
Private Equity Investing

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INTRODUCTION

In recent years, many institutional investors have been shifting a significant portion of their portfolios to an area of alternative investments known as private equity. Private equity investing involves taking ownership positions in private companies. The allure behind the investment in private equities is the potential for an increased return relative to traditional, publicly traded securities. However, this potential for increased return comes at the cost of exposure to additional risks not faced by holders of publicly traded securities. These risks must be carefully considered before investing in a private equity program.

In this Research Note, we discuss issues pertaining to private equity investing. Our hope is that it will help you decide whether private equity investing is appropriate for your portfolio.

PRIVATE EQUITY INVESTING

Private equity managers provide financing to private firms unable, or unwilling, to seek funding through public equity markets. Since private equity involves acquiring stakes in private companies, their investments are illiquid for a period of time and are, therefore, subject to greater risk. To compensate for this additional risk, private equity investors demand higher returns for their investment. While there are numerous strategies in the asset class, in this article, we concentrate on the two predominant forms of private equity—venture capital and buyouts. We also discuss distressed investing – a hybrid equity/debt product.

Venture Capital

Venture capital investing involves providing capital to emerging companies with a promising idea or innovation, often in high growth industries, including technology, telecommunications, and health care. In general, there are two stages of venture capital financing: early-stage financing and later-stage financing.

Candidates for early-stage financing range in size and age. The earliest type of candidate in this category is an

entrepreneur in need of financing to determine the feasibility of an idea or new technology. Financing may be required to conduct further research or determine what market is available for a product. A more developed firm in the early-stage may have determined a business is feasible and has a market, but needs funding to establish the ability to commercially implement the idea. Naturally, because of their small size and unproven ability to generate profits, early-stage candidates are riskier. In addition, the holding period is generally longer. Accordingly, investors require a higher rate of return.

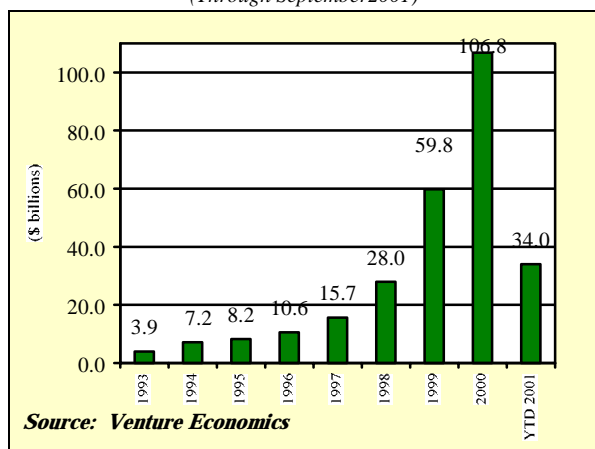
Candidates in the later-stage have already established the technology and market for their product, but require further financing to allow greater, or more rapid, growth. This financing may permit updating equipment to become more productive or expanding marketing efforts. A second reason for financing at this stage is to allow the original investors to partially cash-out before a public offering. Generally, firms at this stage are closer to the point where an initial public offering (“IPO”) is possible. For this reason, the investment is not as risky as one in early-stage firms, nor is the required holding period as long. Therefore, the required return is not as substantial as before.

Venture capitalists typically not only provide financing for budding businesses, but also expertise. Entrepreneurs may have a promising idea, but may not have the specialized knowledge required to fully exploit its potential. It is here that venture capitalists can add value beyond financing. Experienced venture capitalists have assisted other businesses in developing, and can lend that expertise to new investments.

The exit vehicle for successful venture capital investments is an IPO or sale to another company. The booming IPO market in the late 1990’s, particularly for technology stocks, made this a lucrative route for harvesting gains. In 2000, however, the IPO market began to dry up, no longer providing an easy exit opportunity. Established companies are also buyers of developing companies. They are able to use their own stock to purchase young firms with promising technologies.

A significant concern with the present venture capital environment is the rapid expansion and subsequent contraction in the level of commitments. As Chart 1, below, shows, recent years have witnessed an explosion in venture capital fund-raising that has dropped significantly this year. In 1993, venture capital funds raised less than \$4 billion. By 2000, that figure had jumped to over \$100 billion. Much of this money is yet to be invested and the amount of money chasing venture capital deals may bode ominously for future returns, as the number of viable projects is theoretically limited. Moreover, while there have been dramatic write-downs recently, it is still yet to be seen whether it will continue. Nonetheless, the high level of commitments and recent write-downs does not necessarily mean that the venture capital arena is no longer attractive.

Chart 1: Commitments to Venture Capital Funds by Year (Through September 2001)



Buyouts

A second type of private equity strategy is buyouts. Buyouts differ from venture capital in that the companies purchased are usually mature. Buyouts are more likely to involve companies in “Old Economy” industries, such as manufacturing, rather than venture capital investments. However, higher growth industries, such as technology, telecommunications, and health care, garner some investment, as well.

Buyouts can come in a number of forms. Perhaps the most well known form is a leveraged buyout (LBO). An LBO involves purchasing a public or private firm, and recapitalizing it with a significant amount of debt. A typical candidate for an LBO is a company with weak growth prospects, but strong cash flow. Cash flow is required to service the heavy debt loads typically present

in these deals. To profit from the transaction, LBO firms will work with management to cut costs and increase efficiency and profitability. If successful, the firm will be taken public or sold to another company.

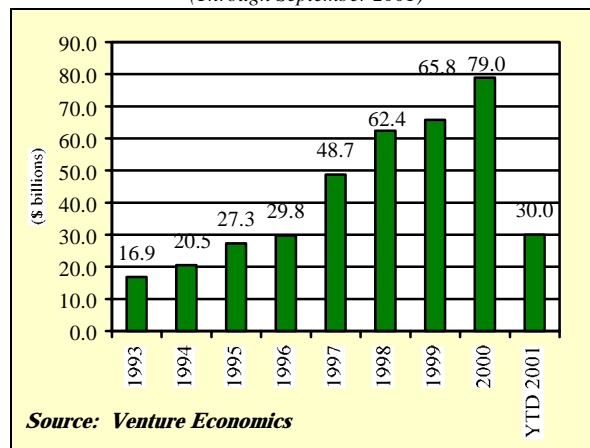
LBOs are not the only area where buyouts occur. Another instance for a buyout is in a closely held, private business in which the owners wish to partially, or completely, cash out. Other opportunities include purchasing non-core or underperforming businesses from established companies, and implementing changes to improve profitability.

As with venture capital, buyout managers typically bring expertise to the companies they purchase. Experienced buyout managers can leverage their expertise in an attempt to turn around underperforming businesses, or improve profitable businesses. This may involve hiring new management teams or retooling strategies.

The buyout business has changed significantly over the past decade with respect to leverage. In the 1980’s, deals were characterized by substantial amounts of debt. Many of the companies involved in such deals had difficulty meeting the debt servicing requirements when the economy stumbled in the early 1990’s. As a result, bankruptcies were common, resulting in a turbulent junk-bond market. There has been a trend away from excessive leverage since then. In 1987, the average buyout deal incurred \$10 of debt for each \$1 of equity investment. In contrast, \$4 of debt was assumed for each \$1 of equity in 1998.

Commitments to buyout funds have increased over the past several years, but not nearly to the extent of venture capital funds. In 2000, \$79 billion was committed to buyout funds, a nearly five-fold increase over the 1993 level of \$16.9 billion.

Chart 2: Commitments to Buyout Funds by Year (Through September 2001)



Distressed Investing

Another strategy utilized by private equity managers is distressed investing. Often referred to as “distressed debt” or “distressed securities,” distressed investing involves the purchase of securities or obligations of companies that are currently, or may become, insolvent. The difficulty may be due to a wide range of financial, operating, economic, or market-related events, causing the securities to trade at a substantial discount to face value. The company’s situation will be resolved through a workout and reorganization either consensually or through the bankruptcy code. If the situation is resolved successfully, a considerable gain can be realized.

Different approaches that a manager may take include the control and the non-control approaches. With a non-control approach, the manager may invest in distressed securities with the intention of simply selling later. With the control approach, the manager will invest with the intention of gaining control of the company or reorganization process to maximize the eventual payout.

The process can be very complicated and time consuming demanding a broad, multi-disciplinary, range of expertise to be successful. The process may include issues such as creditors committees, court procedures, company specific operating and financial issues, negotiations with shareholders and other creditors, and bankruptcy proceedings. A manager must possess analytical, financial, negotiation, and legal expertise to successfully manage the reorganization process.

The success of the strategy is highly dependent upon manager skill. However, macro factors, such as the supply of distressed debt available, also will affect returns. Difficult economic times bring on a larger supply of distressed opportunities meaning that pricing might become more attractive, offering the possibility of higher future returns. However, such environments also present greater risks, as the economy might become even worse, or the recovery might take longer to come about, than anticipated.

STRUCTURE

Private equity investments are usually structured as private limited partnerships, with one or more general partners acting as the manager and several limited partners investing their own capital. General partners have the responsibility of managing the partnership and handling day-to-day operations. Limited partners, on the other hand,

simply invest in the partnership, with little or no influence on the management of their funds once in the partnership.

A limited partnership arrangement permits the manager wider investing latitude because they are often subject to less oversight from government securities regulators than other investment formats (e.g., open-end mutual funds). Managers of limited partnerships are also able to place restrictions on withdrawals, which is a crucial aspect for private equity managers. Naturally, the lack of government oversight also creates greater potential for fraud.

The typical life cycle of a private equity partnership will vary by the investment style of the partnership and the market environment. However, a typical private equity partnership has a life cycle of ten years or more.

When a partnership forms, the limited partners commit to provide an amount of capital to the partnership. There is typically a several month window when investors are able to commit capital. Once the window closes, investors cannot commit additional dollars.

Between years one and five, committed capital is typically called from investors and invested as the manager finds investment opportunities. This is referred to the “draw-down” period. As investments are divested through IPOs or sales to other companies, capital is returned to investors. The distributions are often made in the form of stocks. For instance, if a company is taken public, the managers will distribute the stock of the company to limited partners, rather than selling the stock and distributing cash. In this way, limited partners have the ability to time the realization of capital gains on the investments. Distributions will usually begin a few years after the first capital call and will continue until all the investments are liquidated, which could take ten years or more.

Since it is difficult to accurately value private equity on a regular basis, it is not possible to analyze these investments as we would liquid securities. Instead of using time-weighted return, private equity funds calculate the internal rate of return (“IRR”). Unlike the time-weighted returns, the timing and size of cash flows affect the IRR. The Association of Investment Management and Research (AIMR) has developed performance presentation standards for the reporting of private equity performance utilizing this methodology.

The internal rate of return on private equity partnerships will often be negative in early years. Cash is called to invest in companies and pay management fees, but investments are often carried at cost. As companies are

sold or upwardly revalued, profits begin to emerge. This phenomenon is known as the “J curve”.

Private equity managers will often manage several partnerships at the same time. After all the capital is invested in one partnership, formation of a second partnership begins. Successful managers might start a new partnership every few years.

For their ability to locate and develop private companies, general partners typically receive an incentive fee as well as a management fee. The management fee varies from 1% to 3%. In addition, incentive fees of 20% to 30% of profits are charged, which are designed to motivate the general partner to perform. These fees can create a significant drag on performance. As a result, managers must demonstrate the ability to add considerable value to their investments.

SOURCES OF RISK

Before investing in private equity, it is critical to carefully evaluate the risks present with such strategies. Private equity presents investors with many risks, some faced by investors in traditional asset classes and others that are unique. When evaluating these investments, it becomes necessary to consider these additional risks, rather than expected volatility alone. Below, we outline the additional risks associated with most of these investments.

Liquidity

Lack of liquidity is one of the key risks faced by investors in private equity. For example, when a venture capital firm purchases shares in a private company, their goal is to hold these securities until they are sold for profit, which may take several years. Therefore, investors in a venture capital fund would have difficulty in recouping their investment during the period between investing of the funds and the eventual sale of all the underlying company investments. It is possible to sell shares in a partnership to a third party, but it will often be at a significantly discounted price. For these reasons, investors in private equity should carefully evaluate their need for liquidity before funds are committed.

Investment theory holds that investors require a premium for purchasing illiquid securities. Investors should be willing to pay higher prices (or receive a diminished return) for liquid securities because they can quickly convert these securities into cash at a low cost. The lack of liquidity, therefore, represents additional risk for which a return premium (in the form of a reduced initial price or higher eventual payback) is required. An investment in a

private equity partnership, which may need to hold its acquisitions for several years or more, should result in a significant liquidity premium. Investors capable of committing a portion of their assets to illiquid investments, without infringing on operating capabilities, may find the liquidity premium well worth the additional risk.

Dependence on Key Personnel

Private equity funds are often dependent on the general partners and a relatively small staff for all key investment decisions. Furthermore, private equity managers often take an active approach in the management of companies in which they invest, including participation on the company’s board. For this reason, the inability of one or more of the key personnel to carry out their duties could have a significant, adverse effect on a partnership. While traditional management firms depend on key personnel as well, unlike traditional investments, investors in private equity funds may find it costly or impossible to exit these investments due to the liquidity issues discussed above.

Conflicts of Interest

There are several areas where conflicts of interest can arise between the general partner and the limited partners. One such area is the size of the capital base. Although small partnerships may have an inherent potential for higher returns, large partnerships will typically yield a higher fee to the general partner. For example, assume a general partner receives a 1% management fee, along with a 20% performance fee on a partnership. Let’s further assume this general partner could generate a 20% annualized return on a \$50 million fund, but only a 10% return on a \$500 million fund. Obviously, the initial limited partners would prefer the fund to remain at \$50 million, since they will receive double the return of the larger-based fund. However, the general partner would garner an additional \$12.5 million in annual fees by allowing the fund to grow to the larger capital base, and thus has a personal financial incentive contrary to the best interests of the limited partners.

Another potential conflict of interest is the incentive for managers to take on excessive risk. Incentive fees are used to reward managers when the fund does well, but there are no “punishments” when the manager performs badly—the manager still receives their standard management fee when the fund performs poorly. Therefore, the more risk a manager takes, the greater the upside potential, with little immediate downside impact from losses. This conflict of interest may be reduced if the manager has a significant

portion of his personal wealth in the fund, since it may mitigate the incentive to assume extraordinary risks.

Leveraged Capital Structure

Another risk presented by private equity investing, particularly in the buyout arena, is that partnerships' underlying investments tend to have a more leveraged capital structure than companies with publicly traded securities. This means that companies are more susceptible to downturns in the economy.

Indeed, during the recession in the early part of the 1990's, many of the companies involved in the buyout boom in the late 1980's experienced extreme financial difficulties, resulting in junk-bond defaults and bankruptcies. As a result, buyout partnerships that formed in the 1980's have generally experienced disappointing returns relative to the public equity markets.

Down Market Performance

A reason often cited for investing in private equity is diversification. While private equity will provide some degree of diversification, as small-cap stocks provide diversification benefits to large-cap stocks, many of the diversification benefits are illusory. Partnerships are often valued at cost, which results in the artificial dampening of the standard deviation and correlation.

During down markets, we would expect private equity to perform worse than traditional equity investments. This is because private equity partnerships often have a more leveraged capital structure, which results in higher risk. In the event of an economic downturn, a leveraged capital structure makes bankruptcy more likely.

In addition, private equity investments tend to be smaller companies. In times of market distress, small-caps in public markets tend to perform worse than large-caps. Likewise, we would expect private equity investments to perform worse than small-caps during an extended bear market. However, due to the valuation lag, it may be several years before the true nature of losses are evident.

Competition for Deals

A concern that has been gaining prominence among institutional investors in recent years is that too much money is chasing too few deals. Indeed, the committed capital to private equity programs, as demonstrated earlier, has increased exponentially over the past several years. The concern is that the high degree of competition is forcing partnerships to pay higher prices for attractive companies, thereby lowering future expected returns. In

addition, it could result in the funding of companies that do not really deserve funding. But, this seems to be changing as commitments are dropping off and the supply of potential investments is increasing.

PERFORMANCE AND EXPECTATIONS

Arriving at reasonable return and risk forecasts for private equity presents a challenge. It is more difficult to attain reliable data on the historical performance of private equity partnerships than on traditional money managers. There are few private equity index providers, and their data are limited.

The extraordinary performance in the public equity markets has certainly benefited private equity performance, particularly venture capital. Since public markets often provide the exit mechanism in private deals, valuation multiples in the public equity markets are used as a guide to pricing private transactions. We do not expect the high returns over the past twenty years in the private market to be systematic, or repeatable. As a result, a naïve examination of the absolute returns in the private equity market can be misleading when making projections for the future. Nonetheless, a review of private equity performance relative to public equity performance in projecting future rates of returns can be beneficial.

Historical Returns

Table 1, below, details the performance of Venture Economics Private Equity Index, along with Venture Capital and Buyouts sub-components, against the performance of the S&P 500 index and the Russell 2000 index.

Table 1: Comparison of Trailing Returns (At 6/30/01)

	<i>Venture Economics Private Equity</i>	<i>Venture Economics Venture Capital</i>	<i>Venture Economics Buyouts</i>	<i>S&P 500</i>	<i>Russell 2000</i>
3 Years	20.1	54.5	6.1	3.9	5.3
5 Years	21.7	40.0	11.9	14.5	9.6
10 Years	20.2	28.4	14.4	15.1	13.5
20 Years	17.8	18.7	16.5	15.3	11.7

Source: Venture Economics

As Table 1 shows, the Venture Economics Private Equity index has performed well against the S&P 500 and the Russell 2000 index. As a result, over the last 20 years, the combined Venture Economics Private Equity index has

returned 17.8%, annualized, outperforming both the S&P 500 index and the Russell 2000 index.

The Venture Capital index has performed particularly well of late, returning 28.4%, annualized, over the past ten years. The more recent returns exhibited in venture capital have been poor due to the burst in the technology bubble (down 20% over twelve months), but the phenomenal returns leading up to the crash have been enough to keep the longer term returns buoyed. It is yet to be seen if the numbers will remain high without the lucrative IPO market as an exit vehicle. Over twenty years, the Venture Capital index has beaten the S&P 500 by 2.5 percentage points, annualized.

The Buyout Index has shown good long-term absolute returns and has outperformed the S&P 500 over twenty years. The returns over the past five years and ten years, however, have trailed the S&P 500. This is likely attributable to the dominance of large-caps over these periods. Buyout partnerships tend to hold smaller companies. While venture partnerships also hold smaller companies, buyout partnerships' focus on value-oriented companies meant that they did not benefit as much from the booming IPO market in the late 1990's as venture partnerships. While the absolute return of buyout managers has been admirable over five and ten years, they have been unable to match the returns of the large-cap dominated S&P 500 index. Against the Russell 2000 index, an index of the performance of smaller companies, buyout managers have performed better, outperforming by 0.9 percentage points, annualized, over the past ten years.

Volatility and Correlations

In addition to the concerns over the short data set for estimating returns, two other inputs necessary in asset allocation modeling—standard deviation and correlations—are even more difficult to estimate based on historical data. Examining returns of private equity indices yields suspect results in these two areas because of valuation smoothing. Investments are often valued at cost, which results in the artificial dampening of the volatility of the month-to-month and quarter-to-quarter market values. This means that both volatility and correlation relative to public equities appear falsely lower.

For instance, during the third quarter of 1998, the Cambridge Venture Capital index showed a loss of only 3.2%, while the S&P 500 lost 9.9% and the Russell 2000 lost 20.2%. The dampened losses of the venture capital index relative to public indices likely resulted from the

valuation lag, not downside protection from venture capital investments.

For that reason, we examine public market indices to proxy the private equity asset class in estimating standard deviation and correlations. As a proxy for buyouts, we examine the CRSP 9-10 index, which contains the very smallest stocks in the U.S. market. For venture capital, we use the H&Q Growth index. The H&Q Growth index includes rapidly growing, small-cap stocks, many of which are technology-oriented. As such, we believe that this index is an appropriate proxy for venture capital.

Nonetheless, these proxy indexes will understate the expected volatility associated with these investments. Companies involved in buyouts usually have a more highly leveraged capital structure than publicly traded securities and, therefore, are more exposed to economic weakness. Venture capital investments, since they are generally unestablished companies with questionable future prospects, contain additional systematic risk relative to companies that have already met the scrutiny required to go public.

Table 2, below, shows the standard deviation of the two proxy indexes compared to the S&P 500 index and the Russell 2000 index. The CRSP 9-10 index, our proxy for buyouts, over the last twenty years has experienced higher volatility (as measured by standard deviation) than the S&P 500 index, and similar volatility as the Russell 2000. The H&Q Growth Index, the venture capital proxy, has experienced more than twice the volatility of the S&P 500 index over twenty years.

Table 2: Standard Deviation

	<i>CRSP 9-10 Index</i>	<i>H&Q Growth Index</i>	<i>S&P 500</i>	<i>Russell 2000</i>
3 Years	26.3	50.3	21.0	23.7
5 Years	23.0	44.5	17.5	20.6
10 Years	20.8	38.1	15.6	19.4
15 Years	20.6	36.0	17.4	20.7
20 Years	21.0	37.2	17.2	21.2

Table 3, below, shows the correlation of the two proxy indices to traditional indices. Both the CRSP 9-10 index and the H&Q Growth index exhibit moderate correlation to the S&P 500 index and relatively high correlation to the Russell 2000 index.

Table 3: Correlation Analysis (20 Years)

	CRSP 9-10 Index	H&Q Growth Index
S&P 500	0.69	0.74
Russell 2000	0.94	0.85
MSCI EAFE	0.38	0.34
Lehman Aggregate	0.10	0.11

The correlation statistics suggest that venture capital and buyouts can provide diversification benefits relative to a portfolio that does not contain small-cap stocks. The diversification benefit of adding private equity to a portfolio that already contains a small-cap allocation is marginal. In general, the goal of introducing an allocation to venture capital and private equity should be return enhancement, rather than diversification.

Expectations

We expect that a diversified portfolio of private equity, including both venture capital and buyouts, will provide a return premium of 4.5 percentage points above the S&P 500, net of all fees, going forward. The return premium reflects compensation for additional systematic risk and the lack of liquidity. Based on our compound expected return of 8.5% on the S&P 500, the expected return on a private equity portfolio is 13.0%, which is significantly below that which has been experienced over the past 20 years, but still attractive relative to our expectations for publicly traded securities.¹ Our expected annual standard deviation on a private equity portfolio is $\pm 27\%$, versus $\pm 17\%$ for the S&P 500.

IMPLEMENTATION OF A PRIVATE MARKETS PROGRAM

Once it is decided to allocate funds to private equity, the next step is to generate a commitment schedule and select managers to implement the program. The uncertainty surrounding cash flows to and from private equity funds creates difficulty in maintaining a target allocation. The lag between commitments and calls means that it will likely take several years to fully fund a private equity allocation. In order to reach a target allocation to private equity, commitments, as a percentage of the portfolio value, will need to exceed the target allocation. This is because at any moment in time, the average partnership either will have

not yet called all the commitments or have already started to return capital to investors, such that committed capital almost always exceeds invested capital.

The difficulty in valuing existing investments exacerbates the problem of maintaining a target allocation. Investments in public securities can be readily valued. When there is a deviation from the target weight, transactions are easily executable to bring the allocation in line with the target allocation. In private markets, however, it is often difficult to ascertain the value of the existing investment. It is even more difficult to fine-tune the allocation to get it closer to policy when a difference exists. For this reason, it is necessary to tolerate deviation from the policy weight.

Vintage Year Diversification

When starting a private equity program, we suggest that the initial commitments be spread over three to five years. In this way, vintage year diversification is achievable. A partnership's vintage year refers to the year in which the fund begins investing. It is desirable to invest across a number of vintage years because of the cyclicity in private equity performance. The returns to private equity partnerships formed in some years are significantly depressed relative to returns in other years. Buyout funds formed in 1988, for instance, generated a pooled mean IRR of only 13.2% through December 1999.

Manager Diversification

It is critical to diversify private equity investments across a number of managers. Diversifying across several managers will likely result in increasing the correlation of a private equity portfolio to the public equity markets. Nonetheless, there are two characteristics of private equity investing that makes diversification critical: (1) there is an extremely wide range in performance between the top performing and worst performing partnerships, and (2) the distribution of managers' returns curve is highly, positively skewed.

In public equity markets, there is usually a relatively narrow range between the top and bottom performing investment managers. For instance, in the Mobius@ Universe of Broad Large Cap managers, there was only a 6.4 percentage point difference between the top quartile cutoff and the bottom quartile cutoff over the last five years. Over the last ten years, the difference was only 3.9 percentage points. In private equity, however, this is not the case. Table 4, below, shows the returns for venture capital partnerships for a number of vintage years, as reported by Venture Economics.

¹ See "What's Next for the S&P 500?" Hammond Associates Research Note, May 2000 (available at www.haifc.com under "Articles")

Table 4: IRR for Venture Capital Partnerships by Vintage Years
(Through 12/31/99)

Vintage Year	Pooled Mean (%)	Median (%)	Upper Quartile (%)	Bottom Quartile (%)	Difference (%)
1990	27.7	11.5	28.8	(0.5)	29.3
1991	21.7	17.6	27.1	2.2	24.9
1992	30.8	16.0	22.6	12.1	10.5
1993	36.3	17.7	35.4	3.7	31.7
1994	44.9	28.8	43.8	9.5	34.3
1995	62.4	21.9	63.8	7.6	56.2

Source: Venture Economics

As the table shows, there is a wide divergence between the upper quartile and the bottom quartile in each vintage year. For vintage year 1990 partnerships, there is a 29.3 percentage point difference between the top quartile and the bottom quartile. While such a wide divergence may provide an opportunity to do extremely well by selecting the top performing managers, it also exposes the portfolio to a high degree of underperformance risk. If an institution is unlucky enough to pick a bottom quartile manager, the returns will likely prove to be extremely disappointing. By selecting a number of managers, the chance that a single, unlucky pick will lead to disappointing returns is diminished.

A second reason to diversify among several managers is that the distribution of managers' returns for a particular vintage year shows a great deal of skewness. Skewness is a statistical concept describing the shape of a return distribution curve. A skewed curve differs from a normal, bell-shaped curve, in that there is an abnormal amount of large returns, either positive or negative. A curve with an abnormal amount of large positive returns exhibits positive skewness. Positive skewness results in the mean (or average) of a distribution being higher than the median (or middle) return.

For instance, let's assume that five partnerships in a universe of funds formed in 1990 experienced IRRs of -20%, 10%, 15%, 50%, and 200%, respectively. In this distribution, the median return was 15% (half the observations are above and half are below this number); however, the mean (average) return was 51% $[(-20+10+15+50+200)/5]$. In a normal, bell-shaped curve, the median return equals the mean return. If given the choice of: (1) randomly selecting a single manager from the distribution, or (2) investing equally in all of the managers, the prudent choice would be to invest in all the managers. When selecting a single manager from this distribution, the expected return is 15% (with a wide

standard deviation), compared with a 51% expected return for selecting *all* of the managers.

The positive skewness exhibited by private equity managers has important implications for investors. A few number of partnerships perform extremely well, lifting the mean (average) of the whole universe above the median (middle). This is because a good (and/or lucky) private equity manager can return the initial investment several times over, while a poor manager can lose no more than the initial investment.

The effect of skewness is observable in Table 4, above. The pooled mean for each vintage year is substantially higher than the median return. In fact, in most vintage years, the pooled mean's return is good enough to place it in the top quartile. In other words, if it were possible to invest in every single partnership formed in 1993, the IRR of the portfolio would have beaten more than 75% of the individual partnerships that comprised the portfolio. It should be the goal of a private equity investing program to match the pooled mean return of a universe of private equity managers, rather than the median return.

In order to increase the likelihood of enjoying returns at least equal to the mean, rather than the median, selecting multiple managers is necessary. When randomly selecting a single manager from a universe of managers, there is an even chance that the return of that manager will be above or below the median return. However, when selecting several managers, there is a better than even chance that the portfolio's returns will be above the median return. In addition, there is a higher probability that the return of the overall portfolio will be closer to the pooled mean return, because there is a higher chance of picking a top performing manager.

Fund of Funds

For private equity allocations less than \$200 million, we suggest utilizing several "fund-of-funds," diversified by vintage year as core holdings. Many of the top private equity managers have minimum initial investments exceeding \$10 million; therefore, it is difficult to gain adequate diversification with smaller allocations. Promising individual partnerships could still be held as satellite holdings.

In addition to diversification, using a fund of funds allows for the reduction in internal staff time required to invest in private equity. The fund of funds manager assumes the labor-intensive due diligence process. In addition, using a fund of funds can reduce the legal and administrative headaches of investing in a number of limited partnerships.

The primary disadvantage to a fund of funds is, of course, the additional layer of costs. In addition to paying the management fees and incentive fees of the underlying managers, fund of funds charge management fees. Management fees charged by fund of funds providers can range anywhere from 0.35% to 1.50%. Some fund of funds providers also charge incentive fees.

CONCLUSION

In this research note, we have discussed investing in private equity. Private equity should offer enhanced returns relative to publicly traded securities. However, investing in illiquid instruments raises other issues that require consideration. Nonetheless, for an institution with a long time horizon and minimal cash requirements, the lack of liquidity may be worth accepting for the additional expected return.

*Anthony Brown, CFA
Director of Research
abrown@haifc.com*

*Brad Morrow, CFA
Senior Research Analyst
bmorrow@haifc.com*

*HAMMOND ASSOCIATES
12412 POWERSCOURT DR.
ST. LOUIS, MO 63131
PHONE: 314-821-6400*

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