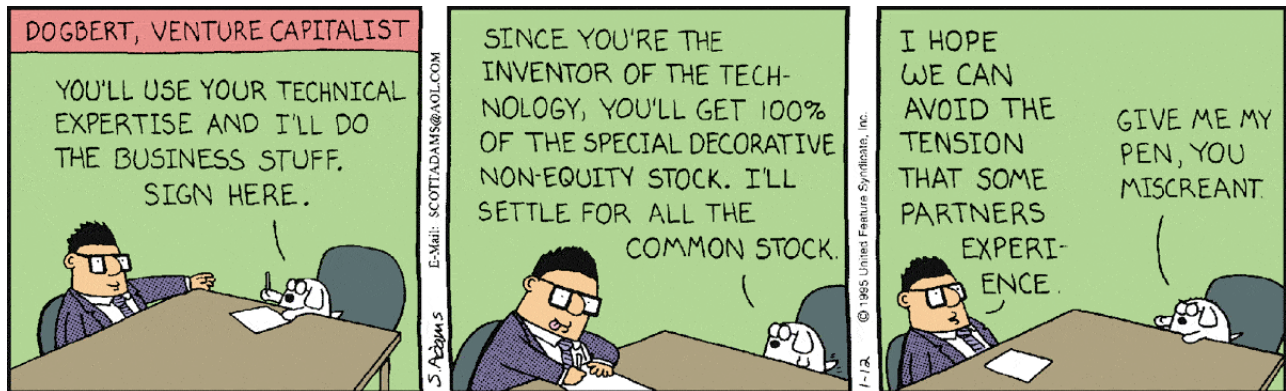


Private investing

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1 Introduction

This lecture summarizes the asset class of *unlisted equity* from the perspective of a potential institutional investor.

The lecture is based on the Døskeland and Strömberg (2018) report. Some background on this report: It was commissioned by Norway's Ministry of Finance as input to a decision on whether Norway's Government Pension Fund Global (GPF – the "Oil Fund") should move into non-listed equity. It is a useful summary of this asset class for institutional investors in general.

Topics covered:

- Overview of the private equity market.
- The investable market for private equity.
- The risk and return to private equity.
- Institutional investors strategies.

2 What is the Private Equity Market?

Generally, unlisted equity is equity positions in companies not listed on exchanges. But for purposes of investments, many of these firms are too small.

Narrow definition to equity investments interesting for professional investors. Typically called the *private equity market*

2.1 Private capital market

- Private equity
- Private debt
- Real estate
- Infrastructure
- Natural resources

Figure 1 Segments of the private capital market

Table 2.1: Segments of the Private Capital market

Closed-End Private Capital				
Private Equity	Private Debt	Real Estate	Infrastructure	Natural Resources
Buyout	Direct Lending	Private Equity Real Estate	Infrastructure	Energy
Venture Capital	Distressed Debt			Private Equity Real Estate Fund of Funds
Growth		Mezzanine	Infrastructure Fund of Funds	
Turnaround	Special Situations	Private Equity Real Estate Fund of Funds		Timberland
Other Private Equity	Venture Debt		Private Equity Real Estate Fund of Funds	Water
Private Equity Secondaries	Private Debt Fund of Funds	Private Equity Real Estate Secondaries		Infrastructure Secondaries

Source: Preqin (2016).

Source: Døskeland and Strömberg (2018).

2.2 Segments within PE

- Venture capital
- Growth (beyond venture)
- Buyout (mature companies)
- Distress (mature, unprofitable – “refurbishing projects”)
- Balanced (mix of above)

2.3 PE ownership model

- Large stake
- Limited horizon
- Active governance

- Exit by IPO

PE companies do

- Governance engineering
 - high powered incentives
 - active board
 - procedural focus
- Financial engineering
 - complex financial contracts
 - high leverage
 - high powered incentives
- Operational engineering
 - expertise

2.4 Empirically

On average, PE works, provide improvements in performance.

2.5 Tapping capital

Need structures for channelling capital to PE investments

- Private Equity Firms
- Private Equity Funds

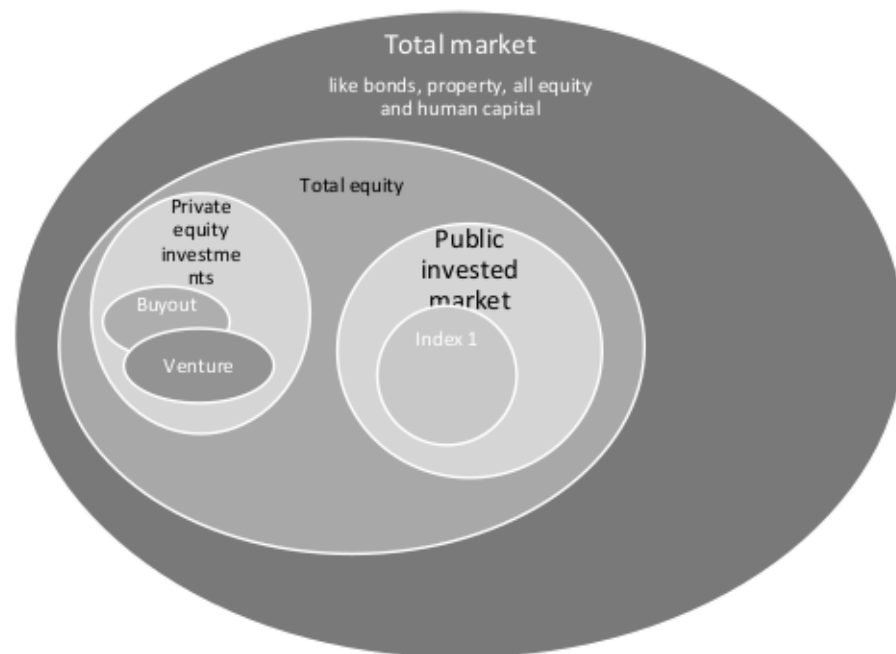
3 The investable market for unlisted securities

Modern portfolio theory: Investors should attempt to achieve the “total market portfolio”, all assets in the economy.

The theoretical market portfolio (illustrated in figure 2) in addition to equities and debt, include such asset as human capital.

Figure 2 The total market portfolio

Figure 3.1: The total market portfolio



Source: Døskeland and Strömberg (2018).

However, never possible to achieve the total market.

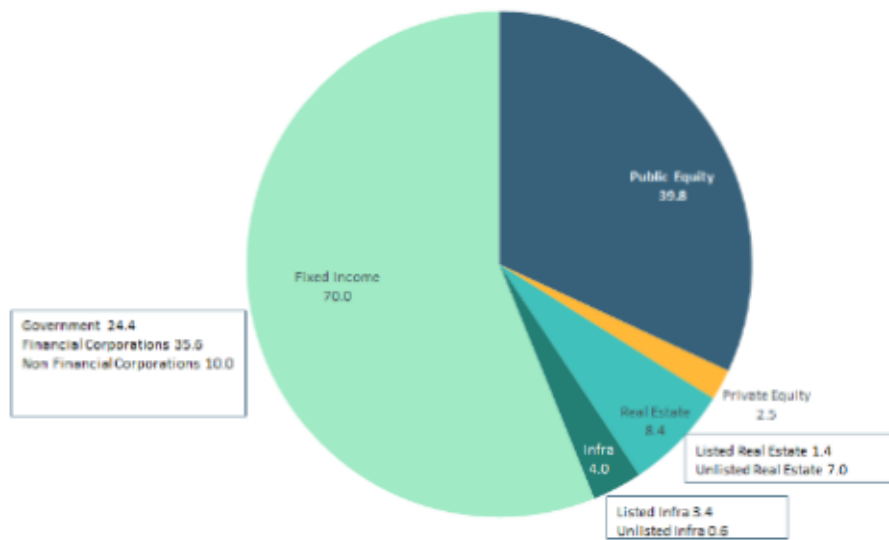
For large investors, attempt to maximize the diversification by as many asset classes as possible

- Public equity
- Fixed income
- Alternative assets
 - Private equity
 - Commodities
 - Infrastructure

If we limit considerations to assets that are available for purchase, Figure 3 shows the composition of the world’s investable global market portfolio.

Figure 3 Investable global market portfolio

Figure 3.3: Investable Global Market Portfolio according to MSCI

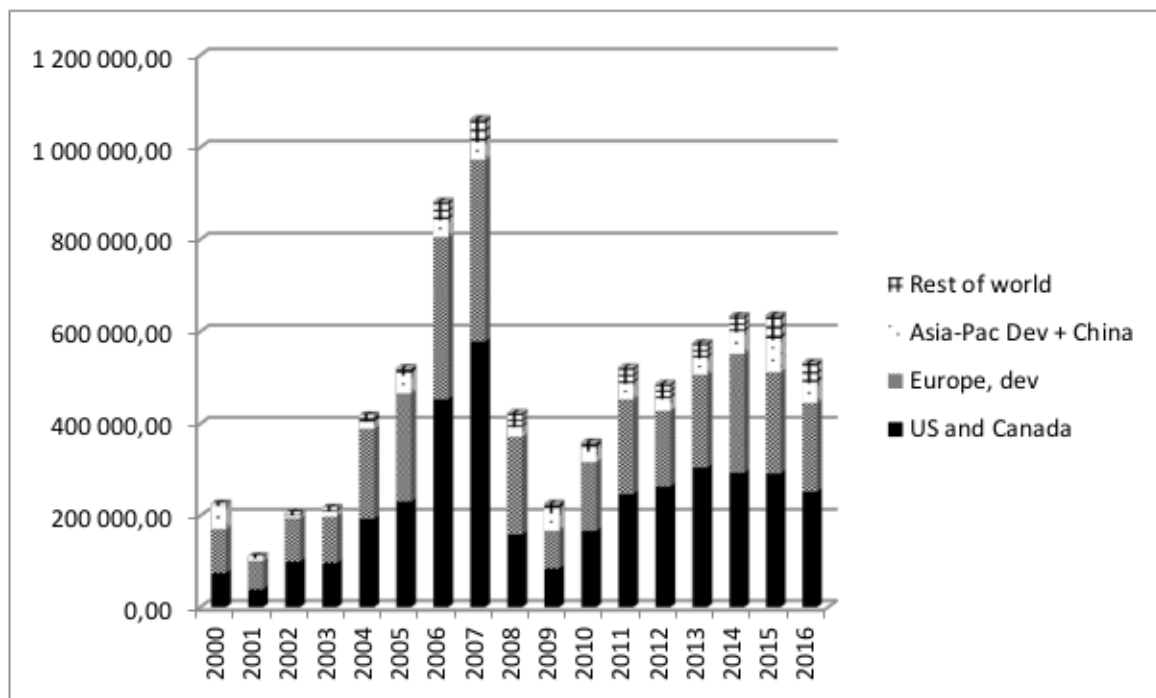


By the end of June 2015, USD trillions. Source: Gupta et al (2016), chart 1.

Source: Døskeland and Strömberg (2018).

Figure 4 Value of worldwide PE transactions

Panel A: Buyout Transactions (transaction values)

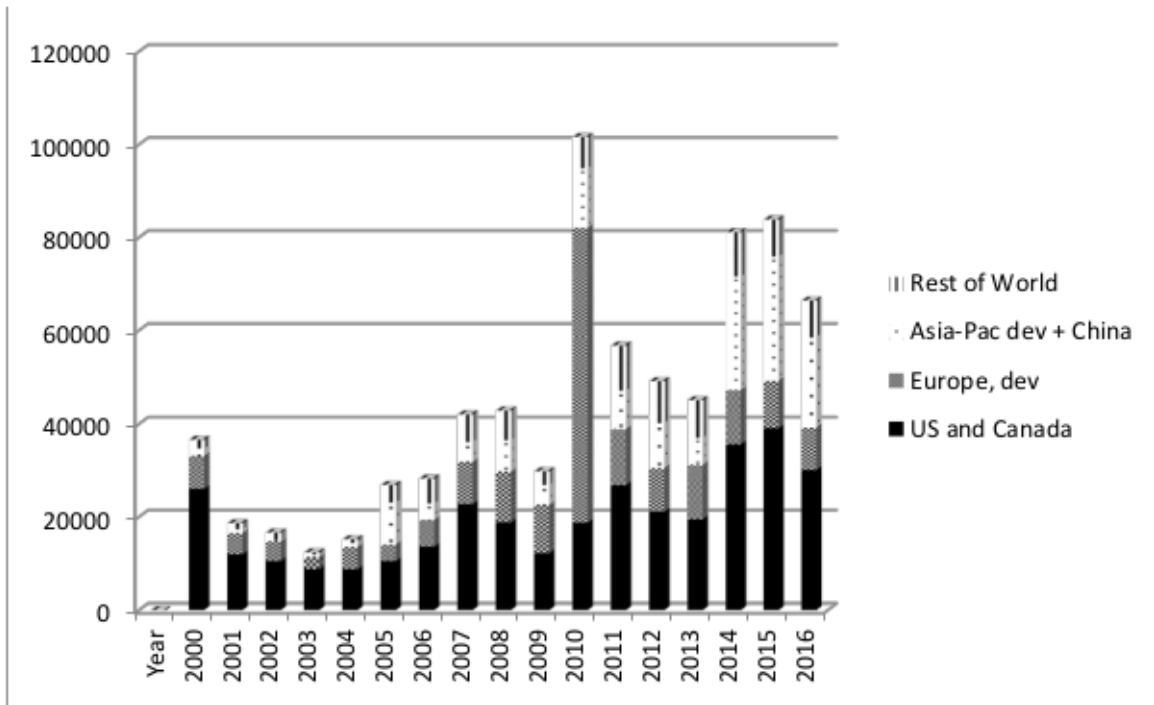


Source: Døskeland and Strömberg (2018).

We see that debt is the largest component of the worlds investment portfolio, followed by public equity. Private equity, by contrast, seems a very small piece of the action. But that is only because the total is so large.

Figure 5 Value of worldwide PE transactions

Panel B: Growth Equity Transactions and other PE Private Placements (transaction values)

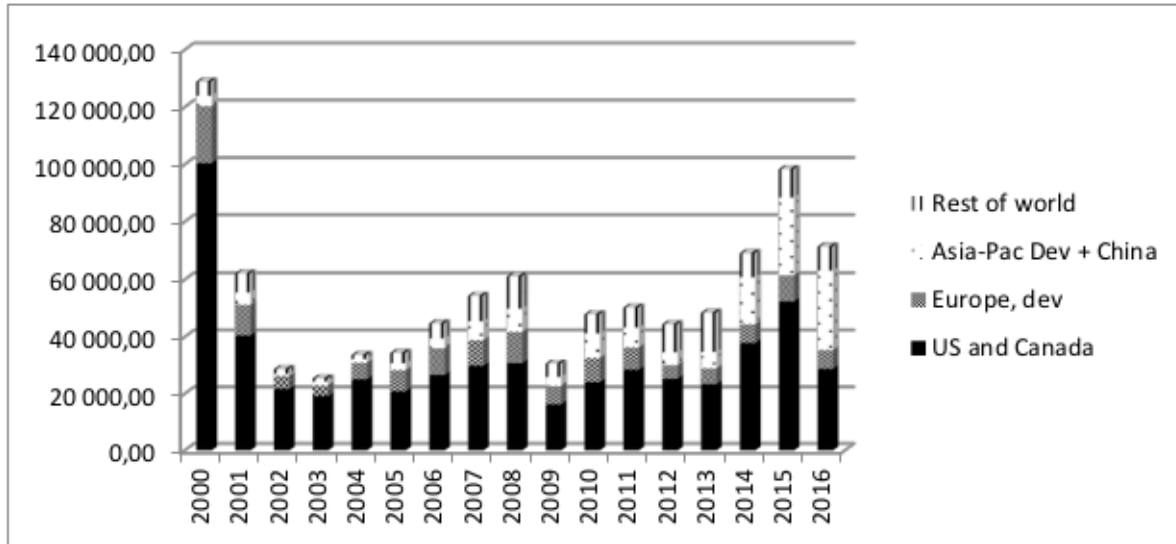


Source: Døskeland and Strömberg (2018).

If we for example look at the amounts raised in private equity transactions, seen in Figure 8, they are in fact huge.

Figure 6 Value of worldwide PE transactions

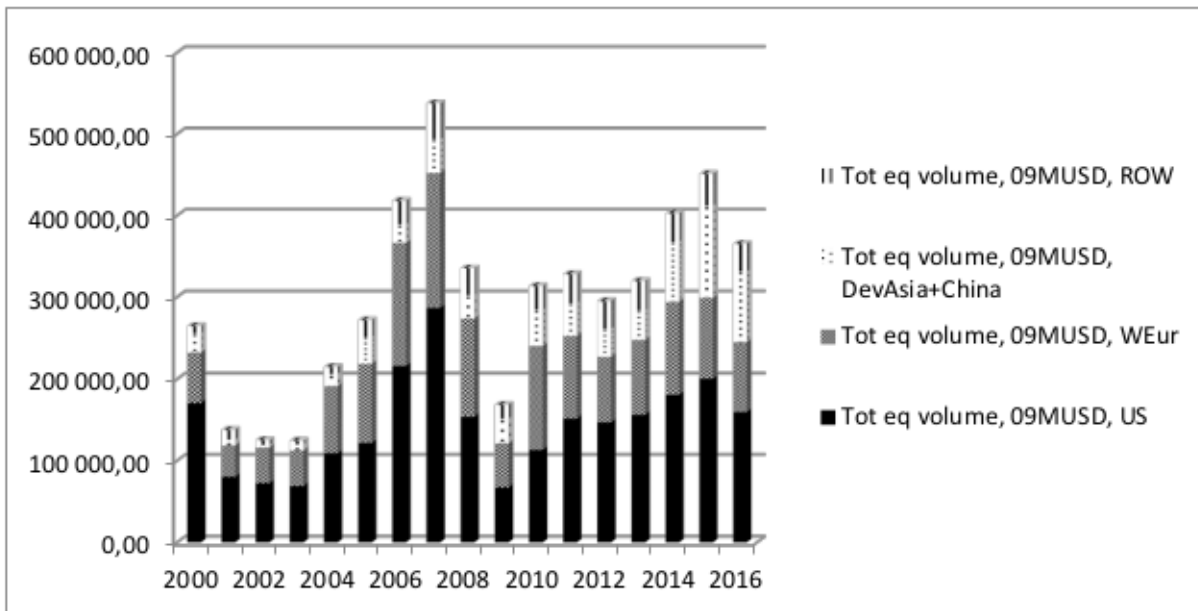
Panel C: Venture Capital (transaction values)



Source: Døskeland and Strömberg (2018).

Figure 7 Value of worldwide PE transactions

Panel D: Total PE equity investments (assuming 65% leverage in buyouts, 0% in growth and VC)



Source: Døskeland and Strömberg (2018).

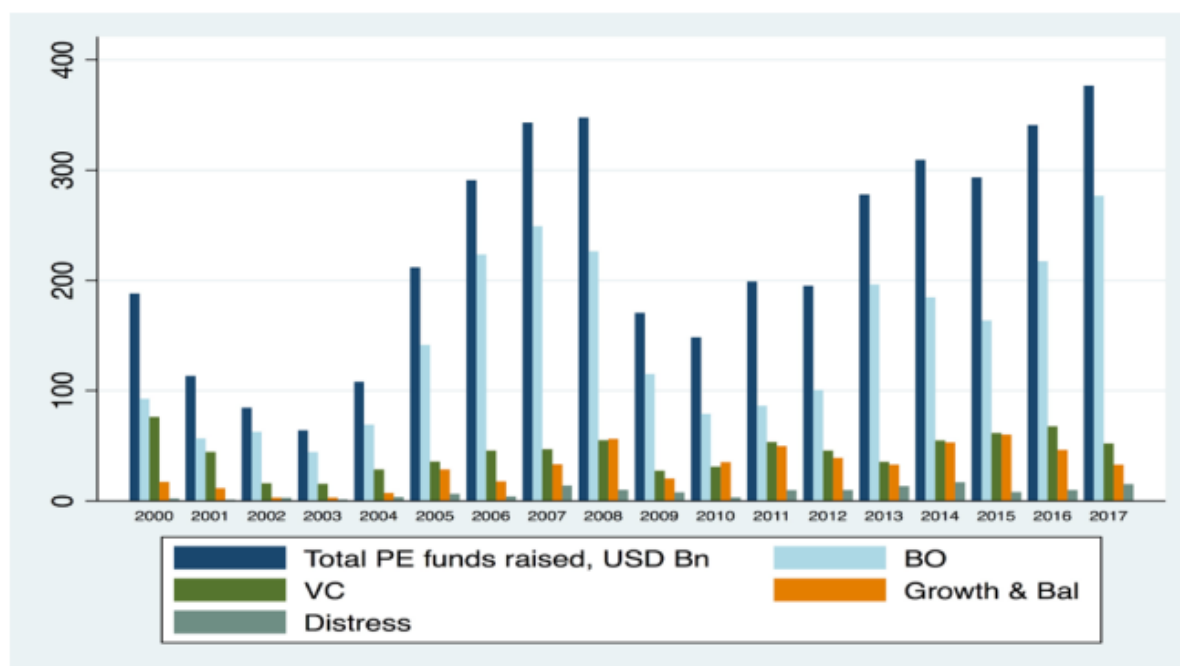
3.1 The private equity fund segment

Table 1 The size of the private capital fund market segment

Fund type	Dry powder (USD bn)	Unrealized value (USD bn)	Total (USD bn)	% of total
Private Equity (incl distress)	1077	2054	3131	64%
Real Estate	245	565	810	16%
Private Debt (excl distress)	126	208	335	7%
Infrastructure	149	268	417	8%
Natural Resources	71	158	229	5%
Total	1670	3265	4924	

Figure 8 Global fundraising

Figure 3.5: Global fundraising 2000 – (nov) 2017, billions of USD.



Source: Preqin, authors' calculations.

Source: Døskeland and Strömberg (2018).

In terms of private equity, as shown in figure 8, the largest segment of this market is buyout funds, which buys existing companies, often listed, with the purpose of reorganizing their operations. The rest is investments in companies at an early stage, before the companies become large enough to list on an exchange. We distinguish two segments, growth and venture capital. Both involves equity stakes in young companies, the distinguishing factor of venture capital is the sequential structure.

3.2 Estimating total PE assets under management

Hard: These assets are not traded.

Rough estimate: USD 1.5 trillion

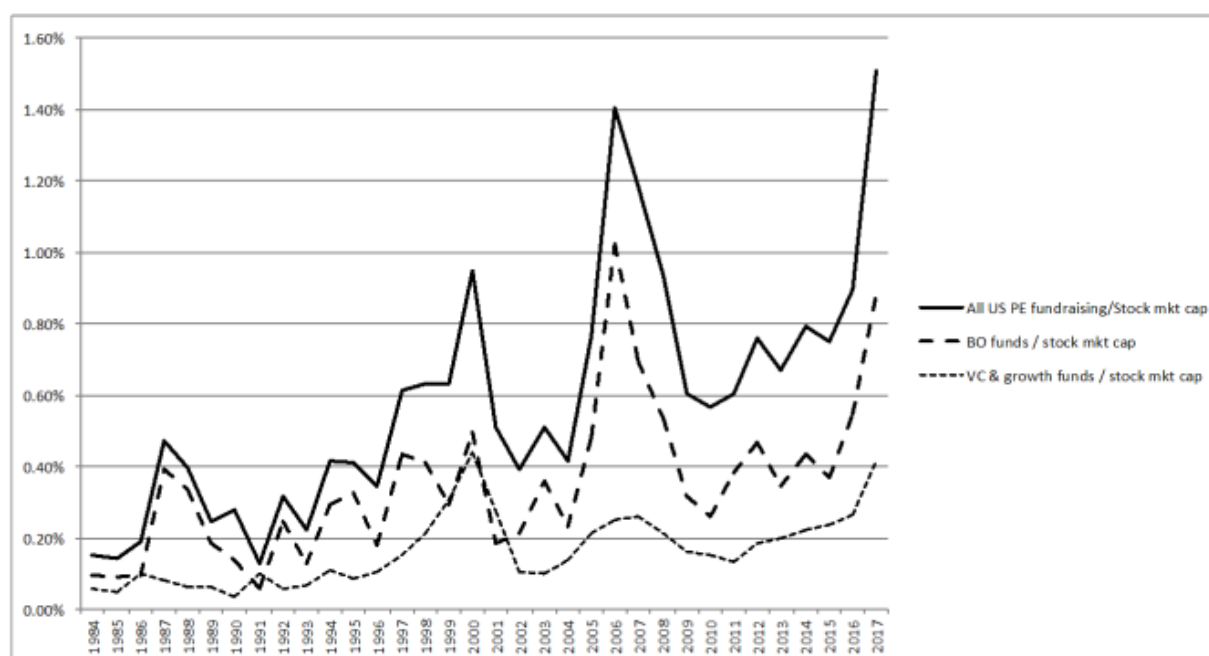
3.3 Development of private versus public equity markets

3.3.1 Trends in the relative size and characteristics of private versus public equity markets

Figure 9 PD activity relative to public stock market cap, Commitments to PE funds

Figure 3.6: U.S. PE Activity Relative to Public Stock Market Capitalization

Panel A: Commitments to PE funds

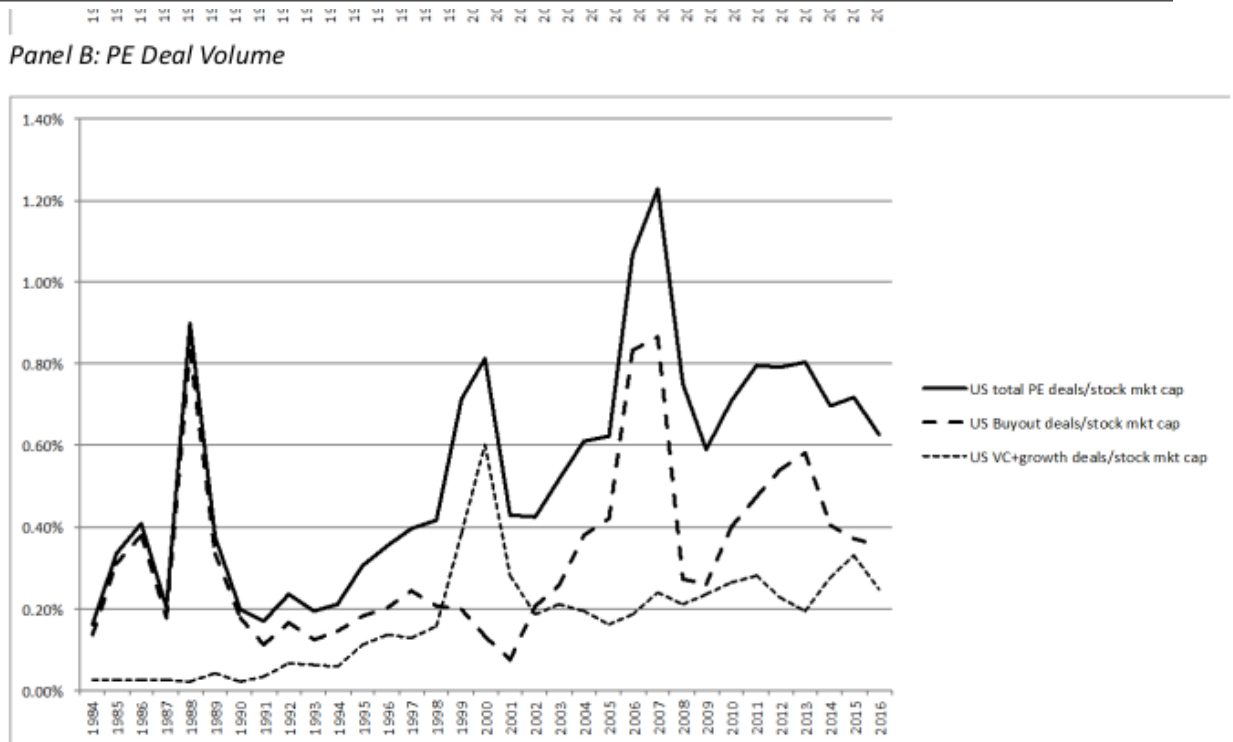


Source: Døskeland and Strömberg (2018).

What is driving this trend?

- Increase in demand by institutional investors.
One demand source: Perceived high returns.
- Increase in supply
Decrease in listings

Figure 10 PD activity relative to public stock market cap, Deal volume

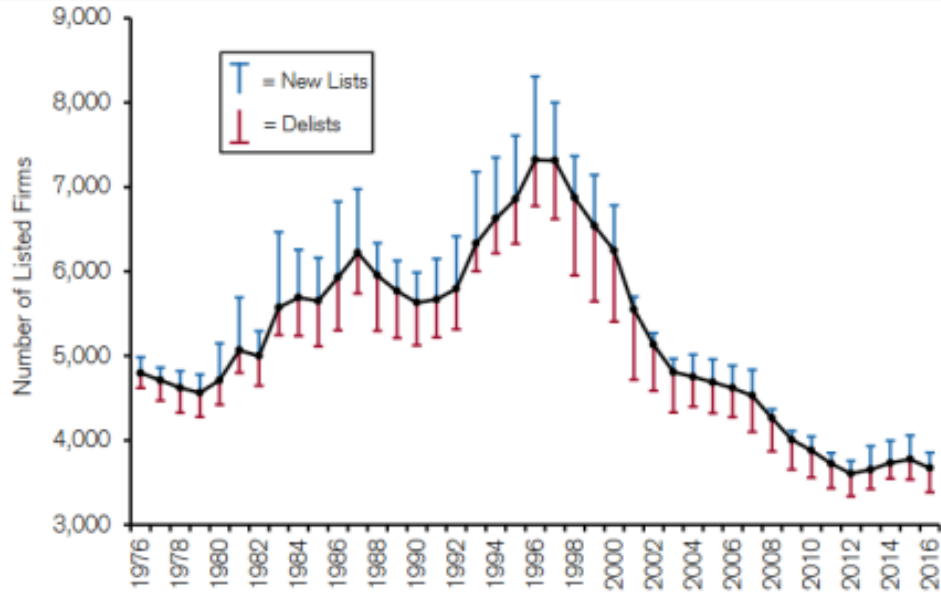


Source: Døskeland and Strömberg (2018).

Figure 11 Additions and subtractions to US listed companies

Figure 3.7: Additions and Subtractions to Listed Companies in the U.S.

Exhibit 2: Additions and Subtractions to Listed Companies, 1976-2016



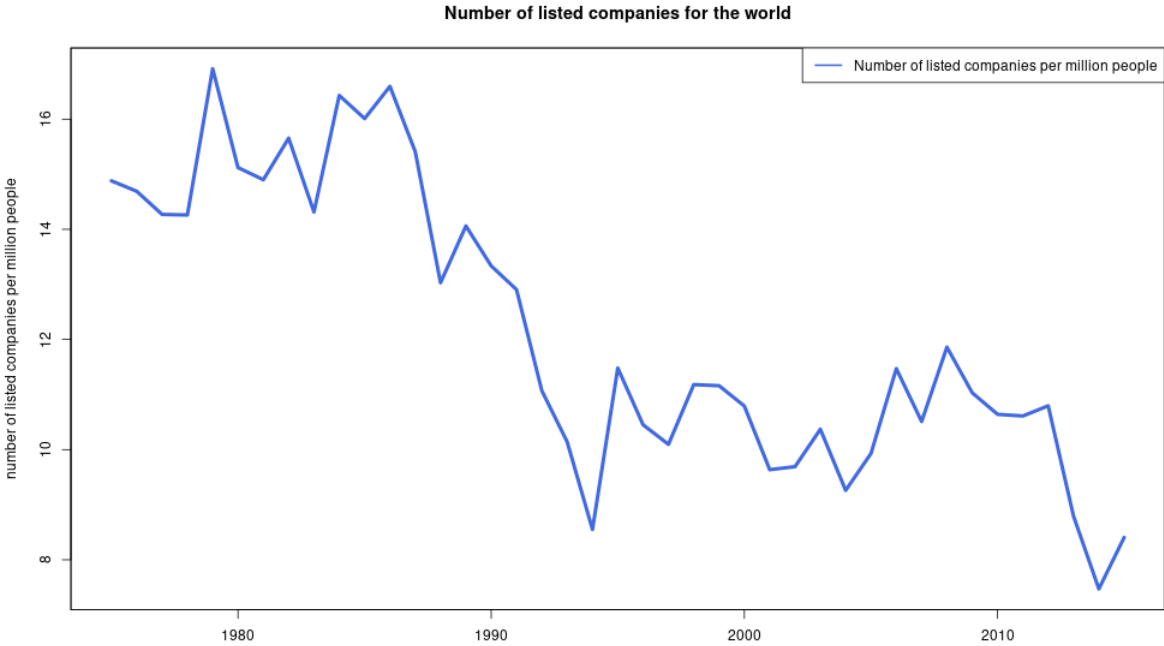
Source: Craig Doidge, G. Andrew Karolyi, René M. Stulz, "The U.S. Listing Gap," *Journal of Financial Economics*, Vol. 123, No. 3, March 2017, 464-487 and Credit Suisse estimates.

Source: Exhibit 2 in Mauboussin et al (2017)

Source: Døskeland and Strömberg (2018).

3.3.2 Geographical and industrial differences

Figure 12 Worldwide number of listed firms.



Data Source: St Louis Fed

4 Private Equity investment returns and risks

Big question: Is the return on the private equity segment different somehow.

4.1 Why should PE returns differ?

Equilibrium arguments

- Liquidity premium - positive
- Systemic characteristics, such as industry, size, growth opportunities, that leads to higher/lower returns
- Spanning – PE may provide characteristics not achievable otherwise, may be both positive and negative (insurance)

Additionally:

- Excess risk-adjusted returns (alpha) Do PE firms have skills that add value.
Skills may be compensated through PE fees (Berk and Green, 2004), but if the fees do not fully capture gains, PE owners may get excess returns.
Overall, though, less likely that PE on average earn alpha.

4.1.1 Liquidity risk

PE not traded in public markets. Investors may demand a liquidity premium (lower price) for liquidity
Types of illiquidity:

- market liquidity
- funding liquidity – limited partners may need to provide capital

4.1.2 Different loadings on public equity risk factors

In principle these could be replicated by publicly traded assets.

4.1.3 PE-specific risk factors

Factors that can not be replicated from public assets.

4.2 Issues in measuring PE performance

Evaluating performance in PE difficult.

- PE is less transparent.
Hard to get a complete sample, necessary to calculate representative returns.
- PE is not traded – hard to get prices for calculating returns.
Reports of NAV at infrequent intervals, hard to evaluate factor exposures.

No consensus in academic literature

Dominant measures

- IRR

- Multiple of Invested capital

However, no risk adjustment in these measures.

Most common method: Public Market Equivalent (PME)

Capital calls and distributions discounted using the returns from a public benchmark, such as the S&P 500. PME greater than one, PE higher return than public benchmark.

Table 2 Estimates of PE PMEs

Panel A: Average Buyout PMEs

	All S&P500	US S&P500	Europe MSCI Eur
Average	1.20	1.20	1.21
2000s	1.23	1.20	1.16
1990s	1.23	1.20	1.30
1980s	1.16	1.16	

Panel B: Average Venture PMEs

	All S&P500	US S&P500	Europe MSCI Eur
Average	1.35	1.48	0.96
2000s	0.96	0.97	0.83
1990s	2.05	2.42	1.24
1980s	0.89	0.89	

Source: Harris, Jenkinson, and Kaplan (2016)

4.3 Variation of vintage-year PE returns over time

Estimates of time variation in returns on PE, from Ang, Chan, Goetzman, and Phillipou (2013).

Table 3 PE returns from Ang et al. Averages 1996–2014

	Ang_BO	Ang_VC	Mkt
Mean (arithmetic)	16.22	15.98	6.34
Mean (geometric)	12.32	10.51	4.61
Standard Deviation (arithmetic)	26.80	31.45	18.22
Sharpe Ratio	0.51	0.43	0.22
Skewness	0.04	0.04	0.02
Autocorrelation	0.08	0.13	0.08

Note: BO: Buyout, VC: Venture Capital

Source: Ang et al. (2013).

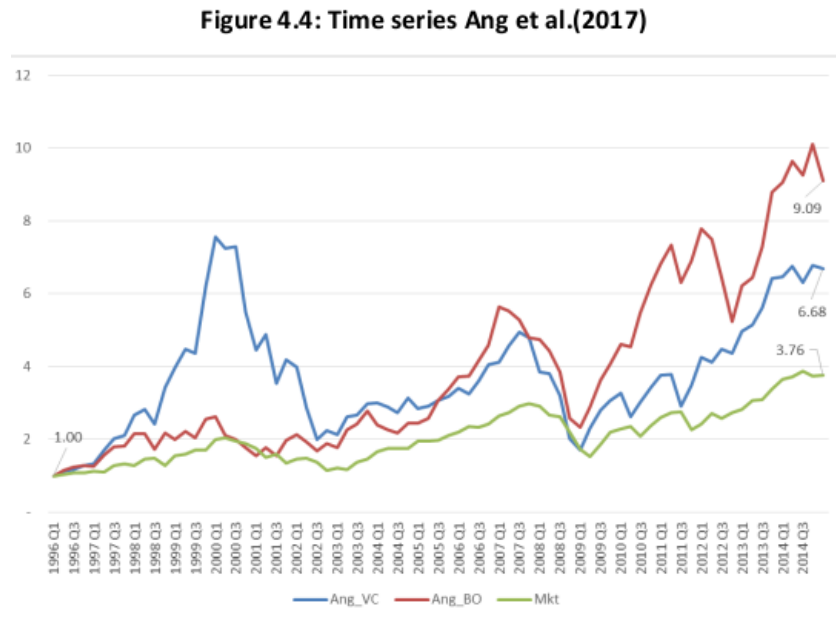
Lots of other detailed analysis of alternative PE strategies, see the report.

4.4 Bottom line

Empirically - Do PE add returns?

- Qualify – hard to estimate

Figure 13 Return evolution from Ang et al



Source: Ang et al. (2013).

- Estimates shown – mainly positive (see also Yale numbers)
- So – Qualified yes, there are return opportunities in PE.

5 PE investment strategies

Three main rationales

- Diversification
- Beta Exposure
- Alpha creation

Costs not present in public equity

- Liquidity and other risks
- Non-financial risks
- Organizational costs

Best practice models

- Endowment model – example - Yale University
- Canadian model

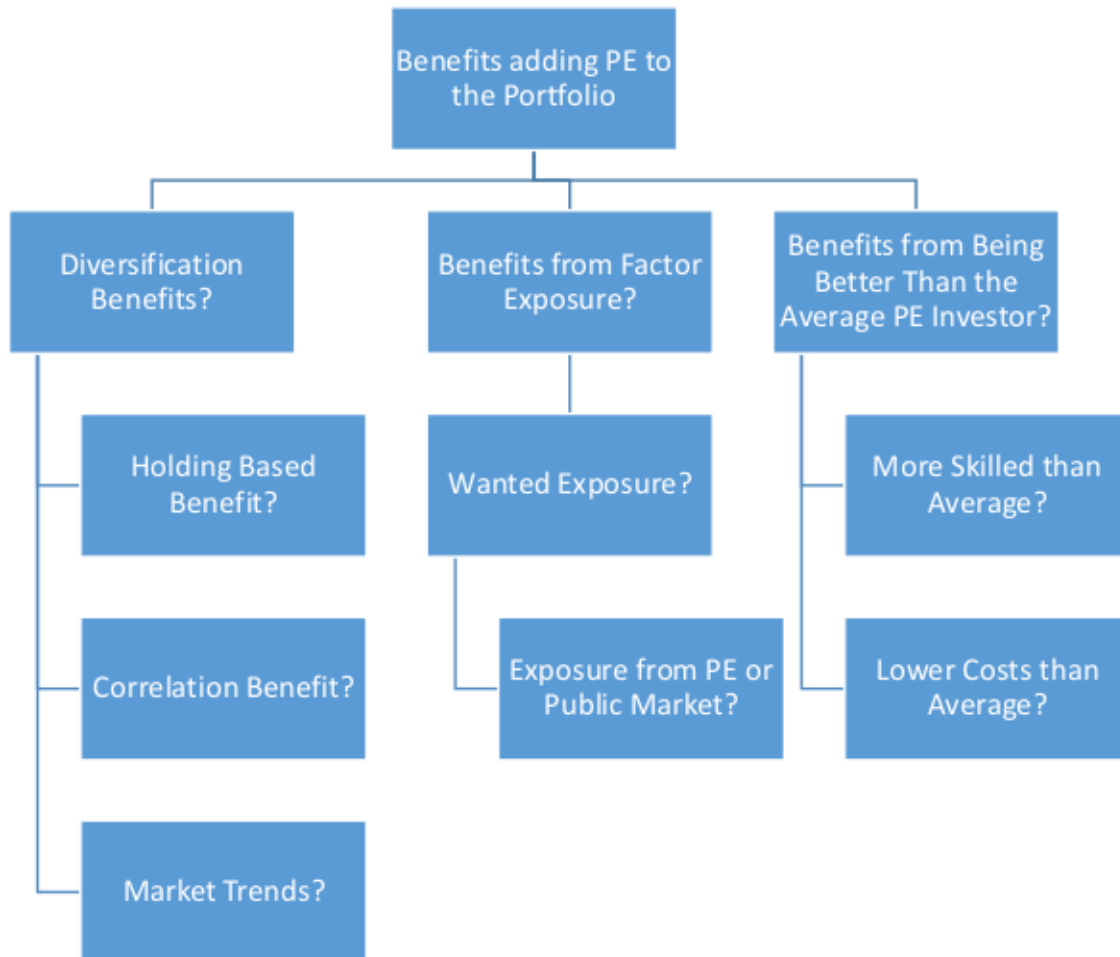
Characterizing Yale's model

- A large allocation to PE as a whole, and a larger allocation to VC compared to other LPs
- Developing capabilities to screen outside fund managers
- focus on fund incentive alignment
- Development of skills in liquidity management
- Avoidance of market timing
- Flexible governance
- Small, but high-quality internal teams

Characterizing the Canadian model

- A large allocation to PE as a whole
- A large allocation to direct investments.
- Large investment in in-house teams
- Development of considerable quantitative skills in evaluating and managing alternative and illiquid assets
- Avoidance of market timing
- A flexible fund governance, insulated from short-term political changes
- Hiring of experienced talent from the private sector.

Figure 5.1: PE investment rationales for an institutional investor



5.1 Non-financial risks

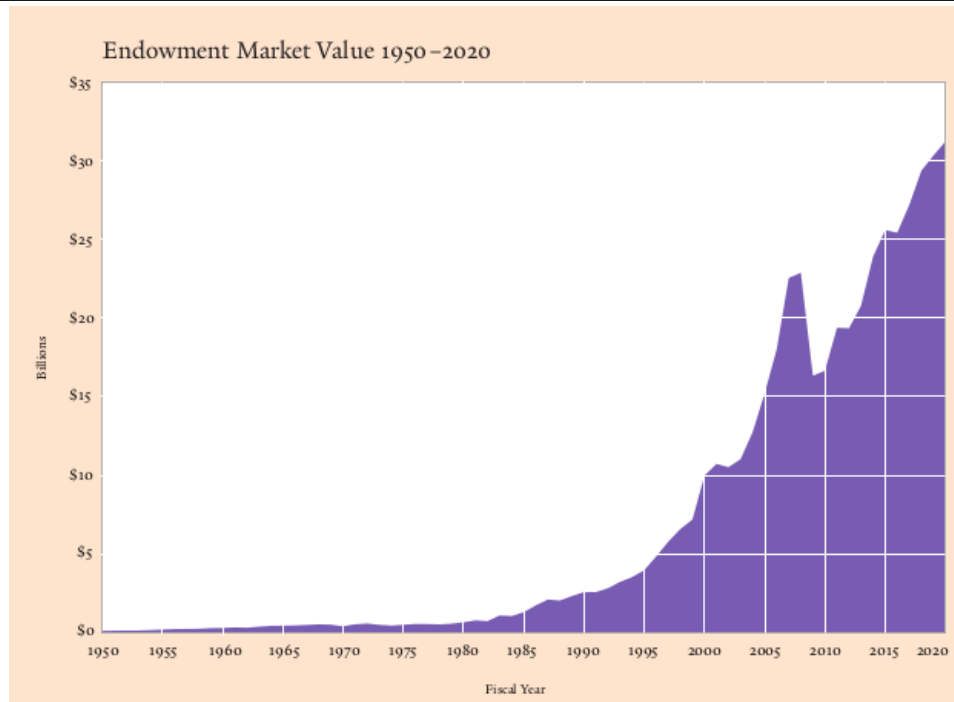
- Performance measurement risk
- Political risk
- Conflicts of interest
- ESG and headline risks
- Organizational and compensation risks

6 The Yale Endowment Investment Strategy

The Endowment of Yale University is an example of an institutional investor who is willing to move outside of listed equity and fixed income as major parts of their asset mix.

From the evolution of the value of the endowment fund, shown in Figure 15, it is clear that they have been successful using their strategy.

Figure 15 The evolution of the value of the Yale Endowment Fund. 1950-2020



Source: investments.yale.edu

Table 4 The Yale Endowment Fund. Asset class mix. 2020

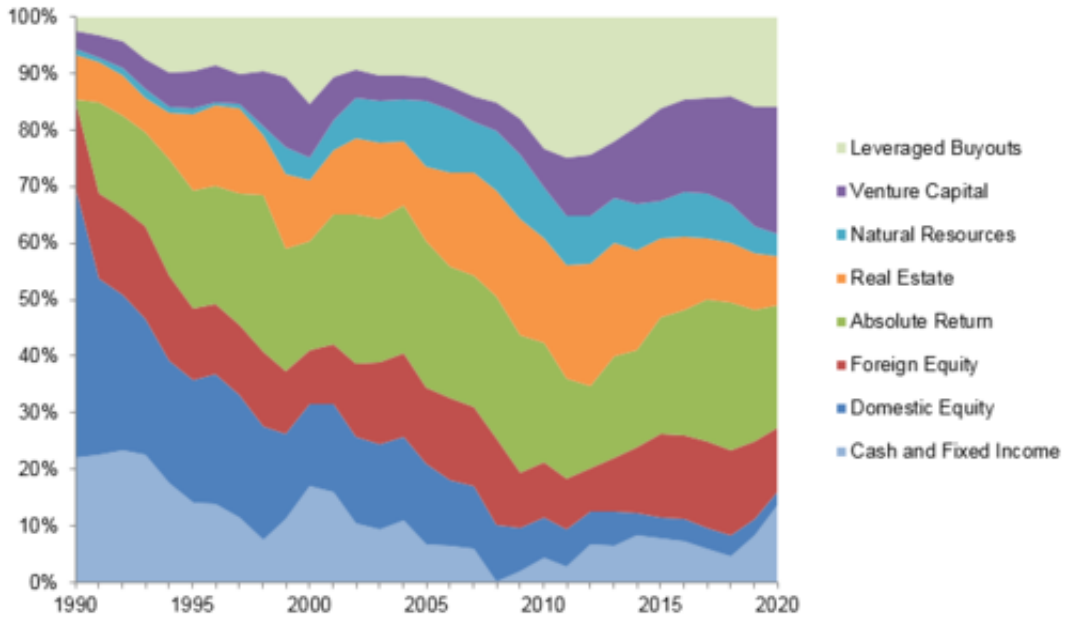
Asset class	Allocation
Absolute Return	21.6%
Domestic Equity	2.3%
Foreign Equity	11.4%
Leveraged Buyouts	15.8%
Natural Resources	3.9%
Real Estate	8.6%
Venture Capital	22.6%
Cash & Fixed Income	13.7%

Source: investments.yale.edu

Table 4 and Figure 16 shows that their asset mix is mostly non-listed assets.

Figure 17 shows the total return to Yale's investments in the various asset classes over the 2010-2020 period. For several of these asset classes Yale seem to have done much better than comparable benchmarks. (although one should remember that Yale has picked their benchmarks). Particularly their venture capital assets have a very high return compared to their benchmark.

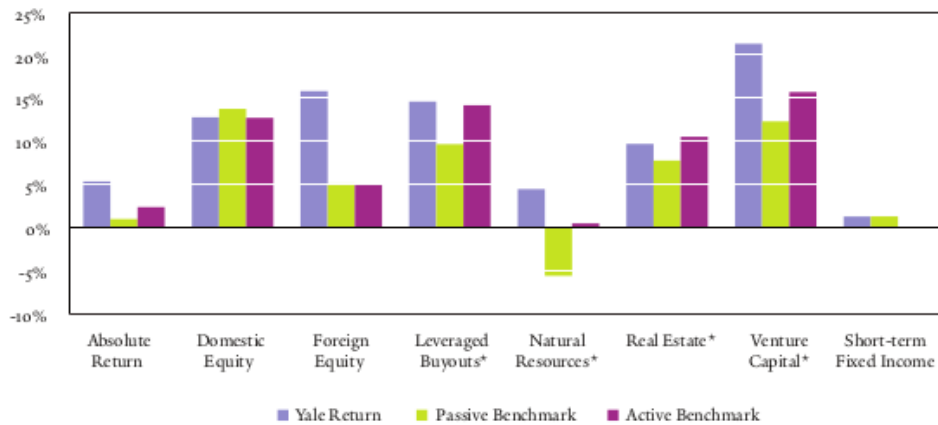
Figure 16 Asset mix of the Yale endowment, 2010–2020



Source: investments.yale.edu

Figure 17 Returns to asset classes, Yale Endowment Fund vs Comparables. 2010–2020

Most Yale Asset Class Results Beat Benchmarks
July 1, 2010 to June 30, 2020



Source: investments.yale.edu

7 Update – What is happening in 2023?

The tech “crash” of 2021-2022 has given the venture capital industry a negative shock, as much of their portfolio is in tech.

Figure 18 shows some estimates of return consequences¹ Large, negative returns are not common in this business.

Figure 18 Venture returns



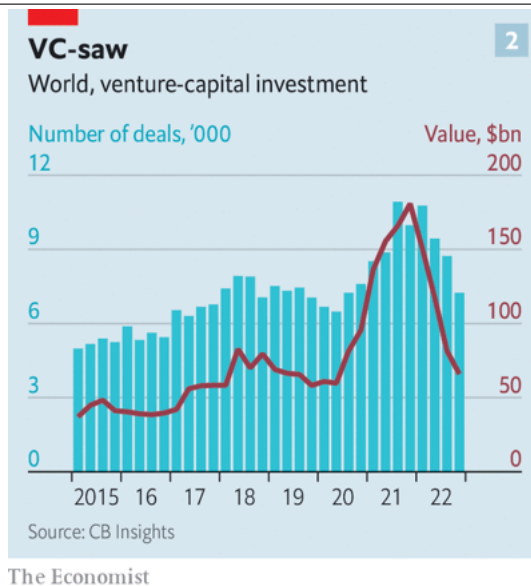
The Economist

Source: “How the titans of tech investing are staying warm over the VC winter”, *The Economist* feb 2023.

The consequences are substantial, both in terms of a lack of new capital (Figure 19) and reluctance in using already committed capital (Figure 20)

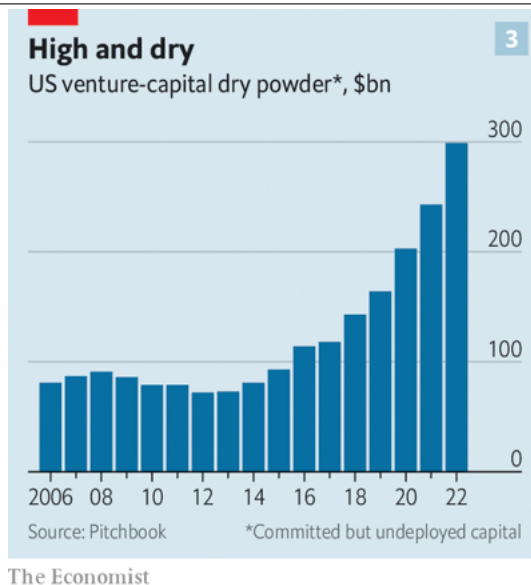
¹These estimates are from “How the titans of tech investing are staying warm over the VC winter”, *The Economist* feb 2023.

Figure 19 Venture – new investments



Source: “How the titans of tech investing are staying warm over the VC winter”, *The Economist* feb 2023.

Figure 20 Venture – dry powder



Source: “How the titans of tech investing are staying warm over the VC winter”, *The Economist* feb 2023.

8 Summarizing Private Equity

Private equity market: Equity investments in unlisted stocks of interest (i.e. large enough) for professional investors.

Important categories

- Venture
- Growth/Buyout
- Distress

PE Firms – Business model

- Governance engineering
- Financial engineering
- Operational engineering

Empirically – on average – PE firms work – provide improvements in performance.

Investable market – identifying

Empirically - Do PE add returns?

- Qualify – hard to estimate
- Qualified yes, there are return opportunities in PE.

References

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