The Startup Performance Disadvantage(s) in Europe - Evidence from Startups Migrating to the U.S.

Stefan Weik

Technical University of Munich
stefan.weik@tum.de

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The “Trillion-Dollar-Question” [Peter Thiel]: Why no Silicon Valley and no Big Tech firms in Europe?

- Growth of venture capital (VC)-backed startups into global tech giants is one of *the* economic trends of our time – and **Europe is largely missing out**
  - 8 of 10 of world’s top companies are VC-backed US/Asian tech **(0 from Europe)**
  - Europe also **lags at producing “Unicorns”**: 51% US, 31% Asia, 13% Europe (in 2021)
- **Many hypotheses**: lacking financial capital, human capital, entrepreneurs, ambition, risk tolerance; as well as: bureaucracy, inflexible labor laws, inadequate exit markets...
- **But no systematic evidence** on European disadvantages at startup performance

In This Paper

The Ideal Experiment?

- The ideal experiment would be to send random startups to the U.S. and observe their differential development
- Challenges: No such data

In This Paper:

- Novel dataset of European startups migrating to the U.S.
- Compare U.S. migrants and stayers to understand European disadvantages
- Main findings:
  1. U.S. migrants raise much more funding, sustain *higher* financial losses, are more mature at IPO
  2. U.S. migration does *not* increase revenue, or likelihood of IPO/acquisition
  3. Main advantage of the US: higher funding and tolerance for losses, allowing focus on growth - European startups not hindered by exit and product markets.

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Empirical Strategy

Idea

- Compare performance of migrants and stayers to grasp European disadvantages

Challenge

- Migration is (endogenous) choice; no exogenous variation to exploit

Empirical Strategy (Intuition)

1. **Theory predicts that better startups migrate to the U.S.**
   - Startups benefiting most from U.S. migration are the ones most likely to move (i.e., **positive selection**) » Formal Theory
2. **Use this theoretical insight as empirical strategy**
   - Due to positive selection, cross-section gives an **upper bound** of the US ecosystem's effect on startups
   - Logic: in areas where migrants do not perform better, there should be no advantage
   - Analogy: European basketball players going to U.S. colleges...

Theory: Who Selects into Migration?

- Startup performance is Π_i; migrating the startup to the U.S. ecosystem improves performance by λ_i^{US}, but costs c_i
- Hence, a startup will migrate to the U.S. if:

$$(1 + \lambda_i^{US} - c_i)\Pi_i > \Pi_i \tag{1}$$

- Relative performance of migrants and stayers we observe is:

$$\frac{\mathbb{E}_i\left[\left(1 + \lambda_i^{US} - c_i\right)\Pi_i | \lambda_i^{US} > c_i\right]}{\mathbb{E}_i\left[\Pi_i | \lambda_i^{US} < c_i\right]} - 1. \tag{2}$$

- Which gives an upper bound of the true effect of the U.S. ecosystem on startups:

$$\mathbb{E}_i\left[\left(\lambda_i^{US} - c_i\right) | \lambda_i^{US} > c_i\right] \geq \mathbb{E}_i\left[\lambda_i^{US} - c_i\right]. \tag{3}$$

Novel Data on U.S. Migration of Startups in Europe

Starting point:

- Startups from 17 European countries VC-funded 2000-2014 (from VentureSource)

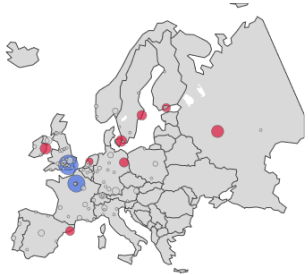
Augmented with comprehensive micro-data:

- Financials from Orbis (62% of firms covered)
- IPO & Acquisition outcomes from SDC (exit number increased by 25%)
- Patents from PATSTAT (30% of firms patent)
- Hand-collected headquarter (HQ) moves from painstaking manual search: historical company/LinkedIn/Crunchbase websites, (from WebArchive), news articles (from Businesswire/LexisNexis), business registration records in US states.

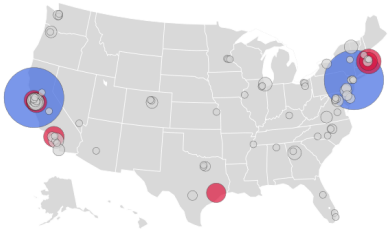
Novel Data on U.S. Migration of Startups: Overview

- 11,066 sample startups, from 17 countries - 555 (or 5%) move to US (”Migrants”)
- Migrants move early (median 1 year after funding)

Migrant Origins



U.S. Destinations



European Stayers vs. US Movers: At First Funding ($t = 0$)

	Stays in Europe	Moves to US	Difference	
	Mean	Mean	Mean	t-stat.
Panel A: Startup characteristics at first financing (t=0)				
VC raised ($ m)	5.73	5.93	0.21	0.18
Pre-money valuation ($ m)	15.45	13.39	- 2.06	-0.25
Startup age	2.59	2.49	- 0.10	-0.88
Num. of VCs investing	1.96	2.36	0.40	7.25***
US VC involved	0.08	0.29	0.21	16.76***
Revenue ($ m)	6.91	5.08	- 1.83	-0.37
Net income ($ m)	- 0.65	- 1.00	- 0.35	-0.90
Employees	50.02	30.99	- 19.03	-1.01
Num. of Patents	0.62	0.67	0.06	0.42
Observations	10511	555	11066	

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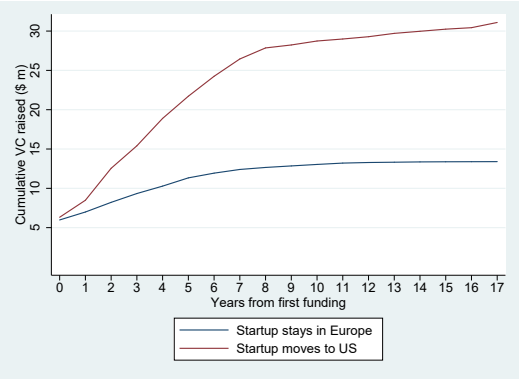
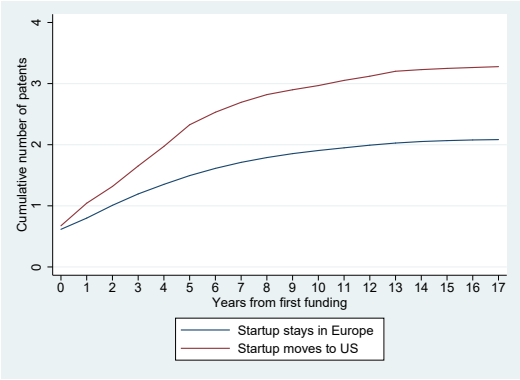
Moving to the U.S. and Startup Fundraising & Innovation

Venture capital (VC) funding

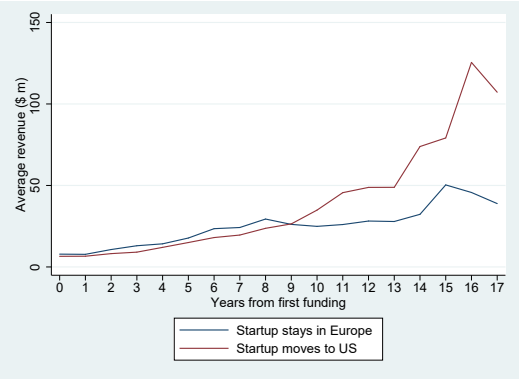


Patents

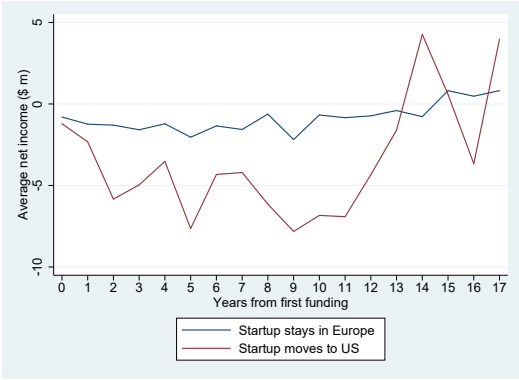


Moving to the U.S. and Commercial Success

Revenue

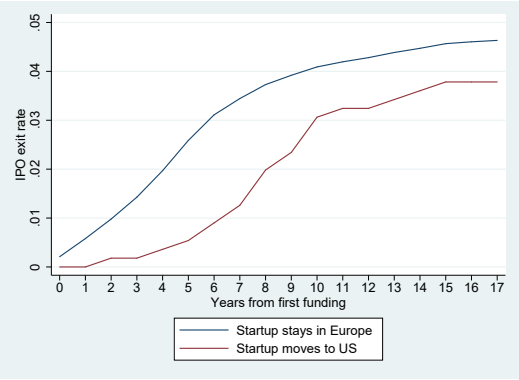


Net Income (Losses)

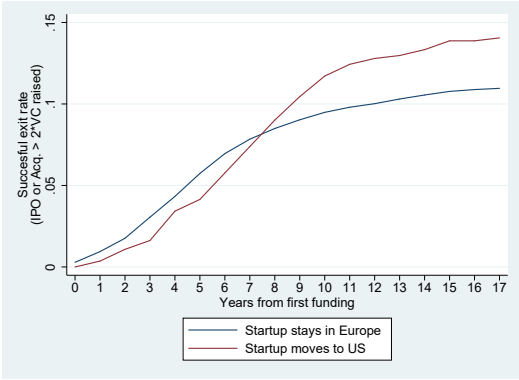


Moving to the U.S. and Startup IPOs/Acquisitions

IPO



Successful Exits (IPO or Acq. $>$ 2$*$VC raised)



Moving to the U.S. and Fundraising & Innovation

Dependent variable:	LN VC raised ($ m) by $t+6$			LN Num. of Patents by $t+6$		
	(1)	(2)	(3)	(4)	(5)	(6)
Moves to US	1.04***	1.13***	0.62***	0.17***	0.22***	0.12***
	(0.10)	(0.07)	(0.05)	(0.05)	(0.04)	(0.03)
First funding controls	No	No	Yes	No	No	Yes
Funding Year FE	Yes	No	No	Yes	No	No
Industry X Funding Year FE	No	Yes	Yes	No	Yes	Yes
Country FE	No	Yes	Yes	No	Yes	Yes
Observations	11066	11066	11066	11066	11066	11066
R-squared	0.019	0.070	0.677	0.002	0.216	0.662

Moving to the U.S. and Commercial Success

Dependent variable:	Revenue ($ m) by $t+6$			Net income (loss) by $t+6$		
	(1)	(2)	(3)	(4)	(5)	(6)
Moves to US	0.98	1.08	-2.62	-2.18***	-1.79***	-1.51**
	(3.10)	(2.90)	(2.85)	(0.70)	(0.67)	(0.70)
First funding controls	No	No	Yes	No	No	Yes
Funding Year FE	Yes	No	No	Yes	No	No
Industry X Funding Year FE	No	Yes	Yes	No	Yes	Yes
Country FE	No	Yes	Yes	No	Yes	Yes
Observations	11066	11066	11066	11066	11066	11066
R-squared	0.000	0.073	0.168	0.009	0.094	0.120

Moving to the U.S. and Startup IPOs/Acquisitions

Dependent variable:	IPO			Successful Exit (IPO or Acq>2*VC raised)		
	(1)	(2)	(3)	(4)	(5)	(6)
Moves to US	-0.01*	0.00	-0.01	0.04*	0.04**	0.03
	(0.00)	(0.01)	(0.00)	(0.01)	(0.02)	(0.02)
First funding controls	No	No	Yes	No	No	Yes
Funding Year FE	Yes	No	No	Yes	No	No
Industry X Funding Year FE	No	Yes	Yes	No	Yes	Yes
Country FE	No	Yes	Yes	No	Yes	Yes
Observations	11066	11066	11066	11066	11066	11066
R-squared	0.000	0.073	0.168	0.009	0.094	0.120

Moving to the U.S. and Scale at IPO

Firm Valuation, Employees, Revenue, Net income, and Age at IPO

	(1)	(2)	(3)	(4)	(5)
	Panel A: IPOs				
Dependent variable:	LN Valuation at IPO	LN Employees at IPO	LN Revenue at IPO	Net income ($m) at IPO	LN Age at IPO
Moves to US	1.48***	1.34***	1.18***	-20.93***	0.41***
	(0.27)	(0.39)	(0.39)	(5.70)	(0.07)
First funding controls	Yes	Yes	Yes	Yes	Yes
Funding Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Stage FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Observations	495	422	414	402	512
R-squared	0.461	0.476	0.547	0.089	0.368

- Previous findings are puzzling - more funding but not more exit success?
- At IPO, U.S. migrants are "different beasts" in scale/maturity:
  - 4.4 *times* higher valued
  - 3.4 *times* more revenue
  - 40% older (12 vs. 8 years in Europe)

Funding Advantage as Main Mechanism?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Innovation		Business success		Exit		Valuation at exit	
Dependent variable:	LN Num. of patents by t+6	LN Scaled citation-weighted patents by t+6	Revenue ($ m) in t+6	Net income ($ m) in t+6	IPO	Successful Exit	LN Valuation at IPO	LN Valuation at Succ. Exit
Moves to US	0.06**	0.18***	-7.37**	-0.44	-0.06***	-0.01	0.75***	0.35***
	(0.02)	(0.03)	(3.01)	(0.61)	(0.02)	(0.03)	(0.22)	(0.12)
LN VC raised ($ m) by t+6	0.10***	0.08***	6.84***	-1.60***				
	(0.01)	(0.01)	(1.12)	(0.17)				
LN VC raised ($ m) by exit					0.04***	0.04***	0.58***	0.67***
					(0.01)	(0.01)	(0.05)	(0.03)
First funding controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Funding Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stage FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11066	11066	2802	2760	3812	3812	495	1223
R-squared	0.677	0.476	0.198	0.203	0.126	0.073	0.663	0.613

Interpretation & Robustness

Interpretation

- Key difference is U.S. migrants **achieve much greater scale, facilitated by higher tolerance to financial losses, and more VC funding**
- No effect on revenue and exit likelihood suggest that **European startups are not hindered by European product and exit markets**
- Financing advantage explains large parts of other performance differences, suggesting **venture capital market is biggest (dis)advantage**

Robustness

- Very similar results when matching migrants with similar stayer
- Robust over time periods (1-8 years) after migration

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What did we learn from the paper?

- Novel dataset on startup migration to the U.S. from 17 European economies
- Main startup disadvantage in Europe is less funding - and lower tolerance for losses
- Product and exit markets do not hinder European startup development much
- Important for policymakers: boosting European entrepreneurship is much more straightforward than previously thought - instead of efforts across many markets (product, exit, human capital etc.), focus on understanding issues in VC market

Appendix

European Stayers vs. US Movers: Industry/Country Mix

	Stays in Europe	Moves to US	Difference	
	Mean	Mean	Mean	t-stat.
Industry				
Software	0.21	0.38	0.17	9.30***
Hardware	0.11	0.11	0.00	0.12
Medical/Biotechnology	0.18	0.12	- 0.05	-3.32***
Consumer/Retail	0.21	0.14	- 0.06	-3.63***
Other Industry	0.30	0.25	- 0.05	-2.56**
Country				
France	0.20	0.17	- 0.03	-1.67*
Germany	0.13	0.09	- 0.04	-2.61***
Sweden	0.07	0.05	- 0.02	-1.43
United Kingdom	0.29	0.31	0.02	0.81
Other Country	0.32	0.39	0.07	3.24***

European Stayers vs. US Movers: Startup Performance

	Stays in Europe	Moves to US	Difference	
	Mean	Mean	Mean	t-stat.
Panel B: Startup performance variables				
VC raised ($ m) by t+6	11.93	24.25	12.32	6.37***
VC rounds by t+6	1.64	2.36	0.72	17.22***
Num. of patents by t+6	1.61	2.53	0.92	3.70***
Scaled citation-weighted patents by t+6	1.36	3.02	1.66	4.70***
Revenue ($ m) in t+6	23.50	18.04	- 5.46	-0.41
Net income ($ m) in t+6	- 1.35	- 4.33	- 2.98	-2.23**
IPO	0.05	0.04	- 0.01	-0.76
Successful Exit (IPO or Acq.>2*VC raised)	0.11	0.15	0.04	2.60***