Foreign investments and jobs: Evidence from US venture capital investments in Sweden

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Current status

Time

Value of feedback

Paper quality

YOU ARE HERE

I AM HERE
The new nationalism
New economic nationalism

- US: President Elect Trump:
  - “Put America First”

- UK: FT, July 16th 2016
  - “Theresa May, the prime minister, took office last week vowing to protect British business from predatory foreign investors”

- FT, July 18th 2016
  - Spotify co-founders threaten to quit Sweden
Long-standing debate
What role of foreign VCs?

Should European countries imitate Silicon Valley?

If so, do foreign VCs bring in direct benefits?

Are there any spill-overs?

Is the Israeli success story replicable?
Ecosystems with multiple equilibria

Panel A

Panel B

Fostering Entrepreneurship: Promoting Founding or Funding? (Hellmann and Thiele 2017)
A role for foreign investors?

Foreign investors can help to escape low equilibrium trap
Over time, domestic investors grow in importance
The Scale-up problem  
(Duruflé, Hellman, and Wilson, 2017)

EU & Canada lags US especially at later stages
Foreign vs. Domestic Investors in UK VC Deals

Figure 5: Foreign vs. Domestic Investors in UK VC Deals

Foreign investors fill scale-up financing gap

Same story in Sweden

![Bar chart showing the percentage of investors by stage in Sweden. The chart compares domestic and US investors.]

- **Stage 1:** 96% domestic, 4% US
- **Stage 2:** 88% domestic, 12% US
- **Stage 3:** 77% domestic, 23% US
- **Stage 4:** 77% domestic, 23% US

% of Investors

Stage
1. Do US VC investments generate more or less employment in Sweden as domestic VC investments?

2. Are the effects causal or based on selection?

3. Is the quality of jobs affected by foreign investors?
Is Sweden interesting?
Is Sweden interesting?

Capital invested ($) per capita by country

- Israel: 304
- USA: 246
- Sweden: 123
- Ireland: 111
- United Kingdom: 59
- Finland: 58

Source: The State of European Tech, 2017, Atomico
Why should investor origin matter?

1. **POSITIVE**: US VCs have greater expertise and deeper networks, which encourages domestic growth

   “Lay all your jobs on me”

2. **NEGATIVE**: US VCs primarily specialize in expansion abroad and has no interest in local job creation, more willing to downsize

   “So long, see you honey”
Preview of core results

Relative to **domestic VC investments**, do US VC investments in Sweden generate more or less employment in Swedish companies?

- Evidence suggests higher employment for US venture capital investments.

Are the effects causal?

- Based on an instrument using shocks to US fundraising environment, the employment effects appear to be causal.
Some literature

Foreign vs domestic investments

Venture capital and jobs
Puri and Zarutskie (2011), Davis et al (2011),

Our contribution
1. Job creation by investor origin
2. Job creation around exits – work in progress
3. Job quality at individual level – work in progress
Swedish data

• All investments and exits in Swedish firms.
• Deal data on investment amount, dates, stage, syndicate members, location of VC headquarters

Swedish Companies Registration Office (1998-2012)
• Annual accounts for population of LLCs (private & listed)
• Event data: bankruptcies, liquidations, M&As.
• Group structures: track subsidiaries (domestic & foreign).

Main Sample
• Company level
• Annual panel data (1998-2012)
• Track companies from 1st VC investment to exit
## Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Sample average</th>
<th>Average For USVC=0</th>
<th>Average For USVC=1</th>
<th>P value mean difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees (log)</td>
<td>5,784</td>
<td>2.331</td>
<td>2.236</td>
<td>2.956</td>
<td>0.000</td>
</tr>
<tr>
<td>Net job creation</td>
<td>5,621</td>
<td>1.566</td>
<td>1.368</td>
<td>2.875</td>
<td>0.135</td>
</tr>
<tr>
<td>Employment growth</td>
<td>5,621</td>
<td>0.221</td>
<td>0.196</td>
<td>0.382</td>
<td>0.054</td>
</tr>
<tr>
<td>Average wages</td>
<td>4,951</td>
<td>432,257</td>
<td>429,238</td>
<td>451,584</td>
<td>0.208</td>
</tr>
<tr>
<td>New round</td>
<td>5,784</td>
<td>0.225</td>
<td>0.217</td>
<td>0.281</td>
<td>0.000</td>
</tr>
<tr>
<td>Foreign new round</td>
<td>5,784</td>
<td>0.029</td>
<td>0.000</td>
<td>0.216</td>
<td>0.000</td>
</tr>
<tr>
<td>Round amount (log)</td>
<td>865</td>
<td>1.404</td>
<td>1.113</td>
<td>2.561</td>
<td>0.000</td>
</tr>
<tr>
<td>Exit</td>
<td>5,306</td>
<td>0.040</td>
<td>0.036</td>
<td>0.065</td>
<td>0.003</td>
</tr>
<tr>
<td>Failure</td>
<td>5,306</td>
<td>0.006</td>
<td>0.006</td>
<td>0.003</td>
<td>0.165</td>
</tr>
<tr>
<td>New round or exit</td>
<td>5,413</td>
<td>0.276</td>
<td>0.263</td>
<td>0.358</td>
<td>0.000</td>
</tr>
<tr>
<td>US fundraising</td>
<td>5,784</td>
<td>24.623</td>
<td>24.329</td>
<td>26.549</td>
<td>0.003</td>
</tr>
</tbody>
</table>
Main empirical model

\[ \text{Outcome}_{t+1} = \text{USVC}_t + X_t + \varepsilon_t \]

Outcomes ($X_{t+1}$):
- Employment
- Employment growth
- Net job creation
- Next round
- Foreign round
- Round amount
- Exit
- Failure

Controls ($X_t$):
- Age at first investment clock
- Industry dummies
- County dummies
- Round and stage controls
- OMX30
- GDP growth

$\varepsilon_t$: cluster by company

$\text{USVC}_t$: endogenous!
## OLS: Effect of USVC

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>USVC coefficient</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees (log)</td>
<td>0.571</td>
<td>0.000</td>
</tr>
<tr>
<td>Net job creation</td>
<td>2.008</td>
<td>0.016</td>
</tr>
<tr>
<td>Employment growth</td>
<td>0.145</td>
<td>0.087</td>
</tr>
<tr>
<td>New round</td>
<td>0.034</td>
<td>0.058</td>
</tr>
<tr>
<td>Foreign new round</td>
<td>0.060</td>
<td>0.000</td>
</tr>
<tr>
<td>Round amount (log)</td>
<td>0.778</td>
<td>0.001</td>
</tr>
<tr>
<td>Exit</td>
<td>0.020</td>
<td>0.058</td>
</tr>
<tr>
<td>Failure</td>
<td>-0.004</td>
<td>0.124</td>
</tr>
</tbody>
</table>
Informative in 1\textsuperscript{st} stage:
Should US VC fundraising affect US investments in Sweden?
YES

Exclusion for 2\textsuperscript{nd} stage:
Does US VC fundraising directly create jobs in Sweden?
NO
### 1st stage:

<table>
<thead>
<tr>
<th>Instrument</th>
<th>T statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>USFR</td>
<td>3.080</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.111</td>
</tr>
</tbody>
</table>

### 2nd stage:

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>USVC coefficient</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees (log)</td>
<td>8.260</td>
<td>0.002</td>
</tr>
<tr>
<td>Net job creation</td>
<td>39.241</td>
<td>0.026</td>
</tr>
<tr>
<td>Employment growth</td>
<td>4.800</td>
<td>0.024</td>
</tr>
<tr>
<td>New round</td>
<td>0.662</td>
<td>0.031</td>
</tr>
<tr>
<td>Foreign new round</td>
<td>0.386</td>
<td>0.022</td>
</tr>
<tr>
<td>Round amount (log)</td>
<td>-3.153</td>
<td>0.853</td>
</tr>
<tr>
<td>Exit</td>
<td>0.560</td>
<td>0.009</td>
</tr>
<tr>
<td>Failure</td>
<td>0.035</td>
<td>0.271</td>
</tr>
</tbody>
</table>

IV valid
An additional IV: Interaction with distance to airport

<table>
<thead>
<tr>
<th></th>
<th>Below 200</th>
<th>200-400</th>
<th>400-600</th>
<th>Above 600</th>
</tr>
</thead>
<tbody>
<tr>
<td>USVC=1</td>
<td>179</td>
<td>35</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>USVC=0</td>
<td>729</td>
<td>256</td>
<td>62</td>
<td>35</td>
</tr>
</tbody>
</table>

Legend: USVC=0, USVC=1
More IV Results

1st stage:

<table>
<thead>
<tr>
<th>Instrument</th>
<th>T statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>USFR</td>
<td>3.24</td>
</tr>
<tr>
<td>Interaction</td>
<td>-2.16</td>
</tr>
</tbody>
</table>

2nd stage:

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>USVC coefficient</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees (log)</td>
<td>7.146</td>
<td>0.002</td>
</tr>
<tr>
<td>Net job creation</td>
<td>44.506</td>
<td>0.017</td>
</tr>
<tr>
<td>Employment growth</td>
<td>4.218</td>
<td>0.032</td>
</tr>
<tr>
<td>New round</td>
<td>0.655</td>
<td>0.026</td>
</tr>
<tr>
<td>Foreign new round</td>
<td>0.361</td>
<td>0.021</td>
</tr>
<tr>
<td>Round amount (log)</td>
<td>3.749</td>
<td>0.406</td>
</tr>
<tr>
<td>Exit</td>
<td>0.552</td>
<td>0.008</td>
</tr>
<tr>
<td>Failure</td>
<td>0.043</td>
<td>0.184</td>
</tr>
</tbody>
</table>

R-squared: 0.112
F statistic: 8.544
The effect of exit on jobs
Employment growth slows down after exit, especially after foreign exit

Only correlation, not causation!
## OLS: Effect of Exit and USVC

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Exit</th>
<th>P value</th>
<th>Foreign exit</th>
<th>P value</th>
<th>USVC</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees (log)</td>
<td>0.112</td>
<td>0.413</td>
<td>-0.164</td>
<td>0.469</td>
<td>0.587</td>
<td>0.000</td>
</tr>
<tr>
<td>Net job creation</td>
<td>0.639</td>
<td>0.859</td>
<td>-6.131</td>
<td>0.144</td>
<td>2.358</td>
<td>0.016</td>
</tr>
<tr>
<td>Employment growth</td>
<td>-0.072</td>
<td>0.386</td>
<td>-0.176</td>
<td>0.072</td>
<td>0.159</td>
<td>0.109</td>
</tr>
</tbody>
</table>

Same results if we also control for USVC investments
Data on individuals
Properties of sample data

Effect of foreign VC on prior employees!

- Prior = hired before 1\textsuperscript{st} VC
- Foreign = US & RoW

Individual annual panel

- Subset of company data
- 511 companies (37\% with foreign investor)
- 13829 employee-year observations

Attrition

- < 10\% for period -4 years to +4 years
Trends in labour income

Raw evolution

Differential trends

Wage income with foreign VC higher but growing more slowly
Trends in total income (labour and capital returns)

Raw evolution

Differential trends

Effect on total income (incl. capital income) all insignificant
Trends in rate of becoming entrepreneur

Raw evolution

Differential trends

Fewer employees in USVC backed companies become entrepreneurs
Conclusion

• US investors have positive effect on
  • Employment
  • Fundraising
  • Exit
• Effects appear to be causal
• Mixed evidence on
  • differential job destruction after exit
  • on individual careers
• More research to be done