Job Reallocation, Productivity Dynamics and Trade Liberalization
Bogotá, July 8, 2005

Comparative analysis of the sources of growth: A quest for more and better data

Stefano Scarpetta

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Road Map

- Motivation: growth, convergence, technical progress and the business environment: the OECD growth story
  - GDP/Capita levels and growth and their drivers
  - What is the role of the ICT-producing and using industries in OECD countries
- Looking at micro: firm dynamics, labor reallocation and productivity: how important is allocative efficiency for growth
- What could be the role of market characteristics, policy and institutions for productivity and allocation efficiency

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Growth patterns over the past decade

- Evidence of widening disparities in growth performance across OECD countries
- Virtually all countries still have a gap *vis à vis* the United States
- In many countries the gap has been rising recently, after decades of convergence

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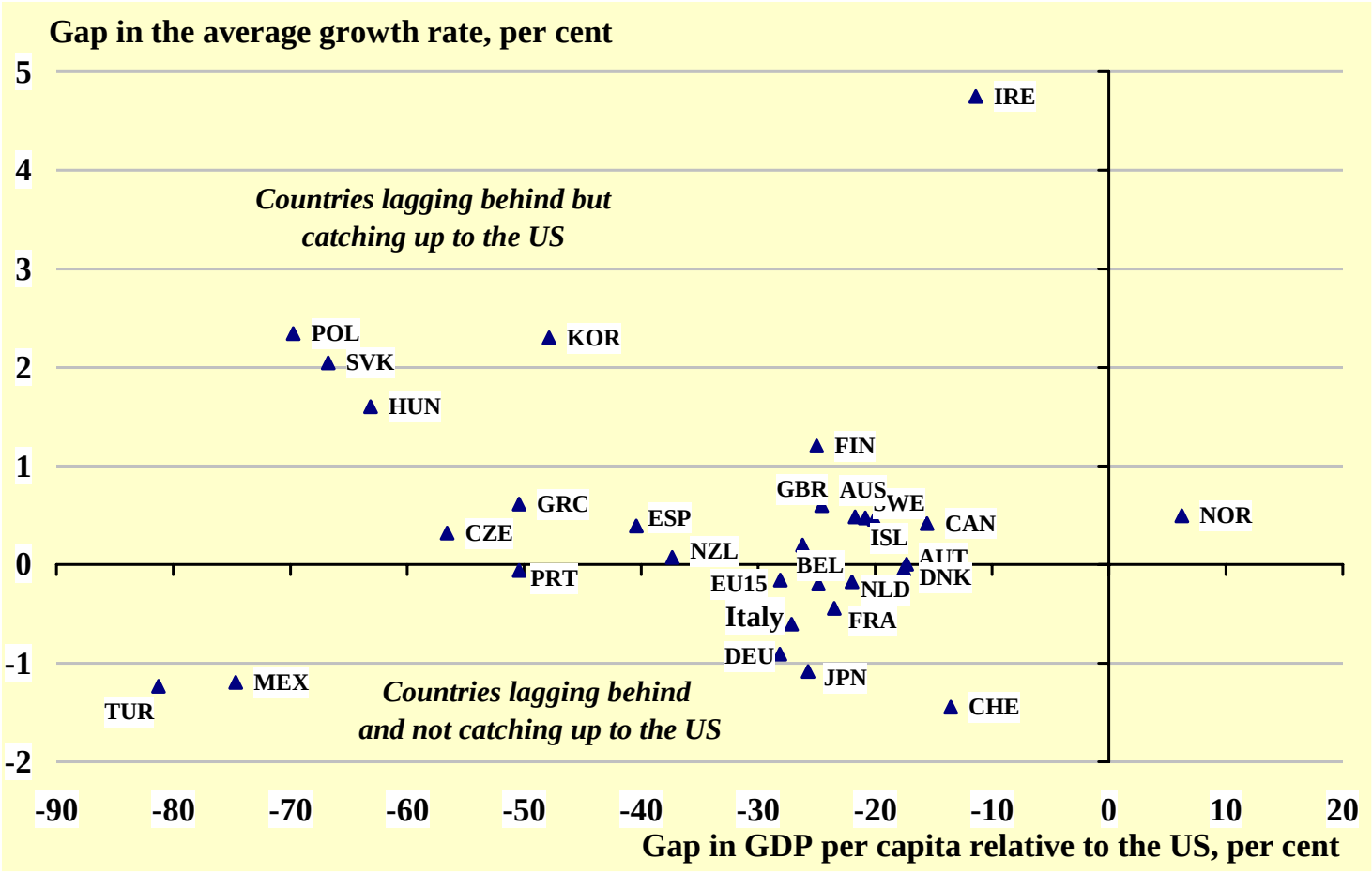
GDP p.c. levels and growth rates
Who is catching up?
1994-2003



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Explaining the GDP p.c. gaps

- A simple accounting decomposition

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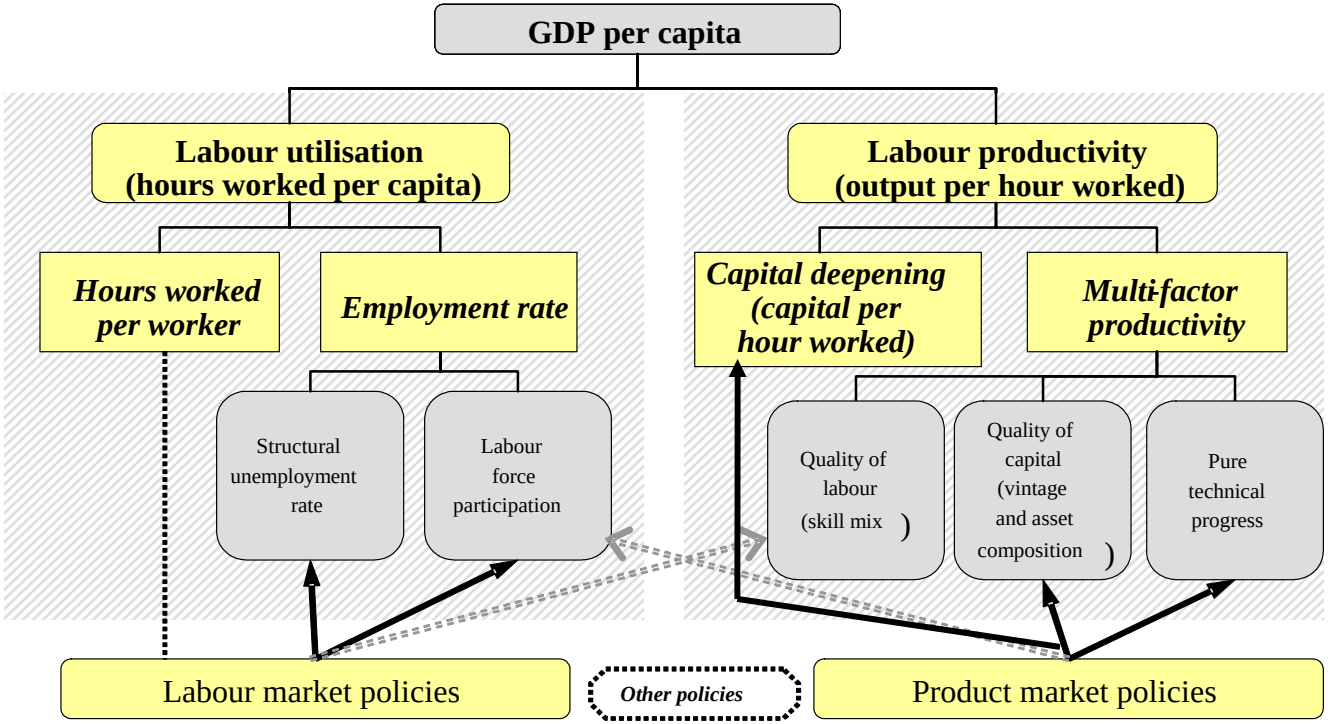
Proximate and policy determinants of GDP p.c.



Explaining the GDP p.c. gaps

- A simple accounting decomposition
- Sources of gaps differ across the OECD:
  - Low productivity is key in some countries (e.g. Japan)
  - Low labor utilization is key in other countries (e.g. EU)

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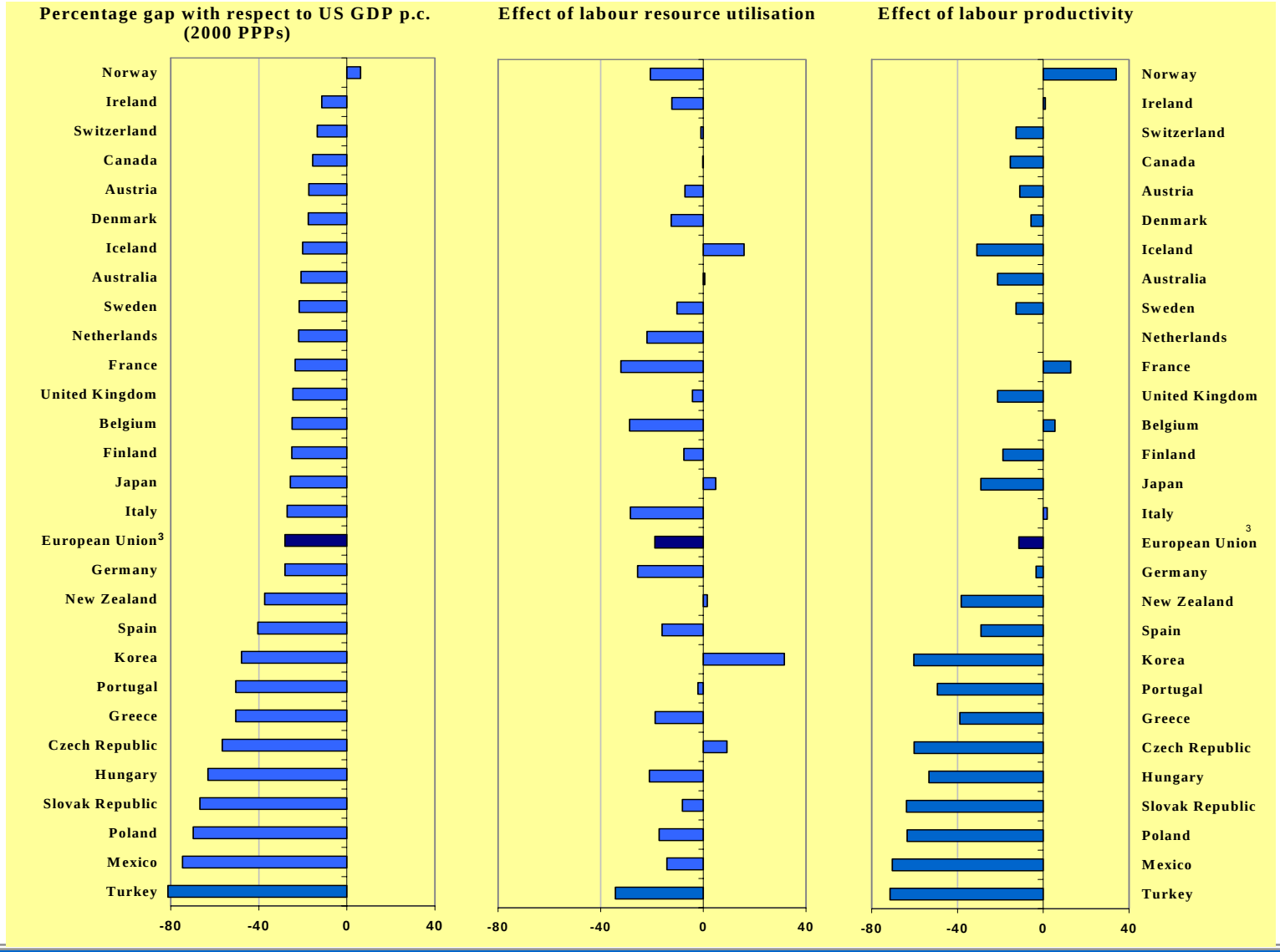
The sources of GDP p.c. gaps



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Explaining the GDP p.c. gaps

- A simple accounting decomposition
- Sources of gaps differ across the OECD:
  - Low productivity is key in some countries (e.g. Japan)
  - Low labor utilization is key in other countries (e.g. EU)
- But high observed productivity often matches low labor utilization, pointing to low « structural » productivity
  - No long-run employment-productivity trade off exists
  - Countries with low « structural » productivity need to accelerate growth in **both** productivity and labor utilization

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Observed and "structural" productivity

The productivity advantage of large EU countries partly reflects low labour utilisation

Observed and "structural" labour productivity as a percentage of the level in the US, 2002

	Observed hourly productivity	Adjustments		"Structural" hourly productivity
		for differences in working time	*for differences in the employment rate*	
	% of the US level	*% of the gap vs. the United States*		*% of the US level*
	a	*d*	*e*	*f = a - d - e*
EU	84	4.4	5.3	74.3
France	107	5.2	7.5	94.3
Germany	91.6	7.2	4.6	79.8
Italy	96.6	3.8	11.3	81.5

Source : Authors' computations based on Artus and Cette (2004)

MFP patterns

Caveat: simple Solow residual: difficult to control for changes in quality of labor and especially capital

- Some countries are filling the productivity gap with the US, but most aren't
- Only a few countries (among which the US!) experienced a productivity acceleration over the past decade
  - Notably, countries with low « structural » productivity failed to do so

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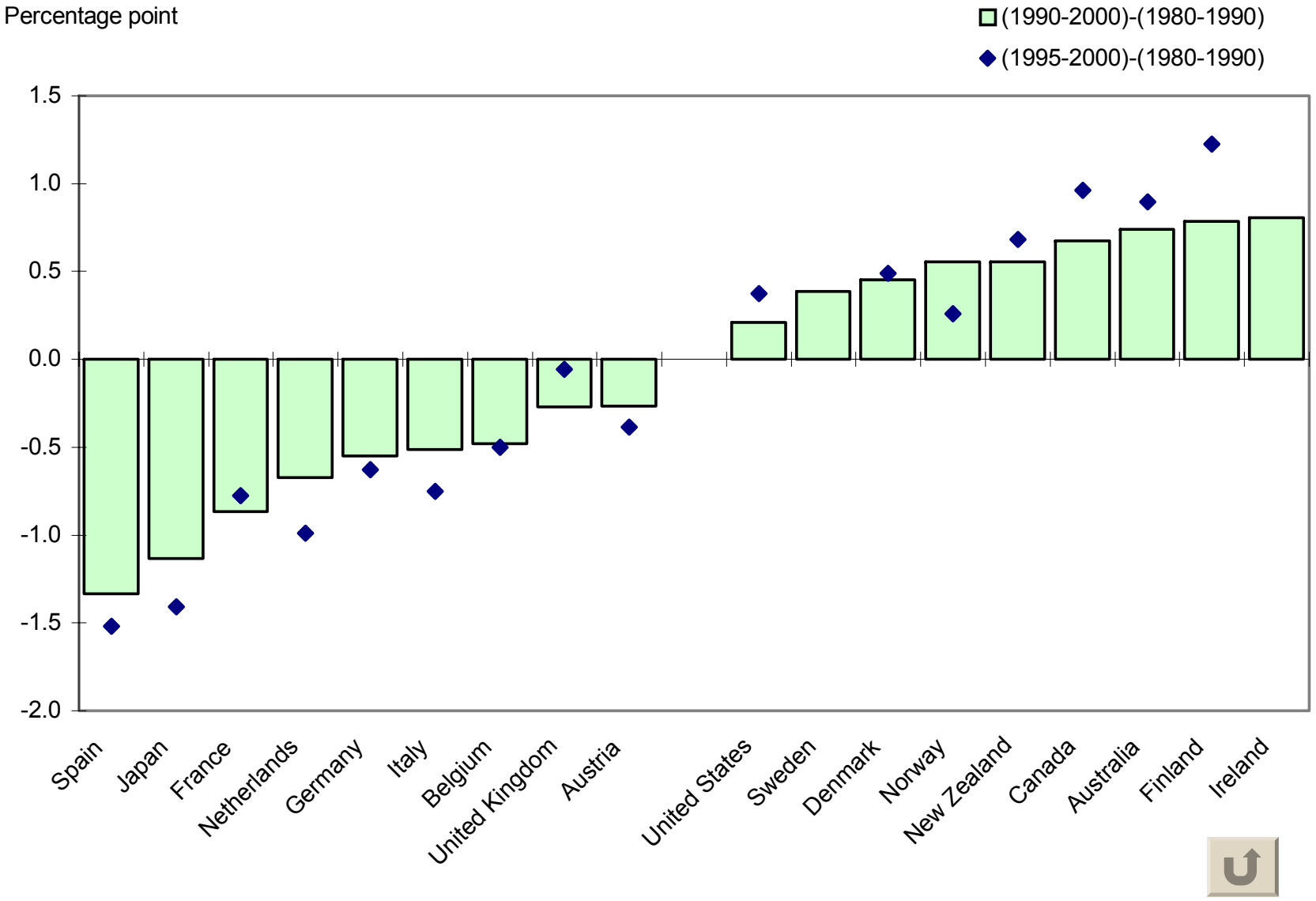
Changes in MFP growth rates, (1990s[1] vs.1980s[2])



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What has driven growth?

- Capital quality has been crucial in explaining cross-country differences in growth
  - Capital quality strong influenced by the shift towards ICT, even after the hype of the late 1990s

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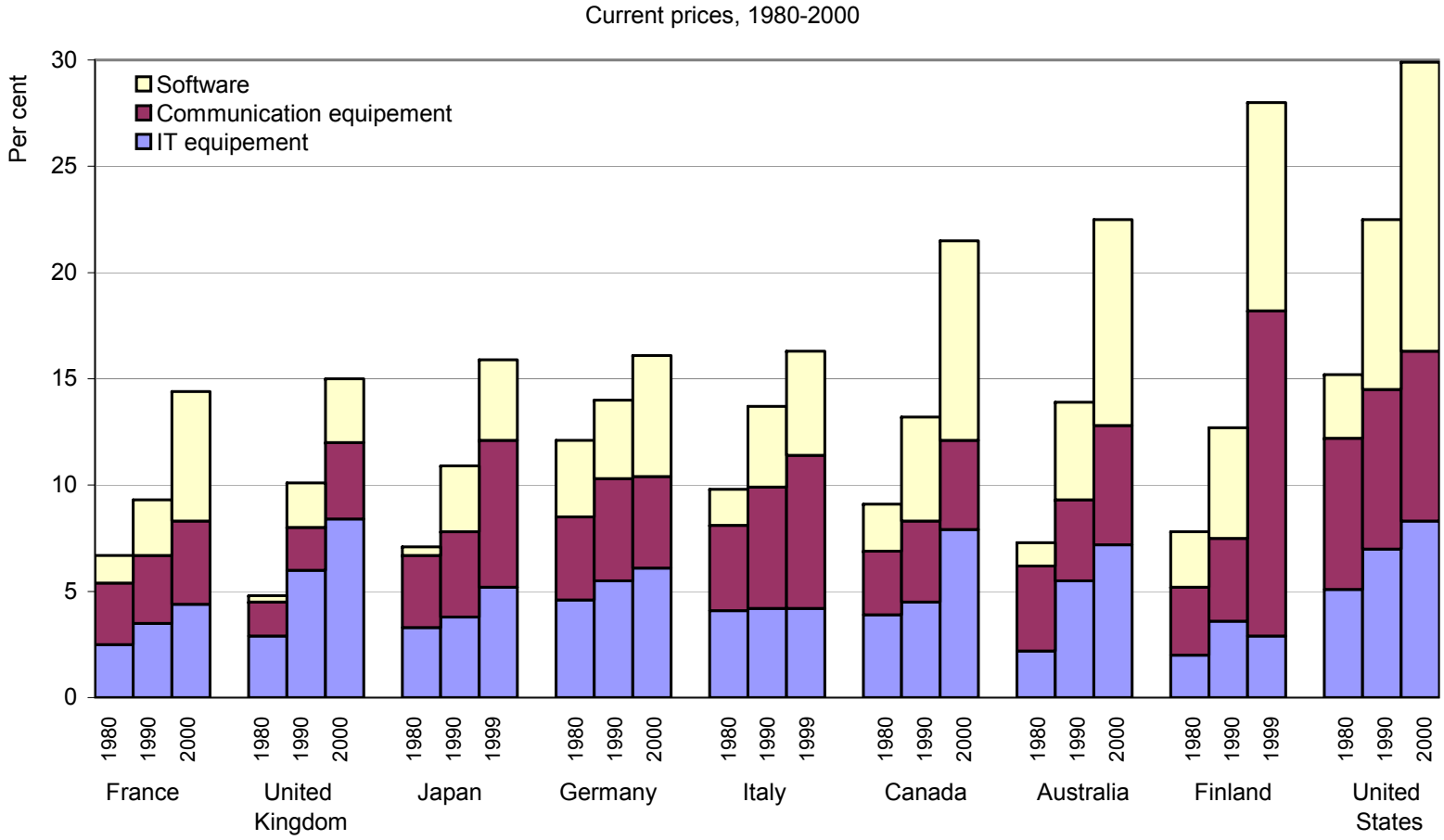
Percentage share of ICT investment in total non-residential investment



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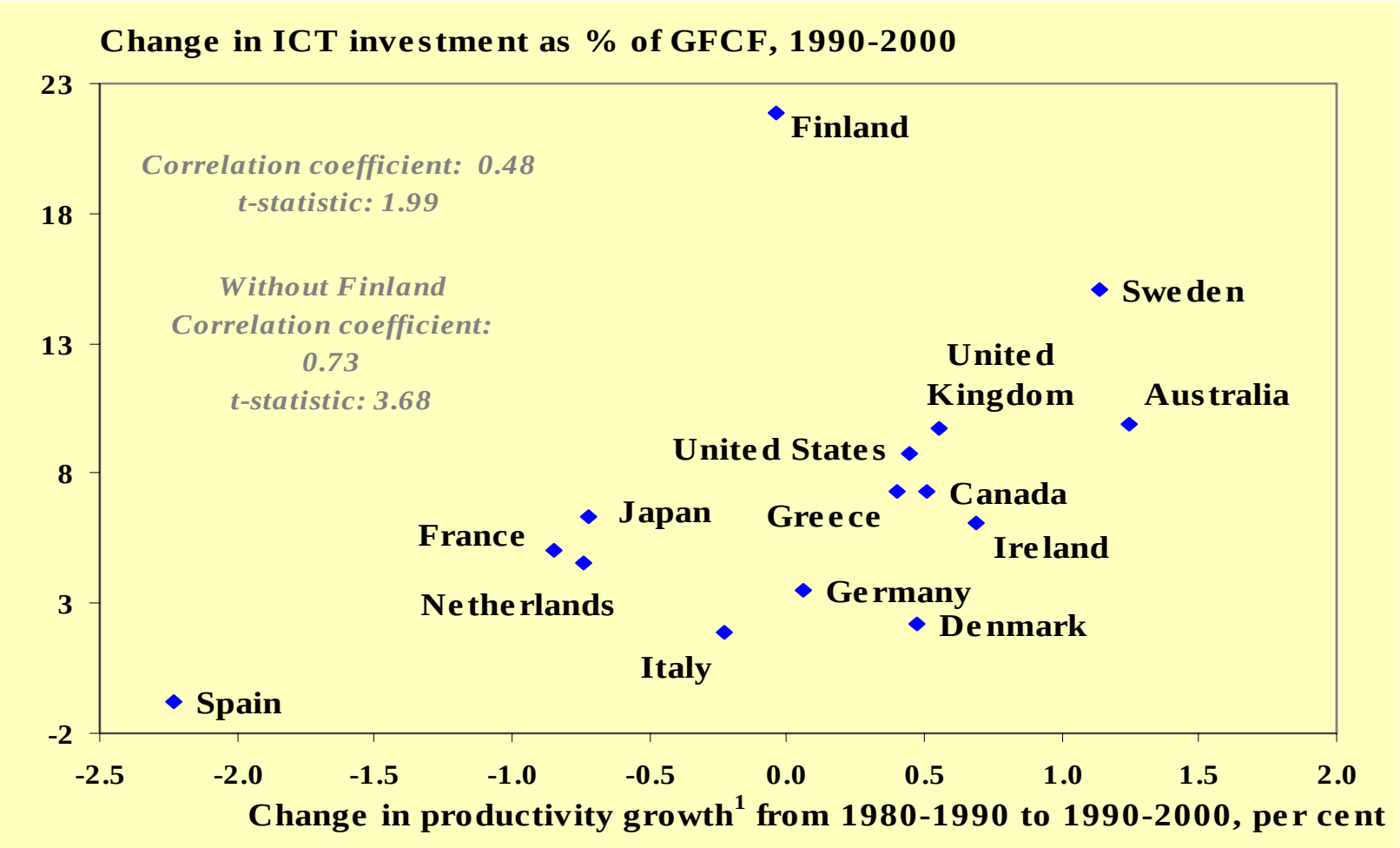
Productivity acceleration and ICT investment



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Caveat: harmonization of price indexes for different products are essential (hedonic adjustment)

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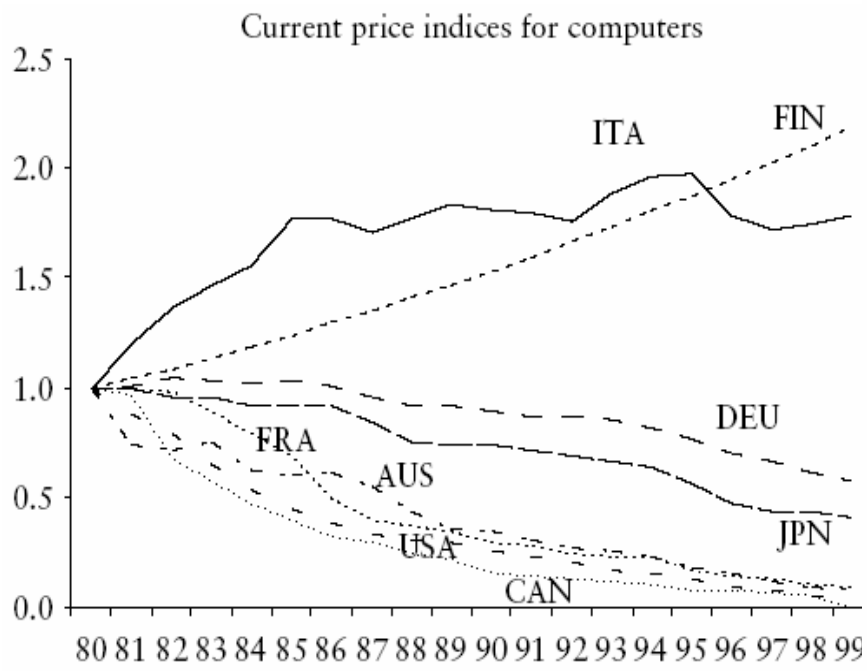
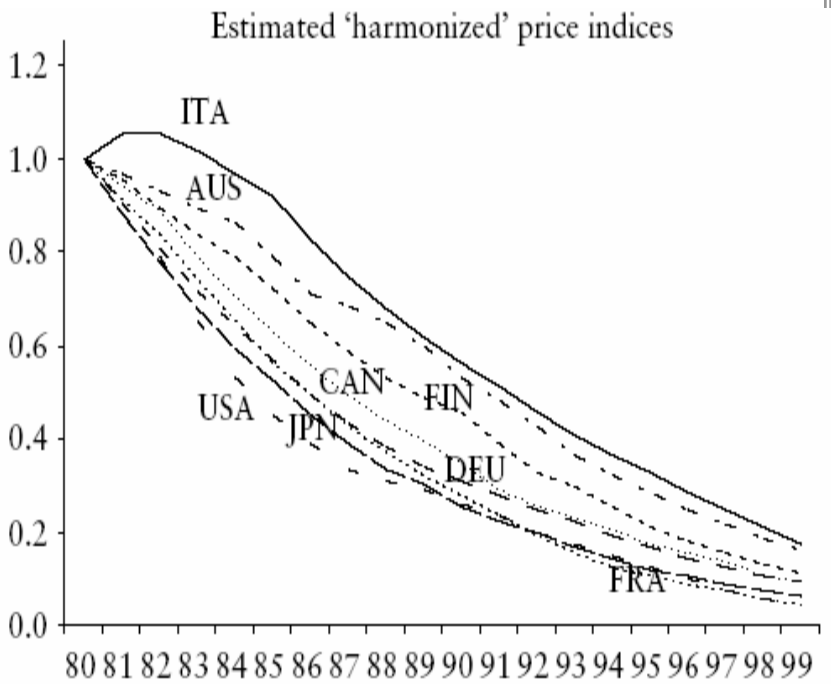
Prices indexes for ICT goods:

a crucial issue for international comparisons





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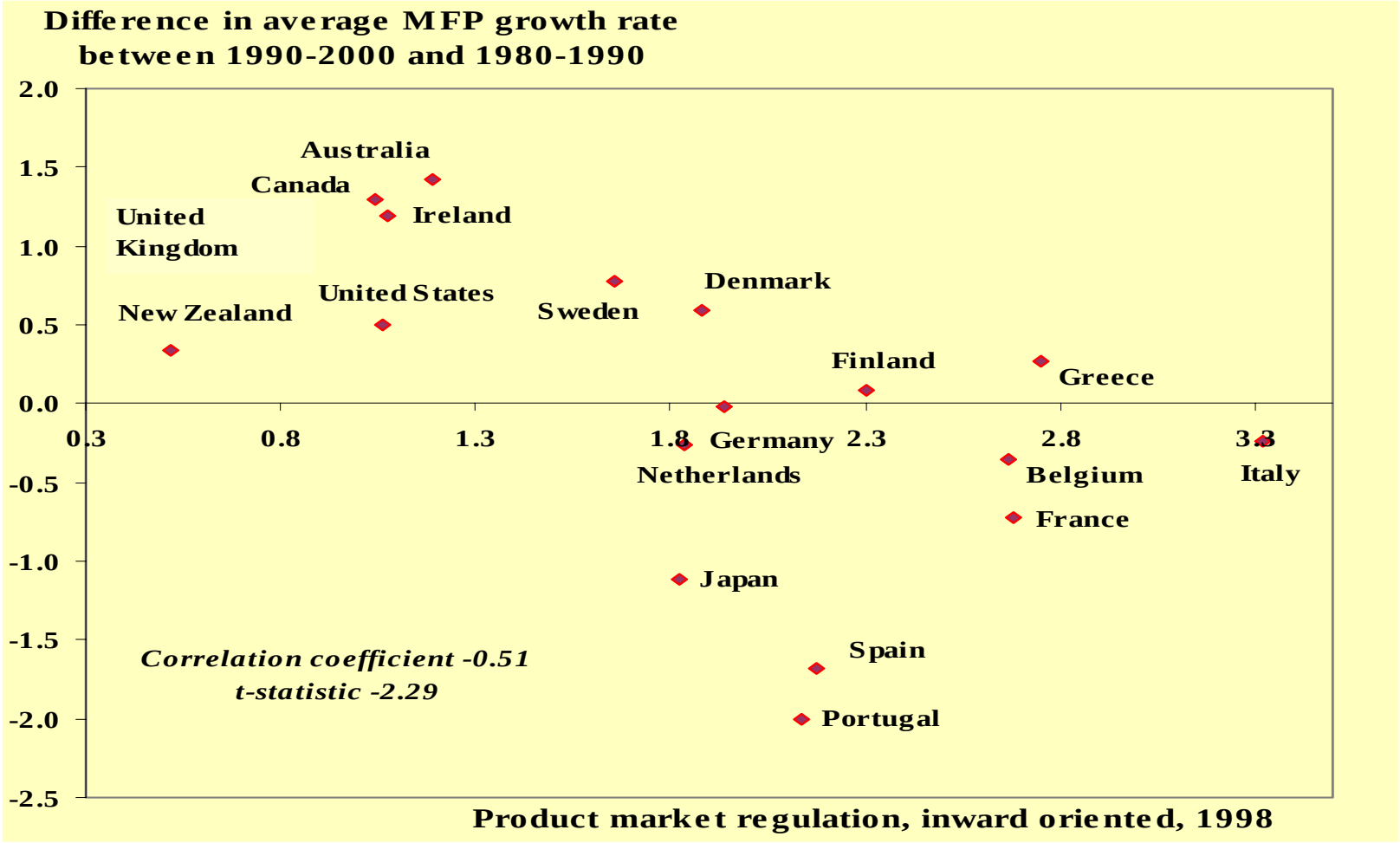
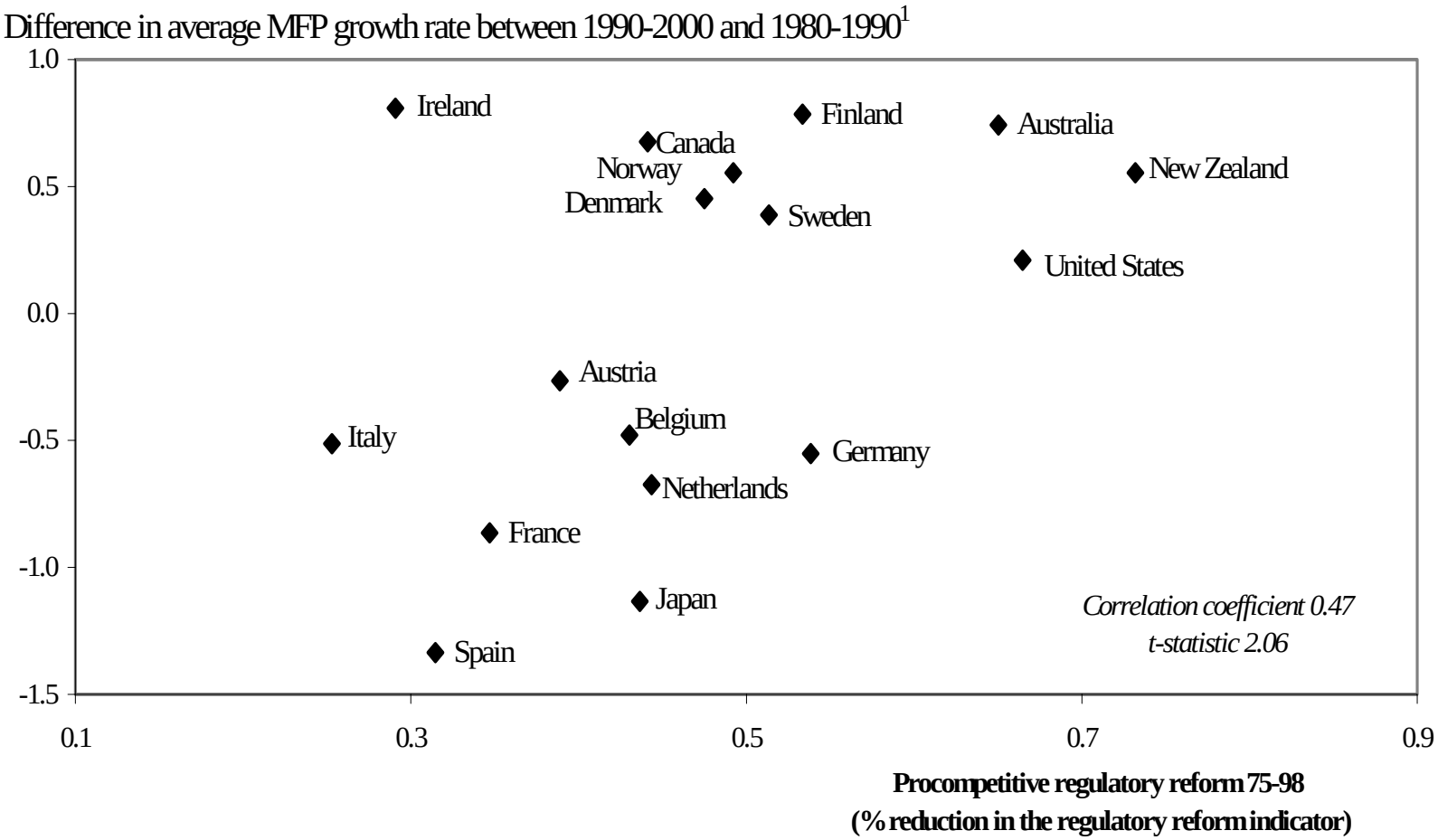
What is the role of policy and institutions?

- In countries that extensively reformed product markets:
  - **multifactor productivity (MFP) accelerated over the past two decades**
  - **ICT-using service industries contributed more strongly to aggregate labour productivity growth**
- Multivariate panel estimates over countries and industries suggest that *(Nicoletti and Scarpetta, 2003)* :
  - **MFP growth rises as the overall regulatory environment is eased**
  - **the lower are entry barriers (including trade barriers), the faster is catch-up to best practice in manufacturing industries**
  - **long-run costs of restrictive regulation are higher where MFP is farther from the technology frontier**
  - **reforms in non-manufacturing increase manufacturing productivity through input-output linkages** *(Faini et al. 2005)*

Regulation and MFP acceleration



Changes in PM regulations and the acceleration of MFP



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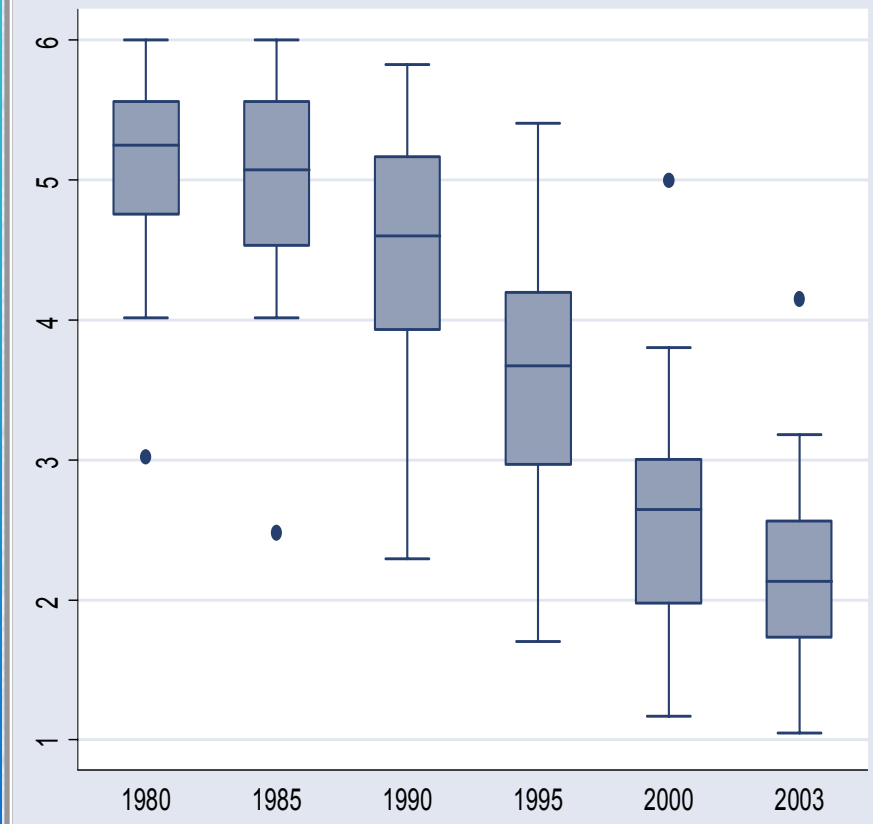
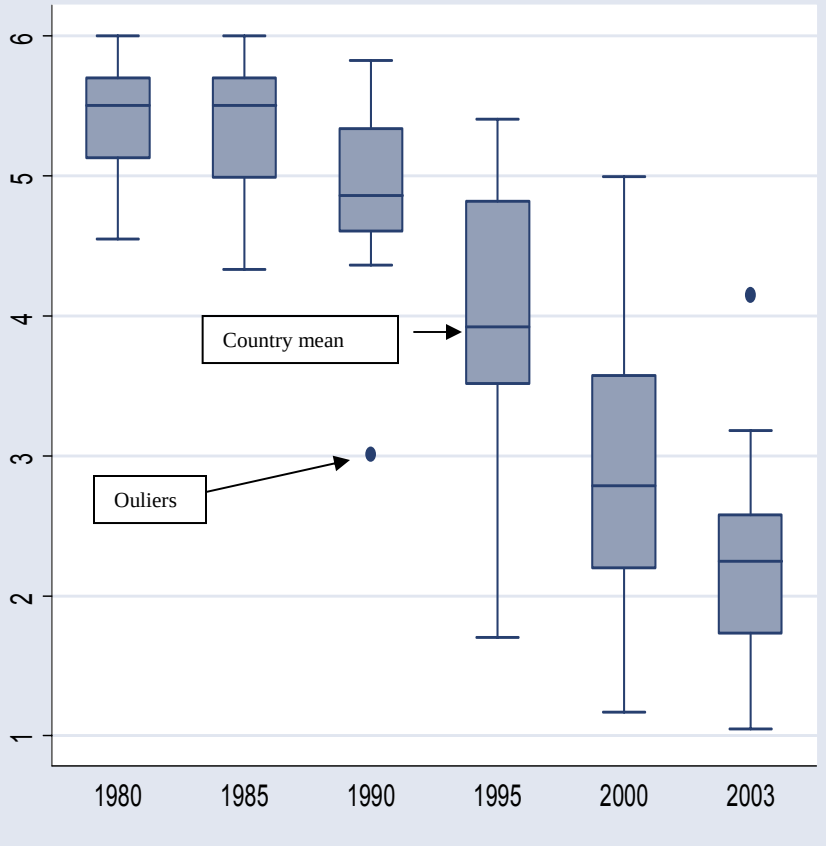
Product market reform in non-manufacturing, 1980-2003

(Indicator increasing in restrictions)

Regulatory reform in OECD countries



Regulatory reform in EU15 countries



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Going deeper: firm level analysis

- Often difficult to assess role of policy and institutions at the aggregate levels: too many possible explanatory factors
- Ideally, we would like to test hypotheses of how policy influence firms' and workers' behaviors leading to different aggregate outcomes
- For example:
  - Role of firm and worker churning for productivity and employment
  - How regulations affect churning and its effectiveness
  - How reforms– including trade reforms and PM reforms—changes incentives for firms to invest and hire workers

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Firm level analyses: the quest for data

- Many country studies (including those in this conference) have shed light on firm dynamics, allocative efficiency and productivity
- Meta-analysis of results from micro studies
  - A challenge to control for data, method, and context
  - Little within-country variation in policy (e.g. before and after)
- Cross-country longitudinal micro dataset
  - Generally not possible (disclosure)
  - EUROSTAT attempting to build EU panel, but from existing databases

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Distributed micro analysis

The WB firm-level project with Eric Bartelsman and John Haltiwanger

- Harmonization
  - Sample frames; Variable definitions; Classifications; Aggregation Methods
- Make comparisons that 'control' for errors
  - Exploit the different dimensions of the data (size, industry, time)
  - Use *difference in difference* techniques

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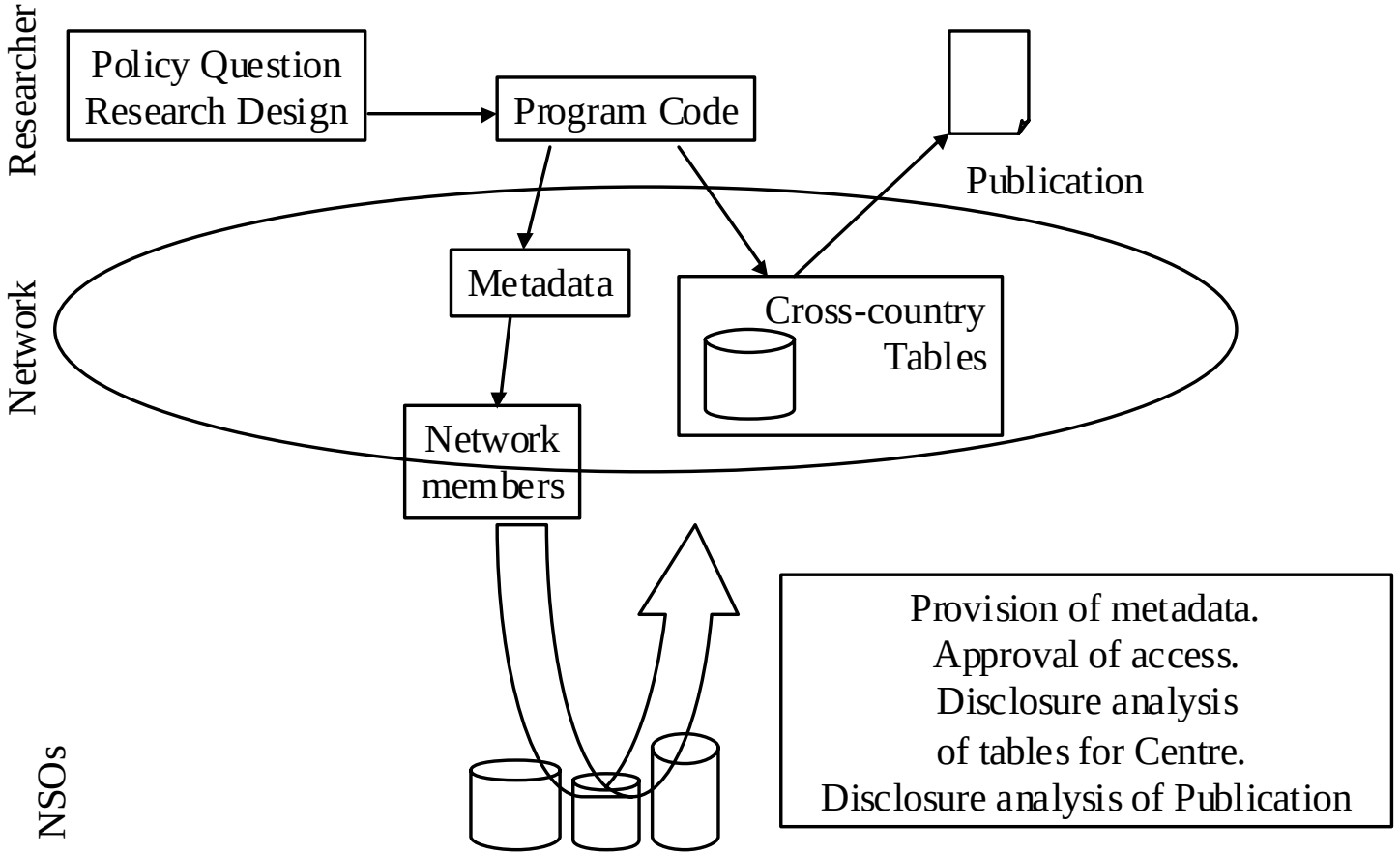
Distributed micro data research



Data sources

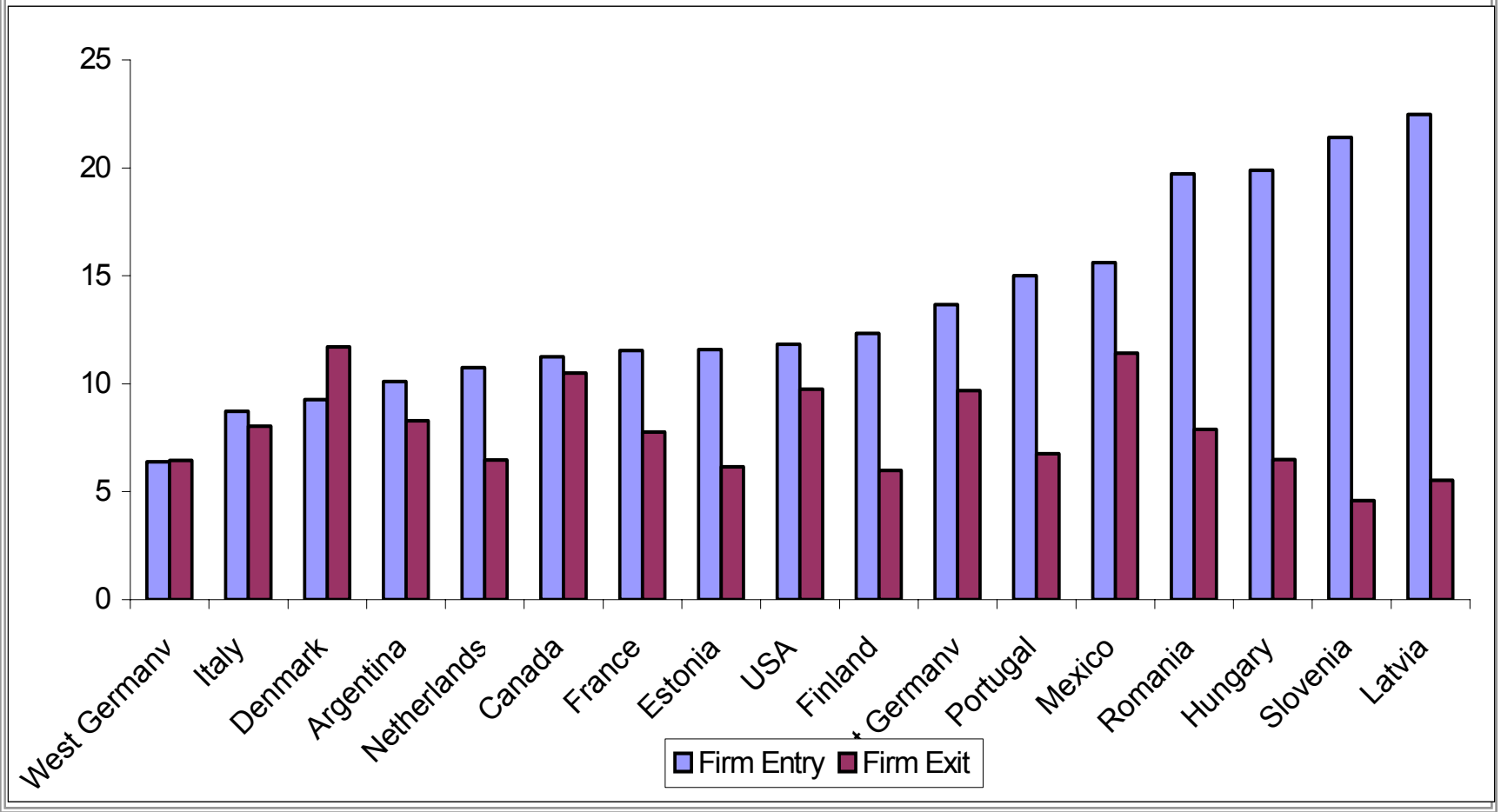
- Business registers for firm demographics
  - Firm level, at least one employee, 2/3-digit industry
- Enterprise surveys for productivity analysis
- Countries: 10 OECD
  - 5 Central and Eastern Europe; 6 Latin America; 3 East Asia
- Data are disaggregated by:
  - industry (2-3 digit);
  - size classes 1-9; 10-19; 20-49; 50-99; 100-249; 250-499; 500+ (for OECD sample the groups between 1 and 20 and the groups between 100 and 500 are combined)
  - Time (late 1980s – late 1990s)

The key features of firm churning

- The magnitude of firm churning

Firm entry and exit rates

Total business sector, firms with at least 1 employee



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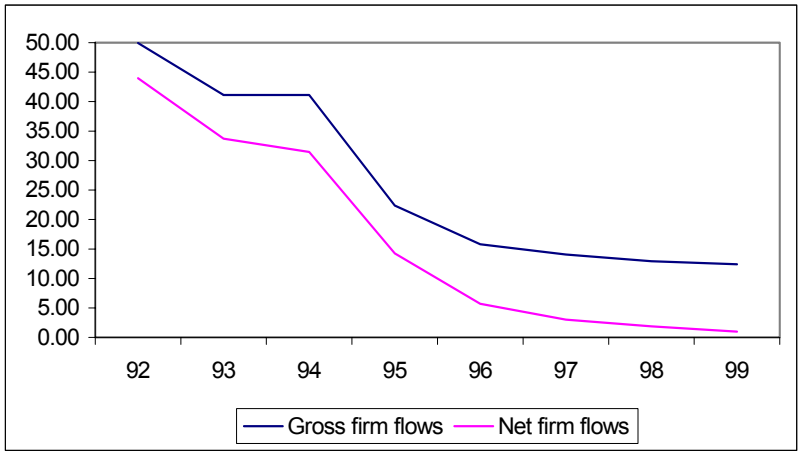
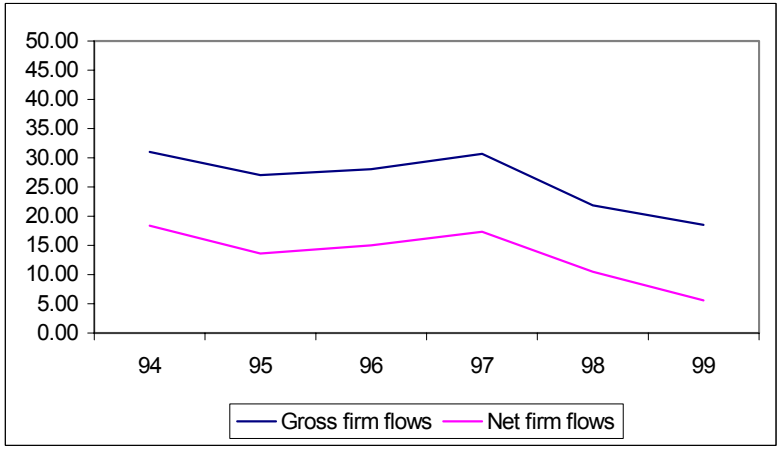
Gross and net firm turnover: how the time dimension sheds light on the evolution of market forces in transition economies

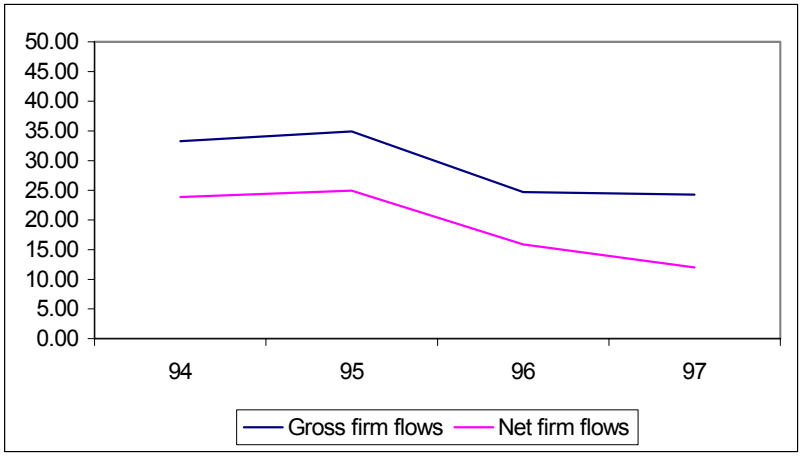
Slovenia



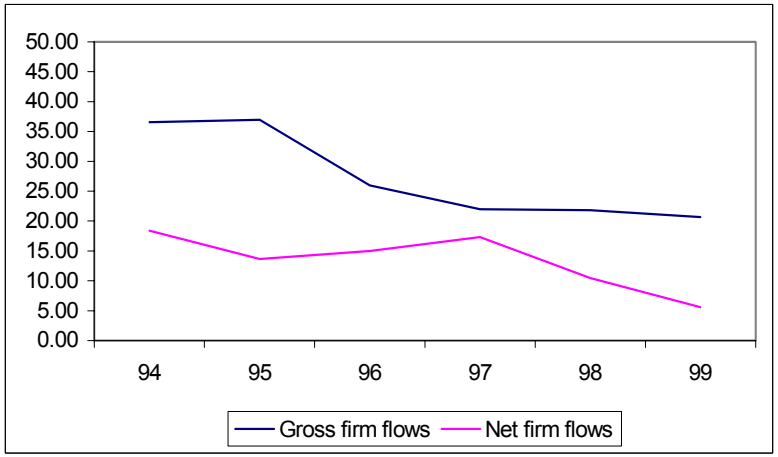
Hungary



Latvia



Romania



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The key features of firm churning

- The magnitude of firm churning
- The characteristics of entrants and exiting firms

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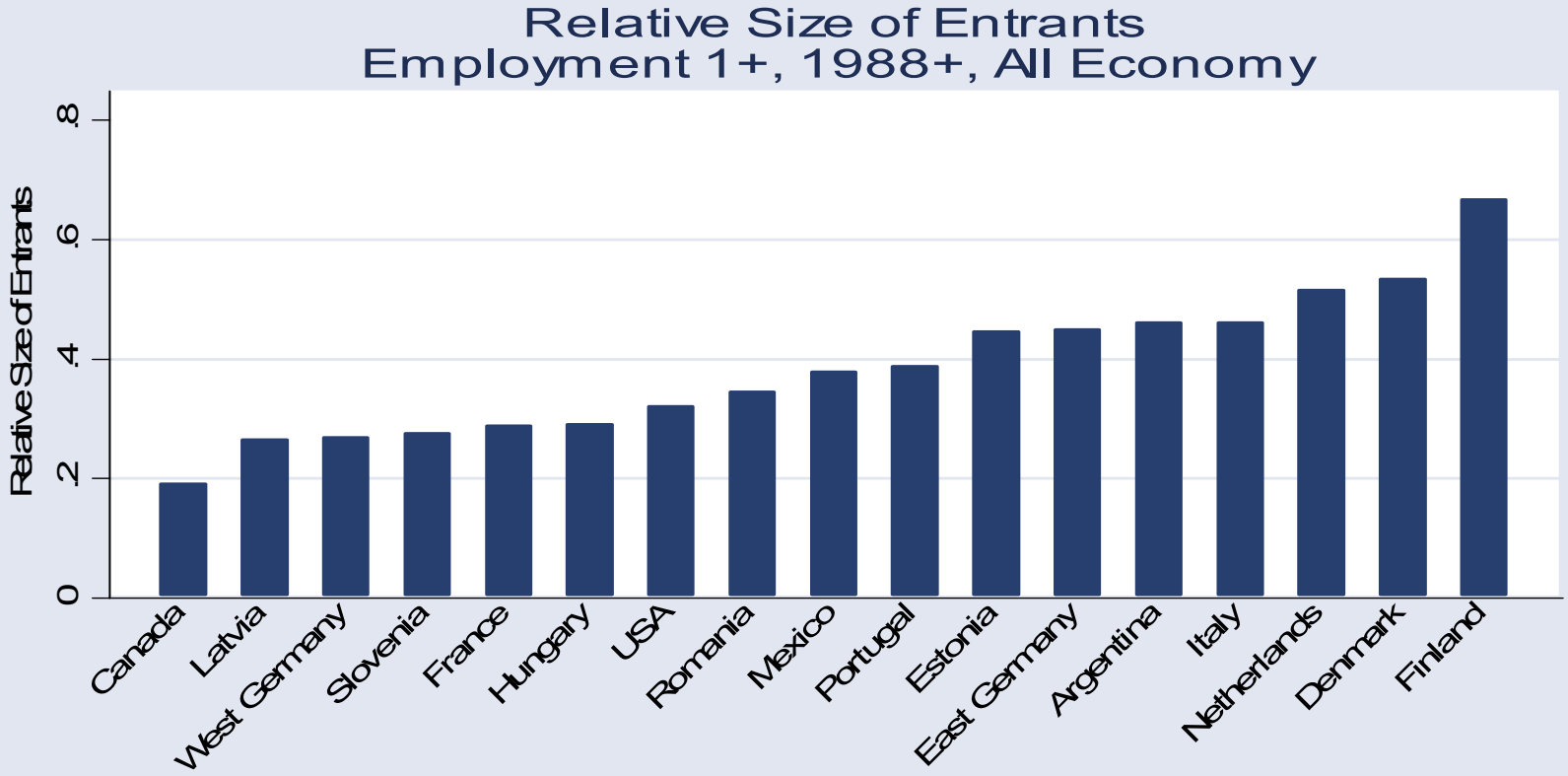
Relative Size of Entrants
Employment 1+, 1988+, All Economy
Relative Size of Entrants
0
.2
.4
.6
.8
Canada
Latvia
West Germany
Slovenia
France
Hungary
USA
Romania
Mexico
Portugal
Estonia
East Germany
Argentina
Italy
Netherlands
Denmark
Finland

The key features of firm churning

- The magnitude of firm churning
- The characteristics of entrants and exiting firms
- The post-entry performance of successful entrants

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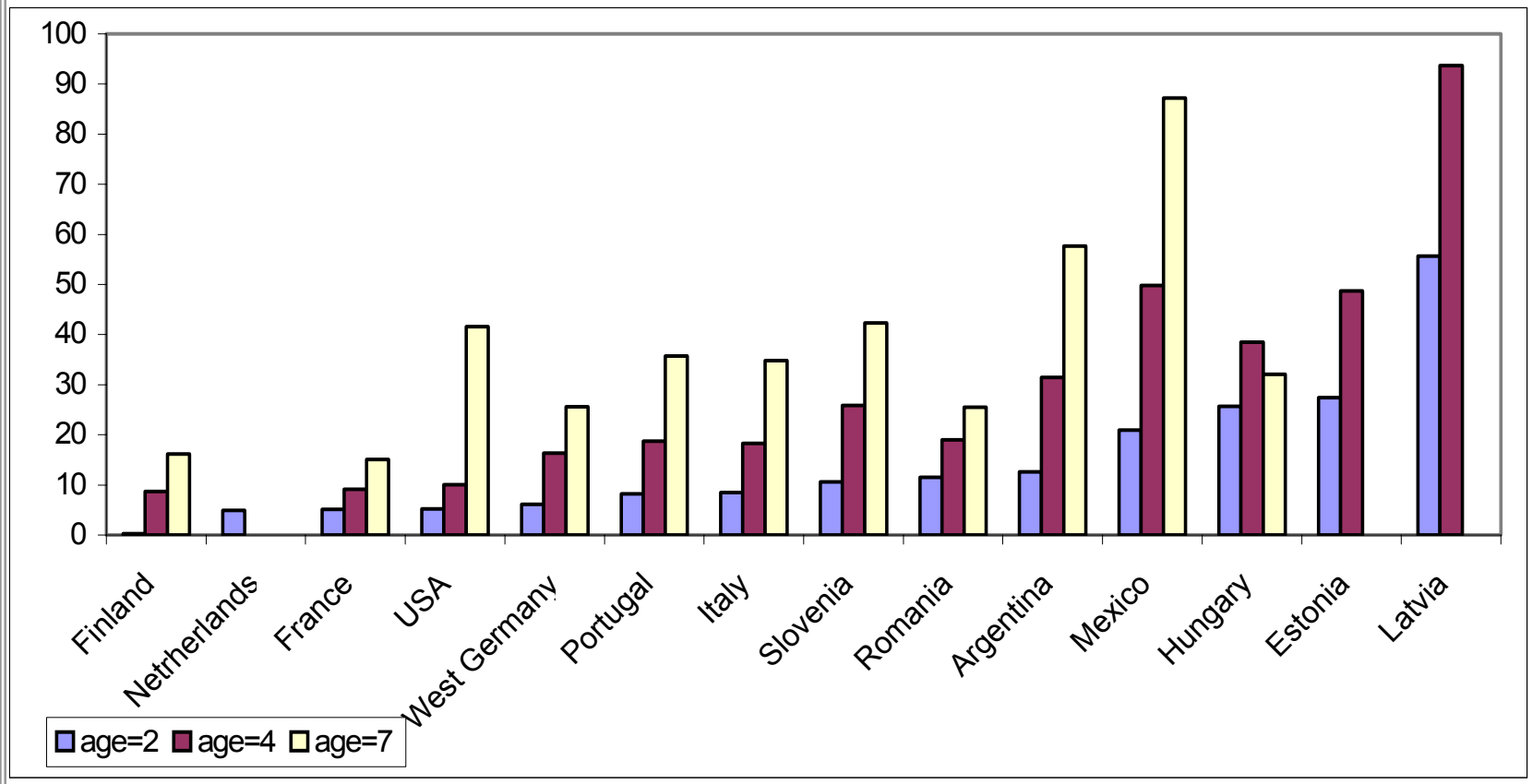
Average firm size growth relative to entry, by age



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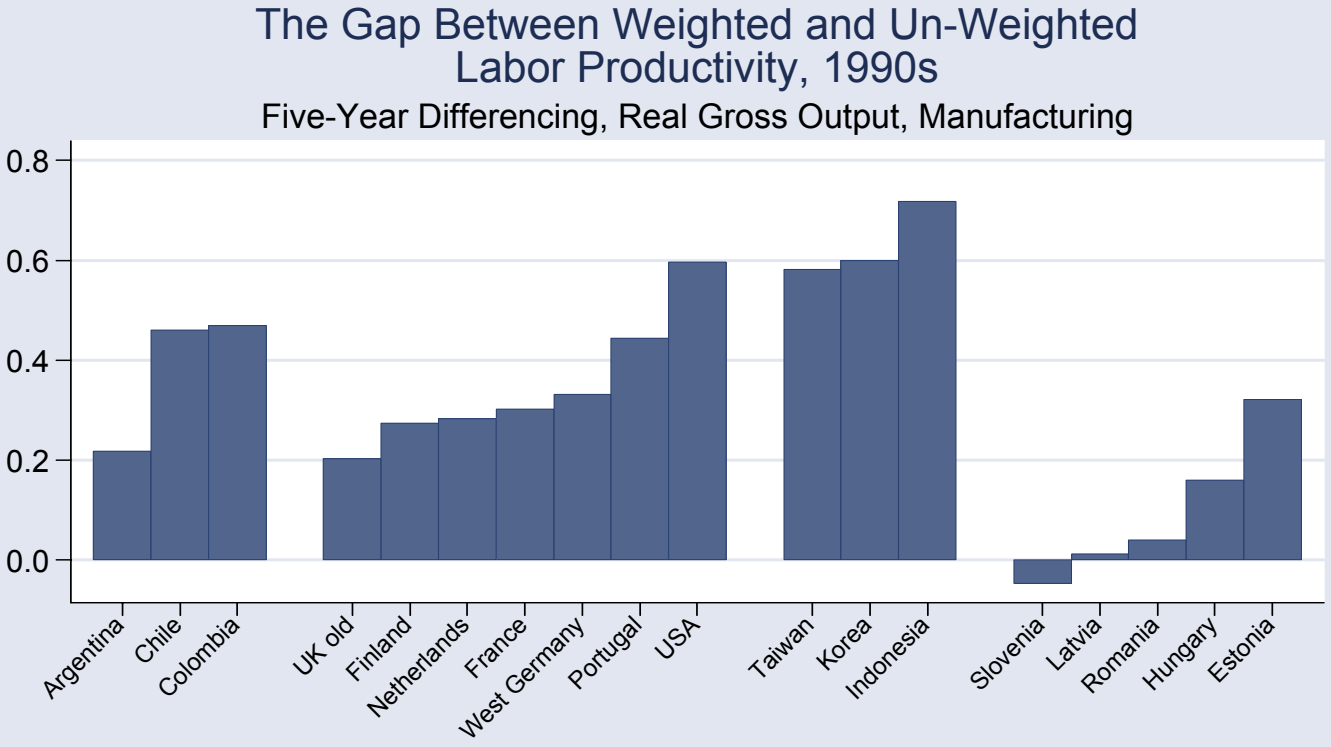
Assessing the role of allocative efficiency for productivity

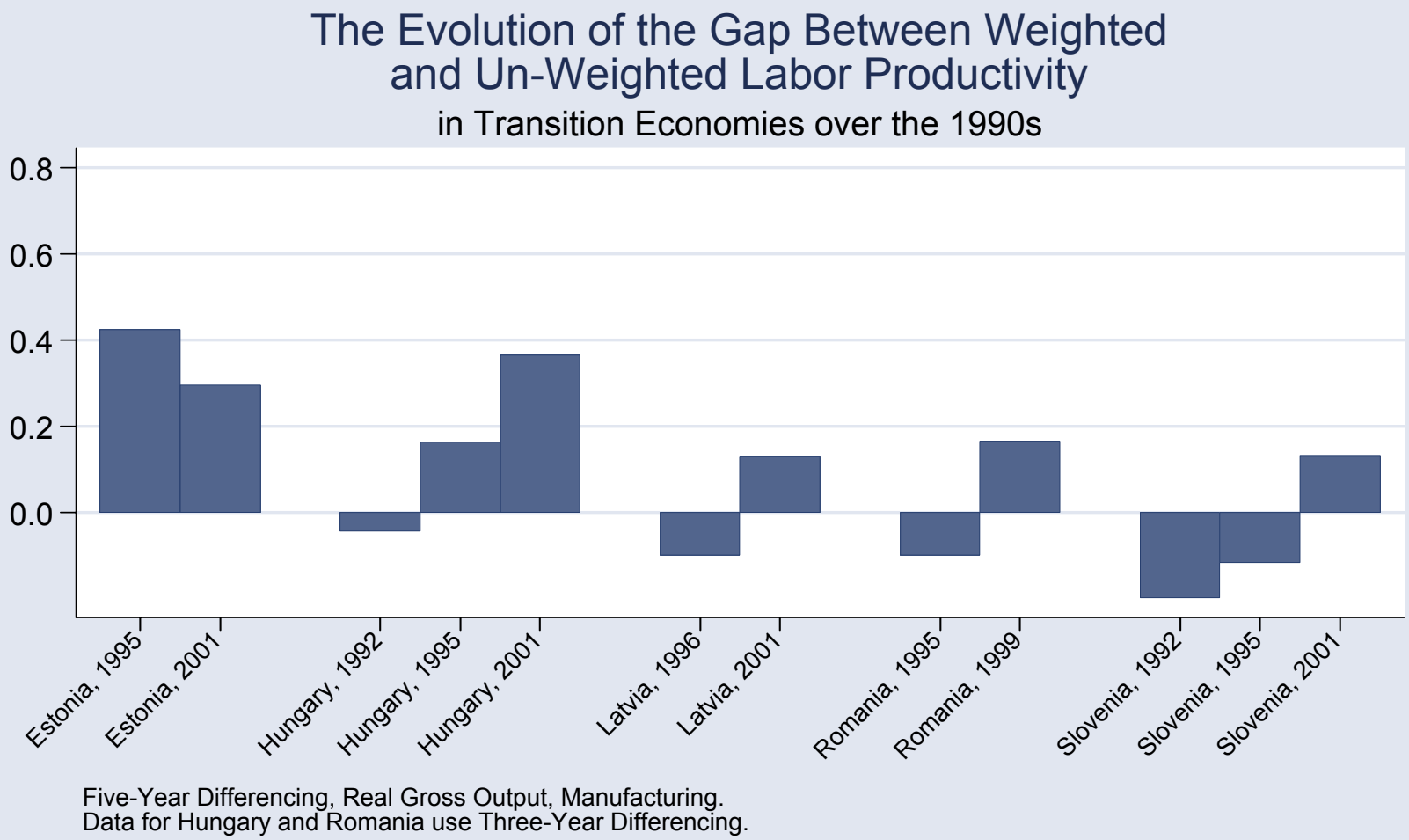
- The cross-sectional efficiency of resource allocation

Allocative efficiency : static analysis – Olley-Pakes decompositon, avg. 1990s

$$P_t = (1/N_t)\sum_i P_{it} + \sum_i \Delta\theta_{it}\Delta P_{it}$$



How the allocative efficiency evolved over time in transition economies



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Assessing the role of firm dynamics on productivity

- The cross-sectional efficiency of resource allocation

- The dynamic efficiency: the role of entry and exit

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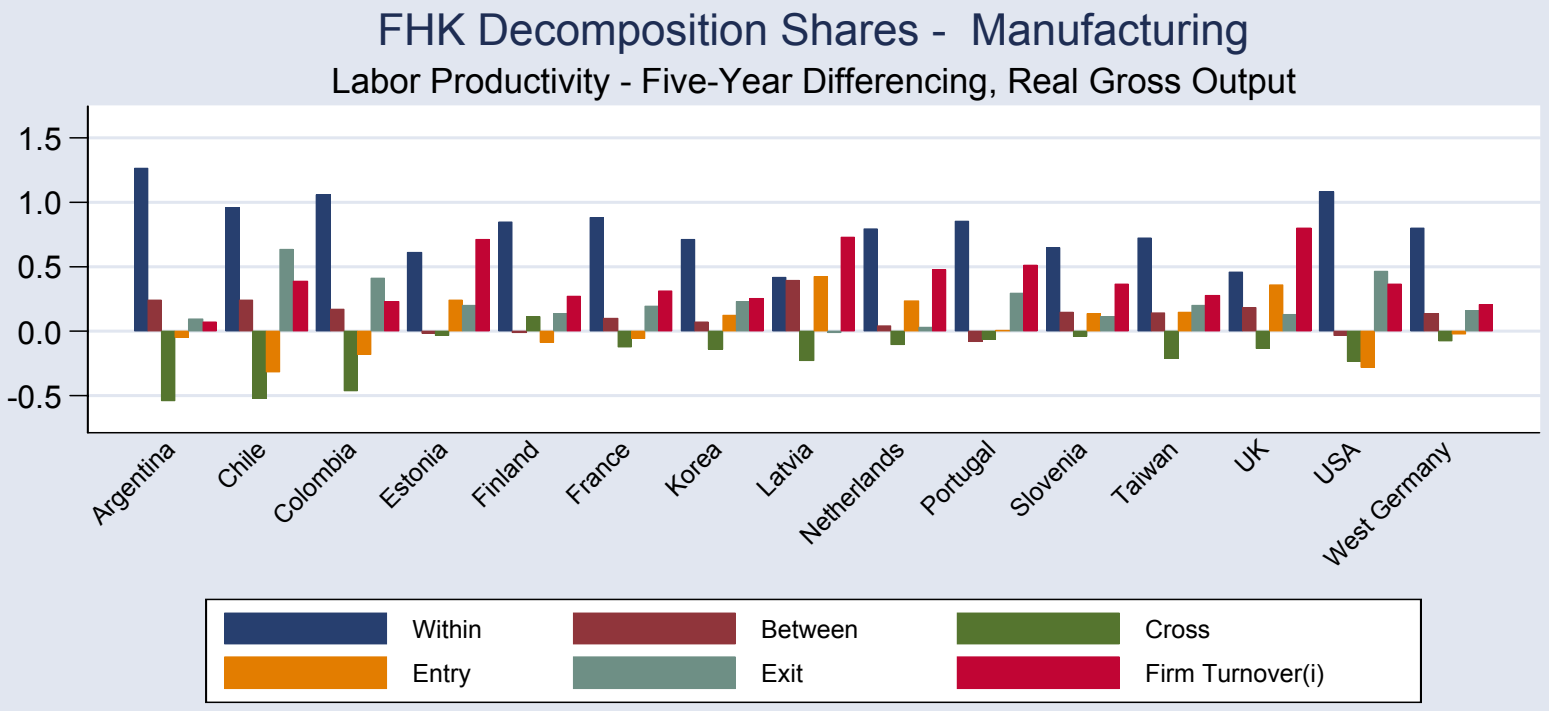
Dynamic efficiency: the role of entry and exit in reallocating resources towards more productive uses, FHK approach

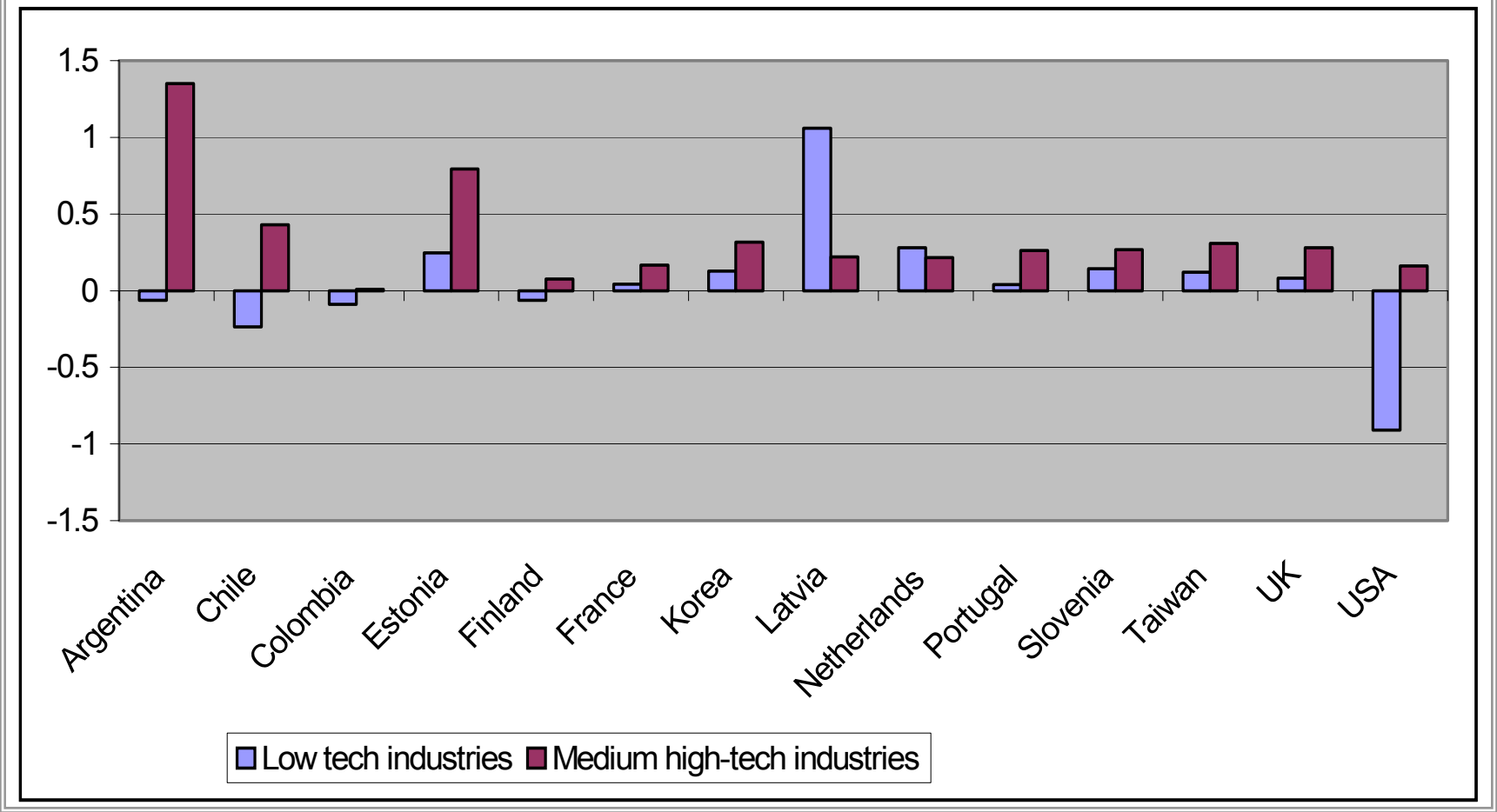
$$\Delta P_t = \sum_{i \in C} \overline{\theta_i} \Delta p_{it} + \sum_{i \in C} \Delta \theta_{it} (\overline{p_i} - \overline{P}) + \sum_{i \in N} \theta_{it} (p_{it} - \overline{P}) - \sum_{i \in X} \theta_{it-k} (p_{it-k} - \overline{P})$$



Argentina: 1995-2001. Chile: 1985-1999. Colombia: 1987-1998. Estonia: 2000-2001.
Finland: 2000-2002. France: 1990-1995. West Germany: 2000-2002. Korea: 1988 & 1993.
Latvia: 2001-2002. Netherlands: 1992-2001. Portugal: 1991-1994. Slovenia: 1997-2001.
Taiwan: 1986, 1991 & 1996. UK: 2000-2001. USA: 1992 & 1997.
Excluding Brazil and Venezuela.

Dynamic efficiency: the importance of "technology factors"

Contribution of entry to labor productivity growth, five year differencing, gross output



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Assessing the role of firm dynamics on productivity

- The cross-sectional efficiency of resource allocation
- The dynamic efficiency: the role of entry and exit
- The heterogeneity of firms and the effects on productivity

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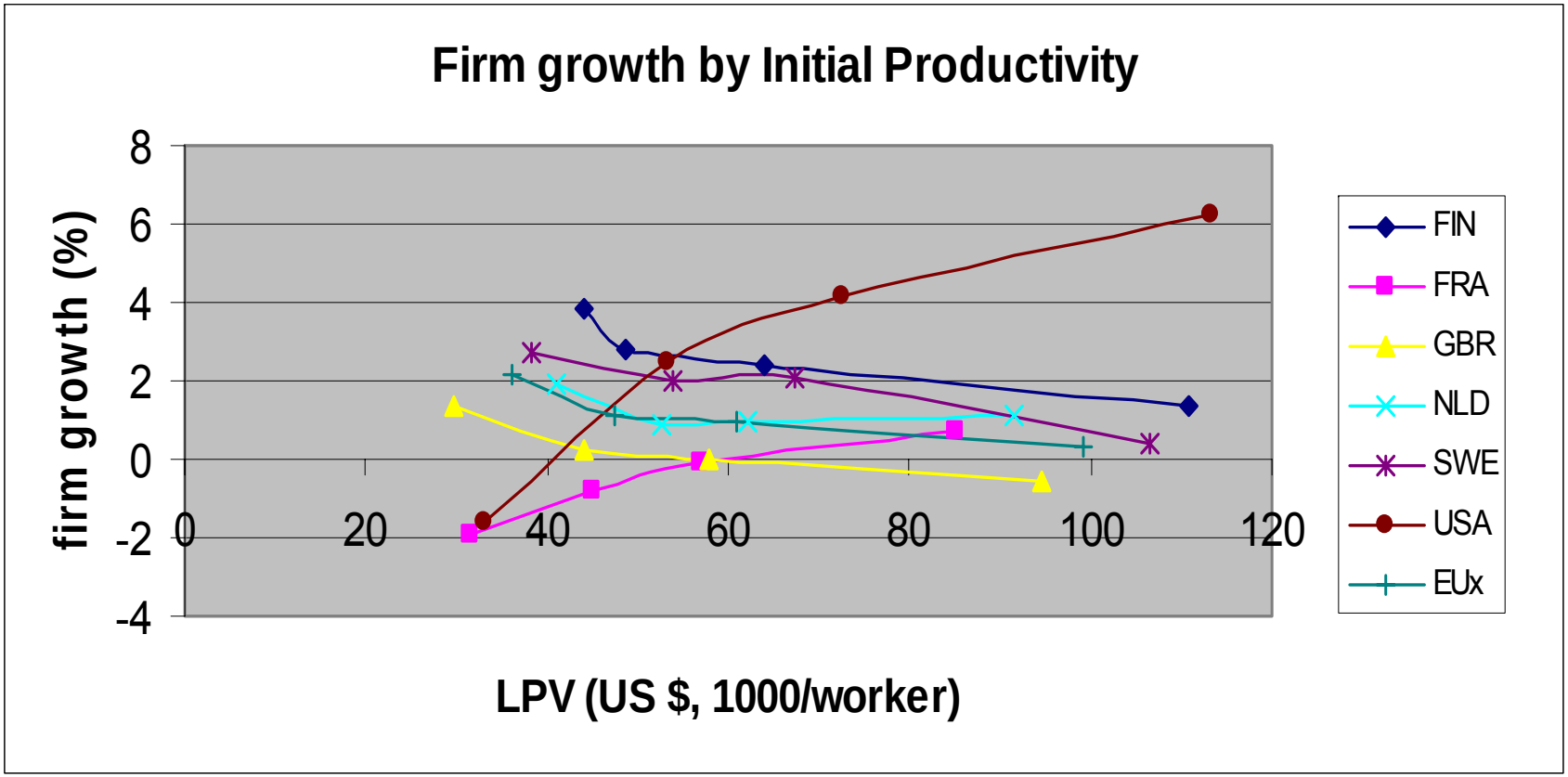
The heterogeneity of firms: labor productivity and growth



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Labor Productivity Dispersion

	ICT-producing		ICT-using	
Quartile	US	EU	US	EU
Top	123	118	74	58
3	88	87	51	48
2	61	72	40	46
Bottom	38	68	26	41

Units: Thousand US$ per worker

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Assessing the role of firm dynamics on productivity

- The cross-sectional efficiency of resource allocation
- The dynamic efficiency: the role of entry and exit
- The heterogeneity of firms and the effects on productivity
- The indirect effect of firm churning on productivity: market contestability

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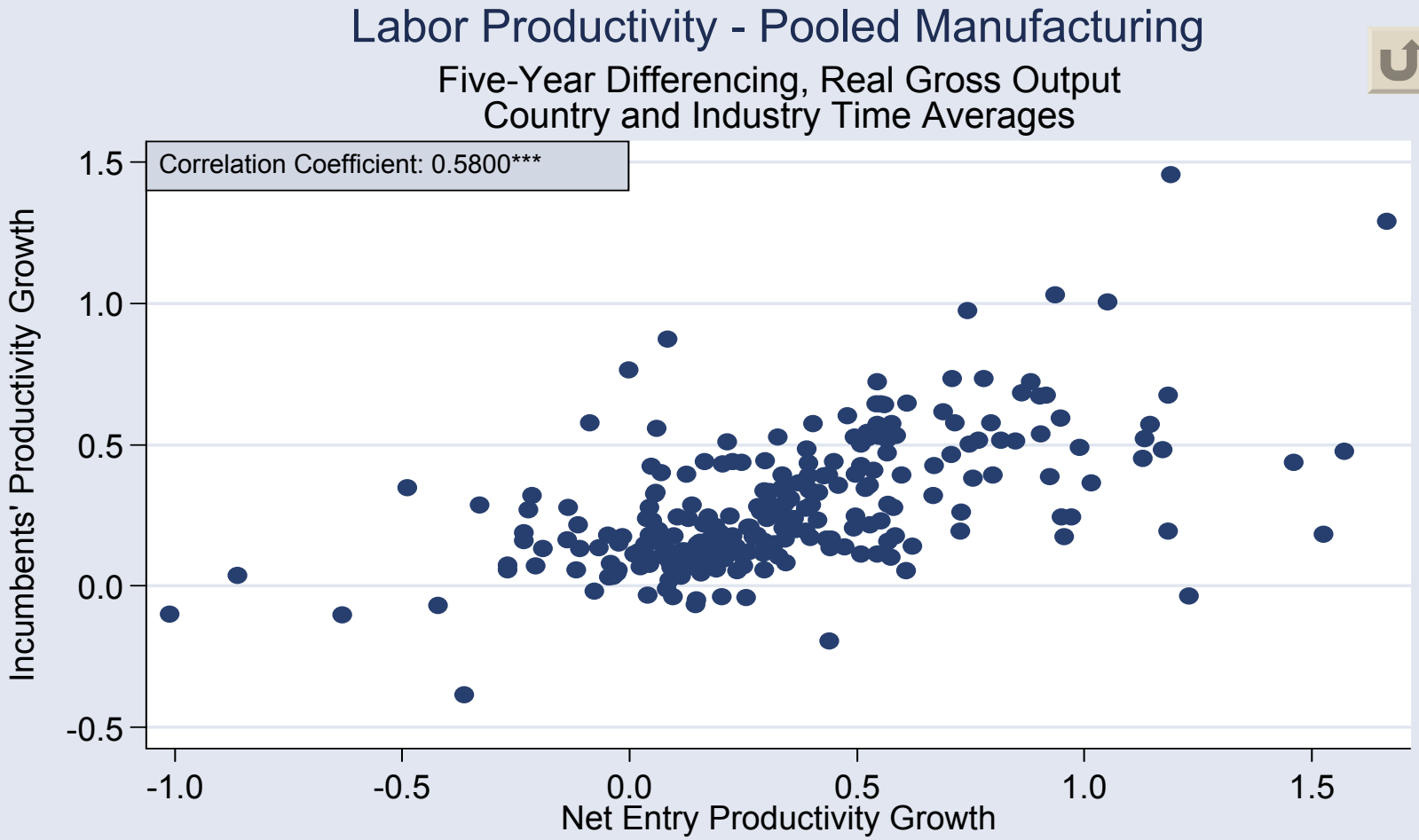
The indirect effect : market contestability



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Back to the role of policy and institutions: U.S. *vs* Europe:

- Similar degree of firm churning and 'infant mortality in Europe and in the United States.
- But in the US vs EU:
  - smaller relative size of entering firms;
  - a lower level of labour productivity of entrants relative to the average incumbent;
  - much stronger expansion of successful entrants in the initial years;
  - Wider dispersion of productivity levels across firms
  - higher allocative efficiency
- These differences may point to a different degree of "market experimentation" in the U.S. than in Europe. Why?
  - More market-based financial system
  - Lower administrative costs of start up
  - Lower costs of adjusting the workforce to accommodate changes in demand

Data issues, micro level

	OECD	**Developing and emerging countries**
Firm demographics	√, several countries, access often difficult	√ , some countries Manufacturing, size cutoff
Firm survival	Fewer countries Track of employment problematic in bus. Reg.	Fewer countries Track of employment problematic in bus. Reg.
Productivity decomposition	Price indices of Y, inputs, materials Threshold for entry in dynamic decomposition	Price indices of Y, inputs, materials Threshold for entry in dynamic decomposition

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