

## CHAPTER 9

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**THE ALLURE OF GROWTH: SMALL CAP AND GROWTH INVESTING**

There is a widespread belief that while value investing is for the risk averse, growth investing is the investment philosophy of those who like to take risk. Though there is nothing wrong with seeking out risk, taking on risk for the sake of doing so is foolhardy. Growth clearly has value, but the real issue is whether you can buy it at a reasonable price. In this chapter, we will examine the basis of growth investing and dispense with the notion that all growth investors are risk seekers. As with value investing, we will look at the various strands of growth investing and examine what you would need to succeed with each.

**Who is a growth investor?**

Many services define a growth investor as one who buys stocks that trade at high multiples of earnings. Though this may be a convenient way to categorize investors, it is not an accurate one. In fact, it leaves us with the misleading picture of growth investors as being uninterested in the value of what they are buying. While this may be true for some growth investors, does anyone really believe that Peter Lynch, who built Fidelity Magellan by focusing on growth companies, cares less about value than Warren Buffett does?

We will define growth investors as those who buy companies whose growth potential is being undervalued by the market. With our categorization, note that growth investors care just as much about value as value investors do. What then, you might wonder, is the distinction between growth and value investors? In our view, the key difference lies in where the focus for finding value lies. As we argued in the last chapter, value investors believe that you are more likely to find under valuation of assets in place and tend to invest in mature firms with substantial existing assets, albeit underperforming ones. Growth investors believe that they are more likely to find bargains in growth investments.

In the sections that follow, we will consider the different strands of growth investing. We will begin by looking at passive growth investing strategies, where we focus on investing in stocks that passes a specific screen - for instance, PE ratios that are less than expected growth rates in earnings per share. We will then consider active growth investing strategies, where investors not only take large positions in growth companies, but also actively involve themselves in the management of these companies. It is in this category that we consider venture capital and private equity investing.

## **Passive Growth Investing**

In passive growth investing, as in passive value investing, we use screens to find stocks that are under valued by the market. The simplest version of passive growth investing is investing in small growth companies, with small defined in terms of market capitalization. Next, we look at investing in initial public offerings, with the intent of capturing any excess returns associated with the stock going up after the offering. Finally, we consider more conventional growth investing strategies, by first looking at a strategy of buying companies with high growth, then evaluate a strategy of buying high PE stocks and finally a more nuanced strategy of buying growth stocks, but only at a reasonable price.

### **Small Cap Investing**

One of the most widely used passive growth strategies is the strategy of investing in small companies, with small defined in terms of market capitalization. While you could construct a value oriented, small cap portfolio, most small cap portfolios tend to be tilted towards growth companies, and we believe that this category fits better in this chapter. We will begin by reviewing the empirical evidence on small cap investing, and then look at the requirements for success at this strategy.

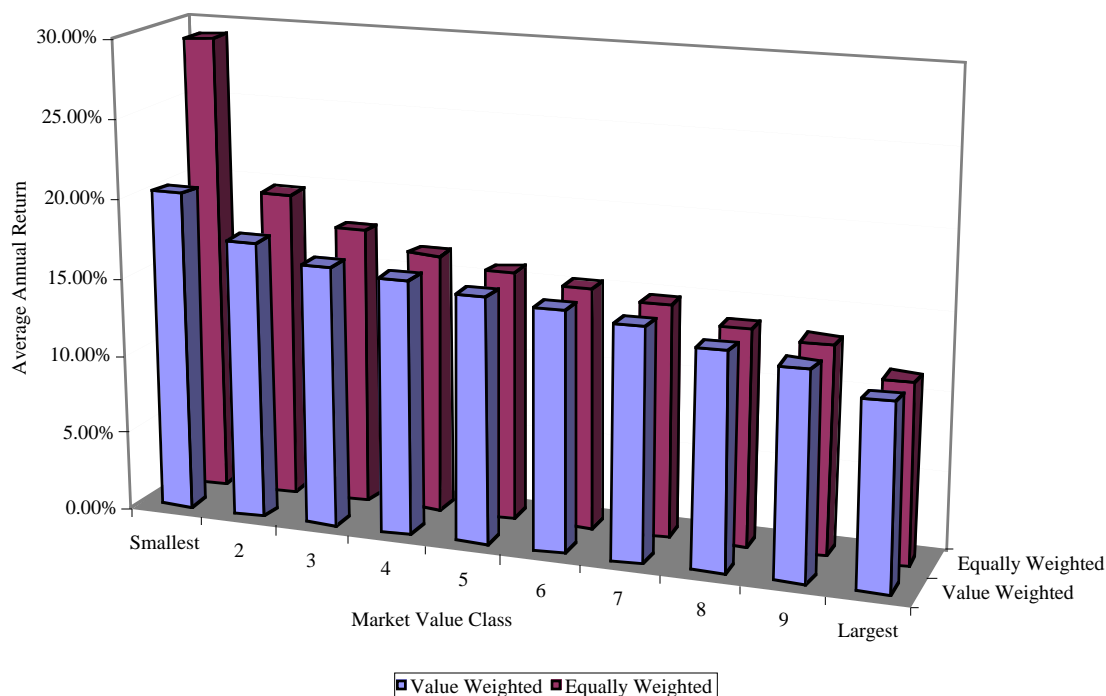
#### ***The Small Cap Effect***

Studies have consistently found that smaller firms (in terms of market value of equity) earn higher returns than larger firms of equivalent risk, where risk is defined in terms of the market beta. Figure 9.1 summarizes annual returns for stocks in ten market value classes, for the period from 1927 to 2001.<sup>1</sup> 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.

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<sup>1</sup> 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



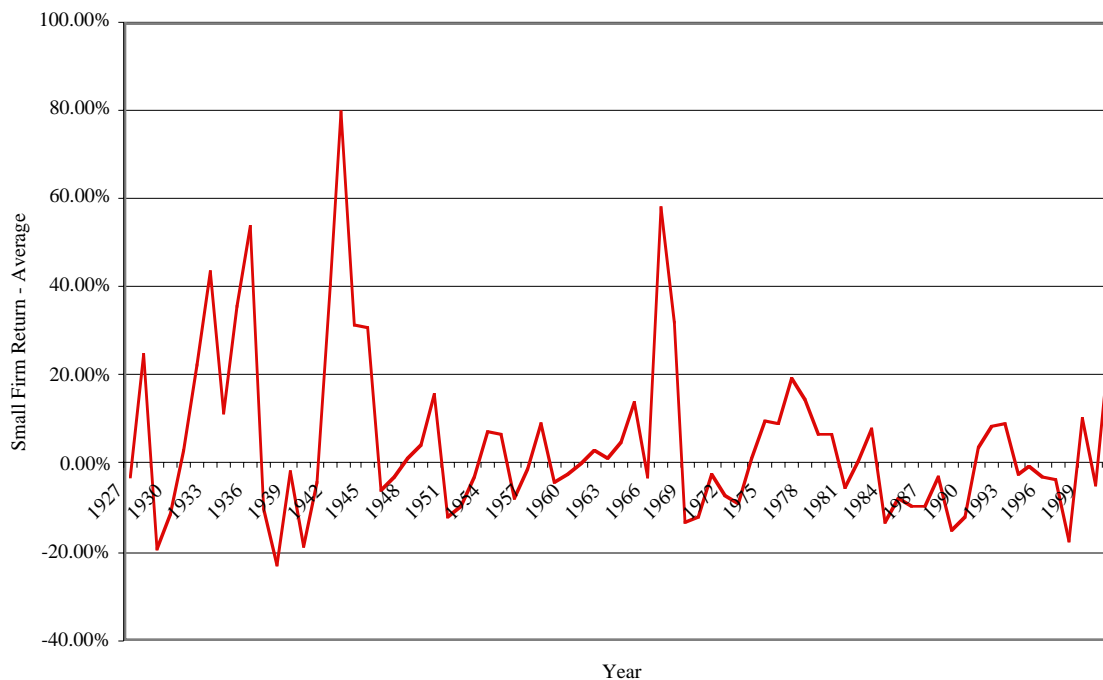
Source: Raw data from French

If we 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 we 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 the small cap 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 number of portfolio managers who focus on buying small cap stocks. Before we conclude that small cap investing is the way to go, though, we do have to consider some of the details of the small stock premium.

### *Small Cap Cycles*

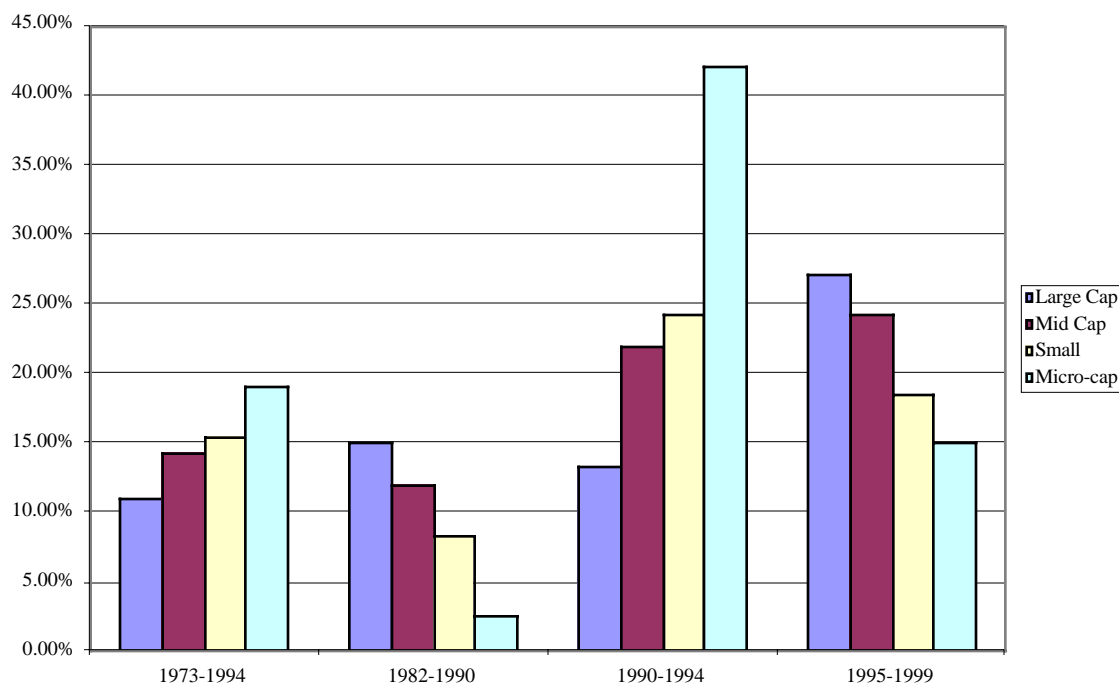
On average, have small cap stocks outperformed large cap stocks over this period? Absolutely, but, success from this strategy is by no means guaranteed in every time period. While small cap stocks have done better than large cap stocks in more periods than not, there have been extended periods where small cap stocks have underperformed large cap stocks. Figure 9.2 graphs the premium earned by small cap stocks over large cap stocks from 1927 to 2001.

Figure 9.2: Small Firm Premium over time- 1927 -2001



Source: Raw data from French

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 notes that the small stock premium can be almost entirely attributed to the performance of small stocks in the late 1970s. 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 below:

*Small Cap Effect over Time*

Source: Pradhuman (1998)

Pradhuman takes a close look at the small cap premium in his book on the topic.<sup>2</sup> He notes that small cap stocks tend to do much better than large cap stocks when the yield curve is downward sloping and inflation is high, which may explain why the premium was high in the 1970s. He also finds that the small cap premium tends to be larger when default spreads on corporate bonds narrow. In summary, there is a return premium for small cap stocks but it is a volatile one. While the premium clearly exists over long time periods, it also disappears over extended periods.

### *Deconstructing the Small Cap Effect*

A number of studies have tried to take a closer look at the small cap effect to see where the premium comes from. The following are some of the conclusions:

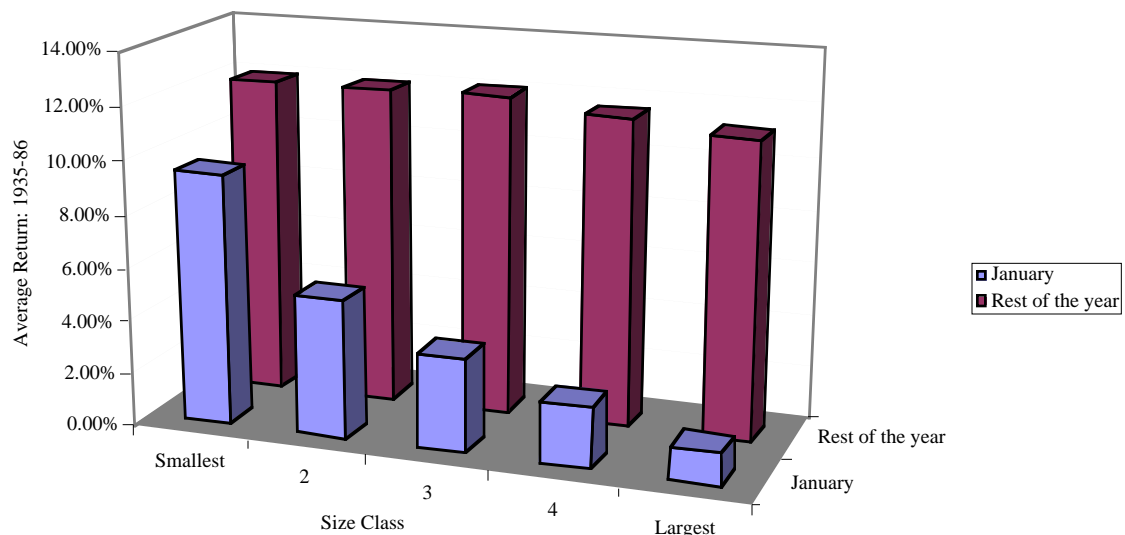
- The small cap effect is greatest in the micro-cap companies, i.e., the really small companies). In fact, many of these companies have market capitalizations of \$250 million or lower. All too often these are also companies that have low priced and illiquid stocks, not followed by equity research analysts.

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<sup>2</sup> The book titled “Small Cap Dynamics” is one of the most detailed looks at the phenomenon.

- A significant proportion of the small cap premium is earned in January. 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:

Figure 9.4: The Small Firm Effect in January



Source: Raw data from French

In fact, you cannot reject the hypothesis that there is no small cap premium from February to December. Many of the other temporal anomalies that we noted in chapter 7 such as the weekend effect also seem to be greater for small cap companies.

- There is evidence of a small firm premium in markets outside the United States. Studies find small cap premiums of about 7% from 1955 to 1984 in the United Kingdom,<sup>3</sup> 8.8% in France and a much smaller size effect in Germany<sup>4</sup> and a premium of 5.1% for Japanese stocks between 1971 and 1988.<sup>5</sup>

### *Explanations for the Small Stock Premium*

The persistence of the small stock premium has led many to argue that what looks like a premium in empirical studies comes the failure to allow for transactions costs and

<sup>3</sup> See Dimson and Marsh,

<sup>4</sup> Updated numbers are reported by Fama and French.

<sup>5</sup> Chan, Hamao and Lakonishok

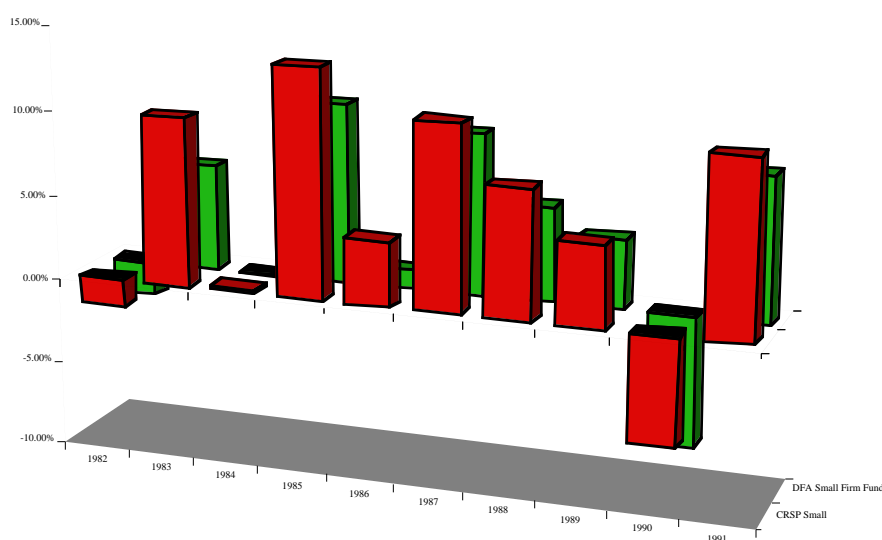
measure risk correctly in firms. There is truth in these arguments, though it is unclear whether the small stock premium would disappear even if they were considered.

### *Transactions Costs*

The transactions costs of investing in small stocks are significantly higher than the transactions costs of investing in larger stocks, and the premiums are estimated prior to these costs. In chapter 5, for instance, we looked at the bid-ask spread as a percent of the stock price and noted that it tended to be higher for smaller companies. In addition the price impact from trading is also higher for small cap stocks because they are less liquid. Can the difference in transactions costs overwhelm the small cap premium? The answer has to depend upon 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.

In a telling illustration of the difficulties associated with replicating the small firm premiums that are observed in the studies in real time, we compare the returns on a hypothetical small firm portfolio (CRSP Small Stocks) with the actual returns on a small firm mutual fund (DFA Small Stock Fund), which passively invests in the same small stocks in figure 9.5:

Figure 9.5: Returns on CRSP Small Stocks versus DFA Small Stock Fund



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.

### *Failure to consider liquidity and estimation risk*

Many of the studies that uncover a small cap premium measure the risk of stocks using a market beta and the capital asset pricing model. It is entirely possible that the capital asset pricing model is not the right model for risk, and betas under estimate the true risk of small stocks. Thus, the small firm premium may really reflect the failure of the market beta to capture risk. The additional risk associated with small stocks may come from several sources. First, the estimation risk associated with estimates of beta for small firms is much greater than the estimation risk associated with beta estimates for larger firms, partly because of the fact that small companies tend to change more over time and partly because of their short histories. The small firm premium may be a reward for this additional estimation risk.<sup>6</sup> Second, there may be much greater liquidity risk associated with investing in small companies. This risk (which is also partially responsible for the higher transactions costs noted in the previous section) is not captured in betas.

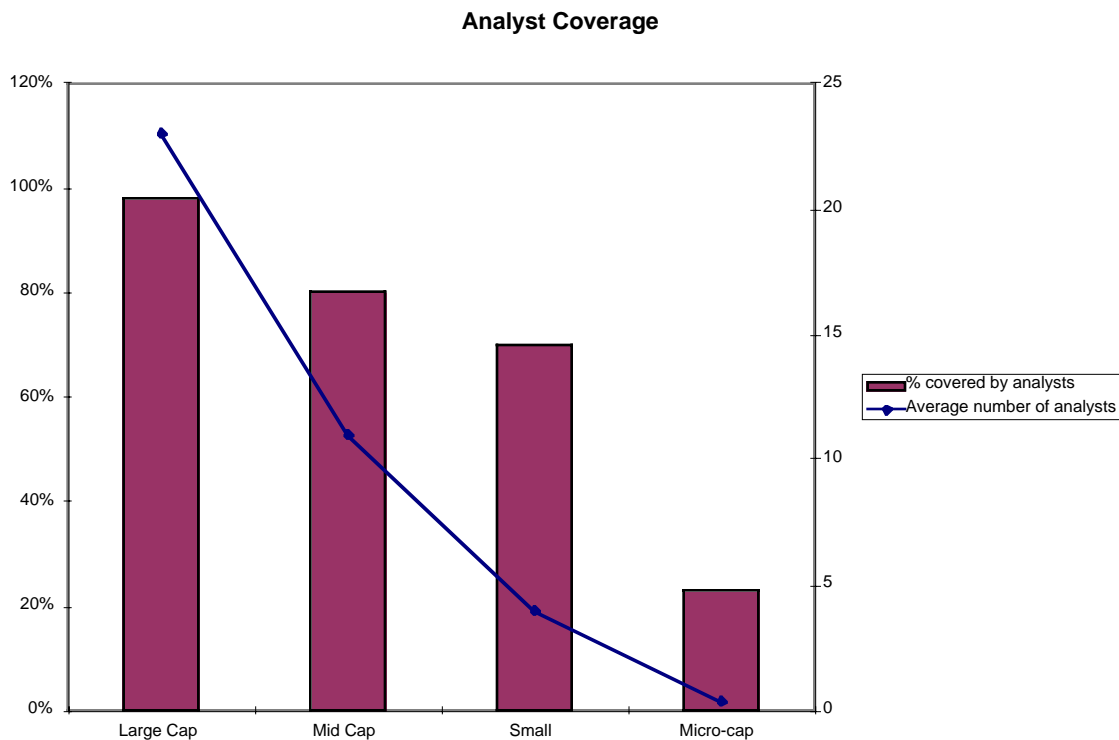
While the argument that liquidity and estimation risk can be significant problems for small cap stocks seems unexceptional, there is one problem with it. Note that portfolios of small cap stocks do not carry the same risk as individual stocks and that estimation risk, in particular, should be diversifiable. Estimation risk will lead you to under estimate the risk (or betas) of some small companies and over estimate the risk (or betas) of other small companies. The beta of a portfolio of such companies should still be predictable, because the estimation errors should average out. With illiquidity, the diversification argument is tougher to make, since it manifests itself as a higher cost (bid-ask spread or price impact) for all small stocks. Thus, the illiquidity risk will show up as higher transactions costs in a small-cap portfolio and will increase as trading in the portfolio increases.

### *Information Risk*

When investing in publicly traded companies, we tend to rely not only on the financial reports filed by the company but also on the opinions of analysts following the company. We expect these analysts, rightly or wrongly, to collect information about the firm and reveal this information in their reports. With a large and widely held firm, it is not uncommon to see 25 or 30 analysts following the firm and substantial external information on the firm. Many small cap firms are followed by one or two analysts and many are not followed by any, as you can see in figure 9.6.

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<sup>6</sup> 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.



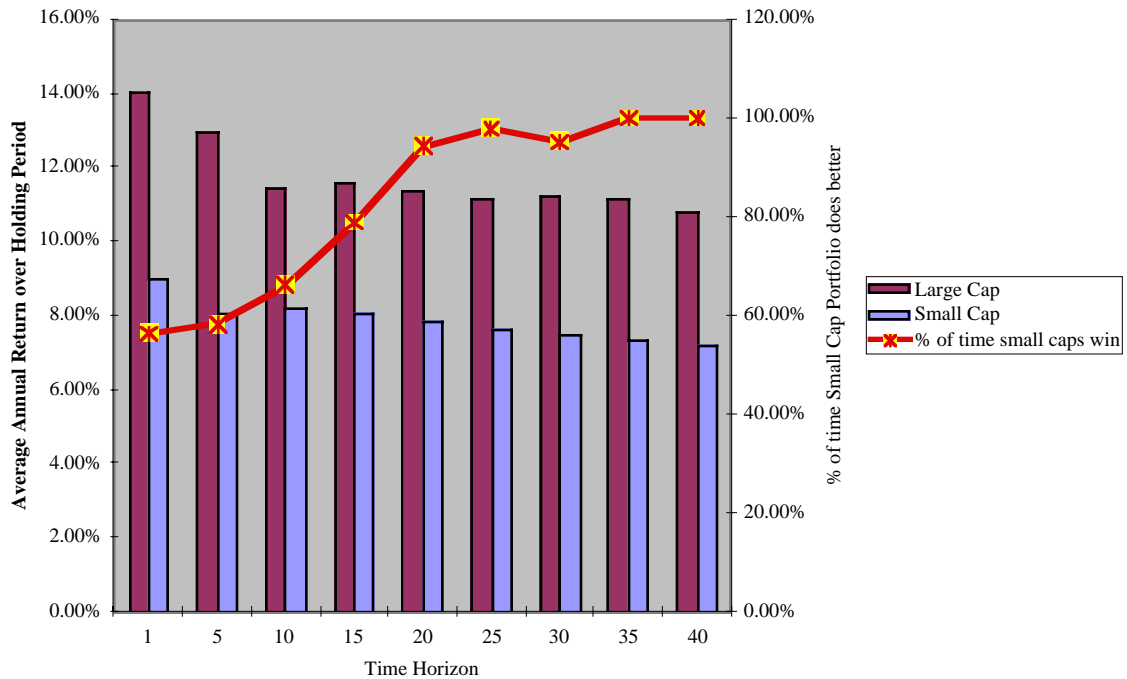
With some small-cap firms, you may find that the only source of information is the firm itself. While the firm may follow all of the regulatory requirements, the information revealed is unlikely to be unbiased, and it is entirely possible that bad news about the firm's operations may be withheld. Since you cannot diversify away this risk, you may demand a premium when investing in these companies.

### ***Determinants of Success at Small-cap Investing***

Let us concede, notwithstanding the period in the 1980s where the premium waned, that small cap stocks earn a premium over large cap stocks, when we adjust for risk using conventional measures like beta. Given the discussion in the last section about potential explanations for this premium, what do you need to do to succeed at small cap investing?

- The first and most critical factor seems to be a long time horizon, given the ups and downs of small cap premium. In figure 9.7, we examine the percent of time a small cap investor would have outstripped a large cap investor with different time horizons. Note that the number is close to 50% for time horizons up to five years, no different from a random strategy. Beyond 5 years though, small cap investing wins decisively.

Figure 9.7: Time Horizon and the Small Firm Premium



A long time horizon will also go a long way towards reducing the bite taken out of returns by transactions costs.

- The importance of discipline and diversification become even greater, if you are a small cap investor. Since small cap stocks tend to be concentrated in a few sectors, you will need a much larger portfolio to be diversified with small cap stocks.<sup>7</sup> In addition, diversification should also reduce the impact of estimation risk and some information risk.
- When investing in small cap stocks, the responsibility for due diligence will often fall on your shoulders as an investor, since there are often no analysts following the company. You may have to go beyond the financial statements and scour other sources (local newspapers, the firm's customers and competitors) to find relevant information about the company.

If you combine the need for more stocks in your portfolio with additional research on each, you can see that small cap investing is likely to be more time and resource intensive than most other investment strategies. If you are willing to expend these

<sup>7</sup> The conventional rule of thumb for being diversified (where you diversify away 95% of the firm-specific risk) with large cap stocks is about 25 stocks. With small cap stocks, you would need to hold more stocks. How many more? It will depend upon your strategy, but you should consider holding at least 40-50 stocks.

resources and have a long time horizon, you may well be able to claim a large portion of the small cap stock premium going forward.

#### *Small Cap Value Investing*

While we have considered small cap investing as a strand of growth investing, you can be a small-cap value investor, if you focus on small companies that trade low PE or low PBV ratios – the conventional measures of value companies. Investors who do this hope to combine the excess returns that have been uncovered for buying stocks that trade at low multiples of earnings and book value with the excess returns associated with small cap investing.

Pradhuman, in his book on small cap investing, contrasts a strategy of buying small cap value stocks with small cap growth stocks and presents several results. First, the excess return on a small cap, value strategy is less than the sum of the excess return on a value strategy and the excess return on a small cap strategy. In other words, there is some leakage in returns from both strategies when you combine them. Second, the difference in returns between value and growth small-cap stocks mirrors the difference in returns between value and growth large-cap stocks, but the cycles are exaggerated. In other words, when value stocks outperform (underperform) growth stocks across the market, small-cap value stocks outperform (underperform) small-cap growth stocks by an even larger magnitude. Third, the excess returns in the last two decades on a small-cap, value strategy seem to be more driven by the value component than by the small-cap component.<sup>8</sup>

### **Initial Public Offerings**

In initial public offerings, private firms make the transition to being publicly traded firms by offering their 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 excess 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

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<sup>8</sup> We came to this conclusion by regressing excess returns on stocks against market capitalization and price to book ratio. The latter explained far more of the differences in excess returns than the former.

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 requirements<sup>9</sup>. Assuming that the benefits outweigh the costs, there are four steps involved in an initial public offering.

### *I. Choosing an Investment Banker*

Once the decision to go public has been made, a firm generally cannot approach financial markets on its own. This is so because it is largely unknown to investors and does not have the expertise to go public without help. Therefore, a firm has to pick intermediaries to facilitate the transaction. These intermediaries are usually investment bankers, who provide several services. First, they help the firm meet the requirements of the Securities and Exchange Commission (SEC) in preparing and filing the necessary registration statements needed for the public offering. Second, they provide the credibility a small and unknown private firm may need to induce investors to buy its stock. Third, they provide their advice on the valuation of the company and the pricing of the new issue. Fourth, they absorb some of the risk in the issue by guaranteeing an offer price on the issue; this guarantee is called an underwriting guarantee. Finally, they help sell the issue by assembling a group called an underwriting syndicate, who try to place the stock with its clients. The underwriting syndicate is organized by one investment bank, called the lead investment bank. Private firms tend to pick investment bankers based upon reputation and expertise, rather than price. A good reputation provides the credibility and the comfort level needed for investors to buy the stock of the firm; expertise applies not only to the pricing of the issue and the process of going public but also to other financing decisions that might be made in the aftermath of a public issue. The investment banking agreement is then negotiated, rather than opened up for competition.

### *II. Valuing the Company and Setting Issue Details*

Once the firm chooses an investment banker to take it public, the next step is to estimate a value for the firm. This valuation is generally done by the lead investment bank, with substantial information provided by the issuing firm. The value is sometimes estimated

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<sup>9</sup> 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 and when to reveal information about the firm to others.

using discounted cash flow models, similar to those described in chapter 5. More often, though, the value is estimated by using a multiple, like a price earnings ratio, and by looking at the pricing of comparable firms that are already publicly traded. Whichever approach is used, the absence of substantial historical information, in conjunction with the fact that these are small companies with high growth prospects, makes the estimation of value an uncertain one at best.

The other decision the firm has to make relates to the size of the initial issue and the use of the proceeds. In most cases, only a portion of the firm's stock is offered at the initial public offering; this reduces the risk on the under pricing and enables the owners to test the market before they try to sell more stock. In most cases, the firm uses the proceeds from the initial stock issue to finance new investments.

The next step in this process is to set the value per share for the issuer. To do so, the equity in the firm is divided by the number of shares, which is determined by the price range the issuer would like to have on the issue. If the equity in the firm is valued at \$ 50 million, for example, the number of shares would be set at 5 million to get a target price range of \$10, or at 1 million shares to get a target price range of \$ 50 per share.

The final step in this process is to set the offering price per share. Most investment banks set the offering price below the estimated value per share for two reasons. First, it reduces the bank's risk exposure, since it ensures that the shares will be bought by investors at the offering price. (If the offering price is set too high and the investment bank is unable to sell all of the shares being offered, it has to use its own funds to buy the shares at the offering price.) Second, investors and investment banks view it as a good sign if the stock increases in price in the immediate aftermath of the initial issue. For the clients of the investment banker who get the shares at the offering price, there is an immediate payoff; for the issuing company, the ground has been prepared for future issues.

In setting the offering price, investment bankers have the advantage of first checking investor demand. This process, which is called building the book, involves polling institutional investors prior to pricing an offering, to gauge the extent of the demand for an issue. It is also at this stage in the process that the investment banker and issuing firm will present information to prospective investors in a series of presentations called road shows. In this process, if the demand seems very strong, the offering price will be increased; in contrast, if the demand seems weak, the offering price will be lowered. In some cases, a firm

will withdraw<sup>10</sup> an initial public offering at this stage, if investors are not enthusiastic about it.

### *III. SEC Requirements*

In order to make a public offering in the United States, a firm has to meet several requirements. First, it has to file a registration statement and prospectus with the SEC, providing information about the firm's financial history, its forecasts for the future and how it plans for the funds it raises from the initial public offering. The prospectus provides information about the riskiness and prospects of the firm for prospective investors in its stock. The SEC reviews this information and either approves the registration or sends out a deficiency memorandum asking for more information. While the registration is being reviewed, the firm may not sell any securities, though it can issue a preliminary prospectus, titled a red herring, for informational purposes only.

Once the registration has been approved by the SEC, the firm can place a tombstone advertisement in newspapers and other publications. This ad contains details of the issue, the name of the lead investment banker, and the names of other investment bankers involved in the issue. The order in which the investment bankers are listed is significant. At the top is the lead investment banker and the co-managers of the issue, followed by the major bracket investment bankers. The categorization is based both upon reputation and national focus. Then comes the mezzanine bracket, which includes smaller investment banks that operate nationally, and at the bottom are the regional investment bankers involved with the issue. Figure 9.8 shows a typical tombstone advertisement for an initial public offering.

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<sup>10</sup> One study of initial public offerings between 1979 and 1982 found that 29% of firms terminated their initial public offerings at this stage in the process.

Figure 9.8: Tombstone Advertisement

This announcement is under no circumstances to be construed as an offer to sell or as a solicitation of an offer to buy any of these securities.  
The offering is made only by the Prospectus.

New Issue April 26, 2000

**\$10,620,000,000**



**AT&T Wireless Group Tracking Stock**

**360,000,000 Shares**

**Price \$29.50 Per Share**

The New York Stock Exchange symbol is AWE

Global Coordinators and Joint Book-Running Managers

**Goldman, Sachs & Co.                      Merrill Lynch & Co.                      Salomon Smith Barney**

Copies of the Prospectus may be obtained in any State or jurisdiction in which this announcement is circulated from only such of the undersigned or other dealers or brokers as may lawfully offer these securities in such State or jurisdiction.

**306,000,000 Shares**

The above shares were underwritten by the following group of U.S. Underwriters.

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A.G. Edwards & Sons, Inc.	Pubity Capital Markets <small>a Division of National Financial Services Group</small>	First Union Securities, Inc.	Green & Company	
Edward D. Jones & Co., L.P.	Lazard Frères & Co. LLC	RBC Dominion Securities Corporation	Robertson Stephens	IG Cowen
Marcel Shihert & Co., Inc.	U.S. Global Capital Partners, L.P.	Windsor Perella Securities, Inc.		JPJ JouonPier
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Frederick Billings Ramsey	General Edward Mathison & Co., Inc.	J. J. R. Wilford, W. L. Lytle, Inc.	Jefferies Montgomery Scott LLC	C. L. King & Associates, Inc.
Legg Mason Wood Walker	Midwest Investments Inc.	Morgan Keegan & Company, Inc.	Northwest & Company, Inc.	Northrup Barlow, LLC
Prys, McCordick, Guerin & Co., Inc.	Ragan MacKinnon	Randall & Co., Inc.	Raymond James & Associates, Inc.	The Robinson Group
Scott & Stripling, Inc.	Shepley Inc.	S&B, Muskar & Company	Southwest Equitable Securities	Steele & Co. Incorporated
C.E. Unterberg, Toronto	U.S. Bakery Paper Jeffrey	Wadsworth Securities, Inc.		The Williams Capital Group, L.P.
Adams, Harkness & Hill, Inc.	Arnhold and S. Bockrisch, Inc.	George E. Bats & Company	Beverly Marry & Co., Inc.	Burdman Securities Inc.
Crowell, Wood & Co.	Davenport & Company LLC	H. A. Buckman & Co.	Duff & Co., Inc.	Daley Securities, Inc.
Garfield Risk & Co., Inc.	Grindl & Co., L.L.C.	Jackson Securities Incorporated	James Parkman, Inc.	Jefferies & Company, Inc.
Kaufman Bros., L.P.	Long Capital Markets	May Derrig Group Inc.	MetLife Financial Markets LLC	Melvin Securities Corporation LLC
Prudential Securities Group	Pittsburg Institutional Inc.	Redwood Securities Group, Inc.	IBK, Broker Investment Corp.	Sanders Morris Harris
Scudder Brothers & Co., Ltd.	The Seidler Companies	Shearman & Co., Inc.	B. C. Waterlight & Co., Inc.	Windsor Morgan Securities

**54,000,000 Shares**

The above shares were underwritten by the following group of International Managers.

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BANCA IMI	BNP Paribas Group	Cazenove & Co.
		Daiwa SBCM Europe
		HSBC
		ING Barings Limited

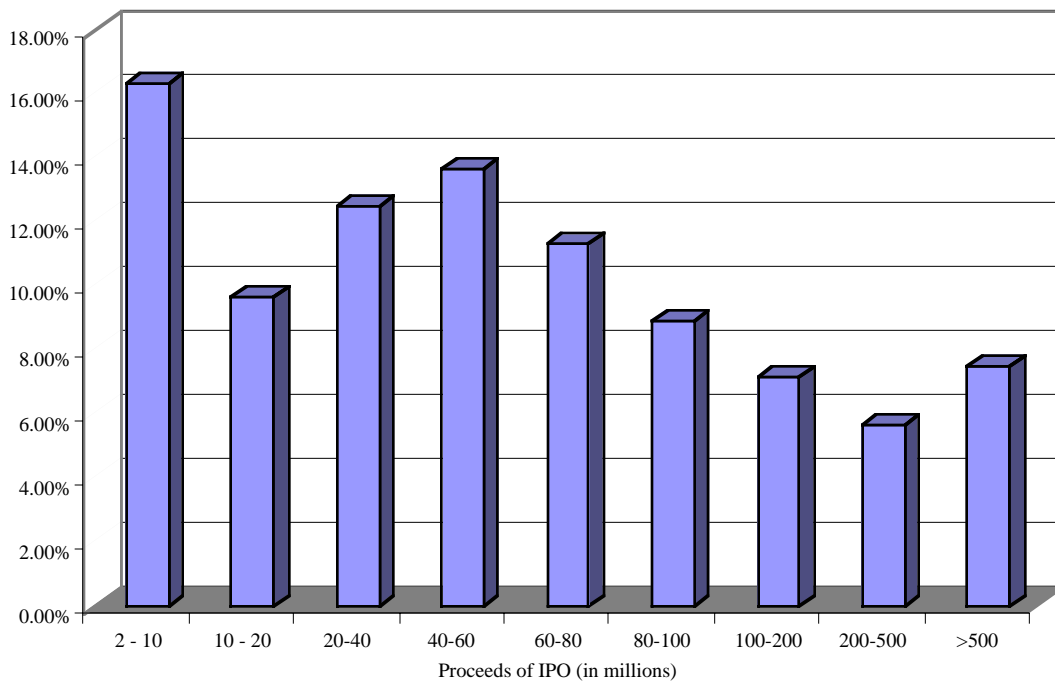
#### IV. The Issue

Once the offering price has been set and the tombstone advertisement published, the die is cast. If the offering price has indeed been set below the true value, the demand will exceed the offering, and the investment banker will have to choose a rationing mechanism to allocate the shares. On the offering date — the first date the shares can be traded — there will generally be a spurt in the market price. If the offering price has been set too high, as is sometimes the case, the investment bankers will have to discount the offering to sell it and make up the difference to the issuer, because of the underwriting agreement.

#### *IPO Pricing and Investment Strategies*

How well do investment bankers price initial public offerings? 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. One study<sup>11</sup> estimates the under pricing as a function of the issue proceeds for 1767 iPOs between 1990 and 1994, and the results are presented in figure 9.9 below:

Figure 9.9: Average Initial Return and Issue Size



Source: Lee, Lockhead, Ritter and Zhao

<sup>11</sup> See Lee, Lockhead, Ritter and Zhao (1996)

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.

Some of the studies have broken down initial public offerings on other dimensions to examine the reasons for the underpricing. In 1998, Ritter provided a comprehensive summary of both the hypotheses on why the underpricing occurs and the empirical evidence on it. We summarize a few of his findings:

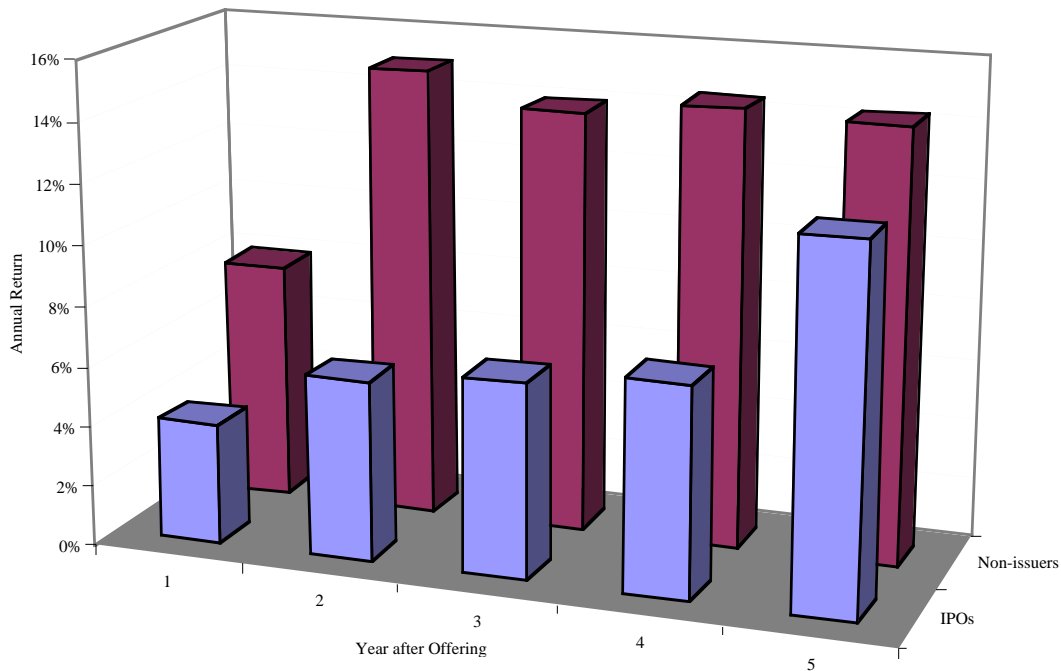
- The average initial return is 15.8% across a sample of 13,308 initial public offerings. However, about 15% of all initial public offerings are over priced. In other words, the stock price drops from the initial offering price on the date of the offering. Thus, investing in IPOs is by no means a riskless or guaranteed strategy, even if you were guaranteed an 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 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. Loughran and Ritter tracked returns on 5821 IPOs in the five years after the offerings and contrasted them with returns in figure 9.10.

Figure 9.10: Post Issue Returns - IPOs versus Non IPOs



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.

### *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 catch in the allotment process that may prevent this portfolio from earning the excess returns from the under pricing. When investors subscribe to initial public offerings, the number of shares that they 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 be underweighted in under priced initial public offering and overweighted in overpriced offerings.

Is there a way in which you can win this allotment game? There are two. 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 States<sup>12</sup>, 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 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*

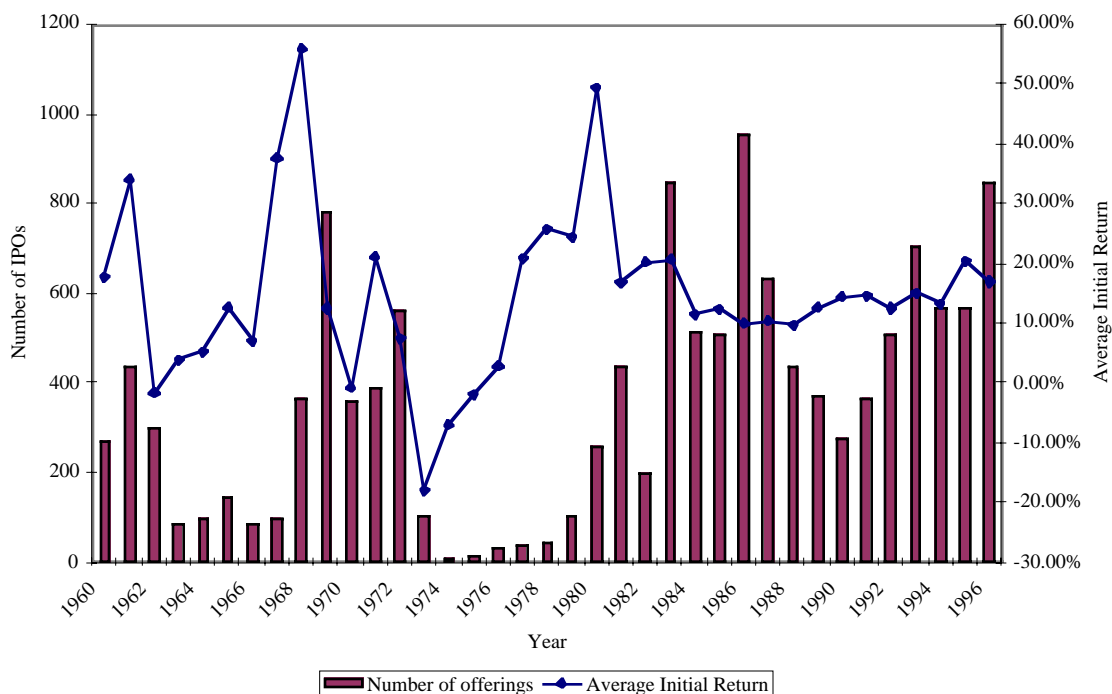
Initial public offerings ebb and flow with the overall market. There are periods where the market is flooded with initial public offerings and periods where there are almost no offerings. Contrast, for instance, the salad days of the late 1990s, when firms went public at an extraordinary pace and 2001, 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 and telecomm 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.

Ritter (1998) 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 9.11:

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<sup>12</sup> 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.

Figure 9.11: Number of IPOs and Average Initial Return



Note that the number of offerings drops to almost zero in the early 1970s and the returns to IPOs drops as well. A portfolio manager who focused only on initial public offerings would have gone out of business in that period.

### *Determinants of Success*

A strategy of investing in initial public offerings makes more sense as an ancillary strategy rather than a primary strategy, partly because the sector concentration of initial public offerings during hot periods and partly because of the absence of offerings during cold periods. Assuming that it is used as an ancillary strategy, you would need to do the following to succeed:

- Have the valuation skills to value companies with limited information and considerable uncertainty about the future, so as to be able to identify the companies that are under or over priced.
- Since this is a short term strategy, often involving getting the shares at the offering price and flipping the shares on the offering date, you will have to gauge the market mood and demand for each offering, in addition to assessing its value. In other words, a shift in market mood can leave you with a large allotment of over-priced shares in an initial public offering.

- Play the allotment game well, asking for more shares than you want in companies which you view as severely under priced and fewer or no shares in firms that are overpriced or that are priced closer to fair value.

In recent years, investment banks have used and misused the allotment process to reward selected clients. In periods when demand for initial public offerings is high, they have also been able to punish investors who sell immediately by withholding or rationing future allotments. If you are required to hold these stocks for the long term to qualify for the initial offering, you may very well find that the under performance of these stocks in the post-offering period (see figure 9.10) can very quickly be decimated by poor returns in subsequent periods.

### **Growth Screens**

If you were a portfolio manager whose choices come from a very large universe of stocks, your most effective way of building a portfolio may be to screen stocks and pick those that pass specific screens. In other words, you do for growth stocks what Ben Graham did for value stocks. In this section, we consider three screening strategies – a strategy of buying stocks with high expected growth rates in earnings, the high flyer strategy, where you pick stocks with high PE ratios and the growth at a reasonable price (GARP) strategy, where you pick growth stocks that trade at low prices, given their expected growth.

#### ***High Earnings Growth Strategy***

The strategy that follows most logically for most growth investors is to buy stocks with high growth rates in earnings. You can look at past growth in earnings as a predictor of future growth and buy companies with high historical earnings growth rates or you can look for companies where analysts are predicting high expected earnings growth.

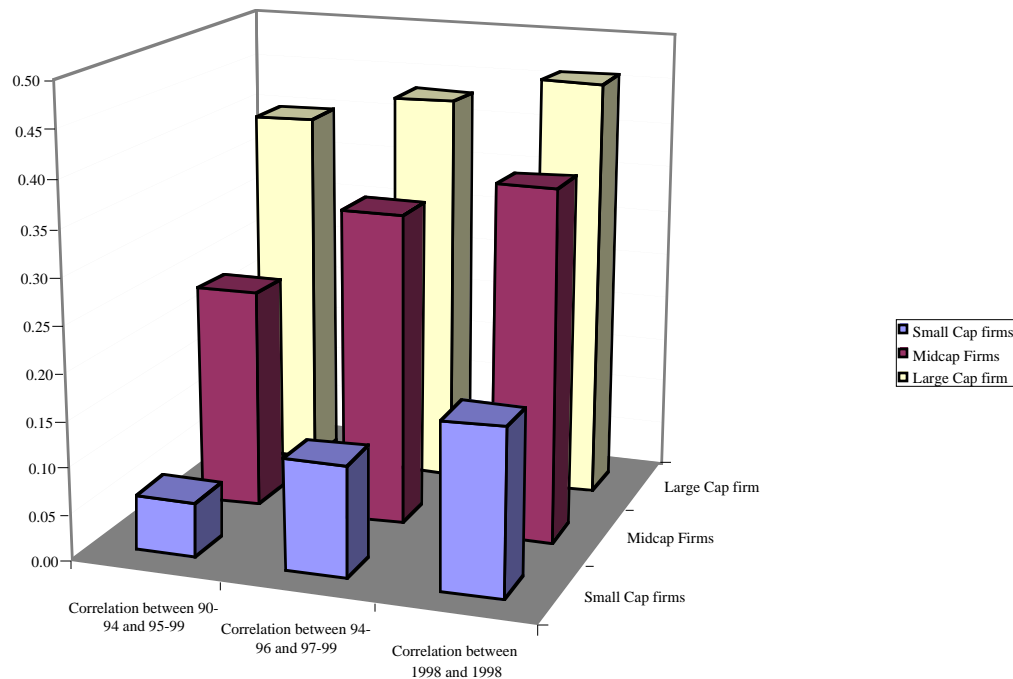
#### ***Historical Growth***

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.

- The first is that they have considerable noise associated with them and are noisy predictors of future growth. In a 1960 study of the relationship between past growth rates and future growth rates, 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. In the process of running a series of correlations 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). If past growth in earnings is not a reliable indicator of future growth at average 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 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 9.12.

Figure 9.12: Correlations in Earnings Growth by Market Capitalization

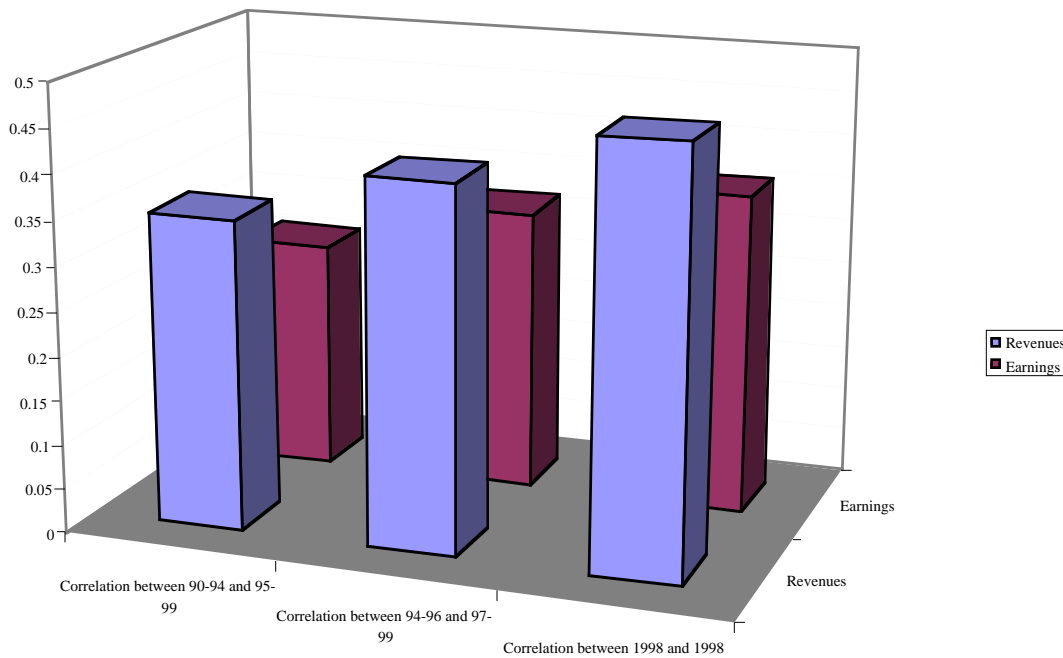


While the correlations tend to be higher across the board for one-year growth rates than for 3-year or 5-year growth rates in earnings, they are also consistently lower for smaller firms than they are for the rest of the market. This would suggest that you should be more cautious about using past growth,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

- The second problem is that there is mean reversion in earnings growth rates. 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 when they track companies in the highest and lowest earnings growth classes for 5 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.
- 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 9.13 compares the correlations in revenue and earnings growth over one-year, three-year and five-year periods at U.S. firms.

Figure 9.13: Correlation in Revenues and Earnings



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 than historical growth in earnings.

There are some investors who believe that it is not earning growth per se that you should be looking at but momentum in growth. In other words, you want to invest in stocks whose earnings growth is accelerating. This is, in fact, a big component of what Value Line's acclaimed stock picking measures are based upon. While Value Line may have been successful with this strategy in its earlier years, much of what we have said about earnings growth probably also applied to earnings momentum.

In summary, past earnings growth is not a reliable indicator of future growth and investing in companies with high past growth does not yield significant returns. In fact, if

there is mean reversion and you pay a large premium for companies with high growth, you will find yourself with a losing portfolio.

### *Expected Earnings Growth*

Value is ultimately driven by future growth and not past growth. It seems reasonable, therefore, that you would be better served investing in stocks where expected growth is high rather than historical growth. Here, you do run into a practical problem. In a market as large as the United States, you cannot estimate expected growth 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?



*Stocks with highest expected growth:*  
Take a look at 50 stocks with the highest expected growth in earnings per share.

Consider what you would need for this strategy to be successful. First, analysts have to be 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 forecast errors are high for long-term forecasts. In fact, some studies find that time series model match or even outperform analysts 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.

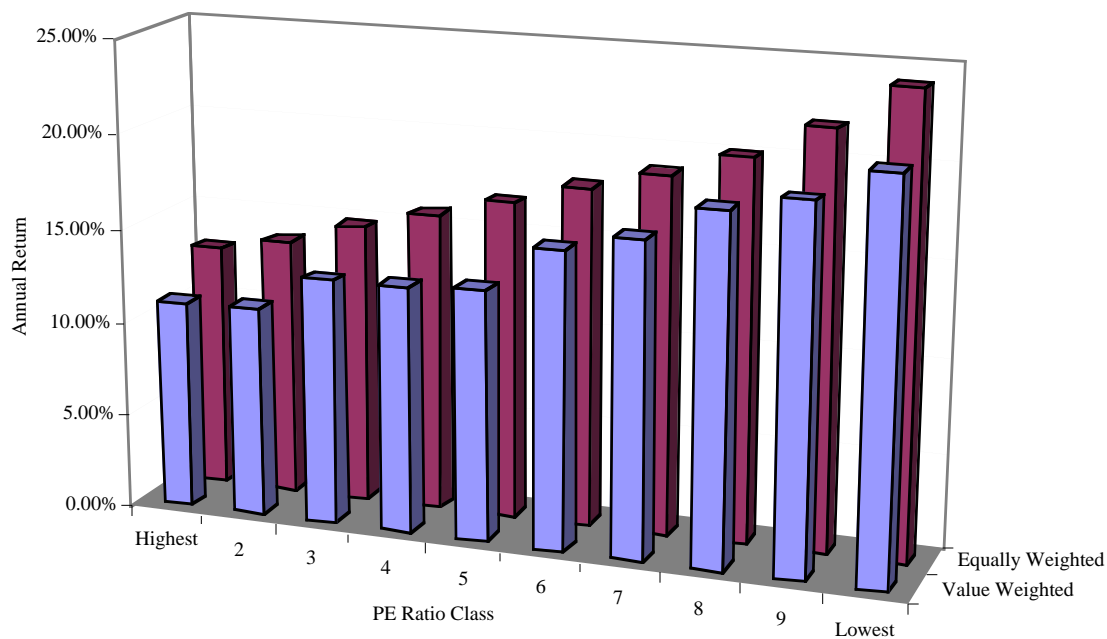
### *High PE Strategy*

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*

We should begin by noting that the overall evidence on buying high PE ratio stocks is grim. As we noted in chapter 8, when looking at the value stocks, buying low PE ratio stocks seems to outperform high PE ratio stocks by significant margins. Figure 9.14 presents the difference in annual returns from buying low PE stock and high PE stock portfolio from 1952 to 2001.

Figure 9.14: PE Ratios and Stock Returns - 1952 -2001

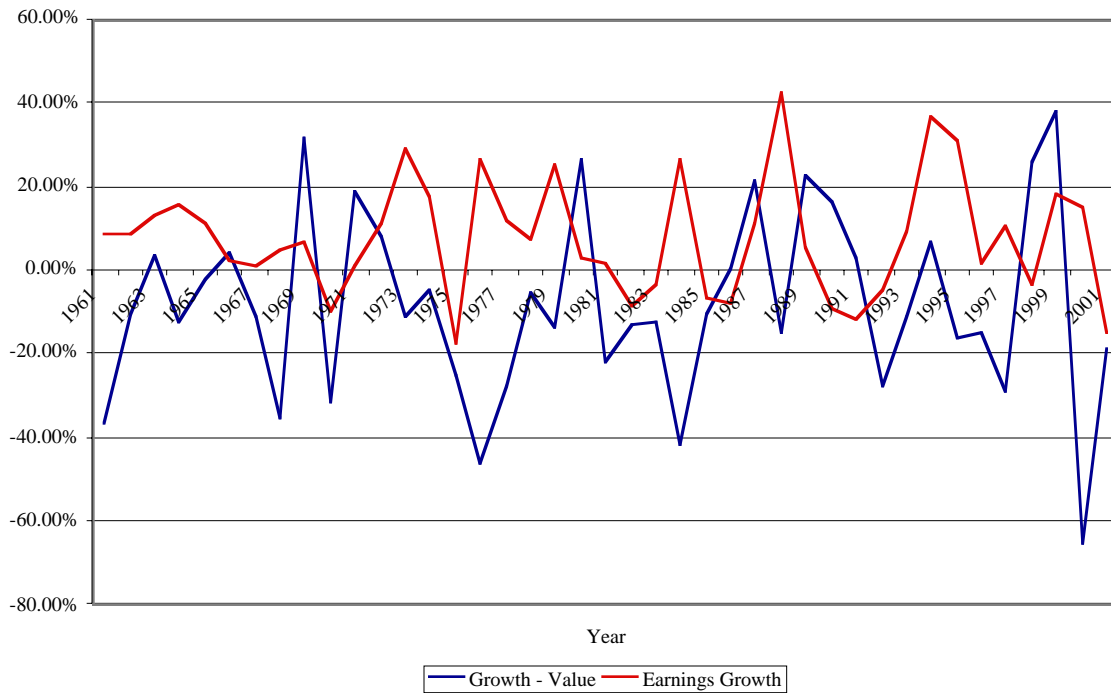


On both an equally-weighted and a value-weighted basis, high PE stocks have underperformed low PE ratio stocks. In fact, it is this consistent underperformance of high PE stocks that has led to the value investing bias that we often see in both academic and practitioner research.

#### *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 9.15, we have graphed the difference between a low PE and a high PE portfolio and the growth in earnings in each period:

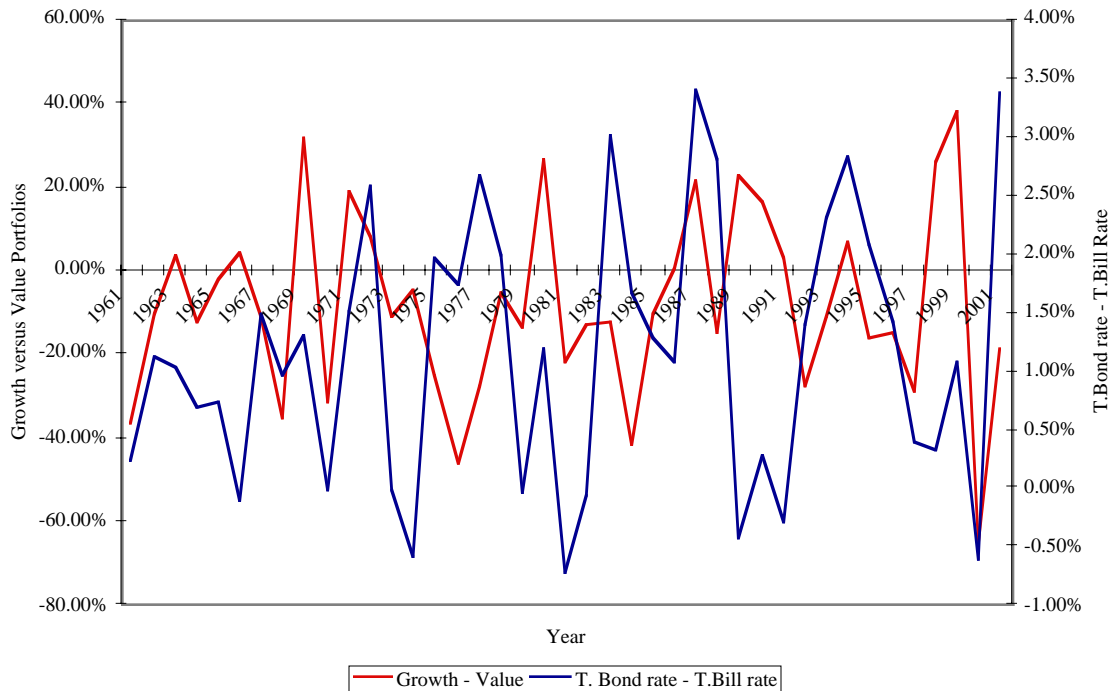
Figure 9.15: Relative Performance of Growth and Value versus Earnings Growth



We measure the performance of growth versus value by looking at the difference between the returns earned on a portfolio of stocks in the top decile in terms of PE (growth) and a portfolio of stocks in the lowest decile (value). 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 periods when earnings growth is low, because they are scarce. 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 the yield curve is flat or downward sloping and value investing does much better when is much more upward sloping. Figure 9.16 presents the relationship between the slope of the yield curve and the performance of growth investing.

Figure 9.16: Relative Performance of Growth Stocks versus Yield Curve



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 his paper on mutual funds in 1995, Malkiel provides additional evidence 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. We will look at this evidence in more detail in chapter 13.

*Peter Lynch: Finding value in growth stocks*

If Warren Buffett is the icon for value investors, Peter Lynch occupies a similar position for growth investors. His reputation was made during his stewardship of Fidelity Magellan, a small high growth fund that he took over in 1977 and made into the largest equity mutual fund in the world over the next decade. The reason for its growth was its performance. An investment of \$ 10,000 in the Magellan fund would have grown 20 fold over the next ten years. During that period, Lynch also helped dispel the notion that growth investors were incurable optimists who bought stocks on promises. He introduced the rigors of value

investing to growth investing, and he described much of what he did in his books on investing and his articles for *Worth*, a financial magazine. One of these articles includes Lynch's maxims on finding good investments:

1. Pay attention to facts and not forecasts.
2. Before you invest, check the balance sheet to see if the company is financially sound.
3. Don't buy options, and don't invest on margin. With options, time works against you, and if you're on margin, a drop in the market can wipe you out.
4. When several insiders are buying the company's stock at the same time, it's a positive.
4. Average investors should be able to monitor five to ten companies at a time, but nobody is forcing you to own any of them.
5. Be patient. Stocks often make their greatest gains in the third or fourth year that you own them. A few took ten years.
6. Enter early -- but not too early. Think of investing in growth companies in terms of baseball. Try to join the game in the third inning because a company has proved itself by then. If you buy before the lineup is announced, you're taking an unnecessary risk. If you buy in the late innings, you may be too late.
7. Don't buy "cheap" stocks just because they're cheap. Buy them because the fundamentals are improving.
8. Buy small companies after they've had a chance to prove they can make a profit.
9. Long shots usually backfire or become "no shots."
10. Investigate ten companies and you're likely to find one with bright prospects that aren't reflected in the price.

*Worth Magazine, 1996.*

### ***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 consider both expected growth and the current pricing of the stock. We 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 undervalued, 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. 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) 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 the expected growth rate. 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.<sup>13</sup> 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 provide consensus estimates from analysts of earnings per share growth over the next 5 years for most U.S. firms. Many analysts who use PEG ratios, though, prefer to use short-term growth rates in earnings to compute them.



*Stocks with lowest PEG ratios:* Take a look at the 50 stocks with the lowest PEG ratios.

### *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

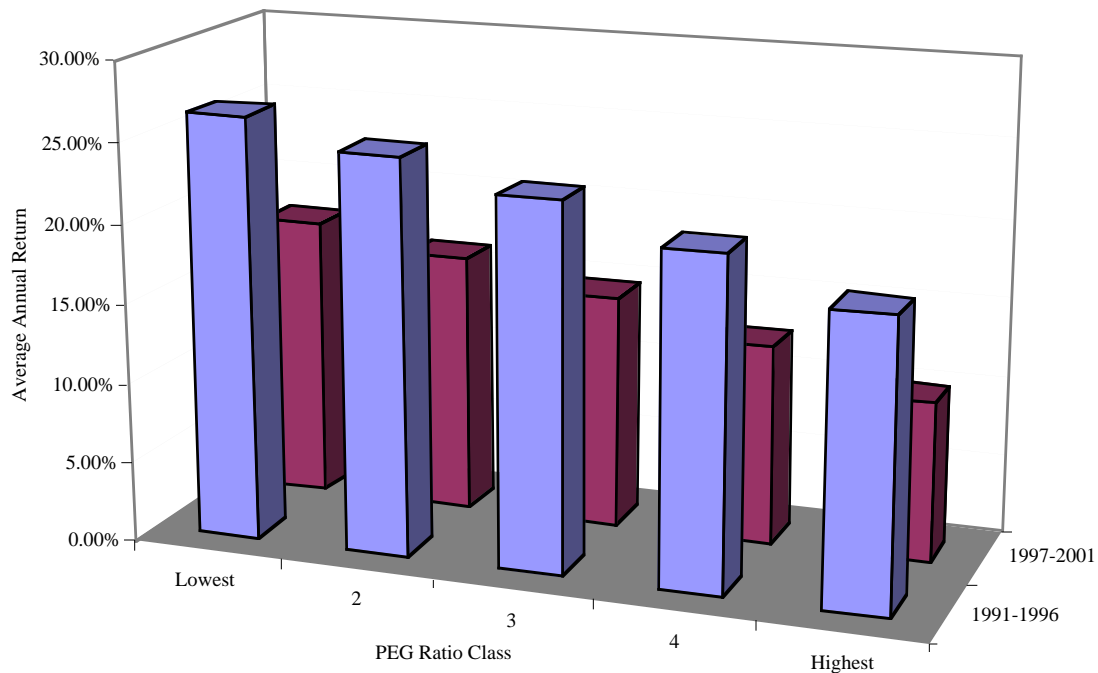
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<sup>13</sup> If the forward earnings are high because of high growth in the next year, and this high growth results in a high growth rate for the next 5 years, you will understate your PEG ratio.

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 ratio 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, it was argued that the difference was larger than could be justified by the risk adjustment.

We updated this study 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 9.17 summarizes the average annual returns on PEG ratios classes in the 1991-1996 and 1997-2001 time periods.

Figure 9.17: PEG Ratios and Annual Returns



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.

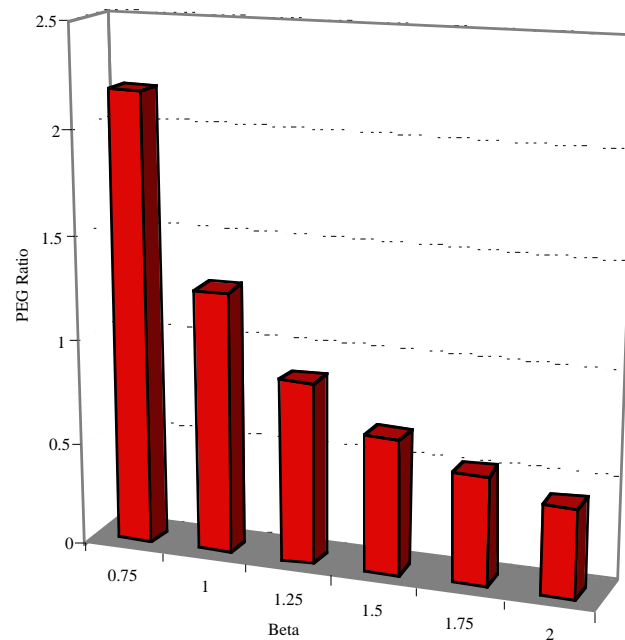
#### *Potential Problems*

If, on average, stocks with low PEG ratios outperform other stocks, why should we not adopt this as a screening strategy? There are two potential problems with PEG ratios that may lead us to misidentify riskier stocks with higher growth rates as undervalued.

The first and most obvious problem is that the PEG ratio is obtained by dividing the PE ratio by the expected growth rate and the uncertainty about that expected growth rate is

not factored into the number. Intuitively, you would expect, riskier stocks for any given growth rate, to have lower PE ratios. Thus, a stock that looks cheap on a PEG ratio basis may be, in fact, correctly or even over valued. The relationship between risk and growth can be illustrated in two ways. The first is by computing the PE ratio for a hypothetical firm, holding growth and cashflows constant, but varying the risk.<sup>14</sup> In figure 9.18 below, for instance, we vary the beta of a stock with an expected growth rate of 25% for five years and 8% forever thereafter, and compute the PEG ratio:

Figure 9.18: PEG Ratios and Beta: Firm with 25% growth for next 5 years, 8% thereafter



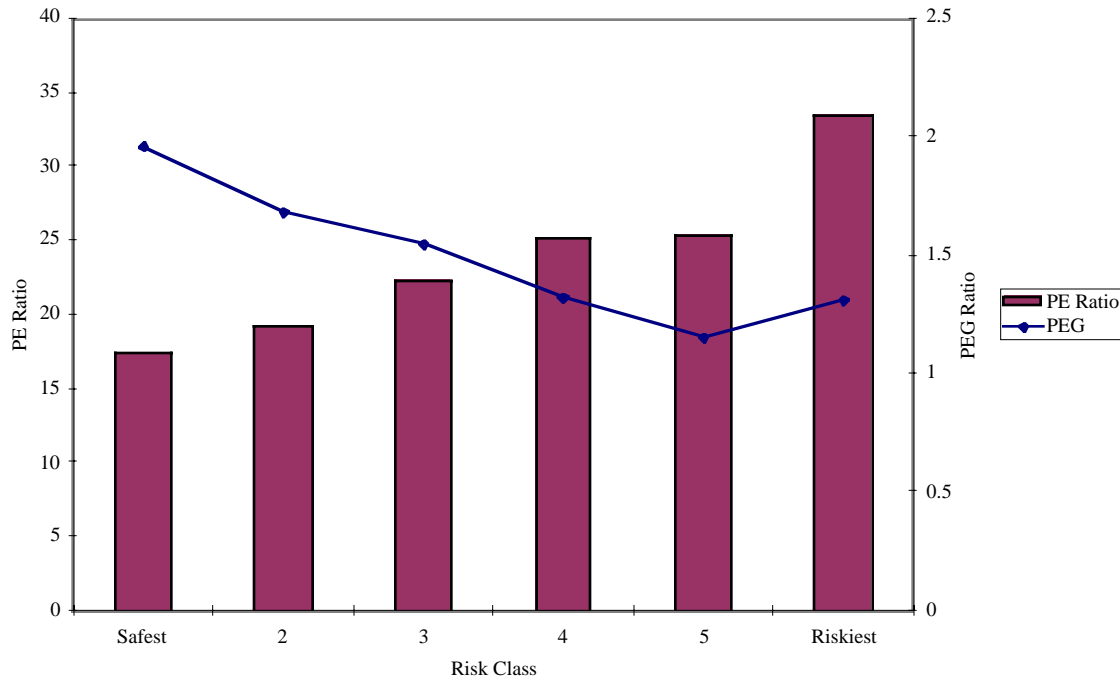
Note that the PEG ratio for the firm with a beta of 0.75 is almost four times higher than the PEG ratio for the same firm (with the same growth rate) with a beta of 2.00. You can also see the relationship between risk and PEG ratios by computing the average PEG ratios for all stocks listed in the United States and categorizing them based upon their riskiness.

<sup>14</sup> To do this, you first have to compute the PE ratio based upon fundamentals and then divide by the expected growth rate. A more detailed exposition is provided in my book on Investment Valuation, but the PEG ratio in a two-stage dividend discount model can be written as

$$\text{PEG} = \frac{(\text{Payout Ratio})(1+g) \left( 1 - \frac{(1+g)^n}{(1+k_{e,hg})^n} \right)}{g(k_{e,hg} - g)} + \frac{(\text{Payout Ratio}_n)(1+g)^n(1+g_n)}{g(k_{e,st} - g_n)(1+k_{e,hg})^n}$$

Figure 9.19 classifies all firms in the United States into six risk classes<sup>15</sup> and computes the average PE ratios and PEG ratios for firms in each class in January 2002.

Figure 9.19: PE and PEG ratios by Risk Class- January 2002



While the highest risk firms have higher PE ratios than the safer firms, on average, they also have lower PEG ratios. Thus, a portfolio of the stocks with the lowest PEG ratios will tend to include a large number of high risk stocks.

The second potential problem with PEG ratios is less obvious but just as dangerous. When we use PEG ratios, we make the implicit assumption that as growth doubles, the PE ratios doubles, and if it is halved, the PE ratio will be halved as well. In other words, we assume a linear relationship between PE and expected growth and this clearly is not correct. To see why, consider what should happen to the PE as expected growth drops to zero. If you



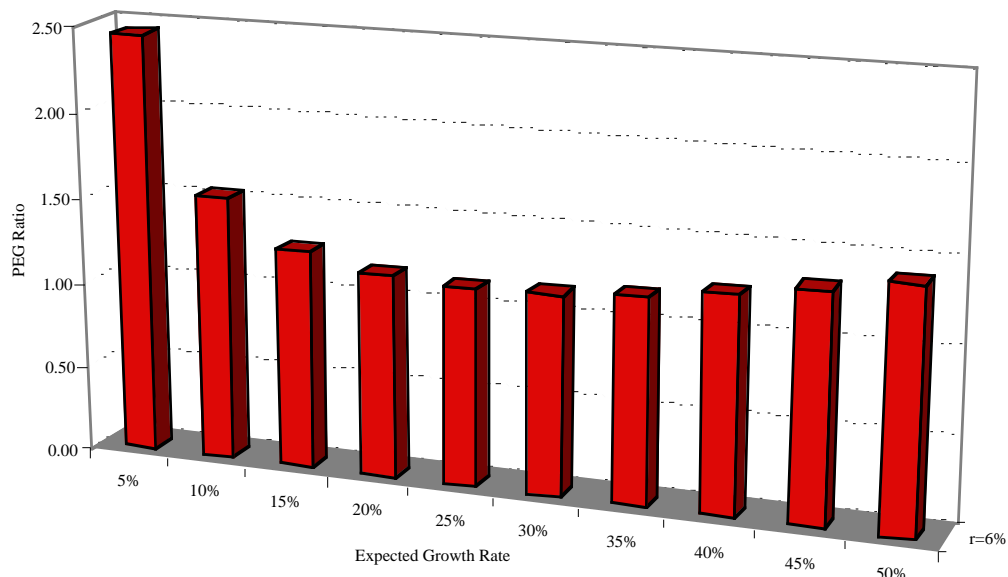
*Stocks with low PEG ratios and below average risk: Take a look at the 50 stocks with the lowest PEG ratios and below-average risk.*

have a firm that has a dollar in earnings that it pays out in dividends and you expect to get this dollar in dividend in perpetuity, you would still be willing to pay a price for its stock. In other words, your PE does not go to zero. On the other side, you will find that PE ratios

<sup>15</sup> This categorization was based upon stock price standard deviation, but we did try alternate measures such as beta and obtained similar results.

increase as you increase the expected growth rate but at a decreasing rate. In other words, your PE ratio will change much more dramatically when your expected growth rate goes from 3 to 4% than when it goes from 23 to 24%. Again, the effect on PEG ratio of varying the growth rate can be shown in one of two ways. Using the same process that we used to examine the relationship between PEG ratios and risk, we can estimate the PEG ratio for a hypothetical firm in figure 9.20 as you change the expected growth rate during its high growth phase.

Figure 9.20: PEG Ratios and Expected Growth Rate over next 5 years



The PEG ratio is highest when the expected growth rate is low, but is lower at higher expected growth rates. Clearly, the problem is greatest when you are comparing high growth firms to low growth firms, since PEG ratios will be understated for the former and overstated for the latter. It is less of an issue if you are comparing PEG ratios across firms with high growth rates, since the effect is muted.

In short, picking stocks based upon low PEG ratios can leave you with a portfolio of stocks with high risk and high growth that are not undervalued. Can you correct for these errors? You can adjust for risk by either considering it as a separate factor (you pick stocks with low PEG ratios and low risk) or modifying the PEG ratio. Morgan Stanley, for example, aware of the potential bias towards risk in the PEG ratio modified it to include the dividend yield in the denominator to create a new ratio called the PEGY ratio:

$$\text{PEGY} = \frac{\text{PE}}{(\text{Expected Growth Rate} + \text{Dividend Yield})}$$

Thus, a firm with a PE ratio of 12, an expected growth rate of 5% and a dividend yield of 4% would have a PEGY ratio of 1.33 (12/(5+4)). It is much more difficult to adjust for the linearity assumption. While you can use a modified version of the growth rate in the denominator, the measure loses its intuitive appeal when this is done.<sup>16</sup>

### **Determinants of Success at Passive Growth Investing**

The overall empirical evidence on the efficacy of screens is much less favorable for growth screens than it is for value screens. While there are cycles during which growth screens like low PEG ratios and high PE ratios may yield excess returns, they are trumped over longer periods by value screens such as price to book value ratios. From our perspective, there are three key determinants of success at this strategy:

- Since growth is the key dimension of value in these companies, obtaining better estimates of expected growth should improve your odds of success. If you are a growth investor following a fairly small set of companies, you may try to estimate growth yourself. If you can estimate growth more precisely than the overall market, you should get a payoff. If this is not a feasible option because you do not have the resources to estimate expected growth rates for the hundreds of firms that you follow, you should compare the different sources that you have for this input to see which one has the best track record. For instance, you may find that Value Line estimates of growth are better than the consensus estimates of growth from all analysts or that estimates of growth from a sub-set of analysts (say the top 5) do better than estimates that look at all analysts.
- If your underlying strategy is sound, a long time horizon increases your chances of earning excess returns. In other words, if you conclude after careful analysis that buying stocks that have PE ratios less than the expected growth rate would have yielded high returns over the last two decades, you will be more likely to replicate these results if you have a 5-year horizon than with a 1-year horizon.
- Finally, there are extended cycles where the growth screens work exceptionally well and other cycles where they are counter productive. If you can time these cycles, you could augment your returns substantially. Since many of these cycles are related to how the overall market is doing, this boils down to your market timing ability.

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<sup>16</sup> For example, using the natural log of the growth rate in the denominator of the PEG ratio seems to make the relationship more linear, but the PEG ratio is no longer intuitive.

Being successful at these strategies will require not only long time horizons but also the capacity to be right on market cycles.

#### *Estimating Growth from Fundamentals*

If obtaining better estimates of growth is key to successful growth investing, you may want to consider breaking your dependence on estimates of growth made by equity research analysts. As we will see in the coming chapters, analysts often do not estimate long term growth and even when they do, they provide biased and erroneous estimates. One alternative that may yield better and more robust estimates is to link the expected growth to fundamental aspects of how a firm is run. In fact, the expected growth rate in earnings for a firm comes from two sources - its willingness to reinvest its earnings back into new projects and assets and its capacity to earn high returns on these investments. The growth rate in earnings for a firm in the long term should be a product of the proportion of its earnings that are reinvested back in the business and the return on this investment. For equity earnings, it can be computed as follows;

Growth rate in earnings per share =  $(1 - \text{Dividends/ Earnings}) (\text{Return on Equity})$

Consider, for instance, a company like Microsoft, which pays no dividends and earns about 25% on its equity. Its expected growth rate, if it can sustain these numbers, will be 25%. In contrast, Procter and Gamble, which pays about 50% of its earnings as dividends and earns about 16% on its equity will have an expected growth rate of 8%.

When computing growth in operating earnings, you will have to modify the equation to make it consistent:

Growth rate in operating earnings =  $[(\text{Capital Expenditures} - \text{Depreciation} + \text{Change in Working capital}) / \text{EBIT} (1-t)] * \text{Return on Capital}$

Thus, Cisco which reinvested 110% of its after-tax operating income and earned a return on capital of 35% in 1999 was able to post a growth rate of 38.5% in that year.

### **Activist Growth Investing**

In activist growth investing, you not only take a position in a growth business but you also play an active role in making it successful. Since most growth businesses start off as small and privately owned, the most common forms of activist growth investing involve taking positions in these businesses before they go public and in nurturing them towards eventual public offerings and large profits. In this section, we will consider venture capital and private equity investing as examples of activist growth investing.

## Description

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.<sup>17</sup> More recently, we 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

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<sup>17</sup> 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.

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.

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. 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 Process of Venture Capital investing**

Venture capital can prove useful at different stages of a private firm's existence. *Seed-money venture capital*, 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. There are five steps associated with how venture capital gets to be provided to firms, and how venture capitalists ultimately profit from these investments:

- *Provoke equity investor's interest*: There are hundreds of small firms interested in raising finance from private equity investors, and relatively few venture capitalists and private equity investors. Given this imbalance, the first step that a private firm wanting to raise private equity has to take is to get private equity investors interested in investing in it. There are a number of factors that help the private firm, at this stage. One is the *type of business* that the private firm is in, and how attractive this business is to private equity investors. In the late 1980s and early 1990s, for instance, firms in bio-technology were the favored targets for private equity investors. By the late 1990s, the focus had shifted to internet and technology stocks.
- The second factor is the track record of the top manager or managers of the firm. Top managers, who have a track record of converting private businesses into publicly traded firms, have an easier time raising private equity capital. For instance, Jim Clark, who founded Netscape Communications and Silicon Graphics, both successful publicly traded firms, was able to raise private equity for Healtheon, the venture he founded after leaving Netscape, because of his past track record.
- *Valuation and Return Assessment*: Once private equity investors become interested in investing in a firm, the value of the private firm has to be assessed by looking at

both its current and expected prospects. While venture capitalists sometimes use discounted cash flow models to value firms, they are much more likely to value private businesses using what is called the *venture capital method*. Here, the earnings of the private firm are forecast in a future year, when the company can be expected to go public. These earnings, in conjunction with a price-earnings multiple, estimated by looking at publicly traded firms in the same business, is used to assess the value of the firm at the time of the initial public offering; this is called the exit or terminal value.

For instance, assume that a small private software firm is expected to have an initial public offering in 3 years, and that the net income in three years for the firm is expected to be \$ 4 million. If the price-earnings ratio of publicly traded software firms is 25, this would yield an estimated exit value of \$ 100 million. This value is discounted back to the present at what venture capitalists call a *target rate of return*, which measures what venture capitalists believe is a justifiable return, given the risk that they are exposed to. This target rate of return is usually set at a much higher level<sup>18</sup> than the traditional cost of equity for the firm.

Discounted Terminal Value = Estimated exit value / (1 + Target return)<sup>n</sup>

In this example, if the venture capitalist requires a target return on 30% on his or her investment, the discounted terminal value for the firm would be

Discounted Terminal value for InfoSoft = \$ 100 million / 1.30<sup>3</sup> = \$ 45.52 million

- *Structuring the Deal*: In structuring the deal to bring private equity into the firm, the private equity investor and the firm have to negotiate two factors. First, the private equity investor has to determine what proportion of the value of the firm he or she will demand, in return for the private equity investment. The owners of the firm, on the other hand, have to determine how much of the firm they are willing to give up in return for the same capital. In these assessments, the amount of new capital being brought into the firm has to be measured against the estimated firm value. In the software firm example described above, assuming that the venture capitalist is considering investing \$ 12 million, he or she would want to own at least 26.36% of the firm.<sup>19</sup>

Ownership proportion = Capital provided / Estimated Value

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<sup>18</sup> By 1999, for instance, the target rate of return for private equity investors was in excess of 30%.

<sup>19</sup> Private equity investors draw a distinction between what a firm will be worth without their capital infusion (pre-money) and what it will be worth with the infusion (post-money). Optimally, they would like their share of the firm to be based upon the pre—money valuation, which will be lower.

$$= \$ 12 / \$ 45.52 = 26.36\%$$

Second, the private equity investor will impose constraints on the managers of the firm in which the investment is being made. This is to ensure that the private equity investors are protected and that they have a say in how the firm is run.

- *Post-deal Management:* Once the private equity investment has been made in a firm, the private equity investor will often take an active role in the management of the firm. Private equity investors and venture capitalists bring not only a wealth of management experience to the process, but also contacts that can be used to raise more capital and get fresh business for the firm.
- *Exit:* Private equity investors and venture capitalists invest in private businesses because they are interested in earning a high return on these investments. How will these returns be manifested? There are three ways in which a private equity investor can profit from an investment in a business. The first and usually the most lucrative alternative is an initial public offering made by the private firm. While venture capitalists do not usually liquidate their investments at the time of the initial public offering, they can sell at least a portion of their holdings once they are traded<sup>20</sup>. The second alternative is to sell the private business to another firm; the acquiring firm might have strategic or financial reasons for the acquisition. The third alternative is to withdraw cash flows from the firm and liquidate the firm over time. This strategy would not be appropriate for a high growth firm, but it may make sense if investments made by the firm no longer earn excess returns.

### ***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

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<sup>20</sup> Black and Gilson (1998) argue that one of the reasons why venture capital is much more active in the U.S. than in Japan or Germany is because the option to go public is much more easily exercised in the U.S.

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 offers 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 we 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 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 we 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 high 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:

*Figure 1. Venture Economics' US Private Equity Performance Index (PEPI)*

*Returns as of September 30, 2001*

<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					
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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.

There is one final point worth making about private equity and venture capital investments. The average returns reported above 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 indicates 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.

### **Determinants of Success at Activist Growth Investing**

While venture capital and private equity investing, in general, is not a recipe for riskfree high returns, there are some venture capital and private equity investors who succeed and earn extraordinary returns. What set them apart and how can you partake in their success? The keys seem to be the following:

- Pick your companies (and managers) well: Most small private businesses do not succeed, either because the products or services they offer do not find a ready audience or because of poor management. Good venture capitalists seem to have the capacity to find the combination of ideas and management that make success more likely.
- Diversify: The rate of failure is high among private equity investments, making it critical that you spread your bets. The earlier the stage of financing – seed money, for example – the more important it is that you diversify.
- Support and supplement management: Venture capitalists are also management consultants and strategic advisors to the firms that they invest in. If they do this job well, they can help the managers of these firms convert ideas into commercial success.
- Protect your investment as the firm grows: As the firm grows and attracts new investment, you as the venture capitalist will have to protect your share of the business from the demands of those who bring in fresh capital.

- Know when to get out: Having a good exit strategy seems to be as critical as having a good entrance strategy. Know how and when to get out of an investment is critical to protecting your returns.

As a successful venture capitalist, you will still find yourself holding not only a risky portfolio but a relatively undiversified one, with large stakes in a number of small and volatile business. In short, activist growth investing is best suited for investors who have substantial capital, long time horizons and are willing to take risk.

## **Conclusion**

If value investors bet on the market getting it wrong when pricing assets in place, growth investors place their bets on mis-assessments of the value of growth. While some categorize growth investors based upon their willingness to buy high PE stocks, that characterization does not capture the diversity of growth investors. In this chapter, we began by looking at investing in small cap stocks and initial public offerings as growth investing strategies. We then considered a variety of growth screens used by investors to find undervalued growth, ranging from high PE ratios to low PEG ratios. While the empirical evidence is not as supportive of growth screens as it is for value screens, investors who are disciplined, have long time horizons and are good at gauging market cycles can earn significant excess returns.

In the last part of the chapter, we examined venture capital and private equity investing and categorized them as activist growth investing strategies, since they require taking large positions in young growth businesses and then taking an active role in making them succeed. While there are some venture capital and private equity investors who earn huge returns, the overall returns to private equity investing reflect only a modest premium over investing in publicly traded stocks. A large appetite for risk and a long time horizon are pre-requisites for success.

*Lessons for Investors*

To be a growth investor, you need to

- Make more precise estimates of growth and price it well: The success of growth investing ultimately rests on your capacity to forecast growth and to price it right. If you are better at these roles than the market, you improve your odds of success.
- Catch the growth cycles when they occur: Growth investing has historically done best when earnings growth in the market is low and investors are pessimistic about the future.

To be an activist growth investor, you need to

- Accept skewed returns: Private equity and venture capital investing may offer a few investors spectacular returns, but the average returns to all investors in these categories are low (relative to investing in publicly traded stocks).
- Invest in the right businesses: To succeed at private equity investing, you have to pick the right businesses to make the investments in, diversify your bets and have a well devised exit strategy.