Management, Productivity & Reallocation

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Draws on joint work with Nick Bloom (Stanford) & Raffaella Sadun (HBS)

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Ways in which management could matter

- Key part of “intangible capital” accounting for some of TFP variation (cf human capital)?

- An indicator of fundamental TFP/performance. Reallocation towards “better managed” firms?
  - Bloom & Van Reenen (2007, QJE)

- Are well managed firms better at internal reallocation (e.g. across plants of the same firms)?

- Complementarity between management & exogenous shocks. E.g. Do firms/countries that have greater managerial capacity respond more to technological shocks (e.g. ICT)?
  - Bloom, Sadun & Van Reenen (2012, AER) “Americans do IT Better”

- If answer if “yes”, what drives the distribution of management
  - And what can policy makers do?

Medium sized manufacturing firms (50-5,000 workers, median≈250)

Now extended to Hospitals, Retail, Schools, etc.
Summary: Productivity & management practices

• Large unexplained component in TFP spreads between & within countries related to management

• Findings (summary in Bloom, Lemos, Sadun, Scur & Van Reenen, 2015, JEEA)
  – Big spreads in management
  – Closely related to TFP
  – Helps account for large fraction of TFP gaps (~30%)
  – Some systematic causes of management spreads: competition, labor regulation, FDI, ownership/governance, skills, information
  – Weak competition (& other frictions) means poorer management within firms and less allocation of economic activity to better managed firms
1) Developing management questions
   • Scorecard for 18 monitoring, targets & people management practices ≈45 minute phone interview of plant managers

2) Getting firms to participate in the interview
   • Introduced as “Lean-manufacturing” interview, no financials
   • Official Endorsement: Bundesbank, RBI, World Bank etc.

3) Obtaining unbiased comparable responses, “Double-blind”
   • Interviewers do not know the company’s performance
   • Managers are not informed (in advance) they are scored
Survey methodology (Bloom & Van Reenen, 2007, QJE)

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Example monitoring question, scored based on a number of questions starting with “How is performance tracked?”

| Score | (1): Measures tracked do not indicate directly if overall business objectives are being met. Many processes aren’t tracked at all | (3): Most key performance indicators are tracked formally. Tracking is overseen by senior management | (5): Performance is continuously tracked and communicated, both formally and informally, to all staff using a range of visual management tools |

Note: All 18 questions & 50+ examples in [http://worldmanagementsurvey.org/](http://worldmanagementsurvey.org/)
Examples of performance metrics – Car Plant
AVERAGE MANAGEMENT SCORES BY COUNTRY

Note: Unweighted average management scores (raw data) with number of observations. All waves pooled (2004-2014), Source: http://worldmanagementsurvey.org/
Average management scores across countries are strongly correlated with GDP per capita

Note: Unweighted average management scores (raw data) with number of observations. All waves pooled (2004-2014)
Large variation of firm management within countries

Firms with 50 to 5000 employees randomly surveyed from country population.
Data: TFP is increasing in management

Management is an average of all 18 questions (set to sd=1). TFP residuals of sales on capital, labor, skills controls plus a full set of SIC-3 industry, country and year dummies controls. N=8314
Three other stylized facts (interesting but not directly related to this paper): Multinationals

Sample of 7,303 manufacturing firms, of which 4,926 are purely domestic and 2,377 are foreign multinationals. Domestic multinationals are excluded – that is the domestic subsidiaries of multinational firms (like a Toyota subsidiary in Japan).
<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Employees</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management (US=base)</td>
<td>201.7***</td>
<td>371.9***</td>
</tr>
<tr>
<td></td>
<td>(19.9)</td>
<td>(64.3)</td>
</tr>
<tr>
<td>MNG*Africa</td>
<td>-237.0***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(75.9)</td>
<td></td>
</tr>
<tr>
<td>MNG*Americas</td>
<td>-192.1***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(66.7)</td>
<td></td>
</tr>
<tr>
<td>MNG*(&quot;Northern&quot; EU)</td>
<td>-164.2*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(93.7)</td>
<td></td>
</tr>
<tr>
<td>MNG*(&quot;Southern&quot; EU)</td>
<td>-292.0***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(66.9)</td>
<td></td>
</tr>
<tr>
<td>MNG*Asia</td>
<td>-131.2*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(77.1)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>8,895</td>
<td>8,895</td>
</tr>
</tbody>
</table>

Notes: US is the omitted country in columns 2 and 3. Includes year, country, 3-digit SIC dummies, firm and noise controls.
Following MAT we can estimate contribution of management to cross-country TFP differences

1. Estimate country differences in *size weighted* management

2. Impute impact of *size weighted* management on TFP

Requires many assumptions so rough magnitude calculation (in spirit of Development Accounting, Caselli, 2005)
Decomposition of the size weighted management (M) in each country we surveyed

\[ M \equiv \sum_{i} S_i M_i \]

- Employment Share of firm \( i \)
- Management score of firm \( i \)
Decomposition of the size weighted management (M) in each country we surveyed

\[ M \equiv \sum_i s_i M_i \]

\[ = \sum_i [(s_i - \bar{s}) (M_i - \bar{M})] + \bar{M} \]

\[ = OP + \bar{M} \]

“Between Firm” Covariance (Olley-Pakes, 1996, reallocation term)

“Within Firm” Unweighted mean of management score
Calculate the **size weighted management gap** with the US in terms of average and reallocation terms.

e.g. France weighted management score 1.02 sd worse than US, with 0.36 (34%) of gap due to better US reallocation.

*Source: Management as a Technology by Bloom, Sadun and van Reenen (2015)*
Step 2: What fraction of country’s TFP gap (with the US) can this management gap explain?

\[
\text{% TFP gap accounted for by management} = \gamma \times \left( \frac{\bar{M}_k / \bar{M}_{US}}{\text{TFP}_k / \text{TFP}_{US}} \right)
\]

where \( \gamma = \text{impact } M \text{ on TFP} \)
### Fraction of country TFP Gaps accounted for by management

<table>
<thead>
<tr>
<th></th>
<th>(1) Weighted Management</th>
<th>(2) Covariance</th>
<th>(3) Unweighted Management</th>
<th>(4) Weighted Mng. Gap with US</th>
<th>(5) % reallocation</th>
<th>(6) TFP Gap With US</th>
<th>(7) % TFP due to Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US</td>
<td>.91</td>
<td>.47</td>
<td>.44</td>
<td></td>
<td>24.93</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Japan</td>
<td>.61</td>
<td>.21</td>
<td>.41</td>
<td>-.3</td>
<td>89.1</td>
<td>.71</td>
<td>8.82</td>
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<tr>
<td>Sweden</td>
<td>.52</td>
<td>13</td>
<td>39</td>
<td>-.39</td>
<td>87.34</td>
<td>92</td>
<td>48.46</td>
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<tr>
<td>Germany</td>
<td>.45</td>
<td>.29</td>
<td>.16</td>
<td>-.46</td>
<td>38.9</td>
<td>.83</td>
<td>24.46</td>
</tr>
<tr>
<td>Canada</td>
<td>.32</td>
<td>.27</td>
<td>.05</td>
<td>-.59</td>
<td>34.71</td>
<td>.88</td>
<td>45.55</td>
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<tr>
<td>Singapore</td>
<td>.25</td>
<td>.43</td>
<td>-.18</td>
<td>-.66</td>
<td>5.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Britain</td>
<td>.2</td>
<td>.26</td>
<td>-.05</td>
<td>-.71</td>
<td>30.46</td>
<td>.94</td>
<td>107.81</td>
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<tr>
<td>Mexico</td>
<td>.17</td>
<td>.4</td>
<td>-.23</td>
<td>-.74</td>
<td>9.51</td>
<td>.73</td>
<td>23.04</td>
</tr>
<tr>
<td>N. Ireland</td>
<td>.16</td>
<td>.58</td>
<td>-.42</td>
<td>-.75</td>
<td>-15.18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>.05</td>
<td>.21</td>
<td>-.16</td>
<td>-.86</td>
<td>30.65</td>
<td>.83</td>
<td>45.24</td>
</tr>
<tr>
<td>Italy</td>
<td>0</td>
<td>.12</td>
<td>-.12</td>
<td>-.91</td>
<td>38.96</td>
<td>.82</td>
<td>45.4</td>
</tr>
<tr>
<td>Portugal</td>
<td>-.04</td>
<td>.37</td>
<td>-.41</td>
<td>-.95</td>
<td>10.55</td>
<td>.66</td>
<td>23.04</td>
</tr>
<tr>
<td>Poland</td>
<td>-.07</td>
<td>.14</td>
<td>-.21</td>
<td>-.98</td>
<td>33.89</td>
<td>8</td>
<td>44.74</td>
</tr>
<tr>
<td>France</td>
<td>-.11</td>
<td>.11</td>
<td>-.22</td>
<td>-1.02</td>
<td>36.08</td>
<td>.84</td>
<td>58.87</td>
</tr>
<tr>
<td>Colombia</td>
<td>-.12</td>
<td>.37</td>
<td>-.48</td>
<td>-1.03</td>
<td>10.25</td>
<td>.52</td>
<td>15.69</td>
</tr>
<tr>
<td>NZ</td>
<td>-.14</td>
<td>.27</td>
<td>-.42</td>
<td>-1.05</td>
<td>18.68</td>
<td>.79</td>
<td>43.54</td>
</tr>
</tbody>
</table>

**Source:** Management as a Technology by Bloom, Sadun and van Reenen (2015)
Conclusions

- One proximate factor for TFP differences could be management capabilities
- Improvements in measuring
- Appears to matter for firm level & aggregate TFP maybe ~30%
- Major challenge is what causes this variation & what can be done
Preliminary estimates of contribution of management to within-country TFP spread ~1/3

<table>
<thead>
<tr>
<th>Country</th>
<th>90-10 gap in:</th>
<th>% accounted for by management</th>
<th>TFP spread source:</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>TFP</td>
<td>Management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>90%</td>
<td>2.7 SDs</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>110%</td>
<td>3.0 SDs</td>
<td>38%</td>
</tr>
</tbody>
</table>

**Note:** Management share imputed assuming that ↑1 SD management ≈ ↑ 10% TFP Using US MOPs on entire firm size distribution US figure is 21%
FURTHER READING

• CEP Election Analysis Series
  http://cep.lse.ac.uk/_new/publications/series.asp?prog=CEPEA

• World Management Survey
  http://worldmanagementsurvey.org/

• LSE Growth Commission Final Report
Three other stylized facts (interesting but not directly related to this paper): **Family CEO firms**

- Dispersed Shareholders
- Private Equity
- Family owned, non-family CEO
- Managers
- Private Individuals
- Government
- Family owned, family CEO
- Founder owned, founder CEO

Management score (by ownership type):

- Dispersed Shareholders: 3.1
- Private Equity: 3.0
- Family owned, non-family CEO: 2.9
- Managers: 2.8
- Private Individuals: 2.6
- Government: 2.5
- Family owned, family CEO: 2.3
- Founder owned, founder CEO: 2.2