



# Private Equity and Venture Capital: Past, Present and Future

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# Overview

- What do VC and PE really do?
- What are the cycles of fundraising and performance?
- What about performance?
  - How is it measured?
  - Do VC partnerships generate superior performance?
  - Does performance persist for particular GPs?
- How does VC compare to PE?
- What does the future hold for GPs and investors?
- Do VC first than PE.

## What do (U.S.) VCs do?

- Problem:
  - Entrepreneur has a good idea, but no money.
  - Investor has money, but no idea.
- Solution. VCs do:
  - Screening / selection;
  - Sophisticated contracting / structuring; and
  - Post-Investment Monitoring / Advising.
- All three are closely interrelated.

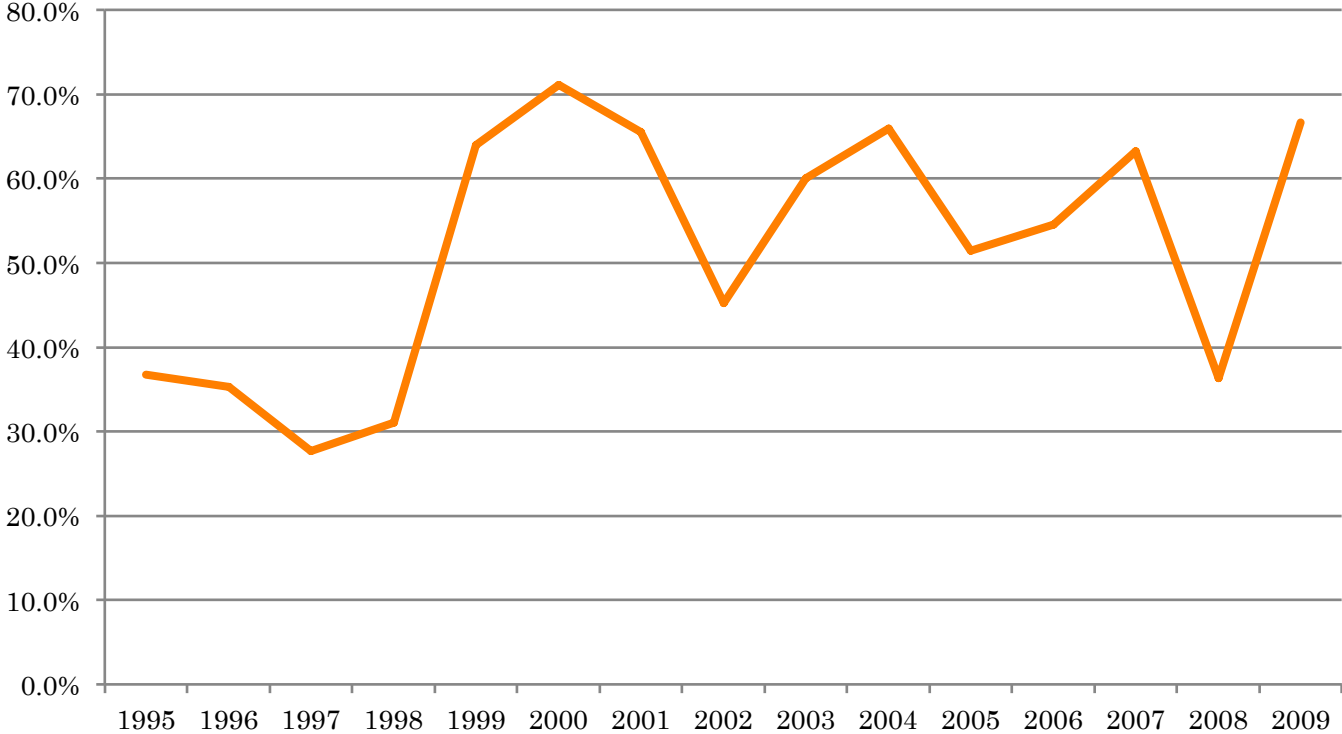
# Impact

- VC investing is important, but how important? What impact has it had?
- Very few companies get VC funding:
  - Roughly 600 K new businesses started each year in U.S.
  - Roughly 1K get VC funding for first time each year in U.S.
  - So VC funded companies are roughly 1/6 of 1%.

# Impact

- Yet, a very large fraction of start-ups that make it to the public company stage are venture capital-funded.
  - Josh Lerner and I looked at all IPOs in U.S. since 1999.
  - Eliminate: blank check companies, spin-outs, financial institutions, and buyouts.
    - » Represents true start-up population that goes public.
    - » Consistently, 60% of IPOs are VC-backed.
  - Companies that do not take VC do not end up going public.

# Venture-Backed Share of U.S. IPOs



Reports share of all non-financial, non-reverse LBO, non-REIT, non-SPAC IPOs that are venture-backed. 2009 data is through 7/31/2009.

- Consistent with this, venture capital has fueled many of the most successful start-ups of the last thirty years.
  - 7 of 40 highest market caps: Apple, Microsoft, Google, Amazon, Cisco, Amgen (and Facebook).
  - Also: eBay, VMware, Starbucks, Gilead, Celgene, Salesforce, Yahoo, Adobe, Genzyme, Juniper, Symantec, Stryker, Intuit, Staples, Groupon.
  
- U.S. practices have been exported to rest of the world.
  - Contracting, screening, advising.
  
- Many countries around world trying to increase entrepreneurship / innovation have tried to understand and replicate the U.S. VC model.
  
- ➔ Looks like VCs do a lot that is right.

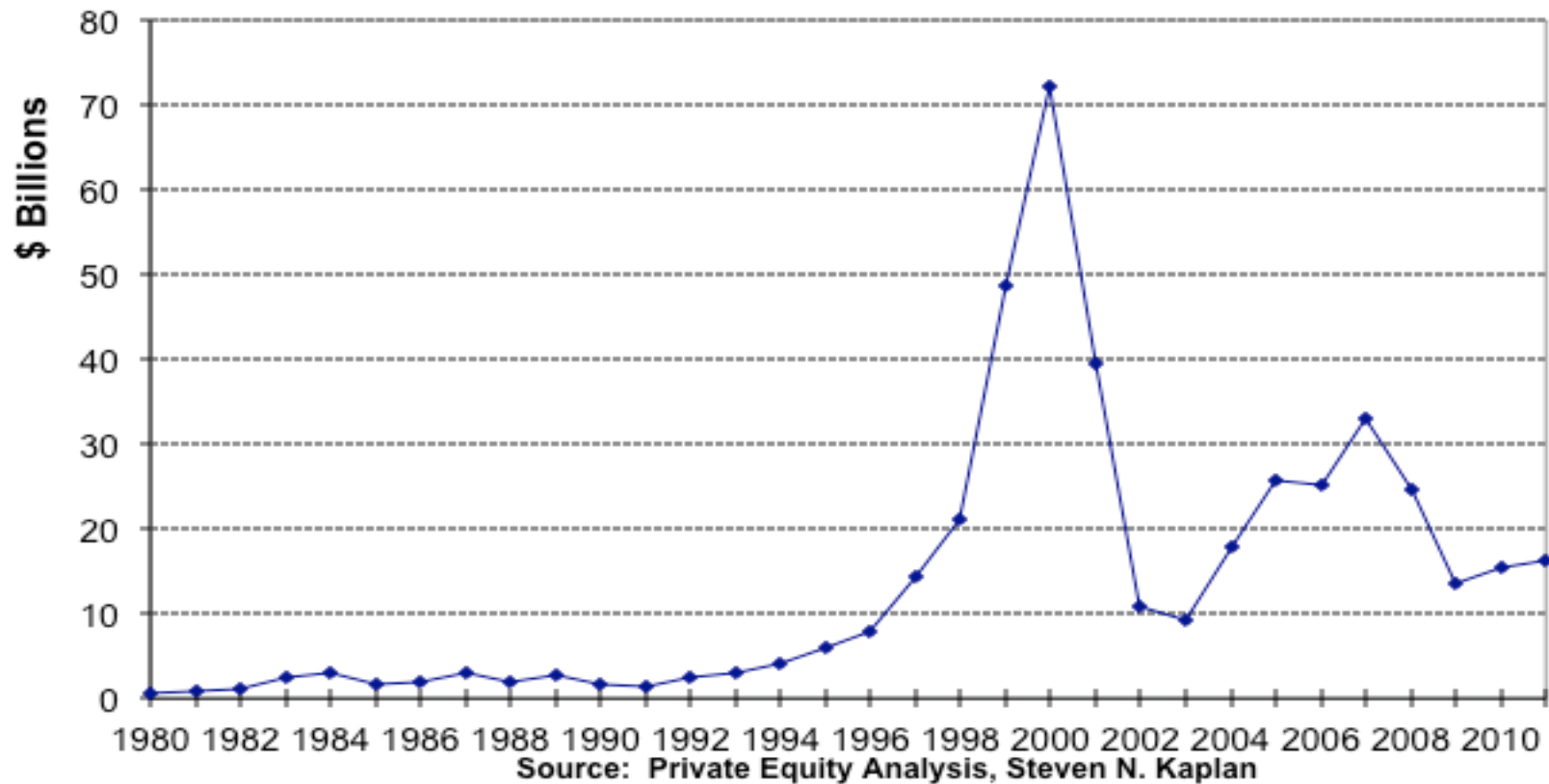
# How did we get to today in VC?

- Fundraising?
- Investing?
- Returns?



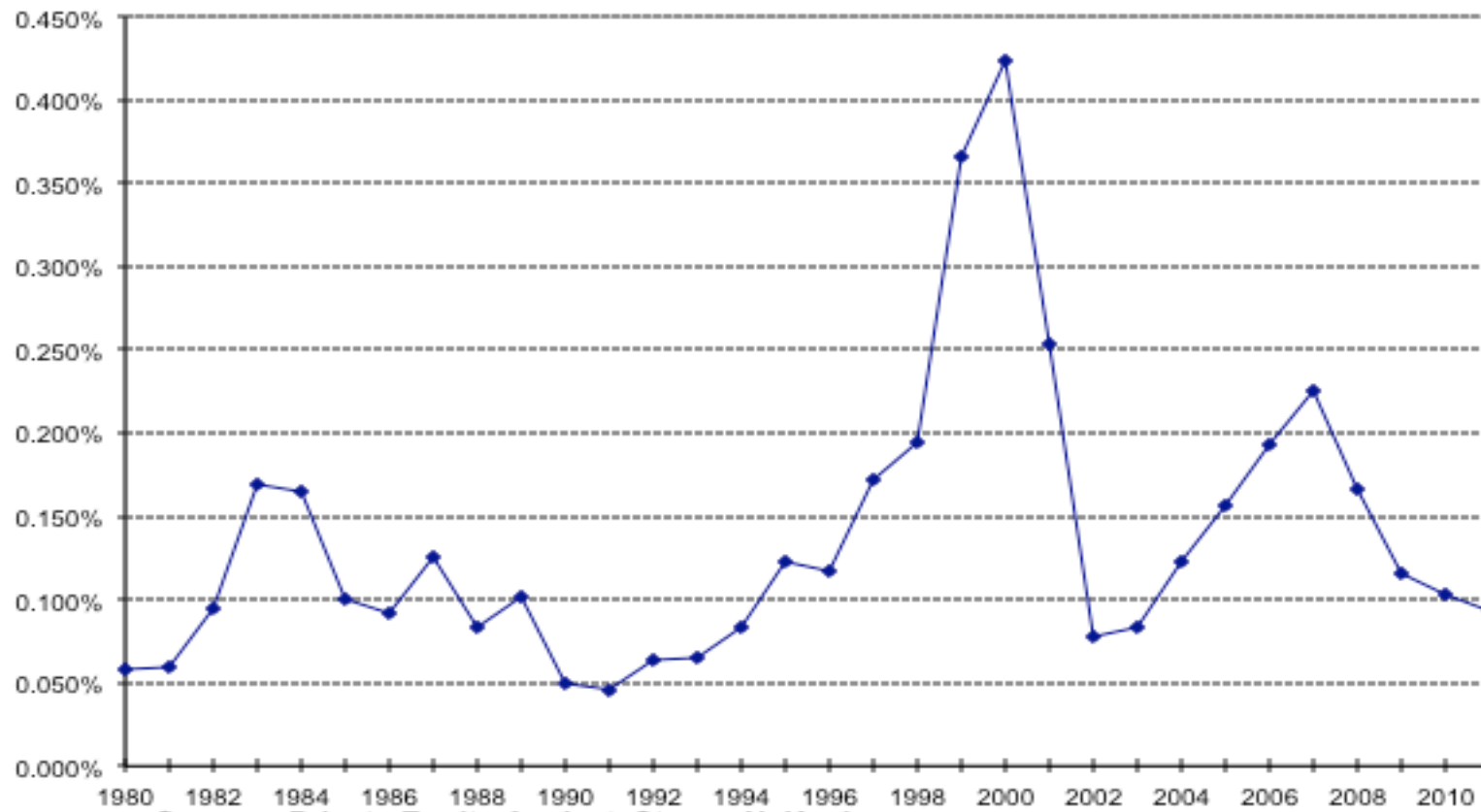
# Fundraising (U.S.)

## Commitments to U.S. Venture Capital Partnerships 1980 - 2011 (in \$ billions)



# Fundraising (U.S.) as % of market

Commitments to U.S. VC Partnerships as Fraction of Stock Market Capitalization 1980 - 2011



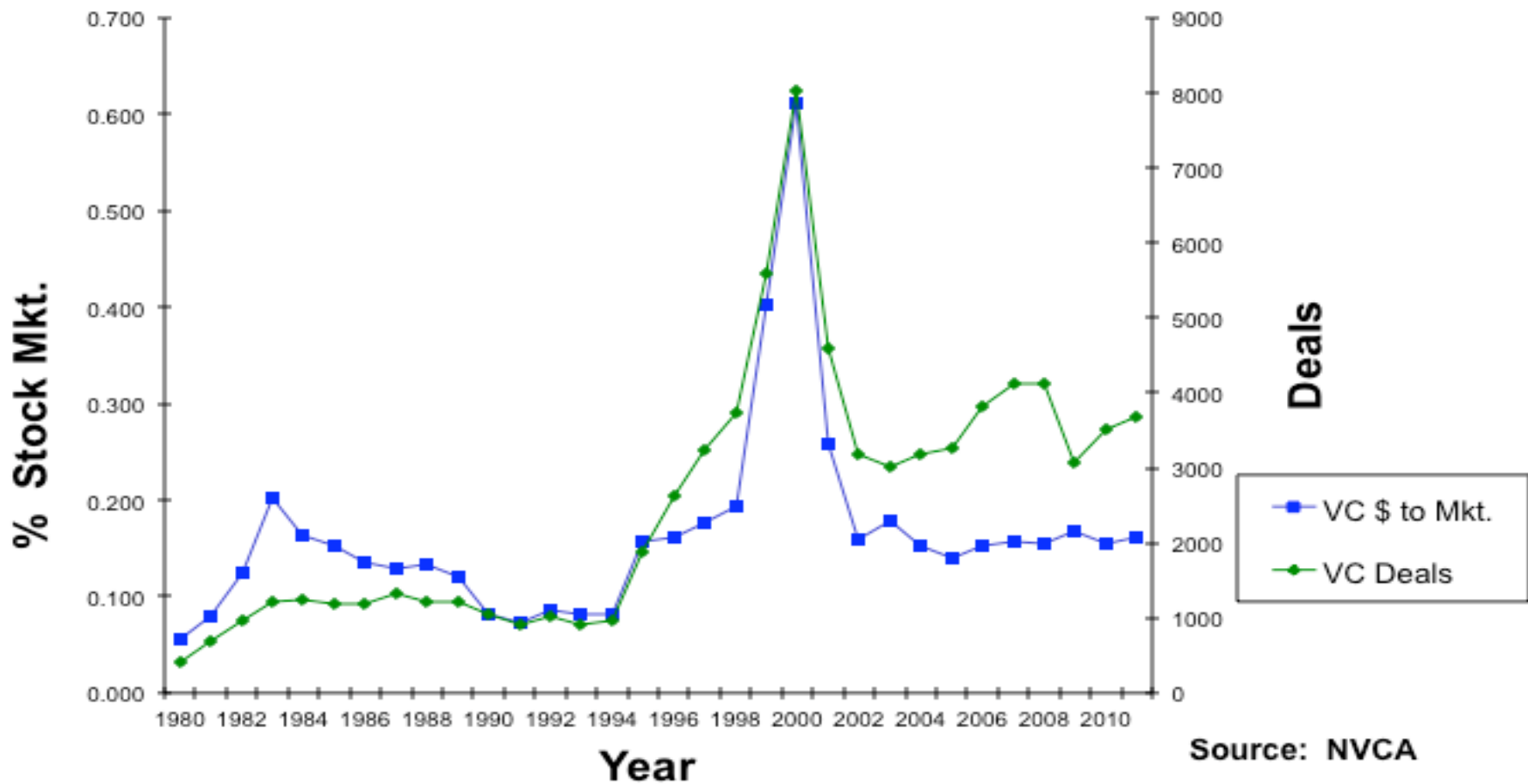
Source: Private Equity Analyst, Steven N. Kaplan

# Fundraising

- Commitments to VC as a % of overall stock market has been much more stable than is commonly appreciated.
  - Usually between 0.10% and 0.20% of total stock market.
  - Big outliers were 1999 to 2001.
  - 2009 to 2011 on the low side.

# Deals and \$ (as a % of stock market)

## U.S. VC Deals and \$ Invested (as % of Mkt.)



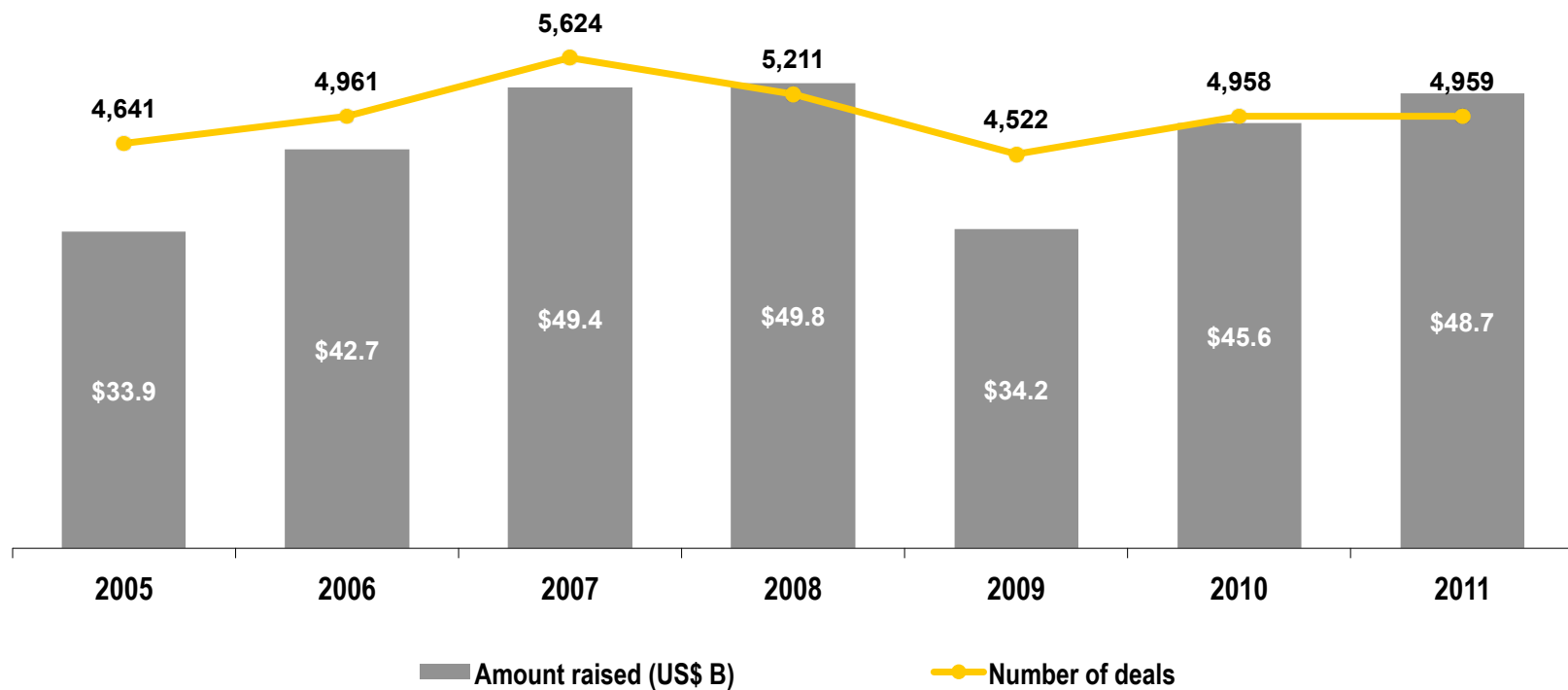
Source: NVCA

## Deals and \$

- Dollars invested in VC deals also have been relatively constant as a percentage of the total stock market since 1995.
  - Between 0.1% and 0.2%.
    - » Has been running at 0.15% of total stock market since 2002.
  - 1999 to 2001 are the big exceptions / outliers.

# Global VC investment has been similarly stable.

*Includes US, Europe, Israel, China, India and Canada*

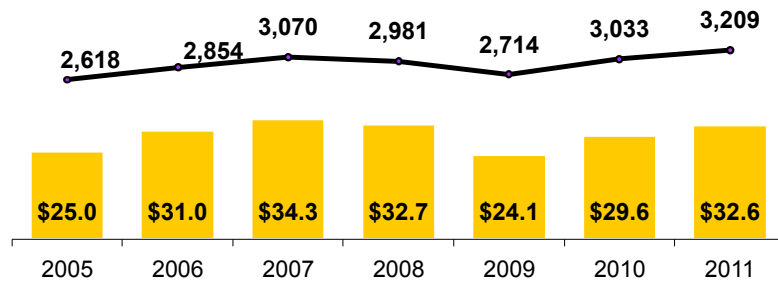


Source: Dow Jones VentureSource / E&Y Venture Insights

# Global VC investment by geography

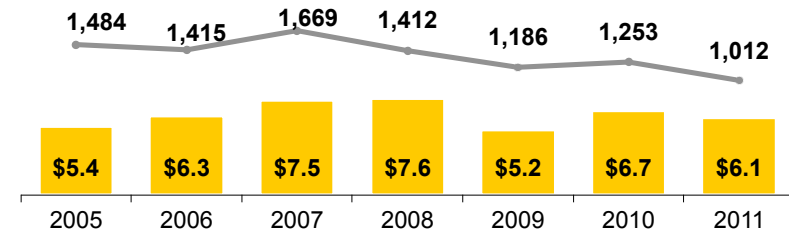
## United States

US\$ B



## Europe

Note: chart scales vary for clarity  
US\$ B

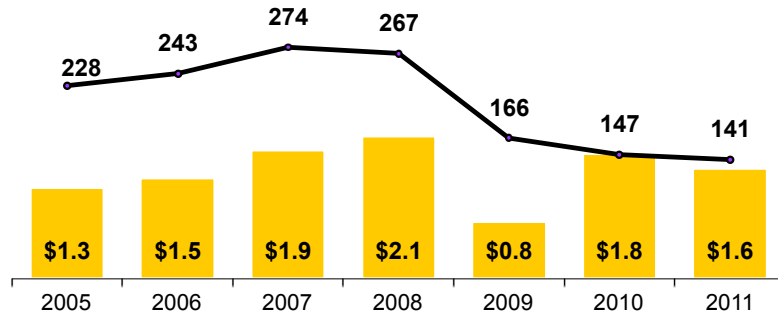


Amount raised Number of rounds

## Israel

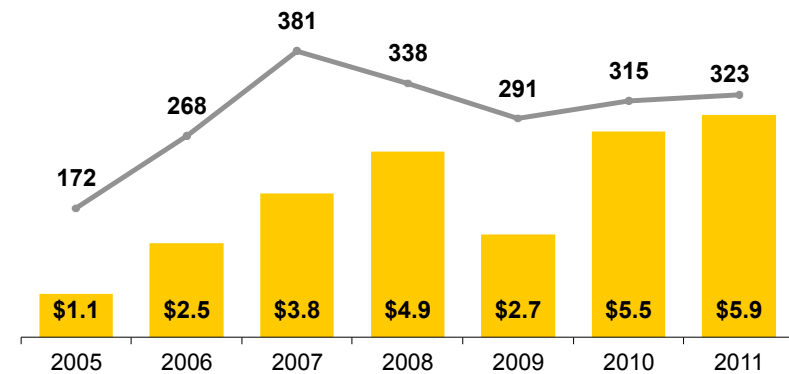
Based on Israel Site data

US\$ B



## China

US\$ B



## What about performance for LPs?

- How is performance measured?
- Who measures performance?
- What has performance been on average?
- Are there good GPs?
- Summarize results from Harris, Jenkinson, Kaplan (2012).



# How is Performance Measured?

- Two industry standards:
  - Annualized IRR (net of fees).
  - Multiple of Invested Capital (MIC).
    - » Total Value Returned / Invested Capital.
    - » (Distributed Value + Residual Value) / (Capital in Cos. + Fees)
- Each has its drawbacks.

## How is Performance Measured?

- Each has its drawbacks:
  - Net IRR:
    - » Absolute (not relative).
      - Does not control for market movements.
    - » Is sensitive to sequencing of investments.
  - Multiple of Invested Capital:
    - » Absolute (not relative).
      - Does not control for market movements.

## How is Performance Measured?

- A 3<sup>rd</sup> method - PME (Public Market Equivalent).
- Compare two investments:
  - 1. Invest \$10 million.
    - » 3 years later it returns \$20 million.
    - » IRR = 26% ; Multiple of Invested Capital = 2X
  - 2. Invest \$10 million.
    - » 3 years later it returns \$10 million.
    - » IRR = 0% ; Multiple = 1X
  - Which investment is better?

## How is Performance Measured?

### ■ Investment 1:

- Invest \$10 million in March 1997.
- Return \$20 million in March 2000.
- Instead, if you had invested the \$10 million in the S&P 500, you would have had \$20.7 million in March 2000.
- Gross PME =  $\$20 / \$20.7 = 0.97$ .
- Net PME =  $\$18 / \$20.7 = 0.87$ .

### ■ Investment 2:

- Invest \$10 million in March 2000.
- Return \$10 million in March 2003.
- Instead, if you had invested the \$10 million in the S&P 500, you would have had \$5.9 million in March 2003.
- Gross PME = Net PME =  $\$10 / \$5.9 = 1.70$ .

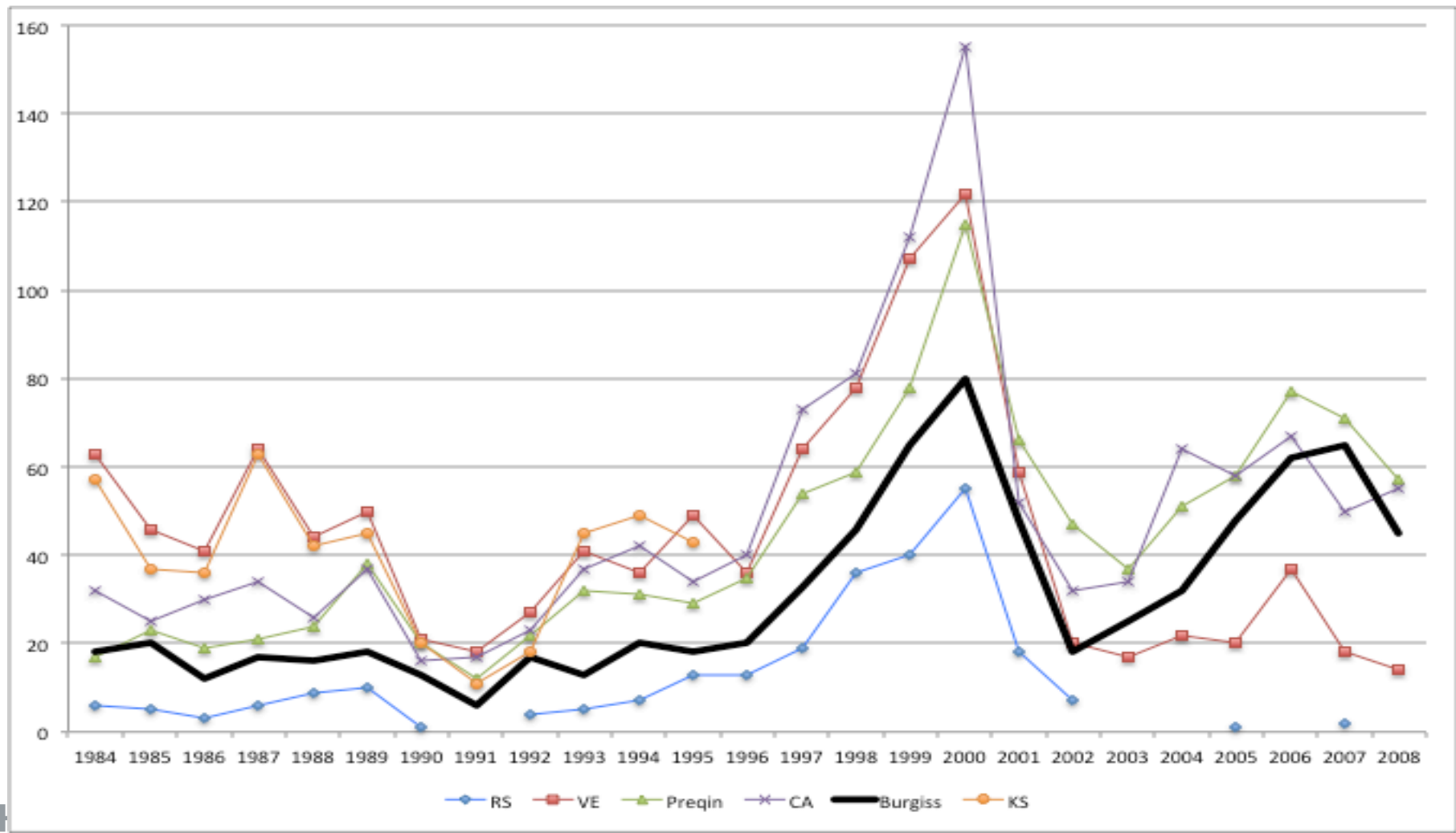
## How is Performance Measured?

- Public Market Equivalent (PME) is an improvement.
  - Grow LP inflows / investments at S&P 500 (or other return).
  - Grow LP returns / distributions at S&P 500 (or other return).
  - Compare value of outflows to inflows.
  - If  $PME > 1$ , then LPs did better than S&P 500.
    - » + Does control for the market.
    - » + Not sensitive to investment sequence.
- Think of PME as a market-adjusted multiple.

# Who measures performance?

- Four commercial databases:
  - Cambridge Associates (CA)
  - Thomson Venture Economics (VE)
    - » Less coverage in the last several years.
  - Preqin
  - Burgiss

# Who measures performance? US VC Funds

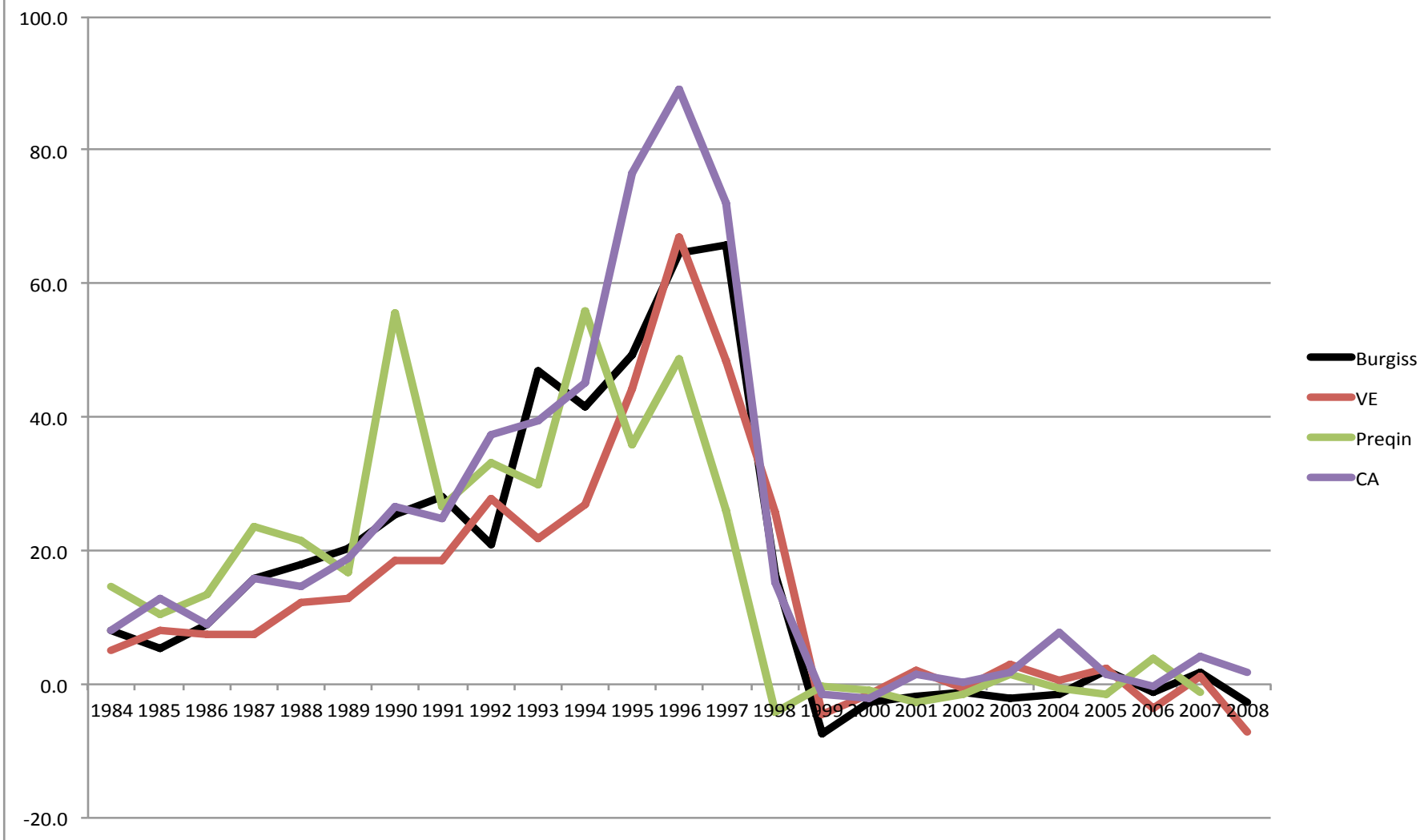




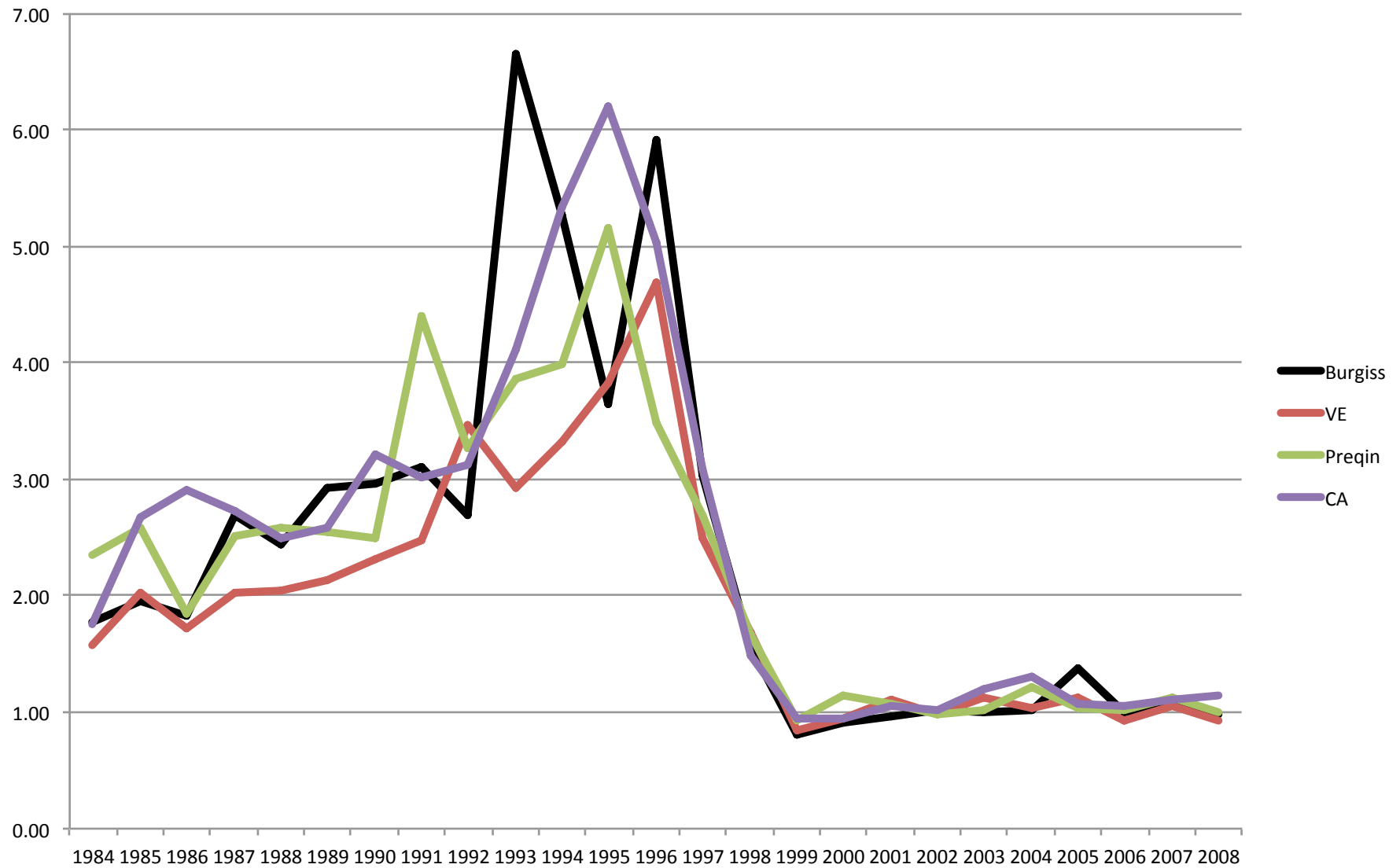
# What about performance? (as of March 2011)



### VC IRRs - Average



# VC Multiples - Average

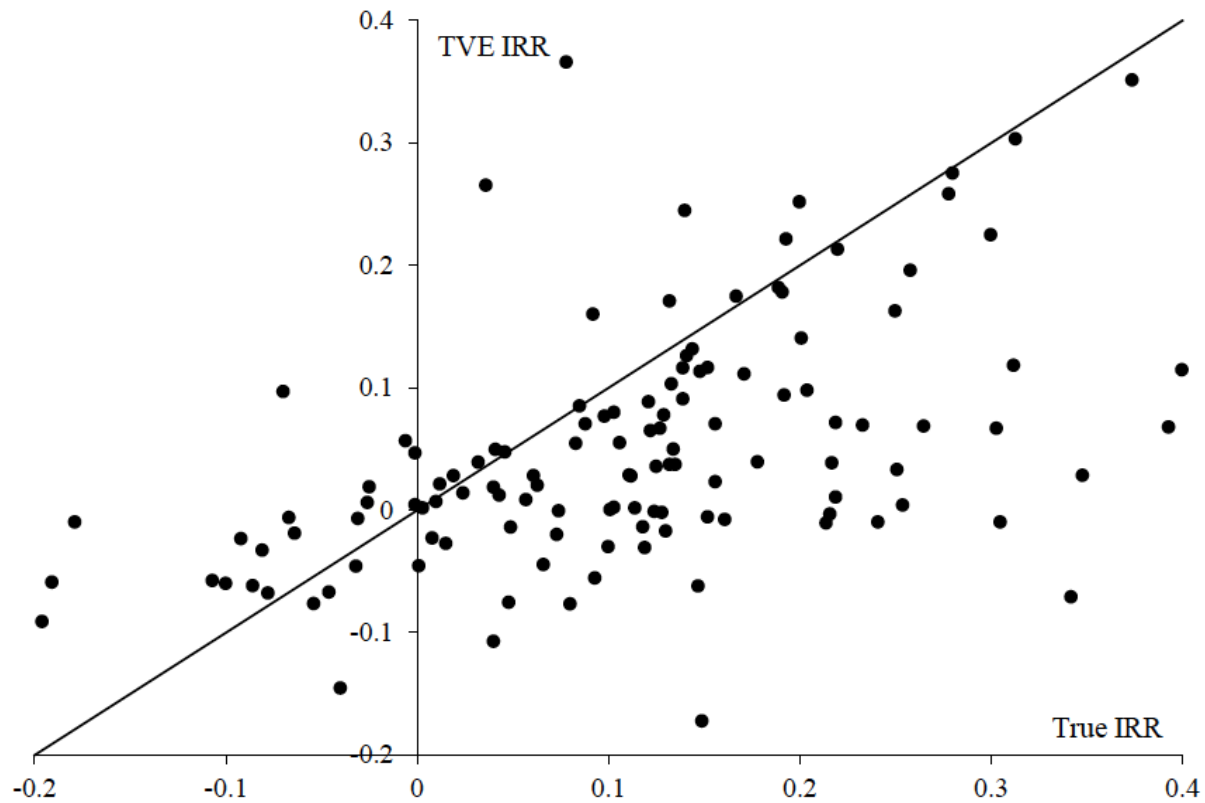


## What has performance been on average?

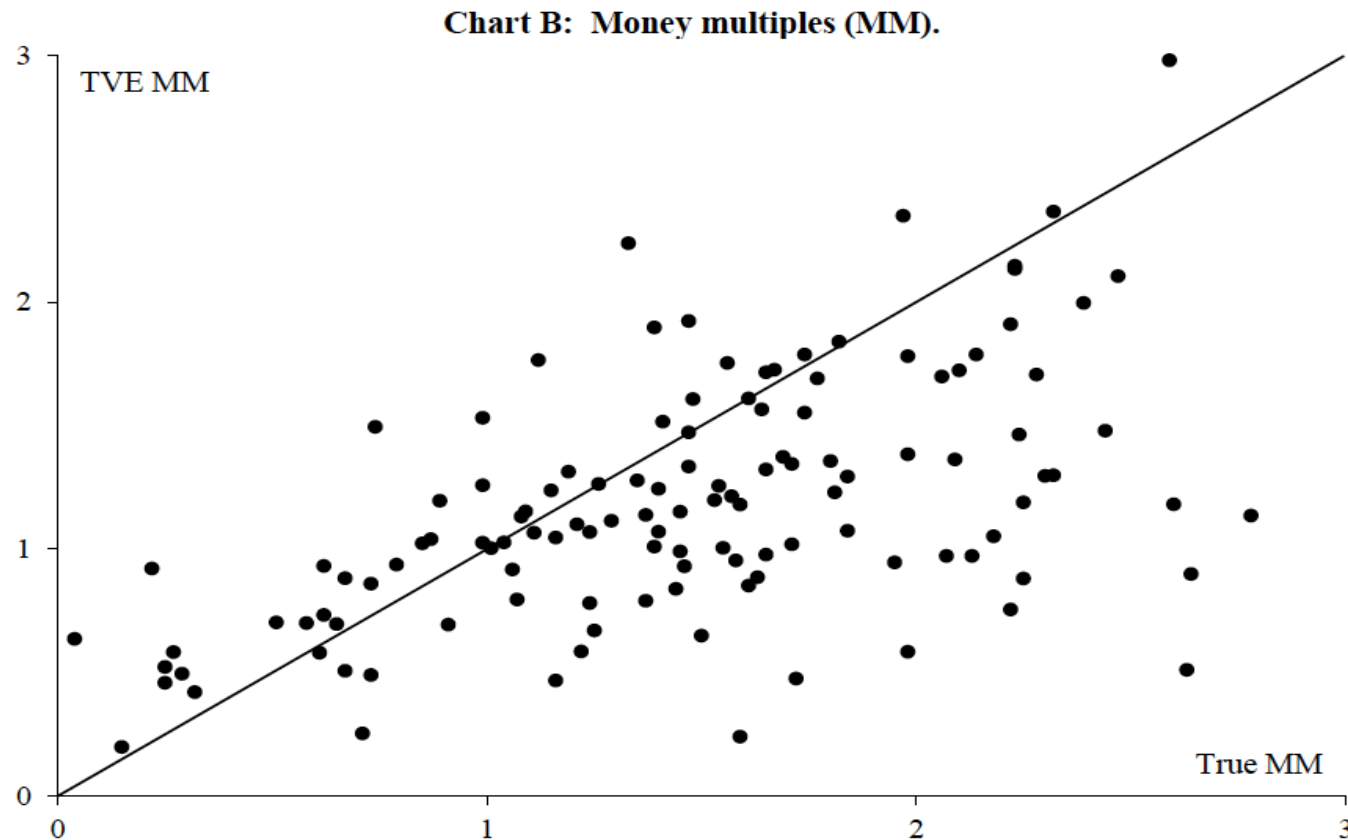
- VE, curiously, lower than the other 3 databases.
  - That is why so many funds are top quartile.
  - They compare themselves to VE.
- Good evidence that VE is sloppy in updating returns / multiples.
  - Worse in PE.
- Recommendation: Do not use VE any longer.
  - » Biased downward.

# VE IRR vs. Actuals from Stucke (2011)

Chart A: Internal rate of returns (IRR).



# VE Multiples vs. Actuals from Stucke (2011)



Source: TVE Performance Statistics, own sample data, calculations and illustration.

## Do VC / PE Funds Outperform Public Markets?

- Cannot say whether PE outperforms public markets in previous slides.
- Need to compare individual fund cash flows to public markets.
  - Among commercial databases, only Burgiss does this correctly (by calculating PMEs).
- Attempted to answer these questions.
  - First attempt, my paper with Antoinette Schoar of MIT.
    - » Appeared in Journal of Finance in August 2005.
    - » But used VE data which we now know were flawed.
  - Second attempt, Harris, Jenkinson, Kaplan with Burgiss data.
    - » Burgiss get data from LPs.

# Do VC / PE Funds Outperform Public Markets?

- Second attempt, Harris, Jenkinson, Kaplan with Burgiss data.
  - Burgiss get data from LPs.
    - » Include all funds and cash flows from LPs that provide data.
    - » Data come from “over 200 investment programs and represent over \$1 trillion in committed capital.”
    - » LPs comprise wide array of institutions.
      - Over 2/3 have PE commitments in excess of \$100 million.
      - 60% pension funds (a mix of public and corporate).
      - Over 20% are endowments or foundations.

# Do VC / PE Funds Outperform Public Markets?

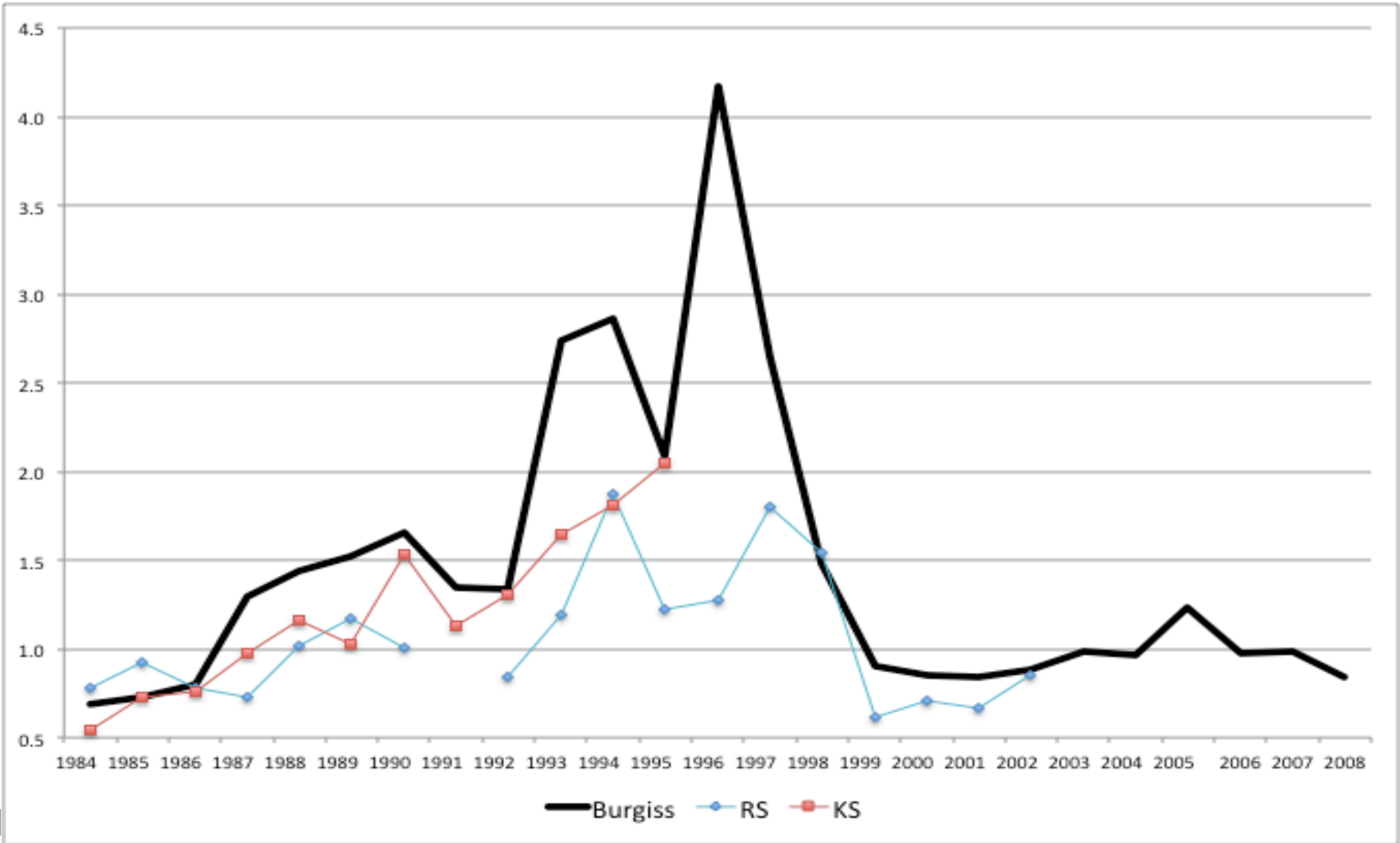
- Second attempt, Harris, Jenkinson, Kaplan with Burgiss data.
  - Cash flow data likely to be very accurate because Burgiss systems used by LPs for record keeping and fund investment monitoring.
    - » No bias in Burgiss for specific LPs.
    - » Superior to CA, Preqin and VE who rely on LPs or GPs to provide data.



## Do VC / PE Funds Outperform Public Markets?

- Cannot say much about whether PE outperforms public markets in previous slides.
- HJK use Burgiss individual fund cash flow data to calculate performance.
  - Not available in Preqin, CA, VE.
- We also show results for PE from Robinson and Sensoy (2011) who have performance data and cash flows for a very large LP.

# Do PE Funds Outperform Public Markets? PME from Burgiss



# Do VC Funds Outperform Public Markets?

- What about CA and Preqin (and VE)?
  - They do not calculate PME's.
  - They do calculate vintage year IRRs and Multiples.
- We look at the Burgiss data and see if we can predict PME's using IRRs and Multiples.
  - For a given vintage year, IRRs and Multiples explain over 93% of the variation in PME's in most years.
  - In other words, IRRs and Multiples very good predictors of PME if you know the right conversion factor.
  - Aside:
    - » Multiples explain more of variation in PME's than IRRs.
      - Focus on Multiples.

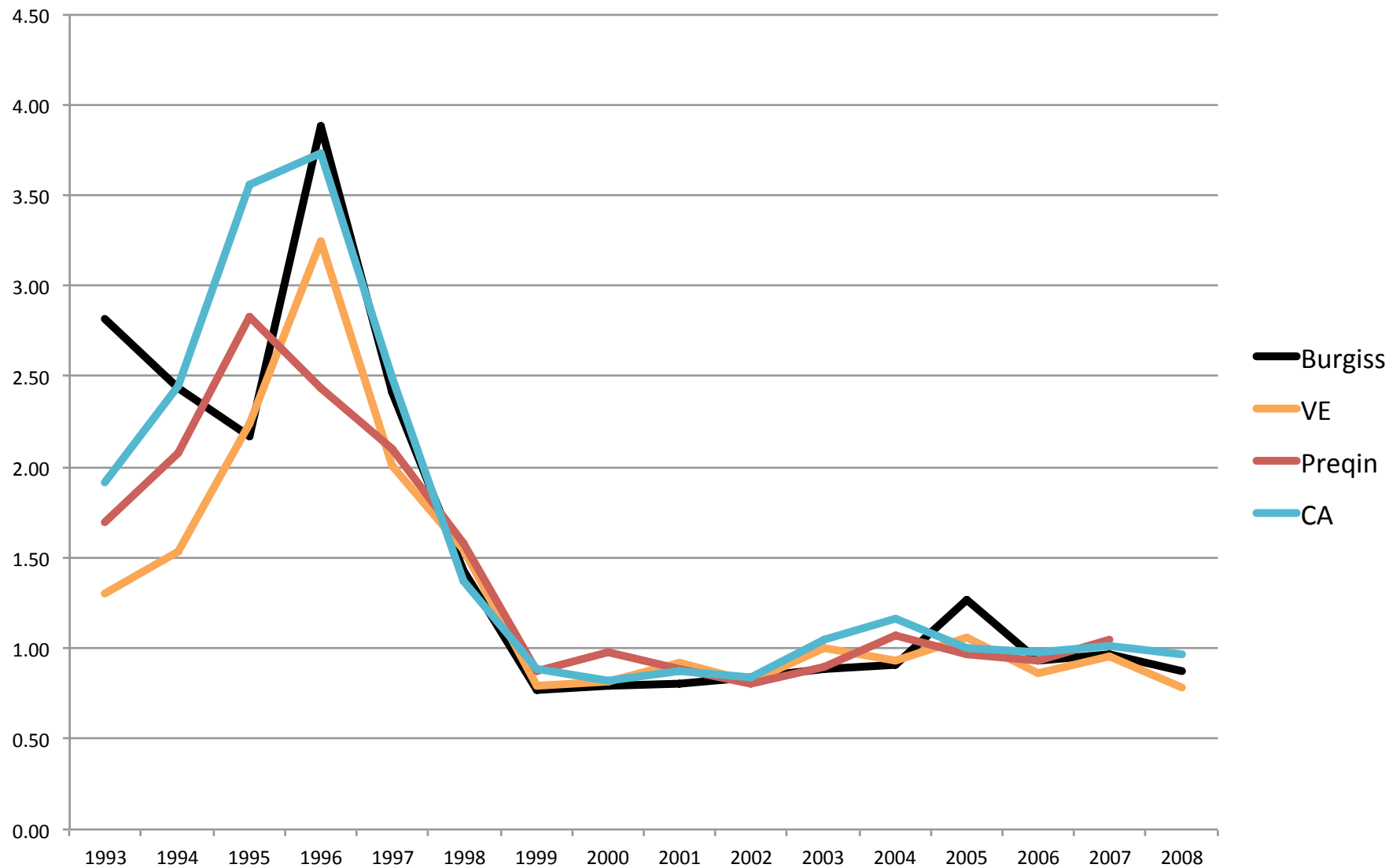
# Do VC Funds Outperform Public Markets?

	VC Funds			N	R <sup>2</sup>
	IRR	Multiple	Constant		
1993	1.43*** [0.31]	0.30*** [0.02]	0.11 [0.10]	13	0.99
1994	1.07*** [0.16]	0.36*** [0.01]	0.05 [0.06]	20	0.99
1995	0.58*** [0.10]	0.48*** [0.02]	0.14 [0.05]	18	0.99
1996	1.44*** [0.26]	0.46*** [0.03]	0.13 [0.12]	20	0.99
1997	0.26*** [0.09]	0.72*** [0.03]	0.09 [0.04]	33	0.99
1998	-0.13*** [0.04]	0.96*** [0.01]	-0.03 [0.02]	46	0.99
1999	-0.20** [0.09]	1.03*** [0.02]	-0.09 [0.02]	65	0.99
2000	0.22 [0.45]	0.84*** [0.10]	0.03 [0.10]	80	0.96
2001	0.19 [0.30]	0.79*** [0.07]	0.04 [0.07]	48	0.99
2002	1.33** [0.60]	0.42** [0.15]	0.41 [0.16]	18	0.95
2003	0.30 [0.25]	0.80*** [0.07]	0.09 [0.08]	25	0.98
2004	0.30 [0.25]	0.79*** [0.07]	0.11 [0.07]	32	0.99
2005	0.14 [0.09]	0.92*** [0.01]	0.01 [0.01]	48	0.99
2006	-0.10 [0.16]	1.00*** [0.06]	-0.08 [0.06]	62	0.98
2007	-0.36* [0.19]	1.07*** [0.10]	-0.16 [0.10]	65	0.97
2008	-0.16 [0.24]	0.96*** [0.19]	-0.12 [0.20]	45	0.86

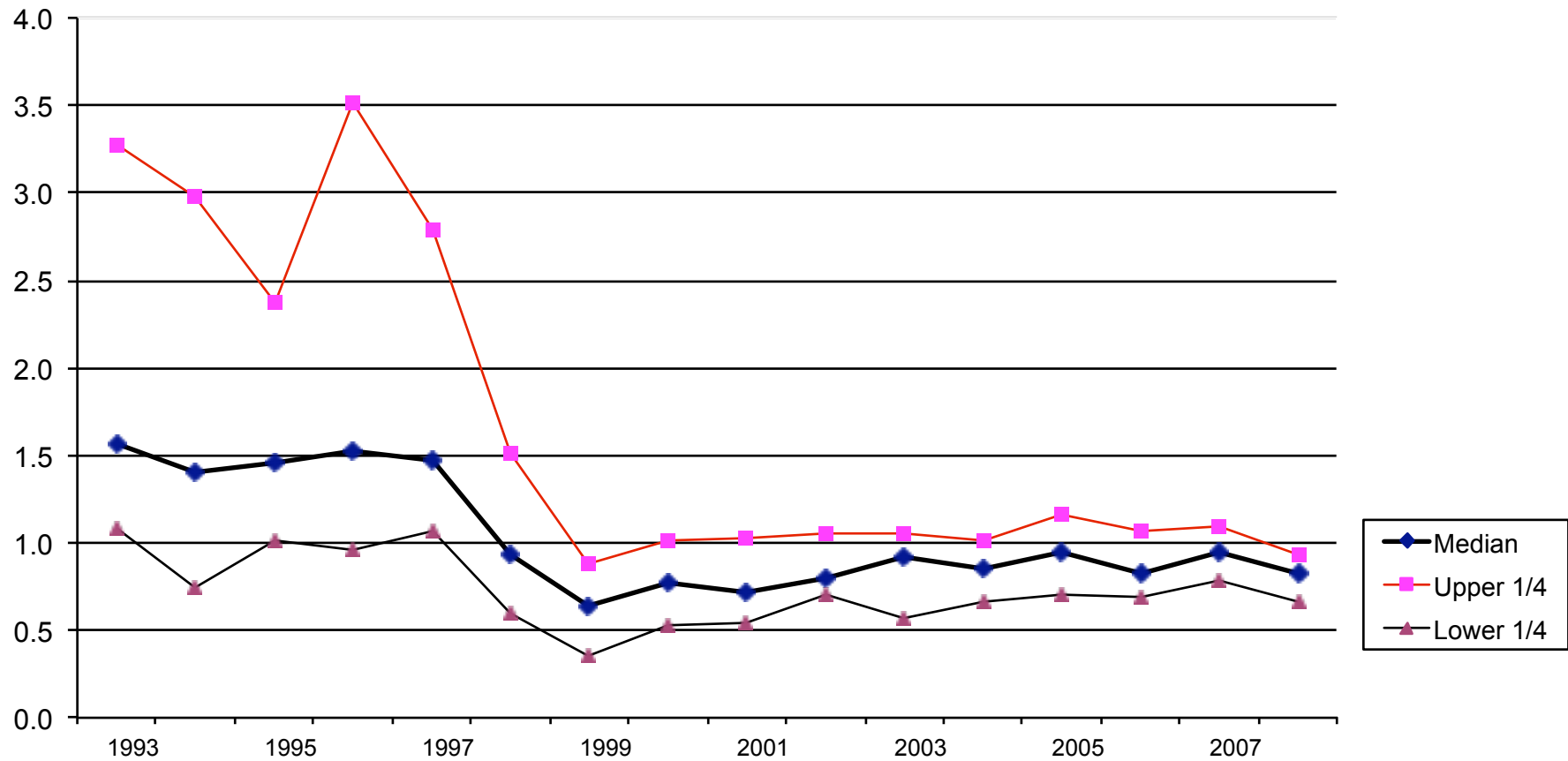
# Do PE Funds Outperform Public Markets?

- We use the relationships between PMEs, IRRs and Multiples from the Burgiss data to estimate the PMEs in CA, Preqin (and VE).

## Estimated Average VC PME From Commercial Datasets



## U.S. Venture Capital PME by Vintage Year Median, Upper and Lower Quartiles



Source: Burgiss

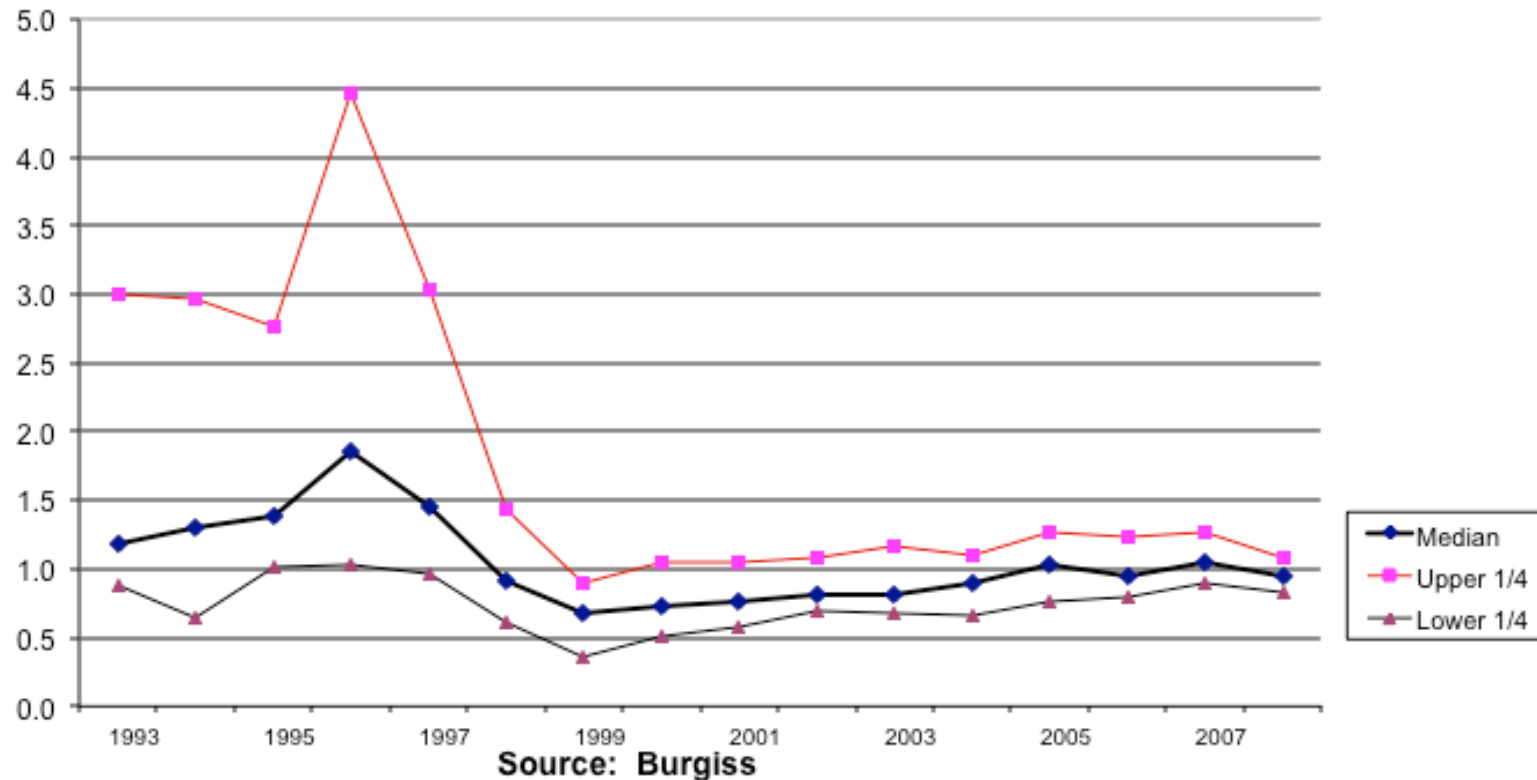
## What about other indices?

- PMEs using S&P.
  - Average vintage year PME is 1.99 in 1990s, 0.91 in 2000s.
  - Average fund PME is 1.20.
  
- PMEs using Nasdaq.
  - Average vintage year PME is 1.76 in 1990s, 0.85 in 2000s.
  - Average fund PME is 1.12.
  
- PMEs using Russell 2000.
  - Average vintage year PME is 2.31 in 1990s, 0.82 in 2000s.
  - Average fund PME is 1.21.
  
- PMEs using Russell 2000 Growth.
  - Average vintage year PME is 2.39 in 1990s, 0.82 in 2000s.
  - Average fund PME is 1.25.



# What about performance? (as of December 2011)

U.S. Venture Capital PME by Vintage Year  
Median, Upper and Lower Quartiles (December 2011)



## Overall return evidence

- IRRs, Multiples and PMEs vary substantially across vintage years.
  - PMEs well above 1.0 through 1998.
  - PMEs below 1.0 in the 2000s, particularly 1999 to 2004.
  - PMEs greater than or equal to 1.0 since 2005.
    - » Have improved meaningfully in the last year.
    - » Top quartile funds beat the S&P 500 by a good margin.
    - » Performance not concentrated in top decile (or even top quartile).
    - » Even median VC funds since 2005 at least as good as S&P 500.
- Expect LPs to increasingly focused on performance relative to public markets.
  - Recent Kauffman Foundation report.



# Overall return evidence

## Persistence in Performance:

- Are there good GPs?
  - Large differences between top and bottom quartile funds.
- Do the good GPs repeat?
  - Do not have data from Burgiss (yet).
  - Do have data from Kaplan and Schoar.
    - » VE data problems less of an issue for persistence.
  - Do have data from Robinson and Sensoy.

## Persistence in Performance: Are there good GPs? Historically yes.

- KS and RS find large and significant amount of persistence in returns across funds of the same GP.
- KS also collected all data made available by public pension funds because of FOIA concerns.

## Past Performance, Fundraising, Future Performance

- Capital flows into specific GPs related to past performance.
  - Good funds raise more money.
- Capital flows into industry related to recent performance.
  - Money comes in after good returns.
- Subsequent performance is negatively related to the amount of money flowing into the industry.
  - Poor returns follow money coming in.
- I.e., a boom and bust cycle.
  - Come back to the implications of this later.



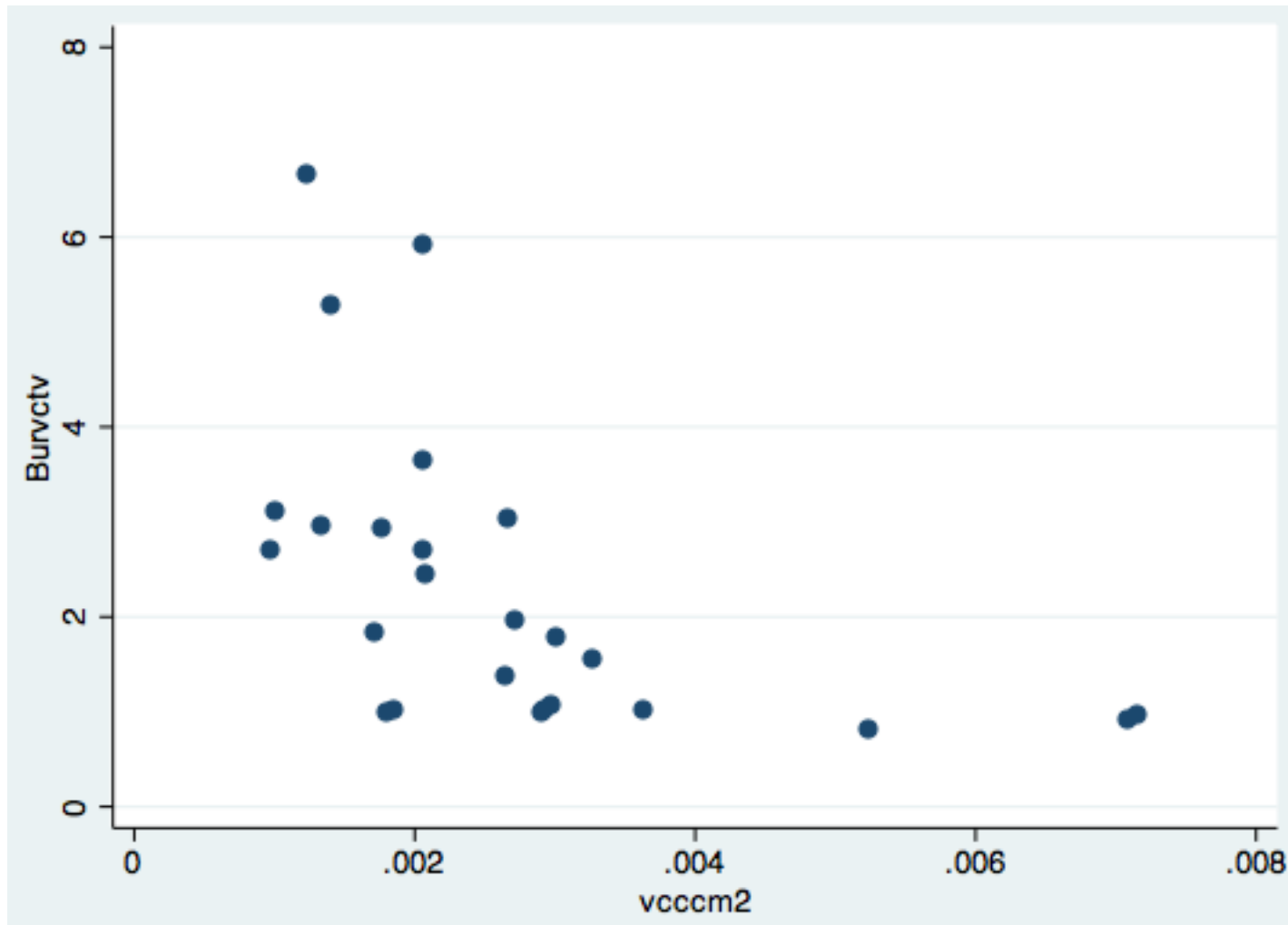
# What will happen going forward? Returns?

## Future Performance and Fundraising:

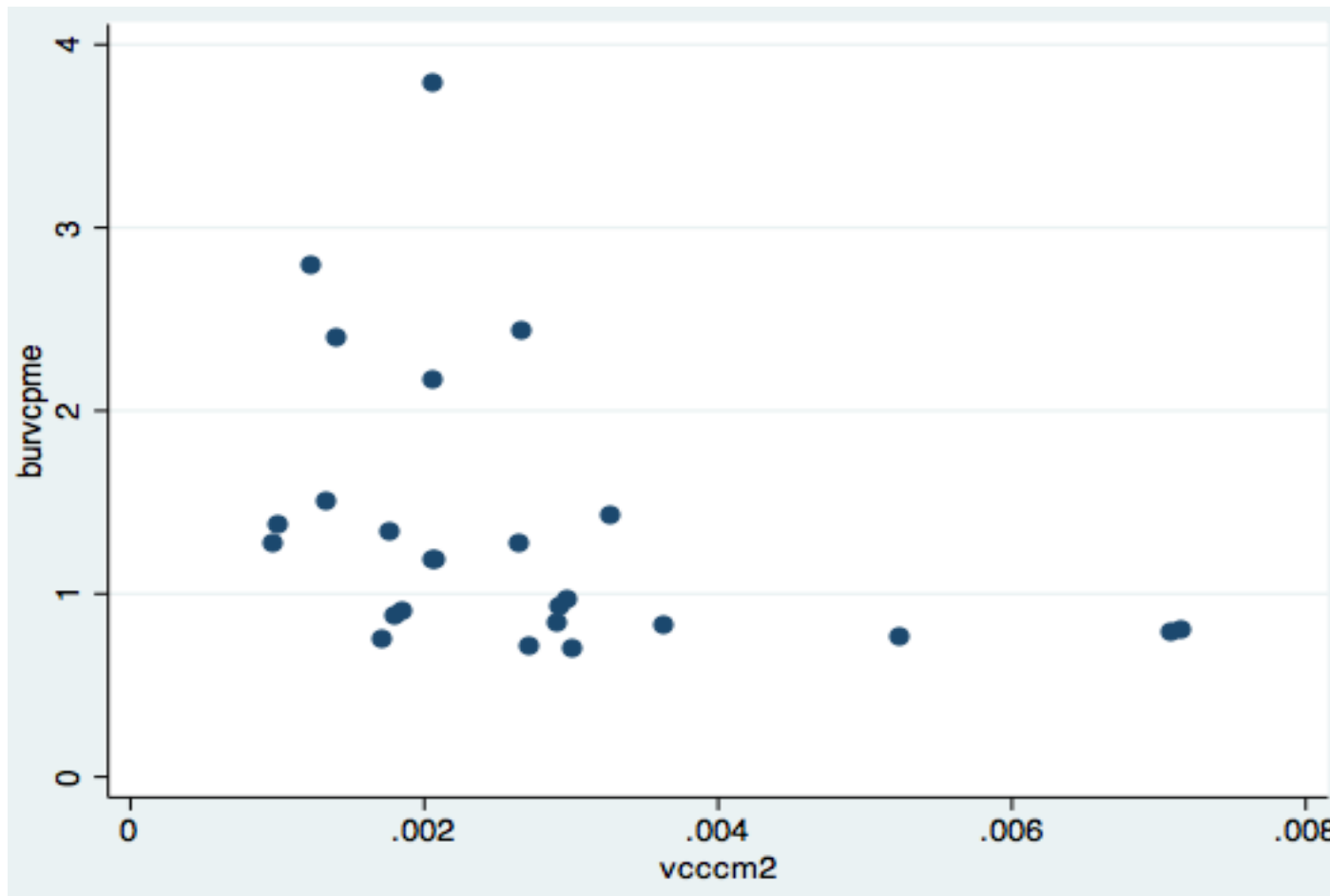
- Performance in VC significantly negatively related to fundraising.
  - Even more so.
  - IRR in Vintage Year =
    - » 43% - 75 x VC inflows in current and prior year as % of stock mkt.
  - Multiple in Vintage Year =
    - » 4.39 - 626 x VC inflows in current and prior year as % of stock mkt.
  - PME in Vintage Year =
    - » 2.48 - 279 x VC inflows in current and prior year as % of stock mkt.
  - On average VC inflows = 0.135% of stock market. (2 years 0.27%).



# Vintage Year Multiples vs. Capital Committed



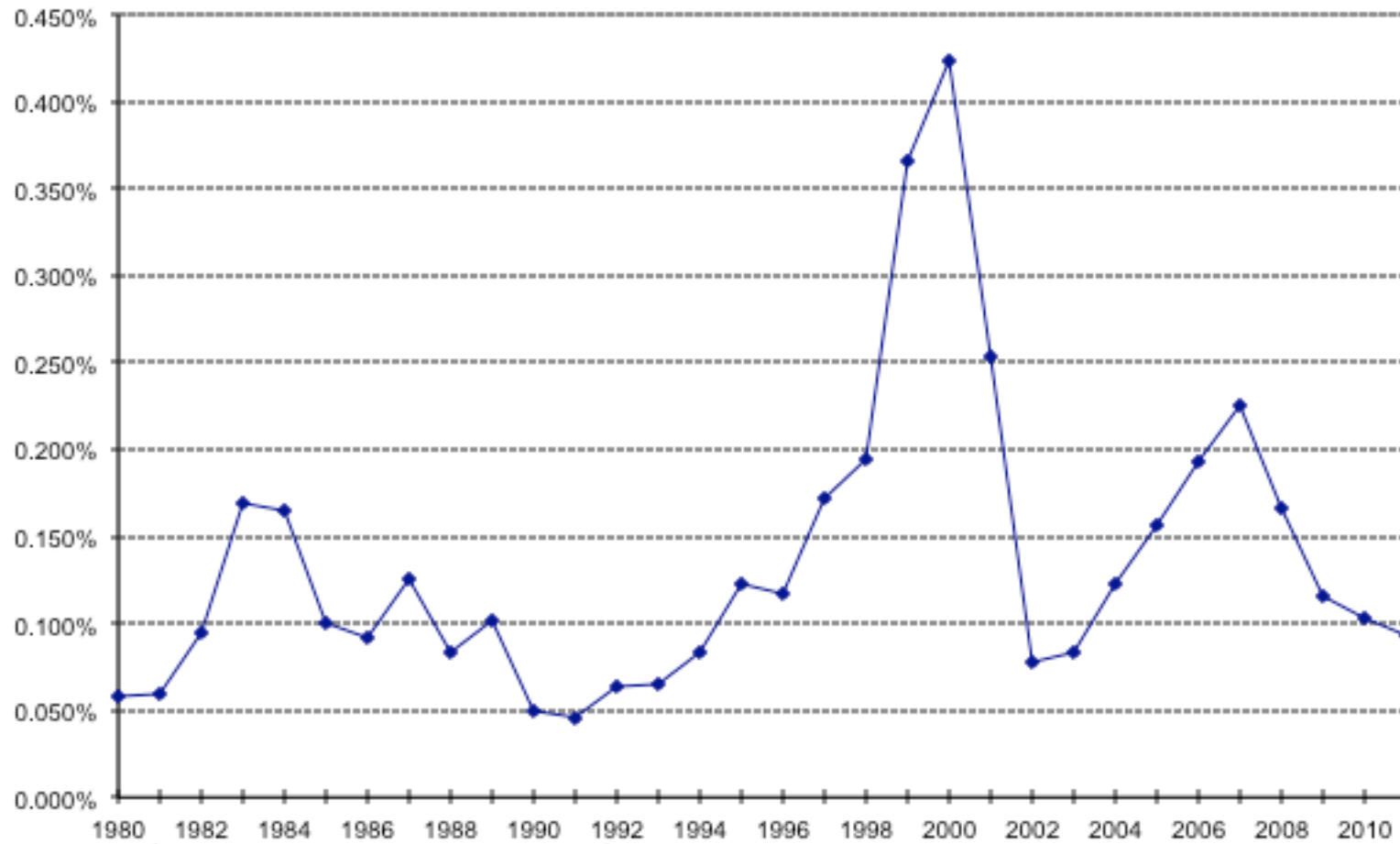
# Vintage Year PME vs. Capital Committed



# What is going to happen next? What will the future hold?

- Where are we in the cycle?
- What are returns likely to be?
- Is this a good time to invest?

## Commitments to U.S. VC Partnerships as Fraction of Stock Market Capitalization 1980 - 2011



Source: Private Equity Analyst, Steven N. Kaplan

## What about 2009 to 2011 Vintages?

- Commitments declined in 2009 to 2011. Came in at
  - 0.12%, 0.09% and 0.10%.
- These are well-below the historical averages of 0.14%.
  - Predict above average performance for these vintages.

## What Does All This Mean For VC?

- Is VC model broken? What is the right size for the VC industry?
  - No reason to believe industry is wrong-sized.
    - » In the U.S. or elsewhere.
  - Returns in U.S. have been reasonable at 0.15% to 0.20% of market.
- What does fundraising look like?
  - Low by historical standards in 2009 - 2011.
- What are returns likely to be?
  - Low fundraising associated with higher returns.