Firm Dynamics and Productivity Growth

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Overview

• Focus on Allocative Efficiency Across Firms Within Industries
  – Are the most productive firms the largest firms and/or becoming large?
  – Are the least productive firms the smallest firms and/or becoming small?

• The economic success of a country at the AGGREGATE level depends in large part the extent of allocative efficiency within industries
  – Static and dynamic allocative efficiency both are important

• Key challenges:
  – Allocative efficiency requires restructuring and reallocation.
  – Restructuring and Reallocation are costly
Productivity Distribution Within Narrowly Defined Industries

Interquartile Range of TFP is 30 log points

Productivity of Businesses
More than 5200 country/industry/year observations of some of the key moments -- virtually all show high dispersion in both STD(LPR) and STD(TFPR)
Distribution of firms by size
(ratio of the mean size of fourth to the first quartile of the
distribution of firms)

<table>
<thead>
<tr>
<th>Country</th>
<th>Total economy</th>
<th>Total manufacturing</th>
<th>High &amp; medium tech industries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>weighted average</td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td>15</td>
<td>37</td>
<td>46</td>
</tr>
<tr>
<td>France</td>
<td>52</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>32</td>
<td>66</td>
<td>111</td>
</tr>
<tr>
<td>Netherlands</td>
<td>32</td>
<td>113</td>
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<td>Portugal</td>
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</tr>
<tr>
<td>United Kingdom</td>
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<td>221</td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>76</td>
<td>381</td>
<td></td>
</tr>
<tr>
<td>Argentina</td>
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<td>47</td>
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<tr>
<td>Brazil</td>
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<tr>
<td>Estonia</td>
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<td>56</td>
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<td>Latvia</td>
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<td>47</td>
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<td>108</td>
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<td>433</td>
<td></td>
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<td>Slovenia</td>
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<td>314</td>
<td></td>
</tr>
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<td>Chile</td>
<td>2</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Colombia</td>
<td>2</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>Venezuela</td>
<td>3</td>
<td>39</td>
<td>29</td>
</tr>
</tbody>
</table>

1. Weighted averages of industry-level data.
2. Firms with 10 or more employees.
3. Firms with 15 or more employees and sample of smaller units.
Covariance Between Size and Productivity (within industries)
Change in Covariance (within industries)
Job Creation and Destruction, U.S. Private Sector, Annual Rates (Percent of Employment), 1980-2009

Total = 16.9

Job Creation:
- Continuing Establishments: 10.6
- New Establishments (Existing Firms): 3.2
- New Firms: 3.1

Job Destruction:
- Continuing Establishments: 10
- Exiting Establishments (Continuing Firms): 2.4
- Exiting Firms: 2.9

Source: BDS
90th and 10th Percentiles of Net Employment Growth Rates for Surviving U.S. Private Sector Firms by Firm Age (2003-05)
Industry as Predictor of Size and Growth of Firms?

<table>
<thead>
<tr>
<th>Probability Firm has less than 20 employees</th>
<th>R-squared from 6-digit NAICS effects</th>
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<tbody>
<tr>
<td>0.12</td>
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<table>
<thead>
<tr>
<th>Net Firm Growth Rate (All Firms)</th>
<th>0.06</th>
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<tr>
<th>Net Firm Growth Rate (Small Firms)</th>
<th>0.06</th>
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<thead>
<tr>
<th>Probability firm is a high growth firm (defined as Net_Rate&gt;2)</th>
<th>0.04</th>
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<tr>
<th>Probability firm is a high growth firm (defined as: Net_Rate &gt; .2 and Net_Level &gt; 10 )</th>
<th>0.03</th>
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</thead>
</table>

Sample: All U.S. Private Sector Firms, 2003-05
Components of Total Factor Productivity Growth over Five-Year Horizons, 1977-1997, Selected Manufacturing Industries

- Total: 5.13
- Within: 3.44
- Reallocation Among Existing Establishments: 0.35
- Net Entry: 1.35
Productivity of Young Businesses Relative to Mature Surviving Incumbents, U.S. Retail Trade

- Young Exits: -31.60%
- Mature Exits: -26.20%
- Young Survivors: 2.80%
- Young Survivors Five Years Later: 1.20%
- Mature Survivors: 3%
- Young Survivors Five Years Later: 5%

Legend:
- Single Unit Establishment Firms
- All establishments
Much Scope for Misallocation

• Barriers to entry and exit
• Poorly functioning product, capital and labour markets
• Weak rules of law
• Poor public infrastructure for communication and transportation
• Graft and corruption
• Even well-intended policies that deter job destruction (and in turn job creation)
Olley-Pakes Decomposition for Colombian Manufacturing

Source: Eslava et al. (2005)
No Free Lunch

• Restructuring and Reallocation is Costly
  – Even in U.S. displacement is a costly event
  – In current crisis, displacement is especially costly
    • Hiring and job creation remain anemic in U.S.
    • Job finding rate is at historical lows.
The Impact of Job Displacement on Earnings
(Men, 3 years of tenure, 50 employee firms with contraction of 30% over 2 years)

Source: Davis and von Wachter (2011)
Unemployment Inflows and Outflows

MA(3) of CPS Unemployment Escape Rate
CPS Unemployment Inflow Rate
Aggregate Job Creation and Destruction (Quarterly)

Creation is all expanding and entering establishments. Destruction is all contracting and exiting establishments.
Hiring and Job creation Lowest in last 20 years

Percent of Employment

Job Creation (left axis)

Hires (right axis)
Job Destruction, Layoffs and Quits

- Layoffs (JOLTS) move with job destruction (BED), and quits (JOLTS) moves opposite to both. In booms, job destruction accommodated more by quits. In recessions, destruction is closely tracked by layoffs.
Surprising (?) declining volatility in U.S.

### Trends in Gross Flows and Net Job Creation

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<tr>
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</thead>
<tbody>
<tr>
<td>Gross Job Creation</td>
<td>18.2</td>
<td>16.7</td>
<td>15.8</td>
</tr>
<tr>
<td>Job Creation (Startups)</td>
<td>3.5</td>
<td>3.0</td>
<td>2.6</td>
</tr>
<tr>
<td>Gross Job Destruction</td>
<td>16.2</td>
<td>14.8</td>
<td>14.9</td>
</tr>
<tr>
<td>Net Job Growth</td>
<td>2.0</td>
<td>1.9</td>
<td>0.9</td>
</tr>
</tbody>
</table>
Policy Challenges?

- Flexibility of Jobs and Workers are critical in advanced AND emerging economies for productivity growth
- Stifling job and worker reallocation through job and worker mobility restrictions dampens productivity levels and growth
- BUT workers caught up in this turbulence even in U.S. can experience persistent periods of joblessness and earnings losses.
- Implement safety net without moral hazard and adverse selection problems, without dampening job and worker mobility but provides support to those caught up in restructuring.
- Targeting problematic given heterogeneity
- BUT what to do during crises?