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Productivity and market selection in EU business services: role of regulatory policies

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Why the business services (BS) industry?

- ❑ Business services is - in terms of intra-EU trade - the single most important industry that is subject to the EU Services Directive
- ❑ Business services includes software (IT), engineering, consultancy, marketing: large role in innovation and disseminating 'best practices' across industries
- ❑ Productivity of EU business services industry has hardly increased between 1979 and 2007
 - ❑ BS is industry with single largest contribution to the 1995-2007 gap in labour productivity growth between EU25 and the USA ⁽¹⁰⁾
 - ❑ Do knowledge-intensive business services (KIBS) perform better than non-KIBS busin. services? No! ⁽¹¹⁾
 - ❑ Is this characteristic for BS as an industry? No: cf. USA, UK ⁽¹⁾





Policy issue

- **Policy issue: productivity stagnation in BS may hamper aggregate productivity growth and competitiveness in EU**
 - **Directly: BS >10% of total EU employment**
 - **Indirectly through prices: BS provides large share of all intermediate inputs**

- **European relative trade advantages in manufacturing are gradually dwindling in the world trade arena**
 - **Future EU needs strong and competitive services industries.**

- **What can the Services Directive and EU-wide follow-up policies contribute to an improvement?**

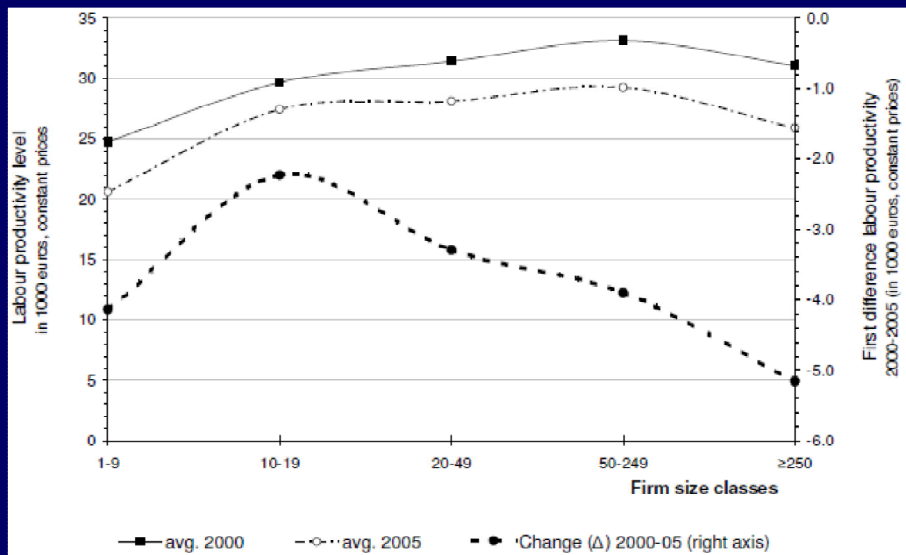


Rest of this presentation

- **Investigate the effectiveness of market selection for BS productivity**
 - **proxy for effectiveness market selection: persistence of scale diseconomies**
 - **decompose scale diseconomies and its sources**

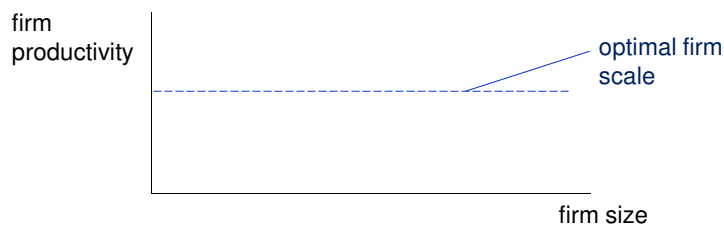
- **Investigate the role of regulatory policies for BS productivity**
 - **national policies**
 - **EU-wide policies**

**Labour productivity appears to differ by size class : some descriptives
(average for BS in 13 EU countries, 2000-2005)**



Scale inefficiencies as proxy for effectiveness of market selection (1)

- Thought experiment:** consider steady state in a competitive industry with a homogeneous product and scale economies:
 - firms grow until they reach optimal scale
 - most firms will at least have optimal scale
 - result of selection:** only firms close to the optimal scale will survive (this is our benchmark)

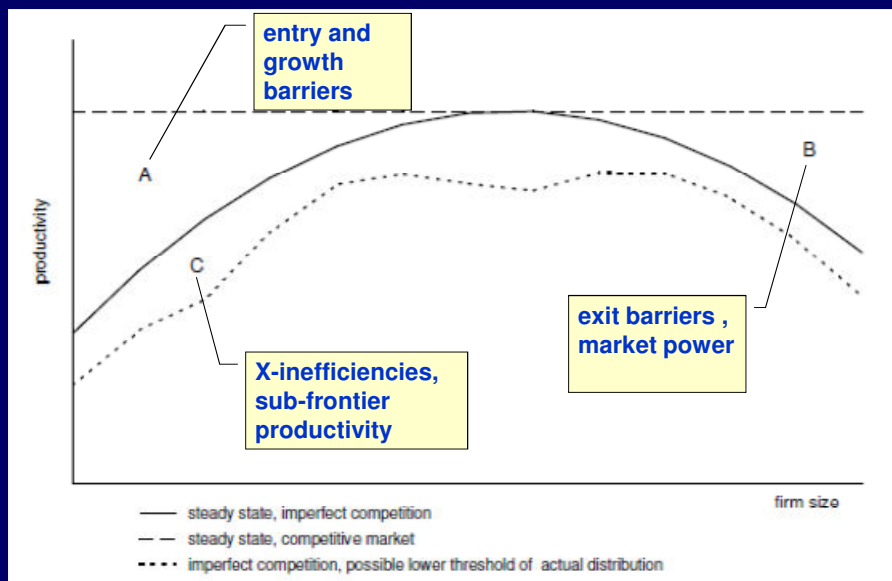




Scale inefficiencies as proxy for effectiveness of market selection (2)

2. Now consider a steady-state situation in the same market when barriers to market selection are important:
 - not all firms achieve minimal optimal scale: many will remain too small
 - other firms will remain too large despite having diseconomies of bureaucracy / weak internal efficiency
 - result: persistence of scale diseconomies between size classes
3. In reality we will never see a full steady state: due to turbulence and firm-specific factors, some firms will always operate below the efficiency frontier of even their own size class

Decomposing the relation between size and productivity in an industry with scale economies: steady state / actual \geq





Factors that may hamper BS market selection

- **Market power by incumbents**

- **Policies that hamper market selection:**
 - creating entry barriers (e.g. start-up costs new firms)
 - creating exit barriers (e.g. bankruptcy laws, labour protection)
 - obstacles for post-entry growth and shrinking of firms (like size-related legal and administrative burdens, size-related tax breaks or subsidies)
 - Policy-related obstacles to import competition (e.g. policies that create sunk entry costs for foreign firms, VAT differences)

- **Spatial effects (which firms compete in the spatially relevant market?)**



Empirical strategy

1. **Identify BS productivity frontier in EU (by size class, sector, country and year)**

2. **Assess X-inefficiency: the distance to the productivity frontier by size class, sector, country and year**

3. **Test hypothesis that distance to frontier - within and between size classes - can be explained from market power en regulation factors**



First estimate scale diseconomies

- ❑ Will not annoy you with technical details, intuitive results (cf. 3)
- ❑ We combined two instrumental "workhorses" for the study of scale economies:
 - a) global stochastic frontier model (GSF)
 - yields a first approximation of 'average' sample-wide frontier
 - b) non-parametric data envelopment analysis (DEA)
 - Calculates 'best practice' frontier by sector, country and size class
 - allows to separate X-inefficiency **within** size classes and scale efficiency differences **between** size classes
- ❑ This gives us the X-efficiency and scale-efficiency indicators as proxies for effectiveness of market selection **==>**



Testing the effectiveness of market selection

- ❑ Hypothesis 1:
scale diseconomies **between** size classes can be explained by market-structure variables and policy-related obstacles to market selection
 - ❑ market structure
 - ❑ national regulatory characteristics
- ❑ Hypothesis 2:
scale diseconomies **within** size classes can be explained by weak mutual competition that does not force firms to adopt best practice technologies within their own size class

Data

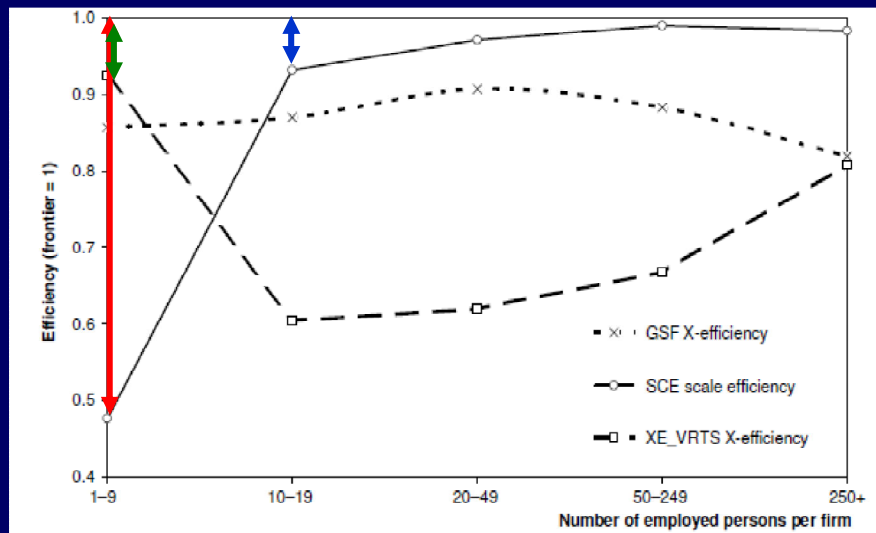
- **Panel data by {sector * sizeclass * country * year} from Eurostat business demography database:**
 - 13 EU countries, 2000-2005 (1995-2005)
 - 5 homogenised size classes (10) and 8 homogenised BS sectors
 - Yields a representative firm by 'data cell' (n = 2362)
- **Indicators market structure (Eurostat):**
 - average market share of firms within a data cell (1/nof)
 - firm entry-exit ratios (per industry and country)
 - HHI: index for concentration ratio of market shares by size class (per industry and country)
- **Indicators regulatory environment (World Bank)**
 - overall Cost of Doing Business indicator; starting a business (entry costs); closing a business (exit costs); costs of changing employment contracts (costs of growth / shrink)

Hypothesis 1: What explains different scale-efficiencies between size classes ?

	1	Z-value	2	Z-value
	Estimated ^c		Estimated ^c	
Market structure:				
* Average market share	0.015***	2.8	0.025***	4.4
* HHI	-0.013***	-2.0	-0.013***	-2.2
* Entry-exit	0.326***	2.3	0.316***	2.2
Regulation indices:				
* Overall Cost of Doing Business	-0.238***	-5.5		
* Starting a business			0.01	0.6
* Closing a business			-0.313***	-3.0
* Employment inflexibility			-0.144***	-5.2
Size-class dummies: ^a	Yes		Yes	
Industry dummies ^b	Yes		Yes	
No. of observations	1238		1238	
Log Likelihood	126.2		138.8	

Method: RE-based panel Tobit estimator

Comparison of 3 efficiency indicators by size class (average all BS industries and countries, 2000-2005)



Interim conclusions (1)

- ❑ **Hypothesis 1 supported: persistence of scale diseconomies is found to be conditional on:**
 - market structure (market concentration, intensity of entry/exit dynamics)
 - regulatory obstacles in relation to exit costs
- ❑ **Hypothesis 2 rejected:**
 - Small BS firms in the EU operate in a highly competitive market segment with much competition and very similar productivities, but...
 - they have huge scale-related productivity disadvantages compared to larger firms
- ❑ **Scale diseconomies form a major factor in the productivity performance of EU business services**
 - 95% of European BS firms falls within the size category that has huge productivity disadvantages (representing between 35-40% of employment)



Interim conclusions (2)

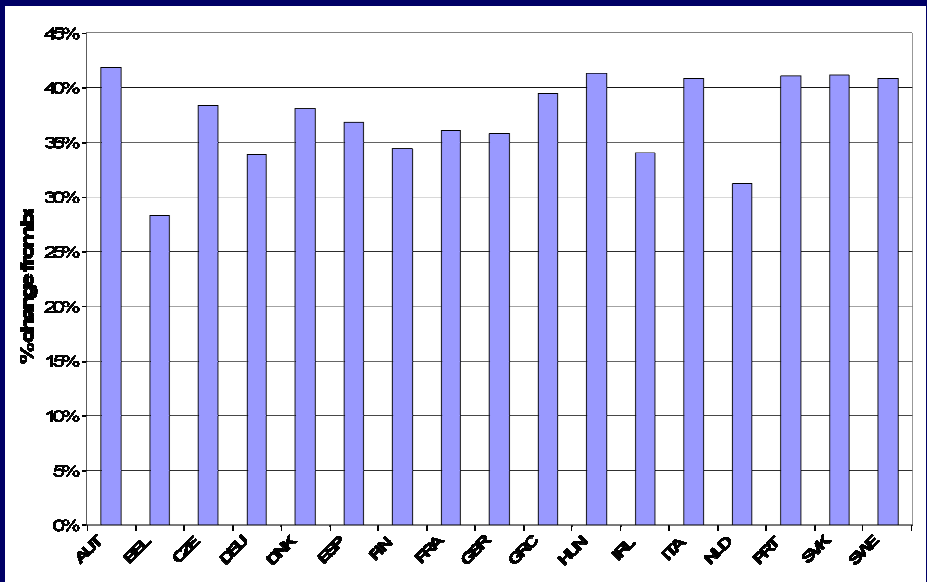
- **Combined results on effectiveness of market selection:**
 - **Market segmentation weakens selection in BS industry**
 - **Weak competition between small firms and domestic large firms**
 - **Lack of import competition by foreign firms : does not force small firms to eradicate scale diseconomies**
 - **Improving market selection: has a level effect on productivity and also generates more productivity dynamics**
- **To improve productivity performance in European BS, more policy attention should be given to:**
 - **strengthen the role of market selection**
 - **facilitate post-entry growth potential of small, innovative firms**
 - **remove obstacles to exit and shrinking of large incumbents**
 - **enhance import competition (follow-up Services Directive)**
 - **remove policy obstacles to import competition, using intra-EU harmonisation or country-of-origin principle**



A number of studies by CPB and OECD ^(2,4,5,6,7,8,9) indicate the services-trade gains from co-ordinated product-market regulation in the European market

- **Well-designed domestic regulation can reduce trade costs**
 - **Reduce entry barriers and trade costs in own market**
- **Avoid excessive regulation**
 - **Restricts foreign suppliers from entering local markets**
 - **Also restricts domestic firms from entering foreign markets**
 - **Hurts SMEs more than large MNE**
- **If trade partners have heterogeneous regulations (product-market regulation, VAT regimes, labour laws) this forms a strong entry and trade barrier in its own right**
 - **Affects SMEs disproportionately, because of fixed/sunk costs**
 - **Small and remote countries can gain most from harmonisation**

Simulation for illustrative purposes; trade increases by full harmonization of product market regulation between trading partners (Source: OECD study Nordås/Kox 2007)



cpb

Effects of more BS import competition

- ❑ More competition in domestic markets and earlier exit of low-productive domestic BS firms
- ❑ Upgrading of aggregate productivity level in European BS
 - ❑ CPB calculated this as a strong effect of the Country-of-Origin principle that has been left out of the Services Directive
- ❑ More market selection dynamics (dynamic efficiency gains)
- ❑ More economies of scale for exporting domestic firms when markets are open
- ❑ Cheaper inputs for manufacturing and services: enhanced competitiveness of EU in world market



Thanks for your attention

see references for full papers



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Annex: A note on the use of representative firm by size class

- Recent discovery: firm size has a self-similar fractal distribution across and within size classes (Axtell 2001,2006)
 - representative firm by 'data cell' implies that we also know something about neighbouring firms and the intra-cell distribution
 - it allows marginal analysis of scale effects

'Zipf'-like size distribution of BS firms in EU, 1999 (size measured by employed persons, log-log scale)

