JOHNSON
Cornell University

NBA 5420: Investment and Portfolio Management

Class 6: Speculative Investing Part II

Professor Matt Baron

March 7, 2016

Class Announcements

- Midterm Exam: **in class** Monday, March 21
  - Covers up to and including last Wednesday's lecture (Week 7) and Problem Set 5
    - Does NOT cover fixed income (HW 6) and HFTs
  - Bring handheld calculator, "cheat sheet", & pen
    - Must use a pen
    - Bring double-sided 8.5' x 11' "cheat sheet"
    - No books, computers, tablets, cell phones allowed

Class Announcements

- Format: 12 multiple choice questions
  - 10 points each
  - Must do all questions, no penalty for guessing
- Must provide explanations and/or calculations
  - 5 points for correct answer
  - 5 points for correct explanation / calculation

Class Announcements

- Midterm review sessions (optional)
  - Kate: Thursday, March 17, 6:30 – 8:30 PM, Sage B05
  - Sam: Friday, March 18, 2 – 4 PM, Sage B05
- Practice midterm exam on Blackboard
  - With answer key
  - **Best way to prepare for the midterm!**
- Exam will be VERY similar to problem sets and practice midterm
  - Focus 80-90% of your prep time on these practice problems!
  - Know lecture slides too
  - NO material from any of the readings will appear on the exam

Speculative Investing

- **This class**: Who beats the market?
  - Actively managed mutual funds, hedge funds, private equity, endowment and pension funds?
  - A review of the evidence.

- **Next class**: The supply side of asset markets
  - Corporate finance (payouts and issuance, CEOs and governance, leverage, capital expenditure, M&A activity)
  - Implications for stock market investors.
  - Activist Investors.

Who beats the market?

1. Actively managed mutual funds?
2. Endowment / pension funds?
3. Hedge funds?
   - Which type: activists, arbs?
4. Private equity?
5. Proprietary traders?
   - Market makers, high-frequency traders?

ACTIVELY MANAGED MUTUAL FUNDS

Actively managed mutual funds

- As you know, the evidence does not generally support “skill”

Underperformance

- No evidence for alpha after fees
  - Classic studies: Jensen (1969), Elton et al. (1992), Carhart (1992)

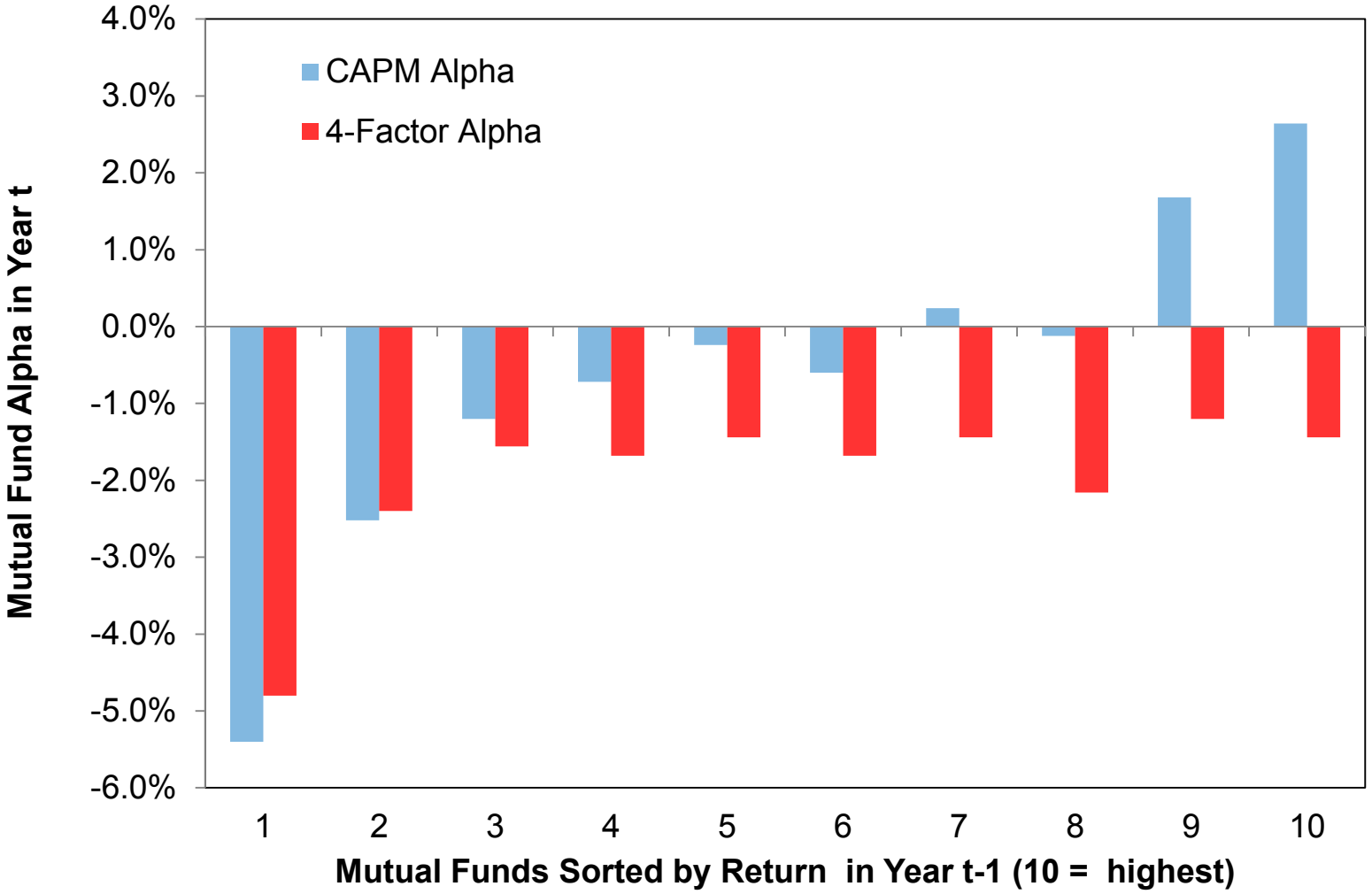
- Basic summary of a huge literature:
  - Mutual fund managers slightly beat (or equal) the market *before* costs
  - But underperform the market after costs.
  - However, there are mutual fund managers that do add value; finding these managers is hard because there is little persistence.
  - Investors tend to put more capital into funds with high past returns but the outperformance of funds is fleeting.

- Wermers (2000) remains probably the most comprehensive study of mutual fund performance to date. In a nutshell:
  - S&P500 return = 15.4%
  - Average gross return = 16.9%, average net return = 14.6%
  - Average gross alpha = 0.79%, average net alpha = -1.16%

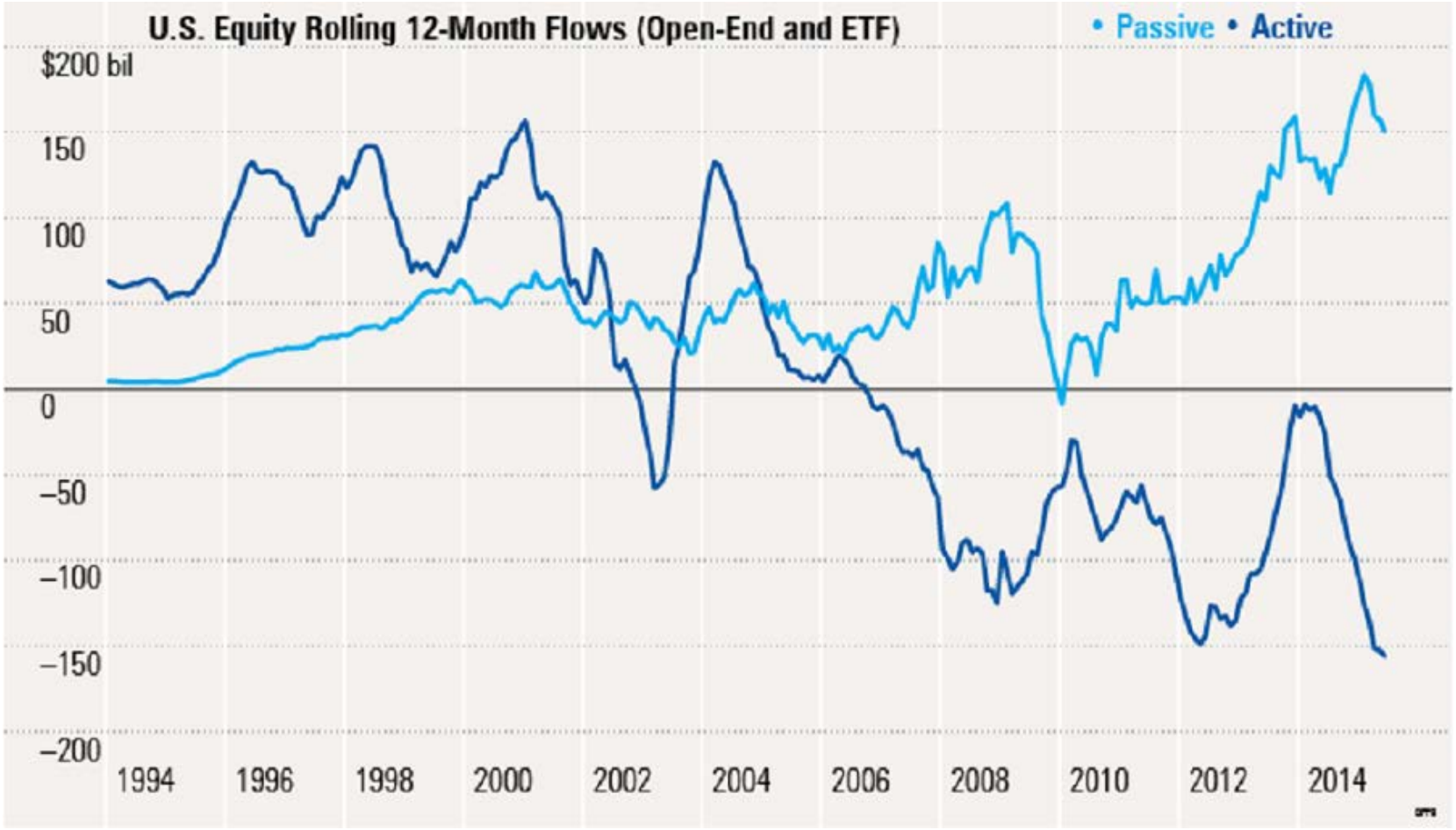
Little persistence over time

- If a mutual fund did well in the past, is that due to luck or skill?
  - Test: see if that fund continues to outperform
- Hendricks, Patel & Zeckhauser (1993) and others showed initial evidence for a "hot hands" effect (persistence in alpha over several years)
- But Carhart (1997) famously showed this was simply due to exposure to the momentum factor
  - **Carhart showed no persistence in 4-factor alphas**
  - Not because managers deliberately follow momentum strategies, but because they hold relatively larger positions of last year's winners by chance
- Most persistence is actually due to the very worst mutual funds (who continue to do abysmally)!

Little persistence over time



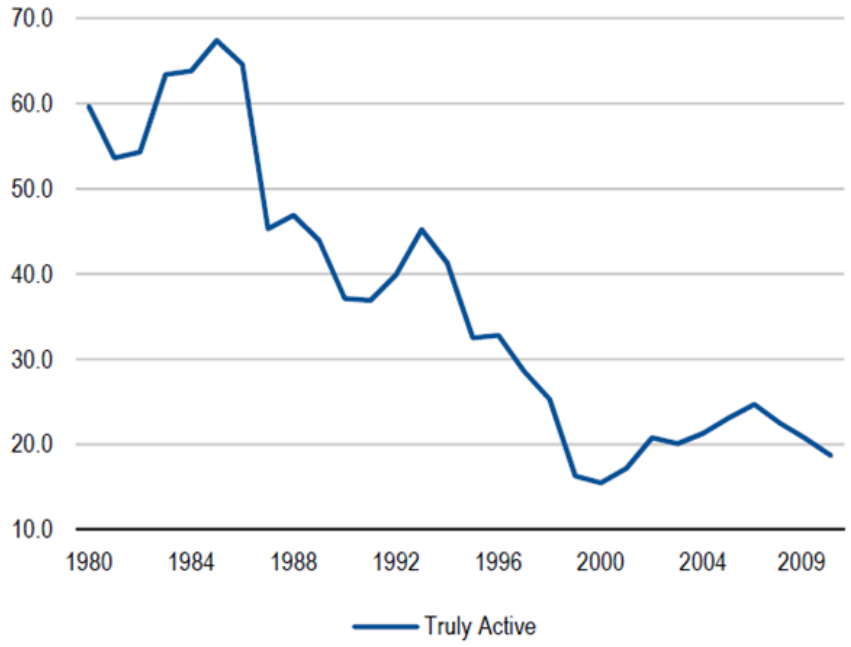
Investors have been listening



Investors have been listening

Assets in Active Funds Have Plunged

% of US All-Equity Mutual Fund Assets Held in Active Funds, 1980–2009

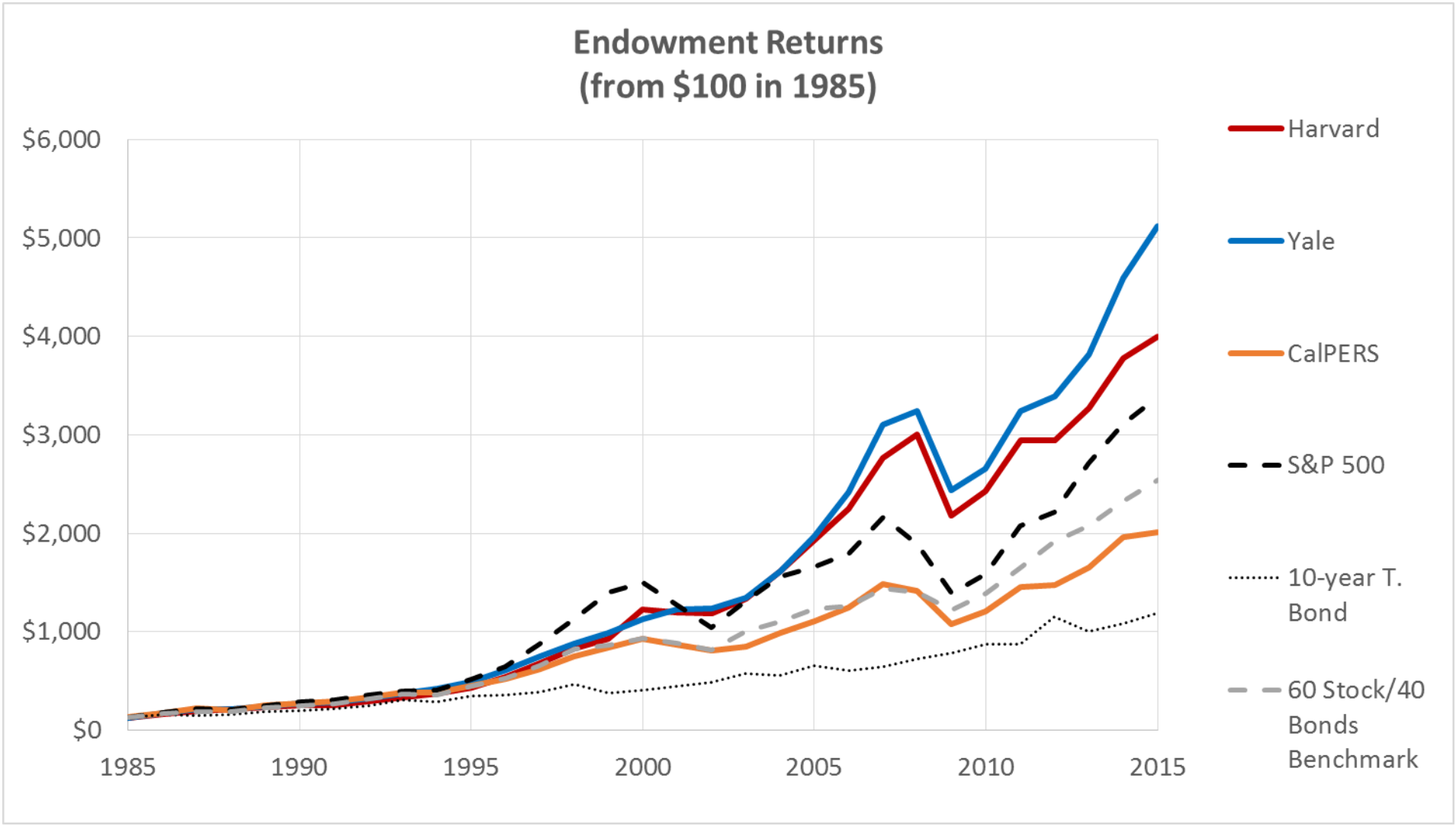


Source: Petajisto, Antti, "Active Share and Mutual Fund Performance," *Financial Analysts Journal*, vol. 69, no. 4 (2013)

ENDOWMENTS / PENSION FUNDS

Endowments / pension funds

1. University Endowments
   - Yale, Harvard, etc.
2. Private pension funds
3. Public pension funds
   - CalPERS, other states,
   - Canadian pension funds, etc.
4. Sovereign wealth funds
   - Norway, etc.


Endowment Returns
(from $100 in 1985)
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0
1985
1990
1995
2000
2005
2010
2015
Harvard
Yale
CalPERS
S&P 500
10-year T. Bond
60 Stock/40 Bonds Benchmark

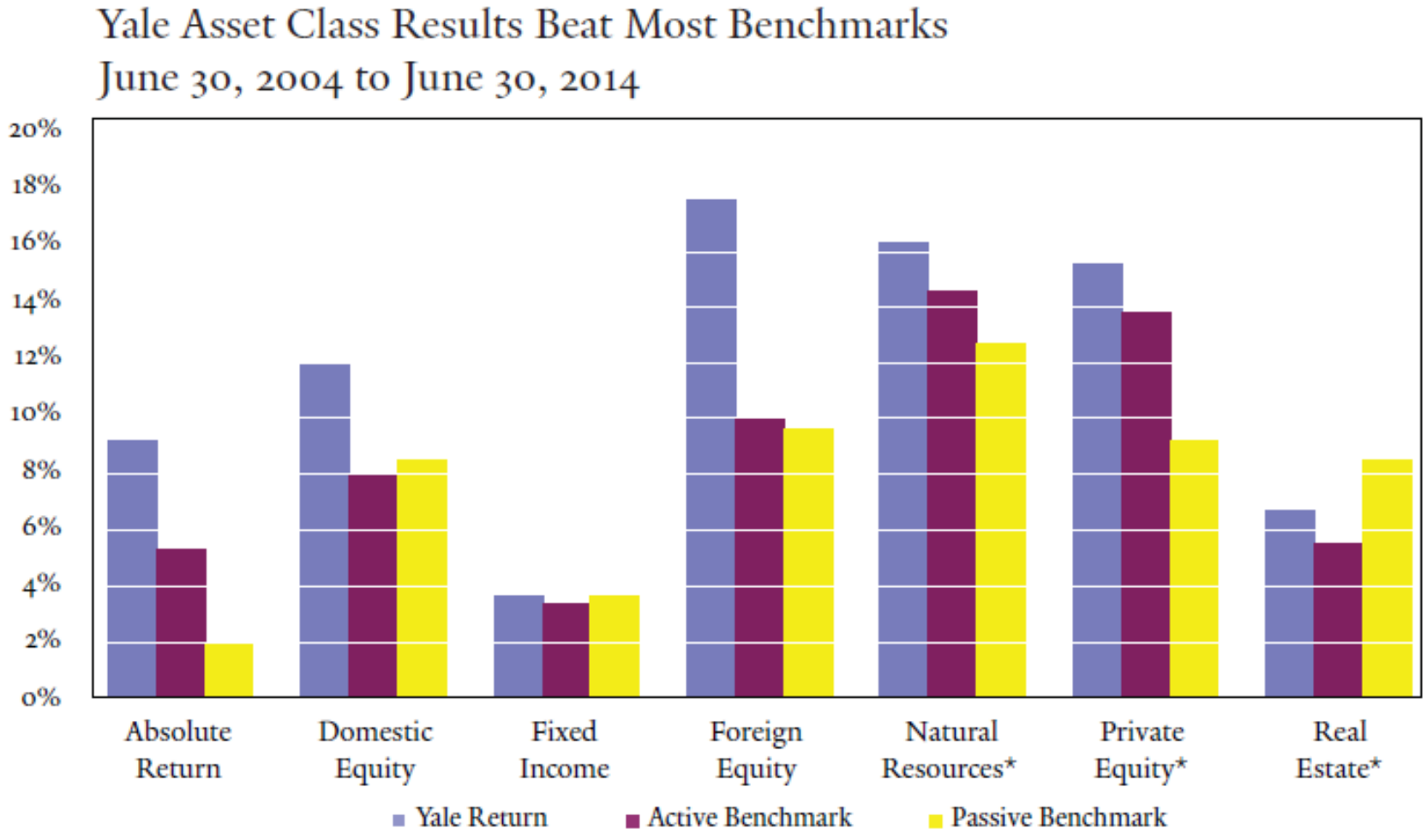
Performance comparison

	Harvard	Yale	CalPERS	S&P 500	10-year T. Bond	60 Stock/40 Bonds Benchmark
Avg returns	13.3%	14.1%	8.9%	13.2%	9.0%	11.5%
CAPM alpha	4.4%	5.5%	-0.5%	0.0%	5.3%	2.1%
3-factor alpha	3.1%	4.0%	-0.6%			
4-factor alpha	1.2%	2.8%	-1.4%			
Sharpe	0.81	0.93	0.49	0.60	0.45	0.72
Treynor	0.17	0.20	0.11	0.09	-5.11	0.13
Information Ratio	0.58	0.79	-0.07			
Beta	0.55	0.52	0.45	1.00	-0.01	0.60
Mkt-beta	0.60	0.55	0.63			
SMB-beta	0.43	0.16	0.21			
HML-beta	0.06	0.21	0.09			
MOM-beta	0.25	0.16	0.10			

Asset allocation of Yale

	2014	2013	2012	2011	2010
Market Value (in millions)	$23,894.8	$20,780.0	$19,344.6	$19,374.4	$16,652.1
Return	20.2%	12.5%	4.7%	21.9%	8.9%
Spending (in millions)	$1,041.5	$ 1,024.0	$ 994.2	$ 986.8	$1,108.4
Operating Budget Revenues (in millions)	$3,116.1	$2,968.6	$2,851.7	$2,734.2	$2,681.3
Endowment Percentage	33.4%	34.5%	34.9%	36.1%	41.3%
Asset Allocation (as of June 30)					
Absolute Return	17.4%	17.8%	14.5%	17.5%	21.0%
Domestic Equity	3.9	5.9	5.8	6.7	7.0
Fixed Income	4.9	4.9	3.9	3.9	4.0
Foreign Equity	11.5	9.8	7.8	9.0	9.9
Natural Resources	8.2	7.9	8.3	8.7	8.8
Private Equity	33.0	32.0	35.3	35.1	30.3
Real Estate	17.6	20.2	21.7	20.2	18.7
Cash	3.5	1.6	2.7	-1.1	0.4

Yale returns by asset class



Yale model

- CIO: David Swensen
  - See his book “Pioneering Portfolio Management”

1. Avoid asset classes with low expected returns
   - Fixed income and commodities

2. Liquidity is a *bad* thing
   - Heavy exposure to private equity, alternative investments, natural resources, & real estate

Yale model

3. Security selection and market timing play minor roles
   - Domestic equities small part of portfolio

4. Be very picky about hedge fund managers
   - Carefully assess managers to find those with high skill
   - Avoid high costs and flashy managers

- Princeton endowment had “success this year in biotech, health care, venture capital & emerging markets”

Pension funds

- If university endowments perform so well, why not public & private pensions??
- Even the supposed best funds don't outperform
  - CalPERS
  - Norway's Sovereign Wealth fund
- However, Canadian public pensions do better

Pension Funds

	Avg. yearly returns as of 2014 (not compounded)		
	Past 5 years	Past 10 years	Past 20 years
CalPERS	12.9	8.0	9.1
Norway	10.2	8.2	9.5
U.S. Public Pensions (as of 2013)	12.5	7.0	8.1
Ontario Teachers Fund	11.7	8.6	10.2
Yale	13.6	12.1	13.3
S&P 500	17.7	8.5	12.1
60/40 Mix	13.7	8.1	10.3
Long-term Bonds	7.7	7.6	7.5

Problems with governance

- Political interference
  - Political appointees on investment committees
  - Pressure from politicians to make up funding shortfalls by taking on more risk
  - Pressure to invest in-state to boost local economy
    - *Might* be good overall but lowers returns
- Corruption
  - Pay-to-play scandals in CA, NY,
- Low incentives of pension managers
  - Subject to state payroll laws; difficult to fill top positions
    - Exceptions in a few state like CA and TX and in Canada

Problems with governance

- High management fees
  - In house teams don't have the resources to do sophisticated institutional investing
  - The easiest thing to do is pay hedge funds and private equity large fees to invest for you

	Risk in 2012	Returns in 2012 Net of costs	Management fees	Performance fees	Total fees
Real estate	3.1%	10.1%	0.80%	0.06%	0.87%
Equities	9.1%	16.1%	0.21%	0.03%	0.25%
Private equity	6.0%	9.6%	2.10%	1.32%	3.43%
Fixed-income	2.5%	10.9%	0.10%	0.01%	0.12%
Hedge funds	4.7%	4.5%	1.84%	1.53%	3.38%
Commodities	13.7%	1.0%	0.18%	0.03%	0.22%
Other	*1.6%*	*1.4%*	*0.06%*	*0.00%*	*0.06%*
Total	**2.8%**	**13.7%**	**0.40%**	**0.13%**	**0.53%**

Source: Dutch central bank study on public pension funds around the world

Public pension funds

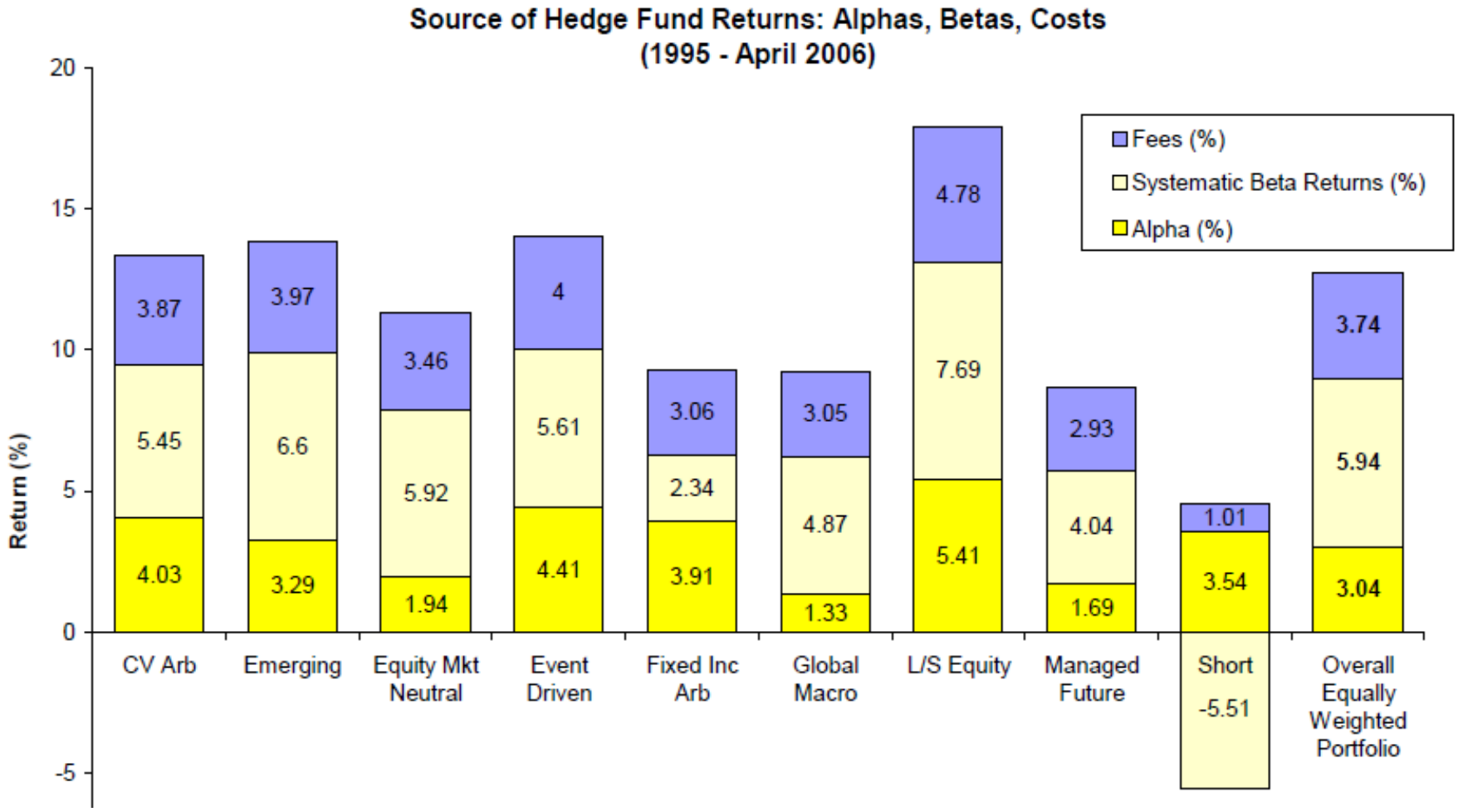
- Andonov, Bauer and Cremers (2012) study:
  1. Divides performance into three categories
     - Asset allocation, market timing, security selection
  2. CAPM alpha disappears when accounting for momentum factors
  3. Large pension funds have lower costs, but doesn't lead to better performance
     - Larger funds can negotiate lower fees
     - However, **diseconomies of scale overall** = hard to outperform if you need to take big positions
     - So large funds should tend towards more passive mandates

HEDGE FUNDS

Hedge Fund returns

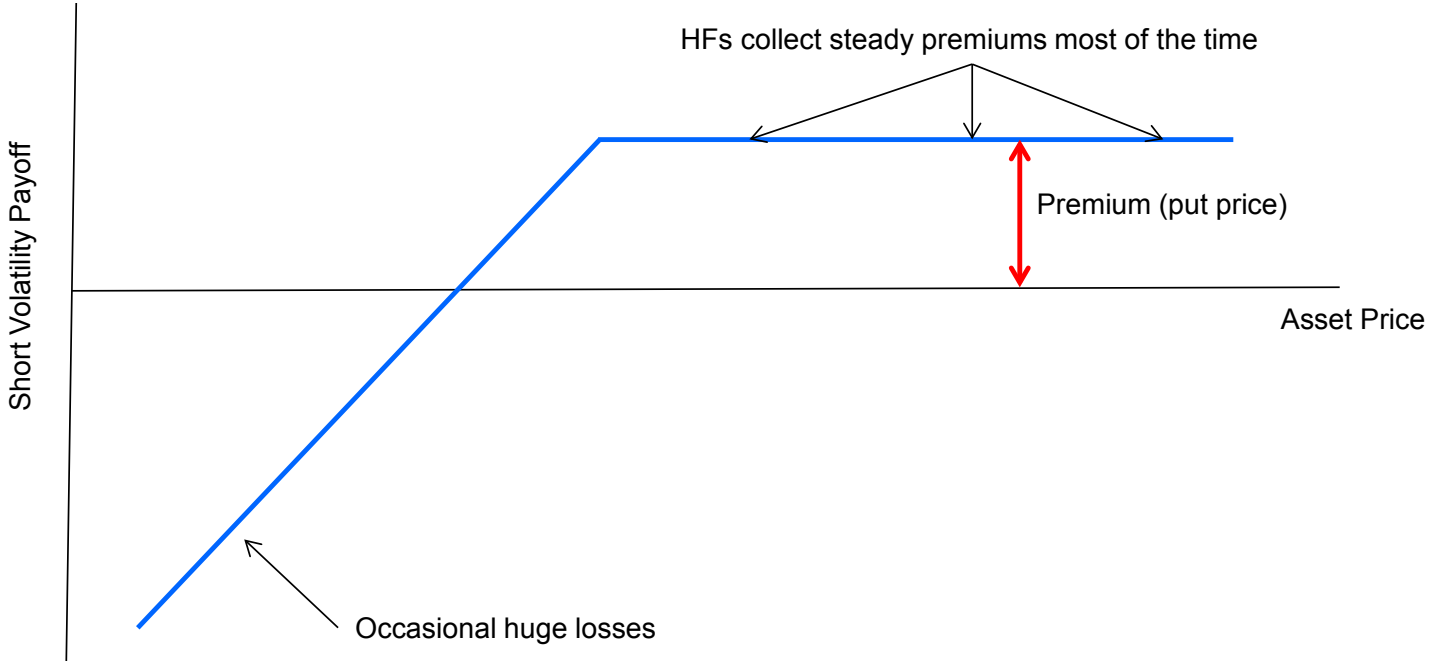
- Ibbotson & Chen (2006)
  - Pre-fee returns of 13.62
  - Divided approx. into thirds: alpha, beta, fees
- Fung, Hsieh, Naik, Ramadorai (2008)
  - The average hedge fund doesn't deliver alpha
  - But high performers exist
    1. Consistently deliver alpha
    2. Less likely to liquidate
    3. Experience far greater and steadier capital inflows
  - But steady inflows tend to diminish the ability to continue delivering alpha

Ibbotson & Chen (2006)



Hedge Funds and Tail Risk

- Jurek and Stafford (2015)
  - Hedge funds capture pre-fee alphas of 6-10% (1996-2012)
  - But their returns not statistically distinguishable from mechanical S&P 500 put writing strategy



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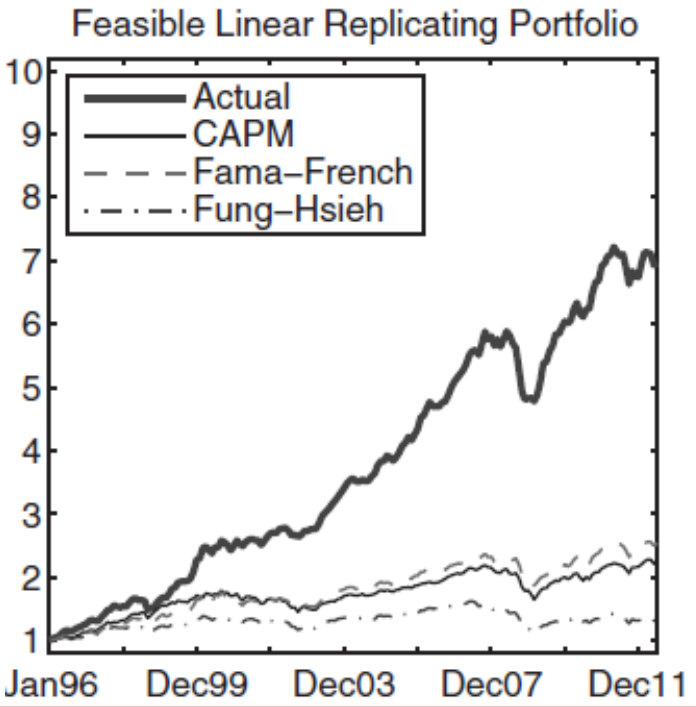
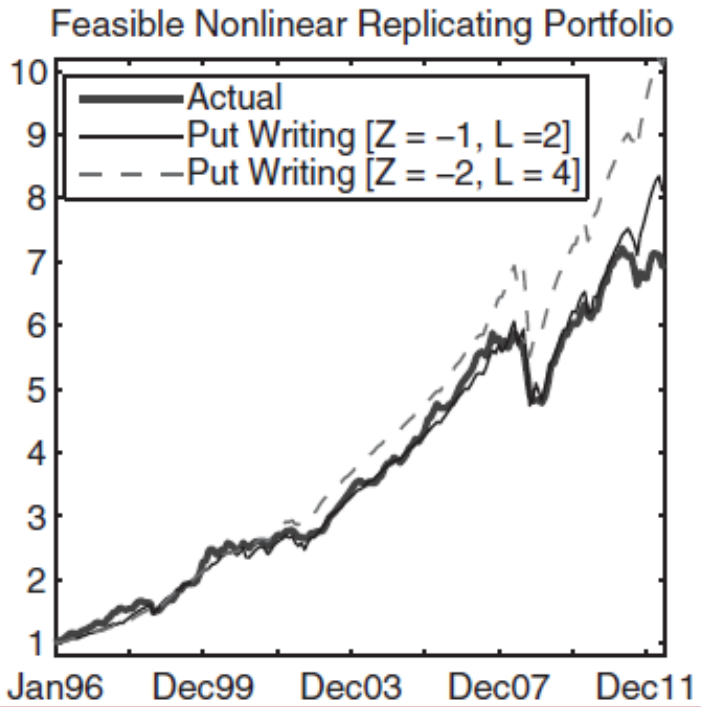




PRIVATE EQUITY

(FROM ANDREW ANG'S SLIDES)

Types of Private Equity

Private equity (PE) characterized as investments in privately-held companies that do not trade on organized exchanges.

1. **Leveraged buyout:** Buying whole companies with high levels of debt.
   - This subclass represents most of the money allocated to PE.

2. **Venture capital:** Buying stakes in companies at early stages of development.
   - Apple, Amazon, Google, YouTube, LinkedIn all financed this way.

3. **Mezzanine:** Junior debt, portfolios of loans.

4. **Infrastructure:** Capital infrastructure, often levered.

Measuring PE performance

- Because of the lack of objective market values, PE typically uses NAVs and IRRs.
  - There is some push to make NAVs closer to market values, but the valuations are to a large degree subject to the discretion of the GP.

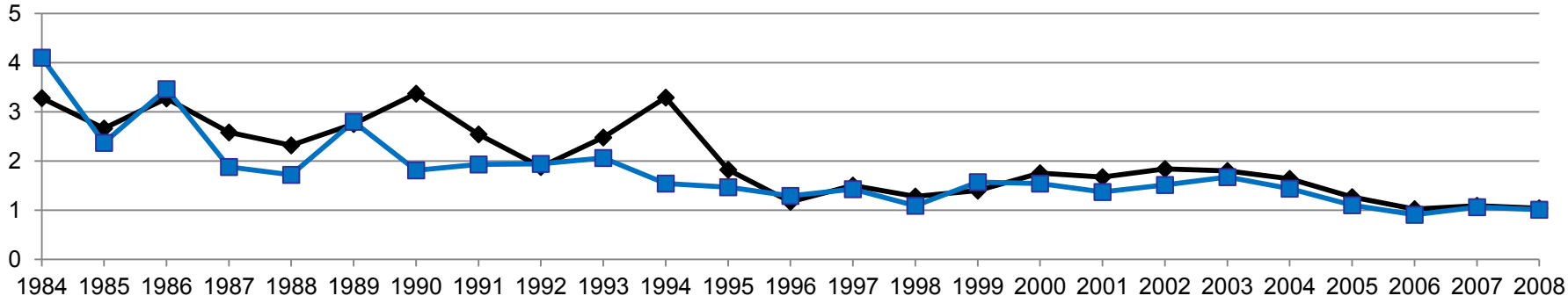
- In practice, two performance measures are used:
  1. **Multiple:** total amount distributed divided by total amount invested
  2. **IRR**

- Both are not realized returns and can be gamed
  - Using the IRR can be uninformative and highly misleading.

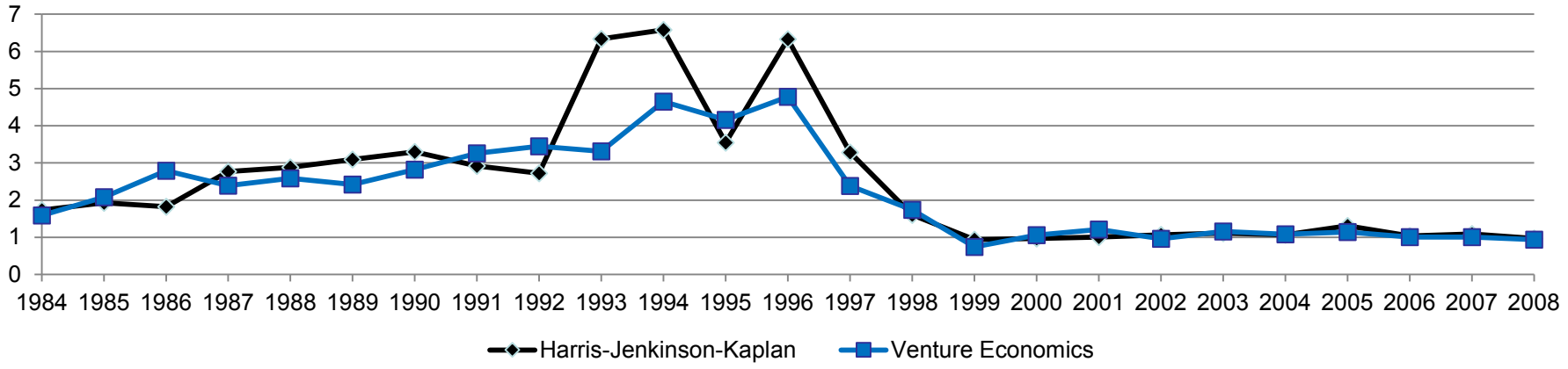
- **Public market equivalent (PME)** also used by academics (Kaplan and Schoar, 2005)
  - Compares an investment to the public market.
  - A PME > 1 indicates outperformance relative to the public market.

PE performance

Leveraged Buyout Multiples

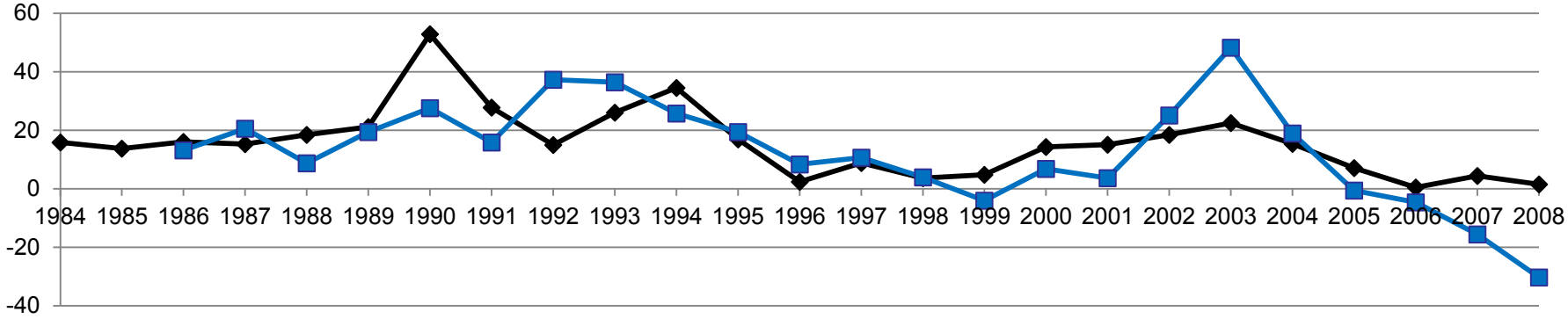


Venture Capital Multiples

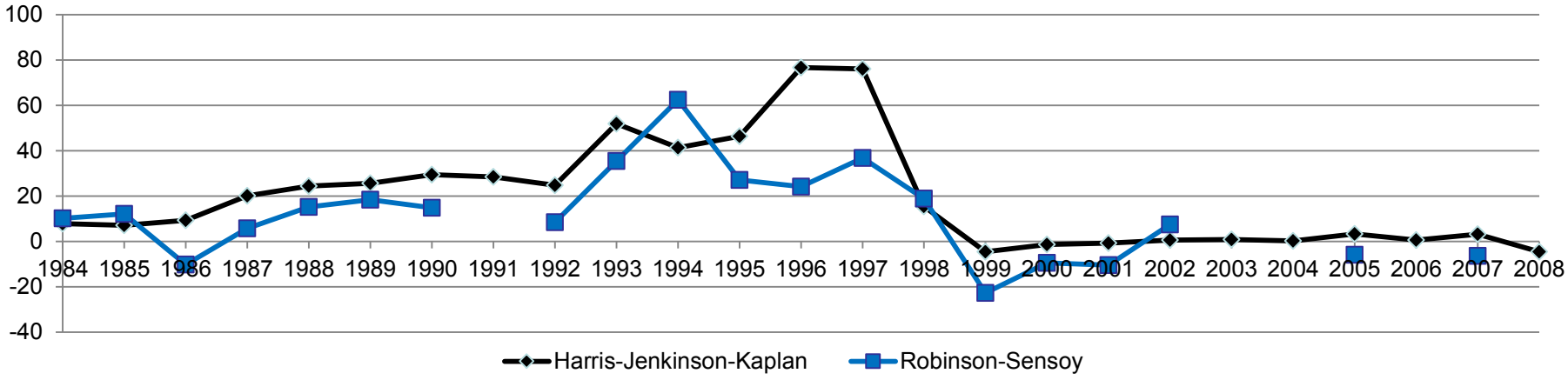


PE performance

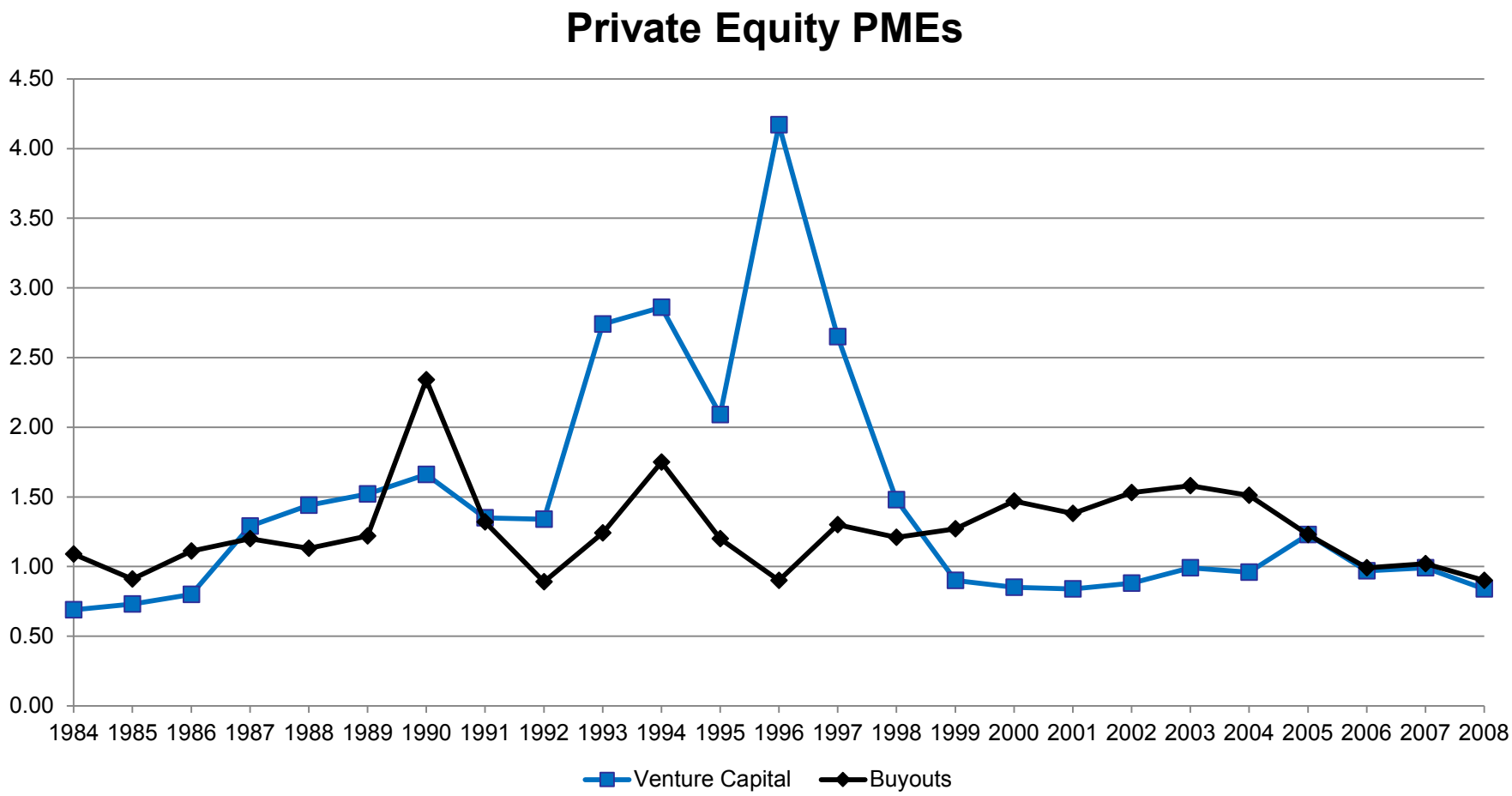
Leveraged Buyout IRRs



Venture IRRs



PE performance

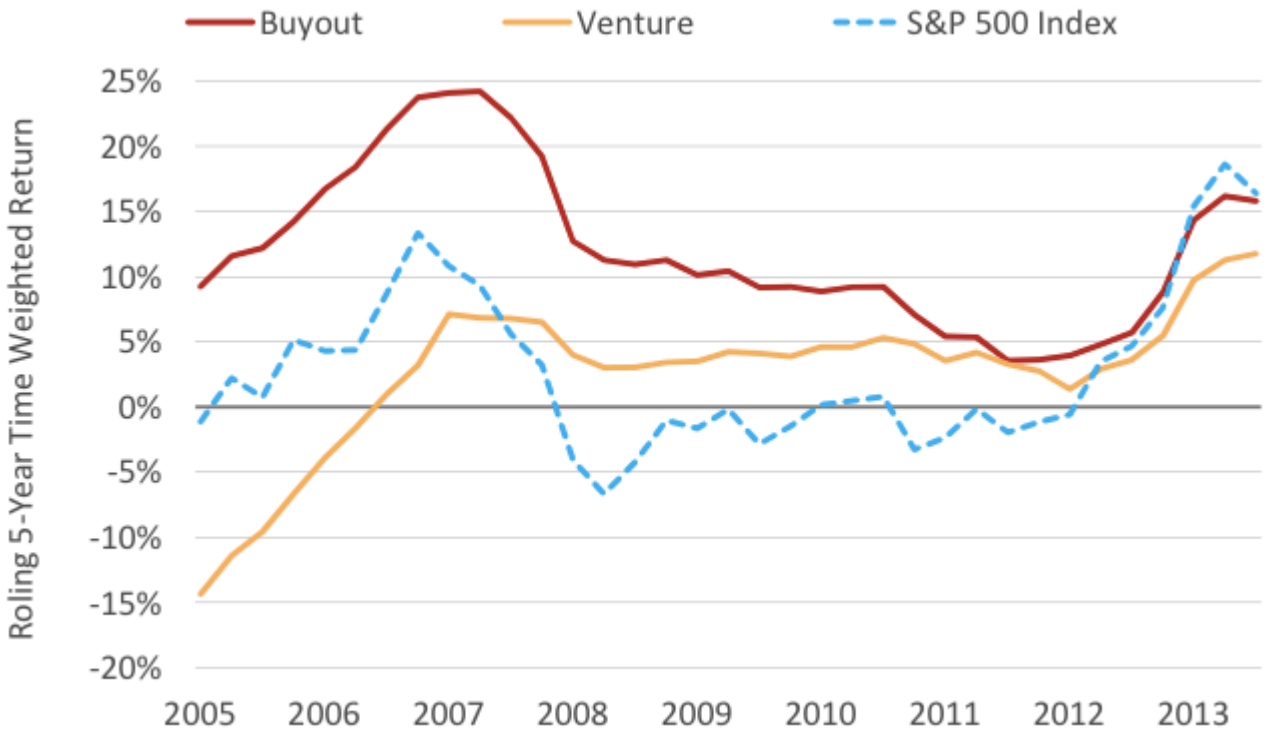


Source: Harris, Jenkinson and Kaplan (2012)

Even historically, PE not so good

- Phalippou and Gottschalg (2009) find an average performance of **3% below the S&P500** and **-6% relative to a risk-adjusted benchmark**.
  - Fees are extremely high and mostly due to management fees (because management fees are on committed, not invested capital).
    - Gross-of-fee alpha is approximately 4%
  - Most of the "high" returns of PE come from inflated accounting valuation of ongoing investments that is not uncovered until the liquidation date of funds (> 10 years)
  - The top quartile of funds outperform the S&P500.

PE performance (more recently)



Net of fees
Data source: Preqin

Why are Investors Duped?

- Given that the performance of PE is poor, why has PE continued to attract investors?
  1. Information is poor, contracts are long and complex and have non-transparent fees
  2. Selective reporting of (dubious quality) performance measures
  3. Gaming IRRs
  4. Not understanding selection bias
  5. Chasing “hopes and dreams”: the next Microsoft or Google?

- Certain types of investors in PE have done extraordinarily well, like the Yale endowment.
  - But, certain investors have done terribly, especially public pension funds and banks (see Lerner, Schoar and Wong (2007)).
  - Banks, however, get other fees from PE.

But some PE funds do well..

- There is a large amount of persistence in PE returns
  - Funds are raised in succession: if Fund ABC II raised in 2005 does well, then Fund ABC III raised in 2007 would tend to do well.
  - Kaplan & Schoar, 2005; Phalippou & Gottschalg, 2009
- Kaplan and Schoar (2005) find that
  - Relationships matter a lot in finding VCs with alpha
    - One of the best predictors of success is past success and capital raising
  - Size is strongly negatively correlated with performance.

PROPRIETARY TRADERS

Market makers on the NYSE

- First thing to know:
  - Market makers are not simply passive suppliers of bids and asks, but are highly informed traders that trade on their own accounts
- The old NYSE specialists wiped out around 2000 by computers
  - Modern counterparts:
    - Optiver, IMC, Citadel, Jane Street, GETCO, Knight, Virtu, Barclays
- Can these traders beat the market?
  - If so, it is just through providing intermediation service?
    - And taking on various risks (inventory risk, stale quote risk)?
  - Or are the profiting from superior information or trading ability?

Market makers on the NYSE

- Average daily profits of **$1.6 million** in 2001
  - Aggregated across all market makers and all stocks (Panayides, 2007)
  - Divided across 18 market making firms (Coughenour & Saad, 2004)
  - Equals **~$100,000** per day per market maker
- Hard to find results on their risk
  - But we do know they **lose money only on 10%** of trading days (Comerton-Forde et al., 2010)
  - With an average loss of $4 million across all market makers

High frequency traders

- HFTs in the E-mini S&P 500 futures (Baron et al., 2014)

	Distribution across HFT firms							
	N	**Mean**	**S.D.**	**10%**	**25%**	**50%**	**75%**	**90%**
Excess Returns (% annualized)	85	39.49	87.83	-0.35	8.07	20.4	51.14	74.13
1-factor alphas (% annualized)	85	39.92	88.81	-0.26	8.95	19.2	51.15	73.33
3-factor alphas (% annualized)	85	39.74	89.43	-1.49	8.09	19.1	50.82	72.93
4-factor alphas (% annualized)	85	39.78	89.21	-1.8	8.13	22.02	50.92	70.51
Profit per contract ($)	85	0.54	1.43	-0.16	0.28	0.46	0.82	2.01
Sharpe Ratios (annualized)	85	5.25	5.01	-0.18	2.16	4.3	9.1	12.68

- Out-performance by a few HFT firms due to faster speed
  - It's important not just to be fast, but to be fastest
  - The fastest firms capture arbitrage opportunities 10s of microseconds ahead of their competitors (who can't compete, because they're slow)
  - Leading to "winner-takes-all" industry based on speed advantages
- Can lead to an **"arms race"** for speed, probably not socially beneficial

CORPORATE FINANCE AND INVESTING

Who beats the market?

1. Actively managed mutual funds?
2. Endowment / pension funds?
3. Hedge funds?
   - Which type: activists, arbs?
4. Private equity?
5. Proprietary traders?
   - Market makers, high-frequency traders?

Announcements

- I made some small changes to the syllabus on Blackboard
  - With Readings and Problem Set due dates
- So please re-download it
- Some of the changes to note:
  - Buffett readings – we'll discuss today in class
  - New Yorker readings – we'll discuss on Monday
  - Problem Set 6 – now due after break (Fri, April 8)

Corporate finance and investing

- IPOs
- Payouts and issuance
- Corporate governance
- M&As and Merger Arbitrage
- Activist investors

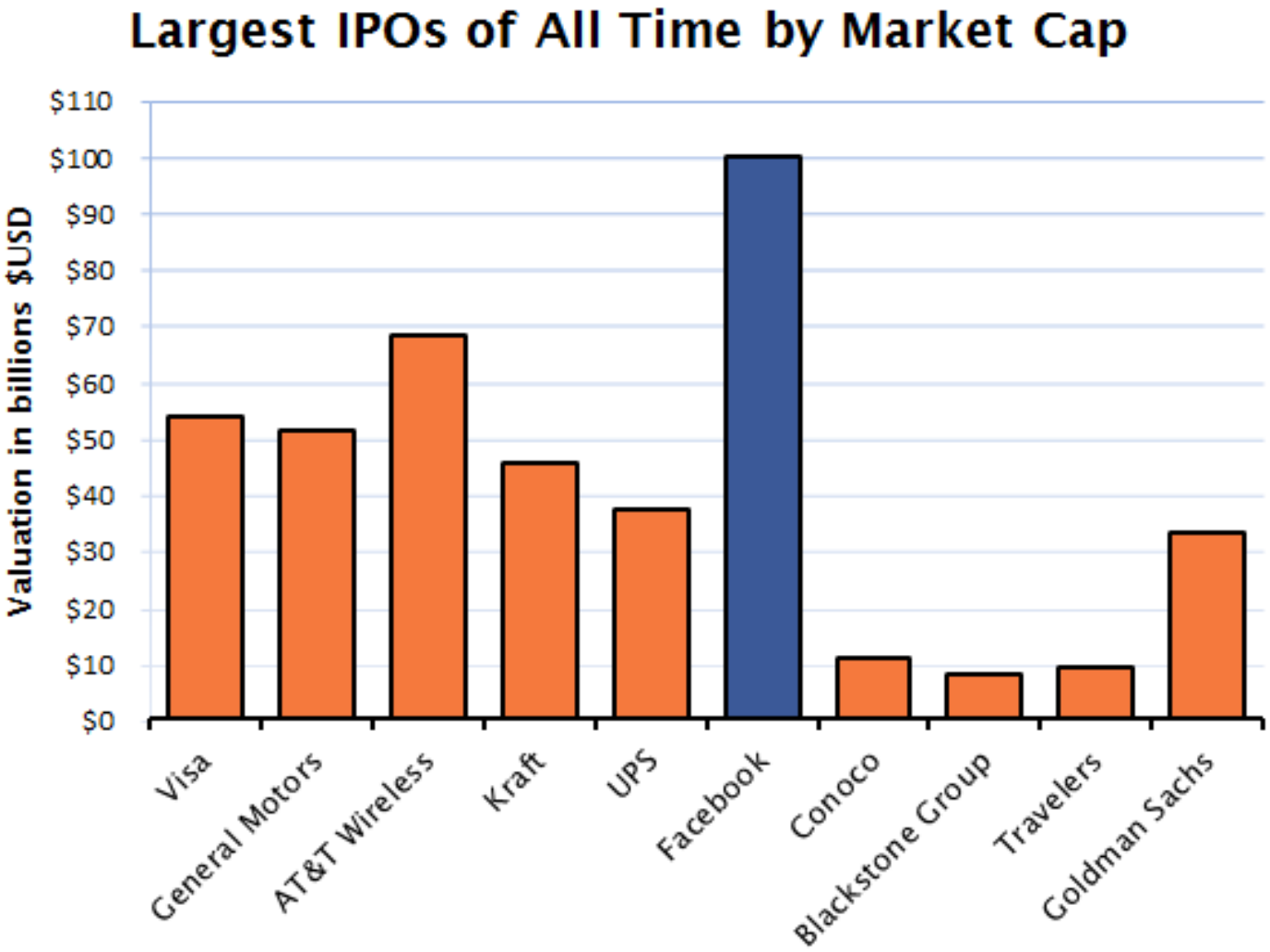
INITIAL PUBLIC OFFERINGS

IPOs

- Public offering of shares in a company
  - Shares usually sold to institutional investors
  - Who, in turn, sell to the general public, on a securities exchange
- A private company transforms into a public company


Google
NASDAQ


facebook
NASDAQ


Largest IPOs of All Time by Market Cap
Valuation in billions $USD
$110
$100
$90
$80
$70
$60
$50
$40
$30
$20
$10
$0
Visa
General Motors
AT&T Wireless
Kraft
UPS
Facebook
Conoco
Blackstone Group
Travelers
Goldman Sachs

Why do firms IPO?

- Advantages of IPO
  1. Allows previous owners to cash out
  2. Allows company to raise significant capital for expansion
  3. Attracting and retaining better management and employees through liquid equity participation

- Disadvantages of IPO
  1. Increased disclosure requirements & other regulation
  2. Loss of control rights
  3. Increased (short-sighted?) pressure from shareholders
     - Which may not maximize long-term value

IPO underwriting

- Investment bank acts as underwriter
  - Assessing the “correct” share price and establishing a public market for shares
- Lead manager known as the ”bookrunner”
  - Demand for shares is determined through analysis of confidential investor demand data compiled by the bookrunner
    - “Book building” phase

421,233,615 Shares

PRICE $38.00 A SHARE

Facebook, Inc. is offering 180,000,000 shares of its Class A common stock and the selling stockholders are offering 241,233,615 shares of Class A common stock. We will not receive any proceeds from the sale of shares by the selling stockholders. This is our initial public offering and no public market currently exists for our shares of Class A common stock.

We have two classes of common stock, Class A common stock and Class B common stock. The rights of the holders of Class A common stock and Class B common stock are identical, except voting and conversion rights. Each share of Class A common stock is entitled to one vote. Each share of Class B common stock is entitled to ten votes and is convertible at any time into one share of Class A common stock. The holders of our outstanding shares of Class B common stock will hold approximately 96.0% of the voting power of our outstanding capital stock following this offering, and our founder, Chairman, and CEO, Mark Zuckerberg, will hold or have the ability to control approximately 55.9% of the voting power of our outstanding capital stock following this offering.

	Price to Public	Underwriting Discounts and Commissions	Proceeds to Facebook	Proceeds to Selling Stockholders
Per share	$38.00	$0.418	$37.582	$37.582
Total	$16,006,877,370	$176,075,651	$6,764,760,000	$9,066,041,719

We and the selling stockholders have granted the underwriters the right to purchase up to an additional 63,185,042 shares of Class A common stock to cover over-allotments.

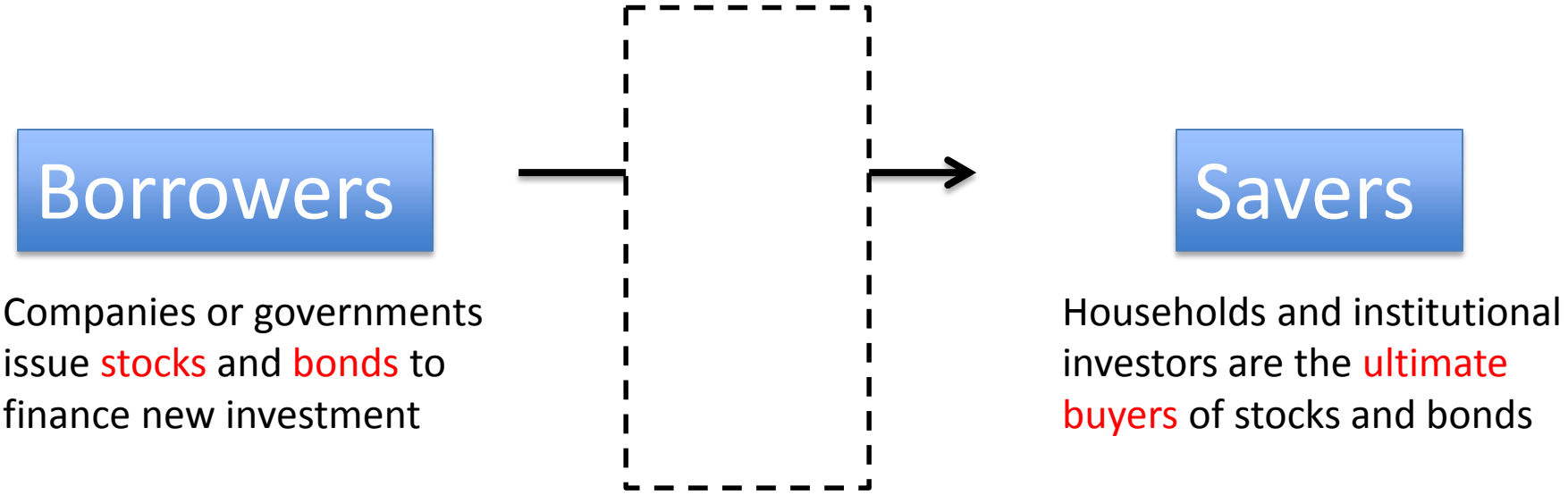
MORGAN STANLEY J.P. MORGAN GOLDMAN, SACHS & CO.

BofA MERRILL LYNCH BARCLAYS ALLEN & COMPANY LLC

CITIGROUP CREDIT SUISSE DEUTSCHE BANK SECURITIES

RBC CAPITAL MARKETS WELLS FARGO SECURITIES

What do investment banks do?



Companies or governments issue stocks and bonds to finance new investment

Households and institutional investors are the ultimate buyers of stocks and bonds

Investment Banks **"underwrite"** the stock or bond offering

-- Find initial buyers for the securities (i.e. "privately place" them)

-- Hold some of the securities on their books for market making or speculative purposes

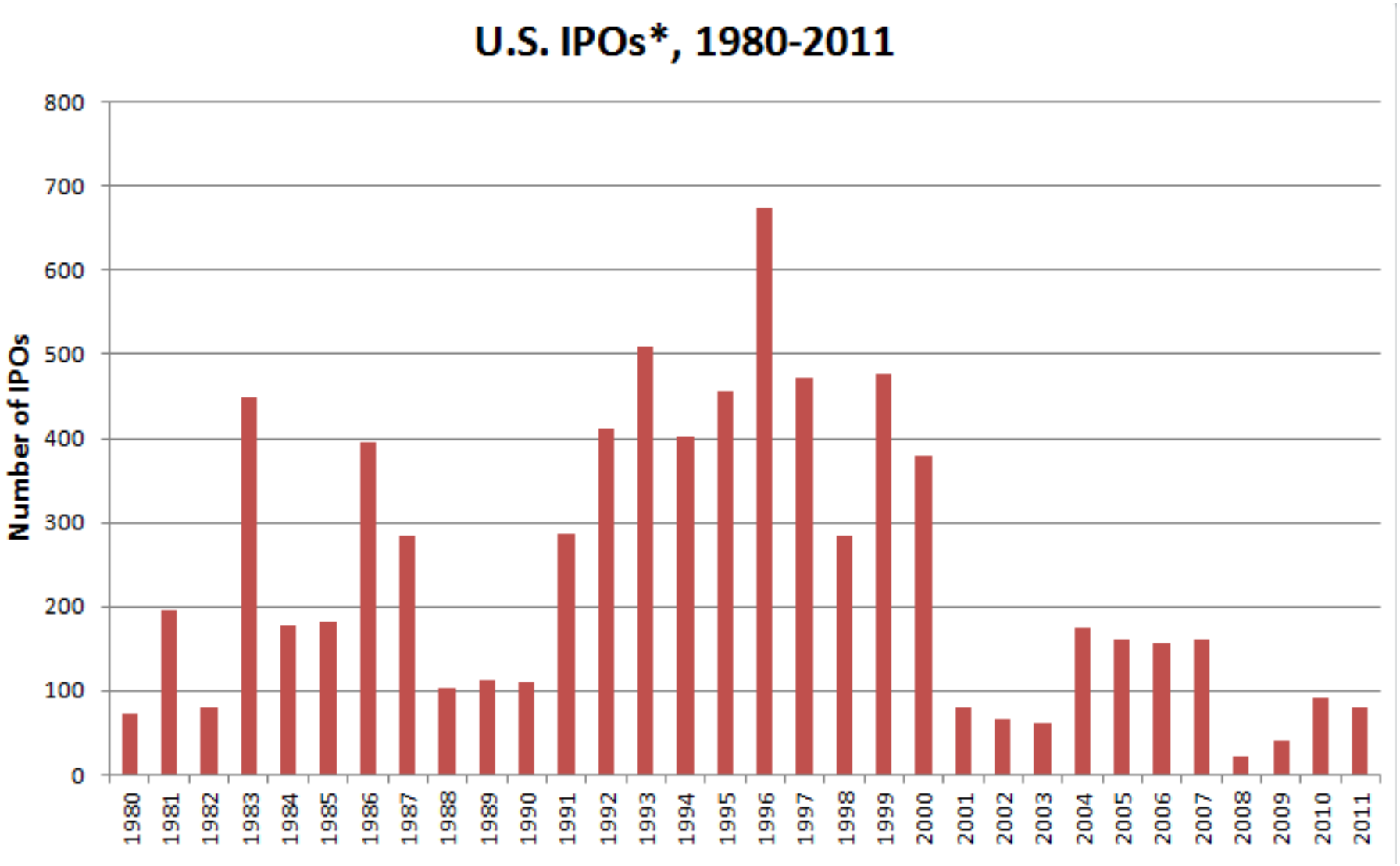
What do investment banks do?

1. Deal Underwriting
   - Stock and bond offerings, M&A activity
   - Intermediaries between govt/corporate issuer and the ultimate buyer of securities
     - Private placements

2. Broker (buy and sell securities on behalf of clients)
   - Prime brokerage (to institutional traders), or retail brokerage

3. Dealers (buy and sell securities for themselves)
   - Hold inventories on their balance sheets
     - Either for market making or speculative purposes (proprietary trading)
   - Highly leveraged positions
     - Usually financed via short-term money markets ("repos")
     - Which is why they are prone to runs and catastrophic failures

4. Other financial services (e.g., research and advising)


U.S. IPOs*, 1980-2011
Number of IPOs
800
700
600
500
400
300
200
100
0
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
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1996
1997
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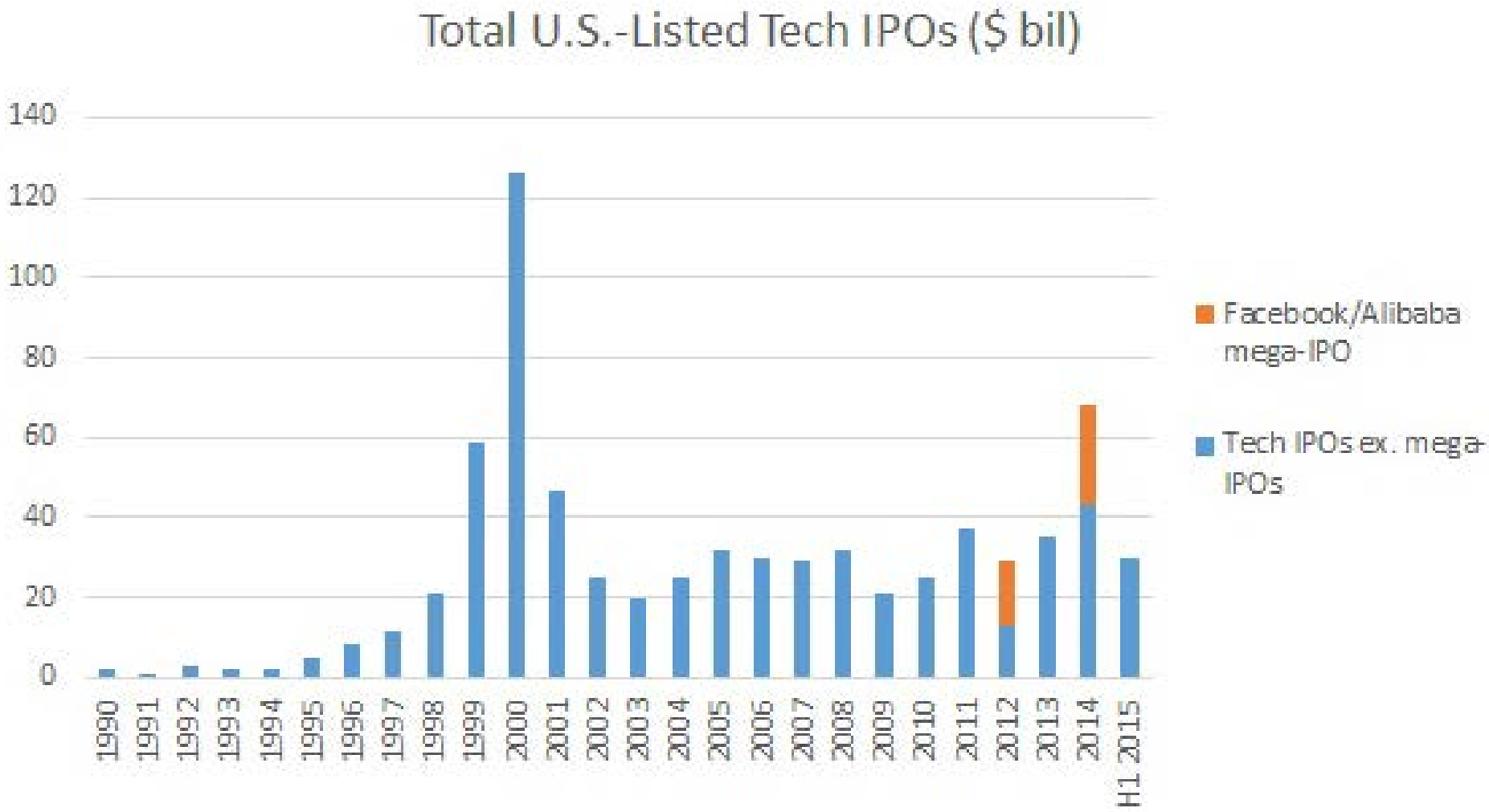
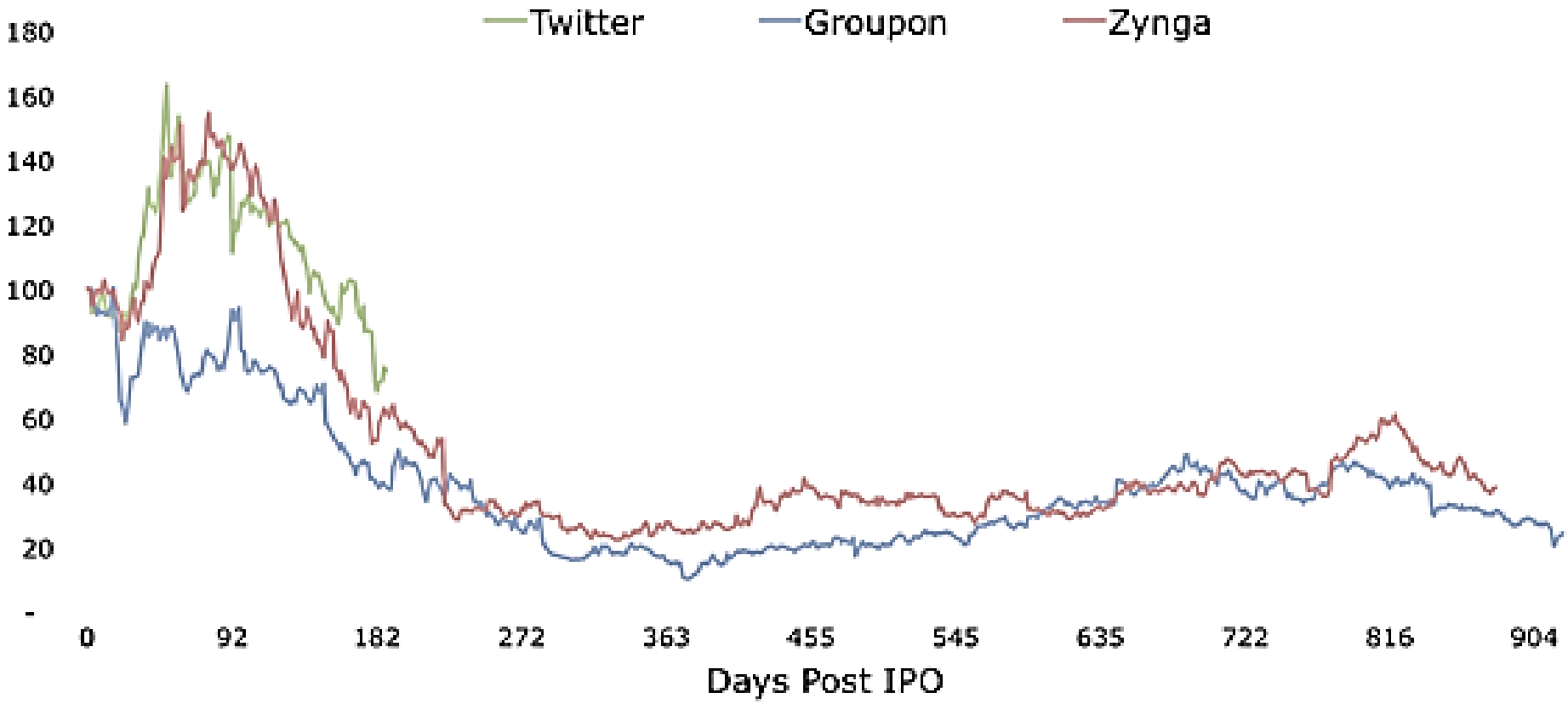
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011


Total U.S.-Listed Tech IPOs ($ bil)
140
120
100
80
60
40
20
0
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
H1 2015
Facebook/Alibaba mega-IPO
Tech IPOs ex. mega-IPOs

IPOs and mispricing

- IPOs show signs of classic bubbles
  - Short-run underpricing
    - Price goes up
  - Long-run overpricing
    - Then price goes down
- The higher they rise, the harder they fall

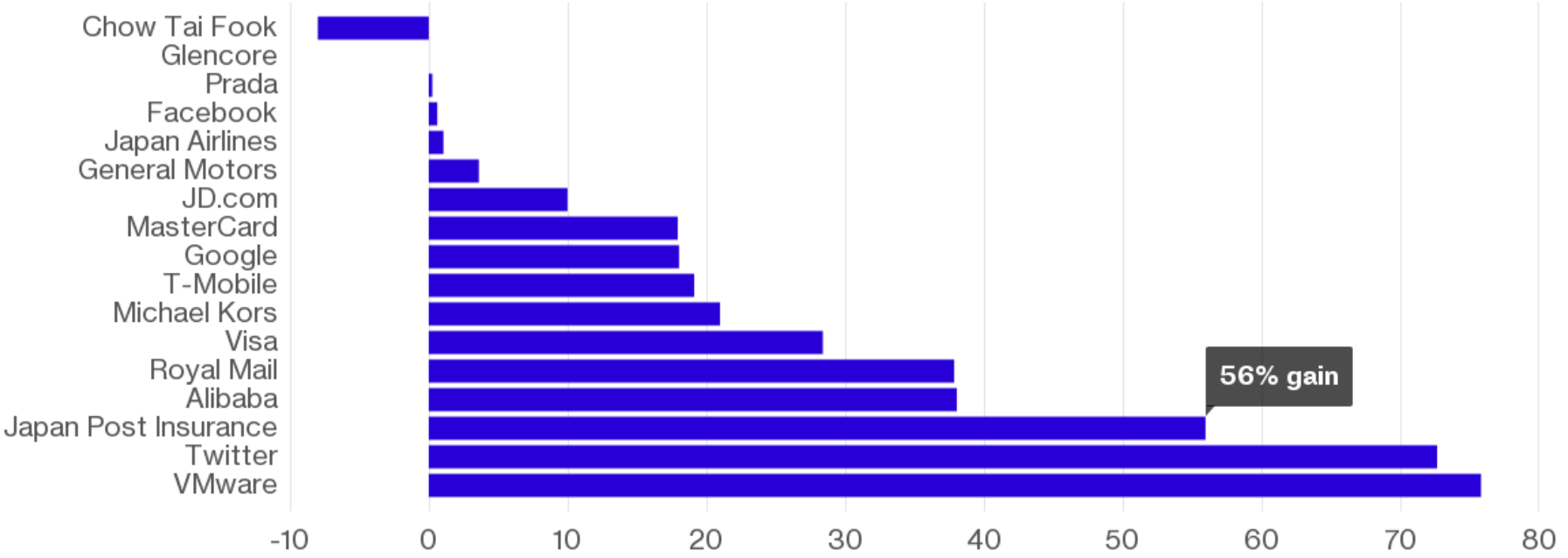
IPOs and mispricing



IPOs and mispricing

Short-run underpricing

First-day IPO returns ("the IPO pop")



Source: Bloomberg data

Bloomberg

Short-run underpricing

- Reasons the underwriter underprices the IPO
  1. Generates additional interest in the stock
  2. Flipping (quickly selling shares) can lead to significant profits
     - For highly favored clients of the underwriters who have been allocated shares of the IPO at the offering price
  3. Underwriter doesn't want risk of over-pricing
     - Doesn't want trouble meeting their commitments to sell shares
- However, IPO underpricing results in lost potential capital for issuer

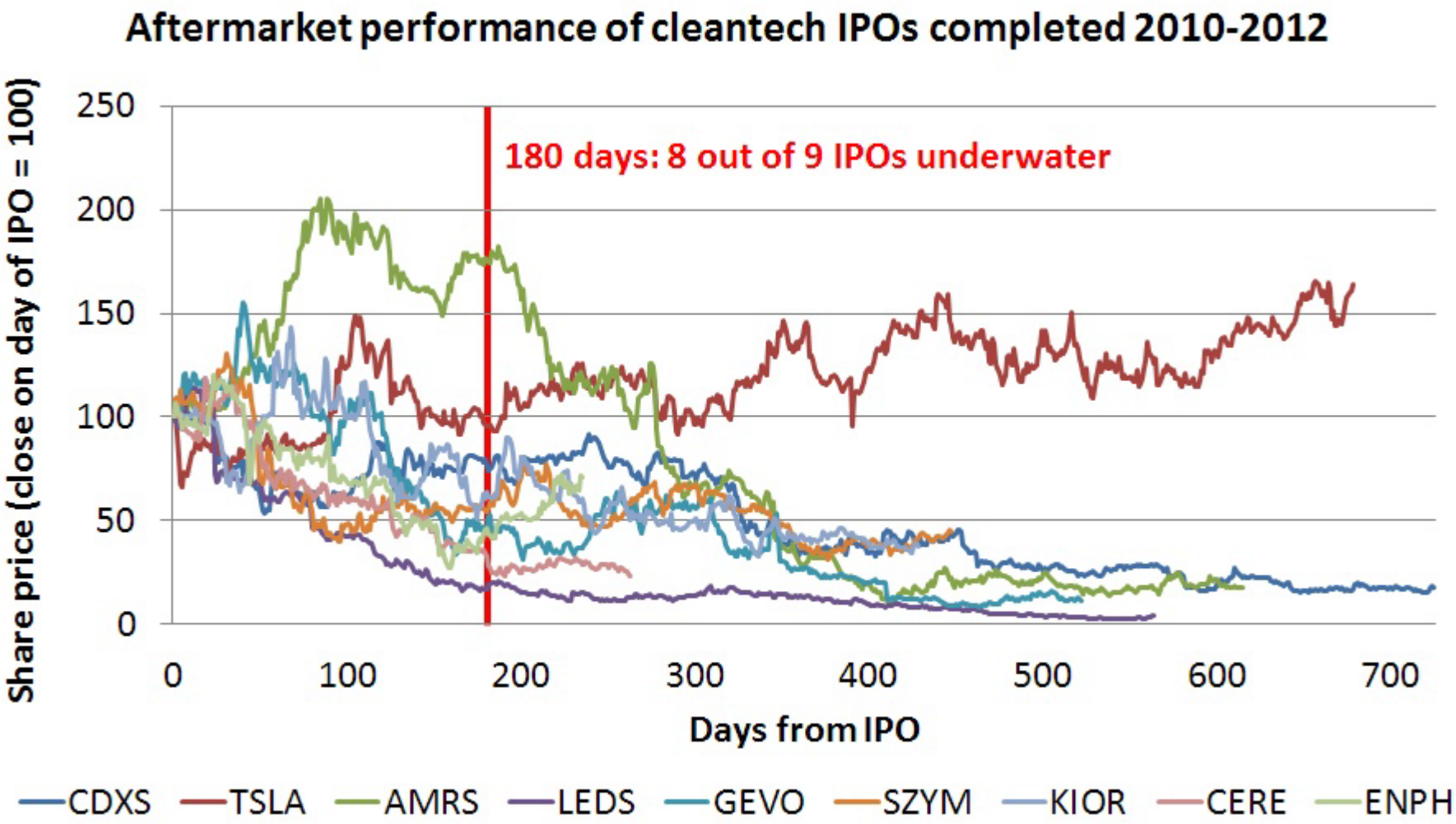
Short-run underpricing:
An extreme example

- theglobe.com
  - Founded by 4 Cornell undergrads
  - IPO during the "mania" of the late 1990s
  - Underwritten by Bear Stearns on November 13, 1998

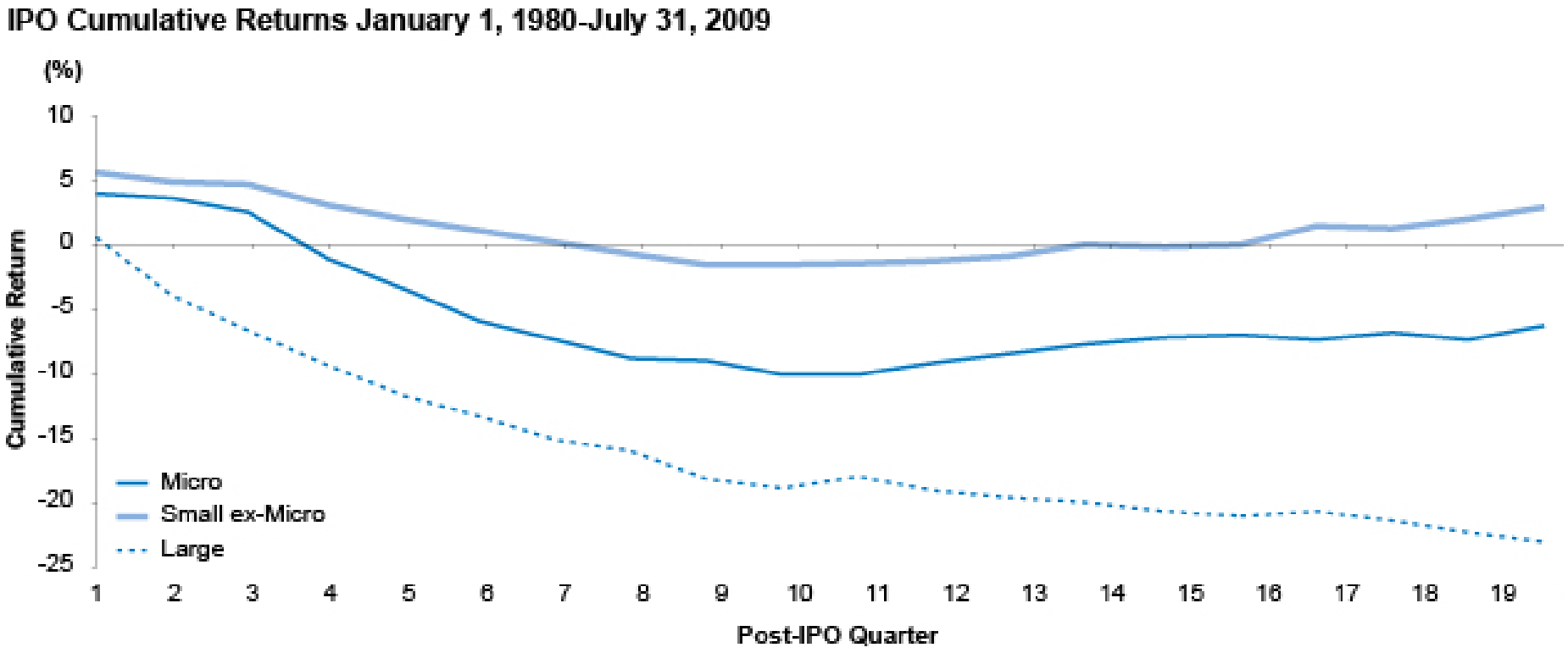
- IPO was priced at $9 per share
- Quickly increased 10x after the opening of trading to $97!
  - Selling pressure from institutional flipping eventually drove the stock back down
  - Closed the day at $63.

- Although the company did raise about $30 million from the offering it is estimated that the company might have left upwards of $200 million on the table

Long-run overpricing


Aftermarket performance of cleantech IPOs completed 2010-2012
180 days: 8 out of 9 IPOs underwater
Share price (close on day of IPO = 100)
250
200
150
100
50
0
0
100
200
300
400
500
600
700
Days from IPO
CDXS
TSLA
AMRS
LEDS
GEVO
SZYM
KIOR
CERE
ENPH

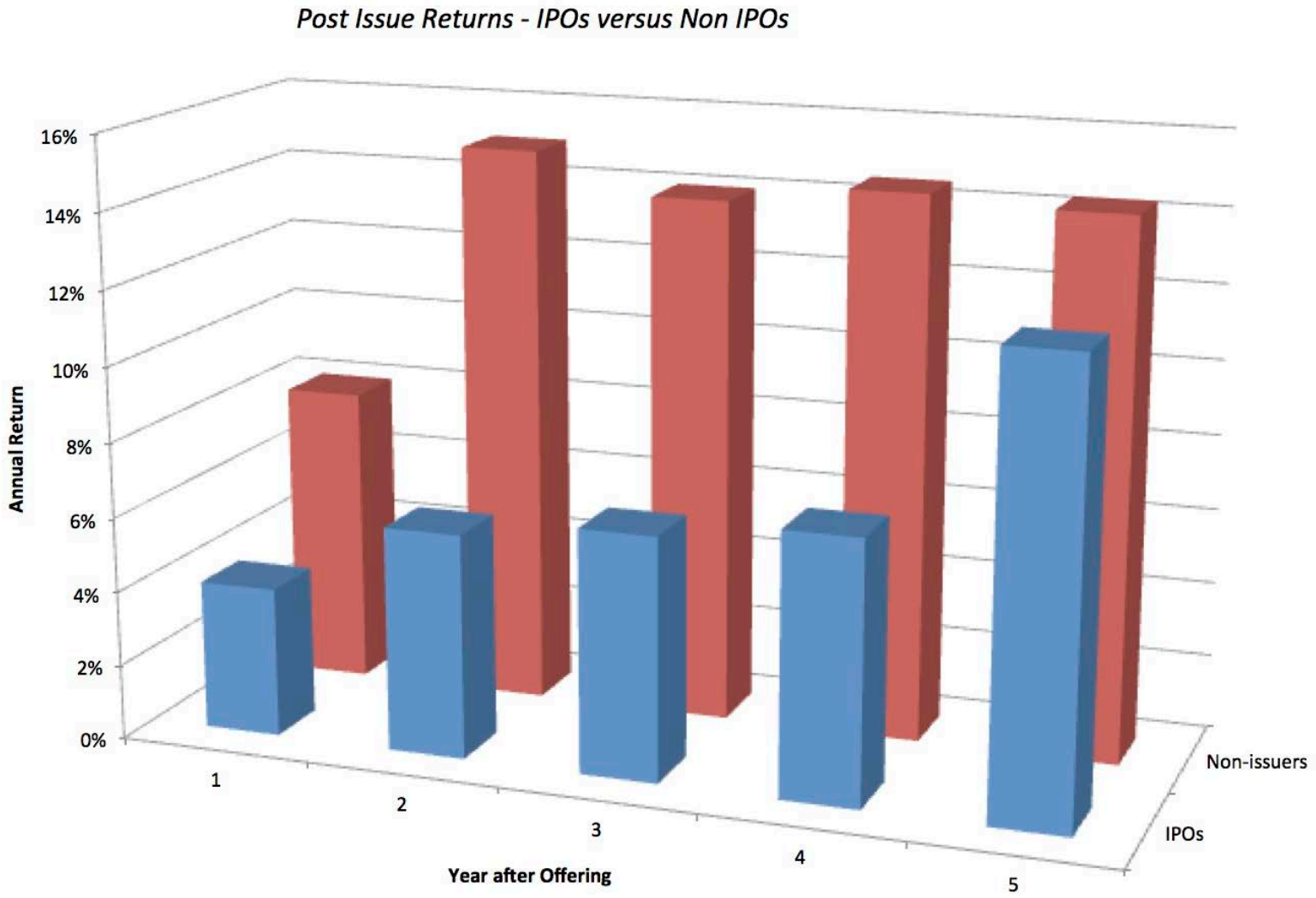
Long-run overpricing



Data for IPO firms are taken from Jay Ritter's website. Information on stock returns, market capitalizations is taken from the Center for Research and Security Prices. Size-based breakpoints are taken from Ken French's website.

Sources: Jay Ritter's Website, CRSP, Ken French's Website, and Gerstein Fisher Research

Long-run overpricing



PAYOUT POLICY AND EQUITY ISSUANCE

Payout Policy

- Companies pay out equity in two forms:
  1. Dividends
     - Pay a fixed amount of cash to shareholders (usually each quarter)
     - Does not create or destroy value, just transfers it from inside to outside the firm
  2. Repurchases
     - Use corporate cash to buy back shares from shareholders on the open market
     - Also a way in which companies pay out cash to their investors

Payout Policy

- Companies pay out equity in two forms:
  - Dividends
    - tend to be smoothed over time
    - e.g., $1 per share per quarter
      - increased steadily by 5% a year
  - Repurchases
    - more flexibility for distributing temporarily high profits

An example

"America West Airlines announced that its Board of Directors has authorized the purchase of up to 2.5 million shares of its Class B common stock on the open market as circumstances warrant over the next two years

"W. A. Franke, chairman and CEO said:

'The stock repurchase program reflects our belief that America West stock may be an attractive investment opportunity for the Company, and it underscores our commitment to enhancing long-term shareholder value.'

"The shares will be repurchased with cash on hand, but only if and to the extent the Company holds unrestricted cash in excess of $200 million to ensure that an adequate level of cash and cash equivalents is maintained."

Equity Issuance

- Companies issue equity in two ways:
  1. IPO
     - Initial issuance when company goes public
  2. SEO (secondary equity offering)
     - Company issues more shares to raise more capital

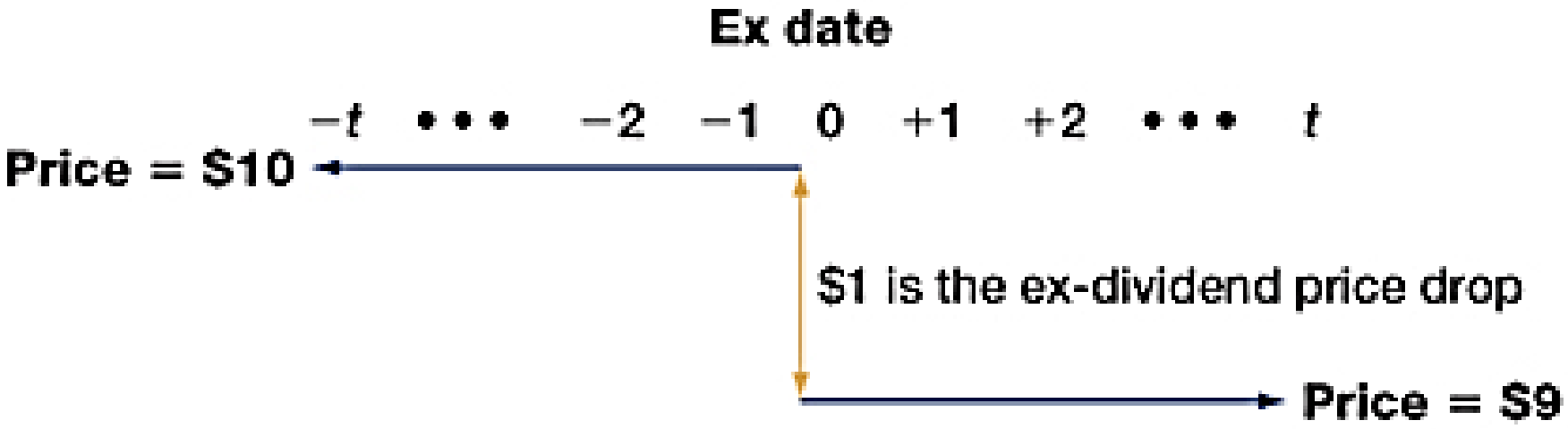
- Issuance and payouts are opposites:
  - Issuances raise money from shareholder
  - Payouts return money to shareholders

The irrelevance of payout policy

1. Dividends don't increase or decrease firm value, they just transfer cash from inside to outside the firm
   - Total shareholder return = 0

2. Dividends and repurchases are theoretically equivalent ways of paying out cash to shareholders (if the stock is efficiently priced)
   - Total shareholder return = 0 in both cases
   - A little unintuitive why this is true!

The irrelevance of dividends



The stock price will fall by the amount of the dividend on the ex date (Time 0). If the dividend is $1 per share, the price will be $10 − 1 = $9 on the ex date:

Before ex date (Time −1), dividend = $0	Price = $10
On ex date (Time 0), dividend = $1	Price = $9

The irrelevance of dividends

MBT Financial pays out 53 cent dividend

Shares fall ~50 cents, so total shareholder return is around zero

Equivalence of dividends vs. repurchases

1. Dividend = pay out D dollars per share
   - If X = shares outstanding, you've distributed D*X cash to shareholders
   - Price of the stock immediately drops by D
   - But shareholders receive D in cash
   - So total shareholder return is 0 (because moving cash inside or outside the shell of the company doesn't by itself create or destroy value)

2. Repurchases = Use the same money (D*X dollars) to purchase shares; destroy those shares
   - You've effectively distributed D*X in cash to shareholders
     - Not uniformly to shareholders, but to those who choose to sell their shares
     - But we're thinking about shareholders in aggregate for now, so who exactly sells doesn't matter
   - Each share is worth exactly D dollars more because fewer shares outstanding. But also D dollars less because D dollars per share has left the company
   - So total shareholder return is 0

Payout Policy

The take-away:

- The choice between dividends and repurchases shouldn’t matter if the stock is efficiently priced

Equivalence of dividends vs. repurchases

- A lot of corporate executives and people in the media & gov't don't seem to understand this
  - Corporate execs think that repurchases are better because they "boost ROE"
    - But, as you can see from the previous slide, this doesn't increase shareholder value
  - Business media and politicians complain that CEOs are doing repurchases to manipulate their share prices instead of reinvesting the earnings
    - But, not clear how repurchases manipulate stock market valuations
    - Also, not clear why "not reinvesting the earnings" with repurchases is any different from dividends
    - CEOs may be following an optimal payout policy (see next slide), there may not be any good investment projects

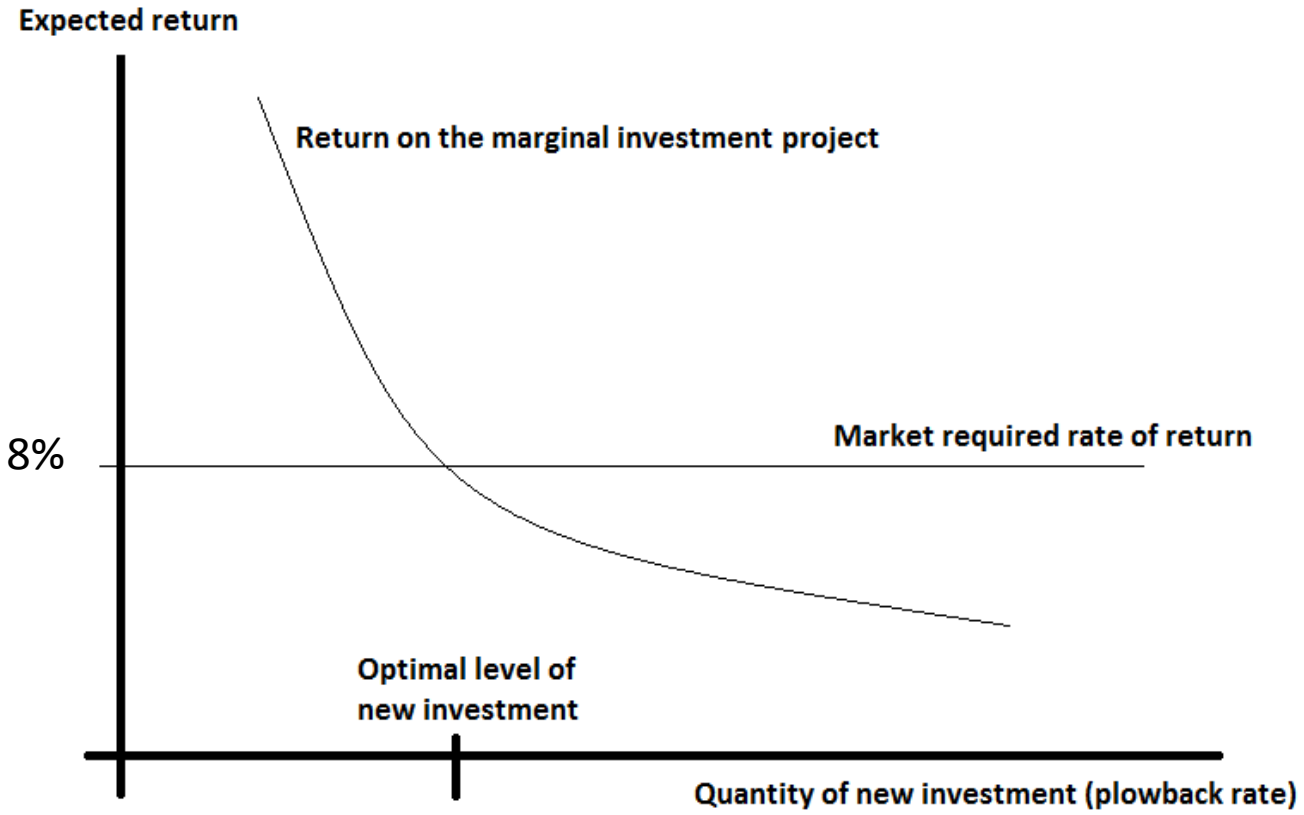
Optimal payout policy

- But aren't higher payouts better?
  - I thought the value of the stock is based on the present value of expected future dividends

- We're assuming that firms will always choose the optimal payout policy
  - Dividend policy is the decision to pay dividends versus retaining funds to reinvest in the firm
  - In theory, if the firm reinvests capital now, it will grow and can pay higher dividends in the future

1. Mature firms with high profits & low growth opportunities
   - Pay out most of profits as dividends
2. Growth firms will retain most of their profits for re-investment
   - To create higher dividends in the future

Optimal Payout Policy



If (past profits > optimal investment rate), you should pay out dividends or repurchase
If (past profits < optimal investment rate), you should issue more equity

The non-irrelevance of dividends

- OK, the real world is not so simple:
  - Signaling: dividends, repurchase, & issuance can signal the investment opportunities of the firm
    - Increased payouts: good signal about profitability
    - Decreased payouts & new issuance: bad signal
  - Clientele effects: certain investors may prefer dividend stocks for tax reasons or due to other preferences

The non-irrelevance of dividends

- Good signals (about firm profitability)
  - Dividend increase
  - Repurchase
- Bad signals
  - Dividend decrease
    - Rarely happens, very bad signal
  - New equity issuance
    - Signals that the firm might be near bankruptcy and needs more capital to survive

The Market Responds to these Signals

Announcement returns for bank stocks

CAR(-1,3) = Cumulative abnormal returns from day -1 to day +3 around announcement

	CAR(-1,3)	T STAT	N
SECONDARY EQUITY ISSUANCES			
all	-1.22%	-5.087	455
greater than 10 % of book equity	-1.45%	-4.546	270
REPURCHASES			
all	1.71%	17.911	1790
greater than 10 % of book equity	2.32%	5.245	119
DIVIDEND INCREASE			
greater than 10% increase in dividend yield	0.57%	5.990	1224
DIVIDEND DECREASE			
less than 10% decrease in dividend yield	-1.50%	-4.253	263

The non-irrelevance of dividends

- **A second signaling story: firm market timing**
  - Firm managers are **the ultimate insider traders**
    - If they know the stock price is undervalued, they'll repurchase equity (buy at low prices)
    - If they know the stock price is overvalued, they will issue equity (sell at high prices)
  - Therefore, equity issuance and repurchases (but not dividends) should predict returns
  - **And they do!**
    - In the cross-section (Pontiff & Woodgate, 2008) and in the time-series (Baker & Wurgler, 2000; Boudoukh et al., 2007)

Cross-sectional regressions, 1970-2003

Panel C: Dependent variable is the one-year stock return

Intercept	BM	BM Dum	ME	MOM	ISSUE	DT- ISSUE	DT-Dum	Avg. R^2
10.36	**4.56**	**8.39**						
(3.84)	**(5.41)**	**(7.54)**						1.37
28.88			−1.15					
(3.21)			(−1.76)					1.28
15.92				**9.62**				
(7.17)				**(3.61)**				1.17
23.30	**3.33**	**8.58**	**−1.20**	**8.66**				
(2.71)	**(3.65)**	**(9.48)**	**(−1.93)**	**(3.58)**				3.59
16.95					**−27.32**			
(7.32)					**(−7.51)**			0.49
18.17						**−8.38**	**−4.68**	
(8.95)						**(−5.94)**	**(−2.32)**	1.22
18.20					**−20.71**	**−4.81**	**−3.60**	
(8.94)					**(−5.08)**	**(−2.87)**	**(−1.74)**	1.43
27.25	**2.59**	**7.96**	**−1.37**	**8.02**	**−16.52**	**−3.41**	**−3.24**	
(3.38)	**(3.33)**	**(8.54)**	**(−2.32)**	**(3.50)**	**(−5.61)**	**(−2.60)**	**(−2.63)**	4.27

At a single fixed point in time, run the following cross-sectional regression:

$$r_i = \alpha + \beta\,(Net\ Issuance) + \beta_2\,(Book/Mkt) + \beta_3\,(Size) + \beta_3\,(Mom.) + \epsilon$$

Firm Market Timing

- Take-away:
  1. Firms repurchase (buy) shares when they think their shares are undervalued
     - And firms are right → shares subsequently go up
  2. Firms issue (sell) new shares when they think their shares are overvalued
     - And firms are right → shares subsequently go down

CORPORATE GOVERNANCE

Corporate Governance and Stock Returns

- Shareholder rights (or governance) vary across firms
  - Strong shareholder rights can help reduce mismanagement and improve performance
- Questions:
  - Do strong governance firms perform better?
  - Do investors fail to fully account for governance when pricing stocks?
  - Do strong governance firms generate higher stock returns?
- Gompers, Ishii & Metrick (2003) says yes
  - Arguing that investors fail to fully account for governance when pricing securities
  - But Core, Guay & Rusticus (2006) challenges their findings

Gompers, Ishii & Metrick (2003)

- Study of 1500 large U.S. firms during the 1990s
- Construct a “governance index” to proxy for shareholder rights
  - Rank firms according the Index
- Find 8.5% abnormal return for a portfolio made of
  - buying the decile with the strongest shareholder rights
  - selling the decile with the weakest shareholder rights
- Also find that firms with stronger shareholder rights had:
  - Better operating performance
    - higher firm value, higher profit, higher sales growth
  - Less evidence of CEO “empire building”
    - lower capital expenditure, fewer corporate acquisitions

The Gompers-Ishii-Metrick Index

Based on the following categories:

1. Tactics for delaying hostile bidders
   - blank checks, classified board, special meetings, written consent
2. Director / officer protection
   - compensation plans, contracts, golden parachutes, indemnification, liability, severance
3. Voting rights
   - bylaws, charter, cumulative voting, secret ballot, supermajority, unequal voting
4. Other takeover defense
   - Anti-greenmail, directors' duties, fair price, pension parachutes, poison pill, silver parachutes
5. State laws
   - Anti-greenmail law, business combination law, cash-out law, directors' duties law, fair price law, control share acquisition law

Gompers, Ishii & Metrick (2003)

	α	*RMRF*	*SMB*	*HML*	*Momentum*
Democracy-Dictatorship	**0.71****	**−0.04**	**−0.22***	**−0.55***	**−0.01**
	(0.26)	**(0.07)**	**(0.09)**	**(0.10)**	**(0.07)**
$G \leq 5$ (Democracy)	0.29*	0.98**	−0.24**	−0.21**	−0.05
	(0.13)	(0.04)	(0.05)	(0.05)	(0.03)
$G = 6$	0.22	0.99**	−0.18**	0.05	−0.08
	(0.18)	(0.05)	(0.06)	(0.07)	(0.04)
$G = 7$	0.24	1.05**	−0.10	−0.14	0.15**
	(0.19)	(0.05)	(0.07)	(0.08)	(0.05)
$G = 8$	0.08	1.02**	−0.04	−0.08	0.01
	(0.14)	(0.04)	(0.05)	(0.06)	(0.04)
$G = 9$	−0.02	0.97**	−0.20**	0.14**	−0.01
	(0.12)	(0.03)	(0.04)	(0.05)	(0.03)
$G = 10$	0.03	0.95**	−0.17**	−0.00	−0.08**
	(0.11)	(0.03)	(0.04)	(0.04)	(0.03)
$G = 11$	0.18	0.99**	−0.14*	−0.06	−0.01
	(0.16)	(0.05)	(0.05)	(0.06)	(0.04)
$G = 12$	−0.25	1.00**	−0.11*	0.16**	0.02
	(0.14)	(0.04)	(0.05)	(0.06)	(0.04)
$G = 13$	−0.01	1.03**	−0.21**	0.14*	−0.08*
	(0.14)	(0.04)	(0.05)	(0.06)	(0.04)
$G \geq 14$ (Dictatorship)	−0.42*	1.03**	−0.02	0.34**	−0.05
	(0.19)	(0.05)	(0.06)	(0.07)	(0.05)

1990 Democracy portfolio

	State of incorporation	1990 Governance index	1998 Governance index
IBM	New York	5	6
Wal-Mart	Delaware	5	5
Du Pont de Nemours	Delaware	5	5
Pepsico	North Carolina	4	3
American International Group	Delaware	5	5
Southern Company	Delaware	5	5
Hewlett Packard	California	5	6
Berkshire Hathaway	Delaware	3	—
Commonwealth Edison	Illinois	4	6
Texas Utilities	Texas	2	4

1990 Dictatorship Portfolio

	State of incorporation	1990 Governance index	1998 Governance index
GTE	New York	14	13
Waste Management	Delaware	15	13
General Re	Delaware	14	16
Limited Inc	Delaware	14	14
NCR	Maryland	14	—
K Mart	Michigan	14	10
United Telecommunications	Kansas	14	—
Time Warner	Delaware	14	13
Rorer	Pennsylvania	16	—
Woolworth	New York	14	13

Corporate Governance and Stock Returns

- Take-away:
  1. Investors don't pay enough attention to corporate governance
     - This paper's interpretation: behavioral bias
     - Investors over-price badly governed companies
  2. Investors that do pay attention to corporate governance (e.g., Warren Buffett, hopefully you) can earn higher returns
     - However, the high excess returns to this strategy in the 1990s may not continue today

EARNINGS QUALITY

Earnings Quality & Stock Returns

- Two components of earnings:
  1. Cash component:
     - More persistent, better "quality"
  2. Accrual (or non-cash) component:
     - Less persistent, worse "quality"

- Examining the two components can
  - lead to better forecast for future earnings
    - Graham-Dodd-Cottle (1962), and many others
  - help predict future stock returns
    - because investors "fixate" on reported earnings

- Sloan (1996) examines these issues carefully:
  - Confirms the above wisdom

Definition of Earnings

- Sloan (1996) defines earnings as *operating income after depreciation*
  - This excludes non-recurring items such as:
    - Extraordinary items, discontinued operations, special items and non-operating income
  - Reasons for exclusion:
    - Compustat (source of data) does not provide info that helps decompose them into cash and non-cash components
    - Focus on cash and non-cash components of income from continuing operation
  - Also excludes changes due to financial transactions or tax payments

- Sloan (1996) then splits earnings into:
  1. Cash earnings (realized)
  2. Accruals (non-cash reported income)

Definition of Accruals

- Accrued revenue: revenue that is recognized before cash is received
  - Accounts receivable
  - Deferred tax assets
  - Re-valuation of derivatives and fixed assets
- Accrued expense: expense is recognized before cash is paid out
  - Accounts payable
  - Goodwill: adjustments to carrying value
- As a practical measure, Sloan (1996) just defines accruals as everything non-cash (the residual):

$$\text{Accruals} = \Delta(\text{Current Assets} - \text{Cash}) - \Delta(\text{Current Liab.} - \text{Debt} - \text{Tax Payable}) - (\text{Depreciation \& Amortization})$$

What's wrong with accruals?

"That is why some analysts prefer to relate Cash Flow from Operations (CFO) to reported net income as a check

"Put another way, a company with a high level of net income and a low cash flow may be using income recognition or expense accrual criteria that are suspect."

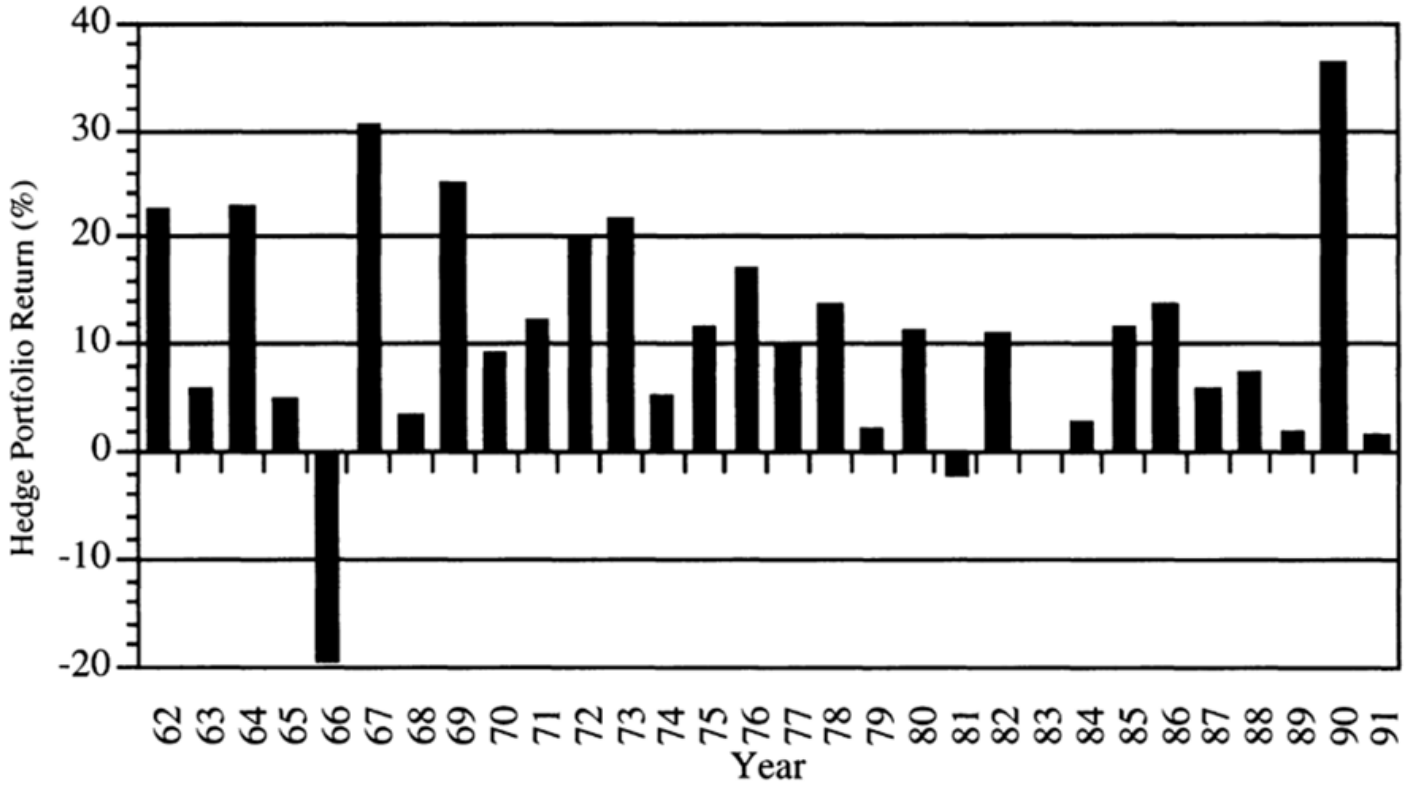
-- Bernstein (1993)

Earnings Quality & Stock Returns

- Sort stocks based on their earnings quality as measured by ***accruals*** in Sloan (1996)
- Sloan (1996) finds that high accruals (i.e., low earnings quality) predict low future returns
- **Long** low-accrual stock and **short** high accrual stocks generate positive abnormal returns

Earnings Quality & Stock Returns

Returns by calendar year to a hedge portfolio taking a long position in the stock of firms in the lowest decile of accruals and an equal-sized short position in the stock of firms in the highest decile of accruals. Returns are cumulated over a one-year period beginning four months after the fiscal year end. Accruals is the change in non-cash current assets, less the change in current liabilities (exclusive of short-term debt and taxes payable), less depreciation expense, all divided by average total assets.



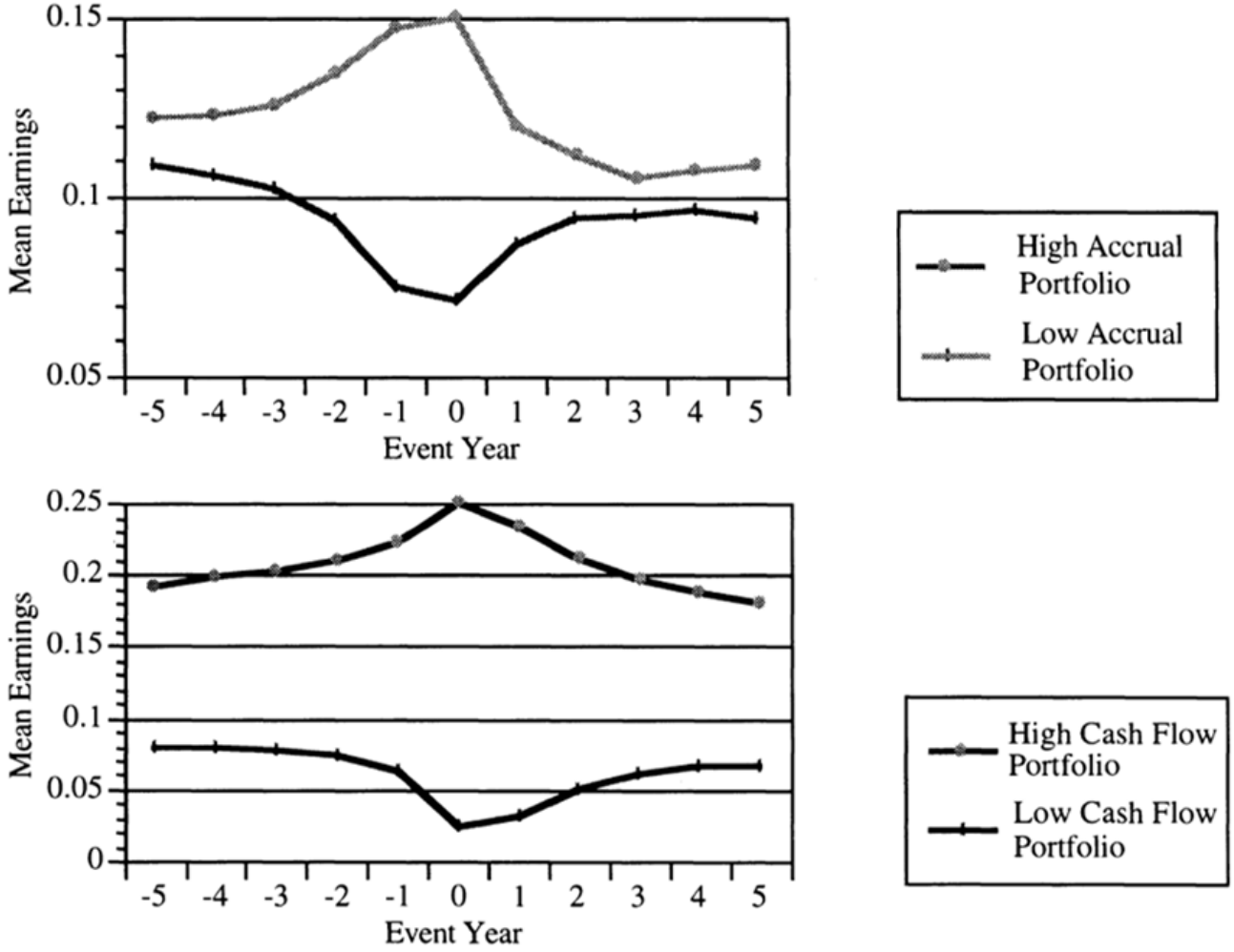
Time-series Means of Equal Weighted Portfolio Abnormal Stock Returns Sample Consists of 40,679 Firm-years Between 1962 and 1991[a]

Portfolio Accrual	*Size Adjusted Returns*[b]			*Jensen Alphas*[c]		
Ranking	*year t+1*	*year t+2*	*year t+3*	*year t+1*	*year t+2*	*year t+3*
Lowest	0.049	0.016	0.007	0.039	0.007	0.001
	(2.65)**	(1.17)	(0.55)	(2.01)*	(0.40)	(0.08)
2	0.028	0.019	0.006	0.020	0.022	0.012
	(3.60)**	(1.65)	(0.68)	(1.68)	(1.53)	(1.06)
3	0.024	0.012	–0.006	0.018	0.014	–0.006
	(3.84)**	(2.27)*	(–0.86)	(1.70)	(1.28)	(–0.72)
8	–0.021	–0.002	–0.001	0.011	–0.004	0.002
	(–3.03)**	(–0.31)	(–0.01)	(–1.17)	(–0.39)	(0.16)
9	–0.035	–0.018	–0.015	–0.028	–0.012	–0.012
	(–3.70)**	(–2.52)*	(–1.60)	(–3.04)**	(–1.36)	(–1.15)
Highest	–0.055	–0.032	–0.022	–0.064	–0.040	–0.036
	(–3.98)**	(–2.25)*	(–1.61)	(–4.68)**	(–2.87)**	(–2.47)*
Hedge[d]	0.104	0.048	0.029	0.104	0.048	0.038
	(4.71)**	(3.15)**	(1.64)	(4.42)**	(2.41)*	(1.62)

Why Do Accruals Predict Returns?

- Accrual component of earnings is much less persistent than the cash flow component
  - they experience more mean-reversion
- But investors "fixate" on earnings
  - they don't sufficiently distinguish between accrual and cash components of earnings
- So high accrual stocks tend to be overpriced
  - which leads to lower subsequent returns

Why Do Accruals Predict Returns?



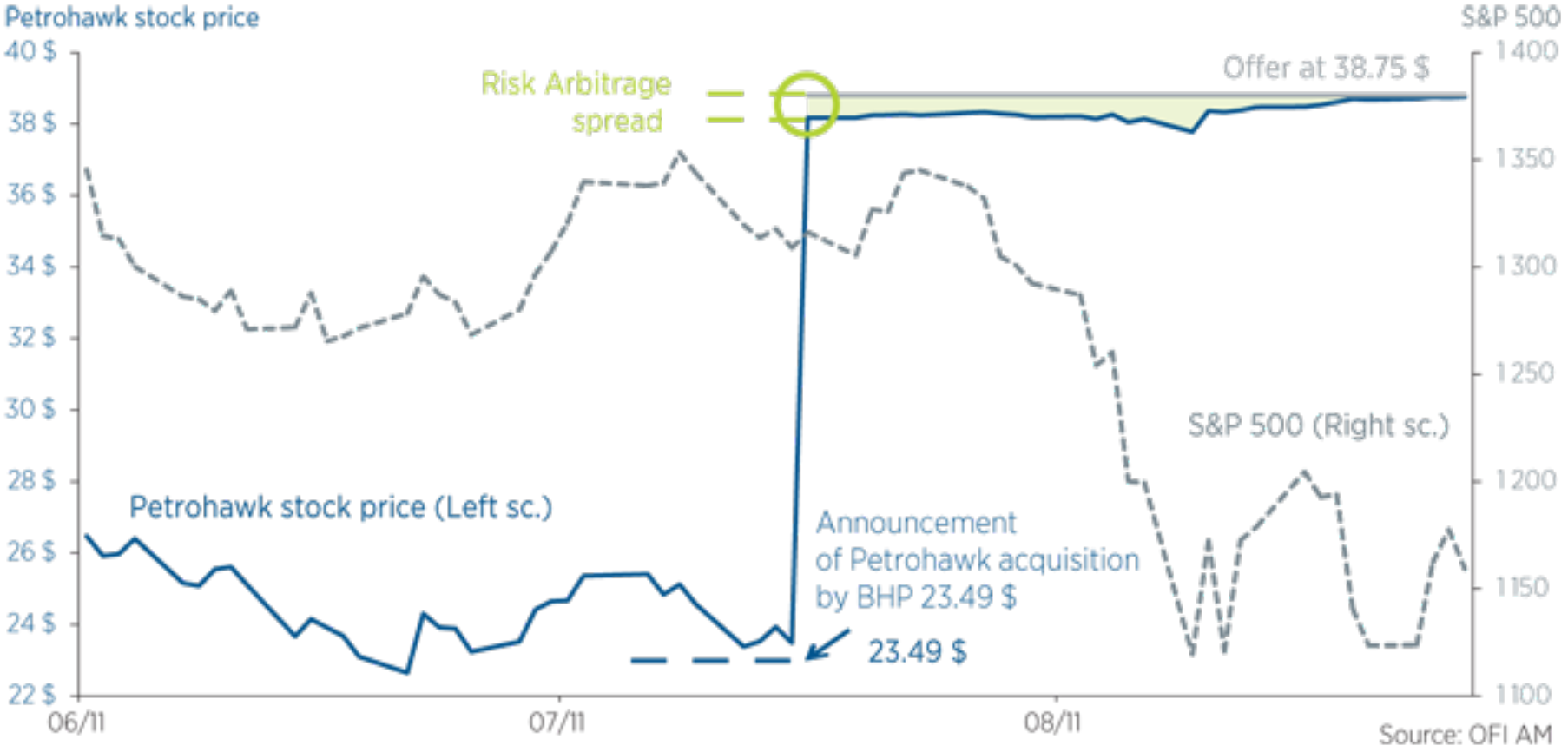
M&A ACTIVITY

Merger Arbitrage

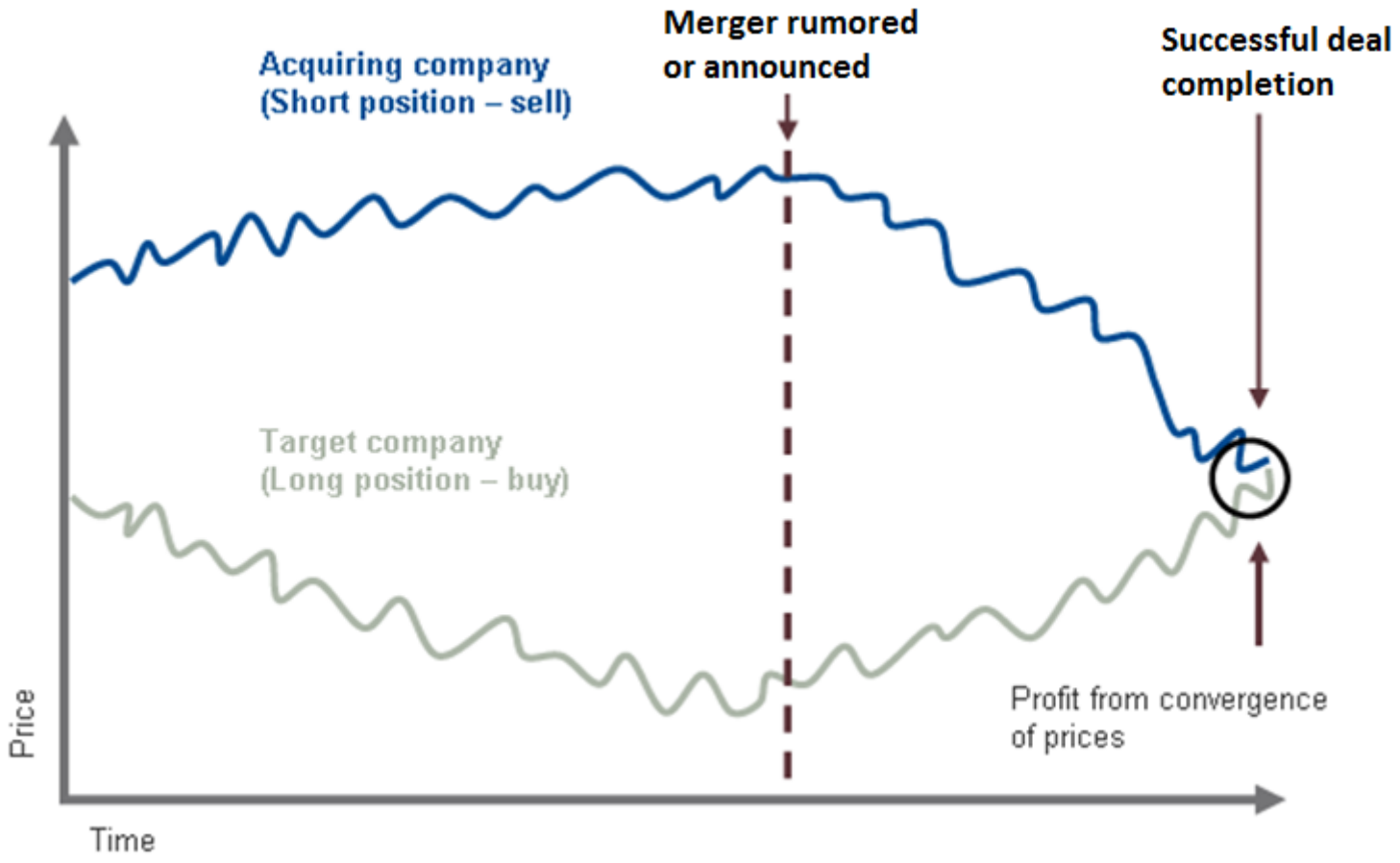
- Event-driven arbitrage = trading on corporate announcements
  - Merger arb = trading on merger announcements
  - Other event-driven: earnings, spinoff, bankruptcy

- Investment strategy:
  - Idea: target stock will increase upon deal completion, but the market “underweights” the probability of deal completion
    - Cash deal: buy the target
    - Stock deal: buy the target, short the acquirer
  - Median announcement return 26.5% and arbitrage spread 3.7%

Cash deal


Petrohawk stock price
S&P 500
40 $
38 $
36 $
34 $
32 $
30 $
28 $
26 $
24 $
22 $
1 400
1 350
1 300
1 250
1 200
1 150
1 100
Risk Arbitrage spread
Offer at 38.75 $
S&P 500 (Right sc.)
Petrohawk stock price (Left sc.)
Announcement of Petrohawk acquisition by BHP 23.49 $
23.49 $
06/11
07/11
08/11
Source: OFI AM

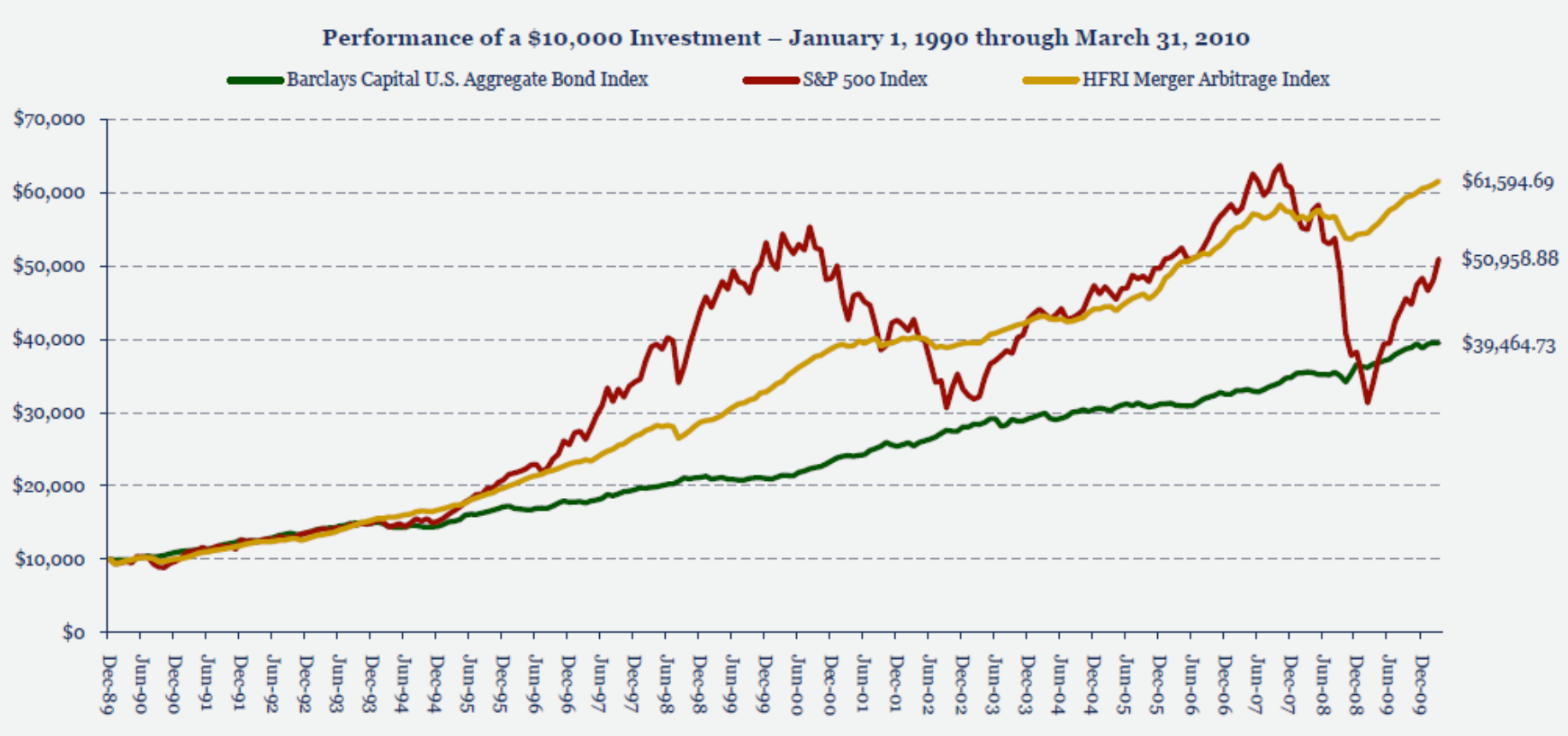
Stock deal
(assuming 1-1 conversion)



Merger Arbitrage

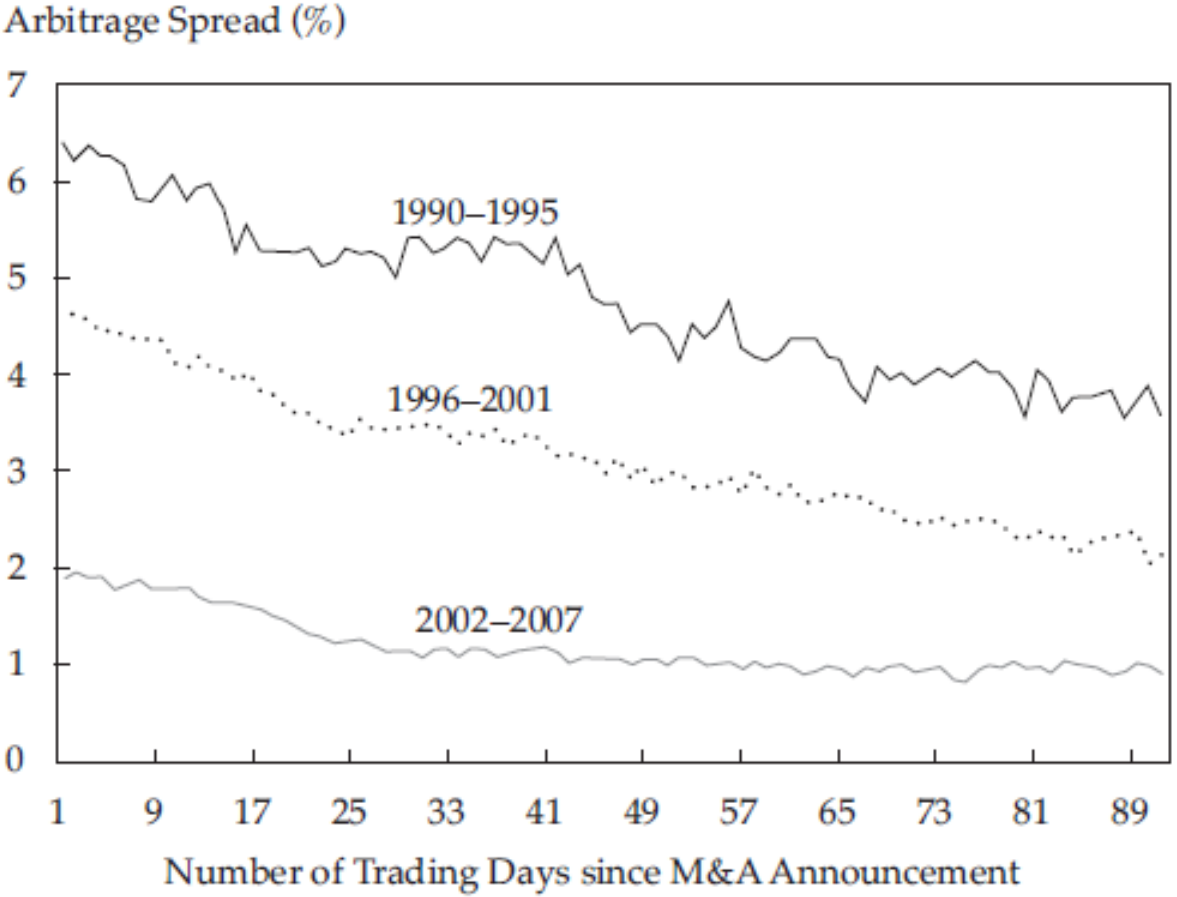
- Popular hedge fund strategy, large inflows from 1997-2014
  - Merger Arb AUM increased 15x to $28.5bn
  - Event Driven AUM increased 25x to $275bn
- Historically earned excess returns, exhibits large Sharpe ratio
  - 5.9% CAPM alpha and 1.48 Sharpe ratio DJCS MA index
- Possible reasons
  - Downside risk, limits to arbitrage, investor under reaction
  - Mitchell and Pulvino 2001, Baker et al. 2002, Giglio and Shue 2014

Merger Arb Returns



Shrinking Merger Arb Spreads

A. Successful M&A Deals, First 90 Trading Days after M&A Announcement



Shrinking Merger Arb Spreads

"Event-driven strategies have been the most disappointing performers this year
lost on average 1.4 percent this year

"Funds have crowded into the largest corporate deals and have been reluctant to bet on smaller ones

"That contributed to low returns for event-driven hedge funds in a year that has seen a record number and value of deals such as mergers and acquisitions

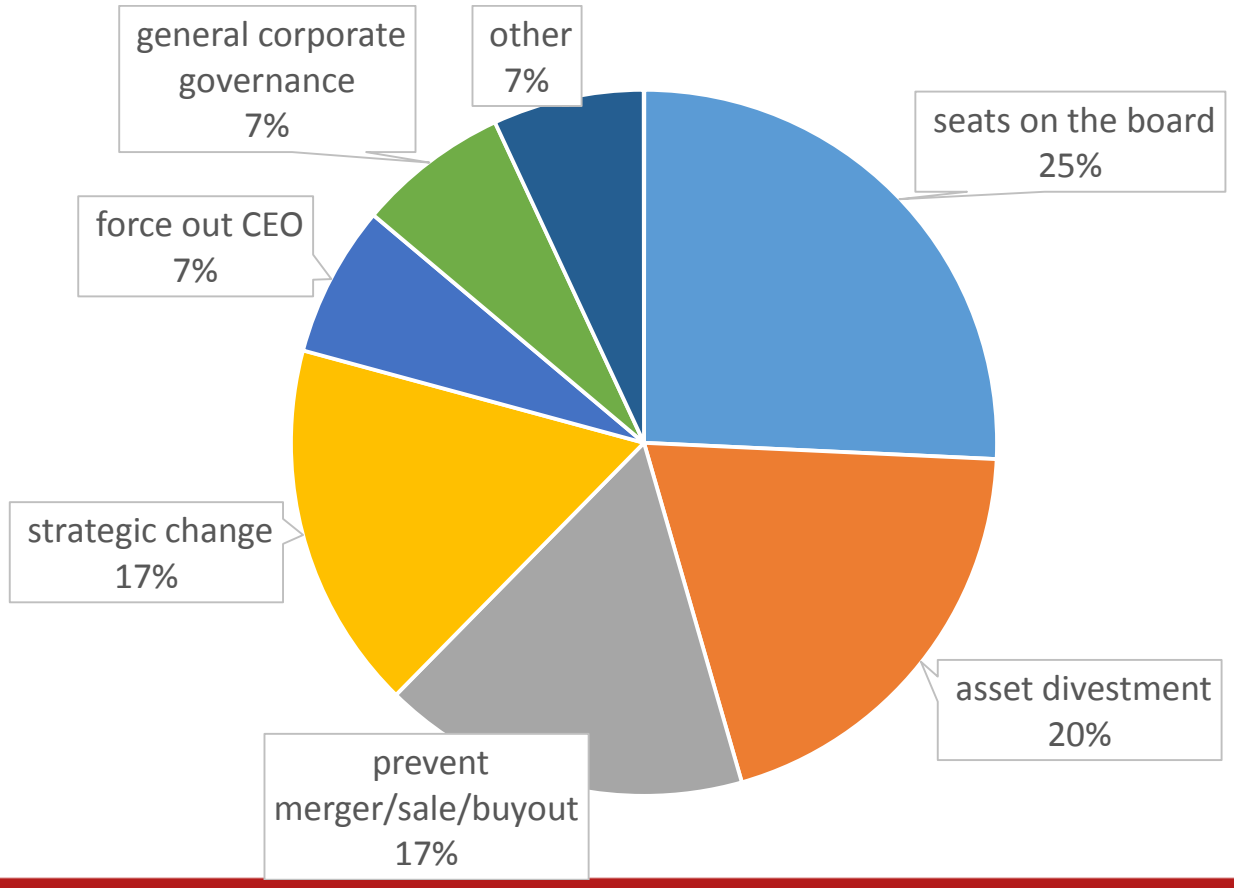
"**Allen & Co.** announced in September that it was shuttering the merger arbitrage strategy that it had offered clients since 1975, in part because of poor returns for such funds. **Hutchin Hill Capital** closed a portfolio managed by Steven Mermelstein that made wagers on corporate events."

-- Bloomberg News (Nov. 15, 2015)

ACTIVIST HEDGE FUNDS

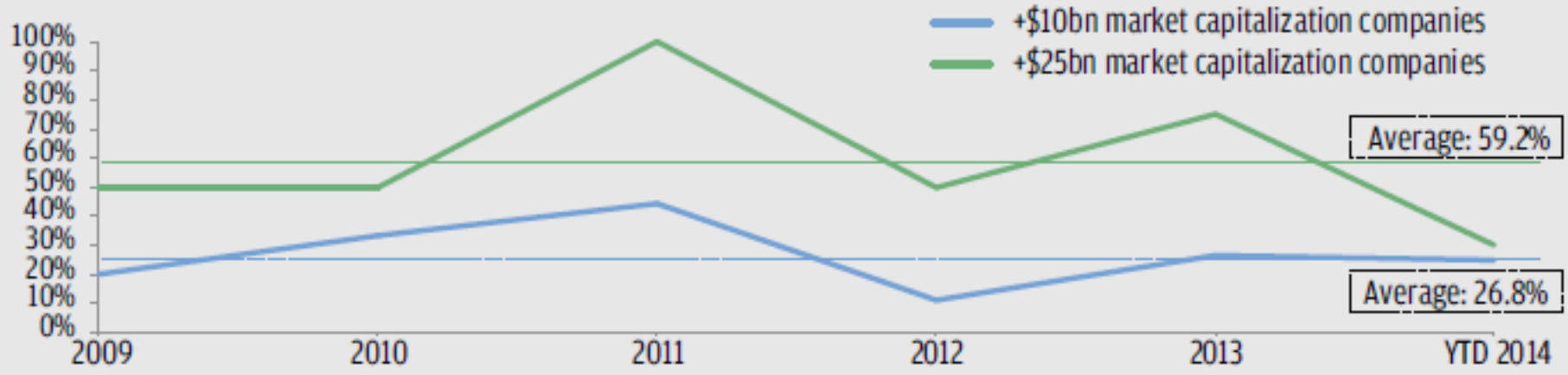
Activist HF demands

(source: Thomson Financial)



Activist Hedge Funds

Percentage of campaigns where ownership stake at announcement was 1% or less[1]

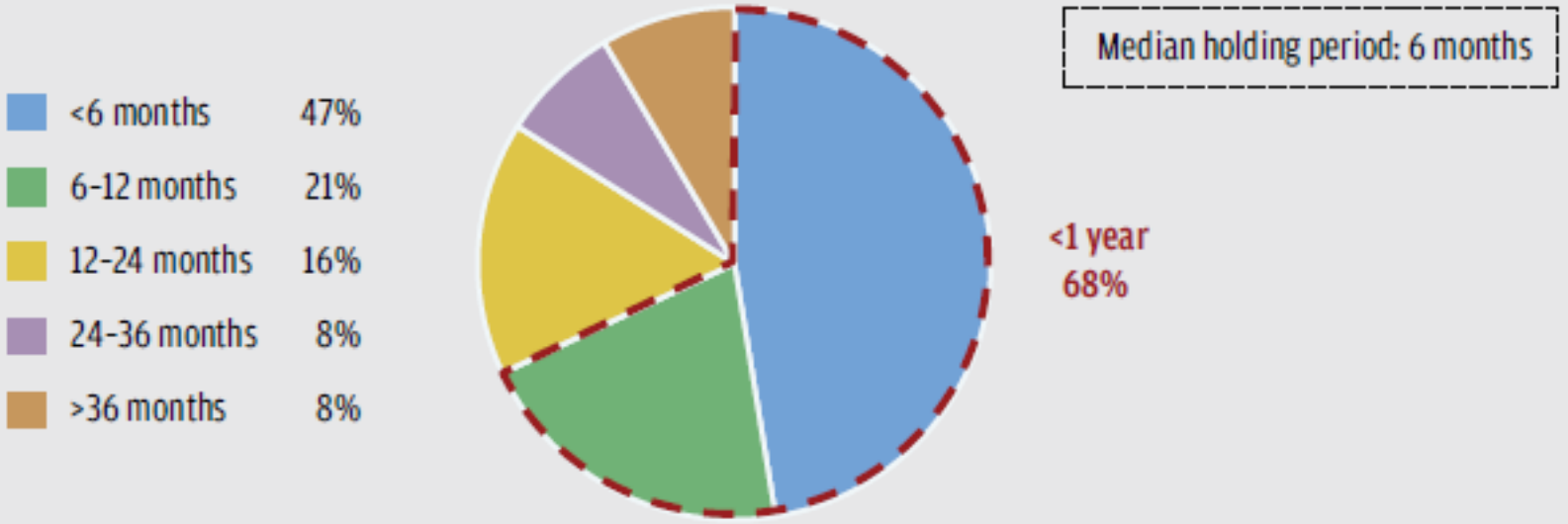


Source: SharkRepellent as of 12/15/2014

[1] Represents the following campaign types: Board control and representation, enhance corporate governance, maximize shareholder value and remove directors and officers; excludes campaigns where no initial ownership stake was disclosed

Activist Hedge Funds

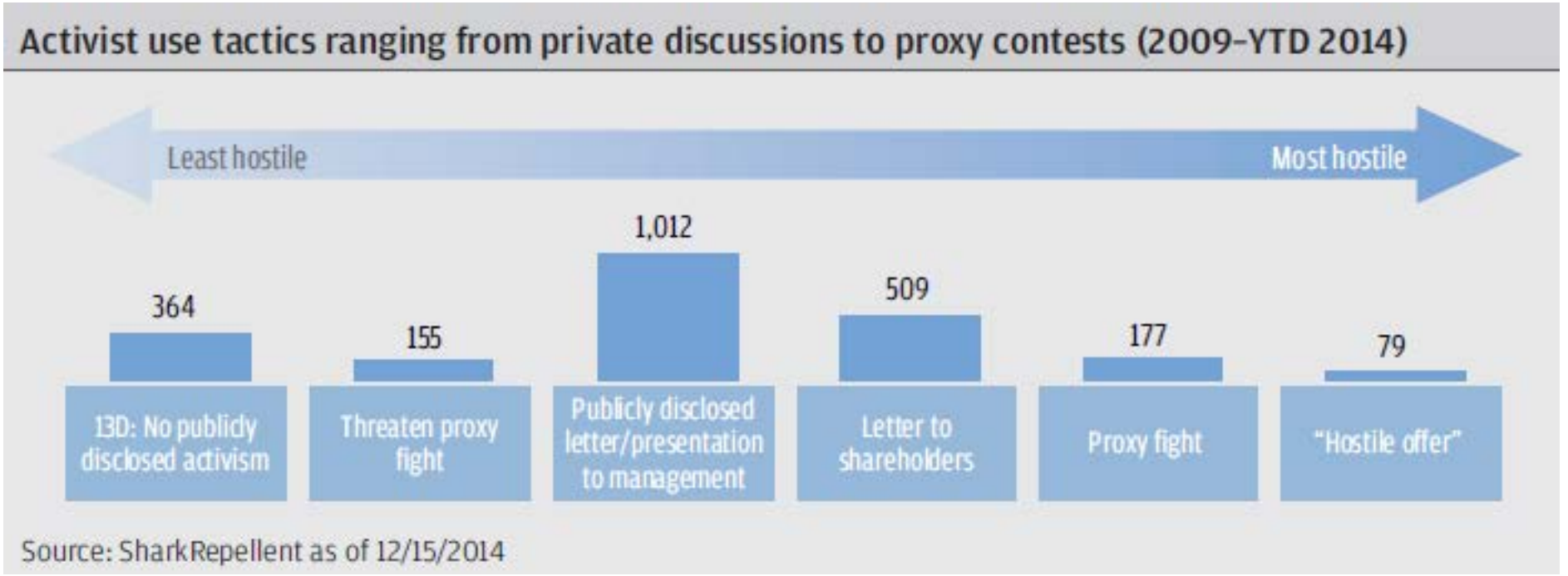
Activists' campaigns holding period



Source: SharkRepellent

Note: Represents completed activist hedge fund campaigns announced between 01/01/01 and 12/15/2014; Represents the following campaign types: Board control and representation, enhance corporate governance, maximize shareholder value and remove directors and officers. Holding period defined as the earlier of campaign announce date/first reporting period to the later of campaign end date/final reporting period; campaigns excluded where there is insufficient data

Activist Hedge Funds



Activist Hedge Funds

- Brav, Jiang, Partnoy & Thomas (2008)
  - Study sample over period 2001-2006
  - Activists are successful in achieving stated goals 2/3 of cases
- Activist hedge funds do well overall
  - One- and four-factor monthly alphas of 0.71% and 0.64%
  - Returns exceed those of other hedge fund strategies
- So do the target firms
  - Abnormal stock return of 7% upon announcement of activism, no long-term reversal
  - Target firms increase payouts, operating performance, and higher CEO turnover