Some remarks on QuInnoE - Innovation et qualité de l'emploi

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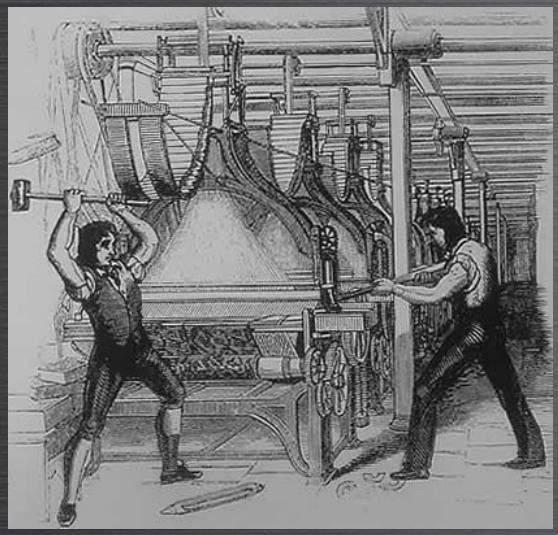
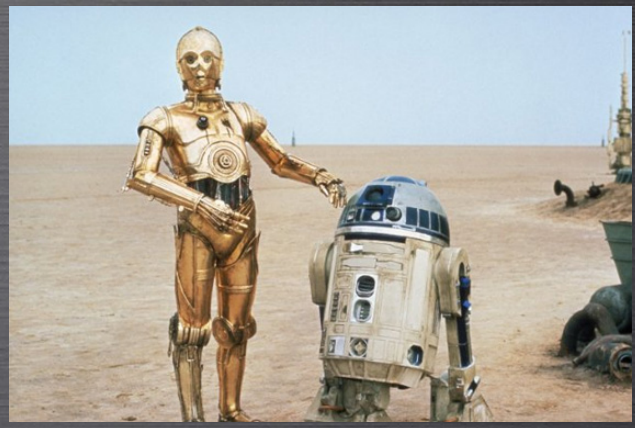
Technical change and (un)employment

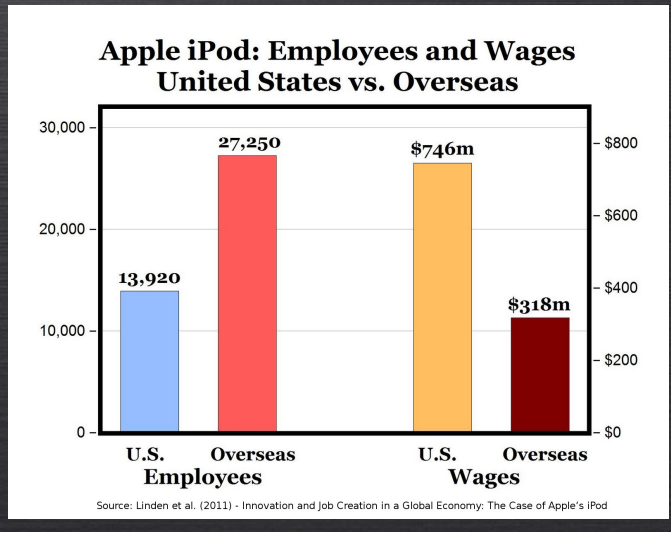




Bring on the personal trainers

Probability that computerisation will lead to job losses within the next two decades, 2013
(1=certain)

Job	Probability
Recreational therapists	0.003
Dentists	0.004
Athletic trainers	0.007
Clergy	0.008
Chemical engineers	0.02
Editors	0.06
Firefighters	0.17
Actors	0.37
Health technologists	0.40
Economists	0.43
Commercial pilots	0.55
Machinists	0.65
Word processors and typists	0.81
Real estate sales agents	0.86
Technical writers	0.89



Theoretical framework

Relation between innovation and employment.

Product Innovation

- Increasing demand
- but cannibalization of old products

Process innovation

- Direct effect: reducing employment, at output fixed, but
- price compensation mechanisms (do they work?)

Firm-level empirical evidence

Existing evidence

- (average) Positive link between innovation and employment growth at the firm-level (especially R&D, product innovation).
- Process innovation has more ambiguous (average) effects.

Missing evidence

- Few contributions use longitudinal data;
- no comparisons across countries;
- very few contributions further decomposes product and process innovation;
- no investigations on the link innovation and quality of jobs;
- endogeneity of innovation proxies.

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ISIGrowth project

Research for Innovation-fuelled, Sustainable, Inclusive Growth in Europe. Two main aims:

- provide novel diagnostics of the relationships between innovation, employment dynamics and growth;
- elaborate policy scenarios and deliver a coherent policy toolkit to achieve the Europe 2020 objectives of smart, sustainable and inclusive growth.

More info on www.isigrowth.eu

Another type of missing evidence

Thanks to micro-data availability we now know that employment growth (and its relation with innovation) is characterized by a rich and complex dynamics:

- simple averages might misrepresent the phenomenon;
- a different perspective based on distributions could provide new insights. It can be a useful complement to

1 single average effect (standard regression)	1 effect for each firm (case studies)

3 examples from ISIGrowth.

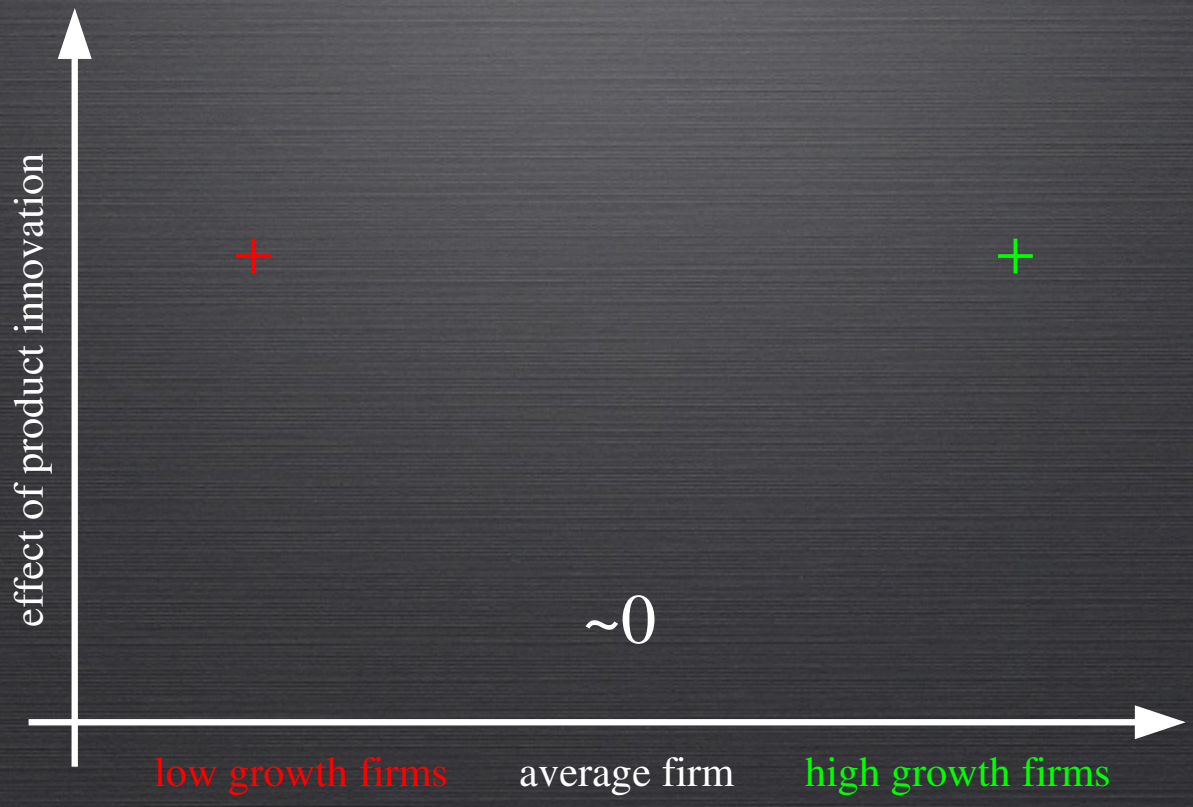
1. Innovation and employment growth

Traditional approach: "average" positive effect of product innovation, "average" limited effect of process innovation, no growth-premium for persistent innovators.

1. Innovation and employment growth

Distributional approach

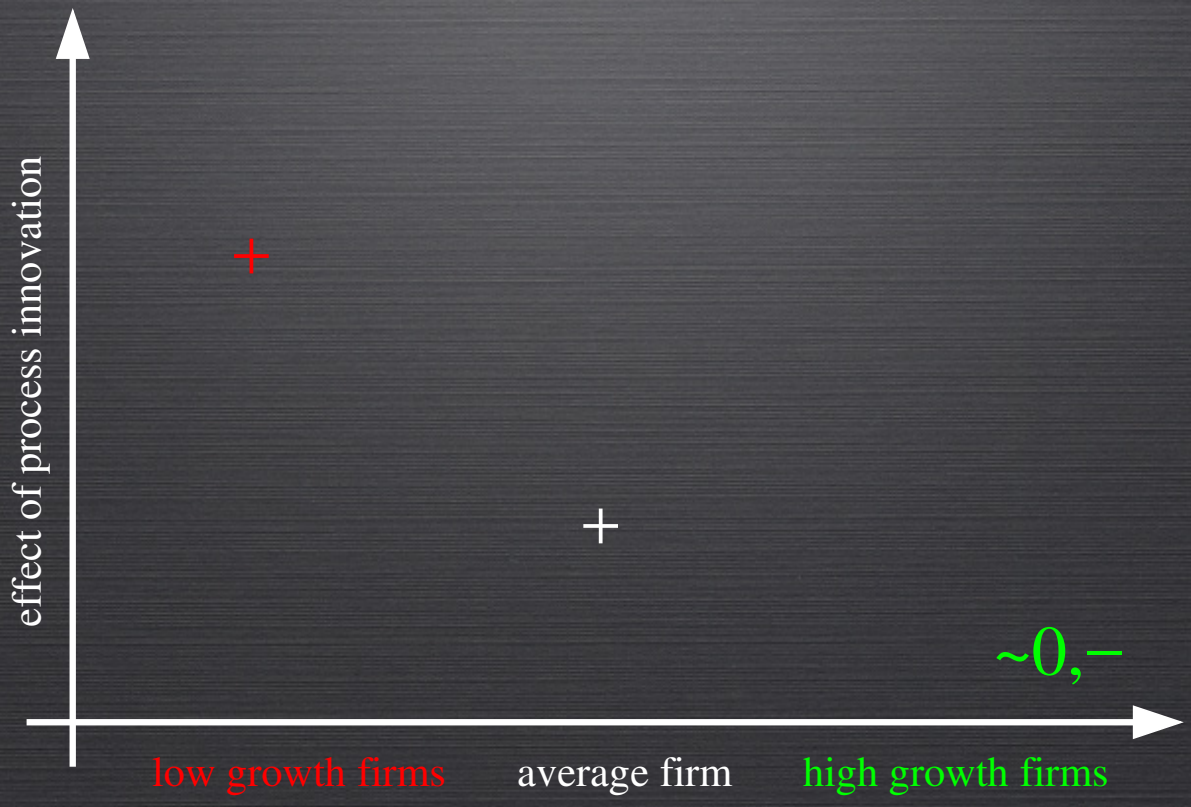
1A. The effect of product innovation on employment growth is U-shaped.



1. Innovation and employment growth

Distributional approach

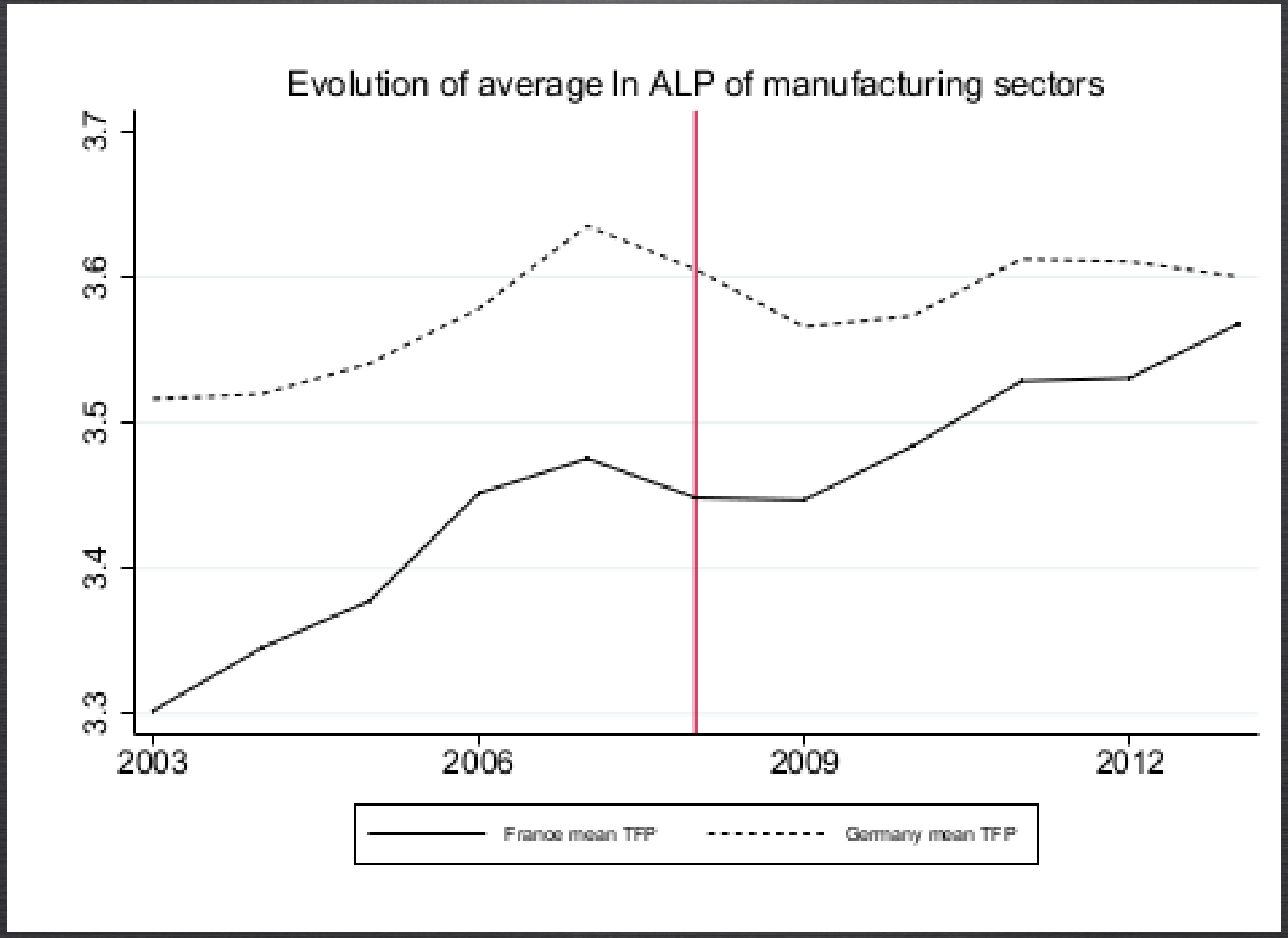
1B. The effect of process innovation on employment growth is decreasing.



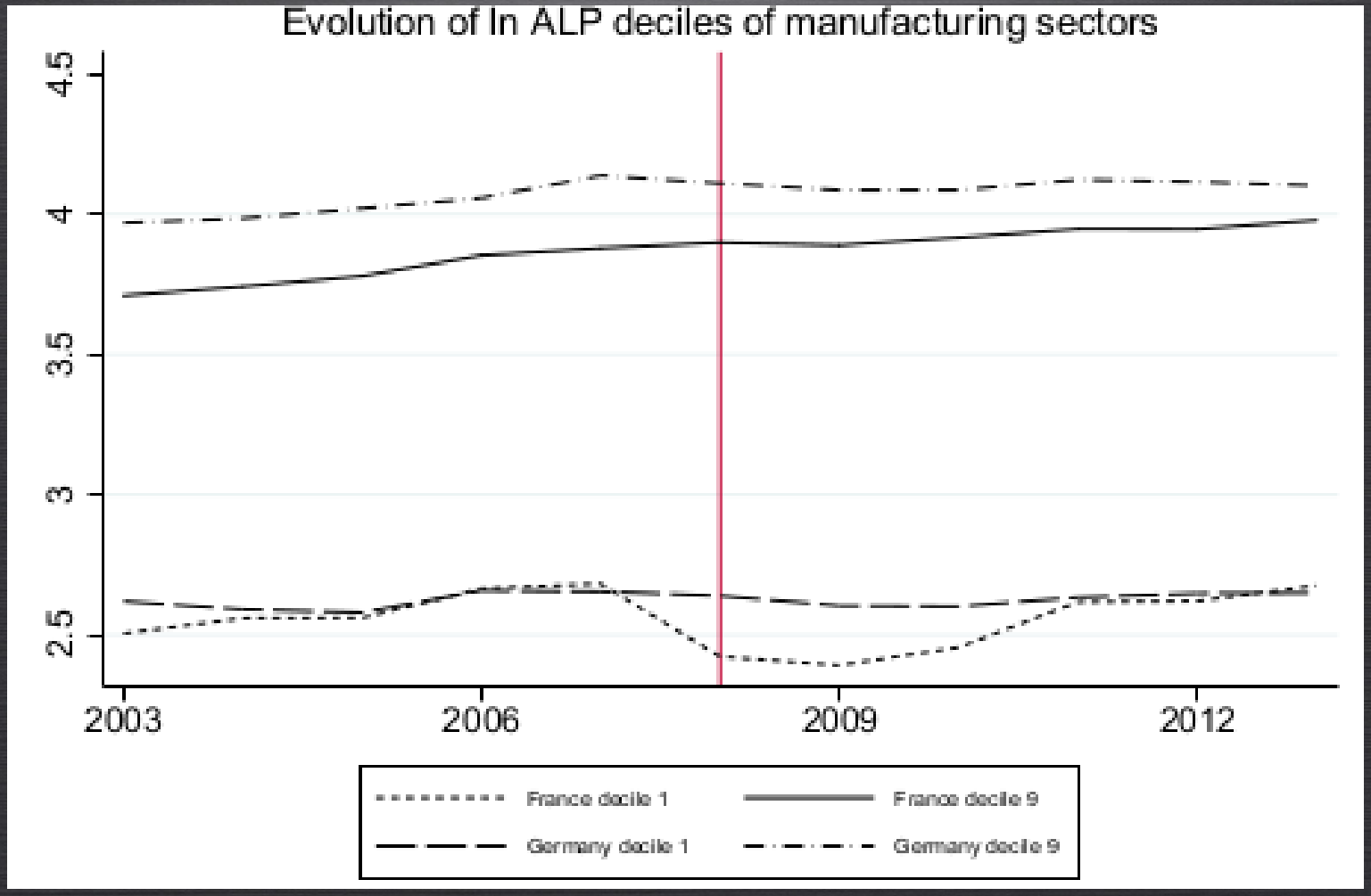
2. Comparing Productivity FRA-DEU

We built an exercise to compare LP and TFP levels between France and Germany. Several comparability challenges.

2B. Average


Evolution of average ln ALP of manufacturing sectors
3.7
3.6
3.5
3.4
3.3
2003
2006
2009
2012
France mean TFP
Germany mean TFP

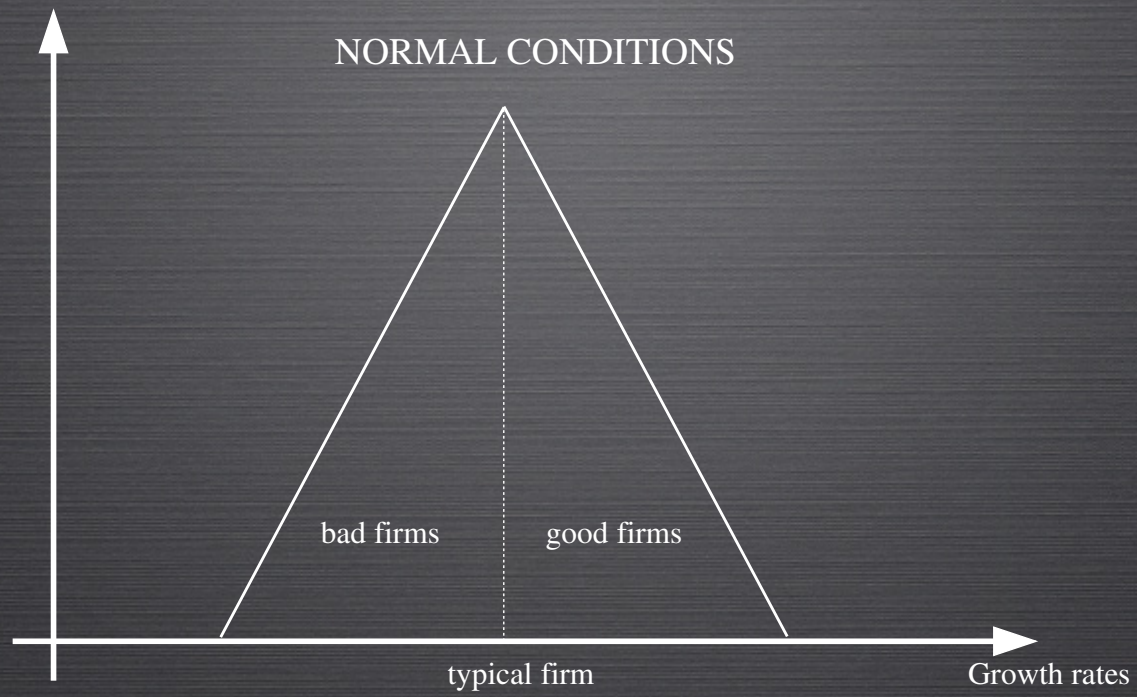
2B. 1st (bad performers) and 9th deciles (top performers)



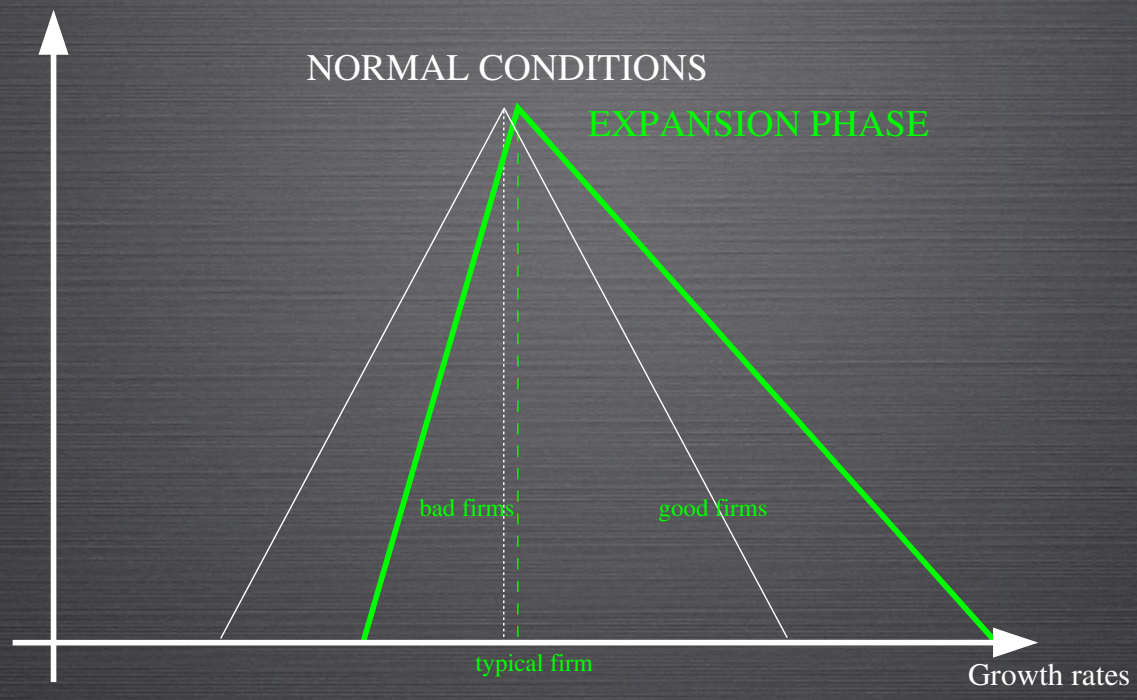
3. Distributional properties

We focus on distribution of firms growth rate (employment and sales) and we look at

- 3A. its evolution over the business cycle;
- 3B. the effects of financial constraints;
- 3C. its relation with firm size.

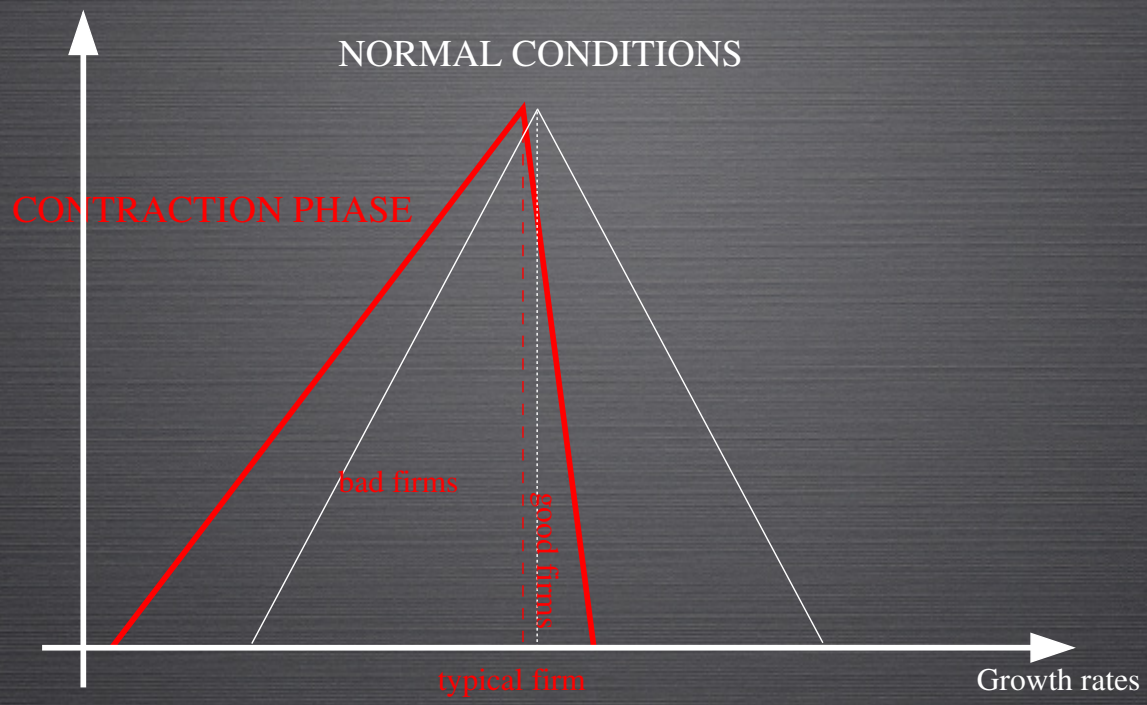


Very robust empirical evidence on its shape.



3A. During an expansion phase:

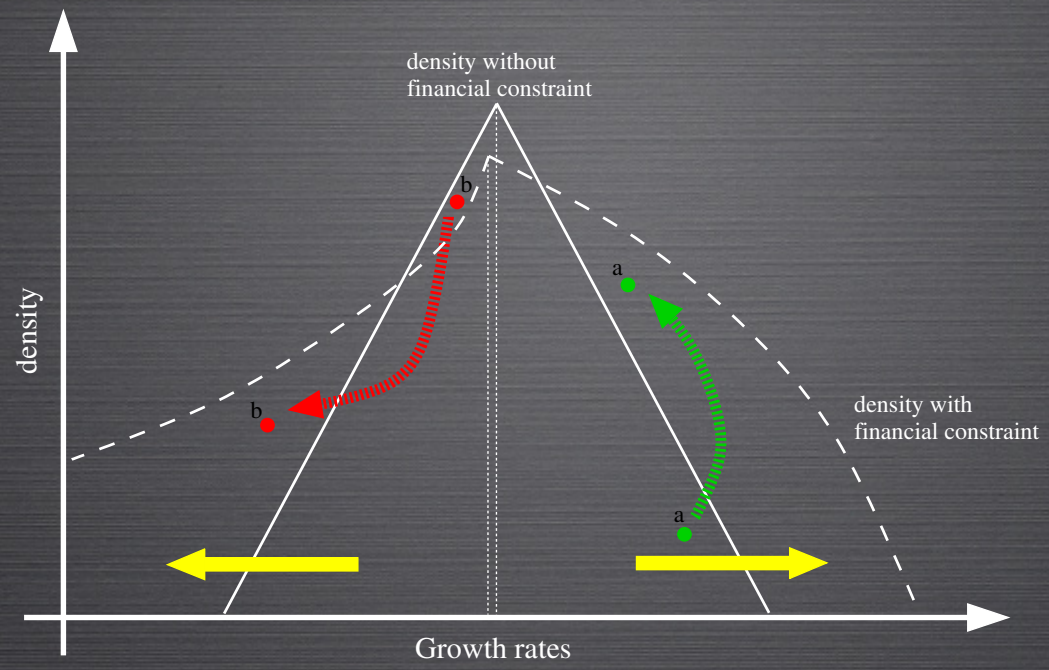
- no big change in the typical growth rate (mode);
- many more firms growth faster than the typical one (asymmetry).



3A. During a contraction phase:

- no big change in the typical growth rate (mode);
- many more firms growth slower than the typical one (asymmetry).

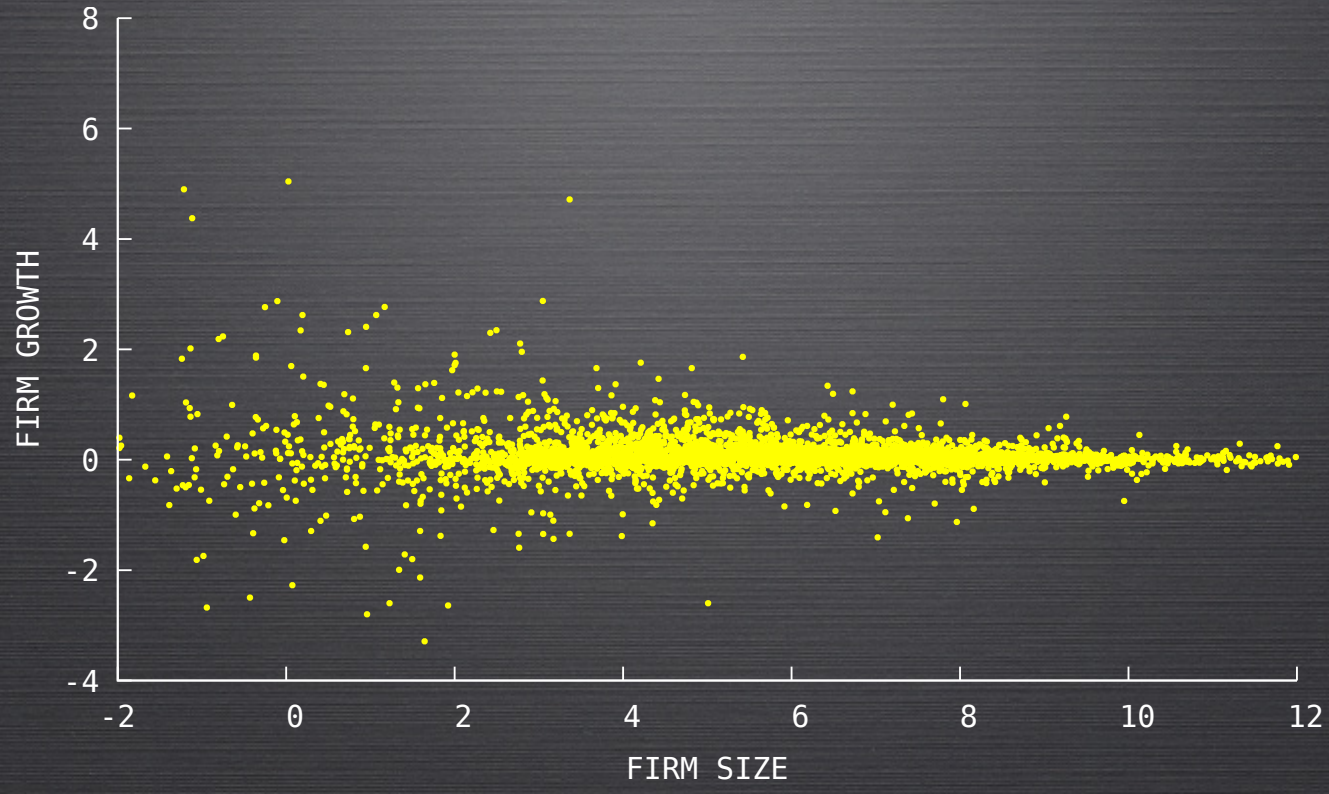
3B. Effects of financial constraints.



- Moderate negative shift in the typical growth together with higher volatility.

- Asymmetric shift in the probability mass:
  - firms facing good growth opportunities tend to bypass attractive investments;
  - firms facing poor growth opportunities display higher propensity sell off productive assets.

3C. Size and Volatility of sales/employment growth.



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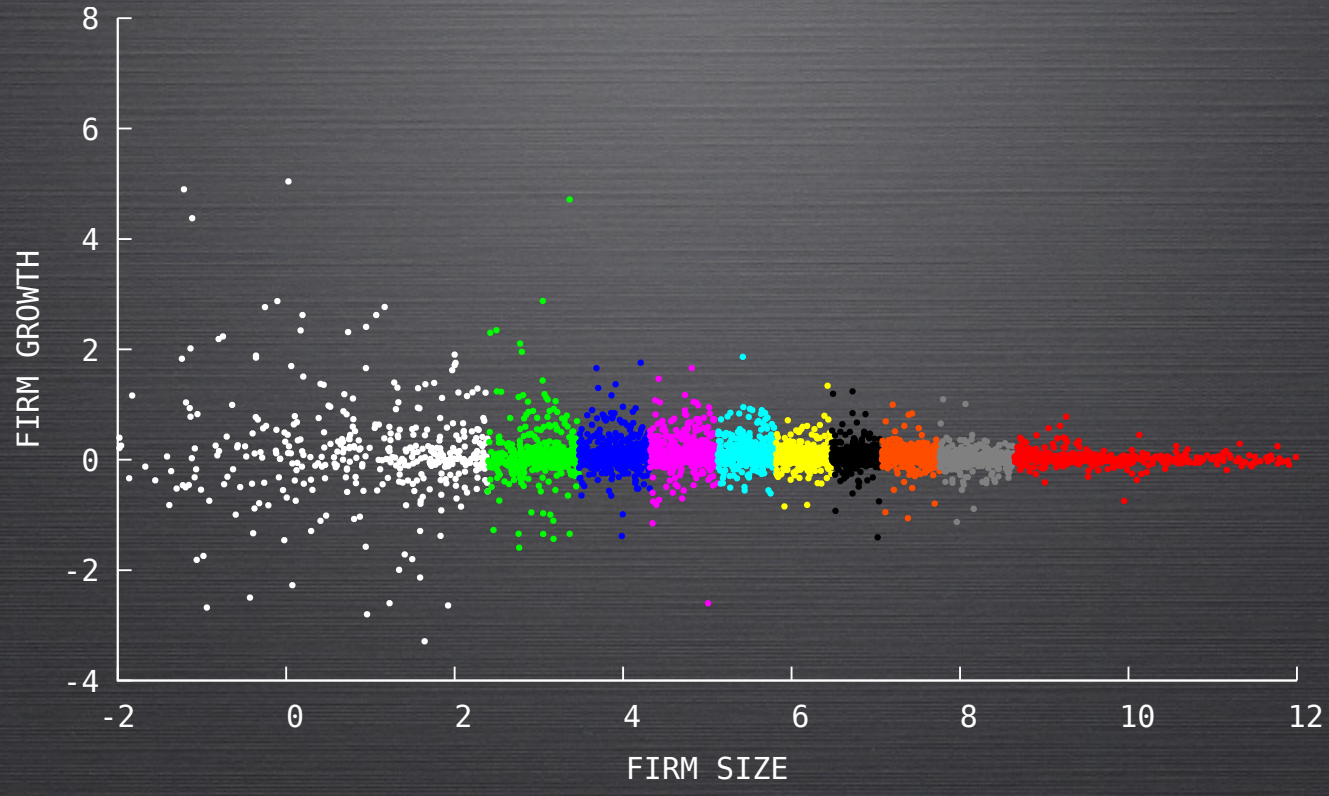

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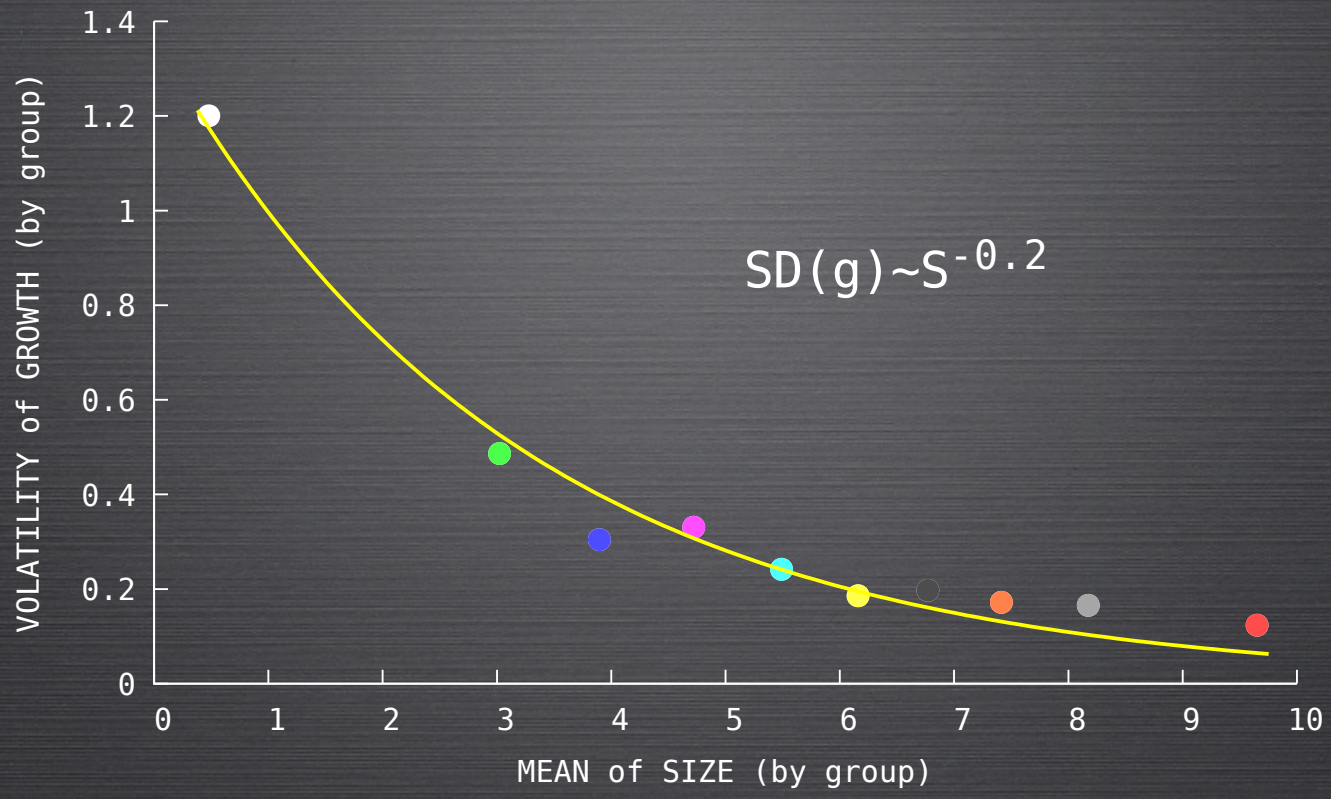

- Small firms display a higher volatility of growth than large firms. Very robust across countries. (20 OECD and NON-OECD countries).
- Relevance: it links to the resilience of granular economies against shocks.