Productivity, Misallocation and Trade

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CompNet ECB
June 2015

Resource allocation

- To focus ideas let me use a simple decomposition:

$$\Pi_t = \bar{\pi}_t + cov(s_{it}, \pi_{it}) \tag{1}$$

- Evidence points to significance of *reallocation* term.
- Comments today:
  1. Technical issues: measurement of firm performance (π).
  2. Substantive issues: identifying mechanisms. [Policy Relevant] – if time case study on US steel.
  3. Policy conclusions/suggestions

Measurement of TFP

- Traditionally focus on so-called simultaneity, but I am more worried about:
  1. confounding efficiency with demand and market power,
  2. multi-product production
- We can, and have to, interpret literature as having used firm performance π which consists of productivity, output and input prices (putting scale and MP aside for now):

$$\pi = \omega + p - w \tag{2}$$

- Theme of compnet is to identify drivers of all these components, but traditional focus on ω – i.e. absence of imperfect markets, both output and input.

Mechanism underlying covariance term

- Ultimately the mechanism is relevant for policy and less so the actual number coming out of any study.
- We therefore need to study what drives the turning on and off of the covariance term.
- This brings us back to the measurement issues, since the identification of the mechanism crucially depends on the components of TFPR
- Let's not forget that even if covariance is 30 percent, remaining 70 percent from industry-wide effects. Latter brings back role of entry, R&D, market access, etc.

Mechanisms

- As before components of firm performance are:

$$\pi = \omega + p - w \tag{3}$$

- Immediately points out various candidates:
  1. market power: both through synergies and higher margins,
  2. heterogeneity: technology and demand,
  3. dynamics: volatility and adjustment,
  4. ownership: M&A activity.

Identifying mechanisms

- We know very little about the actual process
- In fact the most has come from studies in the context of trade liberalization: tariff cuts induce a reallocation.
- Recent work on technology (US steel) and ownership (Japanese cotton)
- Obvious candidates that are policy variant: distortions preventing free flow of either output or inputs: labor markets, market integration increasing competition.
- Covariance is closely related to Shumpeter's creative destruction process, and requires long panels to trace it.
- **Challenge for policy** If action is in reallocation, micro data and measurement become even more crucial.

An example: US Steel industry

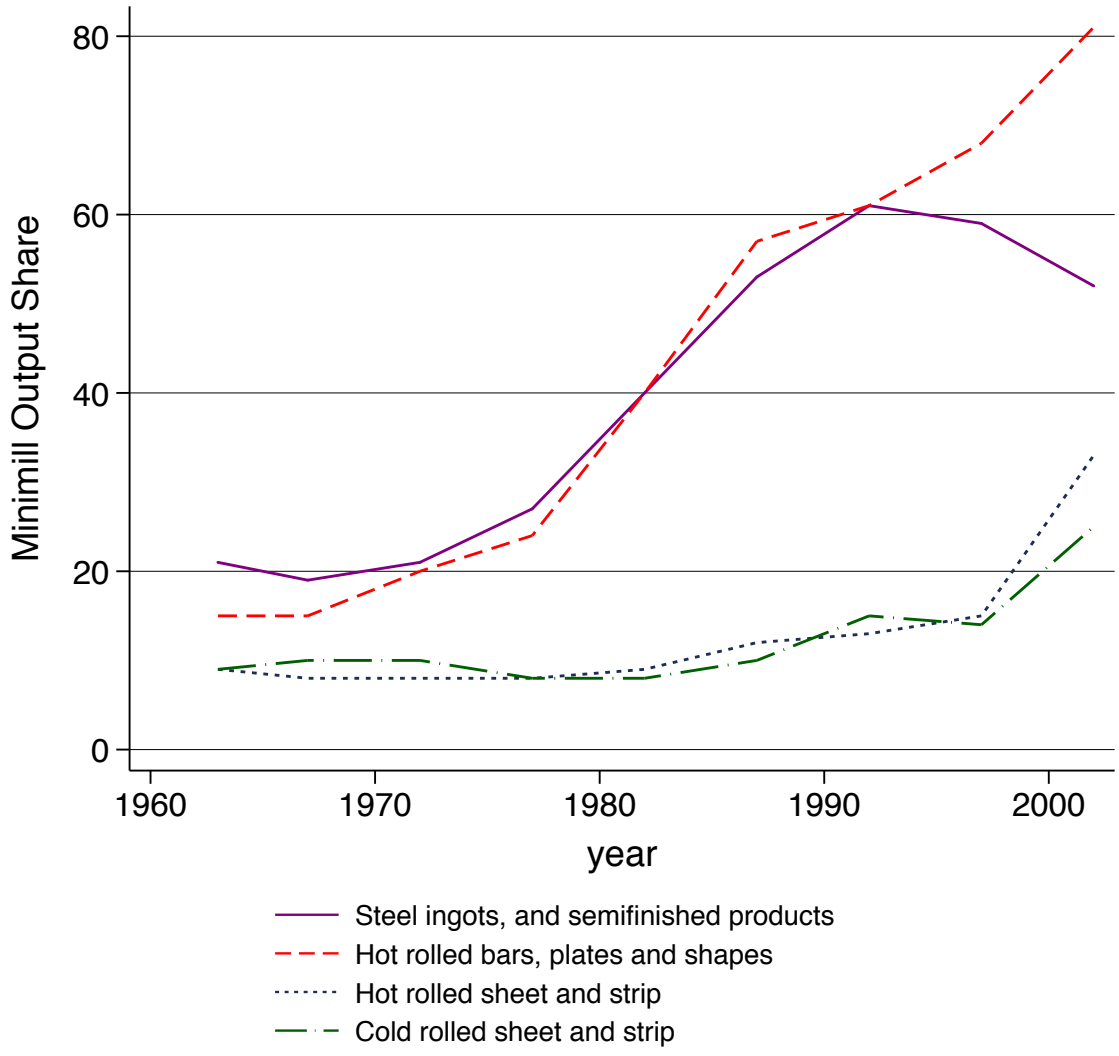
Changes computed between 1972-2002.

Sector	Δ TFP	Δ Shipments	Δ Labor
Steel Sector	28%	-35%	-80%
Mean Sector	7%	60%	-5%
Median Sector	3%	61%	-1%

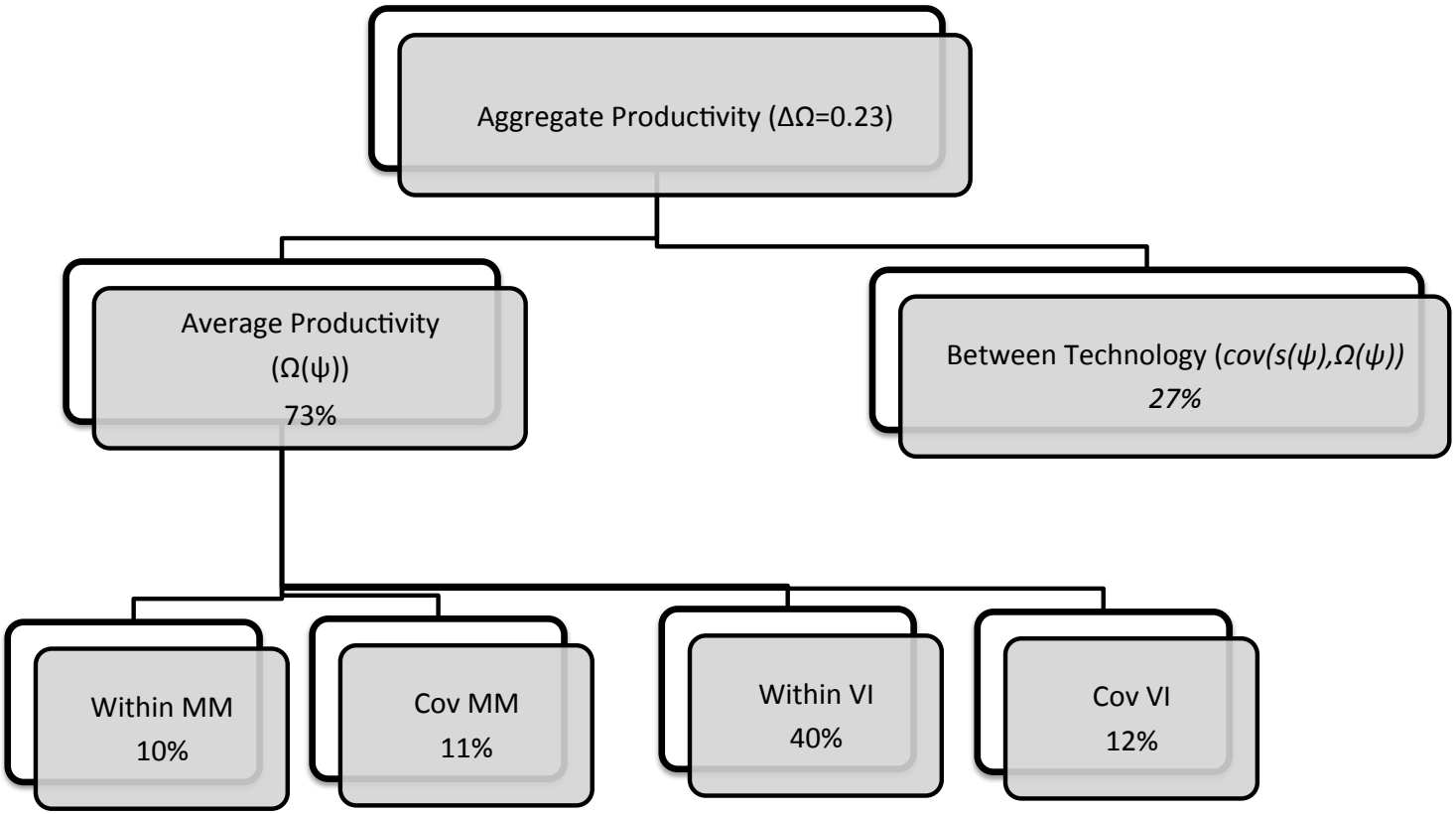
Source: NBER-CES Dataset for SIC Code 3312.

- Standard policy variable (suspects) do not explain above average performance of the sector:
  1. Trade: import competition change at the average,
  2. Unions: Coverage change at the average,
  3. Location: robust,
  4. Firm ownership/management: even more pronounced

Importance of digging in: new technology



Relationship between various decompositions



=> Direct impact of mini-mills = 48%

Last piece: competition

Component	All	Minimill	Integrated
Total Change	23	10	24
	(4)	(5)	(4)
Plant Improvement (%)	34	107	33
Reallocation (%)	47	-7	48
Net Entry (%)	19	0	19
Total Reallocation (%)	66	-7	67

2/3 of growth left to be explained: large part due increased competition selecting high productivity incumbent technology plants active in high quality steel products.

Policy implications

1. Towards dynamics
2. Pass-through
3. Services

Towards dynamics

- Measures of misallocation, and therefore potential of reallocation are misleading.
- Leading case: $sd(TFPR)$ and $sd(MRPK)$ due to Hsieh and Klenow (2009). In an economy where firms face input adjustment costs and volatility in demand/productivity: optimal.
- Puts the policy implication in the time series, in the factors generating volatility (doing business) and adjustment costs (e.g. labor market frictions like hiring/firing costs).

Adding another diagnostic: pass-through

- While computing covariance terms is important and useful, it clearly is not enough to understand reallocation process. Adding *pass-through* will provide extra insight.
- In fact only in very restrictive model environments we obtain complete pass-through eliminating many mechanism, keeping essentially the pure efficiency channel $cov(s, \omega)$.
- This diagnostic does call for collecting **price data**, preferably for output and inputs.
- However, which price? Output and input?
- Interested in $p = \beta mc(\omega, w, z)$, and will inform us about covariance term.

Towards an integrated framework

- The need for at least a conceptual framework that is internally consistent (i.e. the effect of interest is at least allowed for) where both market power, productivity and dynamics are present.
- Impact of competition on profit margins has long been topic of research, albeit in either very particular markets or highly reduced form across sectors.
- The old view of purely pro-competitive effects of competition again are nuanced in the context of the very same shock affecting costs and competition
  - Example: Trade liberalization in Indian manufacturing.

Towards service sectors

- Focus is on manufacturing sector for historically obvious reasons, now at most 20 percent of most economies we study.
- It does still interact with other sectors, like services and IT and energy, allowing for the production process to be spread across various regions in the world.
- The productivity drivers in manufacturing can in turn fuel growth in other sectors, but this requires a more precise view of what technology and advances are about.
- Finally, Applying approach to say banking, health care, among others, might at first seem problematic, but at least conceptually sound: transforming inputs into output.