

Productivity Differentials in U.S. and EU Retailing: Statistical Myth Or Reality?

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Background

Retail trade sector in Europe and the United States

	<i>Productivity growth</i>		<i>Share in economy</i>	
	(value added per hour)		Value added	Hours worked
	1980-1995	1995-2002	2002	2002
U.S.	2.5	7.1	5.7	9.6
EU-15	2.0	1.5	4.6	8.8

- Retail trade important for post-1995 productivity boom in U.S.: 20% of aggregate labour productivity growth in U.S., 5% in EU
- ICT-using industry

This study

- Outlining problems and biases in measurement of retail output volumes in current statistical practice
- Quantify and compare possible biases in U.S. and EU
- Provide experimental estimates of retail output volume using double deflation

Measurement problem

- Retail trade is services sector => intangible output



- Trade sector is margin industry (SNA):
output is value of sales minus value of purchases
- No explicit price for trade services

Statistical problem to measure real trade output

- National Accounts idea: trade service is shifting boxes (number of boxes = quantity of services), so growth of real sales = growth of real trade output
- Problems:
 - ◆ Not just shifting boxes: breadth of assortment, other in-store services (quality)
 - ◆ How to count number of boxes when quality of goods sold changes? Perverse case of ICT goods sale

Scope of ICT problem

	<i>Consumption share</i>	<i>Price change (CPI)</i>
France	4%	-6%
Germany	2%	-3%
Netherlands	5%	-5%
UK	6%	-8%
US	4%	-13%

Share in household consumption of goods

ICT sales impact on retail productivity

Labour productivity growth (sales per hour)

	1987-1995	1995-2002
Retail	2.0	3.7
Retail excluding ICT stores	1.6	3.0

- Maximum bias EU-U.S.: 0.7% (3.7 – 3.0)
- ICT sales are not the full story

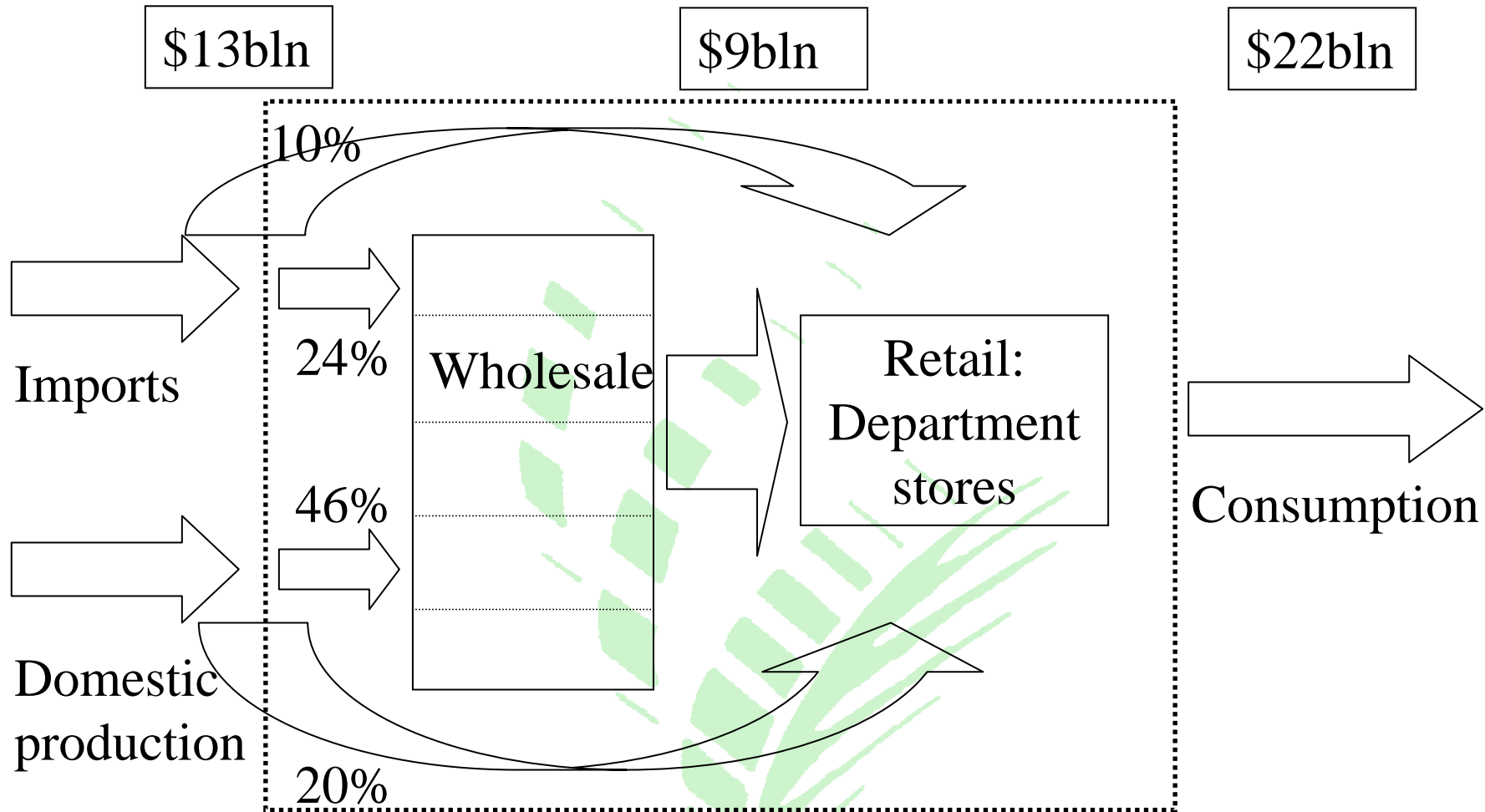
What's next?

- Retail is more than shifting boxes
- Double deflation needed
 - ◆ Deflation of sales and purchases of goods sold separately \Rightarrow margin quantity is implicit
- Problems:
 - ◆ Data requirements high \Rightarrow purchase prices
 - ◆ Sensitive to measurement error \Rightarrow margin is residual
- This study: first experimental attempt

Data for U.S. double deflation

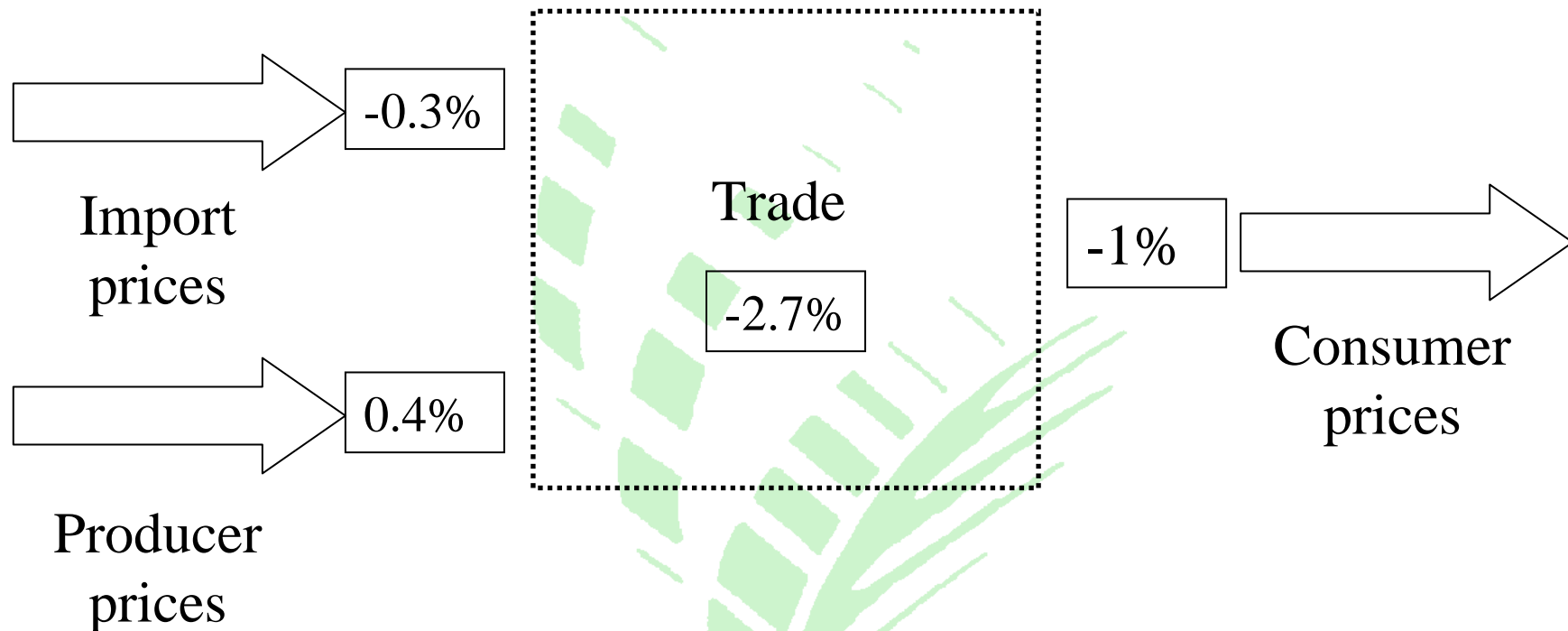
- 1997 Economic Census: Wholesale and retail sales by industry and by product
- Annual Census of Wholesale Trade and Retail Trade: sales and margins (1993-2002)
- BLS retail sales price index by industry
- BLS Producer Price Index and Import Price Index data
- 1997 Input-Output table: import shares

Model of trade sector: U.S. department stores



Model of U.S. trade sector 1993-2002

$$s^I \dot{p}^I + s^P \dot{p}^P + s^M \dot{p}^M = \dot{p}^S$$



$$0.22 \cdot -0.3 + 0.41 \cdot 0.4 + 0.35 \cdot p^M = -1$$

Sales, purchases and margin prices, U.S. retail, 1993-2002

	Sales	Purchases	Margins
Automobile dealers	3.0	0.4	9.7
Grocery stores	2.3	1.2	4.1
Department stores	-1.0	0.4	-2.7
Retail trade	0.8	0.7	1.0

Real sales and margin growth, 1993-2002

	Sales	Margins
Automobile dealers	3.4	-3.5
Grocery stores	0.6	0.7
Department stores	2.8	5.5
Retail trade	4.5	4.5

U.S. versus Europe

- Not enough data for full exercise
 - ◆ Sales by product missing
- Look at household consumption expenditure on goods:
 - ◆ Covers most of retail sales
 - ◆ Data from National Accounts on consumption
 - ◆ Supplemented with PPI, IPI, Input/Output

Real Margin growth, retail trade, 1995-2001

	<i>National Accounts</i>	<i>Double deflated</i>
France	2.4	1.2
Germany	n.a.	3.4
Netherlands	3.1	2.5
U.K.	n.a.	6.4
U.S.	5.4	5.6

➤ So double deflation exercise does not show bias in retail margin volume measurement towards U.S.

Retail value added growth in U.S. Retail

	1987- 1995	1995- 2002	1995- 2002 over 1987-95
1 Quantity of output	2.9	4.9	2.0
2 Quantity of intermediate inputs	3.0	1.4	-1.6
2a <i>Value of intermediate inputs</i>	5.6	3.5	-2.1
2b <i>Price of intermediate inputs</i>	2.6	2.0	-0.5
3 Quantity of value added	2.8	6.7	3.9

- Post 1995 acceleration in value added is also due deceleration of intermediate input growth

Conclusions

- Growth differences between Europe and U.S. robust:
 - ◆ ICT impact is too small
 - ◆ Double deflation: no bias towards U.S.
- There is a Wal-Mart effect in U.S.! (but it's not just Wal-Mart):
 - ◆ increasing retail output
 - ◆ savings in intermediate inputs