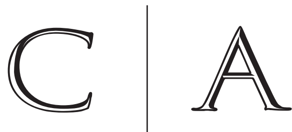

CAMBRIDGE ASSOCIATES LLC

PRIVATE EQUITY FUND-OF-FUNDS

2003

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ABSTRACT

1. Fund-of-funds (FOFs) have been around since the 1970s but proliferated in number, type, and size in the late 1990s when many new investors were entering the private equity asset class for the first time. FOFs presented an efficient way to quickly scale up a private equity program or gain exposure to a particular sector. With more and more money pouring into the asset class, FOFs have become an increasingly influential source of capital in the industry.

2. Today, FOFs vary as much by type of organization as by strategy. Bank and trust companies as well as diversified asset managers have become significant players in the asset class. As these managers have sought ways to differentiate themselves or broaden their product lines, they have created an array of FOFs products and offered specialized or niche funds.

3. For investors with a small asset base, FOFs represent a way to outsource suitably diversified investments in asset classes for which they lack the necessary resources and expertise. For large investors, FOFs offer an efficient means of investing in a specialized area.

4. In implementing an alternative assets investment program, investors have the option of using a FOFs as a means of delegating portfolio construction and decision making, or, building a custom portfolio of direct investments. FOFs offer the diversification and possible access to funds; however, investors have no control over portfolio construction, track records are short, and there are additional fees and a tendency to average down returns because of over-diversification. On the other hand, a customized program of direct investing in private equity funds can require additional internal staff and administrative work, but also offers the potential to achieve superior returns, a broader set of diversification options, and lower fees.

5. In selecting a FOFs manager, investors should consider a FOFs that has been in the market for many years, where the general partners have a vested interest, and the FOFs is core to their business. FOFs should also demonstrate strong manager selection, proven relationships, and access to high-quality managers.

6. Because most FOFs have been raised since 1995, their returns are too immature to be meaningful. This makes it difficult to select FOFs on the basis of comparative performance. Moreover, the strategies of the FOFs diverged significantly in recent years, adding to the complexity of FOFs evaluation. That being said, there are nevertheless several methods of creating a FOFs benchmark against which to measure performance including a general benchmark that will compare a fund to the overall FOFs universe, a subsector benchmark that compares the performance of sector-focused funds, and a customized benchmark that takes into account vintage-year diversification.

7. As of September 30, 2002, the pooled mean net returns to FOFs limited partners for one-, three- and five-year periods were -17.0%, -3.7%, and 1.8%, respectively, according to the Cambridge Associates Fund of Funds Index™ benchmark. This compares to the venture capital net returns of -29.4%, 25.1%, and 46.7%, respectively, and the private equity returns of -9.2%, -4.0%, and 3.7%, respectively. Although FOFs performance data are relatively sparse, these results would seem to confirm the intuitive assumption that the broad diversification by most FOFs will tend to result in middling returns—neither top nor bottom quartile. Naturally, some FOFs will always outperform or underperform the FOFs median, but FOFs in aggregate are unlikely to outperform well-constructed direct investment programs.

8. Across different FOFs, the greatest discrepancies and primary concern in partnership terms are to be found in the fees. Unlike venture and buyout funds, where pricing has been fairly consistent across funds, the pricing of FOFs has varied considerably. Management fees have ranged from a low of 0.4% to a high of 2%. Carried interest has varied from zero to as much as 20%. Our analysis suggests that management fees have the greatest impact on investor's net returns. While the carried interest fee will also impact returns, the effect is not as great as that of the management fee, and, it serves as an incentive for management teams to produce higher returns.

9. FOFs have not been immune to the deteriorating economy and downturn in public markets. The number of FOFs raised has decreased every year from a high of 66 in 1999, to 56 in 2000, 44 in 2001, and 31 in 2002. Annual commitments to FOFs dropped from $17.8 billion in 2000 to $8.7 billion in 2001 and only $5.6 billion in 2002, year-on-year declines of 51.1% and 35.6%, respectively. FOFs as a percentage of all U.S. fund commitments dropped from 13.5% in 1999 to 10.2% in 2002. Because of the slowdown in private equity investing, FOFs managers have closed on smaller than expected fund sizes, extended closing dates, cut fund sizes, adjusted management fees, or cancelled their funds altogether.

SUMMARY

Introduction

Private equity fund-of-funds (FOFs) are vehicles that pool investor capital and make discretionary investments in private equity funds. FOFs will gather capital from their limited partners and typically invest in between ten to 30 independent private equity funds including venture, buyout, international, distressed, real estate, or special situation funds, which subsequently finance private companies and projects. Because the underlying fund investments are illiquid, the FOFs' liquidity is controlled by the general partners (GPs) of the underlying funds.

FOFs typically commit to a selection of independent funds over a two- to four-year period. The majority of distributions occur primarily in years five through seven (although in the late 1990s fund returns and distributions began as early as year one). The investment life of a FOFs is typically ten to 12 years. Most FOFs (over 80%) offer a blind or semi-blind pool of investments, meaning they pre-specify few, if any, of the funds in which they expect to invest in. Minimum investment size for high-net-worth individuals and institutions is typically $1 million and $5 million, respectively.

History

FOFs have been around since the 1970s and have grown considerably from fairly humble beginnings. With their increase in size and number, FOFs now play an increasingly significant role as investors in private equity funds. From 1979 to 1990, only 30 FOFs were raised for U.S. investors, generally at an average rate of approximately two to three per year. Over this 11-year period, only nine FOFs managers were established. Several had been running internal institutional portfolios for some time, establishing track records, and subsequently began seeking third-party investors.

By the late 1990s, the landscape for FOFs had changed dramatically. Many new investors were entering the private equity asset class for the first time and FOFs presented an efficient way to quickly scale up a private equity program or gain exposure to a particular sector. Following in the footsteps of venture capital and private equity funds, FOFs proliferated in number, type, and size. By 2001 there were over 100 active FOFs managers worldwide compared to only seven in 1990 (see Exhibit 1). Commitments to global FOFs grew from $19 million in 1991 to a fund-raising peak of $23.2 billion in 2000, according to *Asset Alternatives* (see Exhibit 2). From 1991 to 1997, 86 FOFs closed, raising $13.3 billion in capital from investors. In the subsequent four-year period 1998-2001, over 220 FOFs closed on $71 billion in capital, representing a 157% increase in the number of funds and a 435% increase in capital raised over the previous seven years combined.

Fund size has increased substantially over the years from an average fund size of $136 million in 1991-94 to $322 million in 1998-2002. In the late 1990s and early 2000s, we witnessed some of the first multi-billion dollar funds raised by such groups as HarbourVest, JP Morgan, Goldman Sachs, and Horsley Bridge.

As more and more money has poured into FOFs, these managers have become an increasingly influential source of capital in the industry. FOFs have become well represented on independent fund advisory boards and now play an important role in decisions to cut fund sizes and management fees as well as negotiate more favorable terms. FOFs accounted for 10% of all the capital raised by U.S. private equity firms in 2002, versus only 2.5% in 1995, according to

Asset Alternatives (see Exhibit 15). Last year, FOFs contributed 11.9% of the roughly $15 billion raised by general partners and placement agents surveyed for *Fund-raising Outlook 2003*—up from 6.2% of $27 billion raised by surveyed firms in 2001. A similar 11.7% of European private equity funding was raised from FOFs in 2001, according to European Venture Capital Association statistics.

FOFs Increased Activity

This significant uptick in activity in the FOFs sector was driven by a number of factors, including regulatory changes, new entrants to the marketplace, increased allocations from existing private equity programs, and changes of investment strategy by private equity advisors. In 1996, the United States passed the National Securities Markets Improvement Act (NSMIA), which essentially increased the number of investors that could participate in a single private limited partnership from 99 to 499. This enabled FOFs managers to effectively lower the minimum investment required by each investor, while still maintaining the same fund size. Buoyed by the passage of the NSMIA and seeking to create a product for their high-net-worth clients, financial services firms became major contributors to the increase in FOFs activity. Following Donaldson, Lufkin and Jenrette's introduction of a FOFs in 1995, over 30 bank and trust companies formed FOFs.

Many existing private equity programs also increased their allocation to the asset class and many new programs were implemented, significantly contributing to the increase in FOFs activity. In Europe, the demand was driven by new investors to the private equity market, particularly pension funds, seeking rapid diversification and convenient administration. Private equity advisory firms also plunged into the FOFs business in the mid- to late 1990s. Before the development of FOFs, many private equity advisory firms (e.g., Hamilton Lane, Adams Street, Crossroads, Horsley Bridge) held their clients' money in separate accounts and invested these capital pools independently of each other. Due to the inefficiencies, and potential conflicts of interest of this approach, many of these firms decided to forgo this strategy in lieu of creating a FOFs structure for clients. (However, it should be noted that a number of private equity advisory firms now offer both FOFs and separate accounts—including Abbott, Adams Street, Pantheon, and Wilshire.)

Categories/Strategies

Today, FOFs vary as much by type of organization as by strategy. The market no longer consists of a small group of independent players. Bank and trust companies as well as diversified asset managers have now become major investors and strategies have also evolved from offering only a broad selection of private equity investments to more specialized, niche-focused FOFs.

There are three basic categories of FOFs managers: independent firms, diversified asset managers, and bank and trust companies representing approximately 53%, 14%, and 34%, respectively, of the capital under management in private equity funds, according to *Asset Alternatives*. Independent firms specialize only in private equity investing and include some of the largest, earliest FOFs investors such as HarbourVest Partners LLC, Horsley Bridge Partners Inc., and Adams Street Partners LLC (formerly Brinson Partners). Diversified asset managers are typically traditional investment managers

that ventured into private equity and include such firms as the Commonfund Capital Inc., Invesco Private Capital, and Wilshire Associates. In recent years, some of the largest diversified asset managers such as Fidelity and Vanguard (which subsequently dropped its efforts) have sought ways to enter the private equity market through FOFs. Bank and trust companies such as Goldman Sachs, JP Morgan, DLJ/CSFB, and Merrill Lynch entered the asset class a bit later, primarily due to the publicity private equity received in the late 1990s and the increasing demands from their high-net-worth client base.

As the private equity market expanded in the mid- to late 1990s, an array of FOFs products were created. Managers sought ways to differentiate themselves or broaden their product lines by offering specialized or niche funds such as early-stage venture capital, "next generation," technology-focused, distressed, and energy funds. Some managers created FOFs that covered specific geographic regions such as Europe. Other FOFs managers developed a flexible approach for investors giving them the option of selecting a broad or narrow focus.

Today, with the slowdown in the overall private equity market and more specifically in FOFs participation, FOFs managers have had to become even more creative, seeking other means of attracting investors. Some firms have responded by providing more custom work for their clients; for example, offering captive funds or partnerships with a single limited partner (separate accounts). Other firms, particularly bank and trust companies, have switched their fund-raising efforts from their retail client base to institutional investors.

FOFs have also jumped on the increasing supply of secondary and co-investment opportunities. Several FOFs have expanded their participation in these sectors or raised stand-alone secondary and co-investment funds. Considering the lack of liquidity in the private equity markets, FOFs capital has been a welcome infusion. FOFs like the appeal of secondary investing and co-investing as, faced with increasing pricing pressures, these investments give them the chance to charge higher carried interest fees (averaging between 10% to 15% on secondary investments and 10% on co-investments) due to the considerably more complicated nature of the investment. Secondary investing may also provide early cash flow through what would otherwise be a long J-curve. Through co-investing, the overall cost of an investment in a particular portfolio company may be lowered as FOFs frequently do not have to pay carried interest on these investments.

FOFs' Role in a Portfolio

Private equity investing is time consuming and costly. It requires extensive resources, relationships, and expertise. FOFs can offer solutions for different types of investors. For those with a small asset base, FOFs represent a way to outsource suitably diversified investments in asset classes for which they lack the necessary resources and expertise. For large investors, FOFs offers an efficient means of investing in a specialized area.

FOFs provide:

- Efficiency;
- Diversification;
- Investment opportunities (deal flow);
- Decision-making;

- Administrative and back-office support;
- Access; and
- Specialization.

Investors need significant capital to obtain an adequate degree of diversification in private equity. For the small- to mid-size investor that cannot meet the minimum investment requirements of private equity funds, or lacks the resources required to create a well-balanced private equity portfolio, FOFs provides an efficient means of diversifying. FOFs provide this diversification by investing in a broad spectrum of managers, strategies, industry sectors, and geography over a two- to four-year time frame. However, a critical determinant of success when building a FOFs portfolio is to avoid over-diversification. Median returns on private equity do not justify the risks and illiquidity of the asset class, particularly when one considers the additional fee and carried interest burden of a FOFs. As a result, committing to numerous diversified vehicles is not typically recommended.

Private equity investing is labor-intensive and requires specialized knowledge and information. Investors must identify and attract high-quality investment opportunities, perform extensive due diligence, negotiate terms and conditions, and subsequently manage and monitor the investments until an exit is made. For the small- to mid-size investor that may lack the in-house resources and skills, FOFs can provide outsourcing of the private equity program, including the decision-making process and administrative and back-office responsibilities.

Because the dispersion in returns between top- and bottom-quartile funds is significant, manager selection and access to top-tier funds is critical to the success of private equity investments (see Exhibit 4). FOFs can add value through manager selection and provide a means of access to better-performing private equity partnerships. FOFs also fill the gap for larger investors who want to supplement their alternative assets program with specific strategies for which they may not have the necessary skills or time. FOFs can provide exposure to different areas within the asset class, such as European FOFs or a secondary FOFs.

Direct versus FOFs Investing

In implementing an alternative assets investment program, investors have the option of using a FOFs as a means of delegating portfolio construction and decision-making, or building a custom portfolio by making direct investments into discrete funds (or in some cases, using a combination of both). There are advantages and disadvantages to each of these. (See Exhibit 5.)

As noted earlier, FOFs provide efficiency, broad diversification, deal flow, decision-making, administrative convenience, possible early access to top-tier funds, and often specialized expertise. A major disadvantage, however, is that investors have no control over the construction of the portfolio. In addition, the majority of FOFs' track records are short, unproven, and difficult to analyze. Investors have restricted ability to monitor the investment program. There is also an additional layer of fees and carried interest to consider, and finally, returns tend to average down because of over-diversification.

On the other hand, a customized program of direct investing in private equity funds offers lower fees and carried interest, the potential to achieve superior returns, and a broader set of diversification options. Investors retain investment discretion, participate more in the investment process, have control over intra-asset class allocation, and maintain more efficient portfolio monitoring. In addition, investors invest as individual interests that may lead to better, easier, and sometimes greater access. Customized programs also give investors the ability to target the best funds. The disadvantages of a customized program include the potential need for additional internal staff, additional administrative work, and initial difficulty in accessing top-tier funds.

Manager Selection

Once a decision to invest in FOFs has been reached, investors must determine how to select the best managers. There are certain investment criteria to look for when selecting a high-quality FOFs:

- Longevity;
- Core investment activity is FOFs;
- Access to high-quality "marquee" managers;
- Proven relationships with experienced marquee funds;
- Reasonable fund size;
- Ability to identify tomorrow's top-tier performers;
- Reputation, respect, and visibility; and
- Reasonable fees/terms.

Given the current market conditions of shrinking fund sizes and reduced investing in the asset class, it is unlikely that the 100+ FOFs in the market (many raised in the last few years) will all survive. In fact, we believe a number of FOFs will cease to exist, particularly groups that raised FOFs as an ancillary business. When selecting a FOFs manager, investors should consider FOFs that have been in the market for many years, where the GPs have a vested interest, and the FOFs is core to their business. Although this cannot guarantee the longevity of a particular manager, it does mitigate some of the risks.

Selecting a FOFs with access to high-quality managers is also important. With over 100 active FOFs in the market, it would be difficult for every FOFs to provide investors with access to the same set of marquee managers. Although a number of FOFs managers will tout their access to such managers, it is important to take into account the size of their investments in these funds, and the percentage of marquee managers within the context of the entire FOFs. With roughly $6 billion in available capital in the FOFs sector and an average fund size of $322 million over the last four years, it is unlikely that an investment in a marquee manager would have significant impact on the overall return of any FOF. Moreover, while FOFs managers may provide access to marquee managers that may be closed to new investors, this has been primarily true only in the venture market and is rarely the case elsewhere.

It is also important to determine the nature of the FOFs relationship with top-performing managers. A FOFs should have proven relationships, particularly with those managers that are either highly selective or no longer accepting

new investors. Investors should also consider the number of relationships with such managers. Has the FOFs invested with these managers more than once? Will they be given allocations to future funds? Will they be given larger allocations?

It is generally assumed that FOFs' management teams are highly skilled in fund selection. Our analysis, however, shows that this is frequently not the case. Initial analysis suggests that possibly the best and most experienced FOFs have only about 50% of their portfolio invested with top-quartile managers. (See Exhibit 13.) This may be because many FOF teams are small and thus have difficulty covering the entire universe of managers, and/or because top-quartile managers are often averse to accepting investments from FOFs. Also, surprisingly few FOFs teams have much prior experience in fund selection.

A high-quality FOFs should demonstrate the ability to identify not just today's marquee managers, but tomorrow's top-tier performers as well, whether these are spinouts from existing funds or entirely new groups. FOFs cannot rely on the same subset of high-quality managers year after year. Private equity firms change over time, and it is difficult for them to consistently maintain top-tier performance. By identifying and building relationships with tomorrow's top-tier firms, a FOFs will likely secure access to and influence with these funds in the future.

A FOFs manager should have an excellent reputation among both investors and private equity firms. A FOFs positive reputation will garner the respect of private equity funds, resulting in better communication, access, and influence.

Fund size is important to consider when selecting a FOFs manager. Can the FOFs responsibly deploy the money it has raised (or seeks to raise) without compromising underlying manager quality? Investors should carefully assess today's larger FOFs in the context of shrinking fund sizes and slower investment pace. Not only will larger FOFs have difficulty finding enough high-quality managers to invest in, they will tend to gravitate towards the largest funds, which are themselves unlikely to generate superior returns.

Finally, when selecting a FOFs manager, investors should make a careful analysis of fees and terms. Are they industry standard? How do they compare to other similar funds? Depending on the returns, how will the fees affect performance?

Measuring Performance

Because most FOFs have been raised since 1995, their returns are too immature to be meaningful. This makes it difficult to select FOFs on the basis of comparative performance. Moreover, the strategies of the FOFs diverged significantly in recent years, adding to the complexity of FOFs evaluation. That being said, there are nevertheless several methods of creating a FOFs benchmark against which to measure performance—although investors should note that each of these is likely to yield a different set of results. (See Exhibit 7.)

Based on data compiled from over 148 FOFs formed between 1986 and 2002, Cambridge Associates has created a general FOFs benchmark by vintage year, based on pooled mean internal rates of return, net of fees, expenses, and carried interest. This method is a meaningful metric to compare a fund to the overall FOFs universe. However, it should be noted that this benchmark includes all the returns for FOFs, regardless of their stated strategy (i.e., diversified, venture-

only, international-only, etc.) and therefore effectively includes comparisons against dissimilar sectors. For example, if one invested in a venture capital FOFs, this benchmark would compare that fund's results to not only those of the venture capital sector, but also to those of all the other FOFs regardless of their sector focus.

Another metric of comparison uses a subsector benchmark such as the Cambridge Associates U.S. Venture Capital Index™ vintage-year data. This is a meaningful metric to compare the performance of a sector-focused fund (e.g., venture capital). However, this method does not take into account the FOFs' vintage-year diversification (i.e., the percent of dollars committed in a given vintage year), nor does it provide particularly meaningful results when analyzing a diversified FOFs.

The third, and probably most meaningful, measure to determine a FOFs' ability to select managers and construct a portfolio uses a customized benchmark. This method takes into account vintage-year diversification by weighting the dollars committed by asset class and vintage year. This benchmark, however, cannot be integrated into an aggregate total portfolio return.

Performance

Given the above caveats about performance measurement, as of September 30, 2002, the pooled mean net returns to FOFs limited partners for one-, three-, and five-year periods were -17.0%, -3.7%, and 1.8%, respectively, according to the Cambridge Associates Fund of Funds Index™ benchmark. This compares to the venture capital net returns of -29.4%, 25.1%, and 46.7%, respectively, and the private equity returns of -9.2%, -4.0%, and 3.7%, respectively. The Cambridge Associates' benchmark is based on data compiled from 148 FOFs formed between 1986 and 2002. (See Exhibits 8 through 12.)

Although FOFs performance data are relatively sparse, these results would seem to confirm the intuitive assumption that the broad diversification by most FOFs will tend to result in middling returns—neither top nor bottom quartile. Naturally, some FOFs will always outperform or underperform the FOFs median, but FOFs in aggregate are unlikely to outperform well-constructed direct investment programs.

Partnership Terms and Conditions

Across different FOFs, the greatest discrepancies and primary concern in partnership terms are to be found in the fees. How do fees vary and what effect do they have on returns?

Unlike venture and buyout funds, where pricing has been fairly consistent across funds, the pricing of FOFs has varied considerably. Management fees have ranged from a low of 0.4% to a high of 2%. Carried interest has varied from zero to as much as 20%. The median management fee is 1% or about half that charged by venture and buyout funds. This fee is typically calculated as a percentage of committed capital in the early years of a FOFs' life. Discounts are frequently given for larger commitments. Once the fund is fully invested, the fee switches to a percentage of the cost basis of the remaining portfolio investments thereby compensating managers early on in the due diligence and fund selection stages, and subsequently scaling down during the monitoring stages.

Management-fee pricing at the lower and upper ends of the spectrum appears to be narrowing in the last few years. For example, only 2% of the funds in 1999 charged 0.5% or less of committed capital in 1999. By 2001, 12% of the FOFs were charging these relatively low fees. Moreover, 20% of the FOFs were charging relatively higher fees of between 1.01% and 1.25% in 1999, versus only 10% in 2001, according to *Asset Alternatives*.

Carried interest fees were non-existent in the early days of FOFs. It was not until the mid- to late 1990s that FOFs began charging carried interest (although they have almost always charged a carried interest on co-investment and secondary investment activity). Today, the standard carried interest fee is 5%, although this can range from 2% to up to 20%. Most recently, in response to investor's sensitivity to FOFs pricing, we have noted several FOFs either decreasing their carried interest fee or removing it altogether. A hurdle rate or preferred return, which guarantees limited partners a minimum return before the GP can share in the profits, is used by almost 90% of all FOFs. Hurdle rates have typically ranged from 8% to 15%, although given the overall dismal returns in private equity, these rates are likely to come down.

How do these differences in management fees, carried interest, and hurdle rates affect returns? Our analysis suggests that management fees have the greatest impact on investors' net returns. While the carried interest fee will also impact returns, the effect is not as great as that of the management fee, and it serves as an incentive for management teams to produce higher returns. To illustrate the effect of fees on performance, we can look at three different return scenarios of 10.9%, 19.7%, and 32.8%. The impact of a 0.5% management fee results in returns of 10.0%, 18.4%, and 31.2%, respectively (see Exhibit 13). With the addition of a carried interest fee of 5% (subject to an 8% hurdle rate), resulting returns are 10.0% (no change as the hurdle rate is barely achieved), 17.9%, and 30.4%, respectively.

Current Environment

FOFs have not been immune to the deteriorating economy and downturn in public markets. The number of FOFs raised has decreased every year from a high of 66 in 1999, to 56 in 2000, 44 in 2001, and 31 in 2002. Annual commitments to FOFs dropped from $17.8 billion in 2000 to $8.7 billion in 2001 and only $5.6 billion in 2002, annual declines of 51.1% and 35.6%, respectively. FOFs as a percentage of all U.S. fund commitments dropped from 13.5% in 1999 to 10.2% in 2002. (See Exhibits 14 and 15.)

With the slowdown in private equity investing, FOFs have either closed on smaller than expected fund sizes, extended their closing dates in an effort to obtain more capital, or cancelled their funds altogether. Banc Boston (PEP III), Thomas Weisel (Global Growth Partners), and Wilshire (Private Markets Fund V), among others, have closed to date on less capital than anticipated. Hamilton Lane/Credit Lyonnais, Alignment Capital, One Equity Partners, and Prudential Global Asset Management were cancelled due to lack of demand.

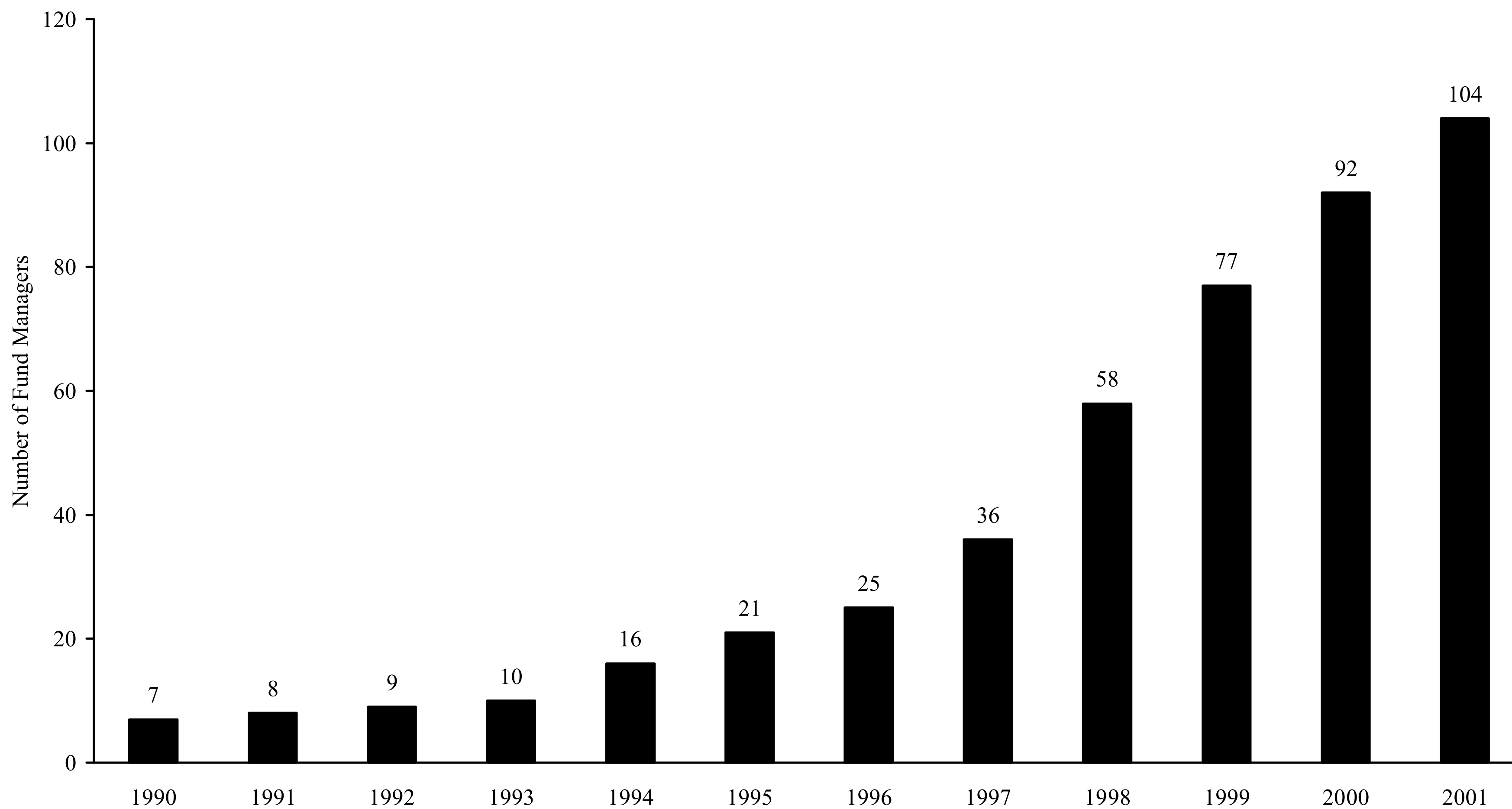
In the past year, a number of FOFs managers have also decided to cut their fund sizes or adjust their management fees (or both) including Commonfund Capital Inc. (Commonfund Capital Venture Partners VI), Goldman Sachs (Peptech), and Horsley Bridge Partners Inc. (Horsley Bridge Partners Fund VII).

EXHIBITS

Exhibit 1

NUMBER OF ACTIVE FUND MANAGERS WORLDWIDE BY YEAR

1990-2001

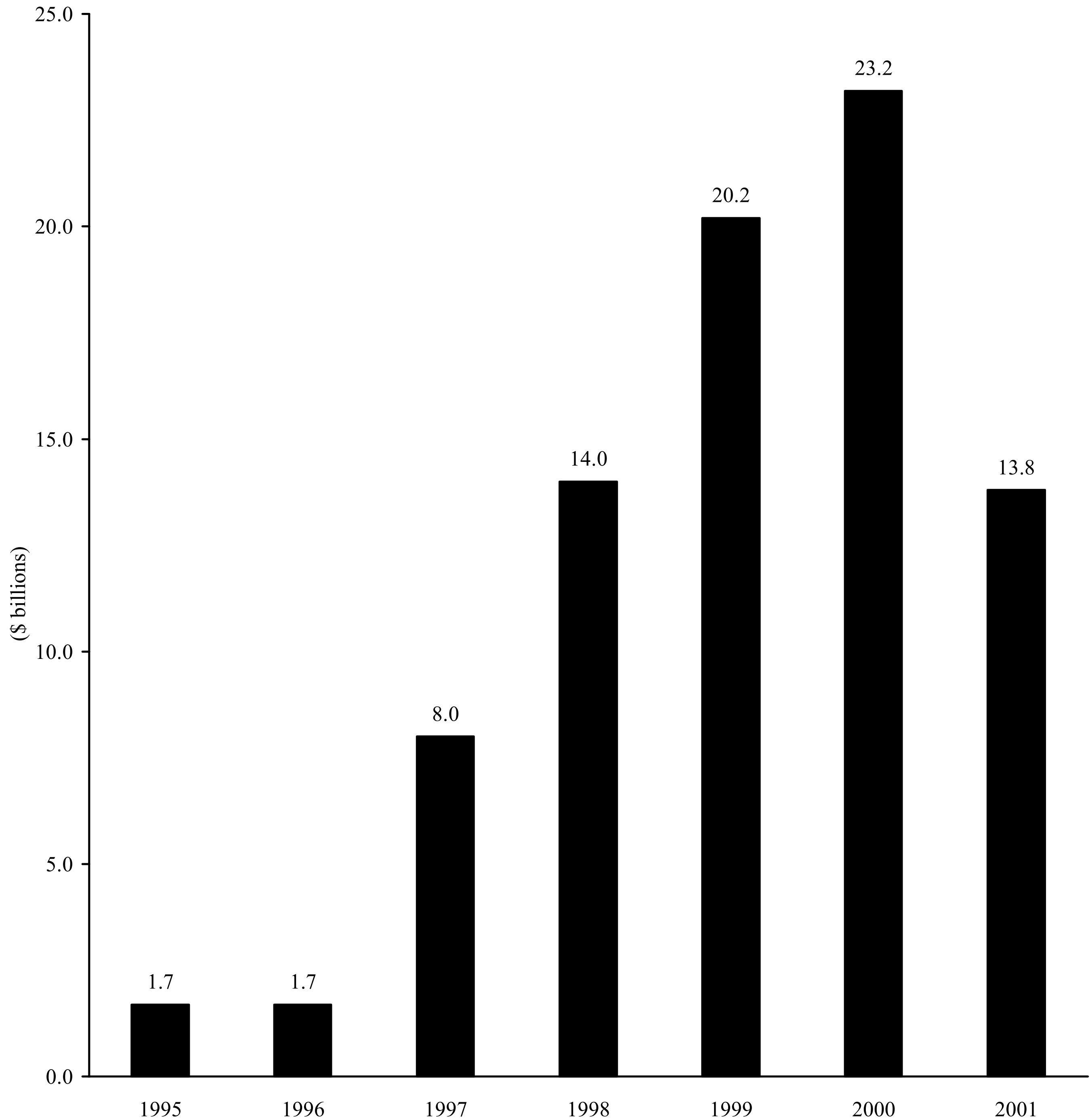


Source: *Asset Alternatives* .

Exhibit 2

GLOBAL COMMITMENT GROWTH TO FUND-OF-FUNDS BY YEAR

1995-2001

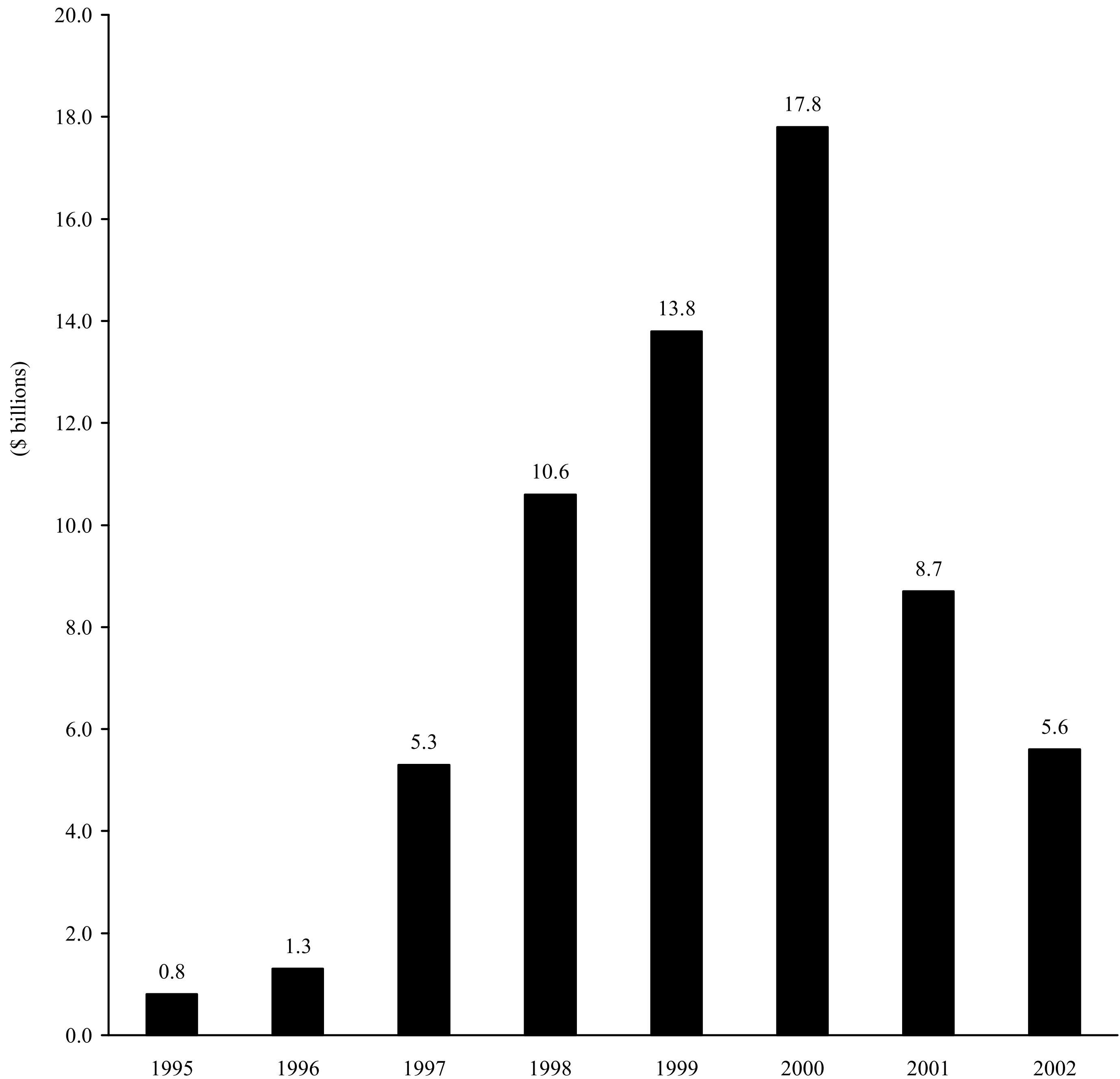


Source: *Asset Alternatives* .

Exhibit 3

U.S. COMMITMENT GROWTH TO FUND-OF-FUNDS BY YEAR

1995-2002

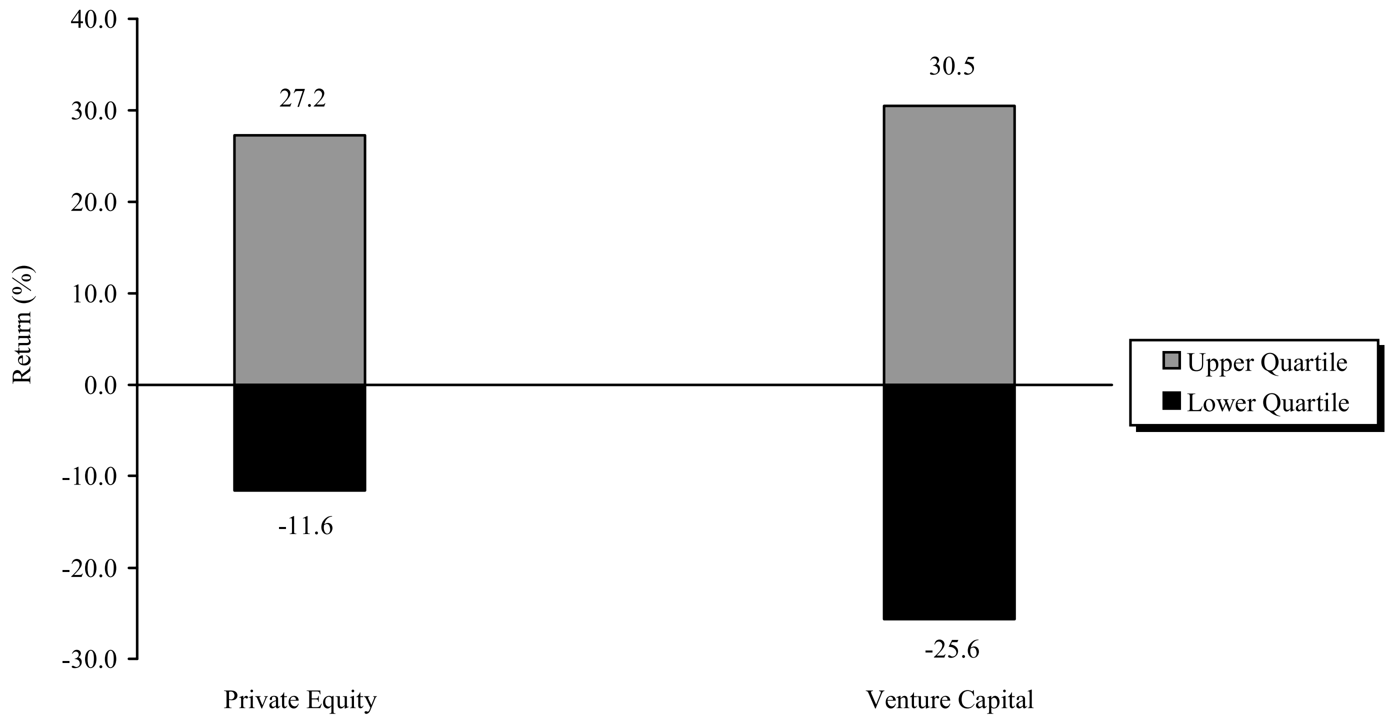


Source: *Asset Alternatives* .

Exhibit 4

DISPERSION BETWEEN TOP-QUARTILE AND BOTTOM-QUARTILE PERFORMANCE

As of September 30, 2002



Notes: Returns are net to limited partners. Private equity data compiled from 385 U.S. private equity funds, including fully liquidated partnerships, formed between 1986 and 2001. Venture capital data compiled from 885 U.S. venture capital funds, including fully liquidated partnerships, formed between 1981 and 2001.

Exhibit 5

COMPARISON OF DIRECT VERSUS FUND-OF-FUNDS INVESTING

Direct Investing	Fund-of-Funds Investing
Advantages	***Advantages***
• Lower fees and carried interest.	• Efficiency
• Potential to achieve superior returns.	• Diversification
• Broader set of diversification options.	• Investment Opportunities (deal flow)
• Investor retains investment discretion and has control over intra-asset class allocation.	• Decision Making
• Provides opportunities to participate in the investment process.	• Administration, Back Office Support
• More efficient portfolio monitoring.	• Access
• Investors invest as individual interests–may lead to better, easier, and sometimes greater access.	• Specialization
• Creates ability for client to target best funds.	***Disadvantages***
Disadvantages	• No control. Fund-of-funds has total discretion.
• May require additional internal staff.	• Limited customization of portfolio.
• Additional administrative work.	• Typically short track records, unproven, and difficult to analyze.
• Initial difficulty in accessing top-tier funds.	• Restricted ability to monitor program.
	• Additional layer of fees and carry.
	• Tendency to average down returns because of over diversification.

Exhibit 6

BENCHMARKING FUND-OF-FUNDS

As of September 30, 2002

Fund-of-Funds XYZ: Invested in 22 venture capital funds over three vintage years beginning in 1996.

1. Compare to CA Fund of Funds™ Benchmark:

Fund XYZ Net IRR to Limited Partners (%)	Fund-of-Funds Pooled Mean Net to Limited Partners (%)	Fund-of-Funds Pooled Median Net to Limited Partners (%)
85.54	41.94	33.48

2. Compare to CA U.S. Venture Capital™ Benchmark:

Fund XYZ Net IRR to Limited Partners (%)	U.S. Venture Capital Pooled Mean Net to Limited Partners (%)	U.S. Venture Capital Pooled Median Net to Limited Partners (%)
85.54	98.78	36.89

3. Calculate a Customized Benchmark Using CA U.S. Venture Capital™ Benchmark Statistics:

Vintage Year	Percent Fund XYZ Committed by Year (%)	U.S. Venture Capital Pooled Mean Net to Limited Partners (%)	Weighted Return (%)
1996	13.18	98.78	13.02
1997	30.04	93.02	27.94
1998	56.77	7.38	4.19
			45.15

Vintage Year	Percent of Fund XYZ Committed by Year (%)	U.S. Venture Capital Pooled Median Net to Limited Partners (%)	Weighted Return (%)
1996	13.18	36.89	4.86
1997	30.04	11.53	3.46
1998	56.77	-3.77	-2.14
			6.19

Fund XYZ Net IRR to Limited Partners (%)	Weighted Mean (%)	Weighted Median (%)
85.54	45.15	6.19

Exhibit 7

FUND-OF-FUNDS PERFORMANCE

As of September 30, 2002

Year	Number of Funds	Pooled Mean Net to Limited Partners (%)[1]	Median Net to Limited Partners (%)[1]	LP/Dist Paid In
1994	11	16.08	22.44	1.09
1995	11	13.19	26.20	0.86
1996	7	41.94	33.48	1.86
1997	14	1.96	2.61	0.38
1998[2]	24	-8.06	-9.62	0.20
1999[2]	20	-9.90	-13.75	0.19
2000[2]	24	-16.86	-22.57	0.06
2001[2]	23	-5.52	-25.09	0.07

Source: Cambridge Associates LLC Non-Marketable Alternative Assets Database.

Note: Performance data compiled from 151 fund-of-funds formed between 1994 and 2001.

[1] Net of fees, expenses, and carried interest.
[2] Most of these funds are too young to have produced meaningful returns.

Exhibit 8

END-TO-END RETURNS FOR CA U.S. PRIVATE EQUITY, U.S. VENTURE CAPITAL AND FUND OF FUNDS INDICES™

As of September 30, 2002

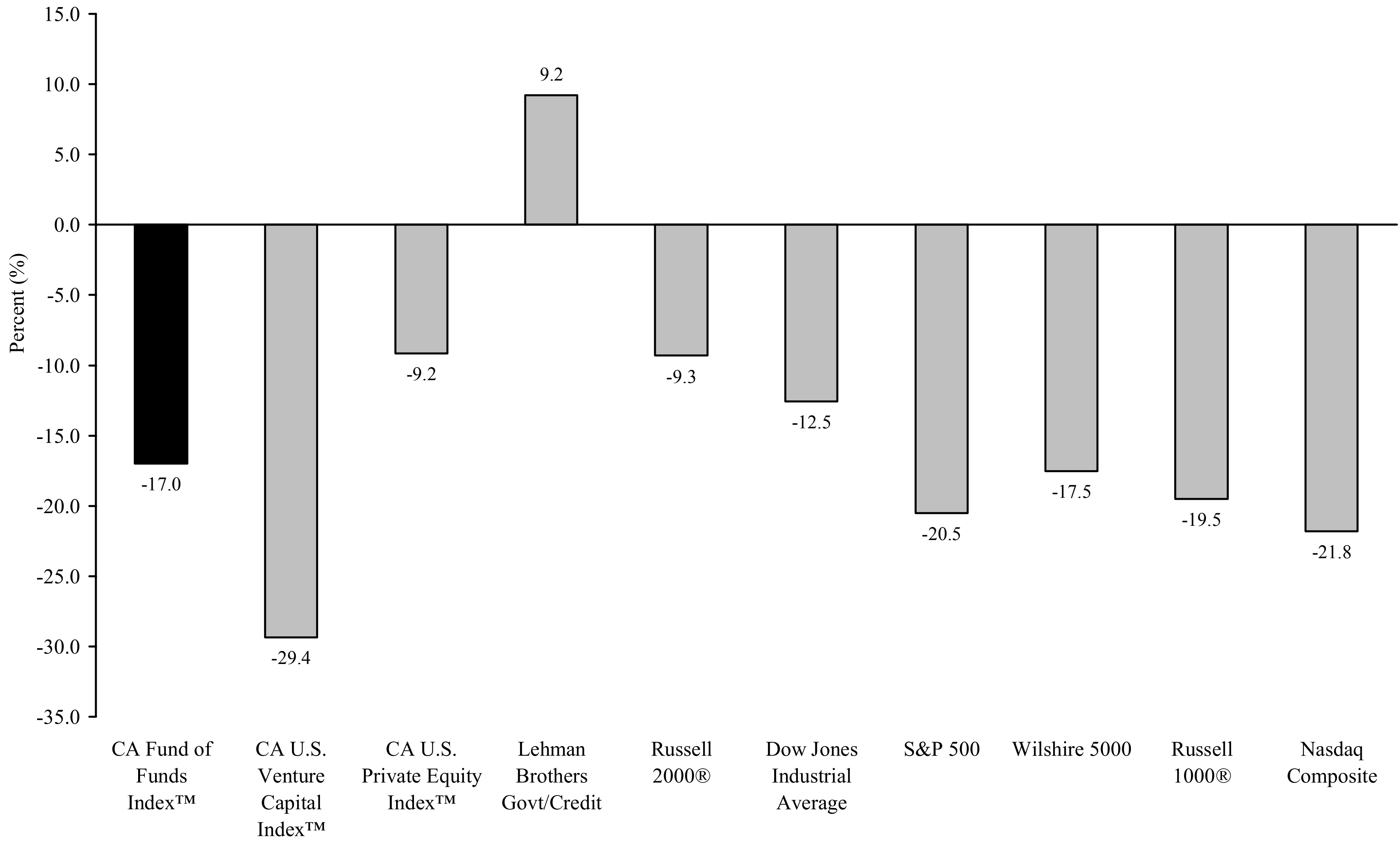
Period	Fund-of-Funds End-to-End Pooled Mean Net to Limited Partners (%)	U.S. Venture Capital End-to-End Pooled Mean Net to Limited Partners (%)	U.S. Private Equity End-to-End Pooled Mean Net to Limited Partners (%)
One Quarter	-4.88	-9.05	-5.19
Year to date	-12.33	-24.53	-9.04
One Year	-16.96	-29.36	-9.15
Three Year	-3.69	25.09	-3.98
Five Year	1.83	46.74	3.66

Source: Cambridge Associates LLC Non-Marketable Alternative Assets Database.

Notes: End-to-end calculation is based on data compiled from fund-of-funds, including fully liquidated partnerships, formed between 1987 and 2002; U.S. venture capital funds, including fully liquidated partnerships, formed between 1981 and 2002; and U.S. private equity funds (subordinated debt, leveraged buyout, and special situation funds), including fully liquidated partnerships, formed between 1986 and 2002. Pooled end-to-end returns are net of fees, expenses, and carried interest.

Exhibit 9

CAMBRIDGE ASSOCIATES FUND OF FUNDS INDEX™ VERSUS OTHER MARKET INDICES FOR THE ONE YEAR ENDED SEPTEMBER 30, 2002



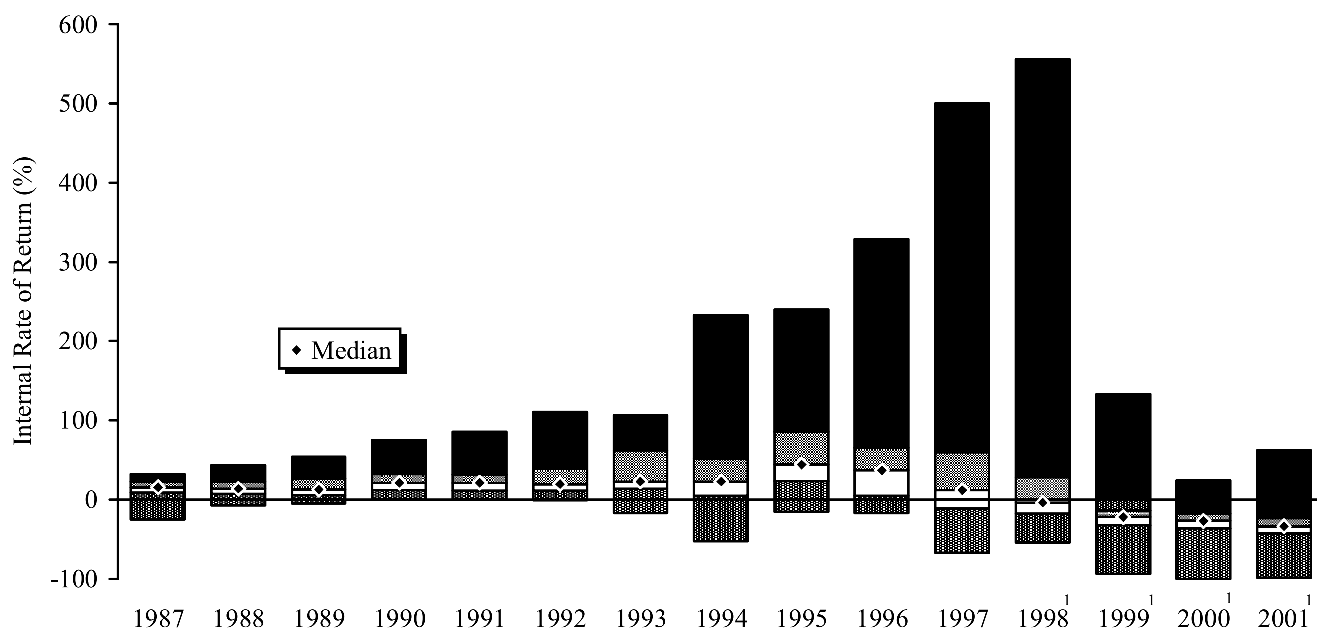
Sources: The Bloomberg, Cambridge Associates LLC Non-Marketable Alternative Assets Database, Lehman Brothers, Inc., Standard & Poor's, Thomson Datastream, *The Wall Street Journal* , and Wilshire Associates, Inc.

Exhibit 10

INTERNAL RATES OF RETURN (%) NET TO LIMITED PARTNERS OF VENTURE CAPITAL FIRMS BY QUARTILES

Vintage Years 1987-2001

As of September 30, 2002



	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998[1]	1999[1]	2000[1]	2001[1]
High	32.4	43.1	54.4	75.3	85.4	110.4	107.1	232.9	240.2	328.4	500.4	552.3	133.2	24.4	62.2
Upper Quartile	22.2	22.7	26.5	31.9	31.1	38.7	61.7	51.6	85.9	65.5	59.4	24.3	-13.6	-18.0	-23.3
Median	15.7	13.8	12.3	21.2	21.3	19.5	22.8	22.6	44.0	36.9	11.5	-3.8	-22.1	-27.0	-33.7
Lower Quartile	8.5	7.4	5.6	12.0	10.8	10.6	13.7	4.9	23.1	5.0	-11.5	-14.1	-32.6	-36.1	-42.4
Low	-25.3	-7.0	-4.6	0.8	0.9	-1.1	-17.5	-52.9	-15.7	-17.1	-67.0	-50.4	-94.0	-100.0	-98.4
Number of Funds	34	28	39	16	19	24	33	43	39	41	63	82	115	131	41[2]

Source: Cambridge Associates LLC Non-Marketable Alternative Assets Database.

Note: These internal rates of return have been compiled from 748 U.S. venture capital funds with inceptions from 1987 through 2001 and are net of management fees, expenses, and carried interest.

[1] Most of these funds are too young to have produced meaningful returns. Analysis and comparison of partnership returns to these benchmark statistics may be irrelevant.

[2] Represents only those funds formed in 2001 that began investing by September 30, 2002.

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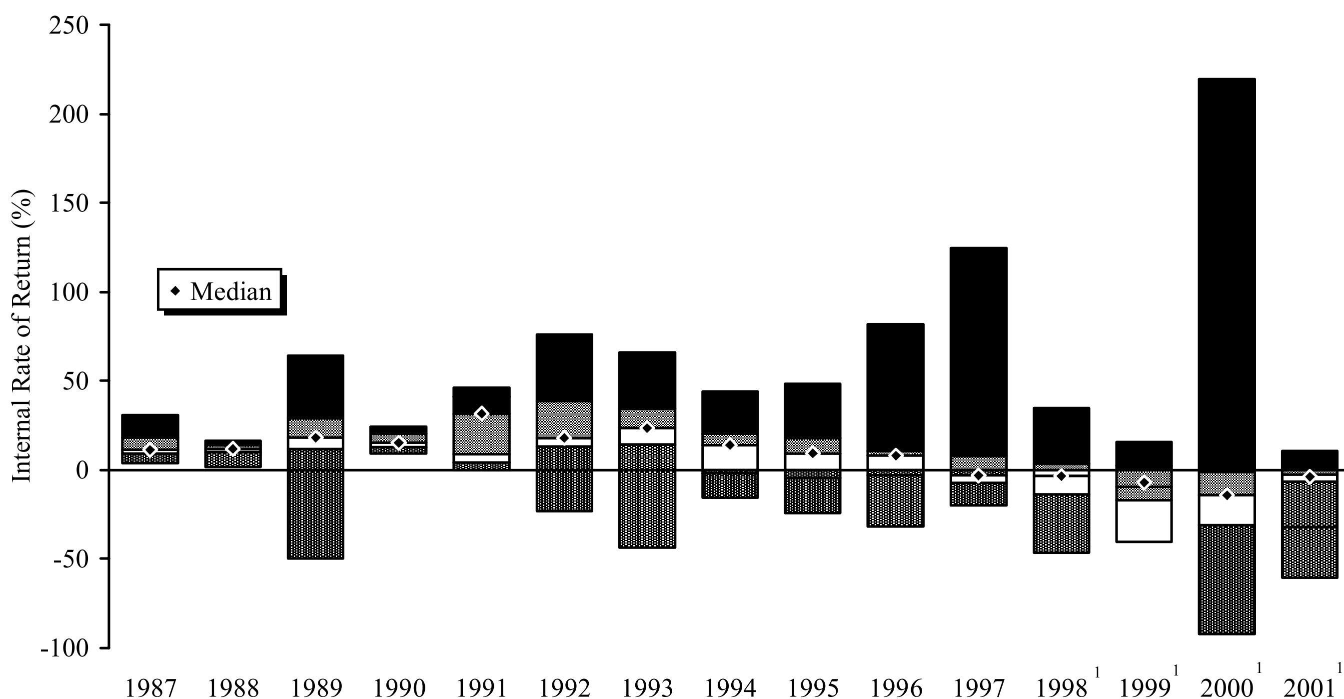
Exhibit 11

INTERNAL RATES OF RETURN (%) NET TO LIMITED PARTNERS OF PRIVATE EQUITY FIRMS BY QUARTILES

Vintage Years 1987-2001

As of September 30, 2002



	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998[1]	1999[1]	2000[1]	2001[1]
High	30.6	16.4	64.3	24.3	46.1	76.2	66.1	44.1	48.4	81.9	124.4	34.5	13.1	219.5	7.8
Upper Quartile	18.0	13.8	28.9	20.4	41.1	38.5	34.3	20.1	17.8	10.5	7.7	3.2	2.4	-1.3	-2.8[2]
Median	11.1	11.7	18.0	15.1	31.5	17.8	23.4	13.9	9.2	7.9	-3.0	-3.4	-7.1	-14.3	-3.7
Lower Quartile	9.2	9.9	11.6	12.8	8.7	12.9	14.0	-1.8	-4.5	-2.9	-7.3	-13.7	-14.6	-31.2	-29.6
Low	3.7	1.8	-49.8	9.2	4.1	-23.3	-43.8	-15.8	-24.2	-31.9	-20.1	-46.6	-38.1	-92.2	-57.8
Number of Fund	13	15	18	10	8	16	27	20	28	32	40	51	33	54	9[3]

Source: Cambridge Associates LLC Non-Marketable Alternative Assets Database.

Note: These internal rates of return have been compiled from 374 U.S. leveraged buyout, subordinated debt, and special situation funds with inceptions from 1987 through 2001 and are net of management fees, expenses, and carried interest.

[1] Most of these funds are too young to have produced meaningful returns. Analysis and comparison of partnership returns to these benchmark statistics may be irrelevant.

[2] NM represents Not Meaningful.

[3] Represents only those funds formed in 2001 that began investing by September 30, 2002.

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Exhibit 12

COMPARISON OF POOLED MEAN RETURNS OF VARIOUS PRIVATE EQUITY CATEGORIES TIME-WEIGHTED RETURNS (%) NET TO LIMITED PARTNERS

Periods Ended September 30, 2002

			Average Annual Compound Returns (%)			
Asset Class	Q3 2002	One Year	Three Years	Five Years	Ten Years	Fifteen Years
U.S. Venture Capital	-9.05	-29.36	25.09	46.74	35.88	22.92
Buyouts $0 - $250M	-2.13	-7.97	3.33	17.63	24.02	17.14
Buyouts $250 - $500M	-7.11	-10.45	-0.13	11.91	23.40	18.13
Buyouts $500 - $1,000M	-4.82	-3.82	-4.64	6.55	13.75	15.30
Buyouts >$1,000M	-5.65	-11.60	-6.20	-0.01	5.91	5.97 [1]
All Buyouts	-5.41	-9.44	-4.64	4.10	12.30	11.46
Mezzanine Funds	-0.54	4.52	7.81	11.42	14.30	10.64
All Private Equity	-6.52	-16.86	3.79	17.03	22.47	17.40
Top Two Quartiles Only						
U.S. Venture Capital	-7.55	-22.78	87.43	79.70	46.57	29.31
All Private Equity	-5.67	-7.93	28.29	43.12	36.34	25.87
S&P 500	-17.28	-20.49	-12.89	-1.63	9.00	9.00
Russell 2000®	-21.40	-9.30	-4.11	-3.19	8.01	6.84
Dow Jones U.S. Small Cap	-16.97	-5.32	0.31	-0.74	9.95	---
Nasdaq Composite [2]	-19.90	-21.80	-24.71	-7.01	7.23	6.68
Wilshire 5000	-16.80	-17.51	-11.69	-2.01	8.69	8.61

Sources: Cambridge Associates LLC Non-Marketable Alternative Assets Database, Dow Jones & Company, Inc., Standard & Poor's, Thomson Datastream, *The Wall Street Journal*, and Wilshire Associates, Inc.

Notes: Returns are time-weighted pooled means net of management fees, expenses, and carried interest. The pooled means represent the time-weighted rates of return calculated on the aggregate of all cash flows and market values as reported by the General Partners to Cambridge Associates LLC in their quarterly and annual audited financial reports. The U.S. Venture Capital sample represents over 80% of the total dollars raised by U.S. venture capital managers between 1981 and 2002. The U.S. Buyouts and Mezzanine sample represents over 70% of the total dollars raised by funds formed between 1986 and 2002. All Private Equity includes U.S. Venture Capital, Buyout, and Mezzanine funds.

[1] The first cash flow for Buyouts >$1,000M did not take place until fourth quarter 1987.

[2] Data are price returns only.

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Exhibit 13

COMPARATIVE FEES AND CARRIED INTEREST STRUCTURES

Example: A

Terms*	IRR (%)
No fees or carry	10.9
0.5% fee	10.0
0.5% fee and 5% carry	10.0
1.0% fee	9.1
1.0% fee and 5% carry	9.1

Example B

Terms*	IRR (%)
No fees or carry	19.7
0.5% fee	18.4
0.5% fee and 5% carry	17.9
1.0% fee	17.1
1.0% fee and 5% carry	16.6

Example C

Terms*	IRR (%)
No fees or carry	32.8
0.5% fee	31.2
0.5% fee and 5% carry	30.4
1.0% fee	29.7
1.0% fee and 5% carry	28.9

Percentage of Fund-of-Funds Investments in the Upper Quartile as Indicated by the Cambridge Associates Indices

As of June 30, 2002

Fund of Funds	Percentage of Funds in Upper Quartile (%)
A	50
B	36
C	50
D	17
E	50
F	64

Source: Cambridge Associates Non-Marketable Alternative Assets Database.

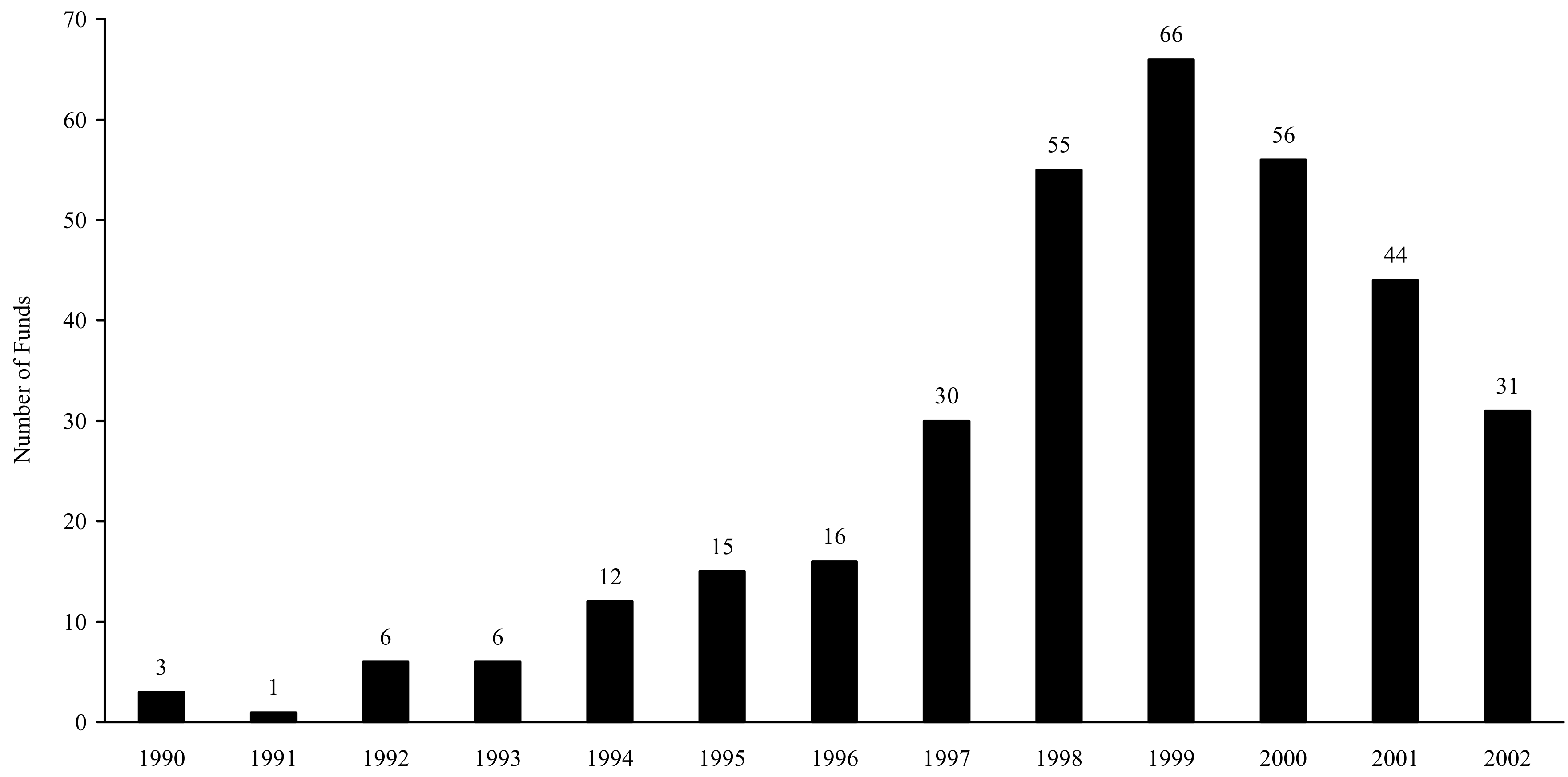
Notes: Six fund-of-funds were evalulated. The percentage of underlying funds that invested in upper quartile funds for the corresponding vintage year was calculated.

* Carry subject to an 8% preferred compounded return with General Partner catch-up.

Exhibit 14

NUMBER OF FUND CLOSINGS BY YEAR

1990-2002



Source: *Asset Alternatives* .

Exhibit 15

COMMITMENTS TO FUND-OF-FUNDS AS A PERCENTAGE OF ALL U.S. FUND COMMITMENTS

1995-2002