On the heterogeneous link between outward FDI and local domestic employment in the USA

Riccardo Crescenzi
Department of Geography and Environment and SERC, LSE (UK)

Roberto Ganau
Department of Geography and Environment, LSE (UK)
Department of Statistical Sciences, University of Padova (IT)
1.1. Motivation of the Paper

- Globalisation is increasing international competition among firms and local productive systems ...

✓ ... but it is also allowing economic actors to exploit global connections to access new and valuable inputs to maximise efficiency and increase competitiveness (Bathelt et al., 2004; Boschma and Frenken, 2010; Crescenzi and Iammarino, 2017; De Marchi et al., 2018).
1.2. Motivation of the Paper

- However, recent economic and political events are questioning the benefits of global economic integration and internationalisation (e.g. Great Recession, Brexit, 2016 US elections) ...

✓ … underlining how decisions by domestic firms to establish new activities abroad can weaken the domestic economic structure:

  - e.g. Trump’s attempts to “bring jobs back to America”.
1.3. Motivation of the Paper

➢ Is this a highly relevant issue for political debate and academic research?
1.3. Motivation of the Paper

2017 Is Going To Be A Disruptive Year For U.S. Multinational Firms - Thanks To Trump

Source: December 2016, Forbes.

The retreat of the global company

The biggest business idea of the past three decades is in deep trouble


18-12 Trump Tariffs Primarily Hit Multinational Supply Chains, Harm US Technology Competitiveness


U.S. Companies In China Losing Patience, Tell Trump 'Enough Is Enough'

Source: July 2018, Forbes.
2. Research Question

➢ Is the active international expansion of domestic firms through brand new greenfield outward FDI detrimental for domestic labour market nowadays?

✓ Is there a trade-off between outward FDI and domestic employment?

  o Is this intra-sector link driven by different knowledge intensity of sectors and/or regional labour market dynamism?

  o Is outward FDI increasing – or decreasing – sectoral and/or regional disparities in the USA?
3.1. USA and Outward FDI

➢ The USA are a suitable environment to analyse the returns of outward FDI on the domestic economy:

1. the most recent US political view on international openness and FDI offers an interesting starting point to think about the policy implications related to the link between active internationalisation of firms and employment dynamics;
3.2. USA and Outward FDI

2. The USA classified as the most outward-investing economy during the last decade …

<table>
<thead>
<tr>
<th>Outward FDI Stock</th>
<th>2006</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>(29.79)</td>
<td>(24.40)</td>
</tr>
<tr>
<td>UK</td>
<td>(9.75)</td>
<td>(10.74)</td>
</tr>
<tr>
<td>Germany</td>
<td>(6.57)</td>
<td>(5.52)</td>
</tr>
</tbody>
</table>

Notes: Percentages on world's total are reported in parentheses. China includes Hong Kong. Elaboration on UNCTAD's data.
3.3. USA and Outward FDI

... but outward greenfield FDI (fDi Markets) is highly heterogeneous across sectors …
3.4. USA and Outward FDI

4. ... as well as across US Economic Areas (fDi Markets).
4.1. Empirical Framework

- We analyse the link between brand new greenfield outward FDI and local employment:
  - Levels of employment:
    \[
    Employment_{r,s,t} = f(OFDI_{r,s,t-1}, X_{r,s,t-1}, Z_{r,t-1})
    \]
  - Yearly employment dynamics:
    \[
    \Delta Employment_{r,s,t} = f(OFDI_{r,s,t-1}, Employment_{r,s,t-1}, X_{r,s,t-1}, Z_{r,t-1})
    \]
4.1. Empirical Framework

- log-log functional form

- 179 EAs \((r) / 7\) industrial sectors \((s) / 11\) years \((t = 2005, \ldots, 2015)\)

- outward FDI in terms of jobs created abroad by US companies from EA \(r\)

- region/sector-specific controls for (i) wages \& salaries per employee, (ii) inward FDI

- region-specific controls for (i) population density, (ii) personal income per capita, (iii) unemployment rate, (iv) share of outward FDI with respect to USA

- EA-, industrial sector- and year-fixed effects.
4.2. Empirical Framework

- two-digit sectors aggregated into 7 industrial sectors to match different aggregation levels available for different data series:

<table>
<thead>
<tr>
<th>Industrial Sector</th>
<th>NAICS Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – Agriculture, Forestry, Fishing and Hunting</td>
<td>11</td>
</tr>
<tr>
<td>2 – Mining, Quarrying, and Oil and Gas Extraction</td>
<td>21</td>
</tr>
<tr>
<td>3 – Utilities</td>
<td>22</td>
</tr>
<tr>
<td>4 – Construction</td>
<td>23</td>
</tr>
<tr>
<td>5 – Manufacturing</td>
<td>31, 32 and 33</td>
</tr>
<tr>
<td>6 – Knowledge-Intensive Services</td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>51</td>
</tr>
<tr>
<td>Finance and Insurance</td>
<td>52</td>
</tr>
<tr>
<td>Real Estate, and Rental and Leasing</td>
<td>53</td>
</tr>
<tr>
<td>Professional, Scientific, and Technical Services</td>
<td>54</td>
</tr>
<tr>
<td>Administrative and Support, and Waste Management and Remediation Services</td>
<td>56</td>
</tr>
<tr>
<td>7 – Other Services</td>
<td></td>
</tr>
<tr>
<td>Wholesale Trade</td>
<td>42</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>44 and 45</td>
</tr>
<tr>
<td>Transportation and Warehousing</td>
<td>48 and 49</td>
</tr>
<tr>
<td>Educational Services</td>
<td>61</td>
</tr>
<tr>
<td>Health Care and Social Assistance</td>
<td>62</td>
</tr>
<tr>
<td>Arts, Entertainment, and Recreation</td>
<td>71</td>
</tr>
<tr>
<td>Accommodation and Food Services</td>
<td>72</td>
</tr>
</tbody>
</table>
## 5.1. Baseline Results

<table>
<thead>
<tr>
<th></th>
<th>Level Equation</th>
<th>Growth Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.082****</td>
<td>0.065****</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.003)</td>
</tr>
<tr>
<td>Outward FDI(_{r,s,t-1})</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Region/Sector Specific Controls</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Region-Specific Controls</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Employment at (t-1)</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>EA Dummies</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Industrial Sector Dummies</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Year Dummies</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>No. of Observations</td>
<td>12,530</td>
<td>12,530</td>
</tr>
<tr>
<td>No. of EAs</td>
<td>179</td>
<td>179</td>
</tr>
<tr>
<td>No. of Sectors</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>No. of Years</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>(R^2)</td>
<td>0.89</td>
<td>0.91</td>
</tr>
<tr>
<td>Adjusted (R^2)</td>
<td>0.89</td>
<td>0.91</td>
</tr>
<tr>
<td>Model F Statistic [p-value]</td>
<td>709.03 [0.000]</td>
<td>206.45 [0.000]</td>
</tr>
</tbody>
</table>

Notes: **** p < 0.001. Robust standard errors are reported in parentheses.
5.2. Sectoral and Labour Market Dynamism Asymmetries

- Regional index of labour market dynamism defined on:
  - (regional) wages & salaries per employee;
  - unemployment rate;
  - personal income per capita.

- Level and growth equations augmented with three-way interactions among:
  - region/sector-specific outward FDI variable;
  - regional index of labour market dynamism in [0, 1] – from low to high dynamism;
  - vector of industrial sector dummies.
5.2. Sectoral and Labour Market Dynamism Asymmetries

<table>
<thead>
<tr>
<th>Industrial Sector</th>
<th>Level Equation</th>
<th>Growth Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effect</td>
<td>Slope</td>
</tr>
<tr>
<td>Agriculture, Forestry, Fishing and Hunting</td>
<td>negligible</td>
<td>downward</td>
</tr>
<tr>
<td>Mining, Quarrying, and Oil and Gas Extraction</td>
<td>+</td>
<td>downward</td>
</tr>
<tr>
<td>Utilities</td>
<td>+</td>
<td>upward</td>
</tr>
<tr>
<td>Construction</td>
<td>+</td>
<td>upward</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>+</td>
<td>upward</td>
</tr>
<tr>
<td>Knowledge-Intensive Services</td>
<td>+</td>
<td>upward</td>
</tr>
<tr>
<td>Other Services</td>
<td>+</td>
<td>upward</td>
</tr>
</tbody>
</table>

low to high labour market dynamism
5.2. Sectoral and Labour Market Dynamism Asymmetries
6.1. Preliminary Conclusions

➢ Evidence on the USA shows that:

✓ active internationalisation of domestic firms is not detrimental for local domestic employment, overall;

✓ however, the link between outward FDI and short-run employment dynamics:

  o varies across industrial sectors;

  o depends on the dynamism of the regional labour market;

• higher effects of FDI on more knowledge-intensive sectors and regions with more dynamic labour market ...

• ... so outward FDI seems to amplify sectoral and territorial disparities.
6.2. Preliminary Conclusions

➢ Given the highly unequal impacts of outward greenfield FDI on short-run domestic employment across sectors and regions ...

✓ ... place-based policies and interventions addressing sector- and region-specific needs might be helpful to mitigate sector- and region-specific effects which are increasing already existing asymmetries.
Thanks!

http://blogs.lse.ac.uk/gild/

r.ganau1@lse.ac.uk

https://sites.google.com/site/rganau/

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The Dataset

<table>
<thead>
<tr>
<th>Data</th>
<th>Aggregation Level</th>
<th>Time Period</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td>EA, Sector, Year</td>
<td>2003 to 2015</td>
<td>US Bureau of Economic Analysis</td>
</tr>
<tr>
<td>Greenfield FDI</td>
<td>EA, Sector, Year</td>
<td>2003 to 2014</td>
<td><em>fDi Markets</em> database, Financial Times</td>
</tr>
<tr>
<td>Wages and Salaries</td>
<td>EA, Sector, Year</td>
<td>2003 to 2015</td>
<td>US Bureau of Economic Analysis</td>
</tr>
<tr>
<td>Population</td>
<td>EA, Year</td>
<td>2005 to 2015</td>
<td>American Community Survey</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>EA, Year</td>
<td>2005 to 2015</td>
<td>US Bureau of Labor Statistics</td>
</tr>
<tr>
<td>Personal Income</td>
<td>EA, Year</td>
<td>2005 to 2015</td>
<td>US Bureau of Economic Analysis</td>
</tr>
</tbody>
</table>
Estimated effect of outward FDI

<table>
<thead>
<tr>
<th></th>
<th>Level Equation</th>
<th>Growth Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outward FDI_{r,s,t-1}</td>
<td>0.070****</td>
<td>0.005***</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.002)</td>
</tr>
</tbody>
</table>

Notes: *** p < 0.01; **** p < 0.001. Robust standard errors are reported in parentheses.
### Sectoral and Labour Market Dynamism Asymmetries (2)

#### Estimated effect of outward FDI by industrial sector

<table>
<thead>
<tr>
<th>Industrial Sector</th>
<th>Level Equation</th>
<th>Growth Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, Forestry, Fishing and Hunting</td>
<td>-0.024</td>
<td>-0.003</td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Mining, Quarrying, Oil and Gas Extraction</td>
<td>0.221****</td>
<td>0.012*</td>
</tr>
<tr>
<td></td>
<td>(0.027)</td>
<td>(0.006)</td>
</tr>
<tr>
<td>Utilities</td>
<td>0.089****</td>
<td>0.004</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Construction</td>
<td>0.019****</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>0.063****</td>
<td>0.006****</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Knowledge-Intensive Services</td>
<td>0.083****</td>
<td>0.008****</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Other Services</td>
<td>0.039****</td>
<td>0.004****</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.001)</td>
</tr>
</tbody>
</table>

Notes: * p < 0.1; ** p < 0.05; *** p < 0.01; **** p < 0.001. Robust standard errors are reported in parentheses.
Sectoral and Labour Market Dynamism Asymmetries (3.1)

Estimated effect of outward FDI by industrial sector and labour market dynamism

Agriculture, Forestry, Fishing and Hunting

Level Equation

Growth Equation
Sectoral and Labour Market Dynamism Asymmetries (3.2)

Mining, Quarrying, and Oil and Gas Extraction

Level Equation

Growth Equation

Effects on Linear Prediction

Regional Labour Market (bad to good)

Effects on Linear Prediction

Regional Labour Market (bad to good)
Sectoral and Labour Market Dynamism Asymmetries (3.3)

Utilities

Level Equation

Growth Equation

Effects on Linear Prediction

Regional Labour Market (bad to good)
Sectoral and Labour Market Dynamism Asymmetries (3.4)
Sectoral and Labour Market Dynamism Asymmetries (3.5)

Manufacturing

Level Equation

Growth Equation
Sectoral and Labour Market Dynamism Asymmetries (3.6)
Sectoral and Labour Market Dynamism Asymmetries (3.7)

Other Services

Level Equation

Growth Equation

Effects on Linear Prediction

Regional Labour Market (bad to good)

Effects on Linear Prediction

Regional Labour Market (bad to good)
Robustness: Endogenous Outward FDI (1)

➢ Identification strategy exploits two-year lagged industrial sector-specific variations in the monetary value of outward FDI projects set up by EU-28 companies, and realised in countries other than the USA:

✓ idea:
  o to identify the effect of industrial sector-specific outward FDI realised by US companies with the outward FDI dynamics characterising EU-based companies;

✓ validity:
  o presence of correlation between location choice determinants for US and EU-28 multinational companies;
  o absence of correlation between the dynamics of US domestic employment and EU-28 outward FDI in countries other than the USA.
Robustness: Endogenous Outward FDI (2)

➢ “Shift-share” IV à la Bartik (1991):

\[ IV_{r,s,t} = \left( \frac{Employment_{r,s,2003}}{\sum_{r=1}^{179} Employment_{r,s,2003}} \right) \times \left( \frac{OFDI_{EU,s,t}^{MV} - OFDI_{EU,s,t-2}^{MV}}{Outward FDI_{EU,s,t-2}^{MV}} \right) \]

✓ industrial-sector specific changes of outward FDI from EU-28 countries between \( t \) and \( t-2 \) are assigned to US EAs using their shares of sectoral employment in 2003.
Robustness: Endogenous Outward FDI (3)

<table>
<thead>
<tr>
<th></th>
<th>Level Equation</th>
<th>Growth Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.045***</td>
<td>0.486****</td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.048)</td>
</tr>
<tr>
<td></td>
<td>0.005**</td>
<td>0.009***</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.003)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region/Sector Specific Controls</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Region-Specific Controls</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Employment at $t-1$</td>
<td>---</td>
<td>---</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>EA Dummies</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Sector Dummies</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Year Dummies</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>18.14 [0.000]</th>
<th>14.10 [0.000]</th>
<th>18.34 [0.000]</th>
<th>12.78 [0.000]</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-Stage F Statistic on IV [p-value]</td>
<td>15.15 [0.000]</td>
<td>21.11 [0.000]</td>
<td>15.26 [0.000]</td>
<td>22.51 [0.000]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>0.166</th>
<th>0.349</th>
<th>0.755</th>
<th>0.190</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H_0$: Exogenous Variable (p-value)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: ** $p < 0.05$; *** $p < 0.01$; **** $p < 0.001$. Robust standard errors are reported in parentheses.