Discussion of “The Life-Cycle Growth of Plants in Colombia: Fundamentals vs. Distortions,” by Marcela Eslava and John Haltiwanger

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What They Do and Find

1. Decompose growth over the life-cycle of plants into fundamentals (physical productivity, demand, ...) versus distortions (residual)
   - Distortions weaken the link between fundamentals and size (static accounting)

2. Exploit detailed panel micro data for Colombia (prices available at the plant level)

3. Fundamentals account for 70% of the variability of output growth across plants whereas the remaining 30% attributed to distortions
   - Demand and physical productivity equally important in fundamentals part
   - Contribution of distortions falls with plant’s age
Why interested in plant’s life-cycle?

- Many reasons, firm dynamics interesting per se
- My focus is on life cycle growth as a potential amplification channel to productivity differences across countries
- Similar focus in growing literature exploring the dynamic implications of misallocation
Output of a single homogeneous good $y_i$ is produced according to

$$y_i = A_i \cdot h_i^\gamma, \quad \gamma \in (0, 1)$$

where $A_i$ reflects productivity differences across producers.

Three channels can account for aggregate TFP differences across countries:

- Distribution of $A_i$’s differs across countries (technology)
- Countries choose different set of producers to operate (selection)
- Countries allocate inputs differently across producers (misallocation)
From accounting perspective, misallocation may be less than 1/4 of the differences in TFP across countries.

Recent work considers dynamic implications of misallocation.

Policies/institutions causing misallocation can generate larger effects on aggregate productivity by altering the productivity distribution via technology and selection channels.
Plant Life-Cycle Employment Growth

Misallocation and Dynamic Implications

- Why would there be a connection between static misallocation and dynamic decisions?
- Prevalent pattern of distortions (wedges or actual policies/institutions): higher productivity elasticity of distortions in poor countries
- Evidence from Hsieh and Klenow (2009, 2014): USA (0.09), India (0.5), Mexico (0.66) for manufacturing industries
- Similar evidence from census of manufacturing in Africa, elasticity between 0.5-0.7
- Broader evidence across countries for manufacturing industries, Bento and Restuccia (2017)
Productivity Elasticity of Distortions

Source: Bento and Restuccia (2017)
Financial Frictions

- Large literature (see survey in Buera, Kaboski, and Shin, 2015)
- Country-level institution, idiosyncratic effects
- Importantly: credit constraints disproportionately affect more productive producers that should operate at larger scale
Land Market Institutions

- Land institutions in poor countries characterized by:
  - Lack of well-defined property rights over land
  - Land use-rights are distributed in a fairly egalitarian basis...
  - ...coupled with difficulty of adjusting operational scales

- As a result, land is misallocated, distortions more severe for productive farmers
Land Misallocation in China

Source: Adamopoulos, Brandt, Leight, and Restuccia (2017)
Implicit Agricultural Distortions in China

Large implied correlated distortions in the agricultural sector

\[ \sigma(\log(TFPR)) = 0.97, \quad \rho(\log(TFPR), \log(TFP)) = 0.88 \]
Misallocation and Dynamic Implications

- How correlated distortions affect technology/investment?
  - Not easy question to answer, but a starting point should be a dynamic model

- Key issue: how a given pattern of TFPQ growth is high or low compared to an alternative pattern of distortions
  - Importance and interpretation of static accounting
What should we expect the pattern of static distortions and plant growth?

- Not obvious pattern, may depend on source of distortions
- For some wedges (e.g. fixed land, can’t grow in size), then we should not expect a lot of growth
- If wedges arising from credit/collateral constraints, then wedges should ease out with plant age
- Pattern may be different than what really drives productivity growth for the plant

Bottom line: to assess importance of distortions, static growth accounting is not sufficient, a model that connects distortions to plant growth is needed
Importance of Life-Cycle Growth

- How important is life-cycle growth for overall dispersion in productivity across countries?
- Exploit panel dimension to assess contribution in Colombia
- Hsieh and Klenow (2014): moving from US to Indian life-cycle can generate a 25% drop in productivity
- Countervailing effects of lower life-cycle growth though entry and misallocation leave productivity gap roughly unchanged
- Similar finding in Bento and Restuccia (2017)
Bento and Restuccia (2017): Standard monopolistic competition framework extended to include endogenous entry and entry-level and life-cycle productivity investment

<table>
<thead>
<tr>
<th>Prod. elasticity of distortions:</th>
<th>0.09 (US)</th>
<th>0.50 (India)</th>
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</thead>
<tbody>
<tr>
<td>Average Establishment Size</td>
<td>22</td>
<td>3</td>
</tr>
<tr>
<td>Entrant Productivity</td>
<td>1.00</td>
<td>0.42</td>
</tr>
<tr>
<td>Life-cycle growth (%)</td>
<td>5.0</td>
<td>2.1</td>
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<tr>
<td>Prod. investment share (%)</td>
<td>13.5</td>
<td>5.4</td>
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</tbody>
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Decomposition of agg. output:

| (a) Static misallocation        | 1.00      | 0.63         |
| (c) Endogenous life-cycle growth| 1.00      | 0.70         |
| (d) Entrant investment          | 1.00      | 0.47         |
Changes from Economic Reforms

- Colombia went through serious market-oriented reforms during the 90s
- Comparison between 80s and 00s contain valuable evidence that points in the direction of improved resource allocation, faster plant growth
- Exploit and emphasize more the interesting patterns of changes
**Compare with Restricted Data**

- Colombian data unique
- Likely to remain as such for some time
- Valuable comparisons with analysis of the more common restricted data
- Examples: without plant-level prices, only cross-section, etc.
Conclusions

- Very interesting paper with amazing data
- To assess role of distortions, need a dynamic model of plant productivity growth...
- Can go beyond plant growth: panel data and dynamic model can be used to make empirical connection of misallocation with selection/technology channels
- Can exploit more policy changes over time