Investing in Private Equity Funds
Return, top quartile, persistence, fees, risk management

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Top reasons invoked to invest in PE

● Performance
  • I need high return, PE will deliver that
  • I am patient
    ▫ with PE I can capitalize on that and earn a liquidity premium
  • Yale envy
  • Top quartile returns are exceptional and there is persistence
  • Bring me diversification

● Incentives are well aligned with the money manager
Recent evidence on performance

- Took about thirty years for first large-scale academic study of PE investor returns

- Using a similar dataset from Thomson Venture Economics, first Kaplan and Schoar (2005) and then Phalippou and Gottschalg (2009) found that the average buyout fund had underperformed the S&P 500.

- This finding has now come into question:
  - Robinson and Sensoy (RS, 2011), Harris, Jenkinson and Kaplan (HJK, 2012) and Higson and Stucke (HS, 2012) have access to up-to-date and apparently better quality data. They find that the average buyout fund has outperformed the S&P 500.
The $1 million question

Which asset class has NOT outperformed the S&P 500 over the past 15 years?

- Real estate?
- Gold?
- Bonds?
  - Treasury, investment-grade, junk ones?
- Wine?
- Art?
- Cash?
- Most of the listed stocks in the US and Europe?
- Emerging market stocks?
- Small stocks?
- Mid-cap stocks?
- Value stocks?
Figure 2: Annualized Ten Year Forward Looking Moving Average Returns

Each point is calculated as the average monthly return over the next 120 months. The average monthly return is annualized. Data are from January 1980 to December 2011. The ten year forward-looking moving average is thus from January 1980 to December 2001. The CRSP equally-weighted index measures the return of the average US stock (CRSP-EW). CRSP-EW and S&P 500 returns are obtained from WRDS (Select CRSP dataset, Index/S&P 500 indexes, monthly, returns include distributions). 10 year Treasury bond monthly returns are also obtained from WRDS (select CRSP dataset, Index/Treasury, annual frequency, return, 10 year bond).
The size premium is back

Figure 1: Annualized average value-weighted return of the Fama-French size portfolios

PE investments are small

- S&P 500 is not the right benchmark. NO value-weighted benchmark is right!

- Capital IQ data: 95% of the enterprise values reported for leveraged buyout transactions are below $1,175 million.

- Largest stock in the third smallest size-decile of the ten size-based portfolios of Fama-French has a market capitalization of $1,090 million ➔ Enterprise value > $1,175

➔ 95% of leverage buyout investments would fall in the first three size-deciles of Fama-French.

NB: Largest ever transaction TXU, was a take-private listed equity; it was the 120th largest market cap pre-announcement
Small cap benchmarks

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Mutual funds</th>
<th>CRSP US stock-market indices</th>
<th>Fama-French Size decile portfolios</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vanguard S&amp;P 500</td>
<td>DFA Micro-cap</td>
<td>Value weighted</td>
</tr>
<tr>
<td>Mean</td>
<td>1.20</td>
<td>1.04</td>
<td>1.19</td>
</tr>
<tr>
<td>Median</td>
<td>1.13</td>
<td>0.99</td>
<td>1.12</td>
</tr>
<tr>
<td>Std-error</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>t-stat</td>
<td>8.62</td>
<td>1.83</td>
<td>8.21</td>
</tr>
</tbody>
</table>

- A PME of one indicates equal returns.
- Use of mutual fund data avoids issues with small stock return measurement biases.
- DFA micro-cap has $3.6 billion asset under management and max market cap is $1,130 (higher than 95th largest PE transaction)
More? Adjusting latest NAV

<table>
<thead>
<tr>
<th>Panel A: Change last reported NAV to 90% of reported value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benchmark</td>
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<tr>
<td>t-stat</td>
</tr>
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</table>

Average discount on the secondary market for buyout fund stakes is 25% (Kleymenova, Talmor and Vasvari, 2012)

A 10% discount is enough to bring PE returns below benchmark
Yet more? Adjusting beta

**Panel B: Change beta to 1.3 (from 1)**

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<thead>
<tr>
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<tr>
<td></td>
<td>Vanguard S&amp;P 500</td>
<td>DFA Micro-cap</td>
<td>Value weighted</td>
</tr>
<tr>
<td>Mean</td>
<td>1.17</td>
<td>0.99</td>
<td>1.16</td>
</tr>
<tr>
<td>Median</td>
<td>1.11</td>
<td>0.94</td>
<td>1.10</td>
</tr>
<tr>
<td>Std-error</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>t-stat</td>
<td>7.48</td>
<td>-0.31</td>
<td>6.93</td>
</tr>
</tbody>
</table>

**Panel C: Change beta to 1.5 (from 1)**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Mutual funds</th>
<th>CRSP US stock-market indices</th>
<th>Fama-French Size decile portfolios</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vanguard S&amp;P 500</td>
<td>DFA Micro-cap</td>
<td>Value weighted</td>
</tr>
<tr>
<td>Mean</td>
<td>1.16</td>
<td>0.98</td>
<td>1.15</td>
</tr>
<tr>
<td>Median</td>
<td>1.10</td>
<td>0.93</td>
<td>1.09</td>
</tr>
<tr>
<td>Std-error</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>t-stat</td>
<td>6.96</td>
<td>-1.13</td>
<td>6.33</td>
</tr>
</tbody>
</table>
Conclusion on performance

- PE performance continues to appear low compared to listed equity
- Puzzle continues
- Contrasts with what investors and PE firms argue but they show IRRs and cash multiples. Contrasts also with some academics claim but benchmark sensitive
- Serious issue for pension funds, endowments etc.
- Above analysis does not adjust for illiquidity (in particular commitment risk), additional fees (fund-of-fund or internal costs, either way adds up to about 1%-10%)
- Consistent with recent moves of some large investors to by-pass funds and invest directly into PE

More details:
Earning a liquidity premium

• It is not because something is illiquid that it will deliver you a liquidity premium

• If I start a PE fund tomorrow and just buy and sell public equity, you won’t earn a premium with me

• The idea is that if there is added value by the fund manager then she should share some of it with me because I provided the liquidity

• It boils down to a supply/demand story

• If plenty of investors are patient, no liquidity premium will be paid
Why are investors feeling otherwise?

An investor recently came out of the closet saying “WE HAVE MET THE ENEMY… AND HE IS US”

• Only 20% of venture funds generated returns of more than 3% annually above public equity. And half of those began investing prior to 1995
• There is no consistent evidence of a J-curve in VC post-1997
• 4 (out of 30) VC funds with size > $400 million have beat public equity
• “Investment committees and trustees should shoulder blame as they have created the conditions for the chronic misallocation of capital. In particular, we learned that investment committees and trustees
  ➢ Make investment decisions based on seductive narratives such as quartile performance, which rely heavily on IRR measures that often are misleading
  ➢ Fail to judge investments in VC against returns from small cap stocks.”
(Extract from *Financial Times*, 2002): “Rival private equity firms have challenged claims by Guy Hands, the financier who is taking himself independent from Nomura at the end of March, about his performance record. (…) The debate highlights the lack of transparency in the private equity industry and the difficulty of making clear comparisons. (…) On the nine investments made since 1995, Mr Hands shows a gross annual IRR of 62 per cent, and returned a multiple of 2.1 times on the initial investment capital. These figures are before fees. Rivals do not dispute that the IRR is strong - though not the highest - but they challenge the competitiveness of the multiple, another measure to which investors look. "His multiple is surprisingly low”. Investors look at investment records in terms of multiples as well as IRRs. "Over the life of a fund, we regard an acceptable multiple as three times, or 2.5 times after carried interest (share of the profits) and fees.” Mr Hands is trying to raise Euros 3bn. It is the most ambitious fund raising exercise in terms of the target.
The yacht is called Yale

• *The Economist*, on March 10th 2011, began an article on private equity investing as follows: “There can be fashions in investing as well as in the arts. Over the past 25 years many university endowments have moved over to the “Yale model”, …Under the leadership of David Swensen, Yale has invested across a wide range of “alternative assets”, from private equity and hedge funds to timber. The model has worked very well over the long run, for Yale at least. The university’s private-equity assets have produced an annualised return of 30.4% since inception.”

• *Institutional Investor*, on November 4th, 2009: “The success of Harvard and Yale attracted imitators. After suffering endowment losses in 2001 and 2002, smaller schools looked to their Ivy League idols for guidance on bulletproofing their portfolios. “Alumni called me up and said, ‘We’re going to be just like Yale, right?’” recalls the CIO of one midsize endowment fund. As a result, many small schools crowded into hedge funds and private equity.” As this quote suggests the perceived
Table 1: Yale endowment track record

<table>
<thead>
<tr>
<th>Annual report for the year</th>
<th>Annualized return in private equity since inception</th>
<th>Annualized return in private equity over the past ten years</th>
<th>Expected return</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>34.1%</td>
<td>37.9%</td>
<td>12.5%</td>
</tr>
<tr>
<td>2001</td>
<td>32.9%</td>
<td>35.3%</td>
<td>12.5%</td>
</tr>
<tr>
<td>2002</td>
<td>31.4%</td>
<td>36.9%</td>
<td>12.0%</td>
</tr>
<tr>
<td>2003</td>
<td>30.7%</td>
<td>36.0%</td>
<td>11.4%</td>
</tr>
<tr>
<td>2004</td>
<td>30.6%</td>
<td>37.6%</td>
<td>11.4%</td>
</tr>
<tr>
<td>2005</td>
<td>31.0%</td>
<td>39.5%</td>
<td>11.4%</td>
</tr>
<tr>
<td>2006</td>
<td>30.6%</td>
<td>33.9%</td>
<td>11.4%</td>
</tr>
<tr>
<td>2007</td>
<td>31.4%</td>
<td>33.9%</td>
<td>11.2%</td>
</tr>
<tr>
<td>2008</td>
<td>30.9%</td>
<td>35.9%</td>
<td>11.2%</td>
</tr>
<tr>
<td>2009</td>
<td>30.4%</td>
<td>25.8%</td>
<td>11.0%</td>
</tr>
<tr>
<td>2010</td>
<td>30.3%</td>
<td>06.2%</td>
<td>10.5%</td>
</tr>
</tbody>
</table>

Source: Yale Endowment Annual Reports
Yale envy?


- Someone earning 30% p.a. over 38 years would have multiplied her money by 24,000.
- A monkey who would have started to invest into VC funds in early 1990s would have the exact same track record.
- In 20 years time, the since inception return of Yale will still be 30% p.a.
- To be able to judge, Yale should show results for VC and BO separately and/or show their multiple.
Silly benchmarking

- Using industry benchmarks for each vintage year
  - Recommended by Global Investment Performance Standards (GIPS)

- Misleading and imprecise
  - E.g. Find 8% alpha per year in example below while there is no alpha

<table>
<thead>
<tr>
<th>Panel A: The industry cash flows</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006 vintage year</td>
<td>-1000</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>23%</td>
</tr>
<tr>
<td>2007 vintage year</td>
<td>0</td>
<td>-500</td>
<td>250</td>
<td>250</td>
<td>0%</td>
</tr>
<tr>
<td>Overall</td>
<td>-1000</td>
<td>0</td>
<td>750</td>
<td>750</td>
<td>18%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B: The investor cash flows</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006 vintage year</td>
<td>-100</td>
<td>150</td>
<td>0</td>
<td>25</td>
<td>60%</td>
</tr>
<tr>
<td>2007 vintage year</td>
<td>0</td>
<td>-150</td>
<td>75</td>
<td>50</td>
<td>-12%</td>
</tr>
<tr>
<td>Overall</td>
<td>-100</td>
<td>0</td>
<td>75</td>
<td>75</td>
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The panacea of top quartile investing

• Typical response at this stage of the presentation: “Fine, so average is not very good. But we all know that. It has always been argued that the only PE funds worth investing are the top quartile funds and their returns are great.”
Another $1 million question

- Do you know of an asset class in which top quartile is NOT doing great?
  - Real estate?
  - Wine?
  - Art?
  - Listed equity US/Europe?
  - Emerging market stocks?
  - (leveraged?) mutual funds?
  - ETFs?
  - Hedge funds?
The panacea of top quartile investing

• Typical response at this stage of the presentation: “Fine, so average is not very good. But we all know that. It has always been argued that the only PE funds worth investing are the top quartile funds and their returns are great.”

• Typical response at this stage of the presentation: “Fine, but top quartile funds are easily identifiable in PE. Any experienced investor can do that.”

→ Response to the response:
→ Really ??!!

→ Can I have the list of the dummies investing in PE?
→ I need names of 75% of all the investors
→ Alternatively, could it be that top quartile funds are easy to identify because…
→ They all are !!
→ In fact, the rhetoric is: if it is top quartile it will stay so. Since all PE firms are top quartile, that makes it for great marketing… but maybe poor finance
Myth of performance “persistence”

- Researchers found that two successive funds have positively correlated returns (NB stronger in VC than Buyouts)

- Consultants and PE community embraced this result:
  - “Although average performance is not good, you can get high returns if you select top quartile funds because their performance is persistently good.”

- But:
  - This research finding is not a tradable strategy
  - Evidence shows no way to identify persistence in advance
  - Everyone is top quartile (because of data issues)!

- Some aspects of past performance may be informative and should be part of the selection process
  BUT - simply knowing past performance is not helpful for fund selection
Fee contracts are far from optimal

• Fees do not reflect stock-market returns

• Fixed fees are at least 3% per annum (of capital invested)

• Portfolio company fees
Diversification

- Difficult to tell but seems to co-move with risk factors driven listed equity returns (size premium, value premium, illiquidity risk premium)

- Makes sense – at the end of the day, it is still equity
Market timing

- Money-chasing deal effect, i.e. prices rise when more capital is being invested
  - Negative relation between amount of capital invested in a given year and return of that vintage year
  - Correlation between performance and number of funds raised in that year is around 70%

- But:
  - Being counter-cyclical in public equity is also profitable. Similar negative correlation with return of US stocks over the six years following a low fund raising year
  - When there is a bust in PE, there is also a bust in other financial markets. Costly to rebalance towards PE in those times
  - Fewer funds raising money in bad times ➔ limited demand
  - Difficult to skip one fund
  - Bad times can last for a long time (five years)

- Returns from market timing are more limited than at first sight. Yet:
  - It is probably easier when one has a constant cash inflow (no need to rebalance)
  - May combine primary and secondary markets