



OESTERREICHISCHE NATIONALBANK

EUROSYSTEM

Producer Services, Manufacturing Linkages and Manufacturing Performance

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Outline

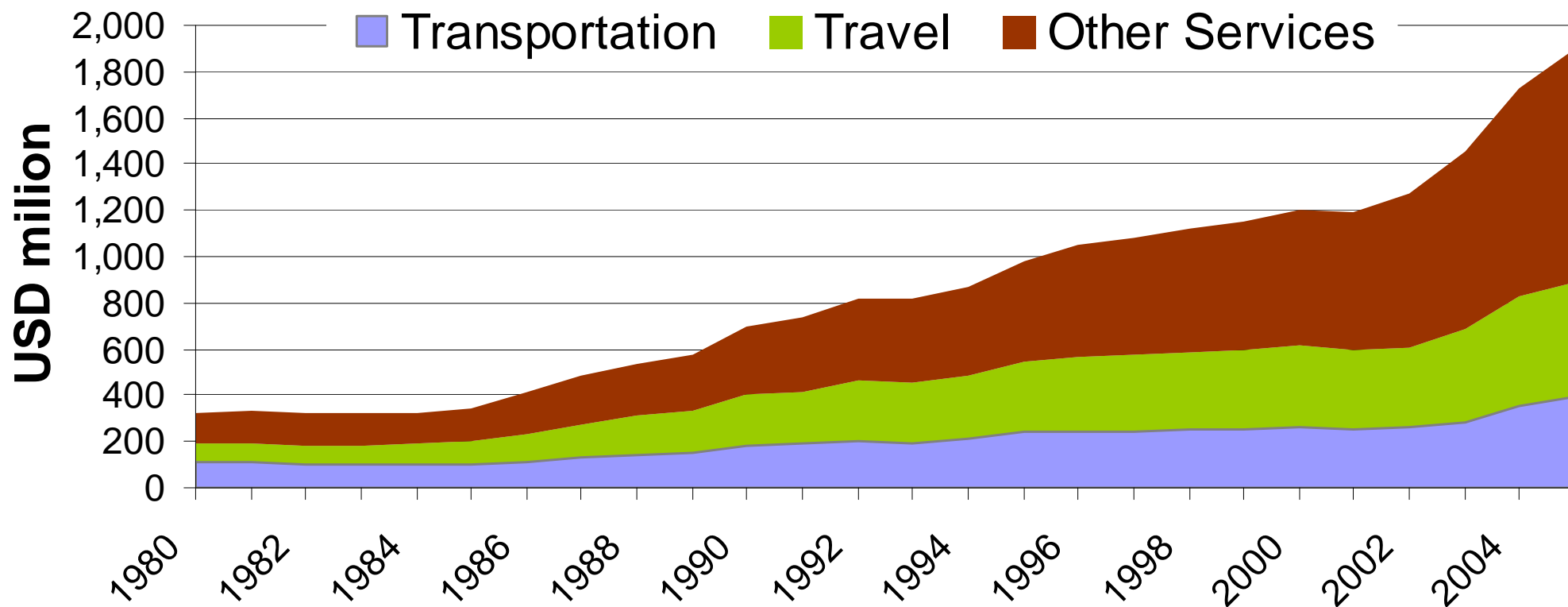
- ⇒ **Focus on general equilibrium impact of visible trade in invisibles**



Outline

- ⇒ **Focus on general equilibrium impact of visible trade in invisibles**
- ⇒ **Multi-sector generalization of the classical 2 x 2 H-O-mechanism**
- ⇒ **Econometric results for 29 countries, 1988-2005**
 - output, employment and trade response depends on intensity of services use as inputs
 - service intensive manufacturing sectors seem to win from services trade liberalization

Trends in Services Trade



Source: IMF BOP.

Trade in services

← technological progress, esp. in ICT

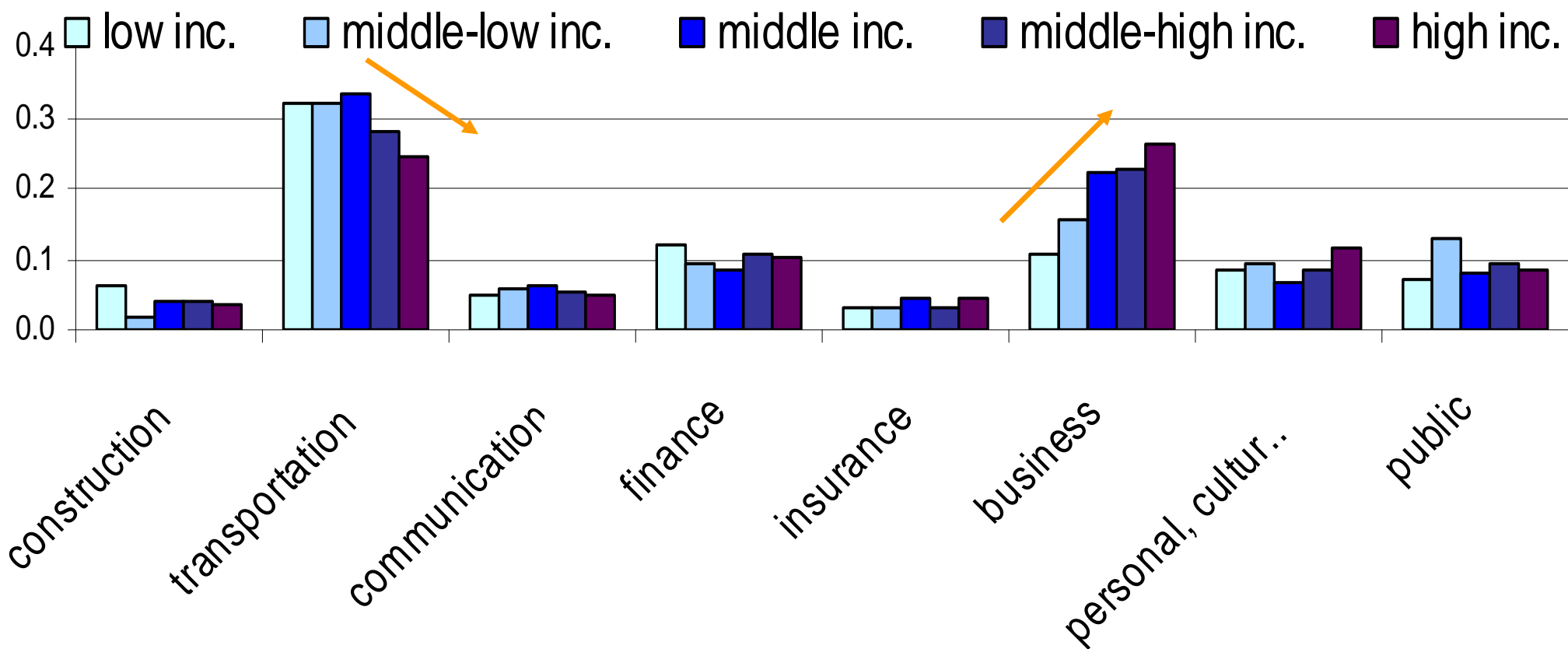


Trade in services

← technological progress, esp. in ICT

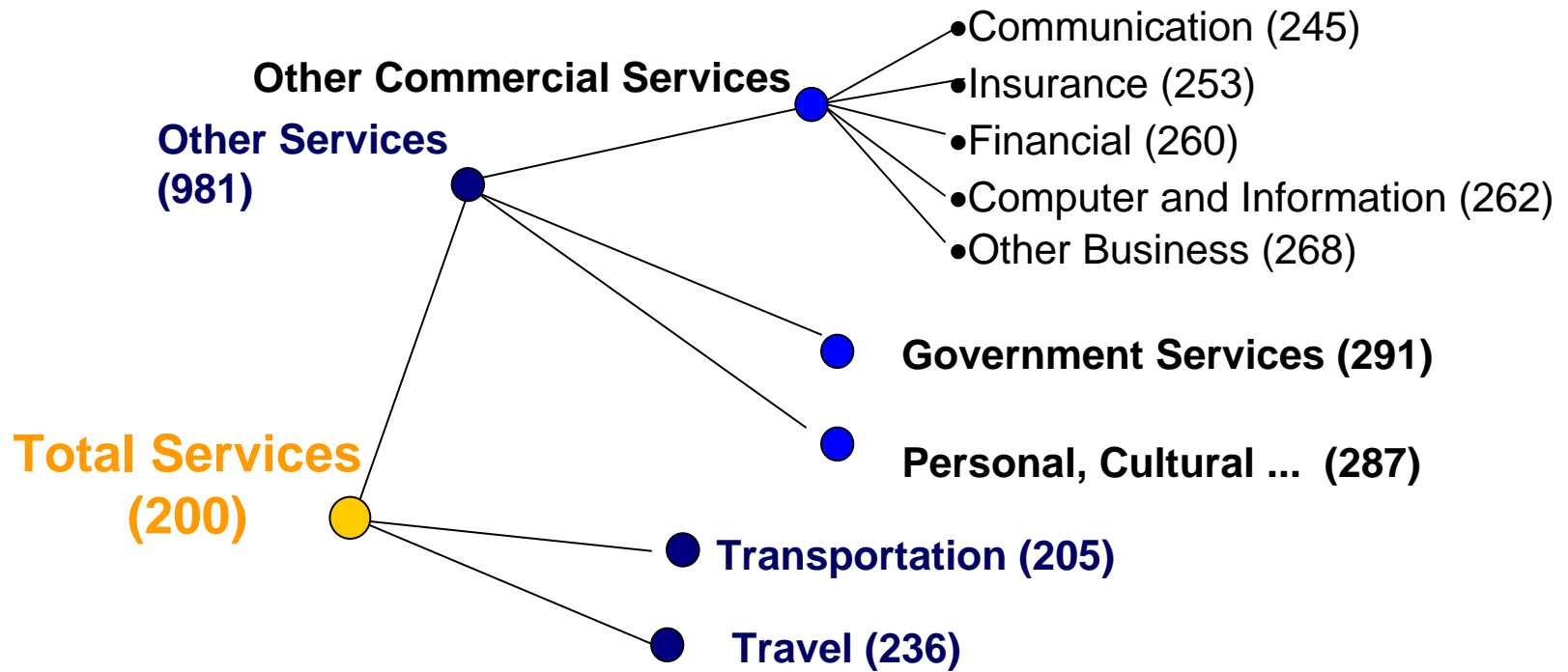
← outsourcing / splintering of production

Additional demand for services generated by exports



Source: own calculations, based on GTAP V6.5.

Classification of Services Trade (BoP)



Background and Issues - Theory

Traditional approach (2 x 2 HO-based framework) is insufficient

- Think of the global value chain → modern global economy is trading tasks, not goods (Grossmann and Rossi-Hansberg 2006)**
- Offshoring of activities can be seen as ‘shadow migration’ (Baldwin and Robert-Nicoud 2007)**
- Therefore, we need to model trade in a general equilibrium framework**

Background and Issues - Theory

Dual model of production in GE:

- **Physical inputs (foreign, domestic)**
- **Value added**

Offshoring is treated as falling trade costs and hence rising imports of intermediate services

Leads to estimating equations for output, exports (can be extended to jobs)

Output /Exports of a sector depends on:

- **Input cost shares**
- **Value added share of the sector**
- **Transformation elasticity between VA across sectors (~ willingness to shift resources around)**

Background and Issues - Empirics

Labor Market Performance and Productivity

Feenstra and Hanson 1999, 2003; Bloningen 2005, Grossman and Rossi-Hansberg 2006; Javorcik 2004

Intermediate Services and Production Structures

Clark, 1940; Uno 1989; Bhagwati 1984a,b; Katouzian 1970; Francois 1990a,b

Offshoring and Trade/Industry Structure (country case study literature)

Yeaple 2006; Feenstra and Hanson 2003; Amiti and Wei 2005; etc.

Background and Issues - Empirics

Contribution of this paper

- **Illustrate general equilibrium effects of services trade on the structure of manufacturing in an econometric framework**
- **Cross-country impact of services trade and FDI on manufacturing trade, production, and employment structures**
- **Generalization of economywide analytical linkages**

Data

Input-Output data for 2001 for 78 countries

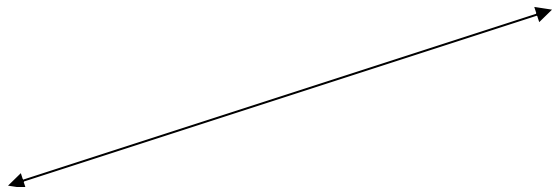
Panel of 29 (mostly) OECD countries: 1988-2004

Indicators:

- **Services trade data**
- **Services FDI (not by sector)**
- **Manufacturing activity: exports, value added , output, employment by sector**
- **OECD regulation data**

Data - Intermediate use shares

This matches import shares to some extent



in %	intermediate use share		
	average	maximum	
transportation	3.8	25.9	(UK-minerals)
construction	0.7	6.2	(AT-other transport equ.)
communication	0.9	3.9	(NL - paper)
finance	2.9	29.9	(PT - other manufacturing)
insurance	0.6	7.0	(IE - chemicals)
business	5.5	34.5	(NL - other manufacturing, FR - machinery)

Source: own calculations, based on GTAP V6.5.

Average Effects of Offshoring on Manufacturing

$$DepVar_{ikt} = \alpha_i + \beta1_i Mbusiness_{ikt} + \beta2_i Mcomm_{ikt} + \beta3_i Mfinance_{ikt} + \beta4 Minsurance_{ikt} + \\ + \beta5_i VAP + \beta6_i FDI_{ikt} + \beta7_i Bentrepreneur + \beta8_i Bstate_{ikt} + \beta8_i Btrade_{ikt} + \mu_k + \varepsilon_{ikt}$$

	Exports	Value Added	Employment
imports of business services	-0.0228	-0.0564 ***	-0.0043
imports of communication	0.0579 *	0.033	0.0156
imports of financial services	0.0485 **	0.0267	0.0285 ***
imports of insurance services	0.0005	-0.0151	-0.0385 ***
value added productivity	0.8153 ***	0.0278	-0.034
total FDI inflows	0.0577 ***	0.018 *	-0.0049
barriers to entrepreneurship	-0.0899 *	0.0962 ***	0.0124
state control	0.1777 ***	0.0117	-0.016
barriers to trade and investment	0.0567 *	0.0335	0.0299 ***
constant	-5.3879 ***	-3.2962 ***	-2.9036 ***

Source: own calculations.

Sector Classification - Grouping

Manufacturing

- **Technology intensive**
e.g. chemicals, machinery, electrical equ., motor vehicles
- **Labour intensive**
e.g. processed food, textiles, clothing, leather
- **Resource intensive**
e.g. wood, paper, coke

Services

- **Producer services**
e.g. financial, business, communication and information
- **Other services**
e.g. construction, personal and recreational, public services

Effects of Offshoring on Manufacturing - Exports

$$Xshare_{ikt} = \alpha_i + \beta1_i Mbusiness_{ikt} + \beta2_i Mcomm_{ikt} + \beta3_i Mfinance_{ikt} + \beta4 Minsurance_{ikt} + \\ + \beta5_i VAP + \beta6_i FDI_{ikt} + \beta7_i Bentrepreneur + \beta8_i Bstate_{ikt} + \beta8_i Btrade_{ikt} + \mu_k + \varepsilon_{ikt}$$

	Industry Group		
	tech intensive	labour	resource
imports of business services	0.1998 ***	-0.1913 ***	-0.1614
imports of communication services	-0.0461	0.2859 ***	0.1764
imports of financial services	0.1546 ***	0.0111	0.016
imports of insurance services	-0.1254	-0.0684	-0.3117 ***
value added productivity	0.4411	0.3054	0.0643
total FDI inflows	-0.0017	-0.0485 **	-0.0158
barriers to entrepreneurship	0.0055	-0.0613	-0.1633
state control	-0.0932 *	0.2801 ***	-0.0329
barriers to trade and investment	0.0289	-0.0118	0.058
constant	-3.7507 ***	-3.6204 ***	-2.7804 ***

Source: own calculations.

Effects of Offshoring on Manufacturing – Value Added

$$VA_{share}_{ikt} = \alpha_i + \beta_1 M_{business}_{ikt} + \beta_2 M_{comm}_{ikt} + \beta_3 M_{finance}_{ikt} + \beta_4 M_{insurance}_{ikt} + \beta_5 VAP + \beta_6 FDI_{ikt} + \beta_7 B_{entrepreneur} + \beta_8 B_{state}_{ikt} + \beta_9 B_{trade}_{ikt} + \mu_k + \varepsilon_{ikt}$$

	Industry Group		
	tech intensive	labour intensive	resource
imports of business services	0.1528 ***	-0.1913 ***	-0.0558
imports of communication	0.0437	0.2534 ***	0.1343 *
imports of financial services	0.1021 ***	0.1017	-0.0652
imports of insurance services	-0.2139 ***	-0.1699	-0.0815
value added productivity	-0.2808	-0.4687	-0.6393 ***
total FDI inflows	-0.0088	-0.0613 ***	-0.0156
barriers to entrepreneurship	-0.0455	0.1421 *	0.115 ***
state control	-0.0534	0.0501	-0.0096
barriers to trade and investment	0.0492	0.0701	0.0153
constant	-2.8209 ***	-2.5296 ***	-2.0269 ***

Source: own calculations.

Effects of Offshoring on Manufacturing - Employment

$$Eshare_{ikt} = \alpha_i + \beta1_i Mbusiness_{ikt} + \beta2_i Mcomm_{ikt} + \beta3_i Mfinance_{ikt} + \beta4 Minsurance_{ikt} + \\ + \beta5_i VAP + \beta6_i FDI_{ikt} + \beta7_i Bentrepreneur + \beta8_i Bstate_{ikt} + \beta8_i Btrade_{ikt} + \mu_k + \varepsilon_{ikt}$$

	Industry Group		
	tech intensive	labour intensive	resource
imports of business services	0.1398 ***	-0.1423	0.014
imports of communication	0.0233	0.1357	0.0324
imports of financial services	0.0064	0.1522	-0.0371
imports of insurance services	-0.0804	-0.2313 **	-0.0177
value added productivity	0.0795	-0.1718	-0.0152
total FDI inflows	-0.0042	-0.0319	-0.0011
barriers to entrepreneurship	0.0342	-0.0565	0.0094
state control	-0.04 *	0.1121	0.0264
barriers to trade and investment	0.0192	0.0689	-0.0075
constant	-3.3584 ***	-2.6738 ***	-3.266 ***

Source: own calculations.

Results

Producer services trade (visible outsourcing) and goods trade, value added (and employment) are linked

Importance of non-traded service inputs in the production of traded manufactures & increased import penetration by producer services has a positive effect on the skill and technology mix of exports

→ I.e. service sector openness has boosted the competitiveness of more technology and skill intensive industries in the OECD - at the expense of sectors like textiles and clothing

Goods dominate direct trade data, but services are often important activities contributing to final exports

Conclusions

Protecting intermediate service sectors places manufacturing sectors (especially high wage manufacturing sectors) at a competitive disadvantage

Commercial services represent most dynamic category of global trade in services → there is more to come!

As so often: positive welfare effects with politically challenging re-allocation effects

Focus on service imports rather than exports is important from a welfare enhancing view, mercantilist view possibly more at odds with socially desirable outcome than in goods trade



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