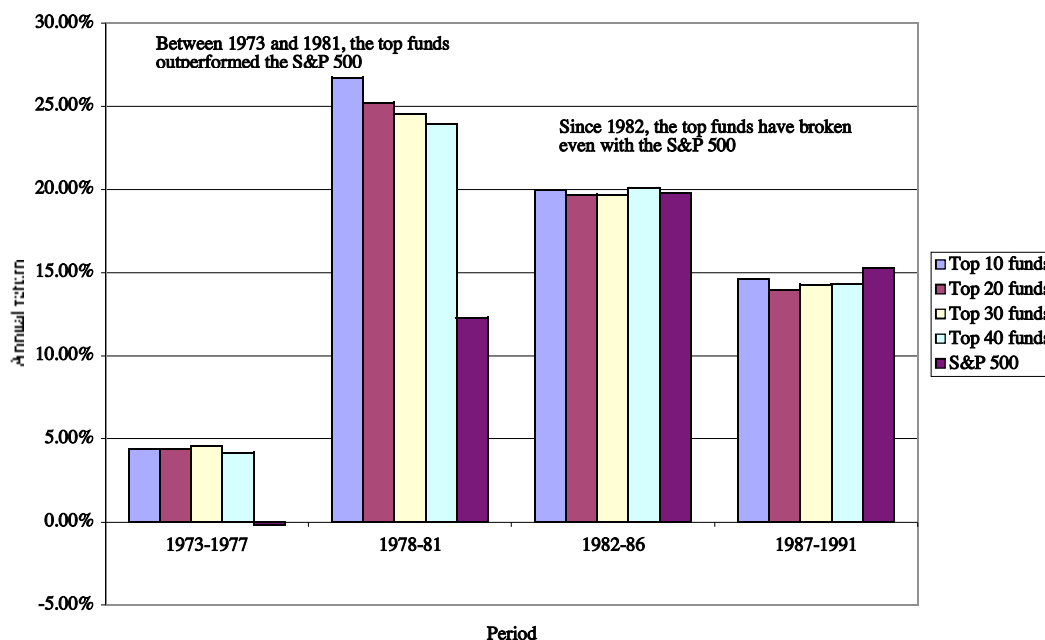
<i>Year</i>	<i>Percent of repeat winners</i>	<i>Year</i>	<i>Percent of repeat winners</i>
1971	64.80%	1980	36.50%
1972	50.00%	1981	62.30%
1973	62.60%	1982	56.60%
1974	52.10%	1983	56.10%
1975	74.40%	1984	53.90%
1976	68.40%	1985	59.50%
1977	70.80%	1986	60.40%
1978	69.70%	1987	39.30%
1979	71.80%	1988	41.00%
1971-79	65.10%	1989	59.60%
		1990	49.40%
		1980-90	51.70%

This table tells a surprising story. The percent of repeat winners clearly is much higher than dictated by chance (50%) in the 1970s. However, the percent of repeat winners during the 1980s looks close to random. Is this because mutual fund rankings became more ubiquitous during the 1980s? Maybe. It is also possible that what you are seeing are the effects of overall market performance. In the 1970s, when the equity markets had a string of negative years, mutual funds that held more cash consistently moved to the top of the rankings. You can also compare the returns you would have earned on a strategy of buying

¹⁶ See Grinblatt, M. and S. Titman, 1992, *The persistence of mutual fund performance*, Journal of Finance, v42, 1977-1984, Goetzmann, W.N. and R. Ibbotson, 1994, *Do winners repeat? Patterns in mutual fund performance*, Journal of Portfolio Management, v20, 9-18 and Hendricks, Patel and Zeckhauser, 1995, *Hot Hands in Mutual Funds: Short run persistence in performance, 1974-1987*, Journal of Finance, v48, 93-130.

the top funds (looking at the top 10, top 20, top 30 and top 40 funds) from each year and holding it for the next year. The returns are summarized in figure 12.6:

Figure 12.6: Returns on top-ranked funds: 1973- 1991



Data from Malkiel. The top funds are picked based upon performance over the prior year and the returns are computed over the following year.

Again, the contrast is striking. While the top funds outperformed the S&P 500 in 1973-77 and 1978-81 time periods, they matched the index from 1982 to 1986 and underperformed the index from 1987 to 1991.

In summary, there is little evidence, especially in recent years that investing in the mutual funds that were ranked highest last year in terms of performance will deliver above-average returns. In fact, these funds tend to increase their fees and costs and may be worse investments than some of the lower ranked funds.

Crunching the Numbers

There are many measures of momentum and most of them are relative. In other words, a stock that goes up 30% during a period where all stocks increased substantially may not be viewed as having strong momentum, whereas a stock that goes up 5% in a bear market may qualify. You will begin by looking at how different measures of momentum vary across the market and then go about constructing a portfolio of momentum stocks.

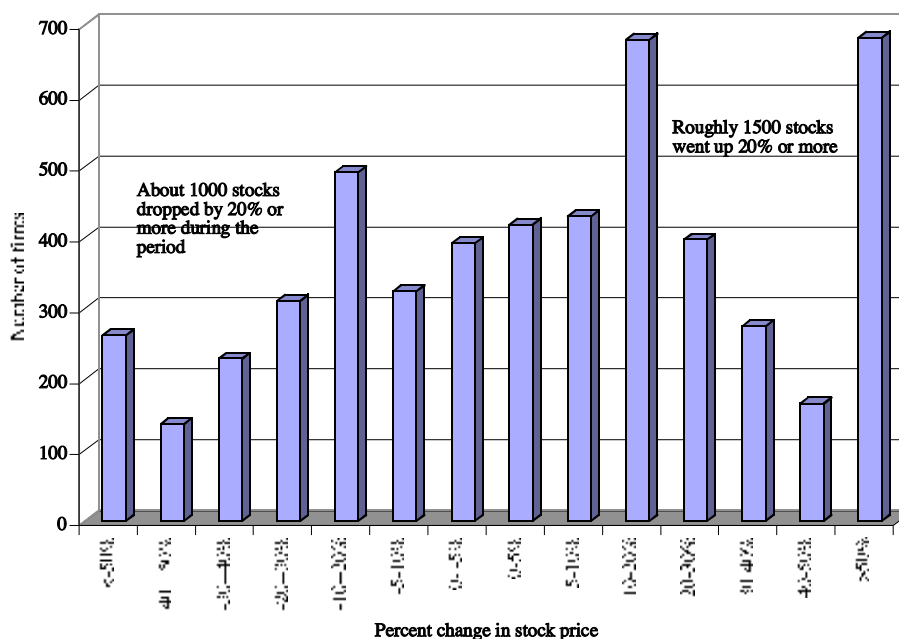
Momentum Measures

This section will examine differences across firms on three sets of momentum measures. The first set includes price momentum measures – price changes and relative price strength. The second set of measures look at trading volume and the final set look at earnings surprises.

Price Momentum

To get a measure of price momentum over a recent period, consider the returns from price appreciation that you would have made investing in individual stocks in the six-month period from October 2002 to March 2003. Figure 12.7 presents the distribution of stock returns (from price appreciation) over this period:

Figure 12.7: Price Appreciation (%) from October 2002-March 2003



Data from Value Line. This is the percentage price change over the period.

In this six-month period, the market was up approximately 13%, and more stocks went up than down. These price appreciation returns can be converted into measures of relative price strength for each stock by doing the following:

$$\text{Relative price strength} = \frac{(1 + \text{Price Appreciation (\%)} \text{ on stock over period})}{(1 + \text{Price Appreciation (\%)} \text{ on market over same time period})}$$

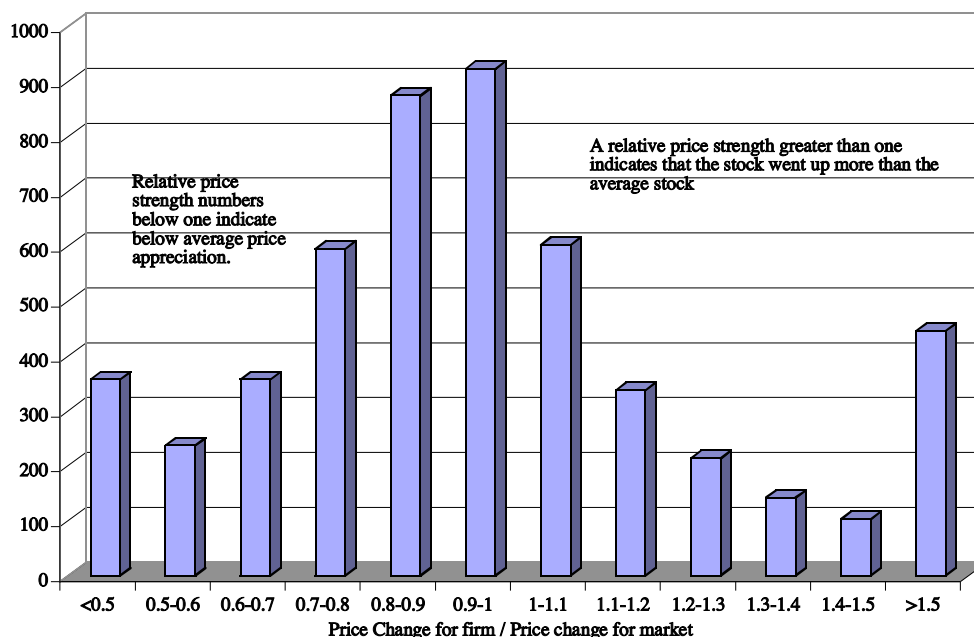
For example, the price appreciation on the market between October 2002 and March 2003 was 14.83%. The relative price strengths of Viacom which saw its price drop by -3.16% during the period and Staples which saw its price go up by 44.56% are computed below:

$$\text{Relative Price strength}_{\text{Viacom}} = (1 - 0.0316) / (1.1483) = 0.84$$

$$\text{Relative Price Strength}_{\text{Staples}} = (1.4456) / 1.1483 = 1.26$$

Figure 12.8 summarizes the distribution of relative price strength across the market for the six-month period (Oct 2002- March 2003):

Figure 12.8: Relative Price Strength - US firms from Oct 2002-March 2003



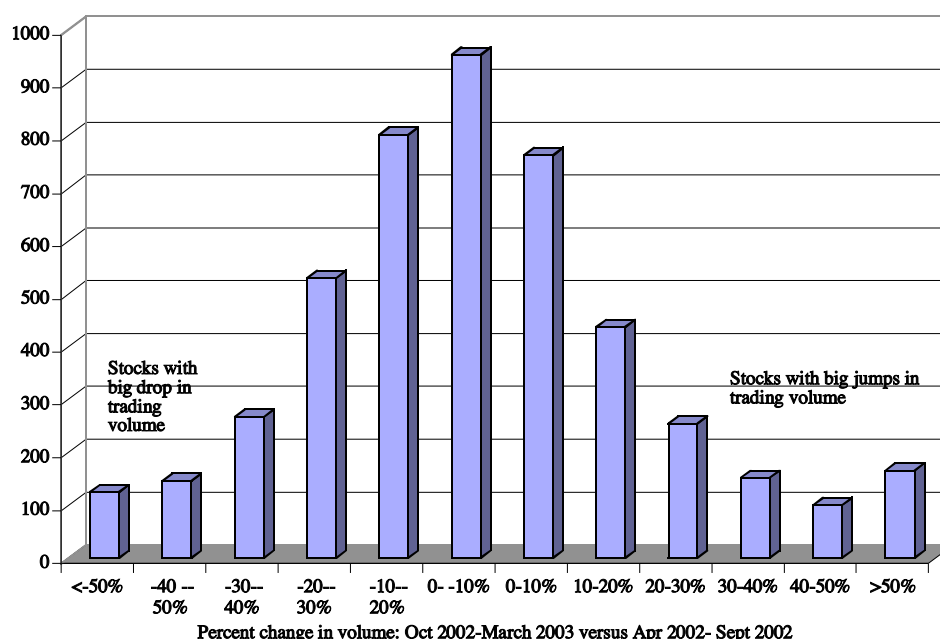
Data from Value Line. The relative strength measure is obtained by dividing the percentage price change for each stock by the percentage price change over the market.

While many firms have price changes that resemble the price change on the market (relative price strength close to 1), a larger number of firms have price changes that are very different from the market and it is these firms that make it into momentum portfolio. There are other measures of relative price strength used by investors, but they share common features. They all look at price increases over a period of time and scale them for overall market movements.

Trading Volume

If price momentum varies widely across companies, trading volume varies even more widely. Some stocks are extremely liquid and millions of shares are traded every day. Others hardly ever trade and volume momentum has to take into account the differences in the level of trading volume. You could, for instance, compare the average daily trading volume on a stock in a 6-month period with the average daily trading volume on the same stock in the prior six months for every stock in the market and compute a percentage change in volume. Figure 12.9 provides a summary of this distribution:

Figure 12.9: Percent Change in Trading Volume: Six month periods



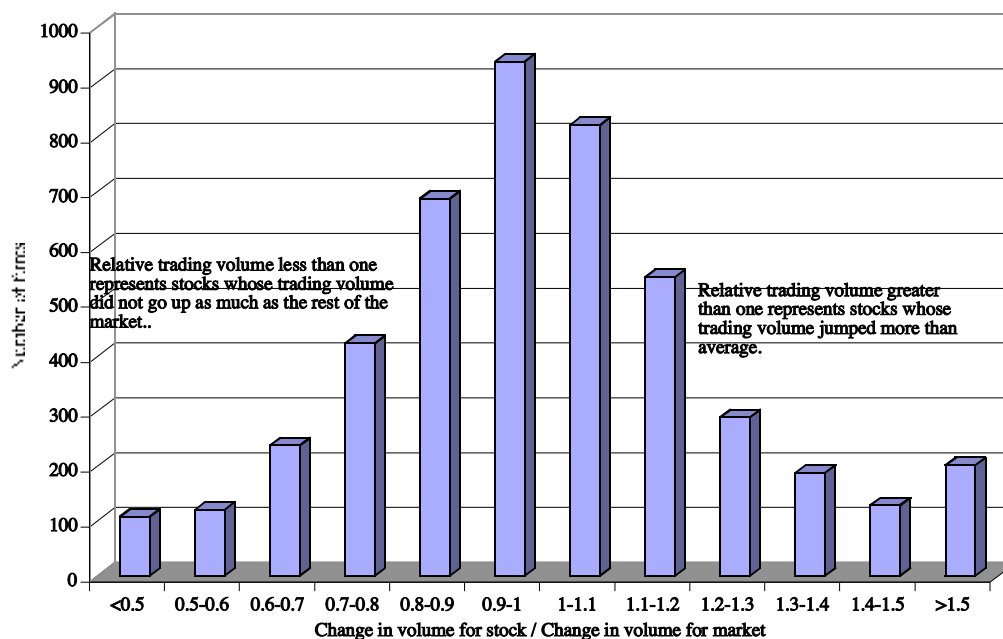
Data from Value Line. This is the percent change in trading volume from one six month period (April 2002-Sept 2002) to the next (Oct 2002-March 2002).

The trading volume from October 2002- March 2003 was compared with the volume from April -September 2002 for every firm. As with price momentum, the changes in trading volume can be scaled to changes in volume in the overall market to come up with a measure of relative volume momentum:

$$\text{Relative volume momentum} = \frac{(1 + \% \text{ change in volume of trading in the stock})}{(1 + \% \text{ change in volume for the market})}$$

Thus, a stock that registers a 50% trading volume increase in a market, where aggregate trading volume increases by 20% will have a relative volume momentum of 1.25 ($1.5/1.2$). Figure 12.10 presents the distribution of relative trading volume across the market:

Figure 12.10: Relative Trading Volume - US Stocks: Oct 2002 - March 2003



Data from Value Line. Relative trading volume is computed by dividing the percent change in trading volume for a stock by the average percent change for the market.

As with relative price strength, while many firms report increases in volume that are close to the increase in volume for the market, there are a substantial number of firms that report significantly higher or lower increases in trading volume than the market.

Earnings Surprises

Earnings announcements, where firms report the actual earning per share over the prior period, contain important information not only about a firm's performance in that period but also about its expected performance in future periods. To measure how much information is contained in an earnings report, you should compare the earnings reported for a period to the earnings that were expected for the period. To get the latter, the firm has to be followed by analysts and the earnings estimates of these analysts for the firm have to be compiled. In the last two decades, services like I/B/E/S, Zacks and First Call have provided information on analyst forecasts to investors. In fact, the consensus estimates of

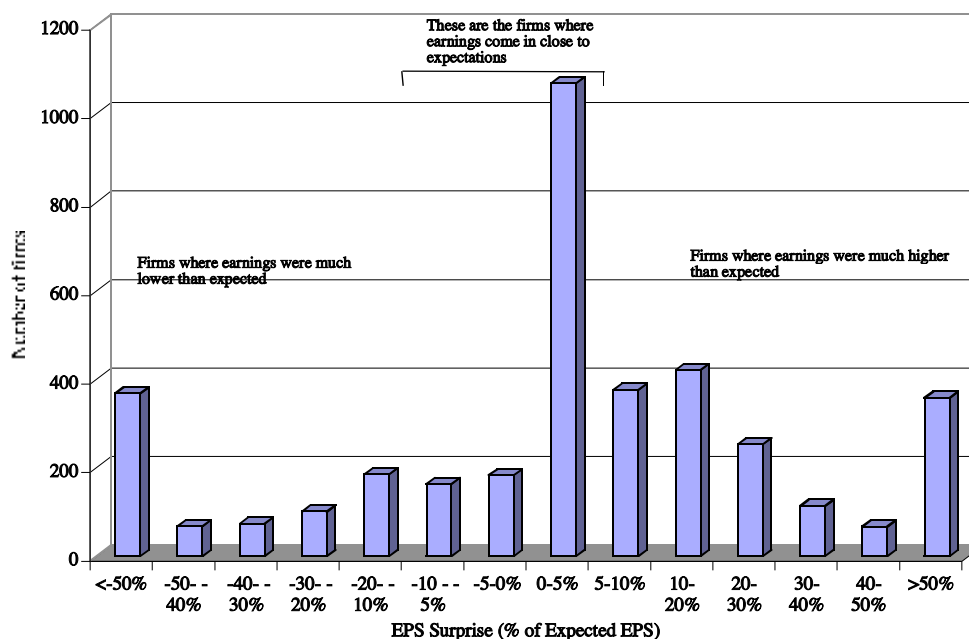
earnings per share for most firms are widely disseminated and discussed in the financial press.

Given the resources that analysts can bring to the task of estimating earnings and the access that analysts have to managers at firms, you would expect earnings forecasts to be fairly close to actual earnings for most firms and they are for most firms. There are some firms that manage to surprise markets with much higher or lower earnings than expected, and it is these earnings surprises that cause large stock price reactions. You can measure the magnitude of the surprise by looking at the dollar difference between actual and expected earnings per share, but this will bias you towards finding larger surprises at firms with larger earnings per share. A firm that is expected to have earnings per share of \$ 2 is more likely to report larger surprises than a firm that is expected have earnings per share of \$ 0.20. One way to scale the earnings surprise for the level of earnings is to compute it a percent of the expected earnings per share:

$$\text{Earnings Surprise (\%)} = (\text{Actual EPS} - \text{Expected EPS}) / \text{Expected EPS}$$

Note that this measure of earnings surprise has its own limitations. One is that it becomes difficult to measure earnings surprises for firms that are expected to lose money (negative expected earnings per share) or for firms where the expected earnings per share close to zero. Notwithstanding this problem, the distribution of earnings surprises (in % terms) in the first quarter of 2003 is reported in Figure 12.11:

Figure 12.11: EPS Surprises in US Market - First Quarter 2003



Data from Zacks. The earnings surprise is the difference between the actual earnings and the forecasted earnings per share, divided by the expected earnings per share.

The sample was restricted only to firms that were expected to have positive earnings per share and that had analyst coverage. As a consequence, smaller, less liquid and younger companies (that are more likely to have negative earnings and be not followed by analysts) are eliminated from your sample. Even with this sample of larger and more liquid firms, there are a couple of interesting findings that emerge:

- Most earnings surprises are small, with actual earnings falling within 10% of expected earnings.
- There are some firms that report larger earnings surprises, but among these firms, positive surprises are much more common than negative surprises. Firms that are doing badly clearly find ways to get the news out to analysts and lower expectations before the earnings are actually reported.

Constructing a Momentum Portfolio

You can construct two different kinds of momentum portfolios. One portfolio will include stocks with price and volume momentum, using the momentum measures constructed in the last section. The other portfolio will be composed of stocks that have had

large positive earnings surprises. In this section, you will construct both portfolios with the intent of putting them under the microscope for potential problems

Price/Volume Momentum

If you accept the proposition that price momentum carries over into future prices, especially if accompanied by increasing trading volume, you can construct a portfolio of stocks that have both characteristics. In constructing this portfolio in April 2003, price and volume momentum measures were estimated over the six-month period beginning in October 2002 and ending in March 2003. The portfolio is composed of stocks that were in the top 10% of the market in both price and volume momentum measure. Roughly speaking, this is accomplished by choosing firms that score more than 1.50 on the relative price strength and relative volume measures. Table 12.2 lists these stocks:

Table 12.2: Stocks with Price and Volume Momentum

<i>Company Name</i>	<i>Return over last 26 weeks</i>	<i>Relative strength month</i>	<i>Percent change in volume</i>	<i>Relative Trading volume</i>
Aceto Corp.	123.59%	1.95	68.55%	1.74
Allen Telecom	107.00%	1.80	68.63%	1.74
Alpha Pro Tech Ltd	82.93%	1.59	46.97%	1.52
Ask Jeeves Inc	707.07%	7.03	68.00%	1.74
Avid Technology	143.75%	2.12	71.84%	1.78
Boots & Coots Intl Well Cntrl	711.11%	7.06	104.35%	2.11
Captiva Software Corp	235.56%	2.92	62.02%	1.68
Castelle	474.07%	5.00	60.11%	1.66
CNB Finl Corp	74.86%	1.52	47.55%	1.53
Concur Technologies Inc.	201.70%	2.63	46.55%	1.52
Document Sciences Corp	163.06%	2.29	60.88%	1.66
DOR BioPharma Inc	271.43%	3.23	55.72%	1.61
Double Eagle Pet & Min	90.27%	1.66	56.69%	1.62
E-LOAN Inc.	82.64%	1.59	50.80%	1.56
Evolving Sys Inc	927.59%	8.95	52.72%	1.58
FindWhat.com Inc	151.51%	2.19	54.78%	1.60
First Colonial Group	84.71%	1.61	62.01%	1.68
Flamel Technologies S.A.	181.01%	2.45	65.01%	1.71
Forward Inds Inc	133.33%	2.03	66.81%	1.73
Garmin Ltd.	93.03%	1.68	59.95%	1.66
GRIC Communications Inc	87.04%	1.63	70.33%	1.76
Group 1 Software	170.00%	2.35	64.64%	1.70
Hi-Tech Pharm.	201.74%	2.63	80.00%	1.86
ID Biomedical Corp	97.83%	1.72	69.79%	1.76
IEC Electrs Corp.	350.00%	3.92	86.66%	1.93

ImageX.com Inc	131.82%	2.02	46.97%	1.52
ImagicTV Inc	160.00%	2.26	47.00%	1.52
InterDigital Commun	95.94%	1.71	48.41%	1.54
KVH Inds Inc	113.90%	1.86	47.71%	1.53
Metrologic Instruments Inc	142.77%	2.11	52.63%	1.58
Metropolitan Finl	74.07%	1.52	61.57%	1.67
Movie Star Inc.	127.27%	1.98	45.77%	1.51
Netease.com Inc ADS	382.13%	4.20	83.73%	1.90
Network Equip. Tech.	85.10%	1.61	65.23%	1.71
North Coast Energy Inc.	73.75%	1.51	62.04%	1.68
Old Dominion Freight	75.32%	1.53	93.85%	2.01
Pacific Internet Limited	183.82%	2.47	85.74%	1.92
Packeteer Inc	199.11%	2.60	57.81%	1.63
Pan Am Beverages 'A'	135.17%	2.05	53.53%	1.59
Perceptron Inc.	106.67%	1.80	44.78%	1.50
Premier Bancorp Inc	98.38%	1.73	52.29%	1.58
ProBusiness Services	101.35%	1.75	53.48%	1.59
Pumatech Inc.	825.00%	8.05	56.78%	1.62
Rambus Inc.	222.35%	2.81	50.76%	1.56
Sanfilippo John B.	115.00%	1.87	61.72%	1.67
Sohu.com Inc	514.59%	5.35	62.07%	1.68
Stratasys Inc	204.74%	2.65	48.10%	1.53
Transcend Services Inc.	129.59%	2.00	51.50%	1.57
United Security Bancshares Inc	82.76%	1.59	72.60%	1.79
US SEARCH.com	87.34%	1.63	55.27%	1.61
Vital Images Inc	140.39%	2.09	57.25%	1.63
Whitman ED Group	146.02%	2.14	76.02%	1.82
Xybernaut Corp	80.95%	1.58	46.00%	1.51

The 54 stocks represent a wide cross section of industries. This price/volume momentum portfolio would have been very different if you used a different time period (three months versus six months, for instance). Thus, you can expect to see variations even among momentum investors on what they hold in their portfolios.

Information Momentum

While there are a variety of information announcements that you can build a portfolio around, earnings announcements stand out because all U.S. firms make them four times a year and the announcements receive considerable media attention. In contrast, relatively few firms make stock split and acquisition announcements. Using the definition of earnings surprise developed in the last section (as a percent of the expected earnings per share), you can construct a portfolio of stocks with the largest recent earnings surprises.

The problem, though, is that this will bias you towards a portfolio of stocks with very small earnings. To prevent this from occurring, two criteria were used in constructing this portfolio. The first is that the actual earnings per share had to exceed \$0.25; this eliminates firms with very low earnings per share. The second is that the earnings surprise has to exceed 50%; the actual earnings per share have to be more than 50% higher than the predicted earnings per share. The resulting portfolio of 105 firms is presented in table 12.3.

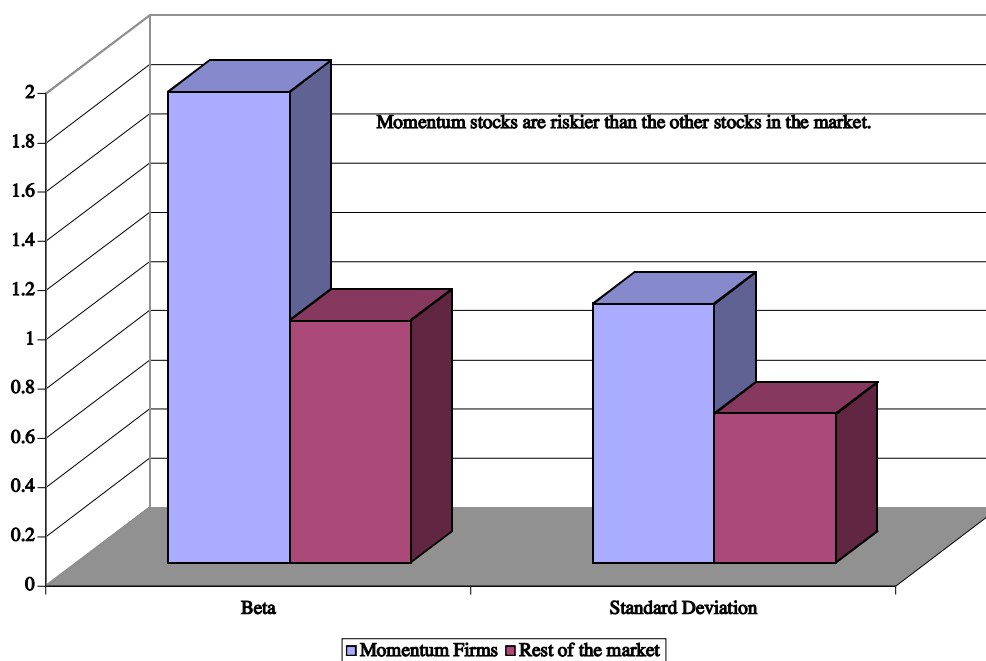
The Rest of the Story

In the last section, portfolios of stocks with price/volume momentum and stocks with large positive earnings surprises were constructed. With the former, you buy the stocks hoping that the price momentum will continue into the future. With the latter, your returns are dependent upon stocks continue to drift up after large positive earnings announcements. In this section, you will look at the weaknesses with each strategy and possible ways of reducing exposure to these weaknesses.

Risk

When constructing the two portfolios in the last section, no attention was paid to the riskiness of the stocks that went into the portfolios. To the extent that riskier stocks are more likely to show price and volume momentum, you may find your eventual portfolio to be far riskier than the market. Figure 12.12 looks at risk on two dimensions – beta and standard deviation in stock prices – and compares the firms in the high price/volume momentum portfolio with the rest of the market.

Figure 12.12: Risk Comparison: Momentum Stocks versus Rest of the Market

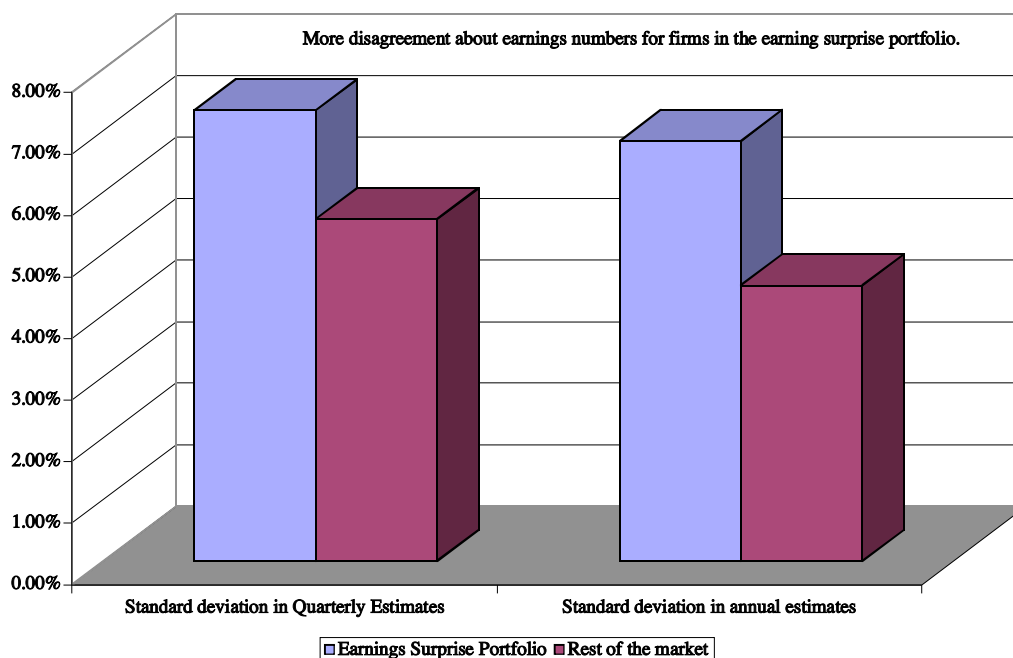


Data from Value Line. The beta and standard deviation is computed using 3 years of data for all stocks.

The difference in risk levels is striking. The momentum stocks have an average beta almost twice that of the rest of the market (1.91 versus 0.98) and are much more volatile (standard deviation of 100% versus the market average of 60%) than the market. A momentum portfolio thus has to beat the market by a hefty margin to justify the additional risk. Putting a cap of 1.20 on the beta and 80% on the standard deviation reduces the portfolio listed in Table 12.2 from 54 firms to 15 firms.

With the earnings surprise portfolio, the risk can lie in the estimate of expected earnings. Note that the consensus estimate of earnings per share that was used as the predicted earnings per share represents an average across estimates made by different analysts following the company. There can be disagreement among analysts that is not reflected in the consensus estimate and the uncertainty that may be generated by this disagreement will have to be factored into the investment strategy. To illustrate, assume that you have two firms that have just reported actual earnings per share of \$ 2 and that the predicted earnings per share for both firms was \$ 1.50. However, assume that there was relatively little disagreement about the predicted earnings per share among analysts following the first firm but a great deal among analysts following the second. A legitimate argument can be made that the earnings surprise for the first firm (with little disagreement among analysts) contains more good news than the earnings surprise for the second (where there is disagreement). Following up, you would be far more likely to invest in the first firm. Figure 12.13 compares the standard deviation in earnings estimates across analysts for companies in the high earnings surprise portfolio with the standard deviation in earnings estimates for companies in the rest of the market; the standard deviation in EPS estimates are divided by the consensus estimate for comparability.

Figure 12.13: Disagreement among Analysts - Surprise Portfolio versus Market



Data from Zacks. The standard deviation is computed across estimates of earnings per share across analysts following each stock.

There is clearly more disagreement among analysts regarding earnings estimates for firms in the earnings surprise portfolio than in the rest of the market.

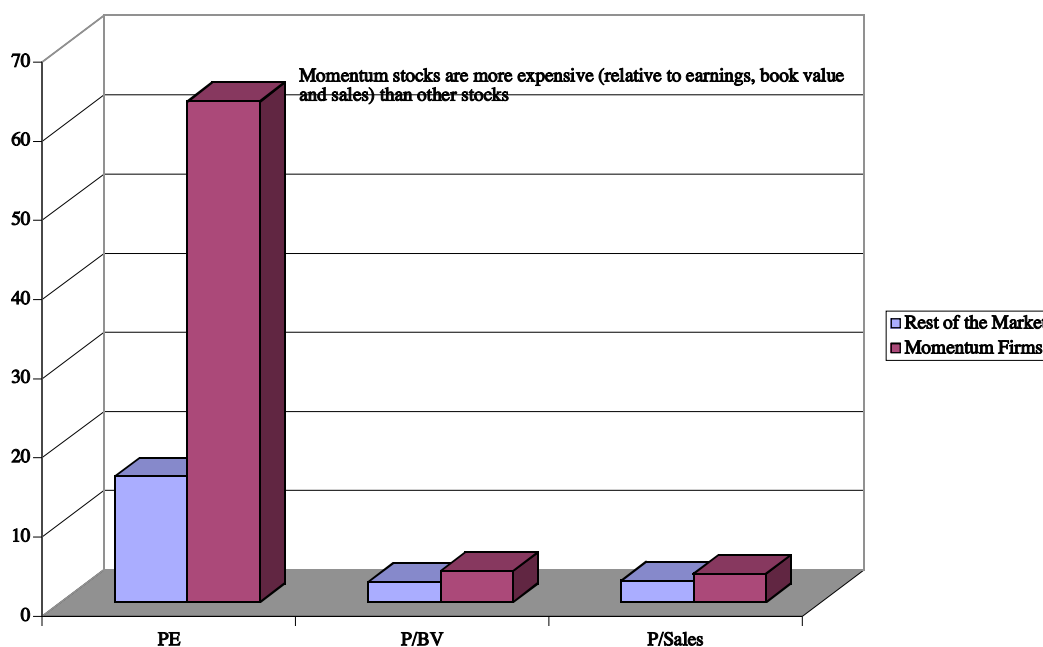
Momentum Shifts (When do you sell?)

One of the perils of a momentum-based strategy is that the momentum that is your friend for the moment can very quickly become your foe. As you saw in the empirical tests of these strategies, your returns are very sensitive to how long you hold the stock. Holding a stock too short or too long a period can both work against you and telling when momentum is shifting is one of the most difficult tasks in investing.

There are signs that, while not infallible, provide early warning of shifting momentum. One is insider buying and selling; insiders often are among the first to sell a stock when momentum carries the price too high. Unfortunately, the information on insider buying and selling comes to you several weeks after the trades are made and in some cases, the warning comes too late. Another is standard valuation metrics such as price earnings ratios. Investing in momentum stocks that trade at unsustainable multiples of earnings is clearly a more dangerous strategy than investing in stocks that trade at reasonable values. In

Figure 12.14, the average price earnings, price to book and price to sales ratios are reported for firms in the momentum portfolio and the rest of the market.

Figure 12.14: Valuation Metrics - Momentum firms vs Market



Data from Value Line from April 2003. The price earnings is the current price divided by the earnings per share.

On every measure, the momentum portfolio is more highly priced than the rest of the market. To illustrate, the stocks in the momentum portfolio have an average PE ratio of 63, whereas the rest of the market has an average PE ratio of 16. With price to book ratios, the average for the momentum portfolio is 4, whereas the average for the rest of the market is about 2.6. Thus, a momentum portfolio may include a large number of overpriced stocks. Applying a cap of 20 on PE ratios, for instance, reduces the number of the firms in the momentum portfolio from 53 firms to 10 firms.

With the earnings surprise portfolio, the key question that you need to address is whether the positive earnings surprises are created by temporary items (one time earnings, currency gains) or by improved performance; the latter is much better news. Your need to invest right after an earnings announcement will clash with your desire to examine the details of the earnings announcement, but the payoff to waiting may be substantial. Alternatively, you can use other screens that find stocks where the earnings surprises and price momentum are likely to be sustained. One is to consider earnings surprises in previous quarters, arguing that firms that deliver actual earnings that beat expectations

several quarters in a row have more sustainable improvement in earnings than other firms. Considering these statistics for the 105 firms with the most positive earnings surprises in Table 12.3, you find that 25 of these firms also had positive earnings surprises in the previous quarter as well.

Execution Costs

By their very nature, momentum and information based investment strategies require frequent trading and will generate large transactions costs. The transactions costs include not just the commissions but also the price impact that you can have as you trade. Obviously, this price impact will be minimal if you are an individual investor but even small trades can affect prices when you are trading illiquid stocks.

With earnings surprise strategies, timing can make the difference between success and failure. If you are able to place a trade immediately after an earnings announcement, you will be able to gain a much bigger gain from the price run-up. Unfortunately, the earnings announcement will trigger a wave of buying and individual investors may be at a disadvantage relative to institutional investors when it comes to execution speed. There are options available to individual investors who want to trade more efficiently, but they will be expensive.

Lessons for Investors

If you decide to pursue a price/volume momentum strategy, you have to be a short-term investor and be willing to trade frequently. While the strategy will always be risky, there are ways in which you can reduce your exposure to its limitations. In general, you should consider doing the following:

- *Have a clear strategy based upon empirical analysis:* Ultimately, the question of whether momentum carries over into future price changes is an empirical question. While the past is not necessarily prologue, there is evidence of stock price momentum but it is very sensitive to time horizon. Investors therefore have to put their momentum strategies to the test on past data, using specific time horizons to maximize their chances of earning returns.
- *Develop screens to eliminate “troublesome” stocks:* Momentum stocks tend to be riskier than the rest of the market and often trade at high prices, relative to fundamentals. Since there is a good chance of momentum reversing itself with these highly priced stocks, you should eliminate the riskiest, most overpriced stocks from your portfolio.

- *Execute:* Trading costs can very quickly overwhelm any additional returns from a momentum strategy and these costs can be exaggerated by the need to trade quickly to take advantage of momentum. Keeping trading costs under control is key to success with this strategy.
- *Be disciplined:* To earn your promised returns, you have to stay true to your tested strategy. All too often, investors deviate from their strategies when confronted with failure.

Incorporating these factors, a portfolio of momentum stocks was created using the following screens:

- Price and volume momentum > 1.40; these screens are not as strict as the screens used in the last section, but will allow you to screen for high risk and over priced stocks.
- Risk criteria: Beta < 1.20 and Standard deviation in stock prices < 80%; These screens will eliminate the riskiest stocks in the portfolio. The levels used for the screen represent the 75th percentile of all US stocks, thus ensuring that the stocks in top quartile in terms of risk will be eliminated from the portfolio.
- Pricing Screens: Only stocks with PE ratios less than 20 are included in the final portfolio.

The resulting portfolio of seven stocks is listed in appendix A.

If you choose to adopt an earnings surprise or information based investment strategy, where you plan to buy after good news and sell after bad, your time horizon will be measured in hours rather than weeks. If you want to maximize your returns from this strategy, you should try to:

- *Invest in information and execution:* Since stock prices react to information, you will need to have access to information immediately. Investing in an information system that delivers news to you in time to trade is a necessary prerequisite for the strategy to work.
- *Develop rules that can be used to screen stocks with minimal information:* Investors who use this strategy often have to trade on incomplete information. For instance, you may have to buy stock after a positive earnings report without having access to the details of the earnings reports. Rules that you can use to screen earnings reports for potential problems may help protect against downside risk. For instance, a positive earnings report from a company with a history of earnings revisions and shady accounting practices may be viewed with more skepticism than a report from a more company with a better reputation.

- *Constantly track your investment to decide on the optimal holding period:* The momentum from news announcements seems to peak at some point in time and then reverse itself. You will either have to develop an optimal holding period, based upon looking at past history, and stay consistent, or use technical rules (such as a drop in trading volume) that allow you to detect when the momentum shifts.
- *Factor in transactions costs and tax liabilities:* Trading on news is expensive. Not only will you have to trade often but you may also have to pay more for speedy execution. These costs can accumulate over the course of time and eliminate any profits from the strategy.

Factoring these concerns, the following screens were used to come up with an earnings surprise portfolio:

- *Expected EPS in most recent quarter > \$0.25:* This eliminates firms with miniscule earnings that are likely to report large earnings surprises. A side benefit is that will also eliminate firms with shares that trade at very low prices and have high transactions costs.
- *EPS Surprise > 40%:* The earnings surprise, defined as the difference between actual and predicted earnings per share in the most recent quarter, divided by the predicted earnings per share, has to be larger than 40%. In other words, the actual earnings have to be at least 40% above expectations.
- *Standard deviation in analyst forecasts < 5%:* Since earnings surprises should have more impact when there is agreement among analysts about the predicted earnings per share, firms are eliminated from the portfolio when there was significant disagreement among analysts about predicted earnings.
- *EPS Surprise previous period > 0:* Firms that reported a positive earnings surprise in the previous quarter are considered as have more sustainable earnings increases than firms that reported earnings that were less than anticipated in the last quarter.
- *Low PE ratio:* Studies indicate that prices are more likely to drift after value companies report earnings surprises. Pursuant to this finding, only companies that trade at PE ratios less than 20 were considered for the portfolio.

The resulting portfolio of 29 stocks is summarized in appendix 2.

Conclusion

Momentum based strategies appeal to investors because it seems intuitive that stocks that have gone up in the past will continue to go up in the future. There is evidence of price momentum in financial markets but with a caveat. Stock prices that have gone up in the past – winner stocks – are likely to continue to go up in the near future. The momentum,

however, reverses itself after a few months and stock price reversals are more likely if you hold for longer time periods. With information announcements such as earnings reports and stock splits, the evidence is similarly ambiguous. When firms report good news, stock prices jump on the announcement and continue to go up after the announcement but only for a few days. As with price momentum, there is a point at which price momentum seems to stall and prices reverse themselves. In both cases, the empirical evidence suggests that price momentum is more likely to be sustained if it is accompanied by an increase in trading volume.

There are two classes of momentum strategies that you can construct. In the first, you buy stocks with both price and volume momentum, i.e., stocks that have gone up more than other stocks in the market over a prior period with an accompanying increase in trading volume. These stocks tend to be riskier than other stocks in the market and your odds of success improve if you can screen these stocks to eliminate over priced stocks where insiders are selling. In the second, you buy stocks after positive earnings surprises, hoping to gain as the stock prices increase. Here again, you can improve your odds of success if you can separate the firms that have sustainable earnings increases from the firms that do not.

Appendix 1: Stocks with price and volume momentum, low risk and low PE

Company	Return over 6 months	Relative Price strength	Relative volume	PE Ratio	Beta	Standard deviation
Chronimed Inc.	68.35%	1.47	1.46	18.76	0.76	79.83%
Movie Star Inc.	127.27%	1.98	1.51	20.40	1.11	70.26%
Aceto Corp.	123.59%	1.95	1.74	17.06	0.74	52.04%
North Coast Energy Inc.	73.75%	1.51	1.68	8.52	0.56	46.32%
Sanfilippo John B.	115.00%	1.87	1.67	11.87	0.71	44.28%
First Colonial Group	84.71%	1.61	1.68	23.89	0.36	32.94%
CNB Finl Corp	74.86%	1.52	1.53	22.20	0.66	25.10%

Appendix 2: Stocks with positive earnings surprises and consensus on expected earnings

Company	Stock Price	Actual EPS	Expected EPS	EPS Surprise	Previous EPS Surprise	Std deviation in forecasts	PE
SHAW GROUP INC	9.7	0.42	0.3	40.00%	1.45%	2.00%	3.87
COASTAL BANCORP	31.8	1.05	0.61	72.13%	11.48%	3.00%	4.97
FIRSTENERGY CP	31.04	1.19	0.47	153.19%	19.70%	2.00%	4.98
RYLAND GRP INC	48	2.5	1.24	101.61%	12.58%	4.00%	5.64
HARLAND(JOHN H)	23.83	0.66	0.4	65.00%	3.92%	2.00%	5.96
SUNRISE ASSIST	24.95	0.83	0.55	50.91%	1.61%	2.00%	6.27
MERITAGE CORP	36.3	1.72	0.88	95.45%	14.49%	2.00%	6.41
AMERICA SVC GRP	12.75	0.46	0.28	64.29%	46.43%	5.00%	6.58
BUNGE LTD	27.3	0.98	0.33	196.97%	12.94%	4.00%	6.93
PULTE HOMES INC	53.96	2.78	1.22	127.87%	1.67%	4.00%	6.96
POLARIS INDUS	49.82	1.51	0.54	179.63%	0.64%	2.00%	7.02
BLACK & DECKER	36.2	1.05	0.43	144.19%	14.46%	5.00%	7.49
YUM! BRANDS INC	24.73	0.55	0.38	44.74%	2.08%	3.00%	7.64
BAUSCH & LOMB	34.45	0.6	0.31	93.55%	9.09%	2.00%	8.31
TORO CO	71.6	0.38	0.26	46.15%	14.81%	1.00%	9.19
NEWELL RUBBERMD	29.93	0.49	0.27	81.48%	2.22%	3.00%	11.37
MCCLATCHY CO-A	52.8	0.86	0.56	53.57%	2.90%	3.00%	11.70
DIEBOLD	36.14	0.67	0.36	86.11%	1.69%	2.00%	11.83
INTL BUS MACH	79.01	1.34	0.79	69.62%	3.13%	3.00%	11.87
COLUMBIA SPORTS	38	0.72	0.26	176.92%	5.19%	0.00%	12.32
LEE ENTRPRS	32.83	0.51	0.34	50.00%	2.38%	1.00%	13.73
GANNETT INC	72.28	1.29	0.92	40.22%	1.02%	4.00%	13.97
SELECT INS GRP	24.67	0.41	0.28	46.43%	2.70%	5.00%	14.67
LANDSTAR SYSTEM	61.22	0.88	0.61	44.26%	1.22%	2.00%	15.94
BIOVAIL CORP	40.1	0.6	0.38	57.89%	2.17%	3.00%	16.40
TRIBUNE CO	46.85	0.57	0.38	50.00%	21.05%	4.00%	16.68

FLIR SYSTEMS	47.21	0.71	0.5	42.00%	17.65%	3.00%	16.77
EDUCATION MGMT	41.91	0.7	0.5	40.00%	14.29%	2.00%	19.39
AVON PRODS INC	57.57	0.8	0.41	95.12%	2.13%	1.00%	19.78

CHAPTER 13

FOLLOW THE EXPERTS**In Search of a Guru**

Stanley had been searching for enlightenment all his life. He tried new religions and new diets with equal enthusiasm, convinced that all he had to do to was follow the right advice to become happy. When he started investing, he watched CNBC and read books on how to get rich by financial experts. He was sure that only they had the key to success in investing and that all he had to do was imitate them. When the portfolio manager of one of America's largest mutual funds listed his top ten stocks to buy in Barron's, Stanley followed along and bought every single one. After all, this portfolio manager had access not only to the best minds and the best data on Wall Street but also to the managers of these companies. In the months that followed, Stanley was deeply disappointed. While a couple of stocks on the list did reasonably well, his portfolio badly under performed the market. Trying to figure out what had gone wrong, Stanley looked for any news he could find about the portfolio manager whose advice he had followed and found a news item that he had been fired because the mutual fund he had run for a decade had done so badly. Stanley sold all his stocks and bought a book on surviving financial crises by an expert on bankruptcy.

Moral: Smart people don't always pick good stocks.

There are investors who seem to know more than others and claim to do much better on their investments than the rest of the market. If you could follow these "expert" investors and copy their investment decision, you may be able to piggyback on their successes. It is this belief that leads investors to read investment newsletters and to watch television shows on the stock market. It is also this belief that allows investment experts – equity research analysts, investment advisors and portfolio managers – to have as much influence as they do in financial markets. In this chapter, you will examine whether these experts do better on their investments than the rest of the market, and whether following the advice they provide pays off in higher returns.

The Core of the Story

Every discipline has its experts and the investing world has more than its share. Some investors like Warren Buffett and Peter Lynch earn their expert status by generating high returns on their portfolios over many years. Others become experts because of the positions they hold – market strategists for investment banks and equity research analysts, for example. Still others become experts because of what they know – insiders at companies

and those close to decision makers. Finally there are those that anoint themselves as experts in aspects of investing with nothing specific to back them up and because of their sales prowess, pull it off; they write books about successful investing and offer newsletters you can subscribe to. Why are novice investors so attracted to expert advice? There are a number of beliefs that underlie this attraction:

Experts know more about markets and hence are less likely to make mistakes: Investing can be daunting, especially in today's markets, where choices abound and investments become increasingly complex. Investors worry about putting their pension funds and savings at risk by picking the wrong investment at the wrong time and assume that experts can steer them away from catastrophic mistakes.

Experts can bring more resources (data, models, people) to the stock selection process and hence can pick better investments: Individual investors are constrained in terms of how much time they can spend on analyzing investments and how much resources they can bring to the process. An equity research analyst at an investment bank or a portfolio manager at a mutual fund can bring more resources and more time to investment analysis and presumably this pays off as better investment choices.

Experts have better access to private information (buzz, rumor, news) and hence get advance notice of big happenings: Markets move on information and investors with timely access to good information should be able to use that information to earn higher returns. While individual investors may not be able to talk to the managers of a firm, analysts have access to these highly placed sources. Many investors assume that information is leaked to Wall Street before it gets to Main Street.

The Theory

To understand how and why experts may be able to beat the market, you have to begin by examining the process by which market prices are set. While market prices are set by demand and supply, the market price of an asset is an estimate of its value. Investors in the market make assessments of the value based upon their expectations for the future. They form these expectations using the information that is available to them and this information can arrive in different forms. It can be information about the past price performance of the asset, or public information available in annual reports or filings with the SEC, or information available to one or a few investors.

While the steps in this process – receive information, process the information to form expectations and trade on the asset – may be the same for all investors, there are wide

variations across investors in how much information they have available, and how they process the information. Some investors have access to more information than others. For instance, an equity research analyst whose job it is to evaluate Cisco as an investment will have access to more information about the firm than a small investor making the same decision. These differences in information are compounded by the different ways in which investors use the information to form expectations. Some investors build complex quantitative models, converting the information into expected earnings and cash flows, and value investments. Other investors use the same information to make comparisons across stocks. The net effect is that, at any point in time, investors will disagree on how much an asset is worth. Those who think that it is worth more will be the buyers of the asset, and those who think it is worth less will sell the asset. The market price represents the price at which the market clears, i.e., where demand (buying) is equal to supply (selling).

The price can and usually will deviate from the value for three reasons. It is these flaws in the pricing process that may provide experts with potential excess returns.

- First, the information available to most investors may be insufficient or incorrect; then expectations based upon this information will also be wrong. Investors with access to better or more complete information will be able to use their information advantage to earn potential excess returns. This is usually the advantage that insiders at companies have over outside investors in these companies.
- Second, investors may not do a good job of processing the information to arrive at expectations. Investors who are better at processing this information (using better and more complex models) may be able to find mispricing and take advantage of it. This is potentially the value created by analysts and portfolio managers.
- Third, even if the information is correct and investors, on average, form expectations properly, there might still be investors who are willing to trade at prices that do not reflect these expectations. Thus, an investor who assesses the value of a stock to be \$ 50 might still be willing to buy the stock for \$ 60, because he or she believes that it can be sold to someone else for \$ 75 later. Investors who see this irrationality and are willing to bet on it or against it may be able to make higher returns in the long term. This presumably is what successful investors like Warren Buffett and Peter Lynch bring to the process.

With this framework, you can see a role for experts in the markets. Experts can attain their status by getting information earlier than other investors, processing that information better or by finding systematic mistakes in how markets price assets. Other investors can learn from them and partake in at least a portion of their success.

Looking at the Evidence

Do investors who have information that no one else has access to, i.e. private information, use this information to profit? While the answer seems obvious (yes), it is very difficult to test to see whether they do because investors who trade on this information will not do so in the open. The reason for this is that the regulatory authorities, at least in the United States, specifically forbid trading in advance of significant information releases. Thus, insiders who follow the law and register their trades with the SEC are not likely to be trading on specific information in the first place. Notwithstanding this selection bias, this section begins by looking at whether insider buying and selling operate as signals of future price movements, since insiders may still have access to general information about the firm that outsiders do not. The second part of the section look at the more difficult question of whether those who trade illegally on private information make excess returns. While this may seem like an impossible test to run, you can at least draw inferences about this trading by looking at trading volume and price movements prior to major news announcements. In the final section, you will look at whether you can augment your returns by listening to equity research analysts and following their advice.

Insiders

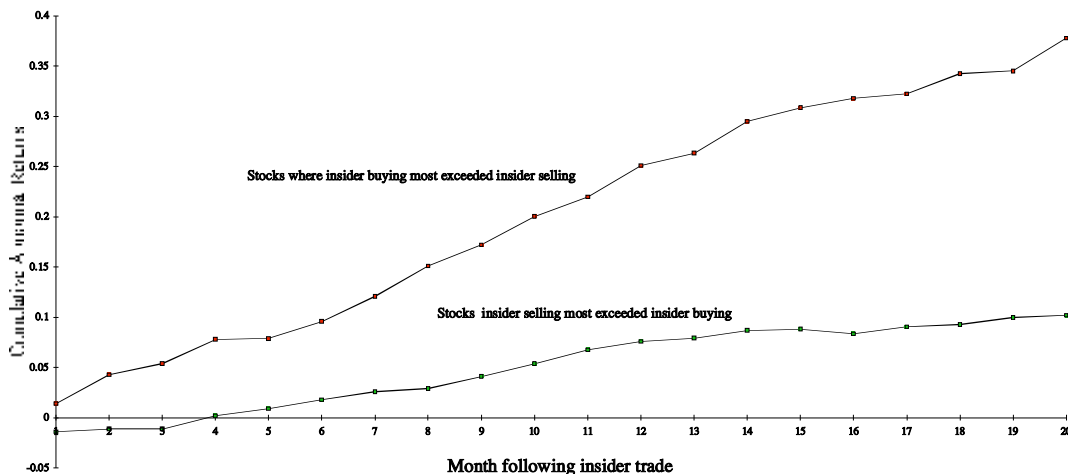
The Securities and Exchange Commission (SEC) defines an insider to be an officer or director of the firm or a major stockholder (holding more than 5% of the outstanding stock in the firm). Insiders are barred from trading in advance of specific information on the company and are required to file with the SEC when they buy or sell stock in the company. In this section, you will begin by looking at the relationship between insider trading and subsequent stock price changes, and then consider whether non-insiders can use information on insider trading to earn excess returns themselves.

Insider Trading and Stock Prices

If it is assumed, as seems reasonable, that insiders have better information about the company, and consequently better estimates of value, than other investors, the decisions by insiders to buy and sell stock should signal future movements in stock prices. Figure 13.1, derived from an early study of insider trading examines excess returns on two groups of stock, classified on the basis of insider trades.¹ The "buy group" includes stocks where insider buys exceeded sells by the biggest margin, and the "sell group" includes stocks where insider sells exceed buys by the biggest margin.

¹ Jaffe, J., 1974, *Special Information and Insider Trading*, Journal of Business, v47, pp 410-428..

Figure 13.1: Cumulative Returns Following Insider Trading: Buy vs Sell Group



Data from Jaffe. The insider buy (sell) group includes companies where insider buying (selling) most exceeded insider selling (buying). The returns are cumulated in the 24 months after the portfolios are created.

Stocks where insiders were buying more aggressively did much better in the months after the insider trading than stocks where insiders were selling. Research done since support this finding², but it is worth noting that insider buying does not always precede price increases – about 4 in 10 stocks where insiders are buying turn out to be poor investments, and even on average, the excess returns earned are not very large. A closer look at the price movements around insider trading found that firms with substantial insider selling had stock returns of 14.4% over the subsequent 12 months, which was significantly lower than the 22.2% earned by firms with insider buying.³ However, the link between insider trading and subsequent returns was greatest for small companies and that there was almost no relationship at larger firms.

While most of the studies quoted above focus on total insider buying and selling, there may be value added if you can break down insider trading into more detail. Consider the following propositions:

² See Finnerty, J.E., 1976, *Insiders and Market Efficiency*, Journal of Finance, v31, 1141-1148, Rozeff, M., and M. Zaman, 1988, *Market Efficiency and Insider Trading: New Evidence*, Journal of Business 61, 25-44, Seyhun, H.N., 1998, *Investment Intelligence from Insider Trading*, MIT Press, Cambridge.

³ Lakonishok, J. and I. Lee, 1998, *Are insiders' trades informative?* Working Paper, Social Sciences Research Network.

Not all insiders have equal access to information. Top managers and members of the board should be privy to much more important information and thus their trades should be more revealing than trades by their underlings. A study finds that investors who focus only on large trades made by top executives, rather than total insider trading may, in fact, earn much higher returns.⁴

As investment alternatives to trading on common stock have multiplied, insiders have also become more sophisticated about using these alternatives. As an outside investor, you may be able to add more value by tracking these alternative investments. For instance, insider trading in derivative securities (options specifically) to hedge their common stock positions increases immediately following price run-ups and prior to poor earnings announcements.⁵ In addition, stock prices tend to go down after insiders take these hedging positions.

In summary, insider trading does contain information for insiders, but the information advantage that insiders have is not overwhelming, at least in the United States. This may partially be explained by the fact that these are legal insiders who cannot trade on upcoming news announcements and partially by the fact that even the best information is not precise. Investors who base their trades on insider buying or selling have to recognize that insiders often are wrong in their assessments of value.

Illegal Insider Trading

None of the research quoted above answer the question of whether insiders themselves make excess returns. The reporting process, as set up now by the SEC, is biased toward legal and less profitable trades, and away from illegal and more profitable trades. Though direct evidence cannot be easily offered for this proposition, insiders trading illegally on private information must make much higher returns than legal insiders. To support this proposition, three pieces of evidence can be presented.

The first (and weakest) is anecdotal. When insiders are caught trading illegally, they almost invariably have made a killing on their investments. Clearly, some insiders made significant returns off their privileged positions. The reason that it has to be viewed as weak evidence, though, is because the SEC looks for large profits as one

⁴ Bettis, J., Vickrey, D., and Donn Vickrey, 1997, *Mimickers of Corporate Insiders Who Make Large Volume Trades*, Financial Analyst Journal 53, 57-66.

⁵ Bettis, J.C., J.M. Bizjak and M.L. Lemmon, 2002, *Insider Trading in Derivative Securities: An Empirical Investigation of Zero cost collars and Equity Swaps by Corporate Insiders*, Working Paper, Social Sciences Research Network.

of the indicators of whether it will prosecute. In other words, an insider who trades illegally on information may be breaking the law but is less likely to be prosecuted for the act if he or she loses money.

Almost all major news announcements made by firms are preceded by a price run-up (if it is good news) or a price drop (if it is bad news). Thus, you see that the stock price of a target firm starts drifts up before the actual takeover announcement, and that the stock price of a firm reporting disappointing earnings drops in the days prior to the earnings report. While this may indicate a very prescient market, it is much more likely that someone with access to the privileged information (either at the firm or the intermediaries helping the firm) is using the information to trade ahead of the news. In fact, the other indicator of insider trading is the surge in trading volume in both the stock itself and derivatives prior to big news announcements.⁶

In addition to having access to information, insiders are often in a position to time the release of relevant information to financial markets. Knowing as they do that they are not allowed to trade ahead of this information, insiders often adjust information disclosure to make it less likely that they will be targeted by the SEC. One analysis⁷ find that insiders sell stock between three and nine quarters before their firms report a break in consecutive earnings increases.⁸ This study also finds, for instance, that insider selling increases at growth firms prior to periods of declining earnings.

Using Insider Trading in Investment Decisions

Tracking what legal insiders are doing has become both easier and more timely. You can look at the filings made by companies on the SEC website (<http://www.sec.gov>). The insider trading information is available in forms 3, 4 and 144s. Many of the more popular financial web sites such as Yahoo! Finance report on recent insider transactions on individual companies. If you are willing to pay more, you can subscribe to services that consolidate the information and provide it to you.

⁶ It is for this reason that the SEC tracks trading volume. Sudden increases in volume often trigger investigations of insiders at firms.

⁷ Ke, B., S. Huddart and K. Petroni, 2002, *What insiders know about future earnings and how they use it: evidence from insider trades*, Working Paper, Social Sciences Research Network.

⁸ You generally face legal jeopardy when you sell in the quarter or two before the news announcement.

As the information on insider trades has become more accessible, it has also become less useful as an investment tool. In addition, the spurt in the use of options in management compensation schemes has introduced a substantial amount of uncertainty in the reporting system, since a large proportion of insider trades now are associated with managers exercising options and then selling a portion of their stock holding for liquidity and diversification reasons. For information on insider trading to pay off, you need to look beyond the total insider trading numbers at the insiders themselves, focusing on large trades by top managers at smaller, less followed firms. Even then, you should not expect miracles, since you are using publicly available information.

The real payoff comes from tracking illegal insider trading by looking at trading volume and bid-ask spreads. The relationship between trading volume and private information may provide an intuitive rationale for the use of some of the volume measures as technical indicators.

Analysts

Analysts clearly hold a privileged position in the market for information, operating at the nexus of private and public information. Using both types of information, analysts make earnings forecasts for the firms that they follow, and issue buy and sell recommendations to their clients, who trade on their basis. In this section, you will consider where there is valuable information in earnings forecasts and recommendations and whether incorporating them into investment decisions leads to higher returns.

1. Earnings Forecasts

Analysts spend a considerable amount of time and resources forecasting earnings per share both for the next quarter and for the next financial year. Presumably, this is where their access to company management and private information should generate an advantage. Thus, when analysts revise their earnings forecasts upwards or downwards, they convey information to financial markets and prices should react. This section examines how markets react to analyst forecast revisions and whether there is potential for investors to take advantage of this reaction.

The Information in Analyst Forecasts

There is a simple reason to believe that analyst forecasts of growth should be better than just looking at past earnings growth. Analysts, in addition to using past earnings data, can avail themselves of other information that may be useful in predicting future growth.

1. Firm-specific information that has been made public since the last earnings report: Analysts can use information that has come out about the firm since the last

earnings report, to make predictions about future growth. This information can sometimes lead to significant re-evaluation of the firm's expected earnings and cash flows. For instance, information that a firm has signed a lucrative contract with the federal government or that its management has been replaced should affect your estimates of earnings growth in future periods.

2. Macro-economic information that may impact future growth : The expected growth rates of all firms are affected by economic news on GNP growth, interest rates and inflation. Analysts can update their projections of future growth as new information comes out about the overall economy and about changes in fiscal and monetary policy. Information, for instance, that shows the economy growing at a faster rate than forecast will result in analysts increasing their estimates of expected growth for cyclical firms.

3. Information revealed by competitors on future prospects: Analysts can also condition their growth estimates for a firm on information revealed by competitors on pricing policy and future growth. For instance, a report of slowing sales growth at one retail firm can lead to a reassessment of earnings growth for other retail firms.

4. Private information about the firm: Analysts sometimes have access to private information about the firms they follow which may be relevant in forecasting future growth. This avoids answering the delicate question of when private information becomes illegal inside information. There is no doubt, however, that good private information can lead to significantly better estimates of future growth. In an attempt to restrict this type of information leakage, the SEC issued new regulations preventing firms from selectively revealing information to a few analysts or investors. Outside the United States, however, firms routinely convey private information to analysts following them.

5. Public information other than earnings: Models for forecasting earnings that depend entirely upon past earnings data may ignore other publicly available information that is useful in forecasting future earnings. It has been shown, for instance, that other financial variables such as earnings retention, profit margins and asset turnover are useful in predicting future growth. Analysts can incorporate information from these variables into their forecasts.

*The Quality of Earnings Forecasts*⁹

If firms are followed by a large number of analysts and these analysts are indeed better informed than the rest of the market, the forecasts of growth that emerge from analysts should be better than estimates based upon either past earnings growth or other publicly available information. But is this presumption justified? Are analyst forecasts of growth superior to other estimates?

The general consensus from research that has looked at short-term forecasts (one quarter ahead to four quarters ahead) of earnings is that analysts provide better forecasts of earnings than models that depend purely upon historical data. The absolute difference between the actual earnings and the forecast for the next quarter, in percentage terms, is smaller for analyst forecasts than it is for forecasts based upon historical data. Summarizing the conclusion on the accuracy of analysts' forecasts:

Analyst estimates are more precise than past growth rates but not by much: An examination¹⁰ of the relative accuracy of forecasts in the Earnings Forecaster, a publication from Standard and Poor's that summarizes forecasts of earnings from more than 50 investment firms looked at the forecast errors by month of the year and computed the ratio of analyst forecast error to the forecast error from time-series models of earnings, which use only past earnings. It found that the time series models actually outperform analyst forecasts from April until August, but underperform them from September through January. The authors hypothesize that this is because there is more firm-specific information available to analysts during the latter part of the year.

Analysts' advantages deteriorate for longer-term earnings forecasts: A comparison¹¹ of consensus analyst forecasts from the Institutions Brokers Estimate System (I/B/E/S) with forecasts, based purely on past earnings, from one quarter ahead to four quarters ahead finds that analyst forecasts outperform the time series model for one-quarter ahead and two-quarter ahead forecasts, do as well as the time series model for three-quarter ahead forecasts and do worse than the time series

⁹ Sell side analysts work for brokerage houses and investment banks and their research is offered to clients of these firms as a service. In contrast, buy side analysts work for institutional investors and their research is generally proprietary.

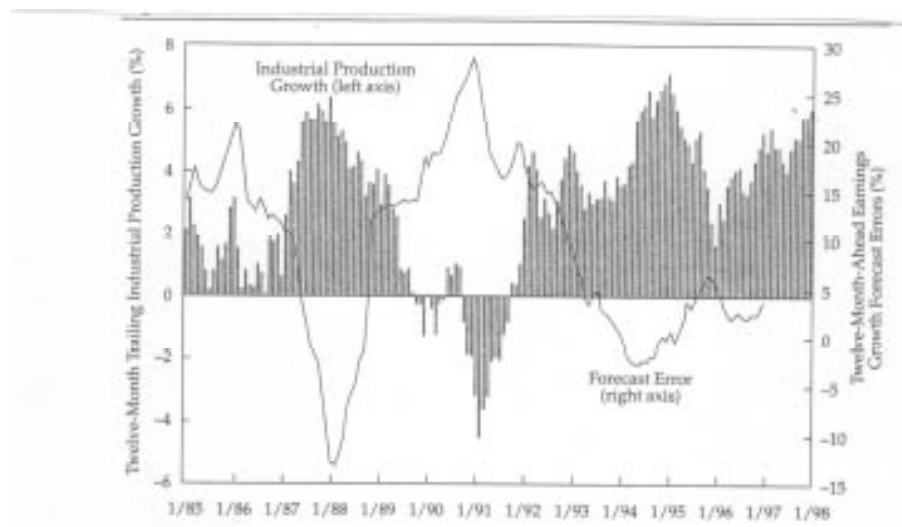
¹⁰ Crichfield, T., T. Dyckman and J. Lakonishok, 1978, *An Evaluation of Security Analysts Forecasts*, Accounting Review.

¹¹ O'Brien, P., 1988, *Analyst's Forecasts as Earnings Expectations*, Journal of Accounting and Economics.

model for four-quarter ahead forecasts. Thus, the advantage gained by analysts from firm-specific information seems to deteriorate as the time horizon for forecasting is extended.

Analysts make surprisingly large mistakes when forecasting earnings: An examination of analyst forecasts from 1974 to 1991 found that in more than 55% of the forecasts examined, analyst estimates of earnings were off by more than ten percent from actual earnings.¹² One potential explanation given for this poor forecasting is that analysts are routinely over optimistic about future growth. An analysis concludes that a great deal of this forecast error comes from the failure of analysts to consider large macroeconomic shifts.¹³ In other words, as Figure 13.2 indicates, analysts tend to overestimate growth at the peak of a recovery and underestimate growth in the midst of a recession.

Figure 13.2: Earnings Forecast Errors and Economic Growth



Data from Chopra. Industrial production measures the pace of economic growth and the earning forecast error is the average forecast error on earnings estimates (relative to actual earnings) across all analysts.

Note that analysts consistently underestimate earnings during periods of high economic growth and overestimate earnings during periods of low economic

¹² Dreman, D.N. and M. Berry, 1995, *Analyst Forecasting Errors and their Implications for Security Analysis*, Financial Analysts Journal, May/June, pg 30-41.

¹³ Chopra, V.K., 1998, *Why so much error in analyst forecasts?*, Financial Analysts Journal, Nov-Dec, pg 35-42.

growth. A comparison of analyst forecast errors across seven countries suggests, not surprisingly, that analysts are more accurate and less biased in countries that mandate more financial disclosure.¹⁴

With long term forecasts (5 years), there is little evidence that analyst forecasts add any information: There is little evidence to suggest that analysts provide superior forecasts of earnings when the forecasts are over three or five years. An early study compared long-term forecasts by five investment management firms in 1962 and 1963 with actual growth over the following three years to conclude that analysts were poor long term forecasters.¹⁵ This view was contested in a later analysis which found that the consensus prediction of five-year growth in the I/B/E/S was superior to historically oriented growth measures in predicting future growth.¹⁶

There is an intuitive basis for arguing that analyst predictions of growth rates must be better than time-series or other historical-data based models simply because they use more information. The evidence indicates, however, that this superiority in forecasting is surprisingly small for long-term forecasts and that past earnings growth rates play a significant role in determining analyst forecasts.

Market Reaction to Earnings Forecast Revisions

In the price momentum strategies described in Chapter 12, investors buy stocks that have gone up the most in recent periods, expecting the momentum to carry forward into future periods. You could construct similar strategies based upon earnings momentum. While some of these strategies are based purely upon earnings growth rates, most of them are based upon how earnings measure up to analyst expectations. In fact, one strategy is to buy stocks where analysts are revising earnings forecasts upwards, and hope that stock prices follow these earnings revisions.

A number of studies in the United States seem to conclude that it is possible to use forecast revisions made by analysts to earn excess returns. In one of the earliest examinations of this phenomenon, researchers created portfolios of 49 stocks in three sectors, based upon earnings revisions, and reported earning an excess return on 4.7% over

¹⁴ Higgins, H.N., 1998, *Analyst Forecasting Performance in Seven Countries*, Financial Analysts Journal, May/June, v54, 58-62.

¹⁵ Cragg, J.G., and B.G. Malkiel, 1968, *The Consensus and Accuracy of Predictions of the Growth of Corporate Earnings*, Journal of Finance, v23, 67-84..

¹⁶ Vander Weide, J.H., and W.T. Carleton, 1988, *Investor Growth Expectations: Analysts Vs. History*, Journal of Portfolio Management, v14, 78-83.

the following four months on the stocks with the most positive revisions.¹⁷ A study reported that a portfolio of stocks with the 20 largest upward revisions in earnings on the I/B/E/S database would have earned an annualized return of 14% as opposed to the index return of only 7%.¹⁸ An examination of the excess returns suggests that the high returns are concentrated in the weeks around the revision: 1.27% in the week before the forecast revision, and 1.12% in the week after, and that analysts categorized as leaders (based upon timeliness, impact and accuracy) have a much greater impact on both trading volume and prices.¹⁹ In 2001, the research was extended to earnings forecasts in other countries, with the conclusion that you could have earned excess returns of 4.7% in the U.K, 2% in France and 3.3% in Germany from buying stocks with the most positive revisions.²⁰

Earnings estimates and revisions to them are widely publicized and you can track them through services such as Zacks and First Call. These services collate earnings estimates made by analysts and report a consensus estimate of earnings per share, based upon the average value. They also report changes in individual estimates and reflect revisions in the consensus value. Investors can track these earnings revisions and buy stocks with the largest upward revisions.

II. Analyst Recommendations

The centerpiece of analyst reports are the recommendations that they make on stocks. You would expect stock prices to react to analyst recommendations, when they are made, if for no other reason than for the fact that some investors follow these recommendations and buy (well) after favorable (unfavorable) recommendations. In this section, you will consider some key empirical facts about analyst recommendations first and then consider how markets react to them. The section closes with an analysis of whether investors who use these recommendations to make investment decisions can make money off them in the short and the long term.

¹⁷ Givoly, D. and J. Lakonishok, 1984, *The Quality of Analysts' Forecasts of Earnings*, Financial Analysts Journal, v40, 40-47.

¹⁸ Hawkins, E.H., S.C. Chamberlin, W.E. Daniel, 1984, Earnings Expectations and Security Prices, *Financial Analysts Journal*, September/October, pp. 20-38.

¹⁹ Cooper, R.A., T.E. Day and C.M. Lewis, 1999, *Following the Leader: A Study of Individual Analysts Earnings Forecasts*, Working Paper, SSRN.

²⁰ Capstaff, J. , K.Paudyal and W. Rees, 2000, *Revisions of Earnings Forecasts and Security Returns: Evidence from Three Countries*, Working Paper, SSRN.

The Recommendation Game

There are three empirical facts that need to be laid on the table about recommendations before you start examining how markets react to them.

If you categorize analyst recommendations into buy, sell and hold, the overwhelming number are buy recommendations. In 2001, for instance, buy recommendations outnumbered sell recommendations seven to one, but that was actually a drop from the late 1990s, where sell recommendations were often outnumbered by more than 25 to one.

Part of the reason for this imbalance between buy and sell recommendations is that analysts often have many more layers beyond buy, sell and hold. Some investment banks, and investment advisory firms, for instance, have numerical rating systems for stocks where stock are classified from one to five (as is the case with Value Line) whereas others break buy and sell recommendations into sub classes (strong buy, weak buy). What this allows them to do is not only rate stocks with more gradations, but also to send sell signals without ever saying the word. Thus, an analyst downgrading a stock from a strong buy to a weak buy is sending a sell signal on the stock.

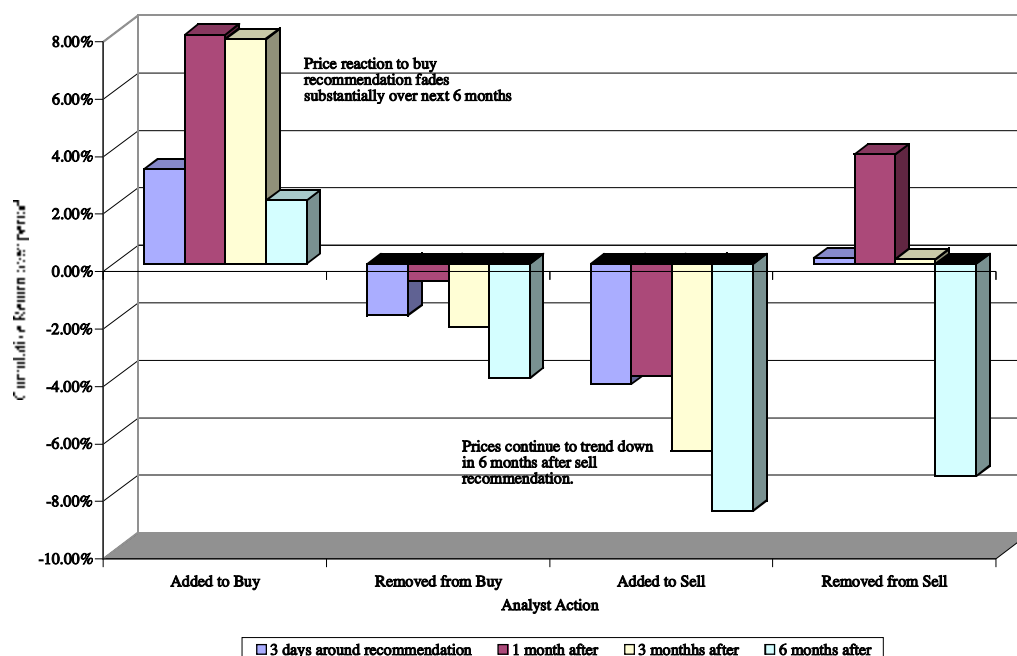
As with earnings forecasts, there is herd behavior when it comes to recommendations. Thus, when one analyst upgrades a stock from a weak buy to a strong buy, there tends to be a rush of other analyst upgrades in the following days.

The Market Reaction to Recommendations

How do markets react to recommendations made by analysts? You can examine the stock price response to buy and sell recommendations on the day of the recommendation and in the weeks following. While both buy and sell recommendations affect stock prices, sell recommendations affect prices much more than buy recommendation.²¹ This should not be surprising when you remember that buy recommendations vastly outnumber sell recommendations. Interestingly, the price effect of buy recommendations tends to be immediate and there is no evidence of price drifts after the announcement, whereas prices continue to trend down after sell recommendations. Figure 13.3 graphs the findings.

²¹ Womack, K., 1996, *Do brokerage analysts' recommendations have investment value?* Journal of Finance, v51, 137-167.

Figure 13.3: Price Reaction to Analyst Recommendations



Data from Womack. The stocks are categorized based upon changes to recommendations made by analysts following the stock.

Stock prices increase by about 3% on buy recommendations whereas they drop by about 4% on sell recommendations at the time of the recommendations (three days around reports). In the six months following, prices decline an additional 5% for sell recommendations, while leveling off for buy recommendations.

Can you make money off analyst recommendations? The answer seems to be yes, at least in the short term. Even if there were no new information contained in recommendations, there is the self-fulfilling prophecy created by clients who trade on these recommendations, pushing up stock prices after buy recommendations and pushing them down after sell recommendations.²² If this is the only reason for the stock price reaction, though, the returns are not only likely to be small but could very quickly dissipate, leaving you with large transactions costs and little to show for them.

²² This can be a significant factor. When the *Wall Street Journal* publishes its Dartboard column, it reports on the stocks being recommended by the analysts its picks. These stocks increase in price by about 4% in the two days after they are picked but reverse themselves in the weeks that follow.

III. Investment Advisors and other Experts

Insiders and analysts are but two players in a very crowded market place of ideas for investors. There are investment advisory newsletters that purport to pick the best stocks in the market, investment advisory services such as Value Line and Morningstar that offer their own proprietary stock picking advice (for a modest cause) and the ubiquitous talking heads on television, who claim to have found an inside track to investment success. Rather than revisit all of the research ever done of the success (or lack thereof) of this expert advice, you can summarize the evidence as follows:

There are few examples of long term and consistent stock picking success among investment advisors and experts. Investment newsletters that claim to use proprietary stock selection models to pick stocks often have little to back up their claim that they pick better stocks. An analysis of more than 153 active newsletters tracked by the Hulbert Financial Digest finds little evidence of stock picking skill, even before adjusting for transactions costs.²³ Given that many of these newsletters require frequent trading, the returns to an investor who followed their advice would undoubtedly be even worse. There are a few exceptions. A number of studies²⁴ that have found that Value Line, one of the oldest investment advisory services, has had some success in identifying good stocks with its rankings.²⁵

Even among those investment advisory services that seem to offer good investment advice (like Value Line), there is a significant “implementation shortfall”. In other words, there is a big gap between the returns on paper and the actual returns that you would earn on a real portfolio. An examination of the Value Line rankings from

²³ Metrick, A., 1999, Performance Evaluation with Transactions Data: The Stock Selection of Investment Newsletters, *Journal of Finance*, v54, 1743-1775. This study examined the returns you would have made as an investor if you followed the investment advice in these newsletters. He used a variety of models to adjust for risk and came to the same conclusion (that you could not have made money following the advice in the newsletters) with every model.

²⁴ One of the earliest was by Fischer Black, titled *Yes, Virginia, There is Hope: Tests of the Value Line Ranking System* (Financial Analysts Journal, v29, 10-14). As an avid believer in efficient markets, Black was surprised to see that following the Value Line rankings would have generated excess returns. A more recent study by Choi in 2000 came to the conclusion that while the Value Line rankings make some excess returns, these excess returns do not survive transactions costs. (Choi, J.J., *The Value Line Enigma: The Sum of the Known Parts*, *Journal of Financial and Quantitative Analysis*, v35).

²⁵ Value Line categorizes firms into five classes in terms of what it calls timeliness, with one being best and five being worst.

1979 to 1991 indicated that while the paper portfolio of the best stocks (timeliness of one) generated 26.2% in annual returns, an investor who bought the same stocks would have earned only 16.1% a year. In fact, a fund created by Value Line in the 1980s to follow its own advice, significantly underperformed the paper portfolio returns.

Investment advisors who find a successful formula for picking stocks seem to have their greatest success when they first begin offering advice. In the long term, success is self-defeating, since imitators can very quickly eliminate the source of the additional returns. Much of Value Line's initial success can be attributed to its pioneering use of earnings momentum (the rate at which the earnings growth rate change) in its timeliness rankings. Once Value Line succeeded, others started using earning momentum in their stock selection strategies, undercutting its effectiveness as a tool.

Much of the investment advice offered by superstar money managers and analysts in the public press is self-serving, and there is little evidence that investors who read this advice have any success with it. As an example, Barron's, the weekly financial newsmagazine, has a roundtable every year of the most prominent money managers in the country who offer their picks for the best stocks for the coming year. A closer look of these stock picks finds that there is a price run up of about 2% in the two weeks between the recommendation day and the publication day, but no excess returns from the publication date for holding periods from one to three years.²⁶

Crunching the Numbers

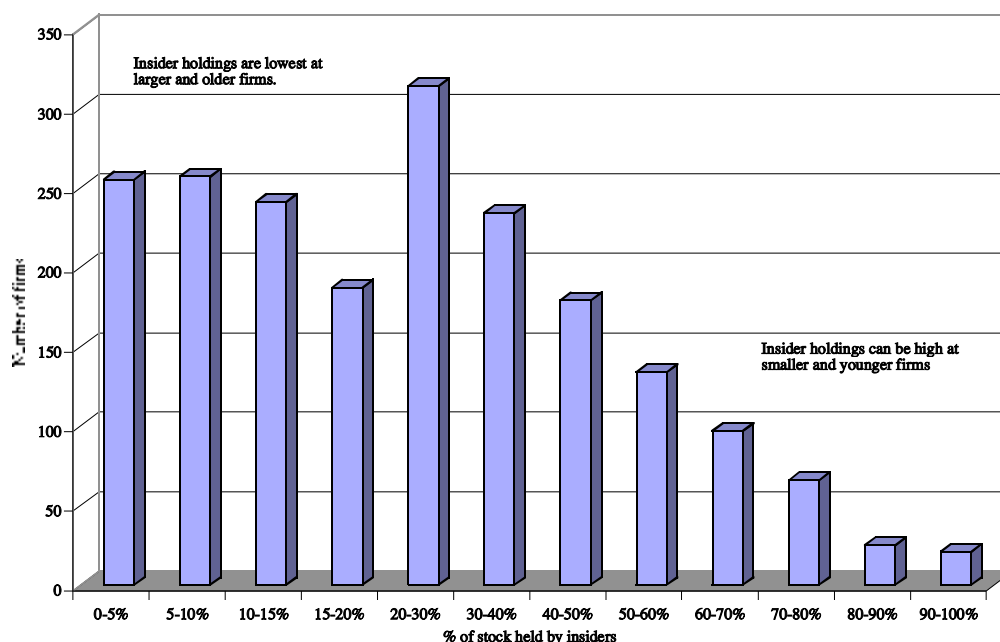
Before you decide to follow the experts and buy stocks after insiders buy and analysts issue buy recommendations, you should take a look at differences across the market and get a sense of how much stock insiders hold at individual companies, and how often they trade, as well as what types of companies are most followed by analysts and the nature of analyst recommendations. In this section, you will look at cross sectional differences in insider trading and analyst following.

²⁶ Desai, H. and P.C.Jain, 1995, *An Analysis of the Recommendations of the Superstar Money Managers at the Barron's Roundtable*", Journal of Finance, v50, 1257-1273. They examined the 1599 buy recommendations contained in the Barron's roundtable publications from 1968 to 1991.

Insider Trading

Using the SEC definition of an insider as a director, manager or employee of the firm, you can compute the percent of stock held in a company by insiders. In companies like Microsoft and Oracle, where the founders still play a role in management and have substantial holdings, you will find insider holdings to be a high percent of the outstanding stock. In Oracle, for instance, Larry Ellison owned in excess of 20% of the outstanding stock of the company in April 2003. In more mature companies that have been in existence for a while, insider holdings are much smaller. In Figure 13.4, you can see the distribution of insider holdings as a percent of outstanding stock across companies in the United States in April 2003:

Figure 13.4: Insider Holdings at US firms



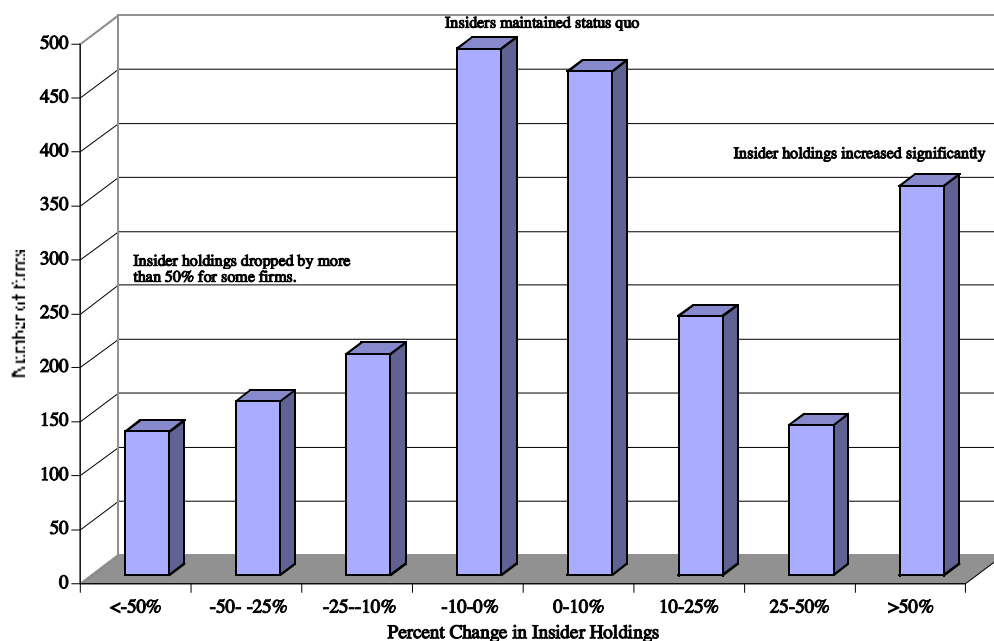
Data from Value Line. The SEC definition of insider includes firm employees and directors and holders of more than 5% of the outstanding stock.

Note that there are a few companies where insiders hold 70, 80 or even 90% of the outstanding stock.

While it is useful to know how much stock in a firm is held by insiders, most investment strategies are based upon changes in insider holdings. But do insiders trade often enough for this to be the basis of an investment strategy? To answer this question, the percent change in insider holdings at each U.S. companies was computed in the 12-week

period from January to March 2003 and the distribution of these changes is graphed in Figure 13.5:²⁷

Figure 13.5: Change in insider holdings - January to March 2003



Data from Value Line. This is the percent change in insider holdings over a 12-month period.

Even over a three-month period, the insider holding changes significantly at least at some firms. For instance, the insider holdings increased by more than 50% in about 375 firms and dropped by more than 50% in about 150 firms between January and March of 2003.

Analyst Recommendations and Revisions

There are hundreds of analysts on Wall Street and elsewhere tracking U.S. companies but not all companies attract the same amount of attention. This section begins with a look at differences in analyst following across companies and continues by examining how often analysts make buy and sell recommendations, how often they change these recommendations and how frequently they revise earnings estimates.

²⁷ To be clear, if insider holdings increase from 4% of outstanding stock to 5%, it is categorized as a 25% increase in holdings.

Who do analysts follow?

The number of analysts tracking firms varies widely across firms. At one extreme are firms like GE, Cisco and Microsoft that are followed by dozens of analysts. At the other extreme, there are hundreds of firms that are not followed by any analysts. Why are some firms more heavily followed than others? These seem to be some of the determinants:

Market Capitalization: The larger the market capitalization of a firm, the more likely it is to be followed by analysts. In fact, this fact was posited as one possible reason for the excess returns earned by small cap companies over time.

Institutional Holding: The greater the percent of a firm's stock that is held by institutions, the more likely it is to be followed by analysts. The open question, though, is whether analysts follow institutions or whether institutions follow analysts. Given that institutional investors are the biggest clients of equity research analysts, the causality probably runs both ways.

Trading Volume: Analysts are more likely to follow liquid stocks. Here again, though, it is worth noting that the presence of analysts and buy (or sell) recommendations on a stock may play a role in increasing trading volume.

Analyst Recommendations

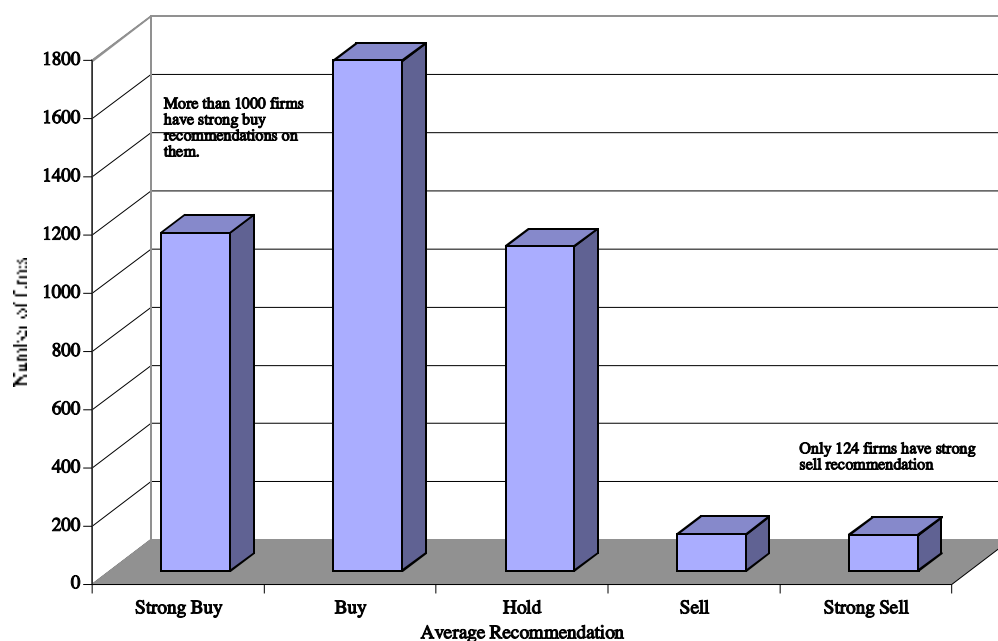
Analyst recommendations take different forms. While some analysts categorize stocks simply into buy, sell and hold groups, most analysts categorize stocks into more groups; one common variation is to put stocks into strong buy, buy, hold, sell and strong sell groups. The bias towards buy recommendations is well established on the street. There are a couple of ways you can see this bias. You could compute the average recommendation across all analysts following a stock and look at how many stocks fall into each category. In Figure 13.6, this distribution is presented for U.S. stocks in April 2003.²⁸

²⁸ Consider a stock with five analysts. If three analysts have a strong buy recommendation and two have buy recommendation, you would assign a score of 1 to each of the strong buy recommendations and a score of 2 to each of the buy recommendations. The weighted score for this stock would be 1.4.

Weighted score = $(1 \times 3 + 2 \times 2) / 5 = 1.4$

This stock would be categorized as a strong buy. If the weighted score had been 1.6, the stock would be categorized as a buy.

Figure 13.6: Average Recommendation - U.S. Stocks in April 2003

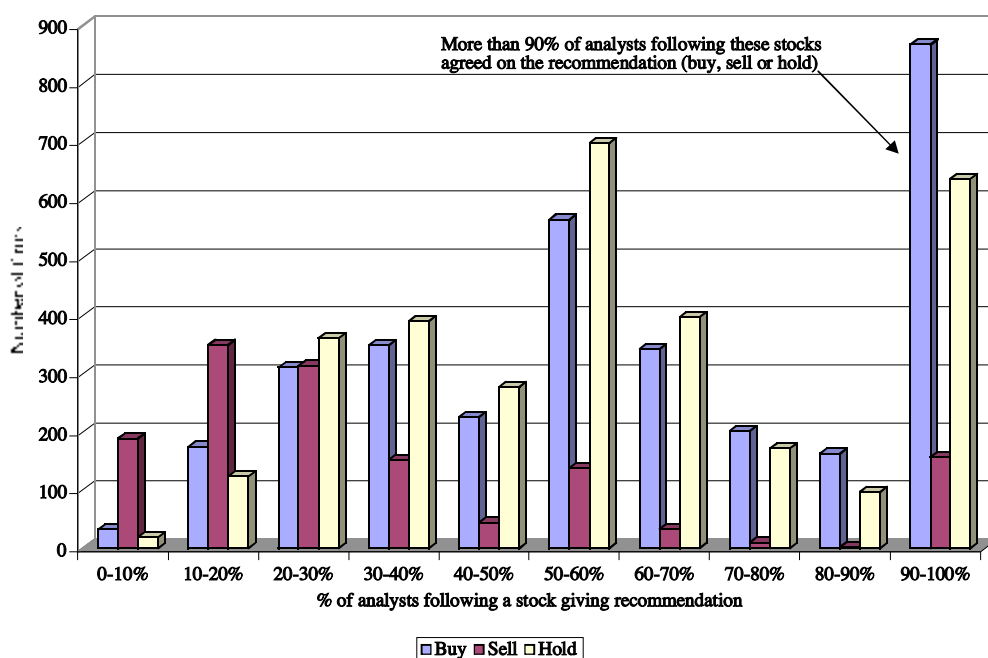


Data from Zacks. The recommendations of individual analysts are aggregated and consolidated into a consensus recommendation for each stock.

Of the more than 4000 stocks that were followed by analysts, less than 300 had sell and strong sell recommendations on them. In contrast, almost 3000 firms had buy and strong buy recommendations.

Looking at recommendations across analysts following a stock and categorizing them in percentage terms into buy, hold and sell recommendations is another way that you can see the bias towards buy recommendations. In Figure 13.7, this statistic is reported across all firms in the United States in April 2003.

Figure 13.7: Recommendation breakdown for individual stocks



Data from Zacks. This graph represents the percentage of analysts following each stock who have buy, sell and hold recommendations on the stock. With each stock, the percentages should add up to 100%.

Here again, the contrast between buy and sell recommendations is clearest when you look at the two ends of the distribution. There are almost 900 stocks where more than 90% of the analysts following the stocks made buy recommendations; in contrast, there were less than 20 stocks where less than 10% of the analysts had buy recommendations on the stock. With sell recommendations, the reverse holds true.

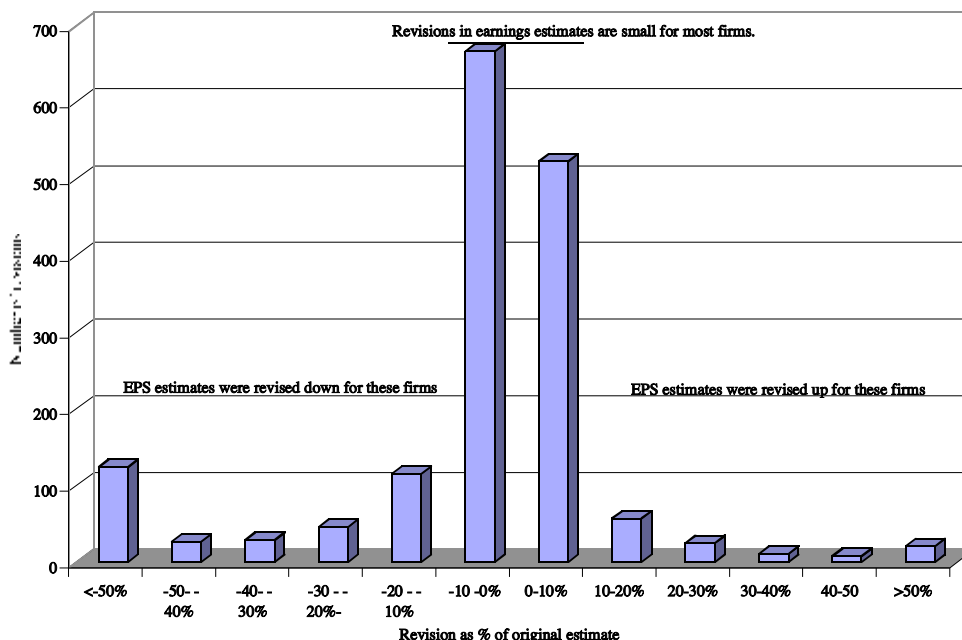
Analyst Earnings Estimates

In addition to making recommendations on stocks, analysts estimate earnings per share in advance of earnings reports. As noted in the last section, upward revisions in these earnings estimates may be a potent signal of future price increases.

How often do analysts revise earnings estimates and how big are these revisions? To answer this question, all earnings estimate revisions made in a four-week period in March 2003 were examined. These revisions were being made in advance of the first quarter earnings reports that would be made in April 2003. Figure 13.8 reports on the percentage

change in consensus estimates of earnings per share during this four-week period for all U.S. stocks tracked by analysts.

Figure 13.8: Revision in Quarterly Earnings Estimate - February 2003-March 2003



Data from Zacks. These represent the percentage changes in revisions in consensus earnings estimates for firms tracked by analysts.

Looking at Figure 13.8, the first fact is that the changes in earnings forecasts are fairly small for most companies – note that the consensus earnings estimate is changed by less than 10% (plus or minus) for about 70% of the sample. There are, however, a large number of firms where the estimate revisions are much more substantial. The earnings estimate increased by more than 50% for more than 100 firms. These are the firms that you presumably would invest in if you followed an earnings momentum strategy.

A Portfolio of “Expert” Stocks

If you were to incorporate all of the findings in this chapter into a portfolio, you would want to buy stocks where both insiders and analysts are optimistic about the stock. To create such a portfolio, you would need to screen for at least the following:

- *Positive Analyst recommendations:* Notwithstanding the fact that buy recommendations are far more frequent than sell recommendations, only stocks where more than 80% of the recommendations are buy recommendations are

considered for the portfolio. Since stocks with only one or two analysts may qualify too easily for this portfolio, only stocks with more than three buy recommendations were considered. Finally, only stocks that have been upgraded by at least one analyst in the last week are considered, since it is changes in recommendations that seem to carry weight with investors.

- *Recent upward earnings revisions:* It is recent revisions in earnings estimates that matter. In keeping with this objective, only firms where earnings estimates have been revised upwards in the four weeks prior to the screening date are considered.
- *Net Insider buying:* Only stocks where insiders were buying more shares than they were selling (in the three months prior to the screening date) are considered in the sample.

The resulting portfolio of 16 stocks, based upon data available on April 15, 2003 is reported in Table 13.1:

Table 13.1: Companies with Insider Buying & Optimistic Analysts

<i>Company name</i>	<i>Current price</i>	<i># Rating Strong Buy or Buy</i>	<i># Rating Hold</i>	<i># Rating Strong Sell or Sell</i>	<i>Revision in Earnings Estimate: Last 4 weeks</i>	<i>Increase in insider holdings: last quarter</i>
AMGEN INC	\$59.54	24	3	0	0.33%	17.48%
APPLEBEES INTL	\$28.09	12	6	0	0.14%	47.30%
BIOMET	\$28.86	13	6	1	0.50%	1.80%
ANHEUSER BUSCH	\$47.23	9	6	0	0.01%	4.12%
CORINTHIAN COL	\$39.66	6	2	0	1.29%	5.54%
COGNIZANT TECH	\$20.16	10	2	1	1.15%	155.60%
DONALDSON CO	\$39.69	3	2	0	2.42%	3.69%
EBAY INC	\$88.41	9	4	0	3.75%	10.93%
EXPRESS SCRIPTS	\$54.53	13	3	1	0.15%	139.09%
HOT TOPIC INC	\$22.77	14	3	0	0.12%	39.57%
HUTCHINSON TECH	\$24.22	4	1	1	0.43%	12.46%
MEDTRONIC	\$46.65	18	9	0	0.15%	2.00%
MERRILL LYNC&CO	\$39.75	11	7	0	2.43%	10.13%
ALTRIA GROUP	\$31.70	7	2	1	0.20%	22.95%
PEETS COFFE&TEA	\$15.65	5	1	0	1.67%	8.66%
PFIZER INC	\$31.36	24	4	0	0.35%	4.24%
BOSTON BEER INC	\$11.31	3	0	0	160.00%	500.00%
USA INTERACTIVE	\$27.69	13	1	0	57.26%	0.01%
WILLIAMS-SONOMA	\$23.05	10	6	0	2.39%	333.33%
ZIMMER HOLDINGS	\$44.70	12	7	0	0.69%	362.47%

Note that most of these are liquid and widely held stocks. This is largely the result of the requirement that was imposed that only firms with at least three buy recommendations would be considered for the portfolio. The percent changes in insider holdings also have to be considered with caution since many of the bigger increases (in percentage terms) occur in firms with small insider holdings.

The Rest of the Story

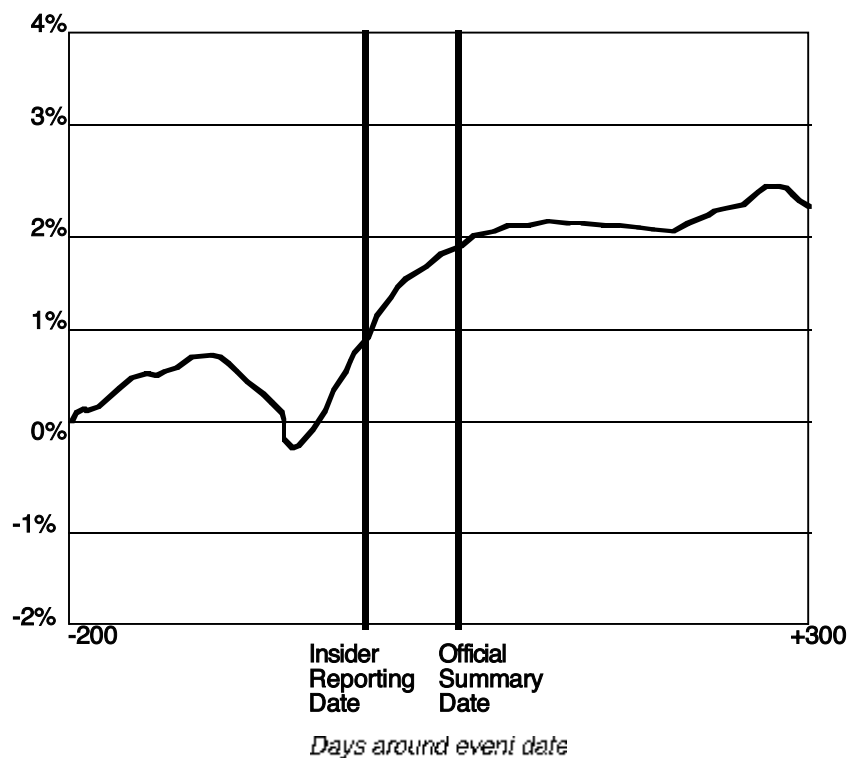
What can go wrong when you follow the experts? There are many potential problems but this section will focus on the most important problems with each of the three screens you looked at in the last section – insider trades, estimate revisions and analysts recommendations.

Following Insiders: Timing is everything

If insider trading offers advance warning, albeit a noisy one, of future price movements, can outside investors use this information to make better investment decisions? In other words, when looking for stocks to buy should you consider the magnitude of insider buying and selling on the stock? To answer this question, you first have to recognize that since the SEC does not require an immediate filing of insider trades, investors will find out about insider trading on a stock with a delay of a few weeks or even a few months. In fact, until recently, it was difficult for an investor to access the public filings on insider trading. As these filings have been put online in recent years, this information on insider trading has become available to more and more investors.

An examination of the excess returns around both the date the insiders report to the SEC and the date that information becomes available to investors in the official summary presents an interesting contrast, summarized in Figure 13.9.

Figure 13.9: Abnormal Returns around Reporting Day/ Official Summary Availability Day



The insider reporting date is the date on which the insider files with the SEC. The actual trade may precede this date by a few weeks. The official summary date is the date the insider filing is made public.

Given the opportunity to buy on the date the insider reports to the SEC, investors could have marginal excess returns (of about 1%), but these returns diminish and become close to zero if investors are forced to wait until the official summary date. If you control for transactions costs, there are no excess returns associated with the use of insider trading information.²⁹

It is possible that as more and more companies make their filings online, investors will be able to find out about insider trades sooner. It is not clear, though, that will translate into higher returns since all investors will have access to this data. The key to success when following insiders is timely trading. Investors may well find that imperfect indicators of insider trading such as jumps in trading volume may offer more promise than waiting for the SEC filings to be made public.

²⁹ This is also the conclusion drawn by Seyhun (1986) and Rozeff and Zaman (1988), referenced earlier in the chapter.

Earnings Revisions

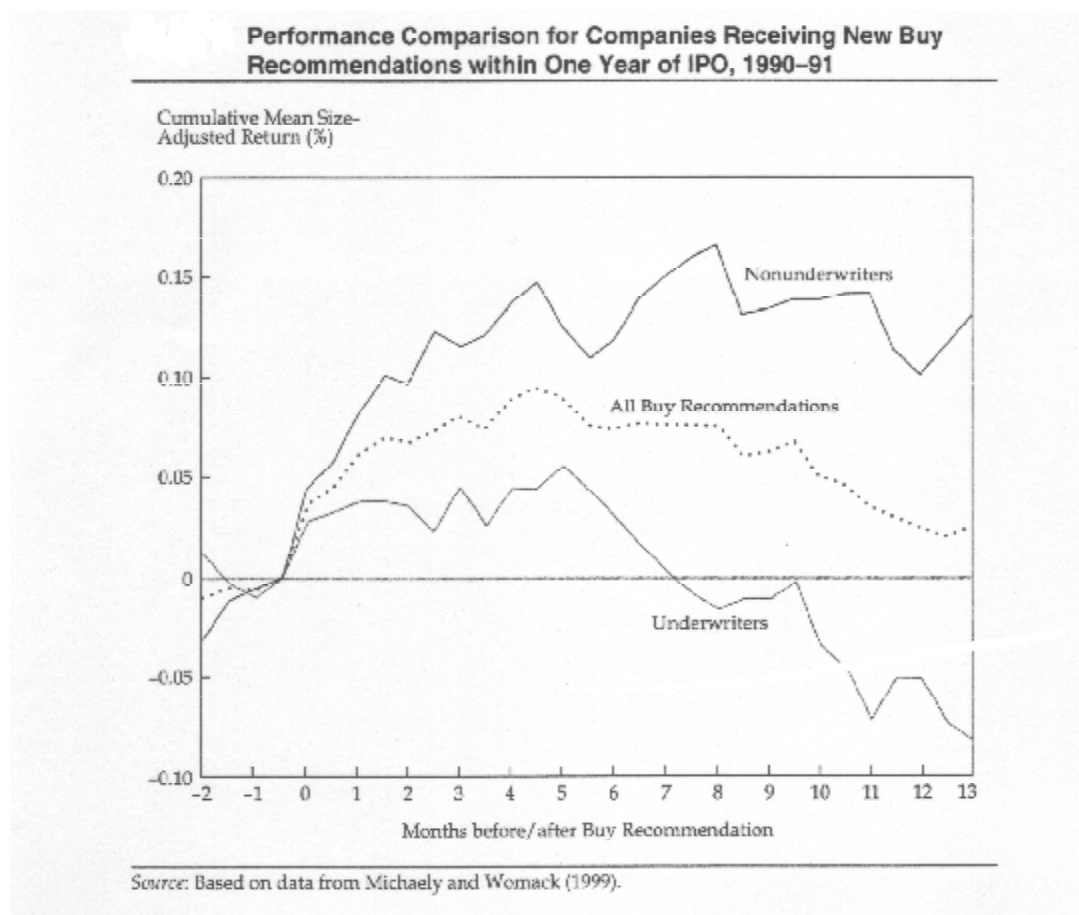
The limitation of an earnings momentum strategy is its dependence on two of the weakest links in financial markets – earnings reports that come from firms and analyst forecasts of these earnings. In recent years, investors have become increasingly aware not only of the capacity of firms to manage their earnings but also to manipulate them using questionable accounting ploys. At the same time, investors have discovered that analysts' forecasts are biased not only by their closeness to the firms they follow but also because of their investment banking relationships. To the extent that analysts influence trades made by their clients, they are likely to affect prices when they revise earnings. The more influential they are, the greater the effect they will have on prices, but the question is whether the effect is lasting. If earnings numbers are being manipulated by firms and analysts are biased in their estimates, price changes around earnings estimate revisions are likely to be fleeting.

Trading on earnings estimate revisions is a short-term strategy that yields fairly small excess returns over investment horizons ranging from a few weeks to a few months. The increasing skepticism of markets towards both earnings reports from firms and forecasts by analysts bodes ill for these strategies. While forecast revisions and earnings surprises by themselves are unlikely to generate lucrative portfolios, they can augment other more long-term screening strategies. One way you may be able to earn higher returns from this strategy is to identify key analysts who are both independent and influential and build an investment strategy around forecast revisions made by them, rather than looking at consensus estimates made by all analysts.

Analyst Recommendations

One of the key issues that equity research analysts were confronted with in the aftermath of the bursting of the dot-com bubble is the extent to which recommendations were perceived to be driven not by views on the stock itself but as cheerleading for investment banking business done by the firms followed by the analysts. A test of this proposition³⁰ looks at the stock price performance of buy recommendations after initial public offerings and compares recommendations made by analysts who work for the underwriters on these offerings to recommendations from analysts who do not. The findings are summarized in Figure 13.10:

³⁰ Michaely, R. and K.L. Womack, *Conflicts of Interests and the Credibility of Underwriter Analysts Recommendation*, Review of Financial Studies, Winter, 635-686.



Note that stock prices for recommendations made by non-underwriters do significantly better than the market, but the stocks recommended by underwriters (in those stocks) tend to do poorly. While this may seem obvious, many investors in the late nineties deliberately overlooked the connections between analysts and the firms that they analyzed and paid a significant price for it.³¹

To incorporate analyst recommendations into an investment strategy, you need to adopt a nuanced approach. You should begin by identifying the analysts who are not only the most influential but also have the most content (private information) in their recommendations. In addition, you may want to screen out analysts where the potential conflicts of interest are too large for the recommendations to be unbiased. How does one go

³¹ In June 2002, Merrill Lynch agreed to pay \$ 100 million to settle with New York State, after the state uncovered emails sent by Henry Blodgett, Merrill's well-known internet analyst, that seemed to disparage stocks internally as he was recommending them to outside clients. The fact that many of these stocks were being taken to the market by Merrill added fuel to the fire. Merrill agreed to make public any potential conflicts of interest it may have on the firms followed by its equity research analysts.

about finding the best analysts following a stock? Do not fall for the hype. The highest profile analysts are not always the best and some analysts are notorious for self-promotion. The best sources of information on analysts tend to be outside services without an axe to grind. For instance, the *Wall Street Journal* has a special section on sell-side equity research analysts, where it evaluates analysts on the quality of their recommendations and ranks them on that basis. There are a few online services that track equity research forecasts and recommendations and report on how close actual earnings numbers were to their forecasts. There are qualitative factors to consider as well. Analysts who have clear, well thought out analyses that show a deep understanding of the businesses that they analyze should be given more weight than analysts who make spectacular recommendations based upon facile analysis. Most importantly, good analysts should just as willing to stand up to the management of companies and disagree with them (and issue sell recommendations).

Once you have identified the analysts that you trust, you should invest based upon their recommendations, preferably at the time the recommendations are made.³² Assuming that you attach credence to the views of these analysts, you should also watch the analysts for signals that they have changed or are changing their minds. Since these signals are often subtle, you can easily miss them.

Lessons for Investors

If you decide to follow the experts, the evidence presented in this chapter provides some pointers on how you can improve your odds of success:

- *Pick your experts well:* Some insiders are more inside than others and some analysts are more credible than others. The key to an expert-based strategy is to separate the true experts from the charlatans. In the case of insiders, this may mean tracking some insiders (CEOs and directors) more closely than others. With analysts, you may want to look at their history when it comes to revisions and recommendations. Earnings revisions by analysts who have a history of forecasting earnings accurately should be weighted more than analysts who do not have this reputation.
- *Screen for bias:* Analysts often have multiple objectives and a buy recommendation from an analyst may sometimes have more to do with maintaining access and investment banking deals than with whether the stock is a good buy. There are two possible screens for bias. One is to consider only analysts who work for entities that

³² This might not be your choice to make since analysts reveal their recommendations first to their clients. If you are not a client, you will often learn about the recommendation only after the clients have been given a chance to take positions on the stock.

have no business relationship with the companies that they analyze. The other is to look at the track record of the analyst. Analysts who have a history of standing up to company management and issuing sell recommendations have more credibility than analysts who always seem to find only good things to say about the companies they analyze.

- *Look for clues of forthcoming activity:* With both insider trading and analyst recommendations, a large portion of the price run-up precedes the actual news (insider filing with the SEC or analyst changing a recommendation). While there are no foolproof early warning systems, you can look at trading volume to get a measure of upcoming news. Trading volume will often jump as a result of insider trading, especially in lightly traded companies.
- *Track closely:* It goes without saying that you should be in possession of insider trading information or analyst recommendations as soon as feasible. This may require an investment in better information systems. For instance, there are paid services that cull through SEC insider filings as soon they are made, and provide quick summaries to clients within a few minutes.
- *Trade quickly:* Once you find out insiders have been buying a stock or that a top analyst has upgraded a stock, you will need to trade quickly. If you want to do other analysis – check pricing multiples or do a discounted cashflow valuation – you should have done this before the fact. For instance, if you want to buy only stocks that trade at less than 20 times earnings, you should screen for those stocks first and prepare a list of companies that meet this criterion. If there is news about insider buying or analyst upgrades with these stocks, you can immediately add them to your portfolios.

Conclusion

There are probably more experts, real and self-proclaimed, in the investment business than in any other. They write columns for the financial press, appear on television and write books on how to get rich quickly. Investors follow their advice, content in the belief that these experts know more than they do and are therefore less likely to make mistakes.

Expert status can come either from access to better information than is available to other investors or to better processing (models, indicators etc.) of the same information that others possess. Insiders at firms – top managers and directors – should be able to lay claim the information advantage and the evidence suggests that they are able to use it to advantage. Stocks with significant insider buying are much more likely to go up than stocks with

substantial insider selling. The time lag between insider trading and reporting makes it more difficult for individual investors to replicate their success. Analysts affect stock prices when they make recommendations on which stocks to buy and which to sell and when they revise estimates of how much these firms will earn in the next quarter. In either case, the bulk of the reaction occurs on the recommendation/revision but there is evidence of a price drift after the announcement. In other words, prices tend to continue to increase in the days or weeks after a buy recommendation or an upward revision in earnings. Analysts with more investor following and credibility have a bigger price impact than less followed analysts with clear conflicts of interest.

As investors, you should focus on the real experts (inside insiders and unbiased analysts), track their words and actions closely and trade promptly after you find out their views. If you succeed, you will have a short-term investment strategy with high transactions costs but your returns will cover these costs and leave you with a profit.

CHAPTER 14

IN THE LONG TERM... MYTHS ABOUT MARKETS

If you wait long enough...

Sarah was a patient woman. She believed that good things came to those who waited long enough, and she was therefore not upset when she opened up the statements from her broker and discovered that she had lost 20% over the previous year on her pension fund investments. "It is only a paper loss," she told herself, "and stocks always come back in the long term." In fact, she had read somewhere that stocks had never done worse than bonds over any ten-year period in history and that stocks tended to bounce back after bad years. Since she had thirty years left to retirement, she did not feel worried about her losses.

Sarah's faith in the long term was shaken when she talked to her good friend, Kazumi Kawamoto. Kazumi had grown up in Japan and had been saving for retirement in the Japanese stock market. She had accumulated a substantial amount in her portfolio by 1989 and was looking forward to early retirement a decade later. Unfortunately, the market plummeted in the 1990s and her portfolio declined in value by 75% over the next 15 years. Comforted at every stage by brokers who told her that stocks always won in the long term, Kazumi was now confronted with the reality that she would never make her money back and that early retirement was not an option. Realizing that stocks can lose even in the very long term, Sarah moved some of her retirement money into bonds.

Moral: Stocks don't always win in the long term.

The chapters so far have looked at sales pitches that revolve around picking the best stocks in the market but the most powerful investment myths in investing are about the overall stock market. In this chapter, you will consider a few of these myths and the damage that believing in them can do to investors. The first and most deadly myth is that stocks always beat bonds in the long term. Following this line of reasoning, stocks become riskless to investors with long time horizons. The second myth is that market timing beats stock picking when it comes to stock returns. Buying into this belief, investors spend far more time than they should thinking about which way the market is going to move and too little picking the right stocks for their portfolios. The third myth is that market timing is easy to do and that there are lots of investors who are successful market timers.

The Core of the Story

Hindsight is the most powerful weapon in the arsenal of those selling market timing. Consider, they say, how much money you could have made if you had bought into the

NASDAQ in 1992 and got out at the end of 1999. The essence of market timing is that it lets you capture upside risk, and avoid the downside risk. This section will look at three widely made claims about timing equity markets.

Stocks always win in the long term

There are many investment advisors and experts who claim that while stocks may be risky in the short term, they are not in the long term. In the long term, they argue, stocks always beat less risky alternatives. As evidence, they point to the history of financial markets in the United States and note that stocks have earned a higher return than corporate or treasury bonds over any twenty-year period that you look at since 1926. They then draw the conclusion that if you have a long enough time horizon (conservatively, this would be 20 years), you will always generate a higher ending portfolio value investing in stocks than in alternatives.

It is not just individual but also professional investors who have bought into this sales pitch. Following these pied pipers of equity, younger workers have invested all of their pension fund savings in stocks. After all, a 35 year-old investor will not be accessing her pension fund investment for another 30 years, a time horizon that should make stocks essentially riskless. Companies have reconfigured the contributions they make to pension plans on the assumption that pension plans will be invested predominantly or entirely in equities. By making this assumption of higher equity returns, they are able to lower their contributions and report higher earnings. State and local governments have used the same assumptions to meet budget constraints.

Aggravating the problem is the shifting definition of long term. While a conservative advisor may mean 20 years or longer when he talks about long term, more aggressive investors and advisors reduce this number, arguing that while stocks may not beat bonds over every 5-year or 10-year period in history, they come out ahead so often (again based upon the data from the U.S. equity markets in the twentieth century), they are safe. During bull markets, investors are all too willing to listen and invest a disproportionately large amount of their savings, given their ages and risk preferences, in equities. It should come as no surprise that books and articles pushing the dominance of equity as an investment class peaked in 1999 at the height of one of the great bull markets of all time.

Market timing trumps stock selection

In a 1986 article, a group of researchers¹ raised the shackles of many an active portfolio manager by estimating that as much as 93.6% of the variation in quarterly performance at professionally managed portfolios could be explained by asset allocation, i.e., the mix of stocks, bonds and cash at these portfolios.² A different study in 1992 examined the effect on your annual returns of being able to stay out of the market during bad months.³ It concluded that an investor who would have missed the 50 weakest months of the market between 1946 and 1991 would have seen her annual returns almost double from 11.2% to 19%. In an assessment of the relative importance of asset allocation and security selection of 94 balanced mutual funds and 58 pension funds, all of which had to make both asset allocation and security selection decisions, about 40% of the differences in returns across funds could be explained by asset allocation decisions and 60% by security selection.⁴ When it comes to the level of returns, almost all of the returns can be explained by the asset allocation decision. Collectively, these studies suggest that the asset allocation decision has important consequences for your returns, and its importance increases with your time horizon.

While how much of actual portfolio returns are due to asset allocation is open to debate, there can be no denying that market timing has a much bigger and speedier payoff than stock selection. It should come as no surprise that investors who have been disappointed with their stock selection skills turn to or at least try market timing in the hope of earning these high returns. Professional money managers are not immune from the allure of market timing either. To the extent that mutual fund managers believe that they can time stock markets, they will adjust how much they hold in cash and stocks. Thus, a portfolio manager who believes that the stock market is over valued and is ripe for a correction will hold a substantial portion of her portfolio in cash.

¹ Brinson, G.L. R. Hood, and G. Beebower, 1986, *Determinants of portfolio performance*, Financial Analysts Journal, July-August, 39-44.

² This is a much quoted and misquoted study. A survey by Nuttall and Nuttall found that of 50 writers who quoted this study, 37 misread it to indicate that 93% of the total return came from asset allocation. (Nuttall, J.A. and J. Nuttall, 1998, *Asset Allocation Claims - Truth or Fiction?*, Working Paper.)

³ Shilling, A. Gary. *Market Timing: Better Than a Buy-And-Hold Strategy*, vol. 48, no. 2 (March/April 1992): 46-50.

⁴ Ibbotson, R. and Kaplan, P., 2000, *Does asset allocation explain 40, 90, or 100 per cent of performance?*, Financial Analysts Journal, January-February.

Market timing works

There is a widely held belief that there are lots of indicators that predict future market movements. Some of these indicators are crude but have popular appeal. A common example shows up every January around the time of the Super Bowl. If a team from the old American Football Conference wins the Super Bowl, you will be told, it will be a bad year for the stock market. Other indicators are more sophisticated and follow economic logic. If markets are driven by the economy and interest rates, it seems logical that you should be able to use the level of interest rate or the rate of growth in Gross Domestic Product to forecast what will happen to the market in the following period. Still others are based upon extending measures that work for individual companies. If companies that trade at low multiples of earnings are cheap, then markets that trade at low multiples of earnings, relative to other markets or their own history, must also be cheap. Whatever the indicator, though, the underlying thesis is that it can be used to decide when to go into stocks and when to get out.

Closely linked to these indicators is the assumption that there are other investors out there who are successful at market timers. This explains the attention that market strategists at investment banks attract when they come out with their periodic views on the right asset allocation mix; the more bullish (bearish) a strategist, the greater (lesser) the allocation to equities. This also explains why the dozens of investment newsletters dedicated to market timing continue to prosper.

Why are so many investors willing to believe that market timing works? It may be because it is so easy to find market-timing indicators that work on past data. If you have a great deal of historical data on stock prices and a powerful enough computer, you could potentially find dozens of indicators (out of the hundreds that you try out) that seem to work. Using the same approach, most market timing newsletters purport to show that following their investment advice would have generated extraordinary returns on hypothetical portfolios over time. It may also be because professional market timers are masters at self-promotion, telling everyone in the market when they are right and fading into the background when they are wrong.

Evidence

To examine the myths about market timing, you have to look at history. Organized equity markets in the United States have been around for more than a century and it is not surprising that much of the work done on market timing is based upon looking at their performance. This section will look at how stocks have done, relative to alternative investments over very long periods. It will follow up by looking at whether the indicators

that purport to time markets and the investors who claim to be market timers actually are successful.

Do stocks always win in the long term?

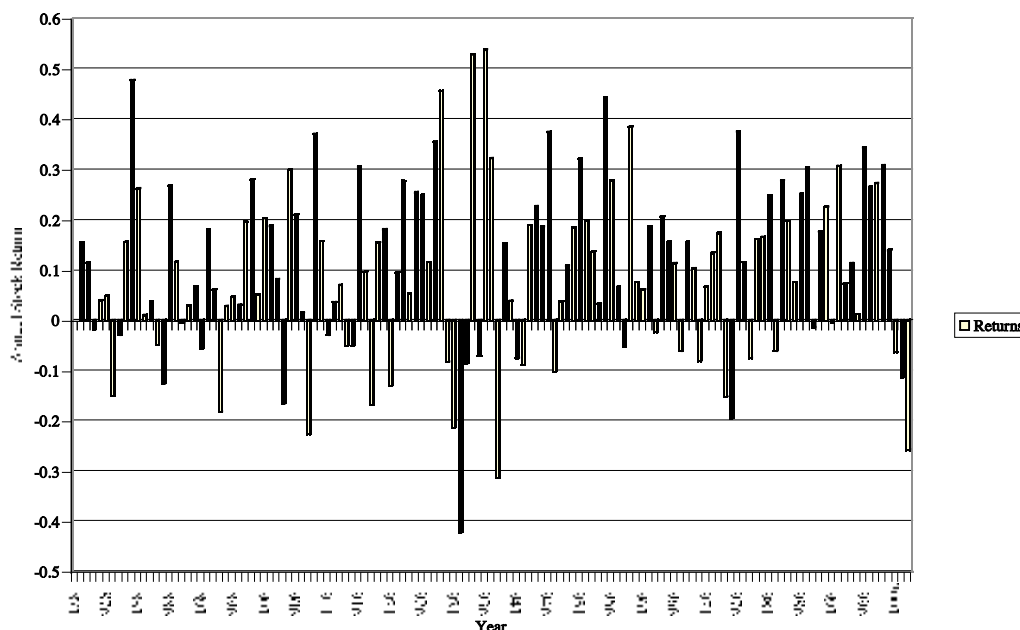
Consider what all investors are told about investing in stocks. If you have a short time horizon, say a year or less, stocks will generate higher expected returns but they are also far riskier than bonds. The risk implies that stocks can do much worse than bonds during the period. If you have a longer time horizon, stocks supposedly become less risky; you can have a bad year where stocks do badly but there will be good years where they more than compensate. Over these longer time horizons, you will be told that stocks almost always do better than less risky alternatives.

This story clearly has some intuitive appeal but does the evidence back it up? The answer provided by those who tell this story is to point to the equity market returns in the United States over the twentieth century. In fact, the most widely used equity market data for the United States comes from a service in Chicago called Ibbotson Associates and covers the U.S. equity market from 1926 to the present. Ibbotson's data suggests that stocks, on average, have about 6 to 7% more than treasury bonds and bills during this period.

To take a closer and more detailed look at equity returns, the period was extended to go back to 1871 and stock returns were examined through the present⁵. Figure 14.1 presents the year-by-year equity returns for the entire period:

⁵ This analysis was made possible the excellent data provided on Robert Shiller's web site.

Figure 14.1: Stock Returns in the United States; 1871- 2002

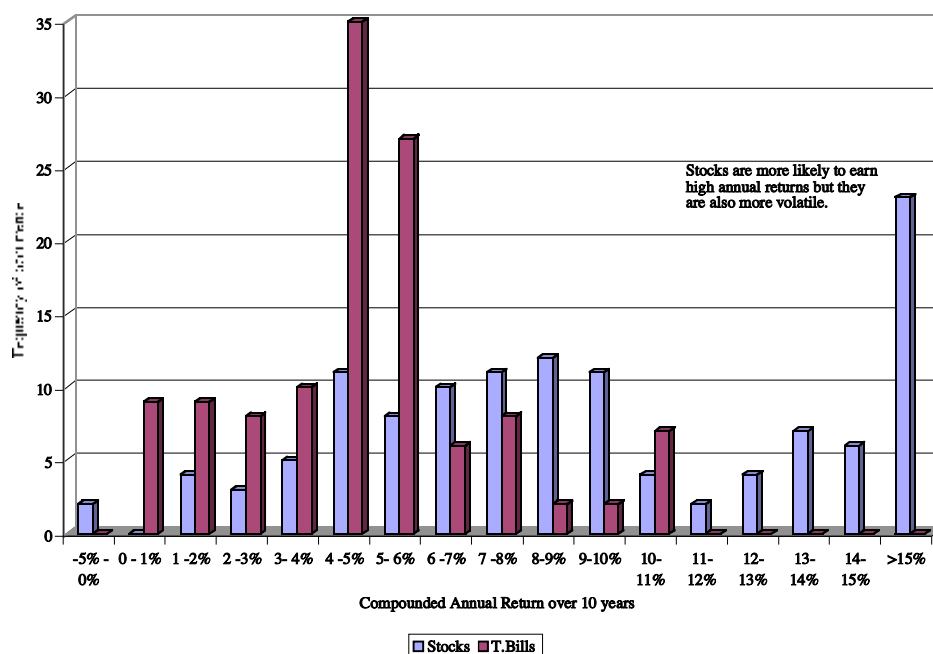


Data from Professor Shiller's web site. These are the annual returns on stocks from 1871 to 2002.

While stocks, across the period, have been on winners, there have been extended periods of market malaise and very negative returns – the early 1930s and the 1970s- and there are many years of negative stock returns. In fact, stock market returns are negative in about one out every four years and are lower than the treasury bill rate one out of every three years.

Proponents of stocks would point out that stocks are risky in the short term but that they are not in the long term. Using 10-year holding periods, the compounded annual returns were computed for every 10-year period beginning in 1871. To allow for the fact that investors could begin investing in any of the intermediate years, overlapping 10-year periods are considered: 1871-81, 1872-82 and so on until 1992-2002. There are 121 overlapping 10-year periods between 1871 and 2002. Figure 14.2 presents the distribution of the compounded annual returns you would have earned over 10-year periods investing in stocks and treasury bills.

Figure 14.2: Annual Returns over 10-year periods - 1871-2002

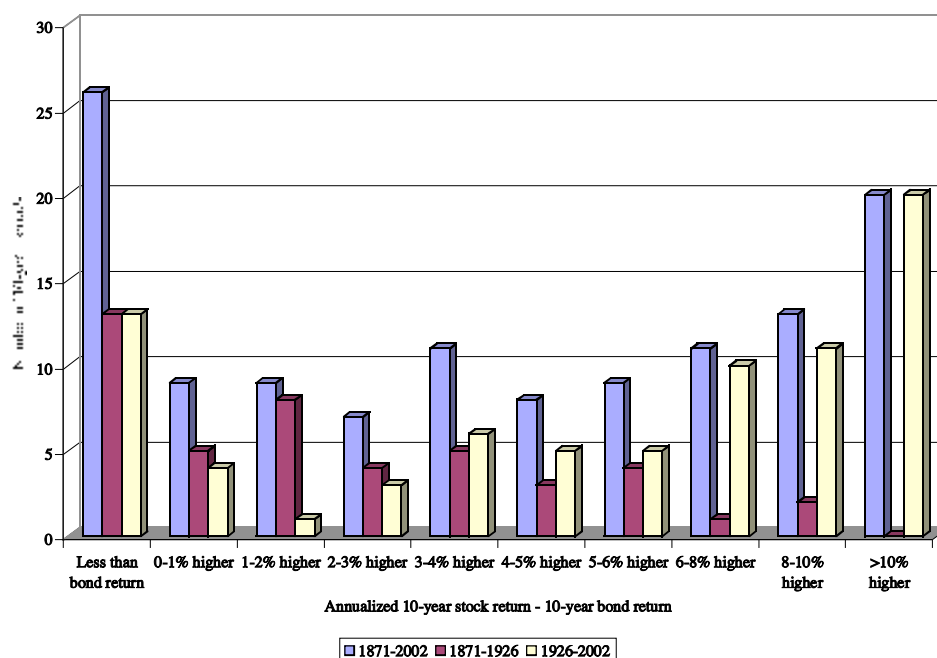


Data from Shiller. The number of years in which returns fell into each return class between 1871 and 2002 is reported for both stocks and treasury bills.

Over ten-year periods, the risk of stocks is smoothed out. There were only two ten-year periods between 1871 and 2002 where the annual return is negative. The contrast in risk between stocks and treasury bills is also visible in Figure 14.2. Treasury bill returns are centered around 4-5%, with the worst 10-year period generating annual returns of between 0 and 1% and the best 10-year period generating annual returns of between 10 and 11%; the best 10-year periods for stocks deliver annual returns in excess of 15%.

Comparing stock returns to bill returns in each 10-year period allows you to make a judgment of the two investment alternatives. In Figure 14.3, the differences in compounded annual returns on stocks and bonds in every 10-year period from 1871 to 2002 are examined to see how often equities deliver higher returns than bills.

Figure 14.3: Stock Returns versus Treasury Bill Returns: Annual returns over 10-year periods



Data from Shiller. This is the difference between the compounded 10-year returns on stocks and the returns on bills computed each year from 1871 and 2002.

There are ninety-five 10-year periods between 1871 and 2002 where stocks have outperformed bills and twenty-six 10-year periods where treasury bills have outperformed stocks. Thirteen of these twenty-six periods occur between 1871 and 1926. Since 1945, there has been only one stretch of time⁶ during the 1970s where stocks have underperformed treasuries.

In summary, there is substantial evidence that stocks in the United States have delivered higher returns than treasury bonds or bills over long time periods, but there are no guarantees. If you consider the longer history of stock and bill returns going back to 1871, stocks do worse than bonds even over 10-year periods about 20% of the time.

Market Timing Works

Most equity investors continue to believe that they can time markets. A substantial portion of the financial press every day is dedicated to presenting the views of market strategists and experts on the future direction of equity markets. In addition, there are

⁶ Stocks did worse than T.Bills in terms of annual returns each of the 10-year periods ending in the late seventies (1974-1980).

dozens of market timing indicators that investors subscribe to, hoping to gain the elusive edge. In this section, you will review the evidence first on market timing indicators and whether they work and then look at the performance of market timers – portfolio managers, market strategists and investment newsletters.

Market Timing Indicators

Market timing indicators run the gamut. At one end of the spectrum are non-financial indicators such as using the winner of the Super Bowl to forecast market movements. At the other end are models that apply to entire markets valuation metrics like PE that are used to price individual stocks. In the middle, are approaches that track trading volume and price patterns – the tools of chartists – to make predictions about future market movements.

Non financial indicators

Through the decades, there are some investors who have claimed to foretell the market's future by looking at non-financial indicators. Some of these indicators, such as whether the NFC or AFC team wins the Super Bowl are clearly of dubious origin and would fall into a category titled spurious indicators. Other indicators such as the hemline index, which relates stock prices to the length of hemlines on skirts, fall into the grouping of “feel good indicators” that measure the overall mood of people in the economy, who after all are both the consumers who act as the engine for the economy and the investors determining prices. Finally, there are the “hype indicators” that measure whether market prices are becoming disconnected from reality.

a. Spurious Indicators

Millions of investors track what happens to their stocks and to the market every day and it is not surprising that they find other occurrences that seem to predict what the market will do in the next period. Consider one very widely talked-about indicator – who wins the Super Bowl.⁷ In the 35 years that the Super Bowl has been played from 1966 to 2001, the winner has come from the National Football Conference (or is an old pre-merger NFL team like the Steelers or Colts) 25 years, and the market has risen in 22 out of the 25 years. In the 10 years that an American Football Conference team has won, the market has fallen seven

⁷ For those unfamiliar with the Super Bowl, it is played between the winner of the American Football Conference (AFC) and the winners of the National Football Conference (NFC). It is played on the last Sunday in January.

times. In fact, there are academic researchers who claim that the success rate of 83% (29 out of 35 years) is far too high to be due to chance.⁸

So why not invest in the market after observing who wins the Super Bowl? There are several potential problems. First, it is not true that chance cannot explain this phenomenon. When you have hundreds of potential indicators that you can use to time markets, there will be some that show an unusually high correlation purely by chance. Second, a forecast of market direction (up or down) does not really qualify as market timing, since how much the market goes up clearly does make a difference. Third, you should always be cautious when you can find no economic link between a market timing indicator and the market. There is no conceivable reason why the winner of the Super Bowl should affect or be correlated with overall economic performance. Indicators such as these may make for amusing anecdotes at parties but can be lethal to your portfolio as market timing devices.

b. Feel Good Indicators

When people feel optimistic about the future, it is not just stock prices that are affected by this optimism. Often, there are social consequences as well, with styles and social mores affected by the fact that investors and consumers feel good about the economy. In the 1920s, you had the Great Gatsby and the go-go years, as people partied and the markets zoomed up. In the 1980s, in another big bull market, you had the storied excesses of Wall Street, documented in books like *Liars Poker* and movies like *Wall Street*. It is not surprising, therefore, that people have discovered linkages between social indicators and Wall Street. Consider, for instance, an index that has been around for decades called the hemline index that finds a correlation between the hemlines on women's skirts and the stock market. This politically incorrect index is based on the notion that shorter dresses and skirts are associated with rising stock prices whereas longer dresses are predictors of stock market decline. Assuming the index works, you would argue that you are seeing a manifestation of the same phenomenon. As people get more upbeat, fashions do seem to get more daring (with higher hemlines following) and markets also seem to go up. You could undoubtedly construct other indices that have similar correlations. For instance, you should expect to see a high correlation between demand at highly priced restaurants at New York City (or wherever young investment bankers and traders go to celebrate) and the stock market.

⁸ Krueger, T. and W. Kennedy, 1991, *An examination of the Superbowl stock market predictor*, Journal of Finance, v45, 691-697.

The problem with feel good indicators, in general, is that they tend to be contemporaneous or lagging rather than leading indicators. In other words, the hemlines don't drop before the markets drop but in conjunction with or after a market drop. As an investor, these indicators are of little use, since your objective is to get out before the market drops and to get in before the market goes up.

c. Hype Indicators

It is said that Joseph Kennedy, a well-known speculator on stocks in his own time, knew it was time to get out of the market when he heard his shoeshine boy talking about stocks. In the present time, there are some who believe that the market peaked when financial channel CNBC's ratings exceeded those of long-running soap operas. In fact, one recent indicator called the "cocktail party chatter" indicator tracks three measures – the time elapsed at a party before talk turns to stocks, the average age of the people discussing stocks and the fad component of the chatter. According to the indicator, the less time it takes for the talk to turn to stocks, the lower the average age of the market discussants and the greater the fad component, the more negative you should be about future stock price movements.

If you consider how stock market bubble forms, propagation is critical to bubbles getting bigger. In the media world, this will involve print, television and the internet and an overflow into day-to-day conversations. Thus, the discussion at the water cooler in a typical business is more likely to be about stocks than about football or other such daily (and more normal) obsessions, when markets are buoyant.

While hype indicators, of all non-financial indicators, offer the most promise as predictors of the market, they do suffer from several limitations. For instance, defining what constitutes abnormal can be tricky in a world where standards and tastes are shifting – a high rating for CNBC may indicate too much market hype or may be just reflecting of the fact that viewers find financial markets to be both more entertaining and less predictable than a typical soap opera. Even if you decide that there is an abnormally high interest in the market today and you conclude (based upon the hype indicators) that stocks are over valued, there is no guarantee that stocks will not get more overvalued before the correction occurs. In other words, hype indicators may tell you that a market is overvalued, but they don't tell you when the correction will occur.

Market Timing based upon Technical Indicators

There are a number of chart patterns and technical indicators used by analysts to differentiate between under and over valued stocks. Many of these indicators are also used by analysts to determine whether and by how much the entire market is under or over valued. In this section, you consider some of these indicators.

Past Prices

In earlier chapters, you looked at the evidence of negative long term correlation in stock prices – stocks that have gone up the most in recent periods are more likely to go down in future periods. The research does not seem to find similar evidence when it comes to the overall market. If markets have gone up significantly in the most recent years, there is no evidence that market returns in future years will be negative. If you consolidate stock returns from 1871 to 2001, into five-year periods, you find a positive correlation of .2085 between five-year period returns – in other words, positive returns over the last five years are more likely to be followed by positive returns than negative returns in the next five years. In Table 14.1, the probabilities of an up-year and a down-year following a series of scenarios, ranging from two down years in a row to two up years in a row, based upon actual stock price data from 1871 to 2001, are reported.

Table 14.1:Market Performance: 1871- 2001

<i>Priors</i>	<i>Number of occurrences</i>	<i>In following year</i>	
		<i>% of time stock market goes up</i>	<i>Return on the Stock Market</i>
After two down years	19	57.90%	2.95%
After one down year	30	60.00%	7.76%
After one up year	30	83.33%	10.92%
After two up years	51	50.98%	2.79%

It is true that markets are more likely to go down after two years of positive performance than under any other scenario, but there is also evidence of price momentum, with the odds of an up year increasing if the previous year was an up year. Does this mean that you should sell all your stocks after two good years? Not necessarily, for two reasons. First, the probabilities of up and down years do change but note that the likelihood of another good year remains more than 50% even after two consecutive good years in the market. Thus, the cost of being out of the market is substantial with this market timing strategy. Second, the fact that the market is overpriced does not mean that all stocks are over priced. As a stock picker, you may be able to find under valued stocks even in an over priced market.

Another price-based indicator that receives attention at least from the media at the beginning of each calendar year is the January indicator. The indicator posits that as January goes, so goes the year – if stocks are up in January, the market will be up for the

year, but a bad beginning usually precedes a poor year.⁹ According to the venerable *Stock Trader's Almanac* that is compiled every year by Yale Hirsch, this indicator worked 88% of the time in the twentieth century. Note, though that if you exclude January from the year's returns and compute the returns over the remaining 11 months of the year, the signal becomes much weaker and returns are negative only 50% of the time after a bad start in January. Thus, selling your stocks after stocks have gone down in January may not protect you from poor returns.

Trading Volume

There are some analysts who believe that trading volume can be a much better indicator of future market returns than past prices. Volume indicators are widely used to forecast future market movements. In fact, price increases that occur without much trading volume are viewed as less likely to carry over into the next trading period than those that are accompanied by heavy volume. At the same time, very heavy volume can also indicate turning points in markets. For instance, a drop in stocks with very heavy trading volume is called a selling climax and may be viewed as a sign that the market has hit bottom. This supposedly removes most of the bearish investors from the mix, opening the market up presumably to more optimistic investors. On the other hand, an increase in stocks accompanied by heavy trading volume may be viewed as a sign that market has topped out. Another widely used indicator looks at the trading volume on puts as a ratio of the trading volume on calls. This ratio, which is called the put-call ratio is often used as a contrarian indicator. When investors become more bearish, they sell more puts and this (as the contrarian argument goes) is a good sign for the future of the market.

Technical analysts also use money flow, which is the difference between the trading volume when stock prices increase (uptick volume) and trading volume when stock prices decreases (downtick volume), as predictor of market movements. An increase in the money flow is viewed as a positive signal for future market movements whereas a decrease is viewed as a bearish signal. Using daily money flows from July 1997 to June 1998, one study finds that stock prices tend to go up in periods where money flow increases, which is not surprising.¹⁰ While they find no predictive ability with short period returns – five day returns are not correlated with money flow in the previous five days – they do find some

⁹ Note that there are narrower versions of the January indicator, using just the first 5 or 10 days of January.

¹⁰ Bennett . J.A. and R.W. Sias, 2001, *Can Money Flows predict stock returns?*, Financial Analysts Journal, Nov/Dec..

predictive ability for longer periods. With 40-day returns and money flow over the prior 40 days, for instance, there is a link between high money flow and positive stock returns.

If you extend this analysis to global equity markets, you find that equity markets show momentum – markets that have done well in the recent past are more likely to continue doing well, whereas markets that have done badly remain poor performers.¹¹ However, the momentum effect is stronger for equity markets that have high trading volume and weaker in markets with low trading volume.

Volatility

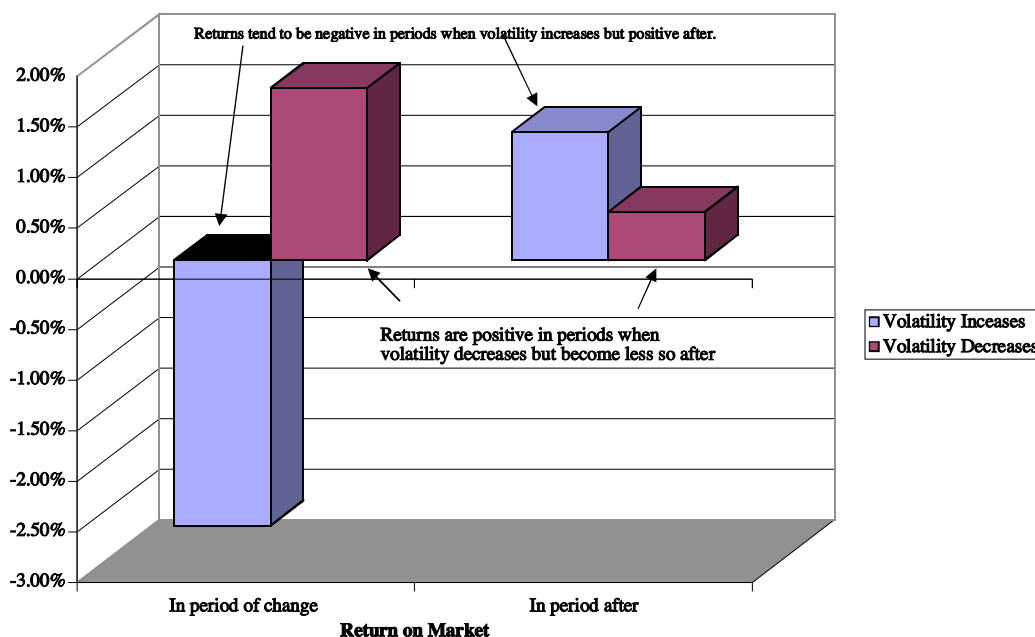
In recent years, a number of studies have uncovered a relationship between changes in market volatility and future returns. One study finds that increases in market volatility cause an immediate drop in prices but stock returns increase in subsequent periods.¹² It came to this conclusion by assessing daily price volatility from 1897 through 1988 and looking for time periods where the volatility has increased or decreased significantly, relative to prior periods.¹³ The returns both at the time of the volatility change and in the weeks following for both volatility increases and decreases are summarized in Figure 14.4:

¹¹ Chan, K., A. Hameed and W. Tong, 2000, *Profitability of Momentum Strategies in the International Equity Markets*, Journal of Financial and Quantitative Analysis, v35, 153-172.

¹² Haugen, R.A., E. Talmor and W.N. Torous, 1991, *The Effect of Volatility Changes on the Level of Stock Prices and Subsequent Expected Returns*, Journal of Finance, v46, 985-1007.

¹³ Daily price volatility is estimated over four week windows. If the volatility in any four week window exceeds (falls below) the volatility in the previous four-week window (at a statistical significance level of 99%), it is categorized as an increase (decrease) in volatility.

Figure 14.4: Returns around volatility changes



Data from Haugen, Talmor and Torous. The returns are computed in the four weeks prior to and after significant changes in stock market volatility.

Note that volatility increases cause stock prices to drop but that stock prices increase in the following four weeks. With volatility decreases, stock prices increase at the time of the volatility change, and they continue to increase in the weeks after, albeit at a slower pace.

Does this mean that you should buy stocks after an increase in volatility? Not necessarily. The increase in returns in the weeks following a volatility increase may just reflect the reality that stocks are riskier. However, if you believe that a surge in volatility is temporary and that stock volatility will revert back to normal levels, a strategy of buying stocks after an increase in equity market volatility may bear fruit.

Other Technical Indicators

There are a number of non-price indicators that are used by analysts to forecast future market movements. As with stock-specific technical indicators, market-wide indicators are often used in contradictory ways by momentum and contrarian analysts, with an increase in a specific indicator being viewed as bullish by one group and bearish by the other:

Price indicators include many of the pricing patterns that are used by chartists to analyze individual stocks. Just as support and resistance lines and trend lines are

used to determine when to move in and out of individual stocks, they can also be used to decide when to move in and out of the stock market.

Sentiment indicators try to measure the mood of the market. One widely used measure is the confidence index which is defined to be the ratio of the yield on BBB rated bonds to the yield on AAA rated bonds. If this ratio increases, investors are becoming more risk averse or at least demanding a higher price for taking on risk, which is negative for stocks. Another indicator that is viewed as bullish for stocks is aggregate insider buying of stocks. When this measure increases, according to its proponents, stocks are more likely to go up.¹⁴ Other sentiment indicators include mutual fund cash positions and the degree of bullishness among investment advisors/newsletters. These are often used as contrarian indicators – an increase in cash in the hands of mutual funds and more bearish market views among mutual funds are viewed as bullish signs for stock prices.¹⁵

While many of these indicators are used widely, they are mostly backed with anecdotal rather than empirical evidence.

Market Timing based upon Normal Ranges (Mean Reversion)

There are many investors who believe that prices tend to revert back to what can be called normal levels after extended periods where they might deviate from these norms. With the equity market, the normal range is defined usually in terms of price earnings (PE) ratios. Buy if the PE drops below 12 and sell if it rises above 18. You will see variations of this advice in many market timing newsletters. A more academic version of this argument was made by Campbell and Shiller who looked at PE ratios from 1871 to recent years and concluded that stocks revert back to a PE ratio of about 16 times normalized earnings. They defined normalized earnings as the average earnings over the previous 10 years. The implicit belief here is that there is a normal range for PE ratio and that if the PE rises above the top end of the range, stocks are likely to be overvalued, whereas if they fall below the bottom of the range, they are likely to be undervalued. While the approach is straightforward, where

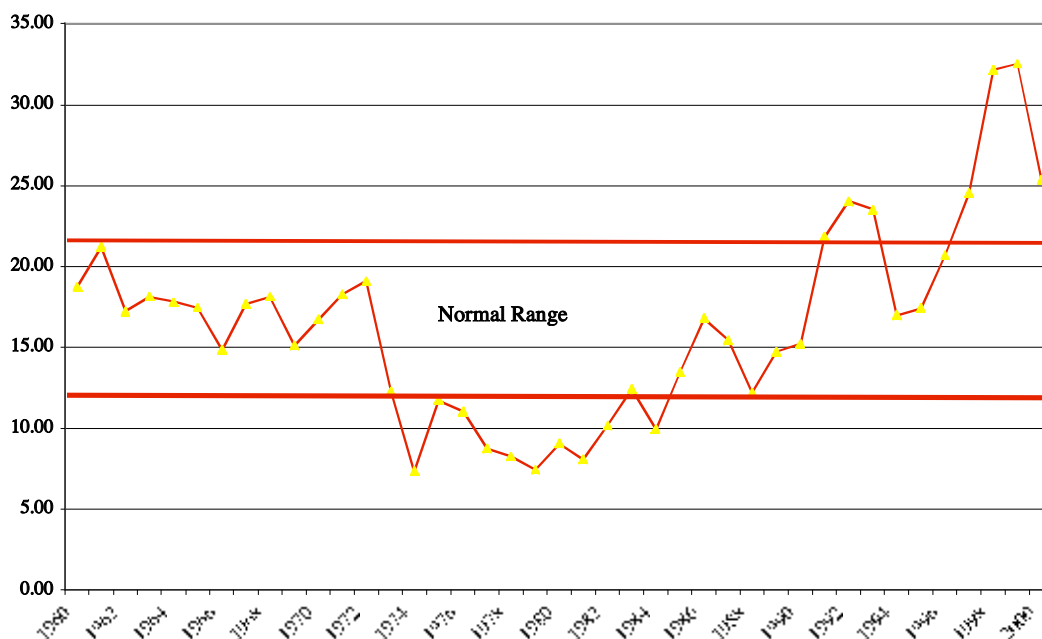
¹⁴ See Chowdhury, M., J.S. Howe and J.C. Lin, 1993, *The Relation between Aggregate Insider Transactions and Stock Market Returns*, Journal of Financial and Quantitative Analysis, v28, 431-437. They find a positive correlation between aggregate insider buying and market returns but report that a strategy based upon the indicator would not earn enough to cover transactions costs.

¹⁵ See “Investor sentiment and Stock Returns” by Fisher and Statman, Financial Analysts Journal, March/april 2000. They examined three sentiment indicators – the views of Wall Street strategists, investment newsletters and individual investors - and concluded that there is indeed evidence supporting a contrarian investment strategy

does the normal range of PE ratios come from? In most cases, it seems to come from looking at history and attaching a subjective judgment on the upper and lower limits.

Consider Figure 14.5, which presents PE ratios for the S&P 500 going back to 1960.

Figure 14.5: PE Ratio for S&P 500: 1960-2001



Data from Value Line. The PE ratio is computed for each year for the S&P 500 using the level of the index at the end of each year and the aggregate earnings on the index during the year.

An attempt was made to draw a normal range for interest rates in the United States, based upon history, though it indicates the subjective judgments that you have to make along the way. Based upon this band, stocks would be considered as overvalued if they traded at a PE ratio greater than 22 and undervalued if they traded at a PE less than 12.

The limitations of this approach should be obvious. In addition to trusting history to repeat itself, you are making two other assumptions. The first is that you can identify a normal trading range by looking at historical data. As you can see from the graph, you will not get any consensus – someone else looking at this graph might end up with a different band for PE. The second assumption is that the fundamentals have not shifted significantly over time. If interest rates are much lower today than they have been historically, you should expect stocks to trade at much higher PE ratios than they have historically. It is dangerous to make investment and market timing decisions, under such scenarios, based upon the premise that PE ratios are higher or lower than a normal range.

Market Timing based upon Fundamentals

Just as the prices of individual stocks must reflect their cashflows, growth potential and risk, entire markets (equity, bond and real asset) have to reflect the fundamentals of these assets. If they do not, you can argue that they are misvalued.. You can try to time markets by developing simple signals based upon the level of interest rates or the strength of the economy. In this section, you will consider these signals – some old and some new – that have been used by portfolio managers as market timing tools.

Short Term Interest rates

Buy stocks when short-term interest rates (treasury bills) are low and sell them when short term rates are high, or so goes the conventional wisdom. But is there a basis to this advice? Looking back at history , there is little evidence of any predictive power in the level of rates. Stock prices are just as likely to go up in years when short term rates are low as they are in years when short term rates are high. There is, however, some evidence that stocks are more likely to go up if short-term interest rates decline than if they increase. Between 1928 and 2001, for instance, treasury bill rates dropped in 34 years, and stocks earned an average return of approximately 12% in the following years. In the 39 years where the treasury bill rate increased, stock returns averaged about 10.75% in the following year. This result has been confirmed by research.¹⁶ A closer look at the data does raise cautionary notes about this strategy, the correlation between treasury bill rates and stock market returns was examined in sub-periods from 1929 to 2000.¹⁷ This study found that almost all of the predictability of stock market returns comes from the 1950-1975 time period, and that short term rates have had almost no predictive power since 1975. It also concludes that short rates have more predictive power with the durable goods sector and with smaller companies than they do with the entire market.

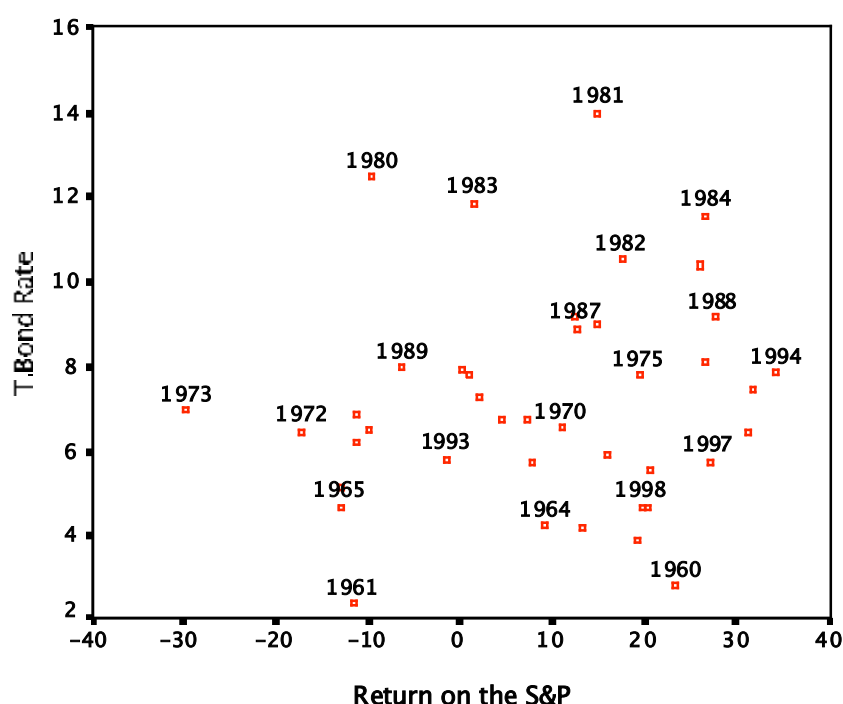
¹⁶ Ang, A. and G. Bekaert, 2001, *Stock Return Predictability: Is it there?*, Working Paper, Columbia Business School. They documented that treasury bill rates dominate other variables as a predictor of short term stock market movements. Breen, W., L.R. Glosten and R. Jagannathan, 1989, *Economic Significance of Predictable Variations in Stock Index Returns*, Journal of Finance, v44, 1177-1189. This study evaluated a strategy of switching from stock to cash and vice versa, depending upon the level of the treasury bill rate and conclude that such a strategy would have added about 2% in excess returns to an actively managed portfolio.

¹⁷ Abhyankar , A. and P.R. Davies, 2002, *Return Predictability, Market Timing and Volatility: Evidence from the Short Rate Revisited*, Working paper, SSRN.

Long Term Interest Rates

Intuitively, it is the treasury bond rate – the long-term riskless rate – that should have a much stronger impact on stock prices, since it offers a direct alternative to investing in stocks for long periods. If you can make 8% investing in treasury bonds for the next 30 years, why would you settle for less when investing in stocks? Thus, you should expect to see stock prices go up if the treasury bond rate is low and go down, if the rate is high. Figure 14.6 presents a plot of stock returns each year against the T.Bond rate at the start of the year:

Figure 14.6: T.Bond Rates and Stock Returns – 1960 - 2001



Data from Federal Reserve. Each point represents a year and the stock return in that year is plotted against the treasury bond rate at the start of the year.

The relationship is murky, at best. In 1981, for instance, the treasury bond rate at the start of the year was 14% but stocks did very well during the year, earning 15%. In 1961, the treasury bond rate at the beginning of the year was 2% and stocks dropped 11% during the year. There is little evidence of a link between the treasury bond rate at the start of a period and stock returns during that period.

This link between treasury bond rates and stock returns may become stronger if you consider how much you can earn as a return on stocks. You could define this return narrowly as the dividend yield (dividends/current stock prices) on the market or use a much

broader measure, such as earnings yield, which looks at the overall earnings on the market as a percent of the current level of the index. The earnings yield is the inverse of the price earnings ratio and is used widely by market strategists as a measure of how equities are priced relative to their earnings. Rather than focus on the level of the treasury bond rate, some market strategists often look at the difference between earnings yields and the treasury bond rate. They believe that it is best to invest in stocks when earnings yields are high, relative to the treasury bond rate. To examine this proposition, the difference between the earnings yield and the T.Bond rate at the end of every year from 1960 to 2000 was estimated and compared to the returns on the S&P 500 in the following year (see Table 14.2)

Table 14.2: Earnings Yield, T.Bond Rates and Stock Returns: 1960 –2001

<i>Earnings yield - T.Bond Rate</i>	<i>Number of years</i>	<i>Stock Returns</i>			
		<i>Average</i>	<i>Standard Deviation</i>	<i>Maximum</i>	<i>Minimum</i>
> 2%	8	11.33%	16.89%	31.55%	-11.81%
1 -2%	5	-0.38%	20.38%	18.89%	-29.72%
0-1%	2	19.71%	0.79%	20.26%	19.15%
-1-0%	6	11.21%	12.93%	27.25%	-11.36%
-2-1%	15	9.81%	17.33%	34.11%	-17.37%
< -2%	5	3.04%	8.40%	12.40%	-10.14%

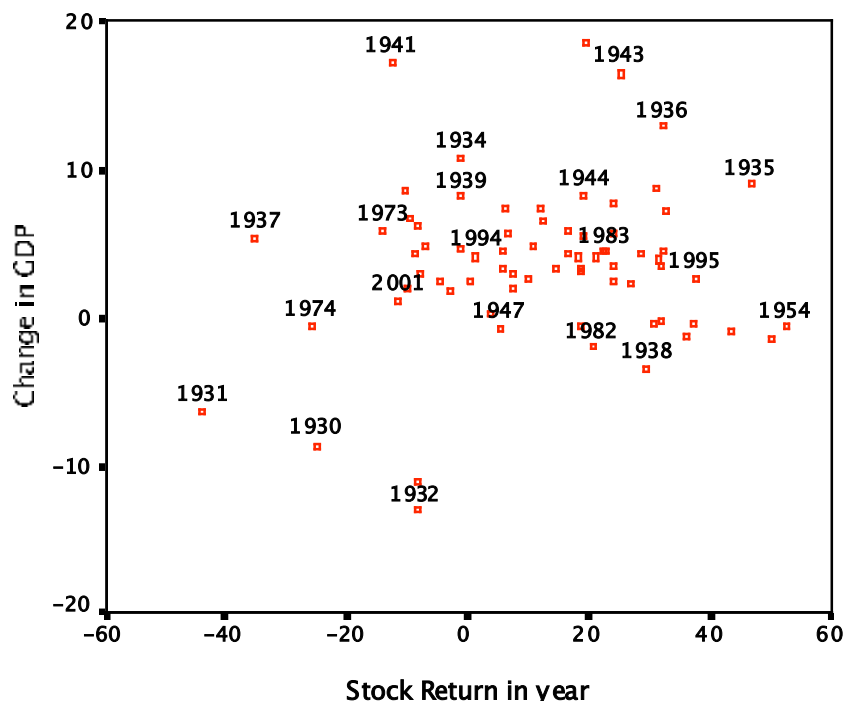
When the earnings yield exceeds the treasury bond rate by more than 2%, which has occurred in 8 out of the 41 years, the return on the S& P 500 in the following year has averaged 11.33%. However, the returns are almost as good when the earnings yield has lagged the treasury bond rate by zero to 1%. It is true that the annual returns are only 3.04% in the five years following periods when the earnings yield was lower than the treasury bond rate by more than 2%, but the annual returns were also negative in the 5 years when the earnings yield exceeded the treasury bond rate by 1-2%. Thus, there seems to be little historical support for using earnings yield and treasury bond rates to predict future stock market movements.

Business Cycles

As with treasury bonds, there is an intuitive link between the level of stock prices and economic growth. You would expect stocks to do much better in economic booms than during recessions. What makes this relationship tricky, however, is that market movements are based upon predictions of changes in economic activity in the future, rather than levels

of activity. In other words, you may see stock prices rising in the depths of a recession, if investors expect the economy to begin recovering in the next few months. Alternatively, you may see stock prices drop even in the midst of robust economic growth, if the growth does not measure up to expectations. In Figure 14.7, the returns on the S&P 500 index and real GDP growth are graphed going back to 1960:

Figure 14.7: GDP Growth and Stock Returns



Data from Federal Reserve. Each point represents a year and the stock return in that year is plotted against GDP growth during the year

There is a positive relationship between GDP growth during a year and stock returns during the year, but there is also a lot of noise in the relationship. For instance, the worst single year of stock returns was 1931, when GDP dropped by about 7%. The very best year of stock returns was 1954 but GDP declined slightly that year. The same dichotomy exists during years of positive GDP growth; stock returns dropped in 1941 even though the economy grew strongly that year but returns in 1995 were very positive as GDP grew about 4% that year. Even if the relationship were strong enough to pass muster, you cannot use it for market timing unless you can forecast real economic growth. The real question then becomes whether you can make forecasts of future stock market movements after observing economic growth in the last year. To examine whether there is any potential payoff to investing after observing economic growth in the prior year, the relationship between

economic growth in a year and stock returns in the following year, using data from 1929 to 2001 is looked at in Table 14.3:

Table 14.3: Real Economic Growth as a predictor of Stock Returns: 1960 – 2001

<i>GDP Annual Growth</i>	<i>Number of years</i>	<i>Stock Returns in Next Year</i>			
		<i>Average Return</i>	<i>Standard deviation in returns</i>	<i>Best Year</i>	<i>Worst Year</i>
>5%	23	10.84%	21.37%	46.74%	-35.34%
3.5%-5%	22	14.60%	16.63%	52.56%	-11.85%
2-3.5%	6	12.37%	13.95%	26.64%	-8.81%
0-2%	5	19.43%	23.29%	43.72%	-10.46%
<0%	16	9.94%	22.68%	49.98%	-43.84%
All years	72	12.42%	19.50%	52.56%	-43.84%

There seems to be no clearly discernible relationship between returns next year and GDP growth this year. It is true that the years with negative GDP growth are followed by the lowest stock returns, but the average stock returns in this scenario are barely higher than the average returns you would have earned if you had bought after the best economic growth years (growth exceeds 5%).

If you can forecast future growth in the economy, it can be useful at two levels. One is in overall market timing, since you will steer more of your funds into stocks prior to better-than-expected economic growth and away from stocks when you foresee the economy slowing. You can also use the information to over invest in those sectors that are most sensitive to the economic cycle – automobile and housing stocks, for instance – if you believe that robust economic growth is around the corner.

Market Timers

While a variety of ways in which investors try to time markets have been looked at, a more fundamental question has not been asked: Do those who claim to time markets actually succeed? In this section, you will consider a broad range of investors who try to time markets and examine whether they succeed.

Mutual Fund Managers

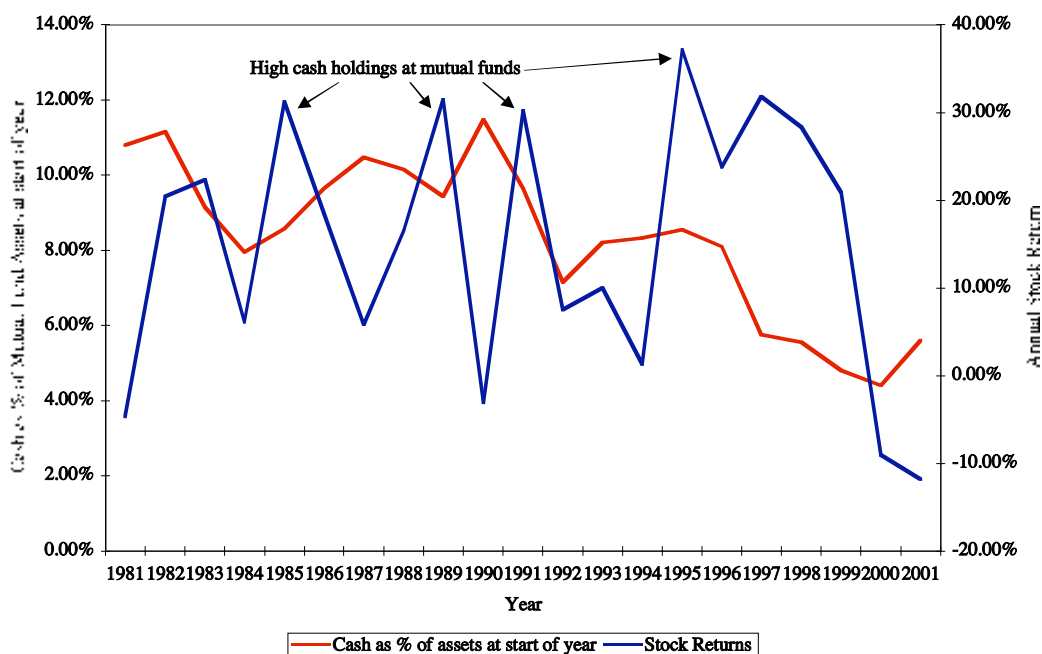
Most equity mutual funds do not lay claims to market timing, but they do try to time markets at the margin by shifting their assets in and out of cash. You will begin by looking at whether they succeed on average. There are some mutual funds that claim market timing

as their primary skill and these funds are called tactical asset allocation funds. You will look at the track records of these funds and pass judgment on whether their claims hold up.

Overall Evidence

How do you know that mutual funds try to time markets? While all equity mutual funds need to hold some cash – investments in treasuries and commercial paper – to meet redemption needs and for day-to-day operations, they collectively hold much more cash than is necessary. In fact, the only explanation for the cash balances that you observe at equity mutual funds is that mutual funds use them to signal their views of future market movements – they hold more cash when they are bearish and less cash when they are bullish. In Figure 14.8 below, the average cash balance at mutual funds is presented, each year from 1980 to 2001 and the returns on the S&P 500 each year.

Figure 14.8: Mutual Fund Cash Holdings and Stock Returns



In each year, the stock return in that year and the cash holdings at mutual funds at the end of the year is shown.

Note that the cash balances seem to increase after bad years for the market and decrease after good years, but there is little predictive power in the level of cash holdings. The question of whether mutual funds are successful at market timing has been examined widely in the literature going back four decades.

Other studies have looked at whether mutual funds succeed at shifting their money into higher beta stocks¹⁸ just before equity markets surge and at whether mutual funds earn higher returns in years in which the market does well but have found little evidence of market timing prowess on the part of mutual funds.¹⁹

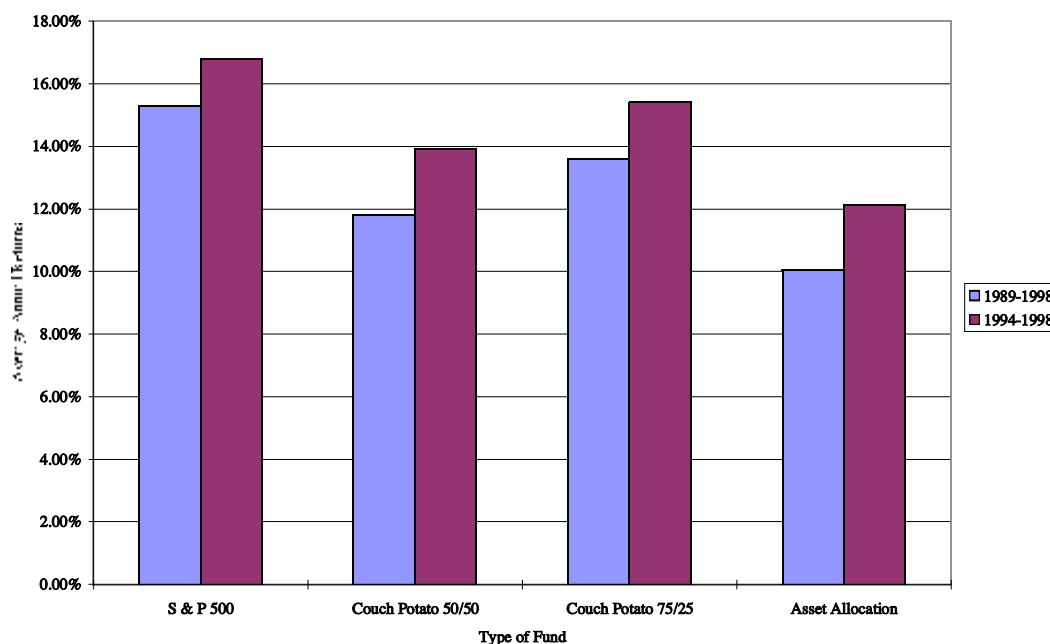
Tactical Asset Allocation and other Market timing Funds

In the aftermath of the crash of 1987, a number of mutual funds sprung up claiming that they could have saved investors the losses from the crash by steering them out of equity markets prior to the crash. These funds were called tactical asset allocation funds and made no attempt to pick stocks. Instead, they argued that they could move funds between stocks, treasury bonds and treasury bills in advance of major market movements and allow investors to earn high returns. Since 1987, though, the returns delivered by these funds has fallen well short of their promises. Figure 14.9 compares the returns on a dozen large tactical asset allocation funds over 5-year and 10-year periods (1987-97) to both the overall market and to fixed mixes – 50% in both stocks and bonds, and 75% stocks/25% bonds. The last two are called couch potato mixes, reflecting the fact that you are making no attempt to time the market.

¹⁸ See Treynor, Jack L., and Kay Mazuy, 1966, *Can mutual funds outguess the market?* *Harvard Business Review* 44, 131-136.. They argued that if mutual funds have market timing skills, they should buy high beta stocks just before up movements in the stock market, since these stocks should up go up even more. Their conclusion was that mutual funds did the exact opposite – moved into high beta stocks just before market declines.

¹⁹ Henriksson, Roy D., and Robert C. Merton, 1981, *On market timing and investment performance. II. Statistical procedures for evaluating forecasting skills*, *Journal of Business*, v54, 513-533.

Figure 14.9: Performance of Unsophisticated Strategies versus Asset Allocation Funds



The couch potato strategies represent fixed allocations (50/50 is always 50% stock and 50% bonds). The average across asset allocation funds is compared to the couch potato strategies.

One critique of this study may be its focus on a few tactical asset allocation funds. In 1998, an examination²⁰ of a much larger sample more than 100 asset allocation funds between 1990 and 1995 also found little evidence of success at market timing at these funds.

Investment Newsletters

There are hundreds of investment newsletters that investors subscribe to for sage advice on investing. Some of these investment newsletters are centered on suggesting individual stocks for investors but some are directed towards timing the market. For a few hundred dollars, you are told, you too can be privy to private signals of market movements.

An analysis²¹ of the market timing abilities of investment newsletters examined the stock/cash mixes recommended in 237 newsletters from 1980 to 1992. If investment newsletters are good market timers, you should expect to see the proportion allocated to

²⁰ Beckers, C., W. Ferson D. Myers, and M. Schill, 1999, *Conditional Market Timing with Benchmark Investors*, Journal of Financial Economics 52, 119-148.

²¹ Graham, John R., and Campbell R. Harvey, 1996, *Market timing ability and volatility implied in investment newsletters' asset allocation recommendations*, Journal of Financial Economics 42, 397-421.

stocks increase prior to the stock market going up. When the returns earned on the mixes recommended in these newsletters is compared to a buy and hold strategy, 183 of the 237 newsletters (77%) delivered lower returns than the buy and hold strategy. One measure of the ineffectuality of the market timing recommendations of these investment newsletters lies in the fact that while equity weights increased 58% of the time before market upturns, they also increased by 53% before market downturns. There is some evidence of continuity in performance, but the evidence is much stronger for negative performance than for positive. In other words, investment newsletters that give bad advice on market timing are more likely to continue to give bad advice than are newsletters that gave good advice to continue giving good advice.²²

The only hopeful evidence on market timing comes from a study of professional market timers who are investment advisors. These timers provide explicit timing recommendations only to their clients, who then adjust their portfolios accordingly - shifting money into stocks if they are bullish and out of stocks if they are bearish. An examination of the timing calls made by 30 professional market timers who were monitored by MoniResearch Corporation, a service that monitors the performance of such advisors, finds some evidence of market timing ability.²³ Note, though, that the timing calls were both short term and frequent. One market timer had a total of 303 timing signals between 1989 and 1994, and there were, on average, about 15 signals per year across all 30 market timers. Notwithstanding the high transactions costs associated with following these timing signals, following their recommendations would have generated excess returns for investors.²⁴

Market Strategists

The market strategists at major investment banks represent perhaps the most visible symbols of market timing. Their prognostications about the market are widely disseminated not only by their investment banks but also by the media. Abby Cohen (Goldman Sachs), Doug Cliggott (Morgan Chase) and Byron Wien (Morgan Stanley) are all widely known. While much of what market strategists say about markets cannot be easily categorized as

²² A good market timing newsletter is likely to repeat its success about 50% of the time. A poor market timing newsletter has a 70% chance of repeating its poor performance.

²³ Chance, D. M., and M.L. Hemler, 2001, *The performance of professional market timers: Daily evidence from executed strategies*, Journal of Financial Economics, v62, 377-411.

²⁴ The study looked at excess returns after transactions costs but before taxes. By its very nature, this strategy is likely to generate large tax bills, since almost all of your gains will be taxed at the ordinary tax rate.

bullish or bearish— good market strategists are difficult to pin down when it comes to explicit forecasts – they also make specific recommendations on preferred asset allocation mixes that are presented in the Wall Street Journal. Table 14.4 provides the asset allocation mixes recommended by major investment banks in June 2002.

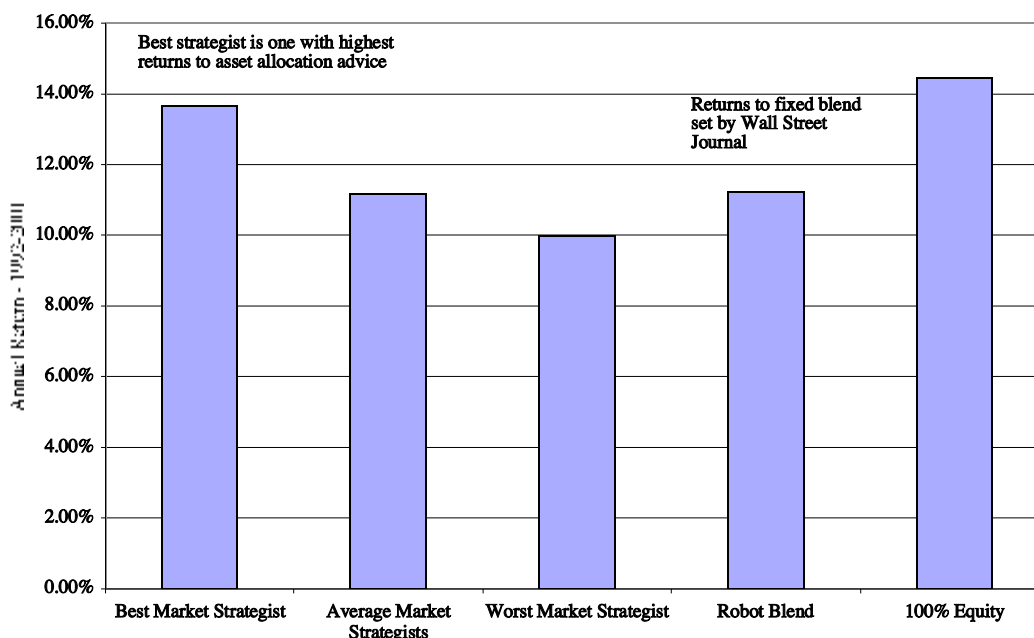
Table 14.4: Asset Allocation Mixes – Investment Bank Strategists

<i>Firm</i>	<i>Strategist</i>	<i>Stocks</i>	<i>Bonds</i>	<i>Cash</i>
A.G. Edwards	Mark Keller	65%	20%	15%
Banc of America	Tom McManus	55%	40%	5%
Bear Stearns & Co.	Liz MacKay	65%	30%	5%
CIBC World Markets	Subodh Kumar	75%	20%	2%
Credit Suisse	Tom Galvin	70%	20%	10%
Goldman Sach & Co.	Abby Joseph Cohen	75%	22%	0%
J.P. Morgan	Douglas Cliggott	50%	25%	25%
Legg Mason	Richard Cripps	60%	40%	0%
Lehman Brothers	Jeffrey Applegate	80%	10%	10%
Merrill Lynch & Co.	Richard Bernstein	50%	30%	20%
Morgan Stanley	Steve Galbraith	70%	25%	5%
Prudential	Edward Yardeni	70%	30%	0%
Raymond James	Jeffrey Saut	65%	15%	10%
Salomon Smith	John Manley	75%	20%	5%
UBS Warburg	Edward Kerschner	80%	20%	0%
Wachovia	Rod Smyth	75%	15%	0%

How do these allocation mixes yield market predictions? One way is to look at the percent allocated to stocks. More bullish market strategists will recommend a larger proportion of the portfolio be invested in stocks, whereas bearish strategists will overweight cash and bonds. The other is to look at changes in holdings recommended by the same strategist from period to period – an increase in the proportion allocated to stocks would indicate more bullishness. On both dimensions, the market timing skills of strategists are questionable. The *Wall Street Journal*, in addition to reporting the asset allocation mixes of strategists also compares the returns that would have been generated by following each bank's allocation advice to the returns you would have made by being fully invested in stocks over 1-year, 5-year and 10-year periods. To counter the argument that it is unfair to compare a 100% equity portfolio to a asset allocation mix, the Journal also reports on the returns on a robot mix – a fixed allocation across stocks, bonds and bills. Figure 14.10 summarizes the returns on all three, as well as the returns you would have earned by

following the strategist who had the best mixes over the period and the one with the worst mixes:

Figure 14.10: Annual Return from Market Strategists' Mixes: 1992-2001



Data from Wall Street Journal. These are the annual returns you would have made between 1992 and 2001 following the asset allocation advice offered by market strategists at major investment banks.

Note that the returns on the robot mix are higher than the average returns generated by following the average market strategists. Of the 16 banks that the *Wall Street Journal* tracks, only five would have generated returns higher than the robot mix over the period and even those would have well within a statistical margin for error. Finally, even the best strategist's asset mix would have underperformed a strategy of being fully invested in stocks. Overall, the evidence indicates that the market timing skills of leading market strategies are vastly overstated.

The Rest of the Story

The evidence on stock market timing is decidedly mixed. While some timing indicators seem to offer promise in predicting market direction, those who use them do not earn excess returns. How do you explain this contradiction? In this section, you will look at the reasons why a unshakeable faith in equity markets in the long term can be dangerous and why market timing indicators do not pay off for most investors.

Stocks are not riskless in the long term

In bear markets, you do not have to spend much time convincing investors that investing in stocks is risky but a prolonged and strong bull market often leads these same investors to the conclusion that equity is not risky, at least in the long term. Earlier in the chapter, you examined some of the evidence, primarily from the U.S. market since 1926, used to sustain this point of view. In this section, you will evaluate the evidence from other equity markets in the world to see if it backs up the evidence in the U.S.

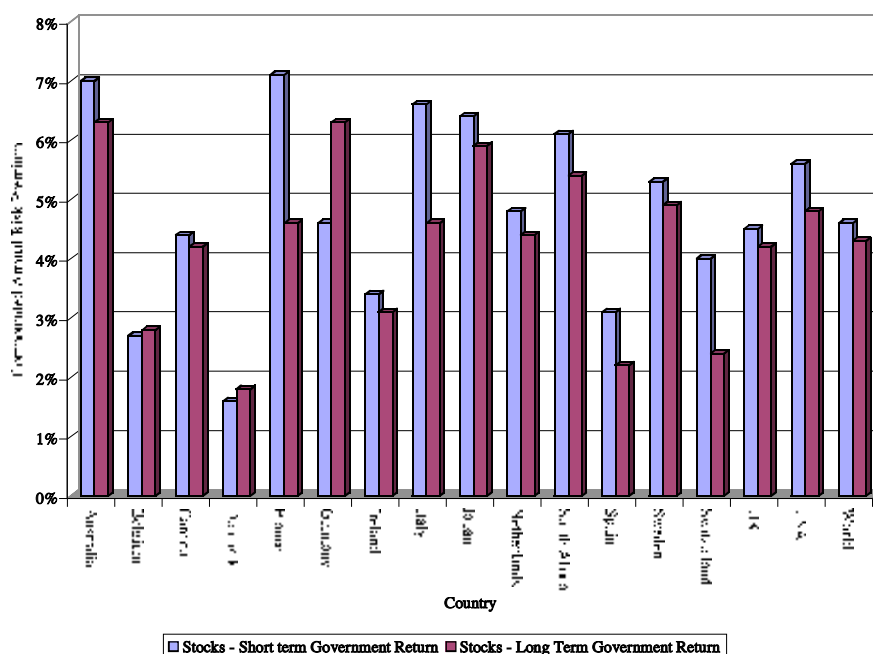
Survivor market bias

One of the problems with extrapolating the findings from the U.S. equity market in the twentieth century is that the United States was perhaps the most successful economy and market in the world in that century. In other words, you have a selection bias. To provide an analogy with individual stocks, this would be the equivalent of picking the top ten companies in the United States, in terms of market capitalization today, and examining whether you would have made money investing in these companies. The answer, not surprisingly, will be yes since these companies acquired their large market capitalization status by being successful over long periods.

To provide some balance, therefore, you have to look at the returns investors in equities would have earned in other (and less successful) equity markets. The most detailed look at these returns estimated the returns you would have earned on 14 equity markets between 1900 and 2001 and compared these returns with those you would have earned investing in bonds.²⁵ Figure 14.11 presents the risk premiums – i.e., the additional returns - earned by investing in equity over treasury bills and bonds over that period in each of the 14 markets:

²⁵ Dimson, E., P. Marsh and M. Staunton, 2002, *Triumph of the Optimists*, Princeton University Press.

Figure 14.11: Equity Risk Premiums - By Country



Data from Dimson et al. The differences in compounded annual returns between stocks and short term governments/ long term governments is reported for each country.

While equity returns were higher than what you would have earned investing in government bonds or bills in each of the countries examined, there are wide differences across countries. If you had invested in Spain, for instance, you would have earned only 3% over government bills and 2% over government bonds on an annual basis by investing in equities. In France, in contrast, the corresponding numbers would have been 7.1% and 4.6%. Looking at 40 or 50 year periods, therefore, it is entirely possible that equity returns can lag bond or bill returns, at least in some equity markets.

Equity investors therefore have to wonder whether the market they are investing in currently will be one of the winner markets (like the US in the twentieth century) or a lagging market (like the Japanese market since 1989). Since there is a probability that every market (including the US equity market today) can be a lagging market over the next few decades, you should be cautious about investing too much in equities in any particular market. You may be able to improve the odds by investing in a global equity fund but even there, you can be exposed to risk over long time periods.

How long term is long term?

Financial experts and advisors who argue that stocks win in the long term are often ambiguous about what they mean by the long term and investors often define long term in very different ways- one year may represent long term for an impatient investor whereas 20 years may be long term to a patient investor.

Equities clearly are not riskless over one year, but are they close to riskless if you have a 20-year time horizon? Not necessarily, for several reasons:

- *Even long time horizons can be shortened by unanticipated events.* For example, consider the advice given to a 35-year old about her pension fund investments. With 30 years left to retirement, she seems like a perfect candidate for a long-term investment strategy. That is predicated though on the belief that she will stay healthy and continue to work for that period. If she has to retire early due to health problems or loses her job, she may find herself needing to draw on her pension fund savings far sooner.
- *Investors save over time and they save more in up markets and in their later years:* Assume that you are 35 years old and that you have 30 years until retirement. You will be saving over time for your retirement and your contributions to your pension fund will tend to get larger as you get older (and closer to retirement). In effect, this will reduce the effective time horizon you have on your investments. In addition, you will tend to save more and invest more in stocks in buoyant stock markets and less in depressed markets. Given the history of the market, this will imply that you will be over invested in stocks when they are over valued and under invested when stocks are a good bargain.
- *Even the most optimistic assessment of the historical data on stock returns can only lead to the conclusion that while there is a high probability that stocks will earn higher returns than less risky alternatives over long time periods, there is no guarantee.* In fact, a more realistic evaluation of stock market history, in the U.S. and elsewhere, suggests that the probability that equities will under perform government bonds over longer period is too large to be ignored by investors. Even a 5% probability that stocks will under perform bonds over the long term may be sufficient to induce more risk averse investors to invest more in bonds and less in stocks.

The perils of investing in equities even with a long time horizon are illustrated when you look at the Japanese equity market over the last 15 years. An investor who invested his wealth in the Nikkei in 1989 when the index peaked at close to 40000 would have lost 80% of his investment by 2003 and is extremely unlikely to recover his losses whole in his lifetime.

Market Timing Indicators and Success

Why do market timers succeed so infrequently if there are so many market timing indicators that make money, at least on paper? In this section, you will consider some of the dangers involved with trying to time markets and with following the advice of market gurus.

Hindsight Bias

Market timing always seems simple when you look back in time. After the fact, you can always find obvious signals of market reversals – bull markets turning to bear markets or vice versa. Thus, in 2001, there were investors who looked back at 1999 and bemoaned the fact that they missed getting out of stocks when the market topped at the end of that year. At that time, though, the signs were not so obvious. There were analysts who argued that the market was overvalued and indicators that supported that point of view, but there were just as many analysts, if not more, who saw the market continuing to rise and had supporting models.

In practice, there is almost never a consensus among investors on whether markets have hit bottom or peaked at the time that it occurs. It is an interesting fact that optimism about the future is greatest just as markets top out and the market mood is darkest just as markets turn around. To succeed at market timing, you cannot wait until a bottom has been established before buying or for a market top before selling. If you do, you will miss much of the subsequent payoff.

Timing of Information

If you are considering timing the market using macroeconomic variables such as inflation or economic growth, you should also take into account the time lag before you will get this information. Consider, for instance, research that shows that stock prices tend to go up after quarters of high GDP growth. An obvious strategy would be to buy stocks after a quarter of high GDP growth and sell after a quarter of negative or low GDP growth. The problem with the strategy is that the information on GDP growth will not be available to you until you are two months into the next quarter.

If you use a market variable such as the level of interest rates to make your market forecasts, you are in better shape since this information should be available to you contemporaneously with the stock market. In building these models, you should be careful and ensure that you are not building a model where you will have to forecast interest rates in order to forecast the stock market. To test for a link between the level of interest rates and stock market movements, you would look at the relationship between interest rates at the beginning of each year and stock returns over the year. Since you can observe the former before you make your investment decision, you would have the basis for a viable strategy if

you find a correlation between the two. If you had run the test between the level of interest rates at the end of each year and stock returns during the year, implementing an investment strategy even if you find a correlation would be problematic since you would have to forecast the level of interest rates first.

Noise in Forecast

As the evidence in the last section should make clearly, no market-timing indicator is perfect or even close to perfect. In fact, the best market timers are right perhaps 60 to 65% of the time, and even then, only about market direction and not magnitude. In other words, a specific indicator, be it the returns in January or the level of interest rates, may give you some indication of whether the market is more likely to go up or down over the rest of the year but not by how much.

Both of these characteristics of market timing indicators – the significant proportion of the time that they are wrong in calling market direction and their lack of success at forecasting the size of the market movement – restrict the investment strategies that you can use to time markets. Derivatives such as stock index futures and options, which would generate the highest returns, have to be avoided because the risk of being wrong is too large.

Lack of Consistency

Market timers are the meteors of the investment universe. While they attract a great deal of attention when they shine, they fade quickly. Looking at the high profile market timers (Market Gurus) over time, from Jesse Livermore in the early part of this century to Ralph Acampora, Prudential's flamboyant market strategist, in the 1990s, you find a diverse group.²⁶ Some were chartists, some used fundamentals and some were mysterious about their methods, but there are three common characteristics that they seem to share:

1. A capacity to see the world in black and white: Market gurus do not prevaricate. Instead, they make bold statements that seem outrageous when they make them about where the market will be 6 months or a year from now. Acampora, for instance, made his reputation with his call that the Dow would hit 7000 when it was at 3500.
2. A correct call on a big market move: All market timers make their reputation by calling at least one big market move. For Livermore, it was the market crash of 1929 and for Acampora, it was the bull market of the 1990s.
3. Outside personalities: Market gurus are born show persons, who use the media of their time as megaphones to publicize not only their market forecasts but the news of their

²⁶ One of the best books on Livermore is the classic "Reminiscences of a Stock Market Operator" by Edwin LeFevre, John Wiley and Sons.

successes. In fact, part of their success can be attributed to their capacity to make other investors act on their predictions, making these predictions, at least in the near term, self-fulfilling prophecies.

So why do great market gurus stumble? The very same factors that contribute to their success seem to underlie their failures. The absolute conviction they have in their market timing abilities and their success at timing markets seems to feed into more outrageous calls that ultimately destroy their reputations. Joe Granville, one of the market gurus of the late 1970s, for instance, spent all of the eighties recommending that people sell stocks and buy gold and his newsletter was ranked the worst, in terms of performance, for the decade.

The Cost of Market Timing: Transactions and Opportunity Costs

If market timing were costless, you could argue that everyone should try to time markets, given the huge returns to getting it right. There are, however, significant costs associated with trying to time markets (and getting it wrong):

In the process of switching from stocks to cash and back, you may miss the best years of the market. An article titled “The Folly of Stock Market Timing”, examined the effects of annually switching from stock to cash and back from 1926 to 1982 and concluded that the potential downside vastly exceeds the potential upside.²⁷ In an analysis of market timing, Bill Sharpe suggested that unless you can tell a good year from a bad year 7 times out of 10, you should not try market timing.²⁸ This result is confirmed by Monte Carlo simulations on the Canadian market, which show that you have to be right 70-80% of the time to break even from market timing.²⁹

This research does not consider the additional transactions costs that inevitably flow from market timing strategies, since you will trade far more extensively if you follow them. In its most extreme version, a stock/cash switching strategy will mean that you will have to liquidate your entire equity portfolio if you decide to switch into cash and start from scratch again the next time you want to be in stocks.

²⁷ Jeffrey, R., 1984, *The Folly of Stock Market Timing*, Financial Analysts Journal (July-August), 102-110.

²⁸ Sharpe, W. F., 1975, *Are Gains Likely From Market Timing*, Financial Analysts Journal, vol. 31, no. 2 (March/April): 60-69.

²⁹ Chua, J. H., R.S. Woodward, and E.C. To. 1987, *Potential Gains From Stock Market Timing in Canada*, Financial Analysts Journal (September/October), vol. 43, no. 5, 50-56.

A market timing strategy will also increase your potential tax liabilities. To see why, assume that you have a strategy of selling your stocks after two good years in the market, based upon the empirical findings that a bad year is more likely to follow. You will have to pay capital gains taxes when you sell your stocks, and over your lifetime as an investor, you will pay far more in taxes.

Lessons for Investors

Trying to time markets is a much more daunting task than picking stocks. All investors try to time markets and very few seem to succeed consistently. If, notwithstanding this history of failure, you decide to time markets, you should try to do the following:

1. *Assess your time horizon:* Some market timing indicators such as those based upon charting patterns and trading volume try to forecast market movements in the short term, whereas others such as using a normalized PE ratio to predict stock prices are long term strategies. You need to have a clear sense of your time horizon before you pick a market timing strategy. In making this judgment, you will need to look not only at your willingness (or lack thereof) to wait for a payoff but also at how dependent you are on the cash flows from your portfolio to meet your living needs; if your job is insecure and your income is volatile, your time horizon will shrink.
2. *Examine the evidence:* The proponents of every market timing strategy will claim that the strategy works and present you with empirical evidence of the incredible returns you could have made from following it. You should consider all the caveats from the last section when you look at the evidence including:
 - a. Is the strategy being fit back into the same data from which it was extracted? You should be suspicious of elaborate trading strategies which seem to have no economic basis or rationale – buy small cap stocks with price momentum at 3 pm every Thursday and sell at 1 pm the next day, for instance. Odds are that thousands of strategies were tested out on a large database and this one emerged. A good test will look at returns in a different time period (called a holdout period).
 - b. Is the strategy realistic? Some strategies look exceptionally good as constructed but may not be viable since the information that they are based on would not have been available at the time you would have had to trade. You may find, for instance, that you can make money (at least on paper) if you buy stocks at the end of every month where investors put more money into mutual funds than they take out. The problem, though, is that this

information will not be available to you until you are well into the next month.

- c. Have execution costs and problems been considered? Many short-term market timing strategies require constant trading. The trading costs and tax liabilities created by this trading will be substantial and the returns, prior to considering these costs, have to be substantially higher than a buy and hold strategy for the strategy to make sense.

3. *Integrate market timing with security selection:* While many investors consider market timing and security selection to be mutually exclusive, they don't have to be. You can and should integrate both into your overall strategy. You can, for instance, use a volume indicator to decide when and whether to get into equities, and then invest in stocks with low PE ratios because you believe these stocks are more likely to be under valued.

Conclusion

If you can time markets, you can make immense returns and it is this potential payoff that makes all investors into market timers. Some investors explicitly try to time markets using technical and fundamental indicators, whereas others integrate their market views into their asset allocation decisions, shifting more money into stocks when they are bullish on stocks. Looking at the evidence, though, there are no market timing indicators that deliver consistent and solid returns. In fact, there is little proof that the experts at market timing - market strategists, mutual funds and investment newsletters, for example – succeed at the endeavor.

Notwithstanding this depressing evidence, investors will continue to time markets. If you choose to do so, you should pick a market timing strategy that is consistent with your time horizon, evaluate the evidence on its success carefully and try to combine it with an effective stock selection strategy.

CHAPTER 15

TEN LESSONS FOR INVESTORS

While the investment stories examined in this book reflect very different investment philosophies and are designed for a wide range of investors, there are some lessons that can be drawn by looking across the stories. In this chapter, you will see a number of propositions about investing that apply across investment strategies. Hopefully, these broad propositions about investing will stand you in good stead when you are subjected to the next big investment story by an over eager sales person.

Lesson 1: The more things change, the more they stay the same

Each of the investment stories listed in this book has been around for as long as there have been financial markets. Notwithstanding this reality, investment advisors rediscover these stories at regular intervals and present them as their own. To provide a façade of novelty, they often give these stories new and fancy names (preferably Greek). Calling a strategy of buying low PE stocks the Omega or the Alpha strategy seems to do wonders for its curb appeal to investors. In addition, as more and more data on stocks becomes available to investors, some have become more creative in how they use this data to find stocks. In fact, the ease with which you can screen stocks for multiple criteria – low PE, high growth and momentum – has allowed some to create composite screens that they can then label as unique.

Proposition 1: Be wary of complex investment strategies with fancy names that claim to be new and different.

Lesson 2: If you want guarantees, don't invest in stocks

No matter what the proponents of an investment strategy tell you, there are no stock strategies that can offer guaranteed success. Stocks are volatile and are driven by hundreds of different variables, some related to the overall economy and some arising as a result of information that has come out about the firm. Even the most elaborate and best planned strategies for making money in stocks can be derailed by unexpected events.

Proposition 2: The only predictable thing about stocks is their unpredictability.

Lesson 3: No pain, no gain

It is perhaps the oldest lesson in investments that you cannot expect to earn high returns without taking risk, but it is a lesson that is often ignored. Every investment strategy exposes you to risk, and a high return strategy cannot be low risk. If you are an investor

who is uncomfortable with large risk exposures, you should avoid any high risk strategy, no matter how promising it looks on paper. Why are some investors so willing to delude themselves into thinking that they can earn high returns without taking much risk? One reason may be that the risk in some strategies is hidden and shows up sporadically. These strategies succeed most of the time and deliver solid and modest returns when they do, but create large losses when they fail.

Proposition 3: If you cannot see the risk in a high returns strategy, you just have not looked hard enough.

Lesson 4: Remember the fundamentals

The value of a business has always been a function of its capacity to generate cashflows from its assets, to grow these cashflow over time and the uncertainty associated with these cashflows. In every bull market, investors forget the fundamentals that determine value – cashflows, expected growth and risk – and look for new paradigms to explain why stocks are priced the way they are. This was the case in the technology boom of the late 1990s. Faced with stratospheric prices for new economy companies that could not be explained by conventional approaches, investors turned to dubious models, where growth in revenues substituted for earnings and cashflows did not matter. In the aftermath of every bull market, investors discover the truth that the fundamentals do matter and that companies have to earn money and grow these earnings to be valuable.

Proposition 4: Ignore fundamentals at your own peril.

Lesson 5: Most stocks that look cheap are cheap for a reason

In every investment story in this book, there is a group of companies that are identified as cheap. Early in this book, for instance, companies were categorized as cheap because they traded at low multiples of earnings or below book value. At the risk of sounding like professional naysayers, it should be noted that most of these companies only looked cheap. There was generally at least one good reason, and in many cases more than one, why these stocks traded at low prices. You saw, for instance, that many stocks that traded at below book value did so because of their poor earning power and high risk and that stocks that traded at low PE ratios did so because of anemic growth prospects.

Proposition 5: Cheap companies are not always good bargains.

Lesson 6: Everything has a price

Investors are constantly on the look out for characteristics that they believe make the companies they invest in special – superior management, brand name, high earnings growth

and a great product all come to mind. Without contesting the fact that these are good characteristics for a firm to possess, you have to still recognize that markets generally do a good job of pricing in these advantages. Companies with powerful brand names trade at high multiples of earnings, as do companies with higher expected growth. Thus, the question that you have to answer as an investor is not whether having a strong brand name makes your company more valuable, but whether the price attached to the brand name by the market is too high or too low.

Proposition 6: Good companies may not be good investments.

Lesson 7: Numbers can be deceptive

For those investors who are tired of anecdotal evidence and investment stories, numbers offer comfort because they provide the illusion of objectivity. A study that shows that stocks with high dividends would have earned you 4% more than the market over the last five years is given more weight than a story about how much money you could have made investing in one stock five years ago. While it is sensible to test strategies using large amounts of data over long periods, a couple of caveats are in order:

Studies, no matter how detailed and long term, generate probabilistic rather than certain conclusions. For instance, you may conclude after looking at high dividend paying stocks over the last five years that there is a 90% probability that high dividend stocks generate higher returns than low dividend stocks, but you will not be able to guarantee this outcome.

Every study also suffers from the problem that markets change over time. No two periods are exactly identical and it is possible that the next period may deliver surprises that you have never seen before and that these surprises can cause time-tested strategies to fall apart.

Proposition 7: Numbers can lie.

Lesson 8: Respect the market

Every investment strategy is a bet against the market. You are not only making a wager that you are right and the market is wrong but that the market will see the error of its ways and come around to your way of thinking. Consider, for instance, a strategy of buying stocks that trade at less than book value. You believe that these stocks are undervalued and that the market is making a mistake in pricing these stocks. To make money, not only do you have to be right about this underlying belief but markets have to see and correct their mistakes. In the process, the prices of these stocks will be pushed up and you as an investor will make money.

While you may be justified in your views about market mistakes, it is prudent to begin with a healthy respect for markets. While markets do make large mistakes in pricing stocks and these mistakes draw attention (usually after the fact), they do an extraordinary job for the most part in bringing together investors with diverse views and information about stocks and arriving at consensus prices. When you do uncover what looks like a market mispricing and an investment opportunity, you should begin with the presumption that the market price is right and that you have missed some critical component in your analysis. It is only after you have rejected all of the possible alternative explanations for the mispricing that you should consider trying to take advantage of the mispricing.

Proposition 8: Markets are more often right than wrong.

Lesson 9: Know yourself

No investment strategy, no matter how well thought out and designed it is, will work for you as an investor, if it is not match your preferences and characteristics. A strategy of buying stocks that pay high and sustainable dividends may be a wonderful strategy for risk averse investors with long time horizons who do not pay much in taxes but not for investors with shorter time horizons who pay high taxes. Before you decide to adopt any investment strategy, you should consider whether it is the right strategy for you. Once you adopt it, you should pass it through two tests:

- a. *The acid test:* If you constantly worry about your portfolio and its movements keep you awake at nights, you should consider it a signal that the strategy that you just adopted is too risky for you.
- b. *The patience test:* Many investment strategies are marketed as long term strategies. If you adopt one of these strategies but you find yourself frequently second guessing yourself and fine tuning your portfolio, your just may be too impatient to carry this strategy to fruition.

In the long term, not much that is good –either physically or financially – comes out of these mismatches.

Proposition 9: There is no one best investment strategy that fits all investors.

Lesson 10: Luck overwhelms skill (at least in the short term)

The most depressing lesson of financial markets is that virtues such as hard work, patience and preparation do not always get rewarded. In the final analysis, whether you make money or not on your portfolio is only partially under your control and luck can play a dominant role. The most successful portfolio managers of last year, all too often, are not the ones with the best investment strategies but those who (by chance) happened to be at the

right place at the right time. It is true that the longer you invest, the more likely it is that luck will start to even out and that your true skills will show through; the most successful portfolio managers of the last 10 years are less likely to get there because they were lucky.

As an investor, you should take both success and failure with a grain of salt. Neither is a reflection of your prowess or lack thereof as an investor or the quality of your underlying investment strategy. While you may not be able to manufacture good luck, you should be ready to take advantage of it when it presents itself.

Proposition 10: It pays to be lucky.

Conclusion

Beating the market is neither easy nor painless. In financial markets, human beings, with all their frailties, collect and process information and make their best judgments on what assets are worth. Not surprisingly, they make mistakes and even those who believe that markets are efficient will concede this reality. The open question, though, is whether you can take advantage of these mistakes and do better than the average investor. You can but only if you do your homework, assess the weaknesses of your investment strategies and attempt to protect yourself against them. If you have a short time horizon, you will also need luck as an ally.