

Intra-Industry Trade in Europe

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Motivation

- Simultaneous exports and imports within industries between countries of similar development levels
- One of the most important empirical findings of the 1960s concerning international trade.
- Initially observed for the Benelux customs union.
- Thereafter for the 6 founding members of the EEC
- Then for the Single European Market
- Verdoorn, 1960, Drèze, 1960, Balassa, 1966, Grubel, 1967, Fontagné et al. (1998)
- Concentration of trade flows *within* industries rather than between industries : a recurrent pattern of the process of European integration
- What does it mean for policy making?
- What is the contemporary evidence?

Outline of the talk

- Introduction
- Related literature
- Methodology
- Main results
- Conclusion

- Prevalence of IIT even using disaggregated classifications of products
 - Traditional theory of trade questioned.
 - New Trade Theory: IIT in horizontally differentiated products
- Synthesis by Helpman and Krugman, 1985
 - IIT between similar countries
 - Inter-industry trade between different countries
 - ... or due to agglomeration economies
 - "Love of Variety" versus specialisation in industries
- Workhorse: gravity model (Bergstrand, 1990, Anderson & van Wincoop, 2004). Explaining trade volumes a.w.a. trade patterns
 - *Share* of IIT in bilateral trade is a decreasing function of differences in capital-labour endowment ratios

- Trade patterns matter for economic policy
- IIT : trade in different products, belonging to the same industry => production functions are the same => limited distributive impacts.
- IIT => gains in variety => economies of scale
- IIT \Leftrightarrow complete specialisation (on products): no FPE
- Inter-industry trade: trade in products belonging to different industries
- Specialisation => efficiency gains => adjustment costs & distributive impacts (Stolper-Samuelson).

- EU integration: large gains and limited pains.
- Specialisation and asymmetries within the monetary union
 - If Single market encourages IIT, "one market" is complementary to "one money"
 - Monetary integration impacts i) transaction costs
2) agglomeration 3) trade patterns
 - Endogeneity of asymmetries
 - Structural asymmetries between member states reduced ("Mechanism 13" of the Emerson Report, 1990).
- Conclusions challenged by studies looking at the completion of the Single market.
- Prevalence of IIT-V
 - Specialisation in vertically diff. varieties within industries
 - Trade does overlap in products having *different unit values*.

- Vertically versus horizontally differentiated: does it make a difference ?
- Determinants of IIT in horizontally differentiated products are different from those in vertical differentiation.
- Consequences differ too.
- Limited substitution between varieties traded within categories limits the impact of trade on labour market?
- Displacement of factors being specific to some extent (incomplete portability of qualifications, sunk costs).
- Specialisation in quality => asymmetries
- Exch rate volatility => IIT-H (--) IIT-V (-) Inter-indus (+)
- Hence monetary integration promotes firstly IIT-H

Related literature

From Dreze to Schott...

- Literature has replicated the initial results and...
- Has clarified methodological issues:
 - Aggregation effects (Grubel & Lloyd, 1975; Greenaway & Milner, 1986; Lloyd & Lee, 2002): bilateral + disaggregated
 - Variability of factor intensities within industries (Finger, 1975; Schott, 2003).
- Peculiar type of IIT to be envisaged: two-way trade of qualitatively differentiated products
 - Abd-el Rahman, 1986, 1991; CEPII, 1997; Greenaway et al., 1994, 1995; Fontagné et al. 1997, 1998; Fontagné & Freudenberg 2002.
- High quality varieties embody
 - More capital (Falvey, 1981; Falvey and Kierzkowski, 1987),
 - More qualified labour (Gabszewicz and Turrini, 1997)
 - More R&D (Gabszewicz, Thisse, Shaked and Sutton, 1981).

Related literature

... Matches new approaches: varieties + vert. diff^o + multi-product heterogeneous firms

- Systematic finding of trade literature: considerable variation in unit values (UV) of traded products at the most detailed level of product classification.
- Japanese (UV) 1.43 times higher than for Brazil, 1.86 times higher than for India, and 2.86 times higher than for China.
- For the *same* products, shipped to the *same* markets, within the *same* year (2004).
- Evidence of a *specialisation of countries within products and across varieties*. Schott (2004)
- At the most detailed level of classification, UV of imports of US-Japan and the EU is a function of GDP per cap of exporter (Fontagné, Gaulier, Zignago 2007).

Median relative unit values (2004)

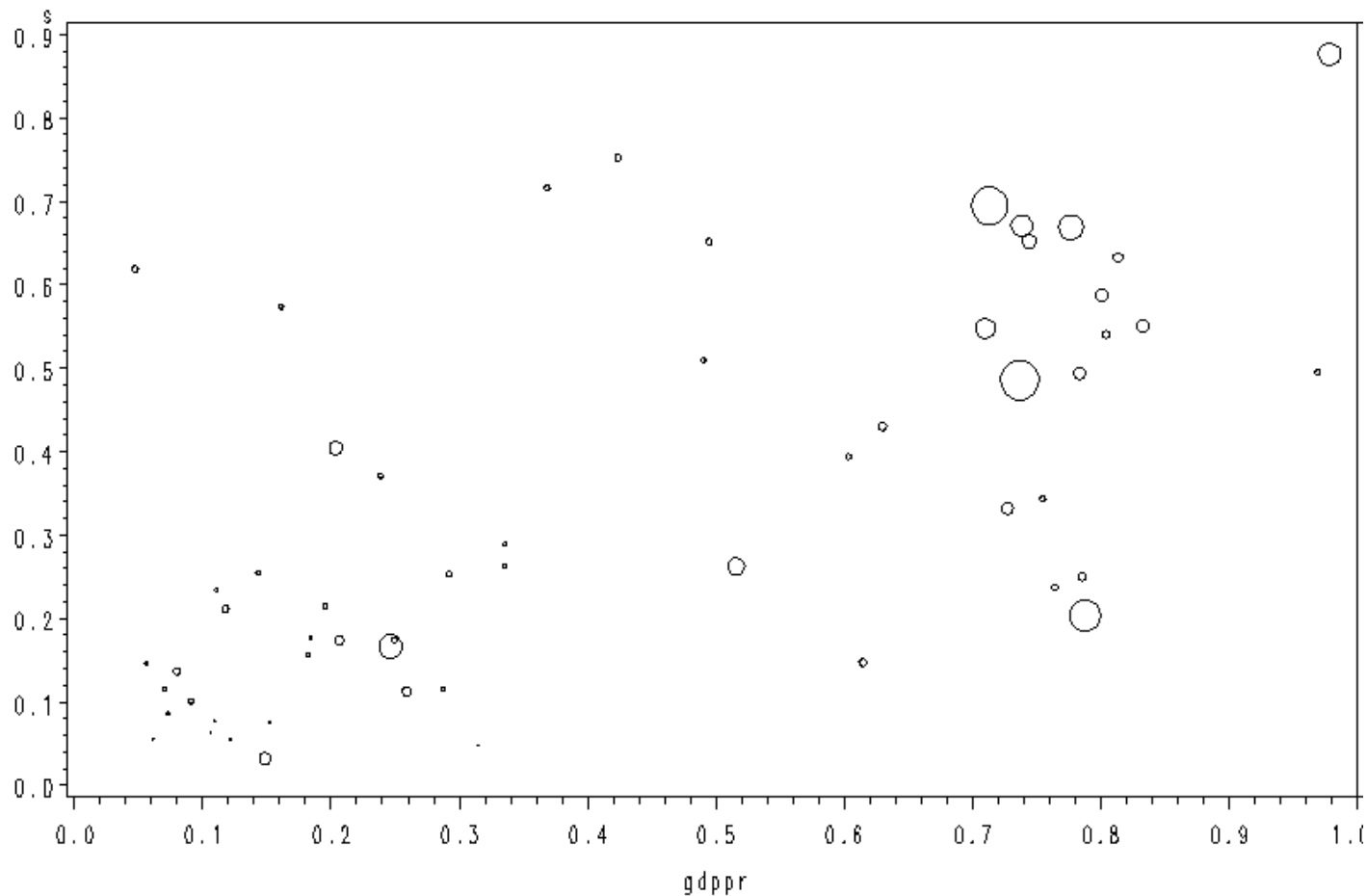
	Brazil	China	Japan	Russia	India	USA	EU25	Oth.Em.
Brazil	.	0.81	1.43	1.00	0.96	1.16	1.48	1.04
China	1.23	.	2.86	1.17	1.25	2.44	3.06	1.43
Japan	0.70	0.35	.	0.75	0.54	1.00	1.08	0.70
Russia	1.00	0.85	1.34	.	1.13	1.26	1.36	1.08
India	1.04	0.80	1.86	0.89	.	1.58	2.05	1.07
USA	0.86	0.41	1.00	0.79	0.63	.	1.12	0.81
EU25	0.68	0.33	0.92	0.73	0.49	0.90	.	0.57
Oth. Em	0.96	0.70	1.43	0.92	0.93	1.23	1.77	.

Note: Median of relative unit values of country A (in column) and B (in line) across common HS6 positions and geographical destinations of exports.

Source: Fontagné, Gaulier & Zignago. (2007)

Related literature

Share of up-market varieties, in US imports from each exporter, by development level (GDP per capita relative to the US) of the exporter.



Related literature

UV of exports is a function of GDP per cap

- Extend the empirical analysis on US imports by Schott (2004) by using a world sample
- Three comparable importers and the same disaggregation of the data: USA, EU and Japan
- Simple methodology: explain UV of each individual trade flow (exporter, importer, HS6 product, year) by PPP per capita GDP of exporter

$$\ln UV_{i,hs6,t} = C_{hs6,t} + \beta \cdot \ln GDP_{PPC}_{i,t}$$

- Value added:
 - Select the products that are sourced simultaneously and significantly in the North and the South;
 - Consider the distribution of the estimated elasticity, by importing country (21,967 equations).

Related literature

**Impact of the level of development of the exporting country on
the UV of products imported by the EU, Japan and USA
(pooled data)**

Importer:	Estimated parameter	standard error	t	R ²	N	F
US	0.378	0.002	182.41	0.0484	653,633	33,274
Japan	0.429	0.002	191.79	0.0796	425,242	36,782
EU (*)	0.352	0.001	501.37	0.0635	3,710,189	251,377

Source: Fontagné, Gaulier & Zignago. (2007)

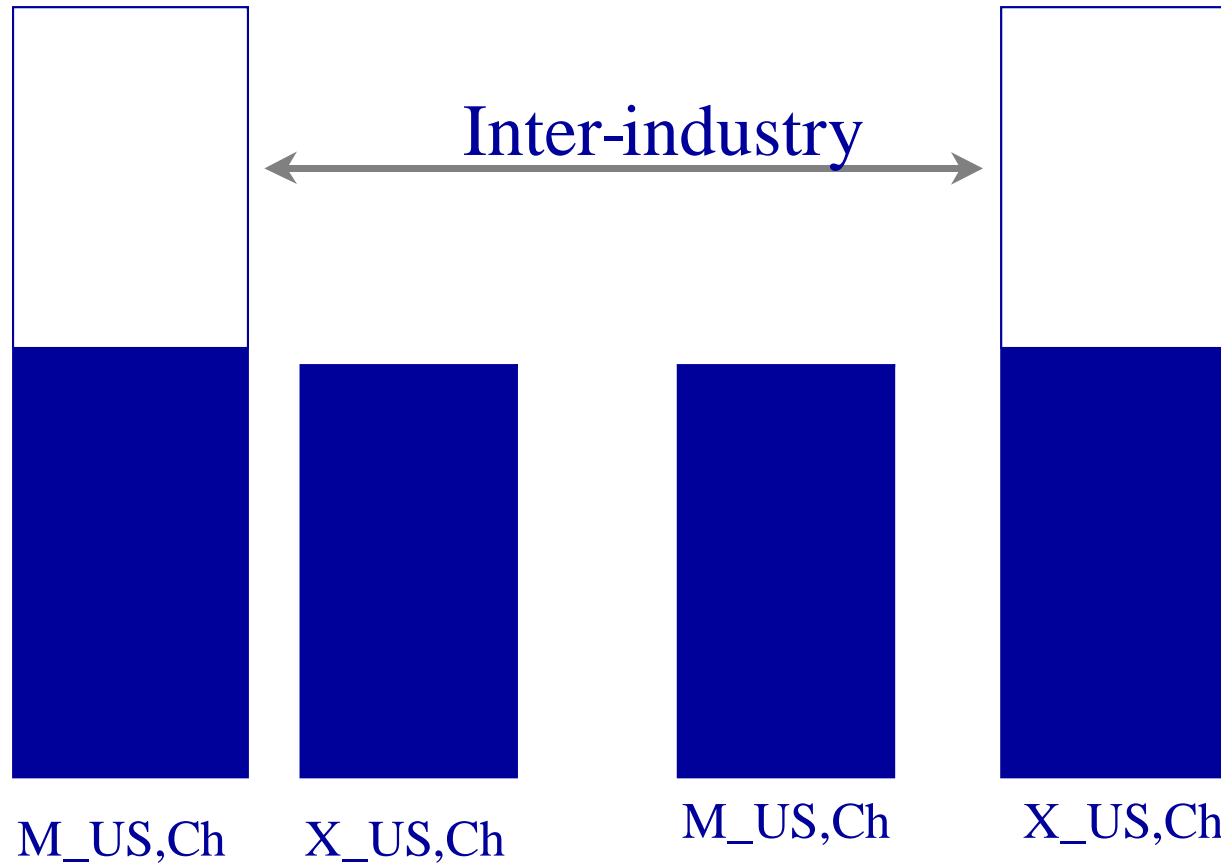
Methodology

Two methods to disentangle horizontal and vertical IIT

- Greenaway, Hine and Milner (GHM 1994, 1995) further decompose a Grubel and Lloyd (G&L) index.
- Fontagné and Freudenberg (FF 1997, 1998) categorise trade flows and compute the share of each category in total trade.
- Both methods rely on the same assumption regarding the association of price (unit values) with the quality of traded products.
- Bilateral trade at the product (HS6, NC8) level
- Threshold on relative unit values (+ - 15% / 25%)
- GHM: the balanced part of a bilateral trade flow is considered as IIT
- The two shares (resp. GHM-H and GHM-V) sum up to the G&L.

Men/boys shirts

Parts of computers



M_US,Ch: Value of US imports from China

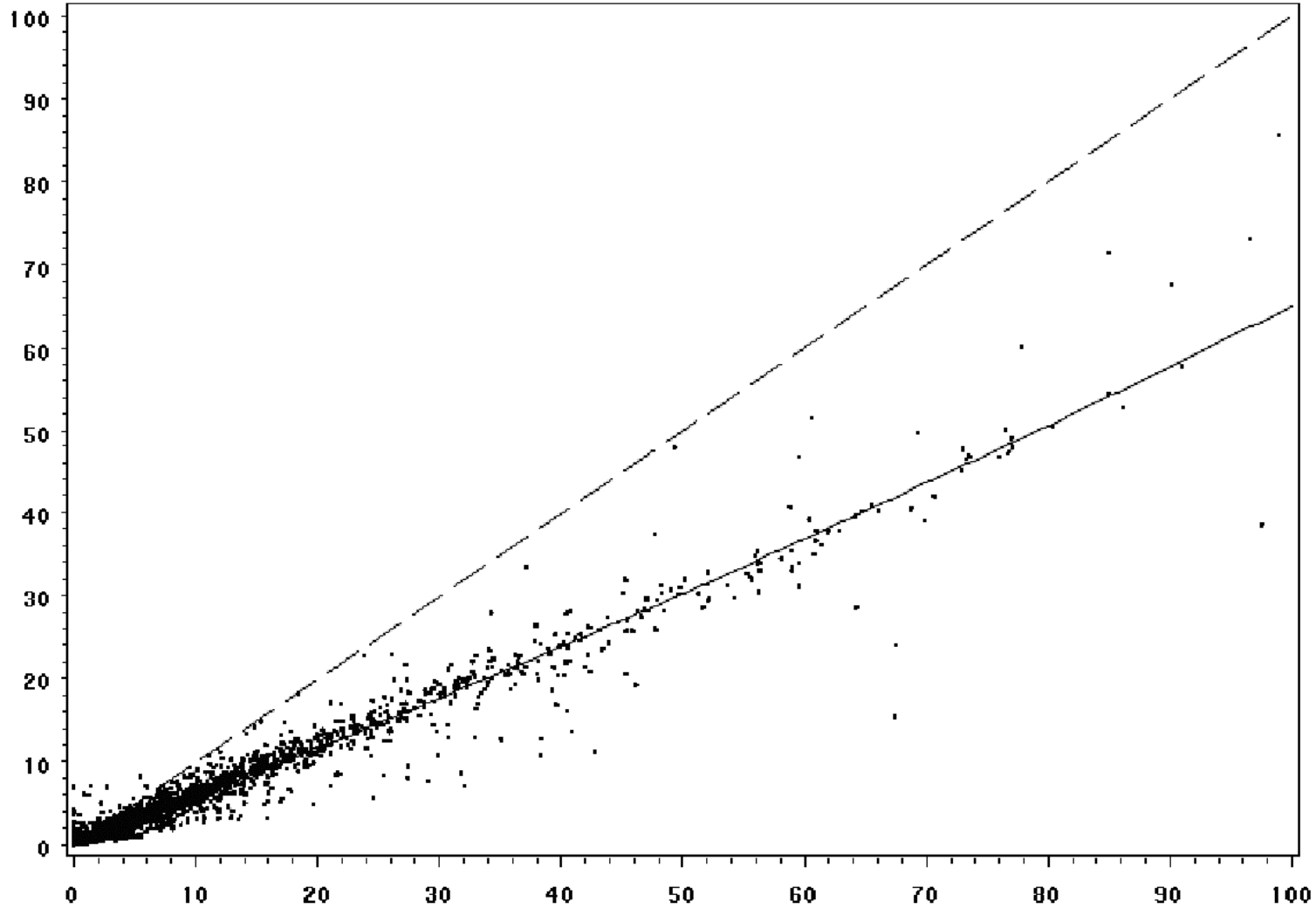
X_US,Ch: Value of US exports to China

Trade types

Degree of overlap between export and import values	Similarity of export and import unit values		
Does the minority flow represent at least 10% of the majority flow?	Do export and import unit values differ by less than 25%?		Unit value not available
	Yes	No	
Yes	Two-way trade in horizontally differentiated products	Two-way trade in vertically differentiated products	Two-way trade non-allocated
No	One way trade		

Comparison between (G&L) and (FF) for country pairs, 2000

GL



TWT

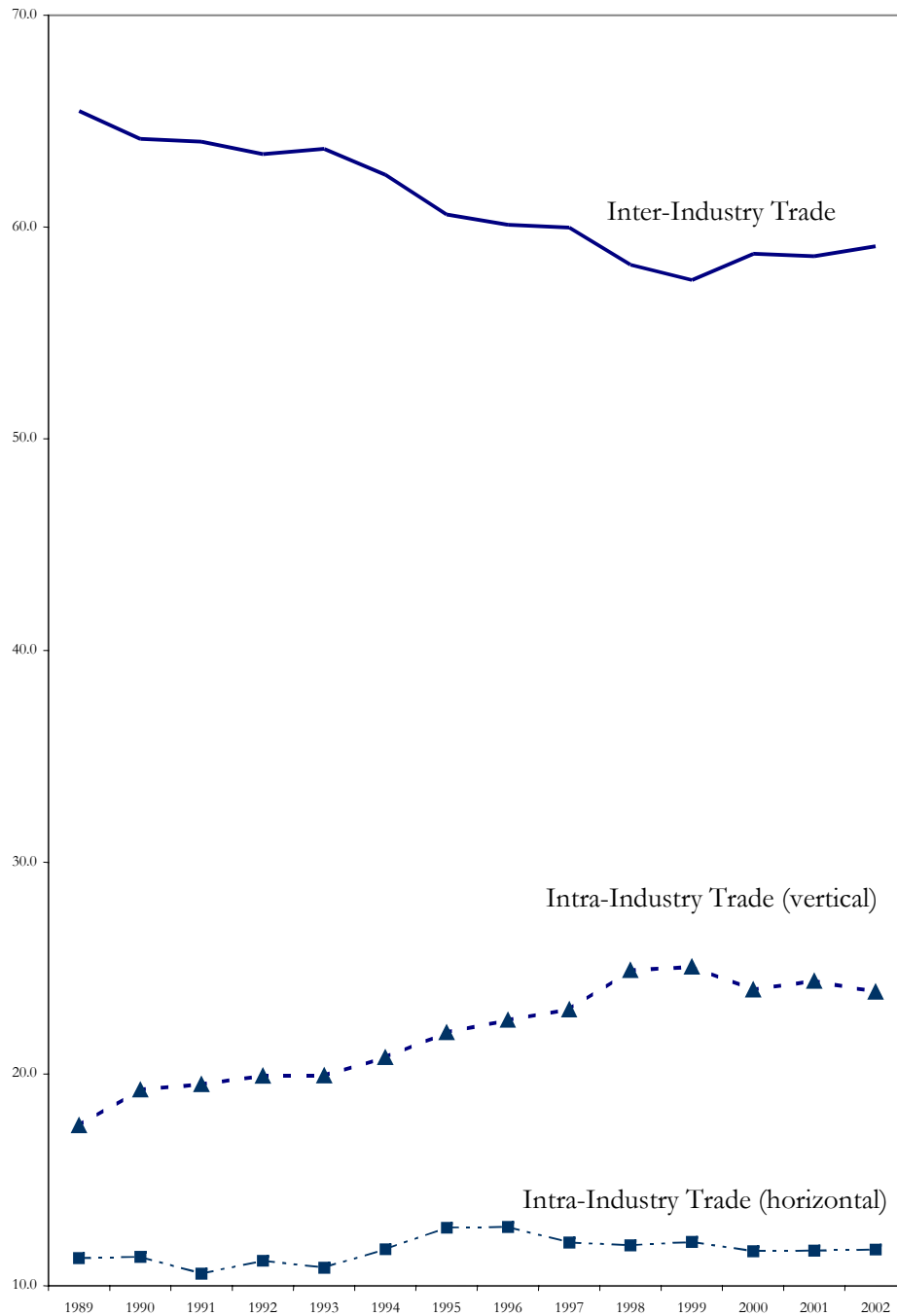
Methodology

The data we need

- Full sample of countries going far beyond OECD: especially emerging economies
- At the most detailed level of the nomenclature of traded products (HS6), values, quantities.
- Based on COMTRADE, BACI aims at providing with a world trade matrix for values as well as quantities at the 6 digit level (1995-2004). FOB-FOB, reconciled.
- Examples of HS6 positions considered:
 - Gas/smoke analysis apparatus
 - Chromatographs, electrophoresis instruments
 - Spectrometers, spectrophotometers, etc using light
 - Exposure meters
 - Instruments nes using optical radiations
 - Equipment for physical or chemical analysis, nes
 - Microtomes, parts of scientific analysis equipment
 - Instruments to measure or detect ionising radiations
 - Cathode-ray oscilloscopes, oscillographs

Main results

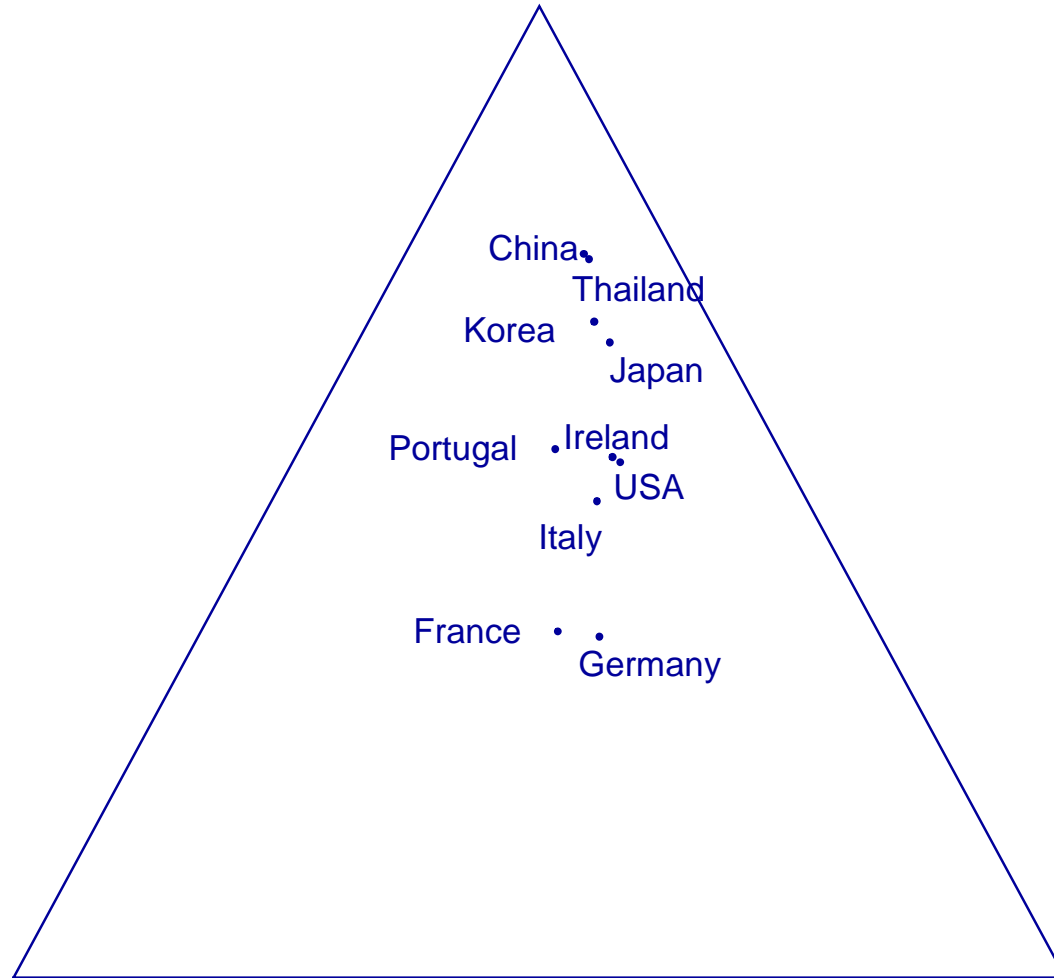
Evolution 1989-2002 of the 3 trade types (% of world trade)



Results

Trade types by country (2002)

One-way trade

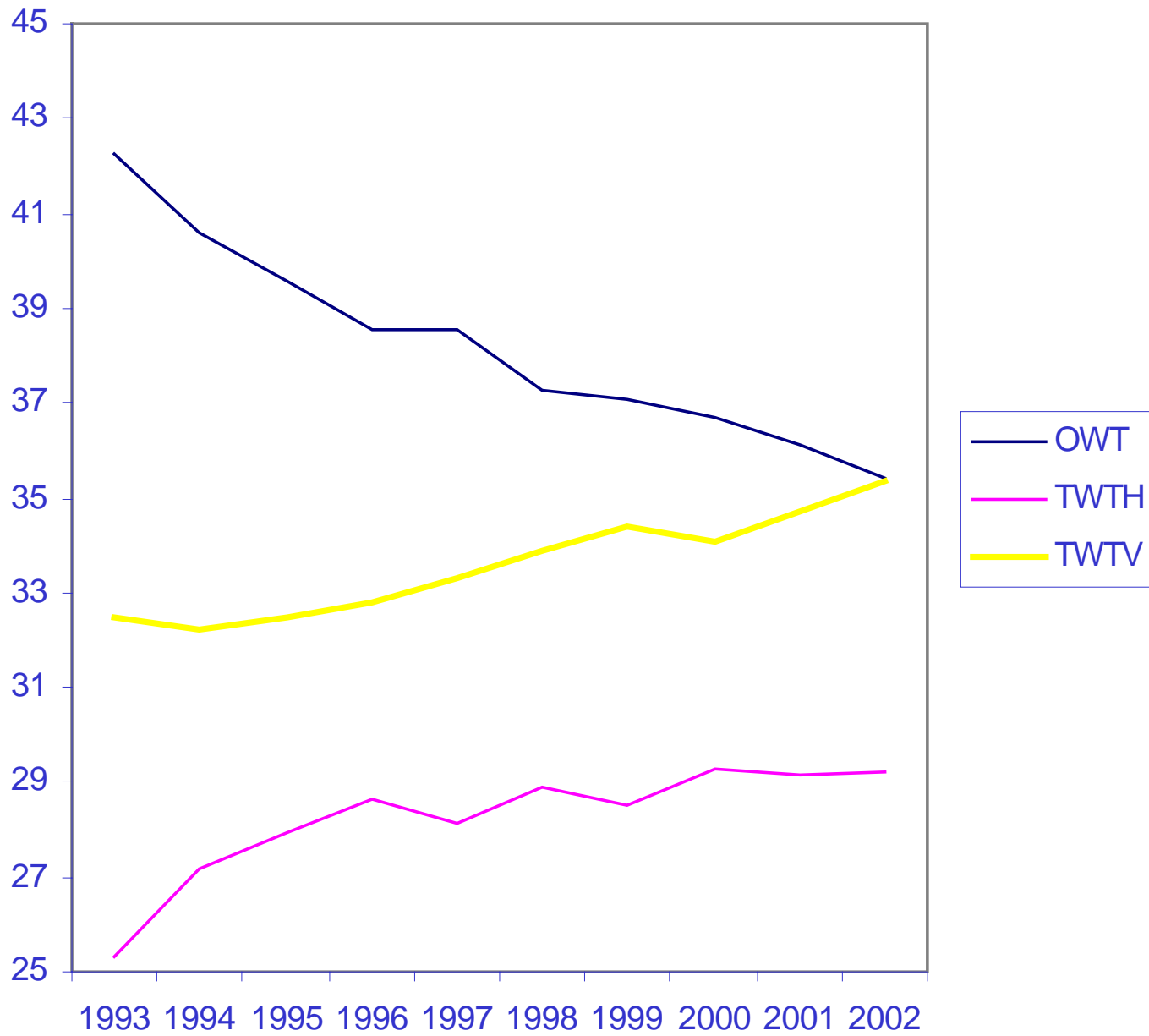


Two-way trade
in similar products

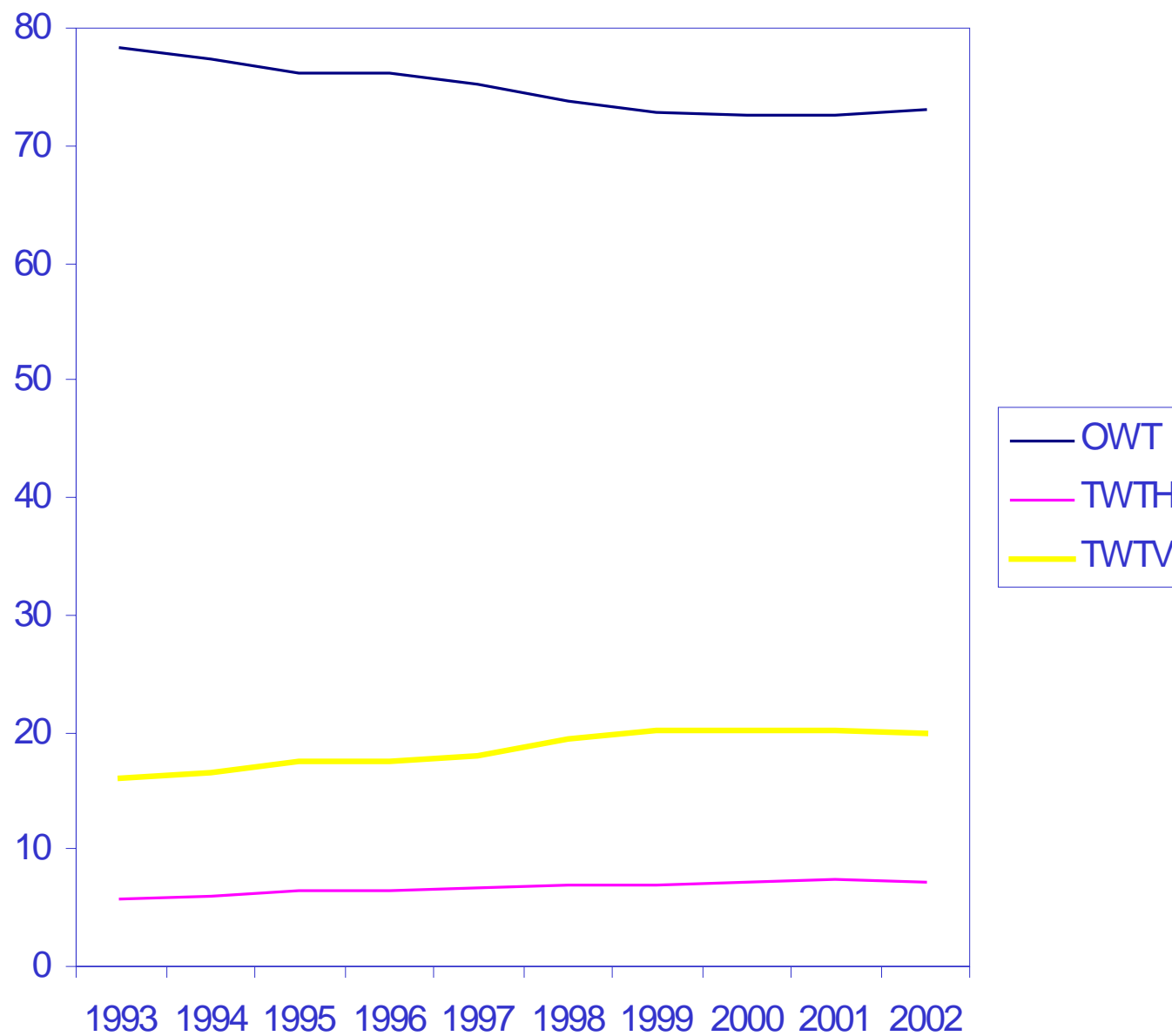
Two-way trade
in vertically differentiated

Results

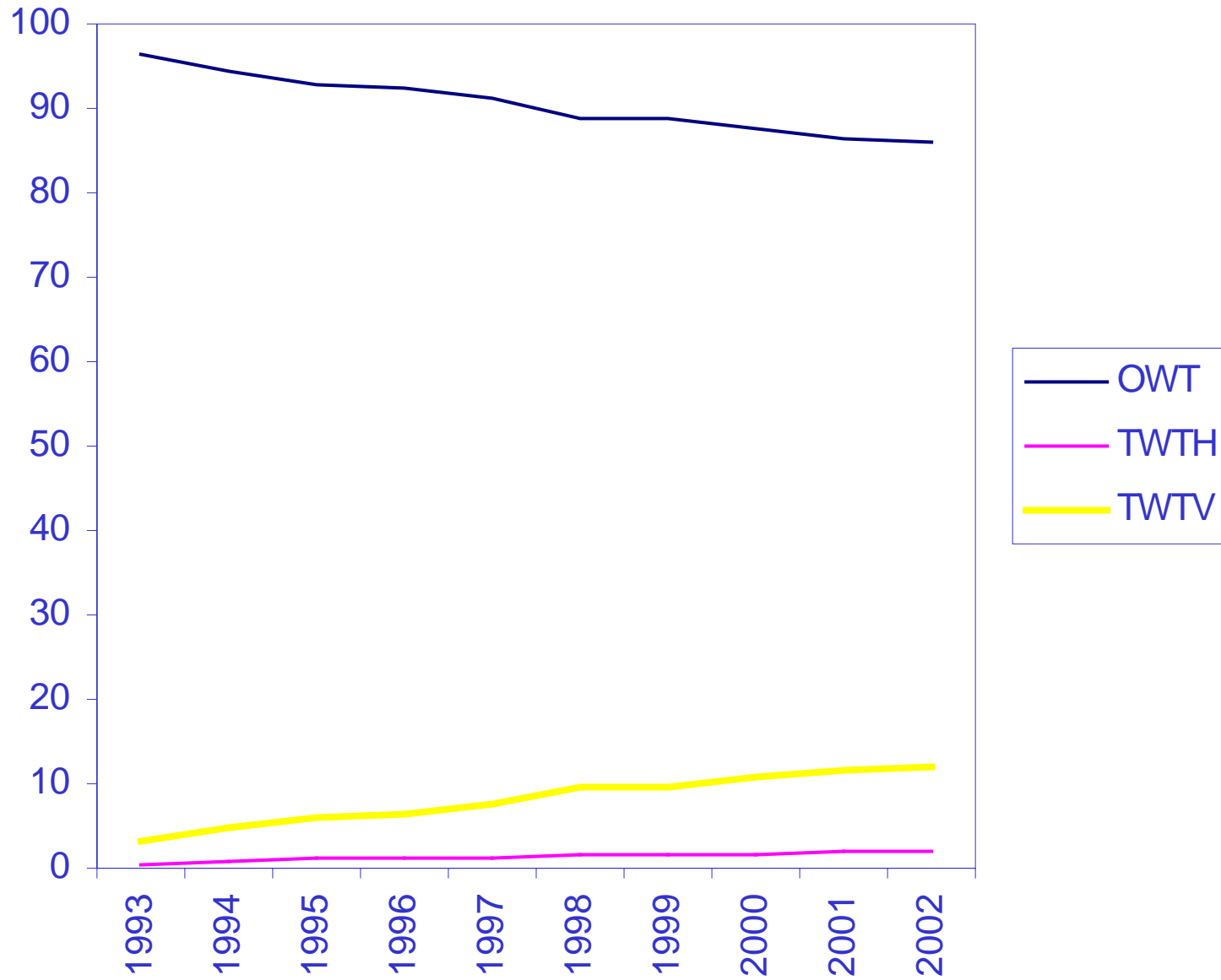
Intra-EU trade



Extra-EU trade



EU-China



The worldwide top ten bilateral IIT relations ranked by share and by value, 2000

Top total IIT shares (in %)			Top total IIT values (USD million)		
Germany	France	86.20	USA	Canada	130,041
Netherlands	Belgium and Lux.	85.01	USA	Mexico	68,111
France	Belgium and Lux.	80.42	Germany	France	49,110
France	United Kingdom	77.08	Italy	Germany	31,337
Germany	Switzerland	76.99	Netherlands	Germany	31,163
Germany	Belgium and Lux.	76.83	USA	Japan	28,442
Austria	Germany	76.63	Belgium and Lux.	France	28,390
France	Spain	76.55	Italy	France	27,530
Germany	Netherlands	76.01	Belgium and Lux.	Germany	27,421
Canada	USA	73.55	United Kingdom	Germany	24,251

Worldwide top ten bilateral IIT-H shares, 2000 (%)

Country pairs		TWT-H	TWT-V
France	Spain	44.05	32.42
France	Germany	43.03	43.15
Belgium and Lux.	Netherlands	38.63	46.28
Belgium and Lux.	France	38.26	42.10
Belgium and Lux.	Germany	35.49	41.28
Austria	Germany	34.27	42.31
Germany	Netherlands	33.81	42.14
France	Italy	33.56	35.18
Germany	Spain	31.24	30.11
France	United Kingdom	30.79	45.54

Results

Worldwide top ten bilateral IIT-V shares, 2000 (%)

Country pairs		TWT-H	TWT-V
United Kingdom	USA	17.77	55.07
Germany	Switzerland	24.28	52.67
Germany	USA	19.32	51.23
Czech Republic	Germany	22.41	50.46
Mexico	USA	11.10	49.61
Switzerland	United Kingdom	9.76	48.94
Ireland	United Kingdom	23.13	46.35
Belgium Lux.	Netherlands	38.63	46.28
Austria	Switzerland	18.45	45.77
Malaysia	Singapore	14.27	45.74

Conclusion

- New database, worldwide H6
- Method FF to disentangle two way trade in horizontally / vertically differentiated products
- IIT-V is a peculiar type of specialisation
- European pairs of Member states characterised by the largest IIT shares in the world
- This is even more true for IIT-H
- Fears of monetary integration leading to asymmetries exaggerated
- The big issue is now the increasing importance of trade with emerging economies: trade patterns characterised by specialisation.
- Stolper-Samuelson make a come-back