

Fintech Unicorns

Spring 2019

Learning objectives

- What is inflating private company valuations?
- Characteristics of Fintech unicorns
- New frameworks to understand the real valuation of unicorns
- Implications

outline

- Fintech investment flows
- Unicorns
 - characteristics globally
 - Unicorn failures
 - Meglomaniacs with cash
- Why there are more unicorns
 - Staying private longer
 - Mega rounds and mega funds
 - New investors and motives
 - New platforms for trading
 - Other new types of exits
- Valuing unicorns-are unicorns even unicorns?
- Implications-what could burst the bubble



Amounts, sectors

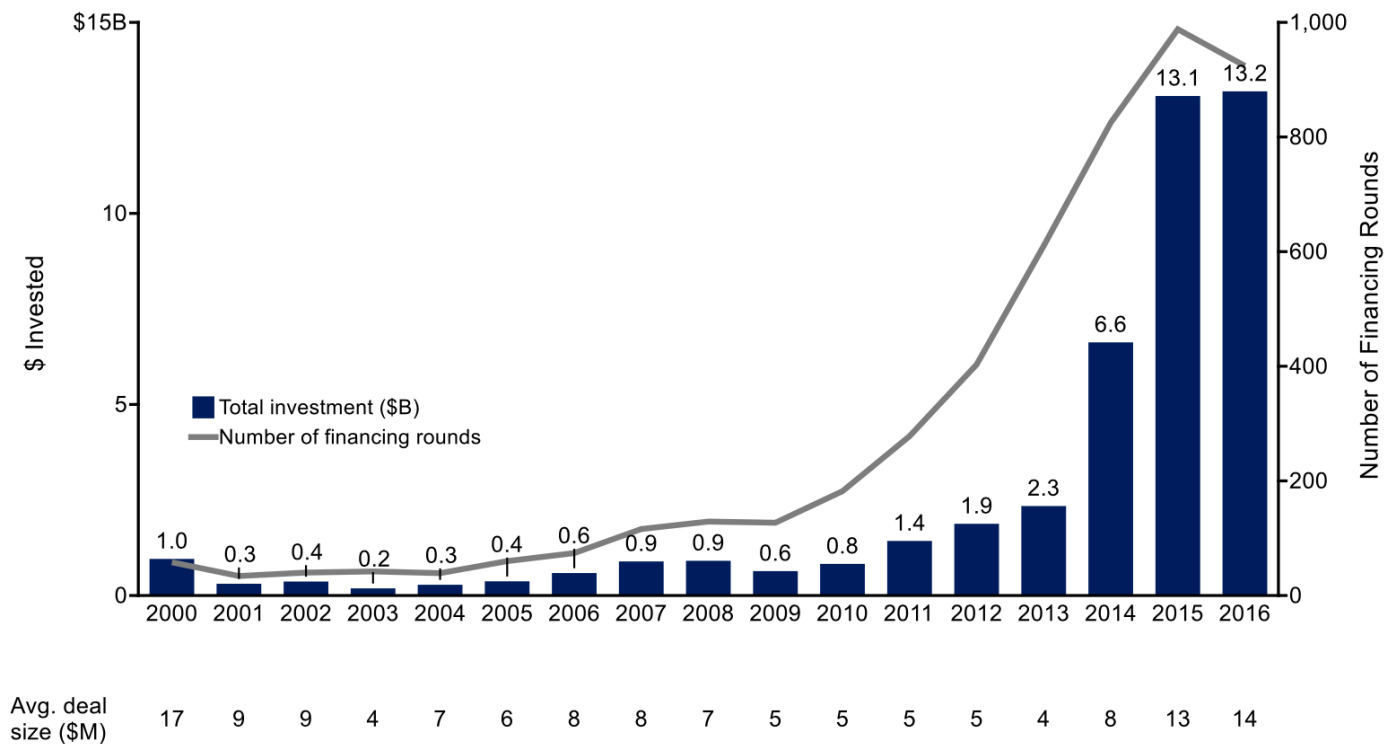
FINTECH INVESTMENT FLOWS

Increasing capital and deal sizes



Deal Analysis I

Fintech has seen a huge inflection in new investments since the financial crisis and average deal size has ~4x from the 2013 average

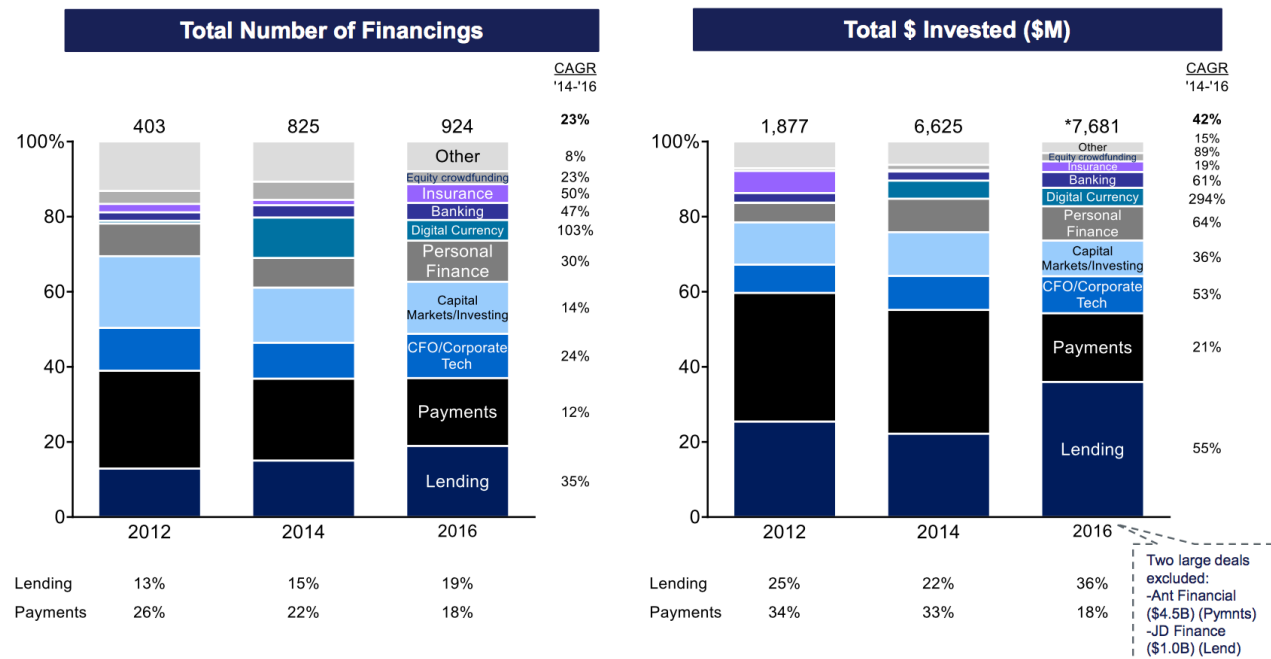


Sector mix shifting



Industry Analysis

Lending was on trend in 2016 and overtook payment technologies to reach the top spot when it comes to dollars invested; there has been diversification of investment as shown by the increases in personal finance, digital currency, and insurance deals



*Two large deals excluded: 1) Ant Financial (\$4.5B) (Pymnts) 2) JD Finance (\$1.0B) (Lend)
 Note: \$ Invested and number of rounds only include deals where the round sizes were publicly available
 Source: PitchBook, BCV analysis

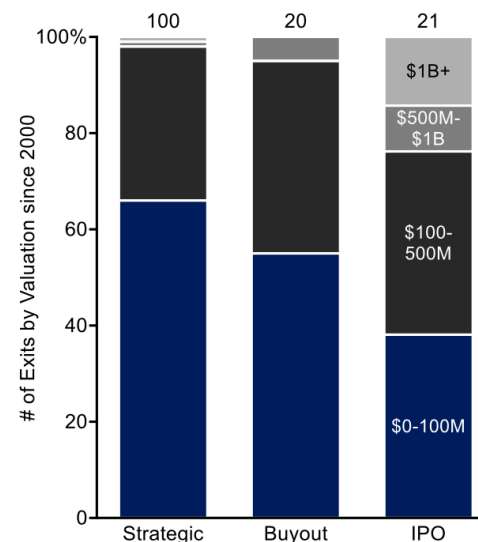
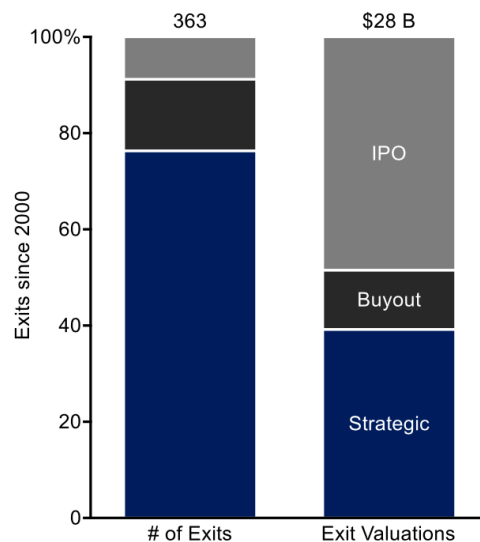
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Exit valuations rising



Exits Analysis

Since 2000 there have been ~9x more strategic exits than IPOs; IPO valuations have trumped both strategic exits and buyouts



Exit Valuation (\$M)

Average	109	172	645
Median	45	83	207



Note: Exit valuations and number of exits (RHS only) only include exits where the valuations were publicly available; exit valuations for IPOs are the market caps from the day of the IPO.
Source: PitchBook

10



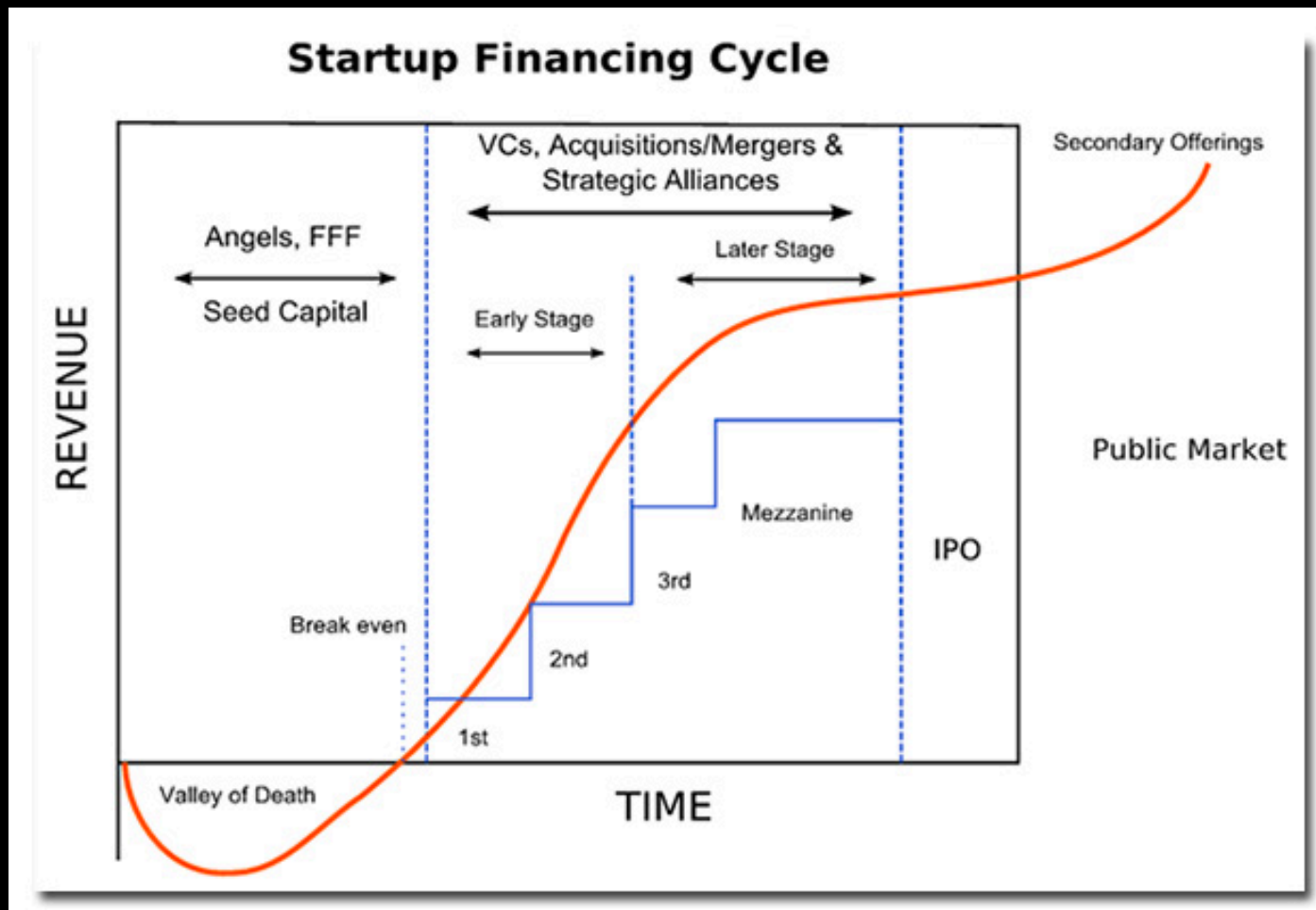
Attributes

UNICORNS



Why do we have more unicorns?

Company lifecycle



Largest Unicorns

(2017) 135 over \$1billion

• <u>Company</u>	<u>Market Cap</u>	<u># Billionaires</u>
• Uber	\$62.5 billion	3
• Xiaomi	46	1
• Airbnb	31	3
• Palantir	21	1
• SpaceX	21	
• Meituan	18	1
• Didi Kuaidi	17	1
• Flipkart	15	2
• Pinterest	12	2
• Dropbox	10	1
• WeWork	10	2

Largest fintech unicorns

27 WORLD FINTECH UNICORNS, RANKED BY VALUE

FINTECH
SINGAPORE
fintechnews.sg

众安保险
ZhongAn Insurance

信而富®
China Rapid Finance

蚂蚁金服
ANT FINANCIAL

Klarna
Simplifying Buying

TransferWise

zuora

PROSPER

SoFi

Mozido
MOBILIZING A BETTER FUTURE™

oscar

AVANTCREDIT

JD.COM 京东

融360
RONG360.COM

趣分期
Qufenqi.com

Funding Circle

adyen

coupa

FINANCIAL
FORCE.COM
ERP of Customer Speed®

stripe

GUSTO

Credit Karma

陆金所
Lufax.com

paytm
one97

Funding Circle

adyen

Kabbage

ZENEFITS

GreenSky

JiMU

ASIA

EUROPE & UK

U.S.

Largest fintech unicorns USA

- Stripe \$9.2 b
- Sofi \$4.4b
- Credit Karma \$3.5
- Oscar \$2.7
- Avant \$2
- Apttus \$1.9
- Coinbase \$1.6
- Avid Exchange \$1.4
- Robinhood \$1.3
- Kabbage \$1.3
- Clover \$1.2

FinTech Unicorns

- Newest: Bill.com \$750 million

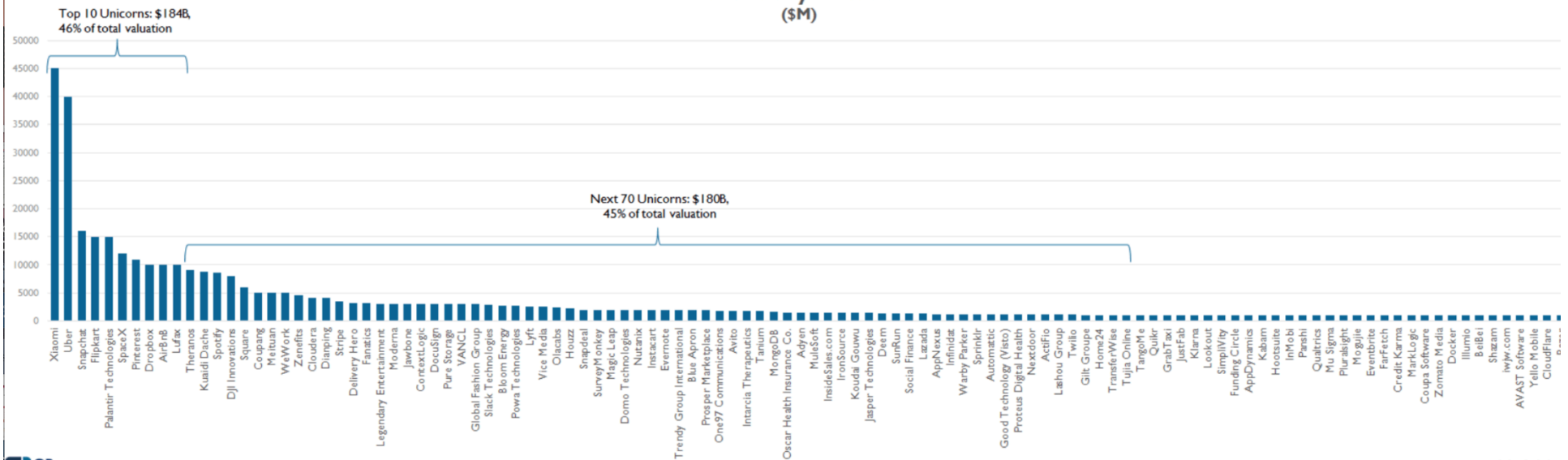
Bill.com is the latest fintech heavyweight, with a \$742.8 million valuation and big-name backers

Largest fintech unicorns-sectors

- Stripe \$9.2 b (payments)
- Sofi \$4.4b (student loans and mortgages)
- Credit Karma \$3.5 (credit scores)
- Oscar \$2.7
- Avant \$2 (personal loans)
- Apttus \$1.9 (sw-AI for sales contracts)
- Coinbase \$1.6
- Avid Exchange \$1.4 (sw-invoices for enterprise)
- Robinhood \$1.3 (trading)
- Kabbage \$1.3 (SME loans, acquired Orchard)
- Clover \$1.2

Unicorn fat tail

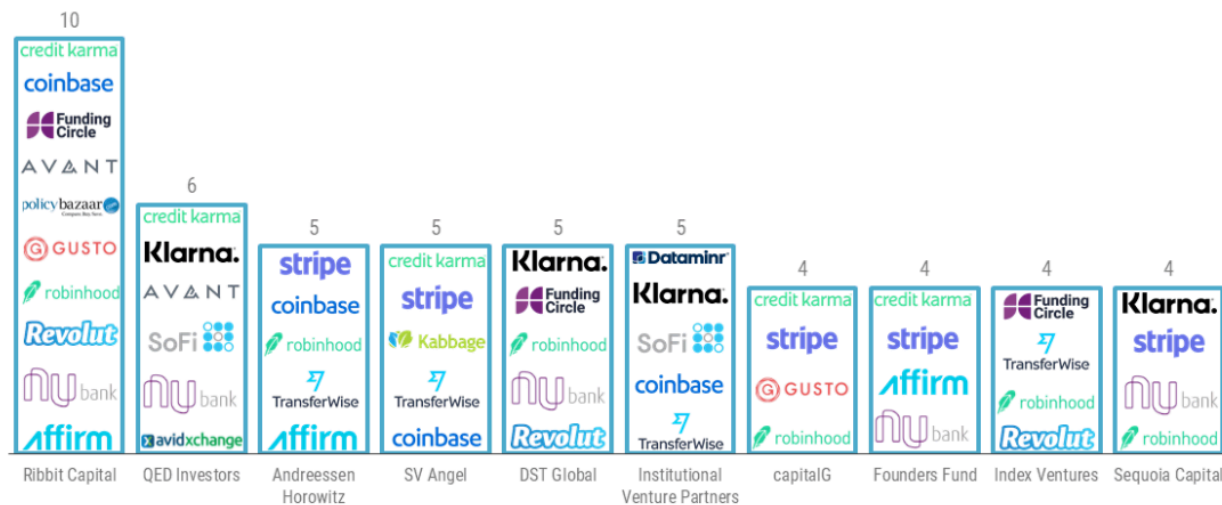
Unicorns by Valuation (\$M)



Largest fintech unicorn investors

Investors ranked by the number of fintech unicorns in their portfolio

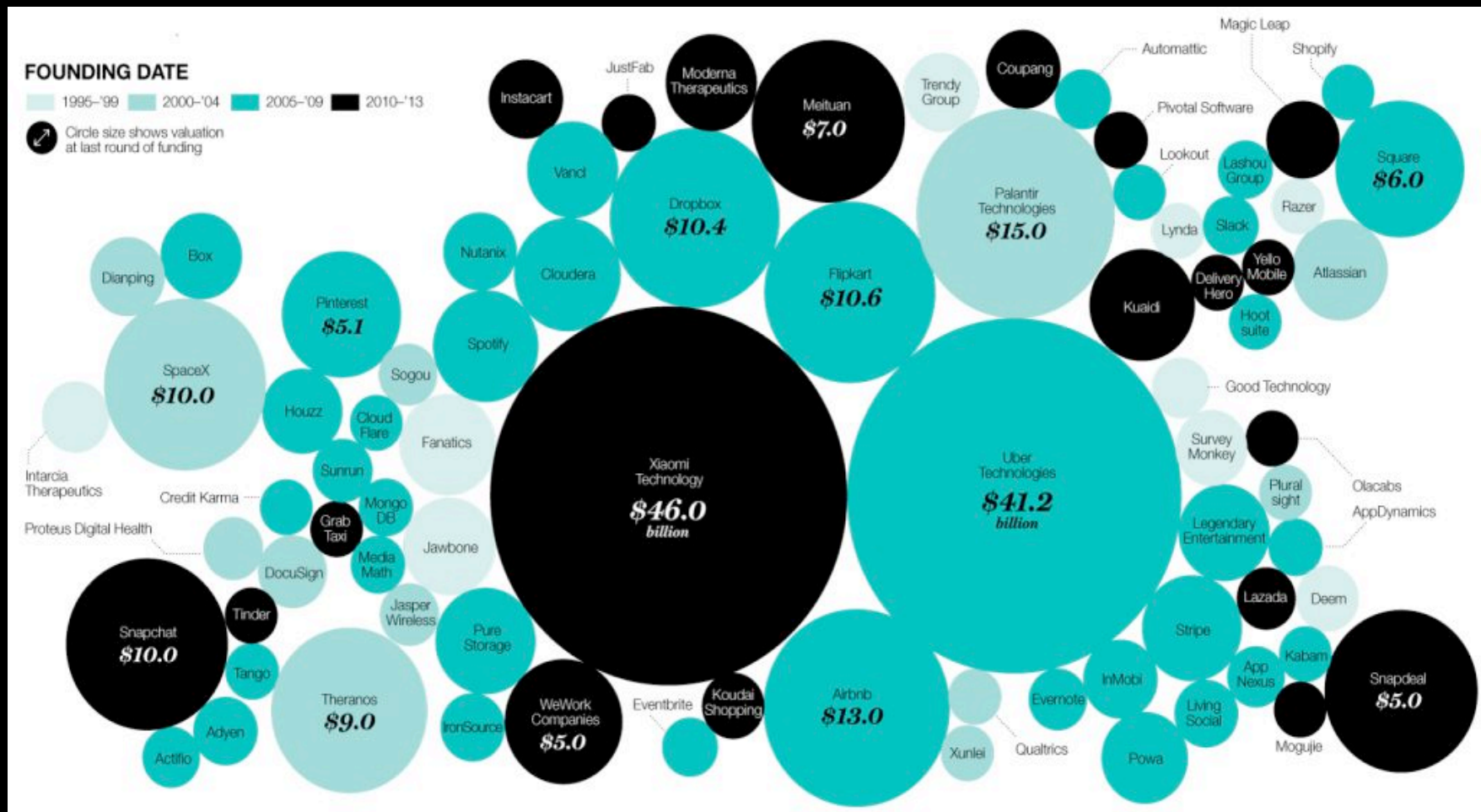
2009 – 2018 (YTD 6.26.18)



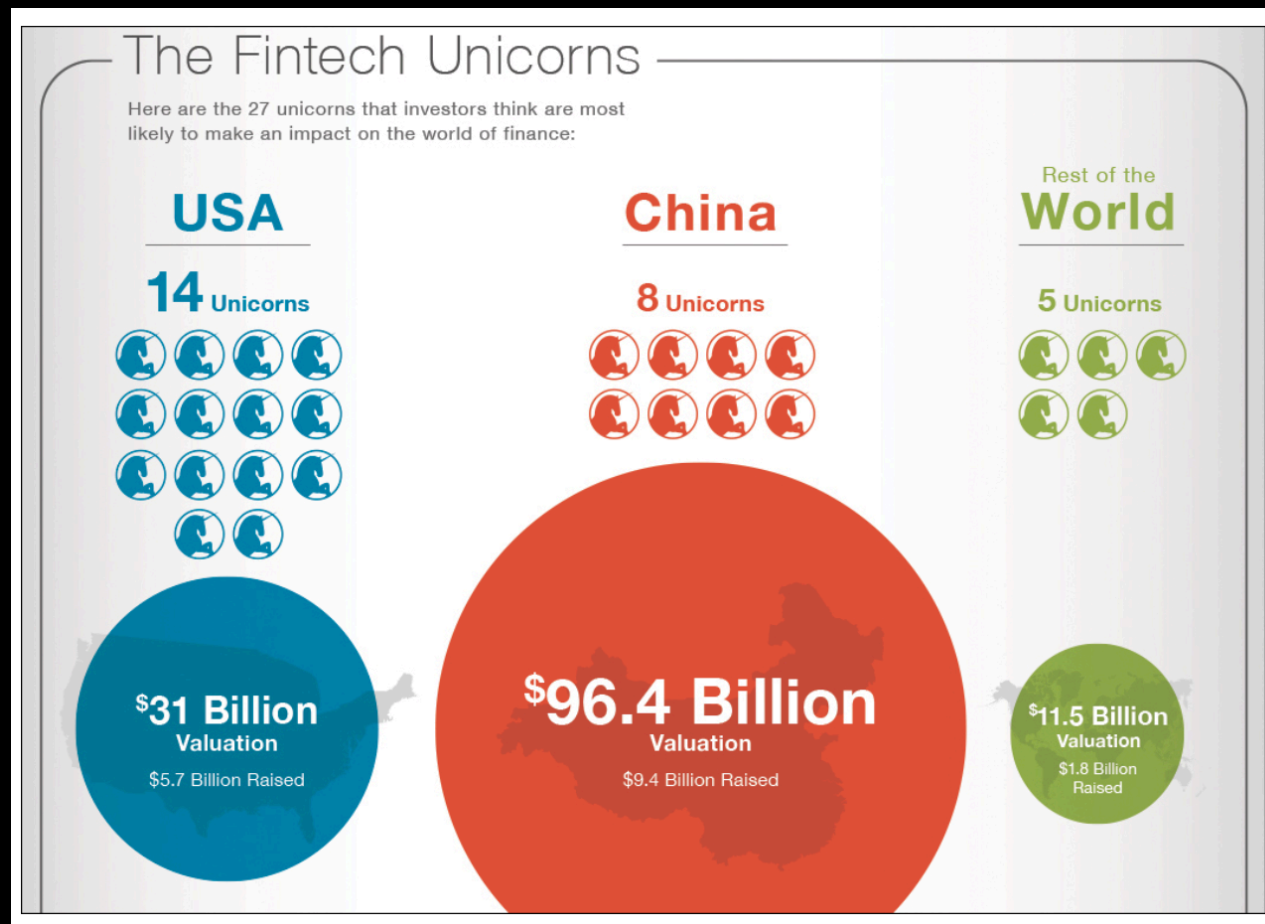
Source: cbinsights.com

CBINSIGHTS

They're Everywhere



Biggest FinTechs are in China





Zenefits

Mozido

FINTECH UNICORN FAILURES

Zenefits

Founded 2013-Y Combinator-HR (esp insurance) automated broker

Rapid growth-\$63 million revenues and 1600 people in 3 years, raise \$580 million, valuation reaches \$4.5 billion

Error rate soars

Conrad writes exam cheating macro

Buzzfeed article finds unlicensed people selling insurance

State insurance regulators investigate and find violations

Founder CEO Parker Conrad fired

lays off 45% of workforce in 2017



nepage

kets

ks

encies

modities

es + Bonds

azine

chmark

chlist

omic Calendar

n

on Valley

al Tech

ture Capital

king

tal Media

uits

Conrad

Mozido

MARKETS

Mozido Founder Accused of Stealing Millions to Fund Luxurious Lifestyle

SEC says Michael Liberty misled investors about Mozido's worth and financial results



Mobile payments startup founded 2011

2016 founder Michael Liberty jailed illegal campaign contributions

2018 SEC charges founder Michael Liberty with fraud accusing him of using \$55 million of company funds for private jets and a dairy cow farm



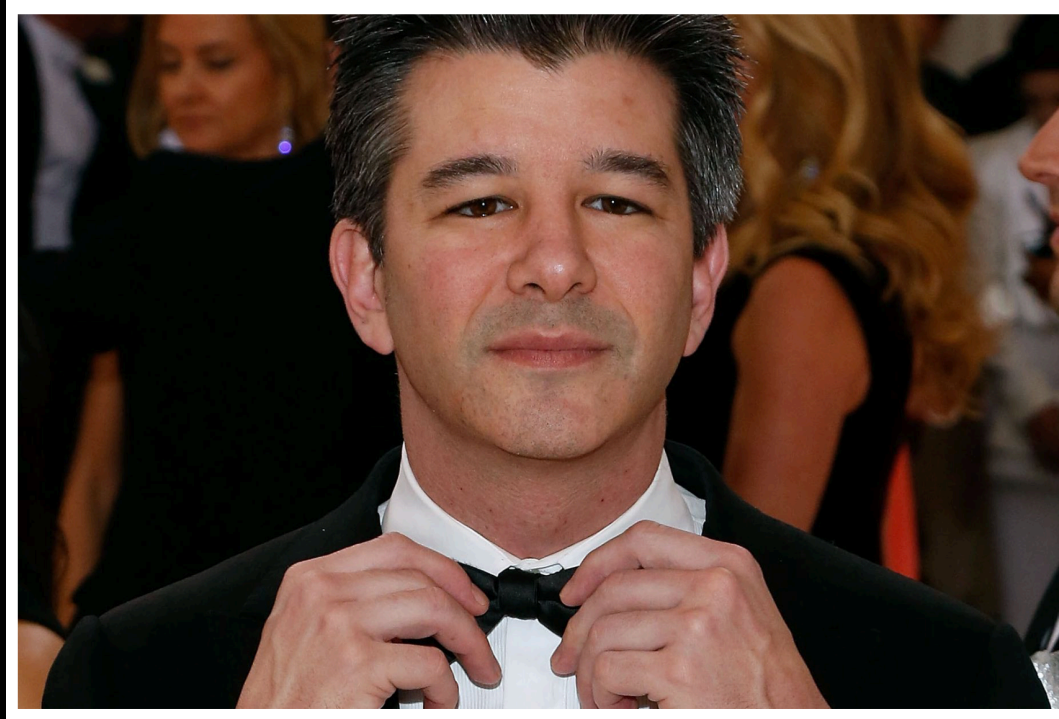
Unicorn ****

THE COWBOY KING

Lending Club: Renaud Laplante



Uber: Travis Kalanick



<https://www.recode.net/2017/8/20/16164176/uber-2017-timeline-scandal>

SoFi: Mike Cagney



<https://www.nytimes.com/2017/09/11/technology/sofi-mike-cagney-sexual-harassment.html?action=click&contentCollection=Technology&module=RelatedCoverage®ion=Marginalia&pgtype=article>

The Cowboy King

- High expectations
- Steve Jobs model-entrepreneur personality
- Rule-breaking corporate culture leads to regulatory and legal violations
- Concentration of power, control
- Hubris
- Discrimination

Characteristics of fintech unicorns?

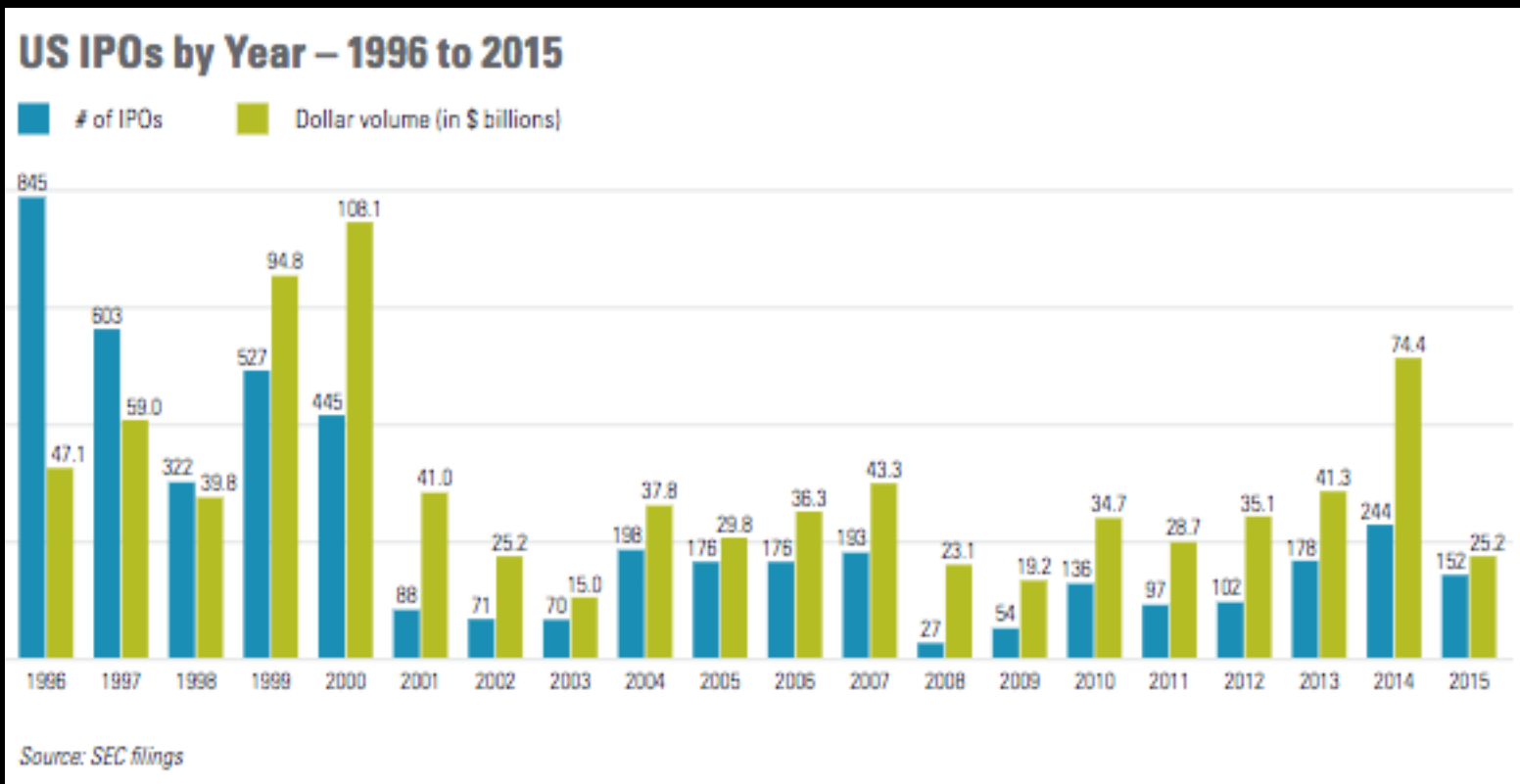
- Success stories-anything in common?
 - Two-sided platforms
 - Payments, lending, insurance
 - Disruptors with partners
 - Global pattern
- Failures-anything in common?
 - Excessive growth hurts quality
 - Over-valuation
 - Crazy founders
 - Regulatory arbitrage
 - Fraud-misleading or even stealing from investors



Upside down world

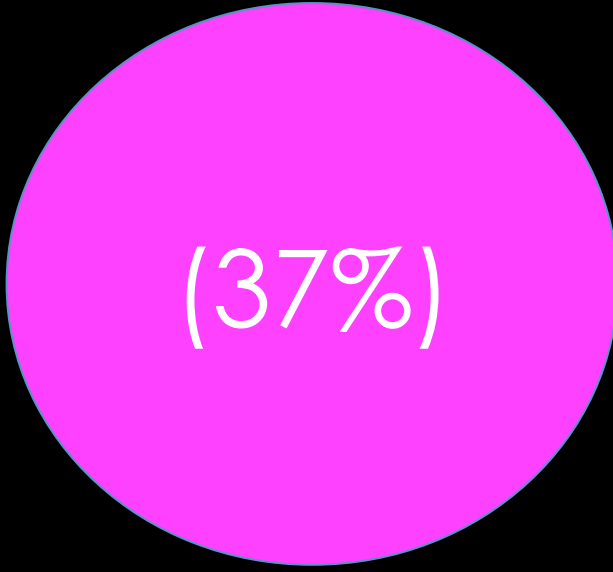
STAYING PRIVATE LONGER

Fewer IPOs = Longer Time Private



84 IPOs in 2016 ytd, down 42% from 2015

Number of NYSE listed co's



(37%)

In the last 20 years. Source: Fortune Magazine

Upside down world:

private companies valued at higher levels than public companies

- Normally
 - Public co valuation > private co valuation
 - Risk premia higher in private co's due to size, stage, liquidity
 - Diversity of ownership and governance is better in public co's than private ones
- Today
 - Private co valuation can be > public co valuation
 - Risk-seeking investors (low interest rates, other motives)
 - Diversity and governance overlooked in expectation of superior results from charismatic founders (Zuckerberg votes) is this changing now (Uber)?



Mega-rounds

MEGA ROUNDS, MEGA FUNDS

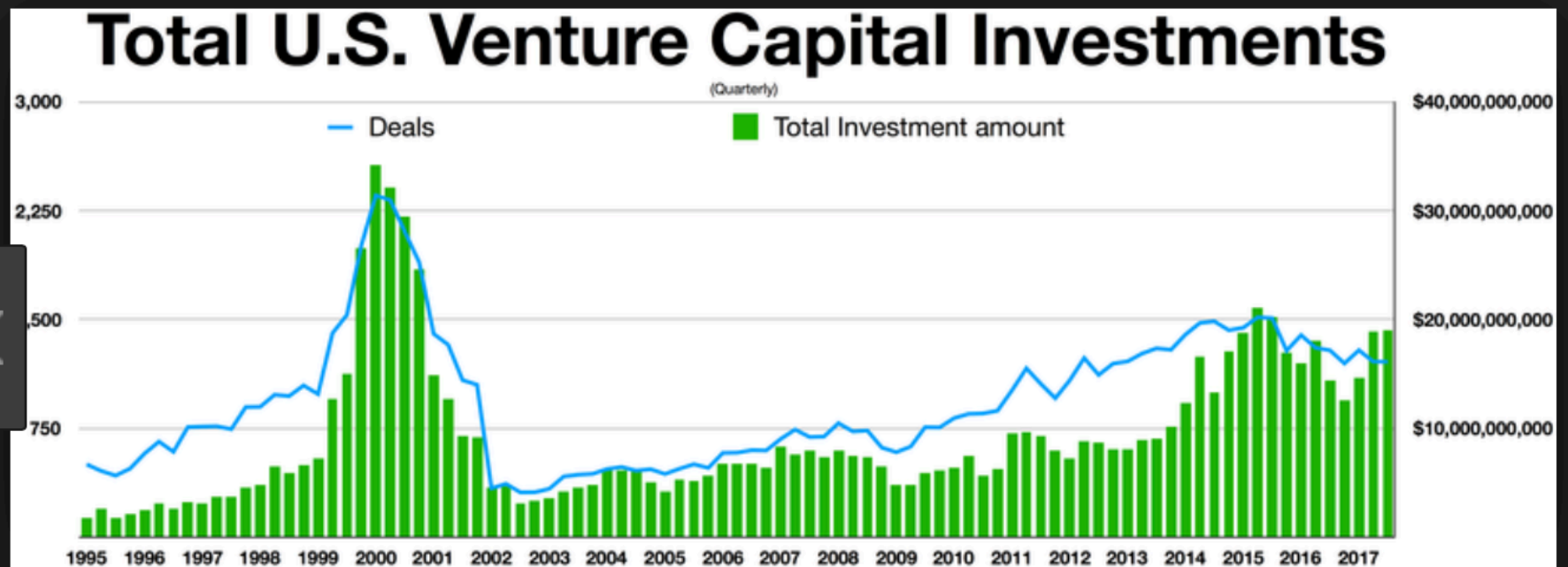
Why do we have more unicorns?

- Large amounts of private capital: mega funds
- New sources of private capital in VC
- Discipline and motives of these new and large sources of private capital
- New platforms for secondary trading in private companies which can provide liquidity (maybe)
- Changes in IPO landscape (pitfalls of, not the only route, new forms of)

Traditional investors: VC motivations

- High startup **failure rate**
- VC business is concentrating
- GP raises **fund** from institutional investors
- The bigger the better (2%/20%)
- Institutional investors (pensions and endowments) typical fund stake could be \$100 million and ticket stake \$10 million
- **10x needed** to cover the many that fail
- To return 10x, requires huge markets to justify huge valuations
- Crowding effect

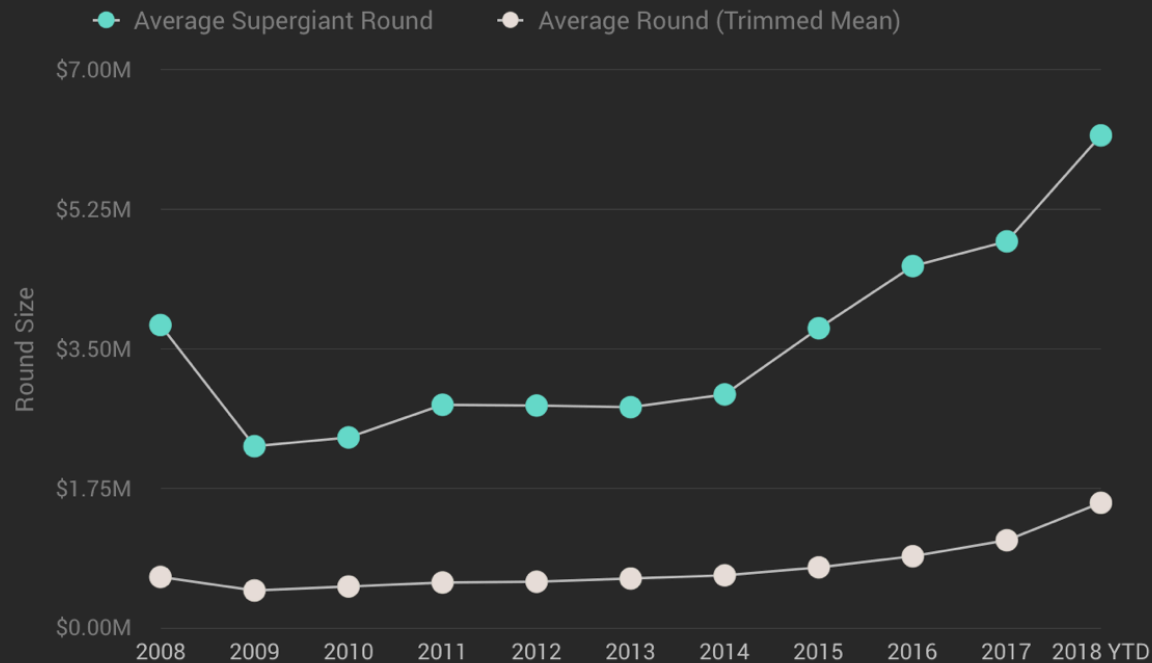
VC boomlet



Rounds getting bigger: seed

Seed And Angel Rounds: Supergiants Versus Average Over Time

US and Canadian startups, from 2008 through 2018 year to date.



crunchbase news



Softbank

- Softbank's \$100 billion Vision Fund
- Softbank: Japanese publicly traded conglomerate famous for turning a \$20 million investment in Alibaba in 2000 into \$60 billion and for early investments in Yahoo
- CEO founder is famous Masayoshi Son
- LP investors include Kingdom of Saudi Arabia, United Arab Emirates, Foxconn, Apple, and Sharp
- Softbank's recent investments include WeWork, (\$300 mill) DidiChuxing, Uber etc.

Impact on the market?

- Fund size = \$100 billion > total of ALL VC investments in 2017 globally
- Expected ticket size \$100 million
- What private companies are big enough to absorb this size of investment?
- How do you get a return on this investment?



Unicorn ****

NEW KINDS OF INVESTORS



Venture
capital
sounds
cool

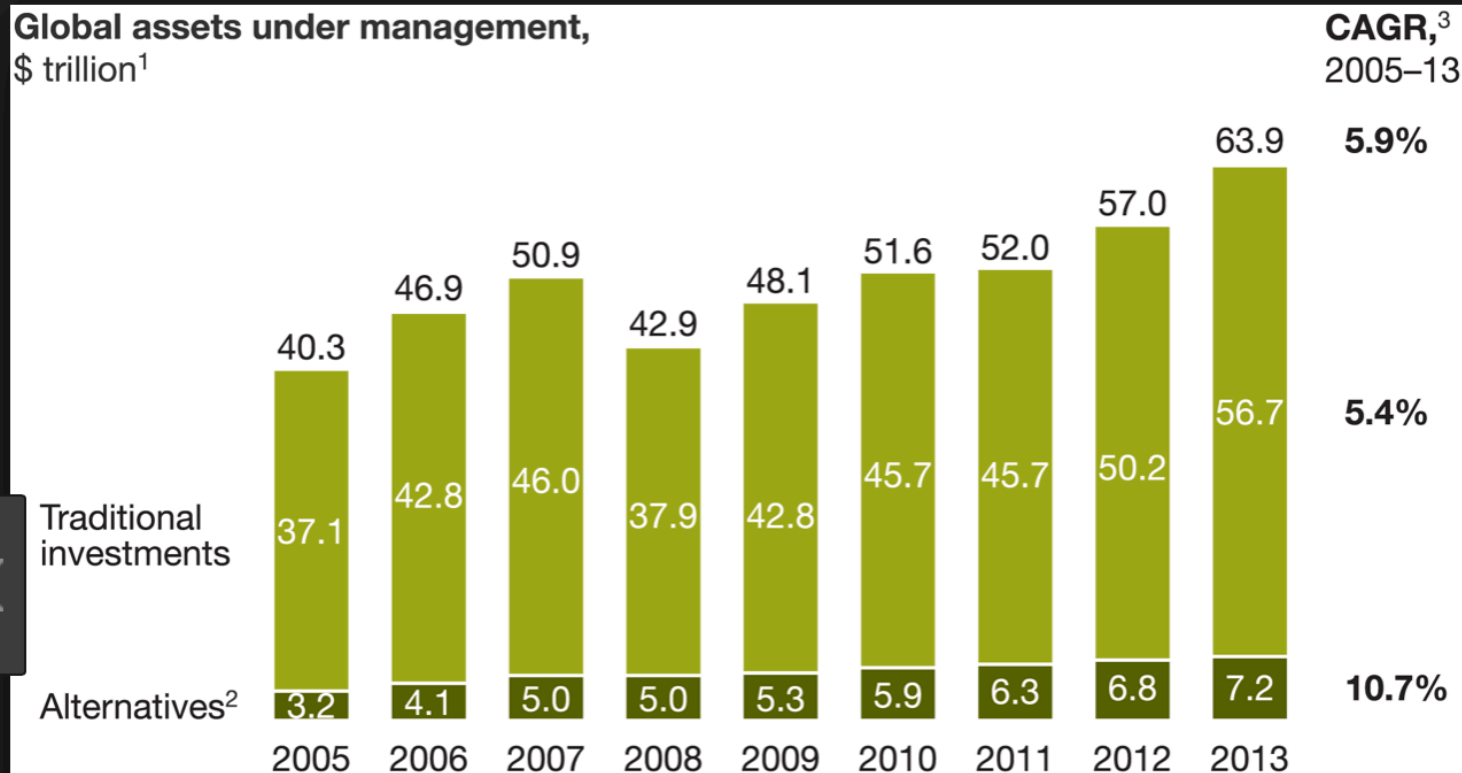
New investors joining

- New **institutional** investors
 - Mutual funds and hedge funds
- New **retail** investors
 - JOBS act
- New **foreign** investors
 - China now the largest FinTech investor

New sources

- “**Market share**: of institutional asset allocation: “alternative” asset classes taking share from traditional as investors try to improve returns, new funds for every stage
- **Access**: “democratization” via crowd-funding
- **Interlopers**: Traditionally public company investors entering private company investing: hedge funds and mutual funds
- **Foreign** capital (see next section) discipline and motives

Alternatives market share of institutional asset allocation



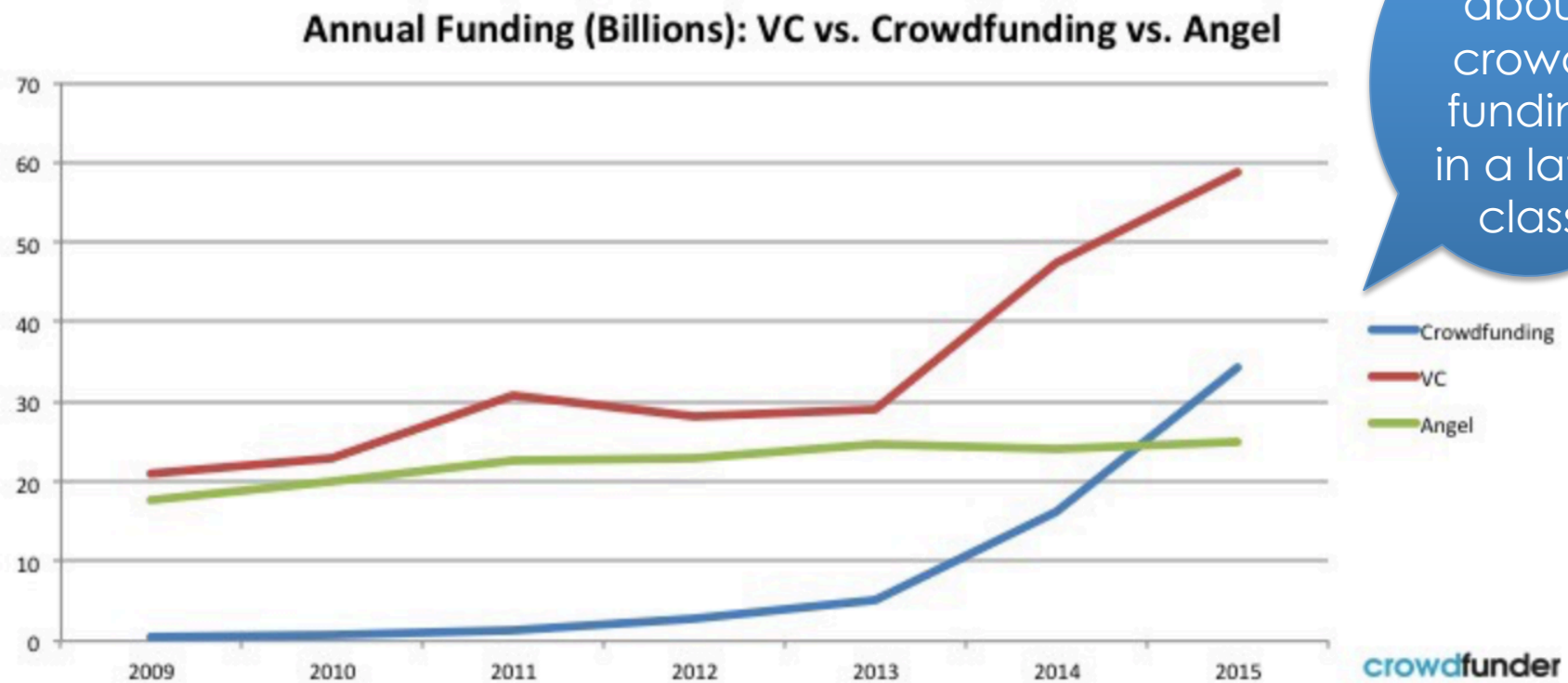
¹Figures may not sum, because of rounding.

²Does not include retail alternatives (ie, exchange-traded funds, mutual funds, and registered closed-end funds).

³Compound annual growth rate.

Source: Hedge Fund Research; Preqin; McKinsey analysis

“democratization” via crowd-funding



We talk about crowd-funding in a later class

Interlopers: mutual funds with PE



3.7%

Source: Fortune Magazine

Juicing valuation

- Of the fund returns

"These can juice returns, and these are opportunities that you can't get anywhere else."

-Robert Stammers, Director of investor engagement, CFA Institute

- Of the unicorn's valuation

Mutual fund investments, however, have measurable effect on companies' valuations. Those that received such financing last year saw their valuations more than double over their previous funding round. In contrast, valuations of companies that raised cash without mutual fund investors grew 1.5 times, according to PitchBook, a private equity, M&A and venture capital database.

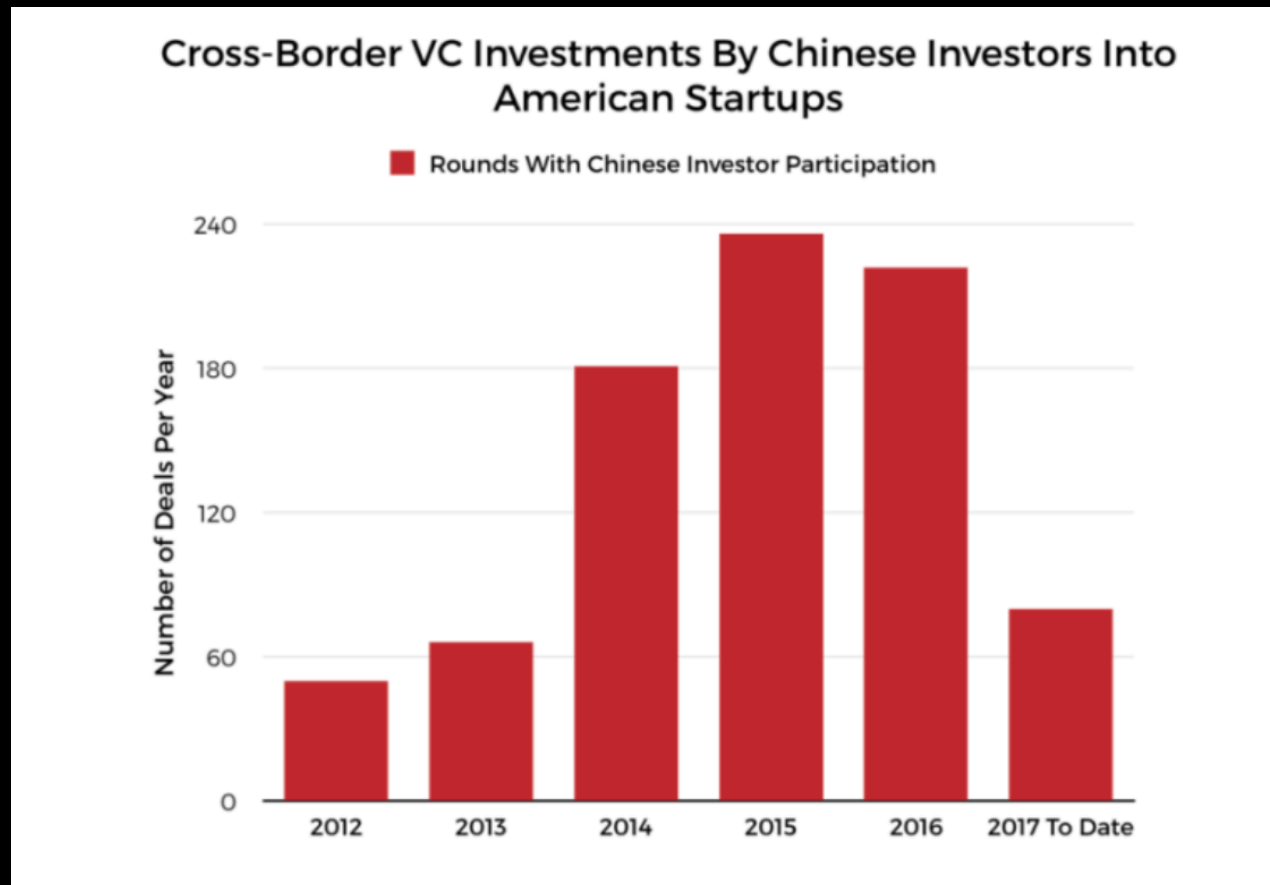
Hedge Funds with PE

- Tiger Global Management
- Coatue Management
- Valiant Capital
- Maverick Capital
- Lone Pine Capital
- Third Point
- <https://www.nytimes.com/2016/04/07/business/dealbook/hedge-funds-are-the-new-venture-firms.html>

Example: China as a VC investor

DISCIPLINE AND MOTIVES OF PRIVATE CAPITAL

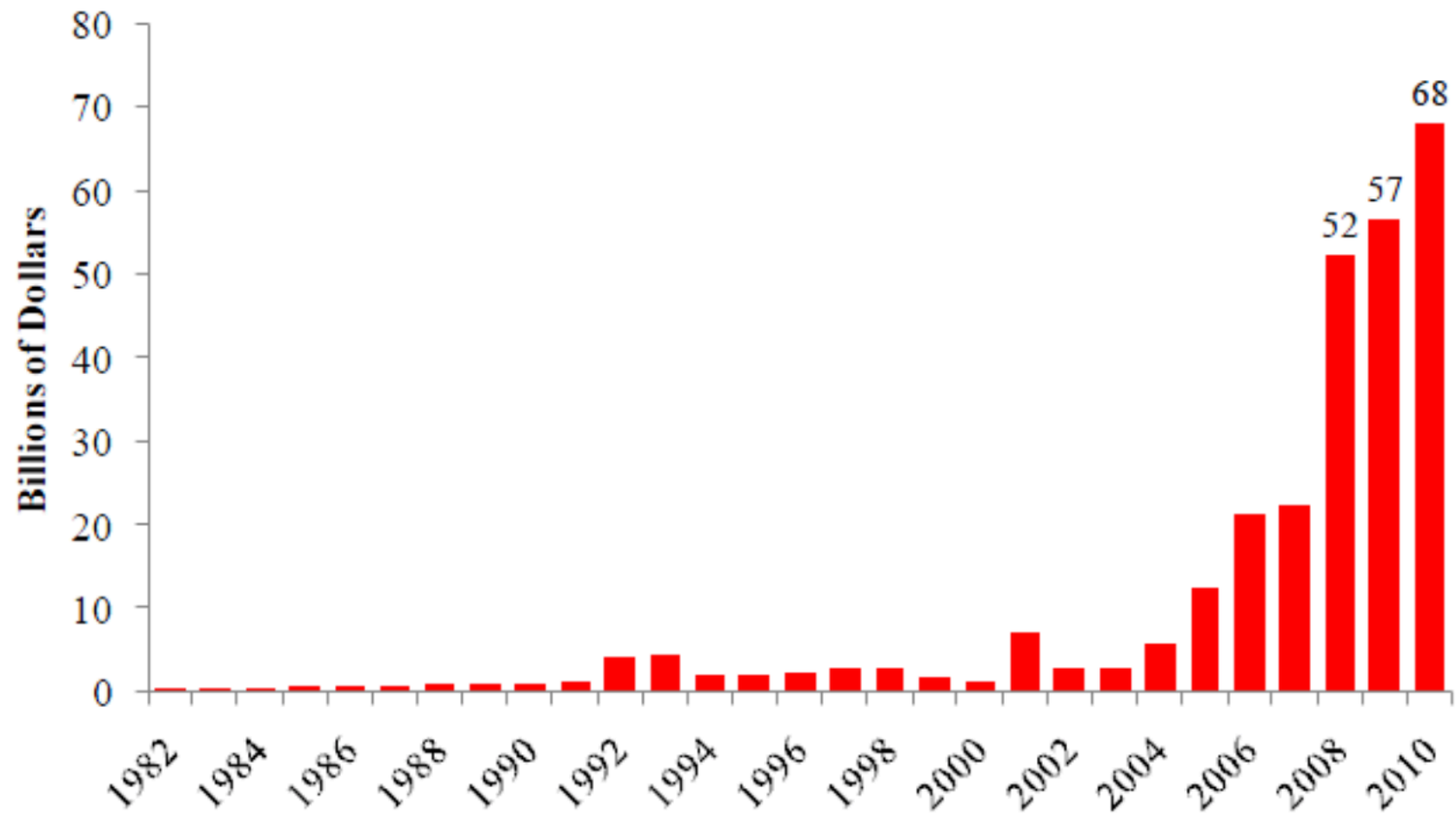
China VC investment in US startups + 372% since 2012



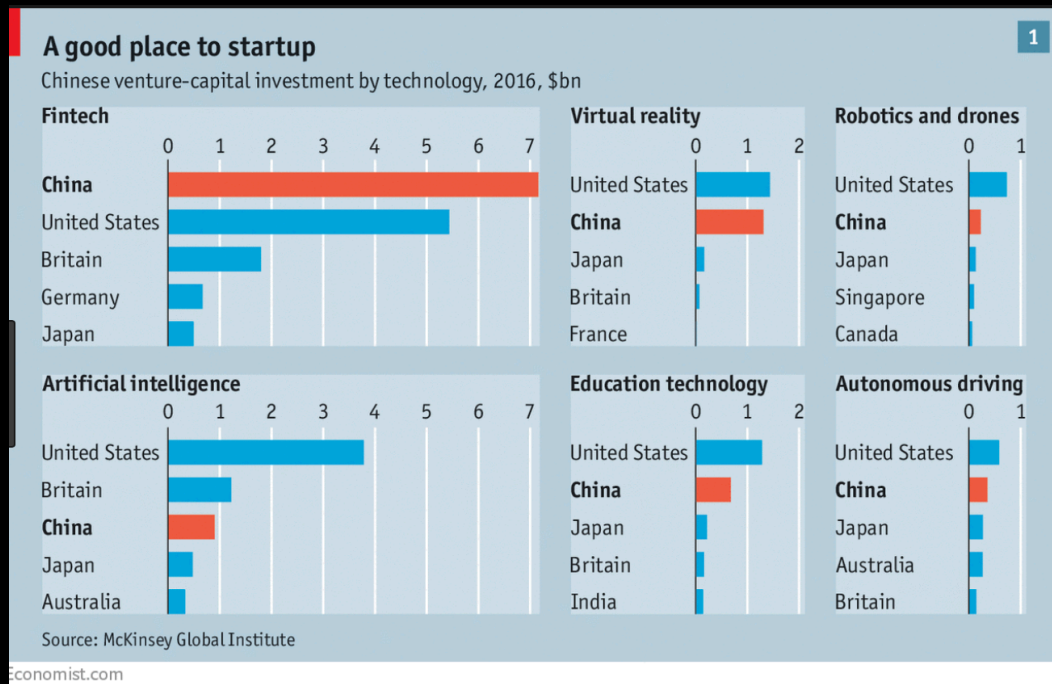
Source: TechCrunch <https://beta.techcrunch.com/2017/06/21/regulation-could-stifle-growing-china-us-venture-activity/>

China FDI

Figure 4: China's Foreign Direct Investments, 1982-2010



In some sectors nearly half the VC capital is from China



China's fintech investment activity



Source: CBInsights

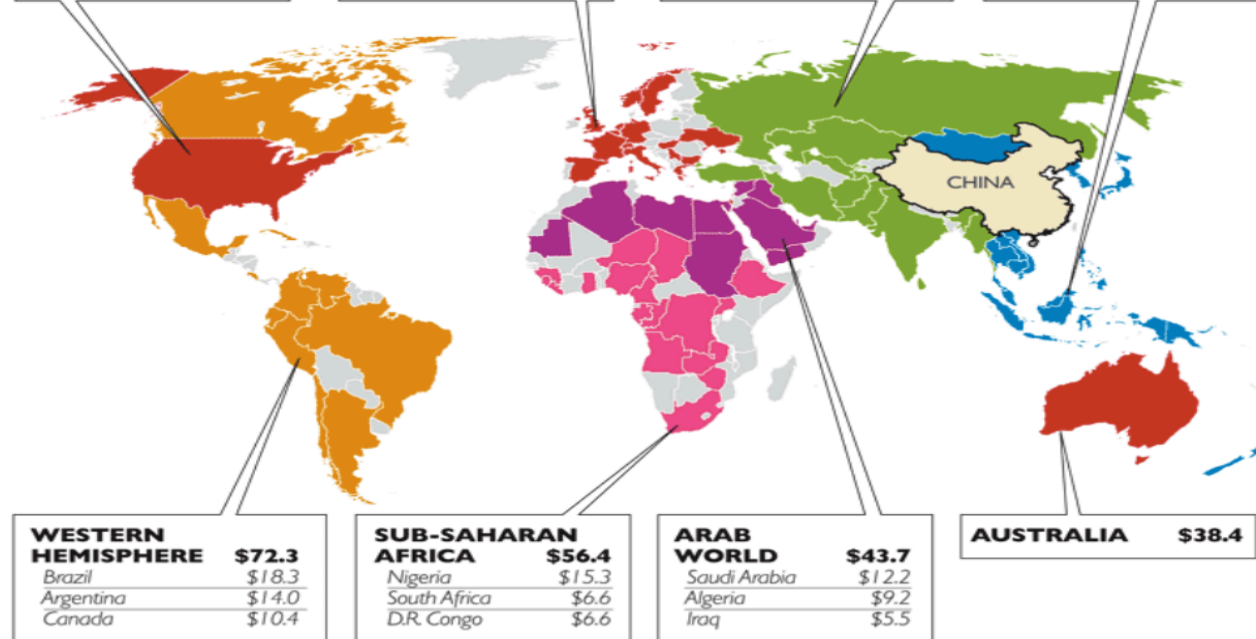
SCMP

In some



U.S.	\$30.5
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EAST ASIA	\$42.6
<i>Indonesia</i>	\$13.5
<i>Vietnam</i>	\$7.2
<i>Singapore</i>	\$7.0

Map 1 • B 2579  heritage.org

China as an international VC investor

- **Government** motives
 - Support domestic innovation ambitions and national industries (“made in China 2025”)
 - Portal into overseas financial & tech systems
 - Soft power (friends with checkbooks)
 - Stretch “great firewall” beyond borders
- **Private company** motives
 - Acquire technology and customers
- **Private citizen** motives
 - Capital flight/money laundering

How do you think these motives affect deal selection, valuation, and decision-making?




Example: Sharespost

NEW PLATFORMS FOR SECONDARY TRADING IN PRIVATE COMPANIES

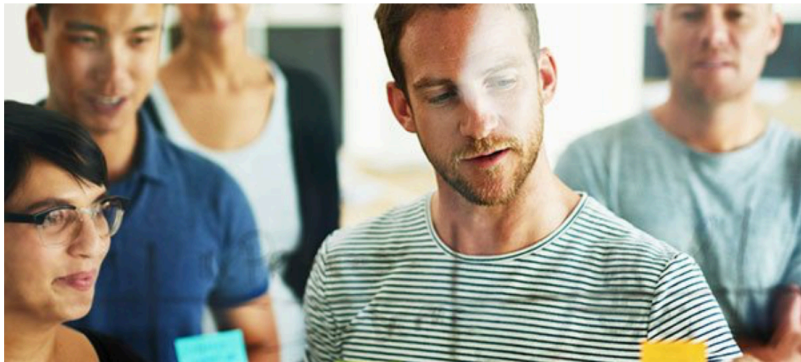
Nasdaq Pvt. Mkt & Sharespost

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Opportunities for Investors

[LEARN MORE >](#)








Solutions for Shareholders

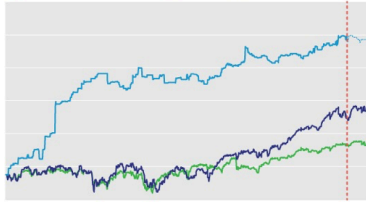
[LEARN MORE >](#)

SharesPost 100 Fund Top 10 Holdings as of 10/13/2017

The SharesPost 100 Fund, a closed-end interval fund, provides investors with access to the private technology growth asset class. [READ MORE >](#)

 Lyft	 DocuSign	 spruce	 SoFi	 OpenX
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■ SharesPost Private Growth Index ■ S&P 500 ■ Dow Jones U.S. Tech Index



NEW INDEX UPDATE
SharesPost Private Growth Index Trends Above S&P 500 in Q2
An Inflection Point in Q2 For Private Growth

San Francisco Chronicle

NEW SHARESPOT IN THE NEWS
SharesPost and Fidelity plan to make private shares a force for charity

Some of the world's biggest philanthropists hail from tech firms: Mark Zuckerberg of Facebook, Bill Gates and Paul Allen from Microsoft, Marc Benioff from Salesforce, Pierre Omidyar of eBay.

Aside from giving away millions of dollars each year to charities and other social causes, these

New retail investors?

VENTURE • VENTURE CAPITAL

Anyone Can Invest Like a VC Now—So Why Aren't They?

U.S. Startups Fail to Attract Crowd of Small Investors

By **Lizette Chapman**

May 19, 2017, 1:00 PM GMT+2 Updated on May 19, 2017, 9:14 PM GMT+2

- Equity crowdfunding generated \$38 million for 142 startups
- High costs and low fundraising cap to blame, analysts say

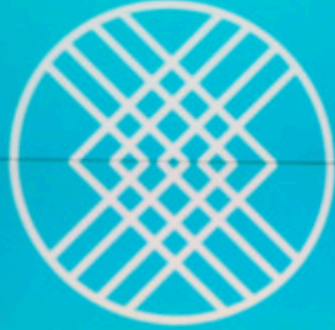
Sonnmatt
tut out.

What types of companies succeed on crowdfunding platforms like SeedInvest?



Example: Snap, StichFix, and Spotify

IPOS UNICORN PITFALLS AND NEW TYPES



STITCH FIX



Nasdaq

Stitch Fix Chief Executive Katrina Lake said her company isn't looking to discounted promotions as a draw for new customers, as Blue Apron has done.

Market summary > Snap Inc

NYSE: SNAP - Mar 2, 7:58 PM EST



18.01 USD **↑0.80 (4.65%)**

After-hours: 18.00 **↑0.06%**

1 day 5 day 1 month 3 month 1 year 5 year max

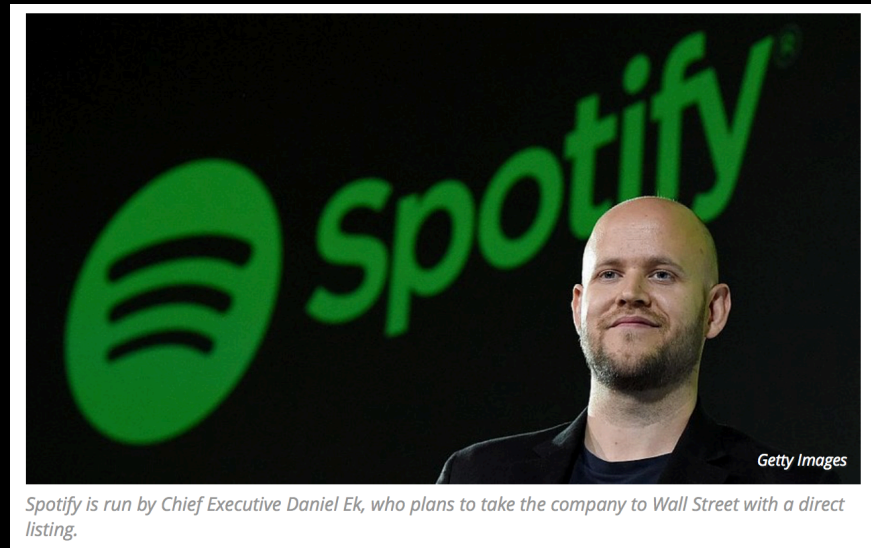


Open	16.83	Mkt cap	21.69B
High	18.08	P/E ratio	-
Low	16.73	Div yield	-



Spotify direct listing

- “direct listing” planned
- No underwriter
- Purely for liquidity (no new capital to be raised)



Summary so far

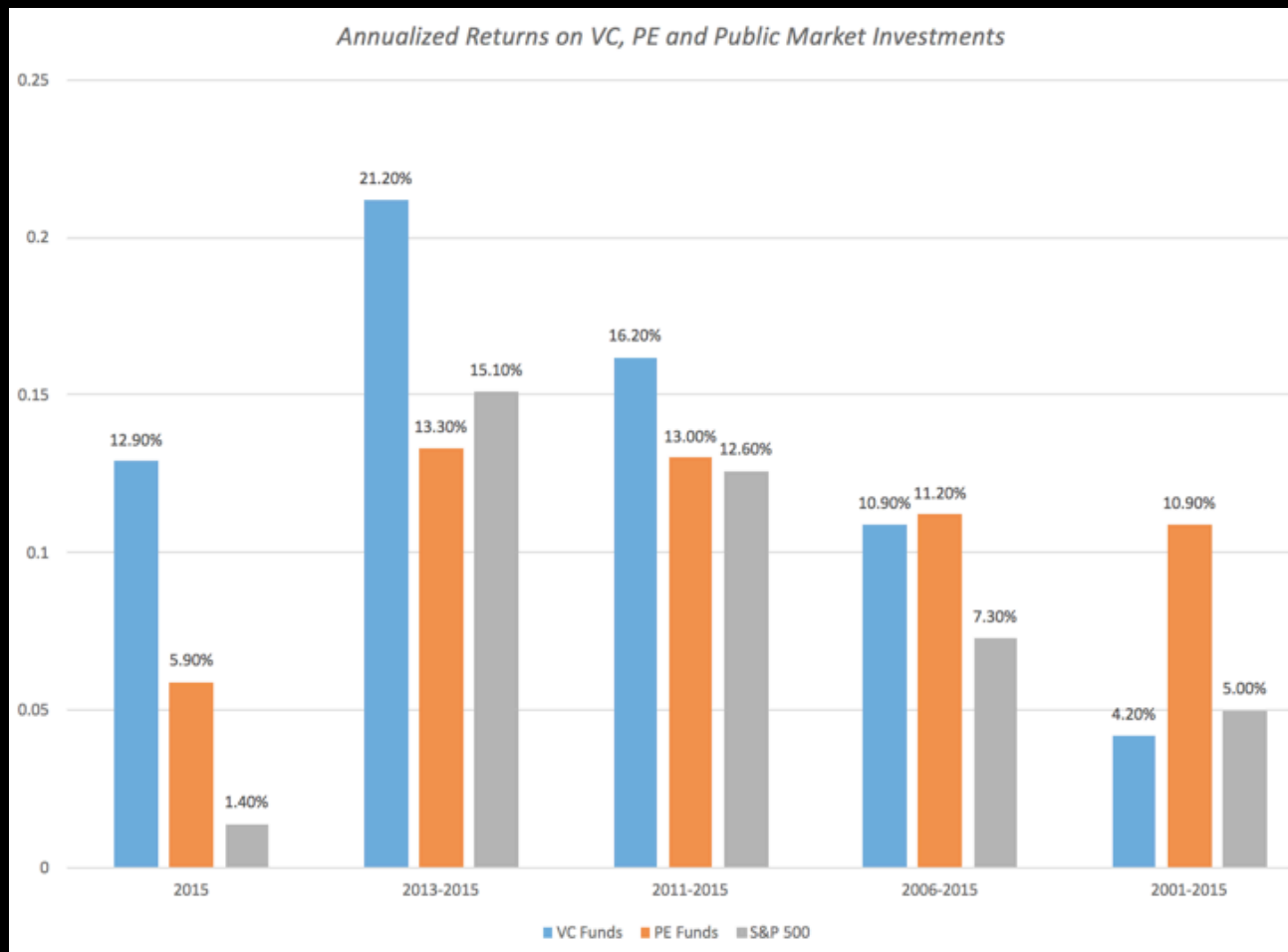
- Inflated private “unicorn” valuations
- Too much capital chasing too few deals
- Some capital with motives that cause weak valuation discipline
- Potential for disappointment : high expectations, high burn rates, potentially low returns or worse
- Unicorn IPOs results really mixed



Unicorn ****

FANTASY VALUATION

Average Reported Returns



What are unicorns really worth?

BUSINESS DAY

How Valuable Is a Unicorn? Maybe Not as Much as It Claims to Be



Andrew Ross Sorkin
DEALBOOK OCT. 16, 2017



“the average unicorn is **worth half the headline pricetag**”
“it is inappropriate to equate post-money valuations and fair values”
Headline prices do not reflect the different terms for different types of shares-the differences are “mind-boggling”
“The people who are hurt most are employees”



Ilya A. Strebulaev

Associate Professor of Finance, Graduate School of Business, Stanford University

50% overvalued zombiecorns?

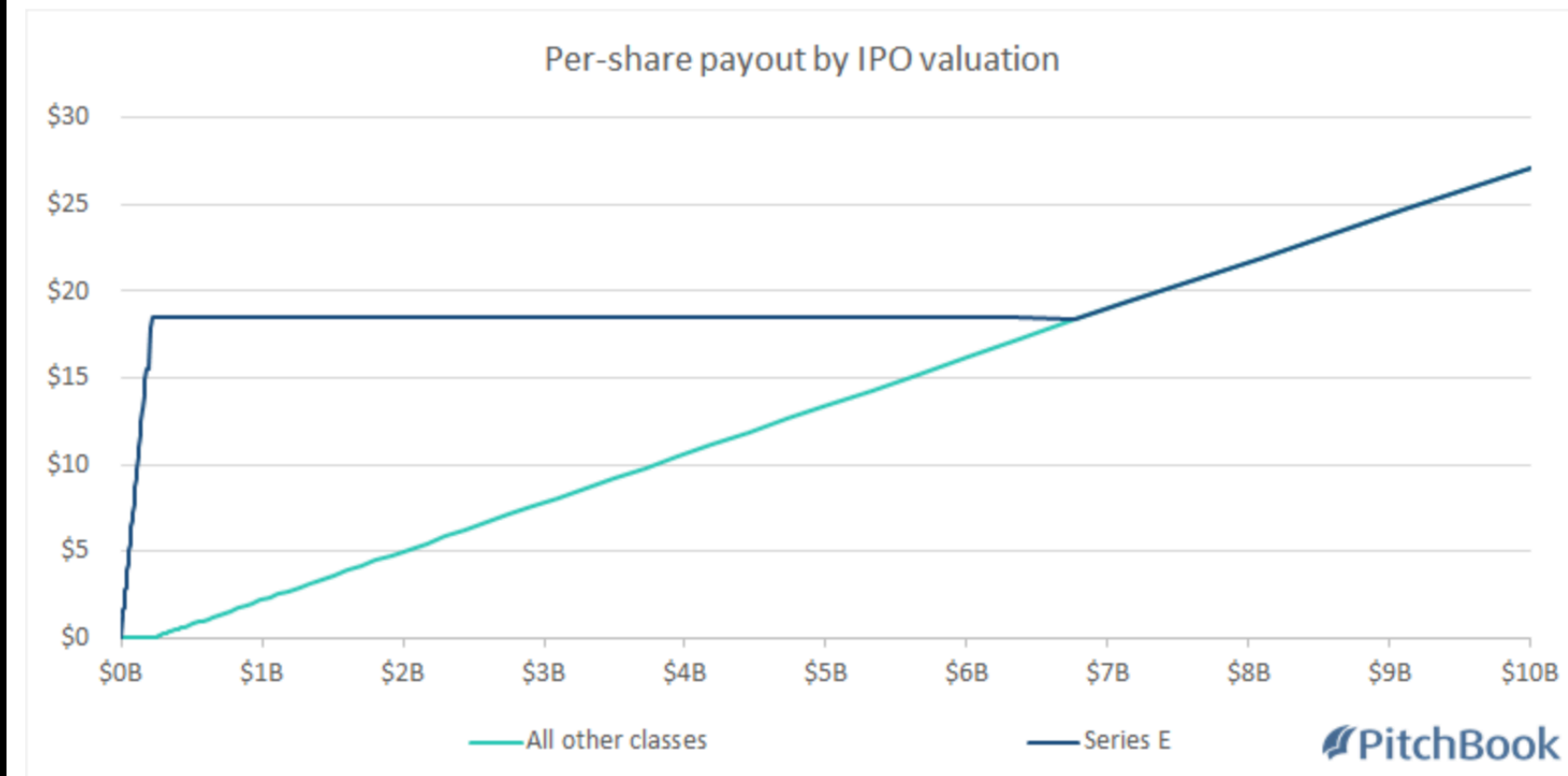
- Startups raise equity capital in successive tranches
- Each round sets a marginal “valuation”
- Each tranche of equity capital can have unique terms
- Payoff patterns for each tranche therefore vary
- There is not one single equity security price

Problem

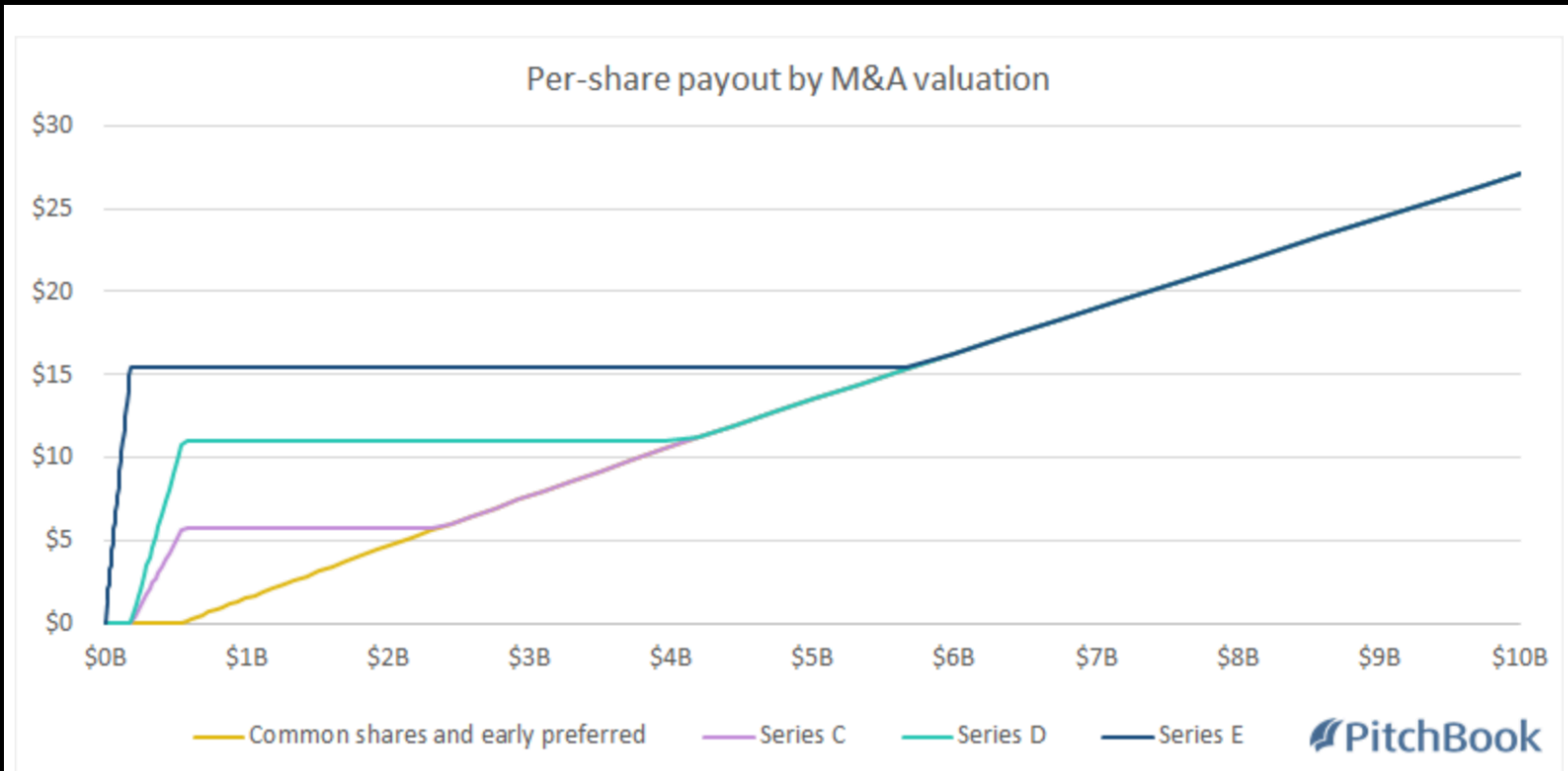
- Private valuations are higher than public valuations which is abnormal
- **Private valuations do not accurately reflect claims of different classes of shareholders**

Square

Square's Series E payout under different exit scenarios



Square



Note: For illustrative purposes only. This analysis only takes into account liquidation preferences; other deal terms would further alter the payout under different scenarios.)

Square Series E terms

- Raises \$150 million in 10/2014 issuing 9.7 million Series E pfd. Shares at **\$15.46**
- Series E has a 1x liquidation preference at \$15.46 in a liquidation or acquisition, and an \$18.56 liquidation preference in an IPO, (a ratchet providing more shares if IPO was below a certain valuation) both senior to the previous tranches
- **\$6 billion post-money valuation** was calculated on new price $\$15.46 \times 388$ pre-diluted shares (w/o the 9.7 million)
- IPO in 11/2015 at \$9/share **42% below Series E** round, **Series E got more shares to equate to \$18.56 value** (crowding out prior investors)

Square

- Because payoff patterns resemble options, options valuation can be used as a method to value unicorns, taking into account all the various terms
- As a result of discounting earlier tranches, the overall valuation of the company is likely to be less than what is implied by the marginal valuation at the last round

Betterment's comments

- Tradeoffs between valuation and terms
- “Softbank never loses money”

Gornall & Strebulaev paper

Squaring Venture Capital Valuations with Reality

Journal of Financial Economics (JFE), Forthcoming

54 Pages • Posted: 22 Apr 2017 • Last revised: 9 May 2018

[Will Gornall](#)

University of British Columbia (UBC) - Sauder School of Business

[Ilya A. Strebulaev](#)

Stanford University - Graduate School of Business; National Bureau of Economic Research

 [There are 2 versions of this paper](#)

Date Written: February 27, 2018

Gornall & Strebulaev paper summary

- Study of 135 unicorns
- On average 48% above fair value
- How determine fair value?
- Calculate value for each share class (average unicorn has 8 share classes!)
- Yields lower valuation in total because of investor protections in some classes
- Common lacks these protections and is 56% overvalued
- After adjustments, 65/135 unicorns are no longer unicorns

Gornall & Strebulaev

- Hybrid securities with different downside protections (seniority) and upside participation (optionality)
- Different cash flow and control rights, especially in downside scenarios—effectively a put option for VCs at the expense of common
- This means “post-money” valuation that treats all share classes the same is dead wrong

Investor protections that distort valuation

- 15% of unicorns gave IPO return guarantees (like Square)
- 24% gave vetoes over down IPOs
- 30% gave seniority to other investors
- Effect is to shrink the firm value assigned to lower-ranking classes
- Since not all shareholders have the same preferences, total firm valuation should not be based on the incremental terms set in the last round
- Total firm valuation is therefore lower than headline unicorn valuation

Square example

- Headline valuation was \$6 billion at the series E round
- Real valuation taking into account the preferences was \$2.2 billion
- Post money valuation overstated valuation by 171%!

implications

- **Mark to last round by VCs and LPs** overstates unrealized value in VC funds by a large margin
- Mark to last round by other investors like **mutual funds** overstates their performance
- **Listings on secondary sites** that use the last round as the headline price are misleading
- **Employee options** at venture backed companies are worth much much less

How to value unicorns?

Gornall & Strebulaev method

- Use options in pfd. Shs. to value the common (just as Black Scholes and Merton use common to value options)
- Contingent claims framework
- Similar to 409A tax valuation method

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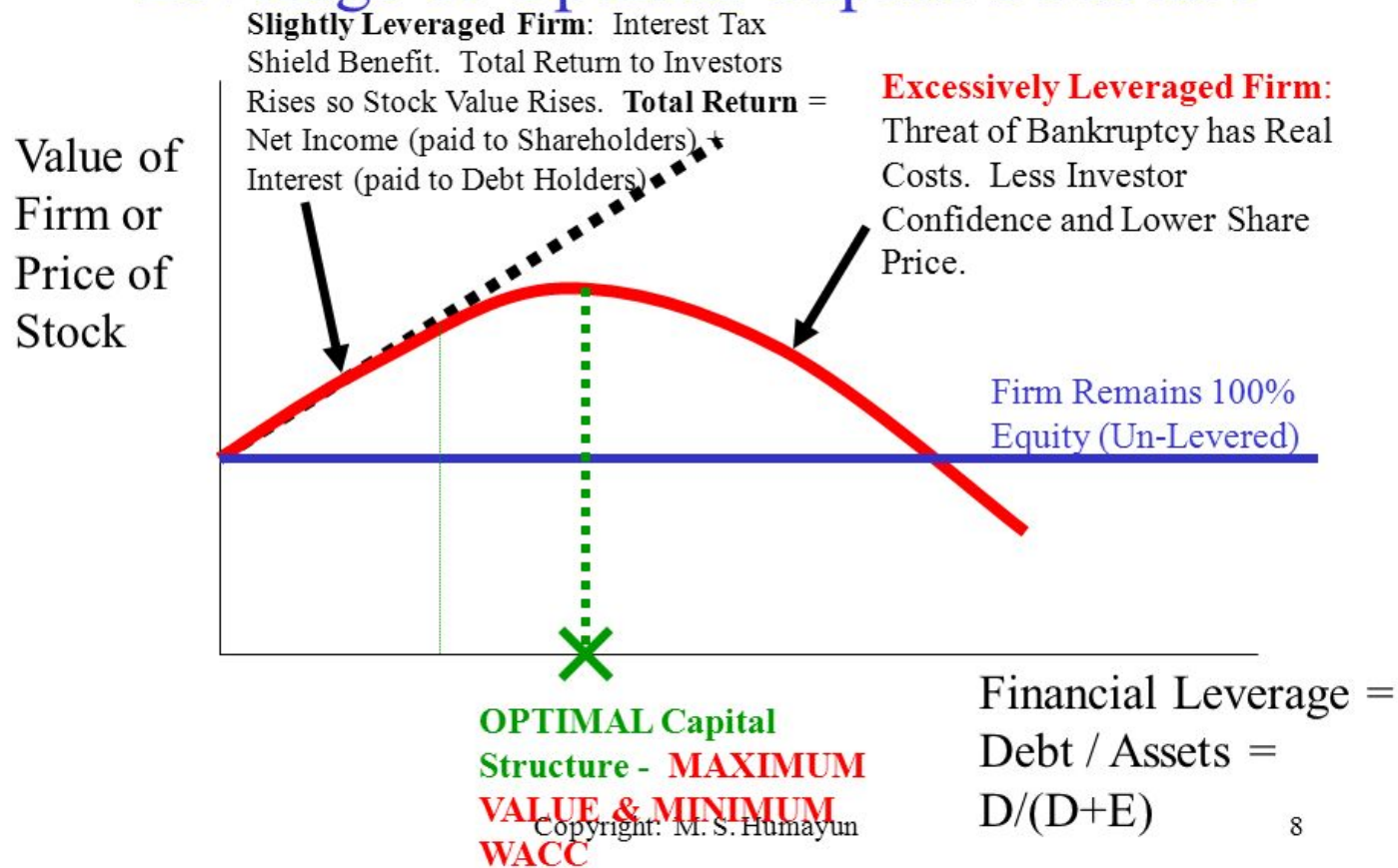
☐ [There are 2 versions of this paper](#)

Date Written: February 27, 2018

Optimal capital structure

Tradeoff Theory Graph

Leverage & Optimal Capital Structure



Which brings us to a weird idea: valuation versus price



Gap between Value vs. Price

Intrinsic Value

- Estimate of *what business is worth* based on future cash flows
- Drivers of Value
 - Cash flows of existing assets
 - Future growth
 - Quality of growth
- Tools for estimating value
 - DCF
 - Options replication better explains value of equity by taking into account varying CLAIMS on the cash flows

Price

- What *other people are willing to pay, also known as the “greater fool theory”*
- Drivers of Price
 - New market participants
 - Excess liquidity and credit
 - Momentum
 - Asymmetrical information
- Can cause firms to be over and undervalued by a wide margin
 - Overpaying will seriously impair future returns

Static v. dynamic firm value (Strebulaev)

**Static
(NPV of cffo)**

**Dynamic
(option)**

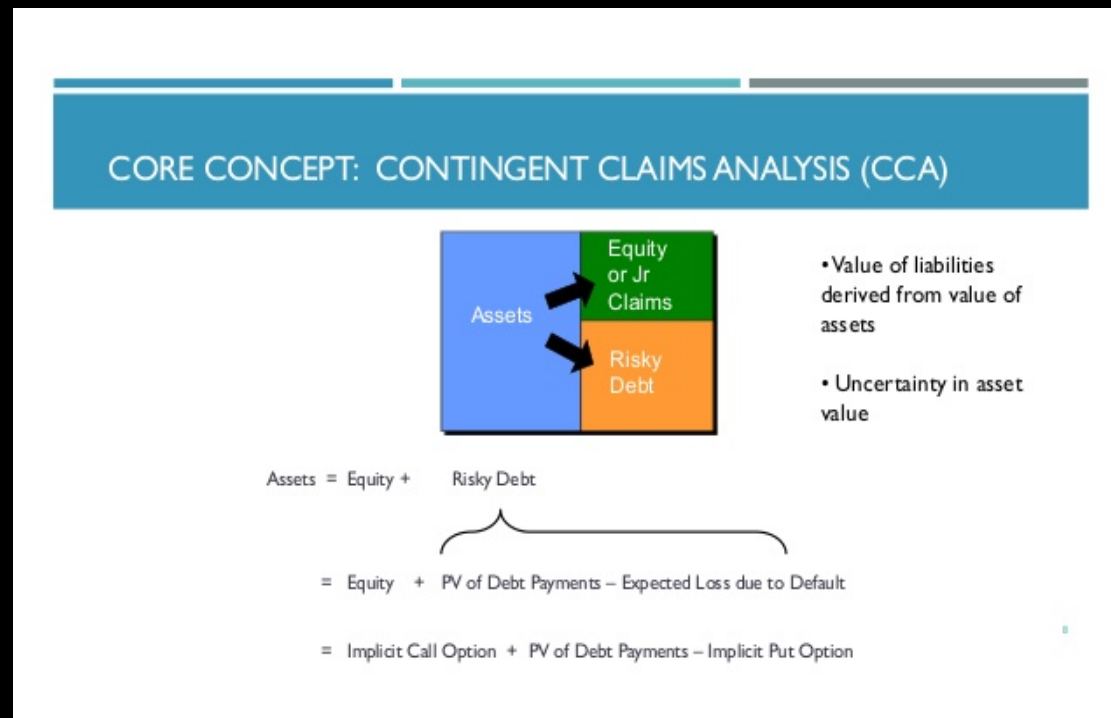
In both models, optimal decision is a f of:

- I = cost of investment
- σ = volatility of cash flows (expression of uncertainty)
- r = discount rate
- μ = growth rate (waiting is costly if growth is high)

Using options approach better demonstrates the economic tradeoffs of investing/not investing in the project, for example required hurdle rates or threshold X where firm is willing to exercise option are actually much higher if volatility is higher (payoff cffo = distribution)

Contingent Claims (Merton 1974):

Equity = implicit call option, Debt = implicit put option (floor)



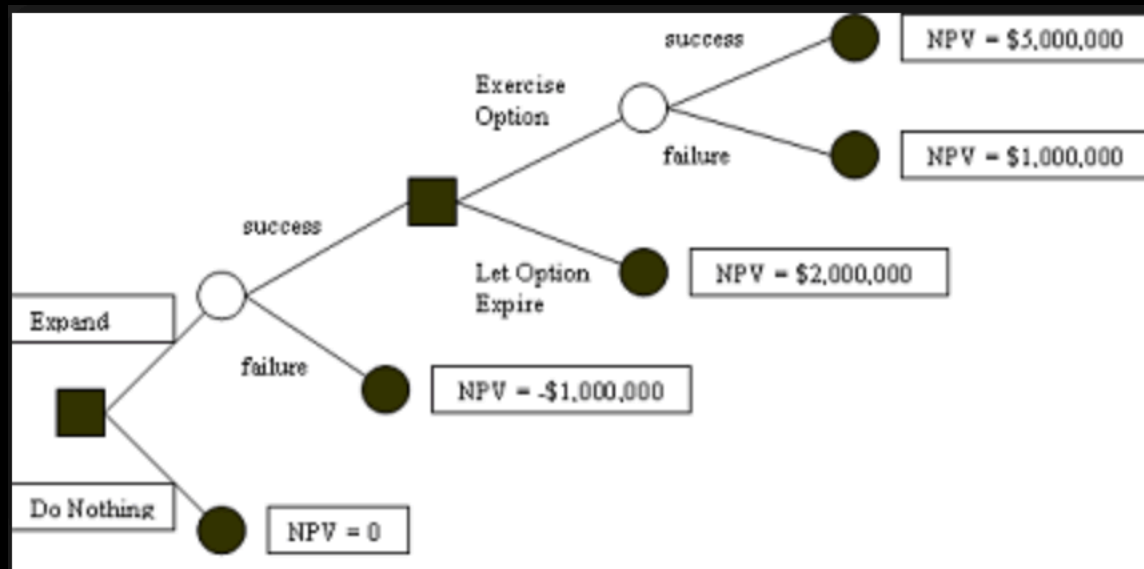
Intuition: option value

- When one security's payoff depends on the value of another (convertible) or can be replicated by a combination of securities
- the future is uncertain, so deferring an expensive project has option value—that means unrealized claims in VC securities also have value

In other words...

- In VC securities with contingent rights, (value that depends on an event) these rights have value even if they are (as yet) unrealized
- Convertible preferred with preferences therefore has optionality—an implied put and an implied call

Same thinking as binomial tree
contingency = path
dependency



Use cases relating to VC

- Multi-staging as an optimal strategy to overcome information asymmetry
 - Releasing capital in stages, or with milestones, reduces risk
- Exits as the point at which value is distributed
 - Optionality in securities used to shape odds / path
 - Varying claims on the firm (non-debt within the equity)

G-S Method

- Model the **structure of payoffs**
 - Exit scenarios (3-IPO, M&A, Liquidation)
 - Investor payoffs in different exit scenarios
 - Investor payoffs = greater of payoff if converted and contingent claim if not converted
- **Model the terms** in typical securities

How it works-1

- Assume a one-time payout (no dividends)
- Exit value X (IPO, M&A, liquidation) at time $T = X(T)$
- All investors payoffs are some function of the exit amount $f(X(T))$
- The form of f depends on the contractual features of the securities in that round, as well as all other rounds

How it works-2

- First model $X(t)$
- $X(t)$ evolves with geometric Brownian motion with volatility that grows with the risk-free rate (common assumption in corporate finance) (distribution of outcomes)
- The time to exit is independent of $X(t)$ and is exponentially distributed
- $T \sim \text{EXP}(\lambda)$ where λ is the exit rate and $1/\lambda$ is the average exit rate

How it works- 3

- Investors payoff based on investment amount I is the investors payoff discounted by the pricing measure:

$$I = \mathbb{E} \left[e^{-Tr_f} f(X(T)) \right].$$

- For example, investor invests at post-money valuation P , with a convertible preferred. If they convert, they get their fraction of P shares I/P , and if they do not convert they retain a claim on the company of I
- Investor's payoffs therefore are a function of the greater converted payoff and their unconverted claim

$$f(X(T)) = \max \left\{ \frac{I}{P} X(T), \min \{I, X(T)\} \right\}.$$

How it works-5

- In addition to optional conversion, there is forced conversion. Investors usually forced to convert if there is a qualifying IPO, even if the IPO price is below the last round
- So you can further model the payoff as a function of scenarios: voluntary or forced conversion, M&A etc.

How it works -6

- Having created a model for the **payoffs at exit** and the value to the investor (greater of realized claim or unrealized claim in different scenarios)
- Next you have to model the **terms** in the securities or f that operates on the $X(T)$

Example

Value of firm post money

$P_A = \$450$ million

$P_B = \$1$ billion

Value of investment

$I_A = \$50$ million

$I_B = \$100$ million

- Series B
 - 100 million new VC money
 - New investor owns 10%
 - \$1/share
 - Post money \$ 1 billion valuation
 - Convertible preferred with automatic conversion in IPO and 1x pref in M&A
- Series A
 - 50 million new VC money
 - A investor owns 12.5% at A round, 10% after B round
 - Post money \$450 million valuation (pre-money \$400)
 - Same type of security
- Common shareholders own 80% after B Round

Headline v actual

- **Down exit** scenario to illustrate what happens to common
- Using models, can compare \$1 billion headline valuation from last round to actual valuation of common implied by B and A rounds with preferences

B round convertible preferred

Greater of either 1) the claim if unconverted or 2) the value upon conversion

$$f_B^{M\&A}(X) = \max \left\{ \min \left\{ \frac{I_B}{I_A + I_B} X, I_B \right\}, X \times \frac{I_B}{P_B} \right\}. \quad (8)$$

1) Claim as unconverted = lesser of or proportion of new investment * exit value or investment I_B

2) Converted payoff = Exit value * B's % ownership

B payoff in down exit

exit $X = \$800$ million
what is B payoff worth?

$$f_B^{M\&A}(X) = \max \left[\min \left(\frac{100}{50+100} * 800, 100 \right), 800 * \frac{100}{1000} \right]$$

lesser of:

①a $\frac{100}{150} * 800 = \532

①b $\$100$

greater of:

$\$100$

value for B in
down exit w/ claim

$\$80$

value for B in
down exit w/o claim

B payoff in down exit

- Down exit: M&A at \$800 million
 - Greater of 1) and 2):
 - 1) is lesser of 1) a \$532 and 1) b \$100
 - 2) is 80
 - So value is 100
 - Same as value of 1x pref in M&A
 - Claim is worth \$20 -difference between \$100 received in down exit due to preference and \$80 would have gotten otherwise

Value of the common is lower in **down** exit due to pfd's preferences

With preferences

- Total \$800
- B investors get \$100 (liquidation value)
- A investors get \$80 (10% of the value-they are above their floor already)
- Common gets $\$800 - 180 = \620
- Common shares worth less per share in down exit
- \$20 transfer of value from common to preferred
- Common worth less per share due to contingent claims value of pfd.

Without preferences

- Total \$800
- B investors get \$80
- A investors get \$80
- Common gets $\$800 - 160 = \640

Payoffs in \$1 billion flat exit (oversimplified)

- A and B shares are worth more than common
- B investors
 - \$333 or \$100, \$100
- A investors
 - \$333 or \$50, \$111
- Common shares
 - $\$1000 - \$100 - \$111 = \789
 - 80% would have been \$800

Going back to the \$1 billion post-money

- Compare to headline last round valuation to fair value for common adjusting for the preferences of the other share classes- adjusting value of common downward
- Ratio of headline last round valuation to “fair” valuation = degree of overvaluation
- In \$1 billion unicorn example when the B and A round preferences are accounted for the firm is really worth \$771* not \$1 billion
- Overvaluation $1000/771 = \text{about } 25\%+$

There are many preferences that shape valuation

- Liquidation preferences
- Option pool
- Seniority
- Participation
- IPO ratchet (extra shares to compensate for IPO below threshold)
 - Square example
- Automatic conversion exemption
- Investment amounts (size of round)



Complicated!

Claims value

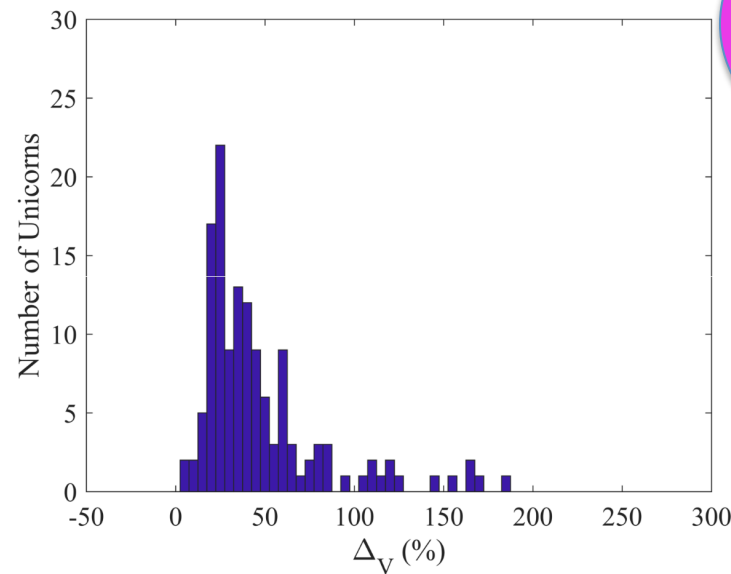
- Contingent claims, just like options that hinge on future events (like a given stock price) have value even in the absence of the actual event as long as the event is in the future
- Question would fixed expiration date increase or reduce the value of these claims ?

Impact on total co valuation

- Preferences have value even when exit does not happen due to contingent claims value (options thinking)
- If there are such preferences in other security classes common is worth less than the headline valuation at the last round
- If common is worth less, then total valuation (pre-exit) is less since the valuation is NOT $\#shs * \text{share price set at last round}$ or $\text{last round} / \#shs$

G-S evidence

- All 135 unicorns using payoff model and terms of securities



All
overvalued

Fig. 4. Distribution of Unicorn Overvaluation. This figure shows the distribution of overvaluation of the total value, Δ_V , for the unicorns in our main sample. Δ_V is the percentage that the post-money valuation overstates the company's fair value. Unicorn capital structures are reconstructed from Certificates of Incorporation using the method in Section 3.3 and fair values are calculated using the model in Section 2.

In other words...

- This options method produces valuations **below** recent unicorn rounds
- Especially since those recent marks treat all securities as if they were the same, **when they are not** (in an options sense)
- **Unicorns are not unicorns** after all!!!



IMPLICATIONS

Dangers Ahead

- Unicorn Valuation bubble?
 - Record high burn rates, 5-10x those of 1999 era
 - Most companies far, far away from profitability
 - Intense competition for best deals
 - Delayed liquidity for employees and early investors
 - Excesses take long time for markets to absorb
 - Fund reports wildly overstate valuations and success-real picture far less pretty

What will cause unicorn
valuations to return to earth?

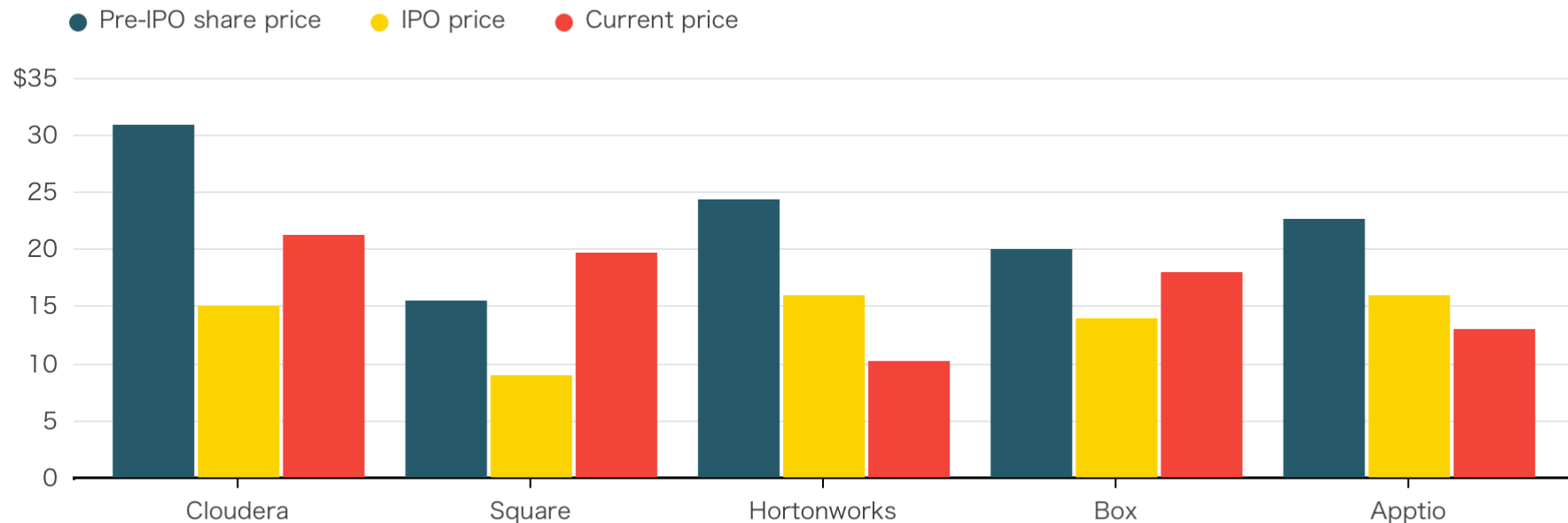
Bubble killers

- Slowing funds flows stop the prop
- Market corrections kill exits
- CEO scandals & #metoo movement creating accountability
- Companies do not fulfill promise
- Regulatory backlash
- Cycle of mark downs in funds and trapped capital

Unicorn markdowns

IPO Black Hole

A number of tech startups have gone public at prices far below their value as private companies



Source: SEC filings and Bloomberg

Note: The pre-IPO share prices were for preferred stock, which is more valuable than typical public stock. The pre-IPO share price doesn't account for additional stock issued later to some investors.

Unicorn markdowns

Dropbox \$10 billion valuation to...?

- Cash flow positive, revenues of \$750 million
- Typical multiple on cloud SW 4-5x
- IPO planned for 2017-2018 at lower than private valuation?

Unicorn markdowns

SoftBank Bids to Buy Uber Shares for 30% Less Than Current Value

By **Eric Newcomer**

November 27, 2017, 7:01 PM EST *Updated on* November 27, 2017, 10:32 PM EST



Unicorn ****

THE SHERIFF IN TOWN

SEC visits Silicon Valley

- Upward pressure on expectations and valuations
- Small companies have accounting and control issues
- Need for good due diligence
- Due to # and size of unicorns, SEC watching entrepreneurs and VCs



DANGERS AHEAD

FinTech valuation summary

- Flood of capital into private companies, some of it undisciplined, creating extreme overvaluation-vulnerable to potential liquidity shocks
- FinTechs following the general unicorn trends-special caution on regulatory arbitrage
- Only platforms likely to sustain high valuations
- Platforms with capital intensive (balance sheet) models like lending versus capital light? Particularly at risk?
- G-S valuation method provides a way to quantify the overvaluation and therefore the downside in unicorns, showing the degree of overvaluation is quite large
- RISK AHEAD!!!