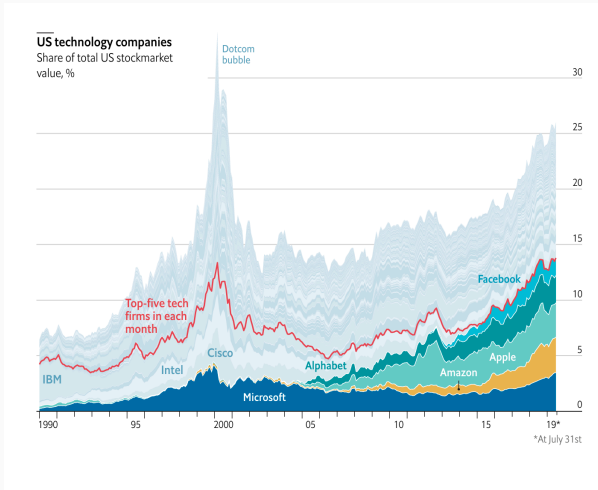# 'Blitzscaling'?

The Changing Structure of UK Venture Capital

Mirko Draca, Max Nathan, Viet Nguyen, Juliana Oliveira-Cunha, Anna Rosso, Anna Valero and Shengxing Zhang

April 2021

Centre for Economic Performance, LSE (All); and Warwick/CAGE (Draca); UCL (Nathan); Milan (Rosso); Zhanng (LSE Econ)

US technology companies
Share of total US stockmarket value, %

Dotcom bubble

Top-five tech firms in each month

IBM · Intel · Cisco · Microsoft · Alphabet · Amazon · Apple · Facebook

*At July 31st
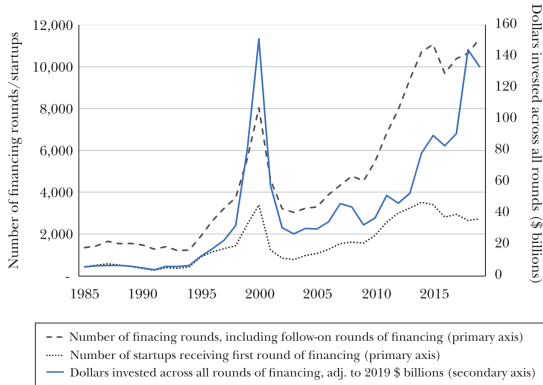
Major firms account for 10-15% total value and half of the tech sector portion. (This boom is more concentrated than the 1990s.)
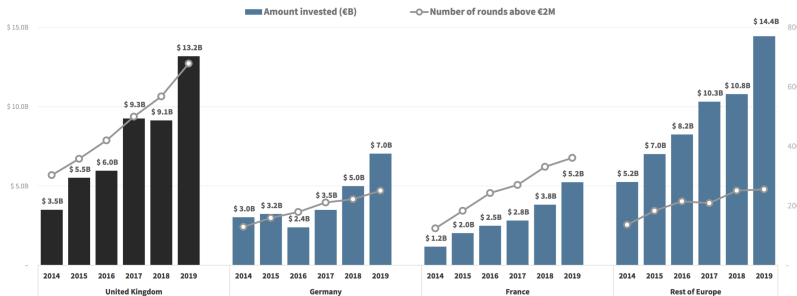
Figure 1
Evolution of the US Venture Capital Industry from 1985–2019

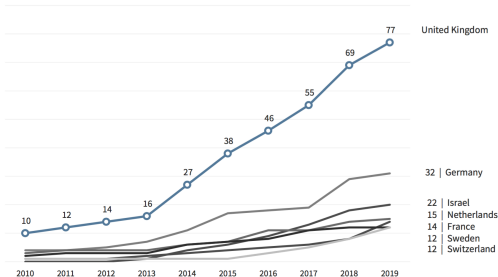Investment into new firms via venture capital. Via Lerner and Nanda (2020) JEP

The UK received more investment than Germany and France combined, and about one third of total investment in Europe in 2019.

Legend: ■ Amount invested (€B)   —○— Number of rounds above €2M

United Kingdom
- 2014: $ 3.5B
- 2015: $ 5.5B
- 2016: $ 6.0B
- 2017: $ 9.3B
- 2018: $ 9.1B
- 2019: $ 13.2B

Germany
- 2014: $ 3.0B
- 2015: $ 3.2B
- 2016: $ 2.4B
- 2017: $ 3.5B
- 2018: $ 5.0B
- 2019: $ 7.0B

France
- 2014: $ 1.2B
- 2015: $ 2.0B
- 2016: $ 2.5B
- 2017: $ 2.8B
- 2018: $ 3.8B
- 2019: $ 5.2B

Rest of Europe
- 2014: $ 5.2B
- 2015: $ 7.0B
- 2016: $ 8.2B
- 2017: $ 10.3B
- 2018: $ 10.8B
- 2019: $ 14.4B

TECH NATION   dealroom.co

3

In Europe, the UK ranks #1 by number of unicorns.

Prominent unicorn case is based on an investment hypothesis about **fast-scaling firms..**

'Blitzscaling is a strategy for driving and managing extremely rapid growth that prioritizes speed over efficiency in an environment of uncertainty.'
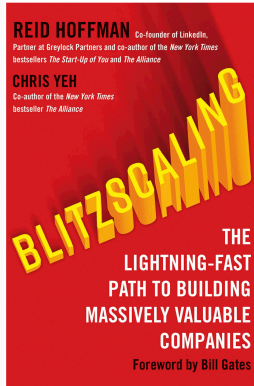
'It requires hypergrowth but goes beyond the blunt strategy of 'get big fast' because it **involves purposefully and intentionally doing things that don't make sense** according to traditional business thinking'..

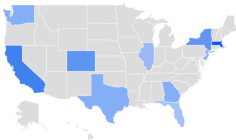Widespread perception that cloud services and mobile computing have had strong effects:

Some personal history helps answer the first question. When I launched a startup in 2000, my one and only institutional funding round of $15 million was largely consumed by the need to buy and maintain servers and storage devices, to write highly customized code for every business process, and to build market awareness through expensive, inefficient mass marketing channels. Launching that same venture today would probably cost 90 percent less, thanks to modern enabling technologies: open source computing, rapid wireframe and product prototyping tools, contract manufacturing, fulfillment-as-a-service, web-store design, cost-effective social media customer targeting, and cloud-based services.

Leonard Sherman, Wired 2019

- A hypothesis that recent technological changes have lowered the fixed costs of basic firm investments as well as the costs of distribution.

- Specifically, cloud services (fixed costs) and mobile computing (distribution) have been the underpinnings. See Ewens, Nanda, and Rhodes-Kropf(2018) on AWS. Subsequent rise of 'software-as-a-service' sector.

- The banner examples are AirBnb and Uber. The 'blitzscaling plus' version also features network effects + gaining monopoly power in new markets.

WIRED
LEONARD SHERMAN   BUSINESS   07.11.2019 09:00 AM

'Blitzscaling' Is Choking Innovation—and Wasting Money

Opinion: VCs are making bigger bets on fewer startups. It's this unconsidered, money-slinging strategy that led to Uber's and Lyft's dud IPOs.

This is problematic to the extent that venture capital allocation decisions are driven more by the VCs' urgency to deploy capital than by real business needs. In a world awash in capital from sovereign wealth funds, deep-pocketed Asian investors, and other highly endowed institutions, VC's have increasingly embraced the philosophy of "blitzscaling," in which investing unprecedented amounts of capital is believed to convey winner-take-all (or most) competitive advantage.

For example, when on-demand dog-walking service Wag sought to raise a $100 million D-round from a syndicate of US VCs in 2017, the Japanese-based Softbank Vision Fund swept in with a preemptive solo investment of $300 million, quadrupling Wag's market value just nine months after its prior funding round.

It wasn't clear then or now that a dog-walking service warrants an investment or valuation on this scale. Likewise, the business strategy wasn't apparent last year when Softbank led a $240 million C-round investment in direct-to-consumer company Brandless, which has subsequently struggled to scale.

- How have investments patterns changed? Sectoral composition and distinction between first and later rounds.

- What were the impacts of the 2000s AWS cloud revolution? Use text information to assess the extent of technological and product market change.

- Performance: Is the 'experimentation function' of VC changing? What evidence is there on success rates?

- Boom in 'business intelligence' data for VC activities: Crunchbase, Pitchbook, CB Insights, Parsers VC and UK specialist Beauhurst.

- Beauhurst covers 'high-growth' firms who hit at least one of 8 triggers.

- The tracking involves a comprehensive, cleaned up profile of the firm..

'Any possibly interesting new standalone firm'.

- Secured equity investment.
- Secured venture debt.
- Underwent a management buyout or buy-in.
- Attended a selected accelerator programme.
- Has been or is a scaleup.
- Spun out of an academic institution.
- Was featured in a selected high-growth list.
- Accepted a large innovation grant.

Graphcore

⬤ Tracked · 🇬🇧 South West, United Kingdom · Growth Stage

🔍 Add to collection · 📄 PDF · 📊 CSV · 💬 Feedback

Summary | Basic Details | Timeline | Recent Activity | News | Transactions | People | Ownership | Corporate Structure | Financials | Filing History | Similar Companies

Seed — Venture — Growth

Jul.2016 · Jan.2017 · Jul.2017 · Jan.2018 · Jul.2018 · Jan.2019 · Jul.2019 · Jan.2020 · Jul.2020 · Jan.2021

Basics summary

💷 Equity fundraising   📋 High growth list

What are Beauhurst Tracking Triggers?

Sectors
- Chips and processors
- Embedded software
- Server software

Buzzwords
- Artificial Intelligence [?]
- Open source [?]

Target Markets
- Businesses

Current COVID-19 status
- Potentially positive

Current COVID-19 impact tags
- Creating job opportunities (Confirmed)
- Surge in demand (Assumed)

Overall COVID-19 status
- Potentially positive

Transactions summary

7 £528m
Fundraisings secured

0
Grants received

0
MBO/MBIs undergone

0
Acquisitions made

0
Companies spun out

See more

Financial summary

	2019	2018	2017	2016
Turnover	£7.60m	£912k	£0.00	£0.00
Operating profit	-£75.2m	-£48.0m	-£15.3m	-£7.81m
Total assets	£166m	£193m	£71.1m	£19.9m

Data - Companies House

We take two main steps to make Companies House (CH) usable for the analysis of start-ups:

- **Start-ups:** Define the universe of new 'standalone' firms that can be classified as start-ups. This gives us a panel of start-up firms by their year of first incorporation or 'birth'.

- **Reporting Rules**: We clarify the rules for accounts reporting such that we're able to model sales and employment growth. In short, firms must report account above a certain level (hence the distribution of variables like sales or employment is left-censored.)

Ideal would be admin data but this is the 'actually existing and accessible' version.

Sales Distribution for Start-Up Companies, 2000-2018 (N = 97,882).
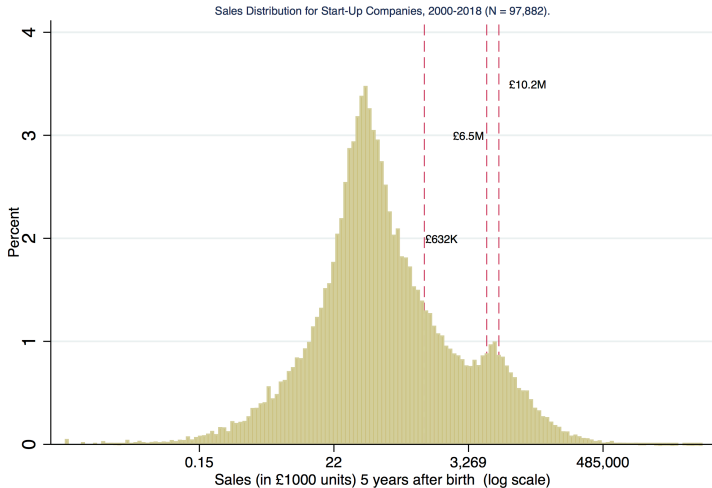
Notes: 632K, £6.5M and £10.2M are Companies House reporting thresholds. Upper threshold changed from £6.5M to £10.2M in 2016.

UK data allows us to observe the 'top tail' of high growth firms.

- The first point-of-entry is the fact that funding occurs across rounds.

- Unlike (say) pension portfolio investment, VC investment is premised on collecting info across rounds of investment & providing input into the investment.

- It therefore provides a window into the economics of business experimentation…

Level of Funding by Round - All Deal Types (N= 41,618)

Number of Deals by Funding Round (N=41,618).
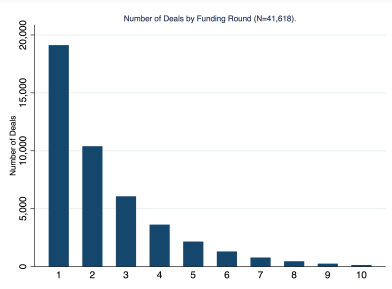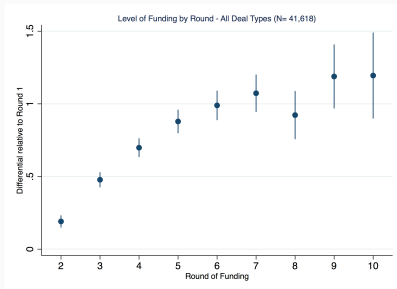
- Probability of second round conditional on first = 54.3%.
- Rises to 74.7% for PE-VC deals.

Step Change, 1st-to-2nd Round (logs), PEVC Deals
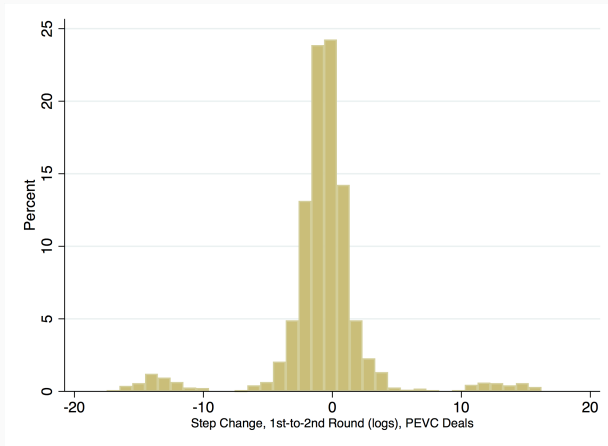
- Probability mass at big hits and big misses.
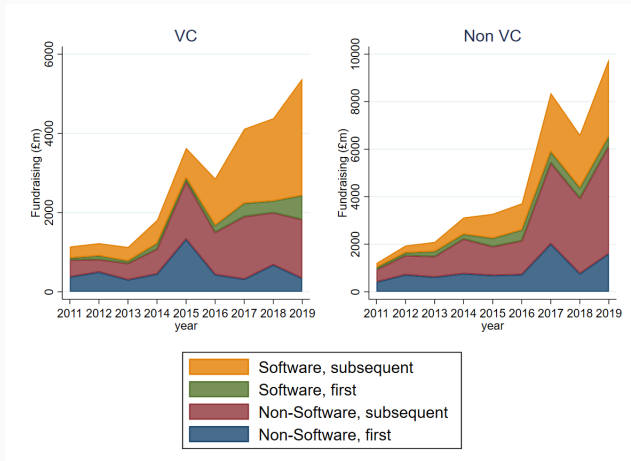
- Heavy bias of VC funding towards software.
- This is then concentrated in subsequent rounds.

|	Deals	Mega	Giga	Mega share	Giga share	Mean deal (£m)	Median deal (£m)
Software							
All rounds	2,254	33	14	1.5%	0.6%	5.45	1.72
First round	632	6	4	0.9%	0.6%	2.92	0.53
Subsequent	1,622	27	10	1.7%	0.6%	6.43	2.30
Other							
All rounds	2,105	41	14	1.9%	0.7%	6.38	2.00
First round	817	11	5	1.3%	0.6%	5.79	1.67
Subsequent	1,288	30	9	2.3%	0.7%	6.75	2.20

- Big median vs mean split shows importance of growing number of large deals.

- Mega = /£50+ million; Giga = /£100+ million

PEVC-backed Software (incl. SaaS) megadeals (£50m+)
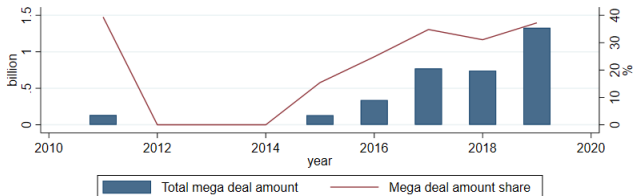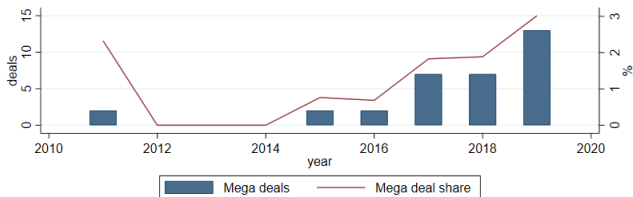
- 13 mega-deals (amount to £1.3 bil in total) accounted for approx 37% of VC funding by 2019.

	Software				Other			
	mean	p50	sd	N	mean	p50	sd	N
Firm age at deal date in years	4.47	3.37	4.18	2174	6.96	4.50	8.71	2030
HQ region is London	0.66	1.00	0.47	2252	0.35	0.00	0.48	2097
Acquired?	0.10	0.00	0.30	2254	0.11	0.00	0.31	2105
IPOd?	0.01	0.00	0.09	2254	0.02	0.00	0.15	2105
Failure (dead/zombie)	0.09	0.00	0.29	2254	0.11	0.00	0.32	2105
Latest pre money valuation millions	51.30	8.59	198.99	2102	29.09	6.55	108.21	1738
Latest post money valuation millions	57.22	11.17	210.58	2102	34.07	8.30	115.50	1738
Firm received large innovation grant	0.14	0.00	0.35	2254	0.27	0.00	0.45	2105
Firm has Patent	0.06	0.00	0.23	2254	0.17	0.00	0.37	2105
Firm has Trademark	0.50	1.00	0.50	2254	0.51	1.00	0.50	2105

- 10% acquired, 1% IPO, 9% failure.
- Strong presence of 'knowledge capital' (trademarks, patents, innovation grants).

Dependent variable: Ln(fundraising)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Seed				Later stages			
Year	0.117***	0.094***	0.138***	0.136***	0.072***	0.035**	0.062***	0.064***
	(0.018)	(0.026)	(0.026)	(0.026)	(0.011)	(0.016)	(0.015)	(0.015)
Software	-0.272***	-0.502***	-1.071***	-1.084***	-0.081	-0.449***	-0.634***	-0.648***
	(0.085)	(0.193)	(0.215)	(0.214)	(0.065)	(0.122)	(0.130)	(0.125)
Software X Year		0.046	0.047	0.047		0.076***	0.069***	0.070***
		(0.035)	(0.033)	(0.033)		(0.023)	(0.021)	(0.020)
Observations	1356	1356	1354	1354	3003	3003	2995	2995
Number of clusters	1178	1178	1176	1176	2033	2033	2030	2030
Firm Controls	no	no	yes	yes	no	no	yes	yes
Investor Controls	no	no	no	yes	no	no	no	yes

- Firm controls include BH high level sectors, age and turnover bands, tracking reasons and HQ in London. Investor controls: announced, and type (angel/crowd/government/undisclosed).

- Evolution of 'spray and pray' into 'spray, pray and go very big'.

- The rise of AWS in the 2000s led to falling start-up costs and a 'spray-and-pay' approach by investors (Ewens, Nanda and Rhodes-Kropf (2018)).

- Has the cloud revolution enhanced the diversity of digital start-ups? Have new sub-sectors emerged?

- We use the text info in Beauhurst to endogenously classify firms.

Basic approach is:

- Preprocess the text. Construct a W-vector for each firm of the word frequencies V_i.

- Then calculate cosine similarities across firm (i, j) pairs. This boils down to a correlation measure for text.

- Run a clustering algorithm on the $(N \times N)$ firm matrix. To put similar firms into discrete bins. This creates a branching structure...

Cluster dendrogram - Beauhurst firms (N = 35,559)

Basic branching structure of the clusters. We can look at the correspondence with SIC...

- TNI is like an SIC classification determined endogenously by the text data.

- It can get at 'fractal' groupings of firms that don't necessarily match the SIC taxonomy (but have explanatory power).

- We can therefore see the spread of endogenous sectors according to traditionally-defined industries...

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High-tech sectors as per NESTA (2015)
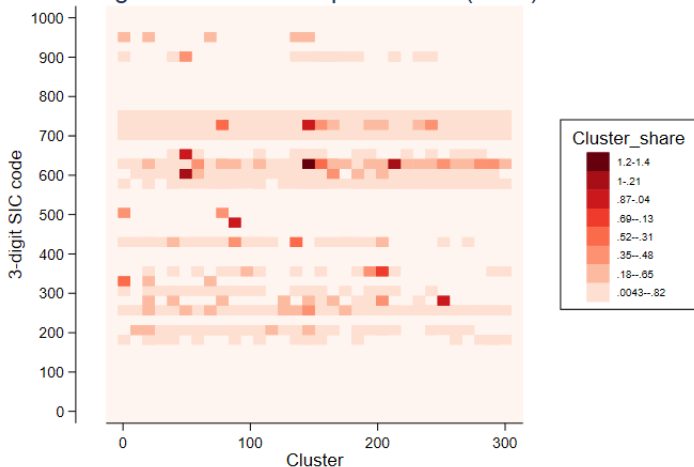
- Breaking this down, shows that there were clear 'waves of entry' by new types of firms in the 2010s...

Emergence of VEPC-backed Software companies [N=1468]
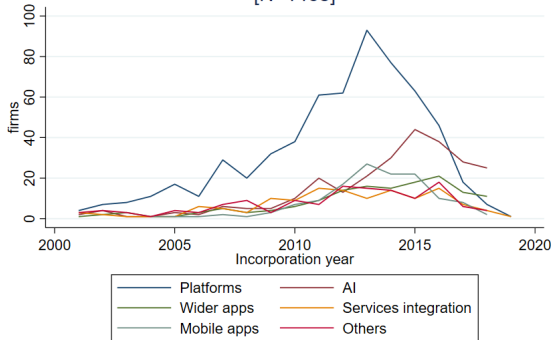
Top companies by latest valuations:

- **Platform**: The Hut Group, Darktrace, TransferWise, Funding Circle, WorldRemit
- **AI**: BenevolentAI, Metaswitch, NewVoiceMedia, Luminance, what3words
- **Mobile apps**: Revolut, Monzo, Shazam, Truphone, Receipt Bank
- **Wider apps**:SyntheticGestalt, Improbable, Graphcore, Snyk, ClearBank
- **Services integration**: Deliveroo, Wonga, OneFirewall Alliance, Unily, Tantalum
- **Others**: wejo,Skyscanner, Displaydata, Veeva,onefinestay

- This is hard to evaluate. By definition, the investments from the mid-to-late 2010s have not had time to mature.

- A foregrounding approach is to look at 'extreme success' in terms of sales growth using our historical Companies House start-up database.

- Let's us ask: how does the digital sector stack up as a general predictor of extreme success?

Share of Firm Types by log(Sales) Percentile (N = 97,882)
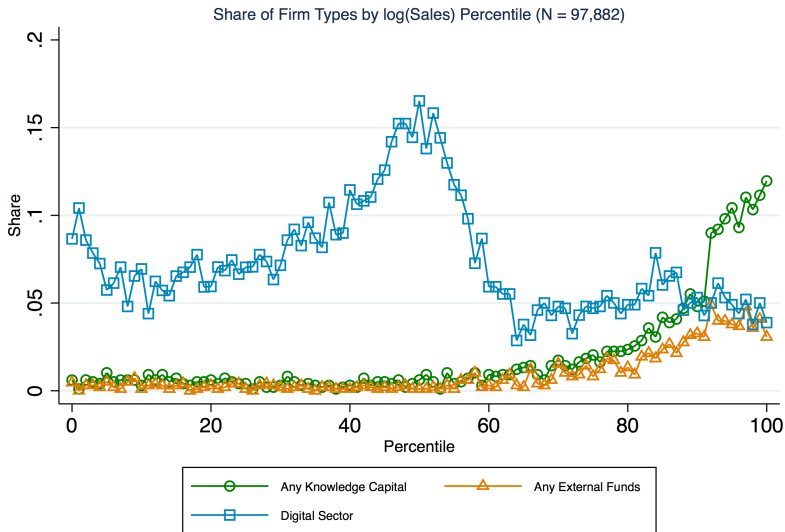
'Any Knowledge Capital' and 'Any External Funds' defined as before. 'Digital Sector' based on Tech Nation(2018) SIC definition

A digital bump in the top 2-3% of all start-ups but nothing systematic about digital.

Table 1: Probability of extreme success

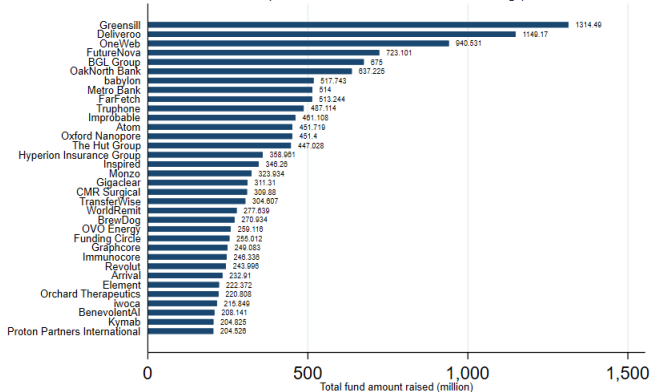| VARIABLES	(1)	(2)	(3)	(4)
	Top 10% firm by log(revenues)?			
Own trademark?		0.0882***	0.0811***	
		(0.0207)	(0.0156)	
Own patent?		0.0252***	0.0220***	
		(0.00522)	(0.00430)	
Received grant?		0.00700*	0.00728**	
		(0.00385)	(0.00319)	
Any IP capability?	0.0571***			0.0592***
	(0.0112)			(0.00962)
Any IP capability*Digital sectors				-0.0357***
				(0.0107)
Observations	2,040,114	2,040,114	2,040,106	2,040,106
R-squared	0.006	0.007	0.042	0.041
Birth year FE	Y	Y	Y	Y
SIC4 FE	N	N	Y	Y

Standard errors clustered by SIC4 in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Beauhurst fundraisers with £200m+ 2011-19
(34/18200 firms obtained 21.82% funding*)

Company	Total fund amount raised (million)
Greensill	1314.49
Deliveroo	1149.17
OneWeb	940.531
FutureNova	723.101
BGL Group	675
OakNorth Bank	637.225
babylon	517.743
Metro Bank	514
FarFetch	513.244
Truphone	487.114
Improbable	461.108
Atom	451.719
Oxford Nanopore	451.4
The Hut Group	447.028
Hyperion Insurance Group	358.951
Inspired	346.26
Monzo	323.934
Gigaclear	311.31
CMR Surgical	309.88
TransferWise	304.807
WorldRemit	277.639
BrewDog	270.934
OVO Energy	259.118
Funding Circle	256.012
Graphcore	249.083
Immunocore	246.338
Revolut	243.996
Arrival	232.91
Element	222.372
Orchard Therapeutics	220.808
Iwoca	215.849
BenevolentAI	208.141
Kymab	204.825
Proton Partners International	204.526

*Total funding amount raised: £66.69 billion

	(1) Follow On	(2) Step1 Change	(3) Number Rounds	(4) Successful Exit
softwaresaas	0.084***	-0.471***	0.391***	0.007
	(0.020)	(0.140)	(0.118)	(0.009)
N	3,099	2,424	3,099	3,099

- Software investment has a longer investment life-cycle.
- The big bets accumulate across later rounds. Successful exit is just hard to judge at this stage.

- Areas with longer time horizons and more complex investment requirements (eg: clean teach) have benefited less from the VC investment boom. Generally, policy-makers should recognise that *failure is the norm*.

- Lots of experimentation should be a good thing. 'Hot money' environments are good for turning up unexpected ideas (Nanda and Rhodes-Kropf 2017)

- But 'blitzscaling' investment strategy must be monitored. There'll be lots to learn about the 'experimentation function' from this era.
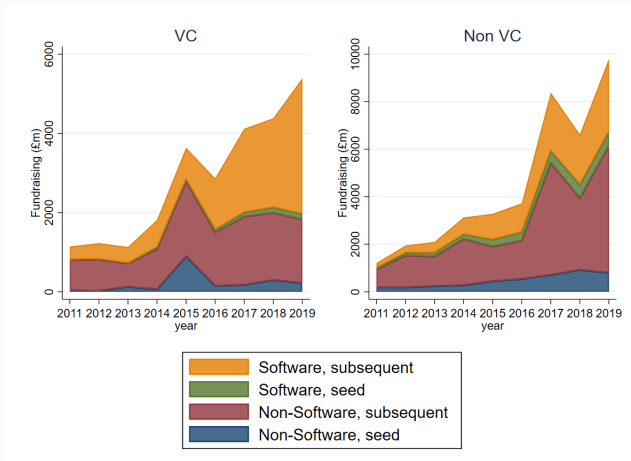
- Heavy bias of VC funding towards software.
- This is then concentrated in later (growth) stages of evolution of the business.

Dependent variable: Ln(fundraising)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	First Round				Subsequent Round			
Year	0.023	-0.025	0.030	0.034	0.059***	0.016	0.083***	0.082***
	(0.018)	(0.024)	(0.023)	(0.022)	(0.013)	(0.019)	(0.017)	(0.017)
Software	-0.743***	-1.247***	-1.304***	-1.265***	0.003	-0.402***	-0.486***	-0.522***
	(0.088)	(0.174)	(0.193)	(0.190)	(0.074)	(0.151)	(0.147)	(0.146)
Software X Year		0.115***	0.098***	0.096***		0.079***	0.050**	0.055**
		(0.035)	(0.032)	(0.032)		(0.026)	(0.023)	(0.023)
Observations	1449	1449	1447	1447	2910	2910	2902	2902
Number of clusters	1449	1449	1447	1447	1886	1886	1882	1882
Firm Controls	no	no	yes	yes	no	no	yes	yes
Investor Controls	no	no	no	yes	no	no	no	yes

- Firm controls include BH high level sectors, age and turnover bands, tracking reasons and dummy for HQ in London
- Investor controls include a dummy for whether the deal was announced, and dummies for whether the deal involves angel/crowd/government/undisclosed investors