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Seminar in International Economics
26 November 2015

The trade and demand nexus: Do global value chains matter?

Julia Wörz (with Al-Haschimi A., Skudelny F., and Vaccarino E.)
Oesterreichische Nationalbank

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The trade and demand nexus: Do global value chains matter?

WORK IN PROGRESS…

Julia Wörz
Foreign Research Division
Oesterreichische Nationalbank

Joint work with Alexander Al-Haschimi, Frauke Skudelny (ECB)
and Elena Vaccarino (Buegel)

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Overview

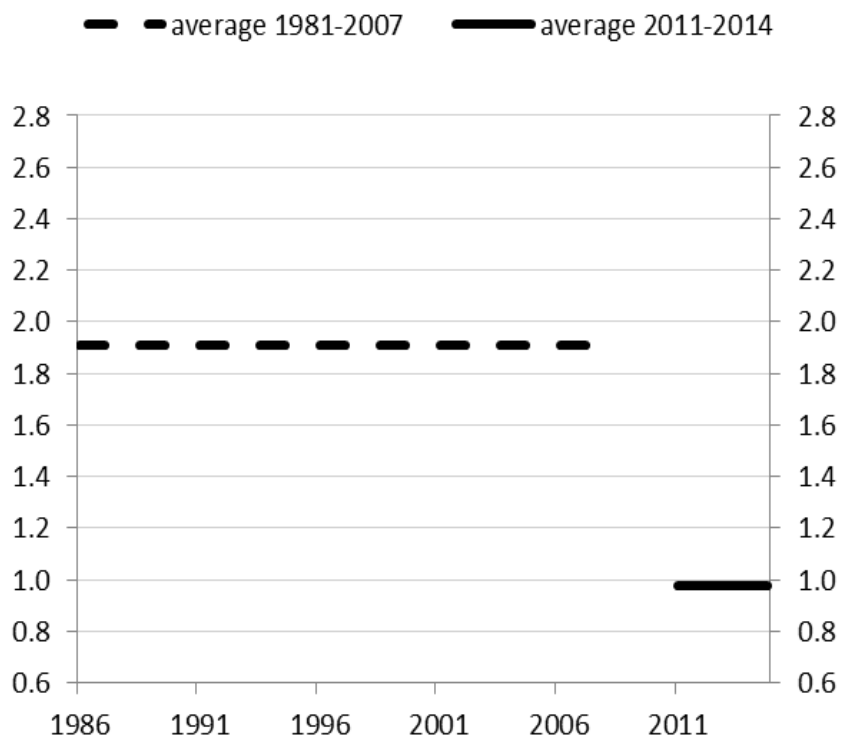
Overview

Motivation

Puzzle 1: Trade grew consistently faster than GDP.

Puzzle 2: The trade-GDP ratio declined.

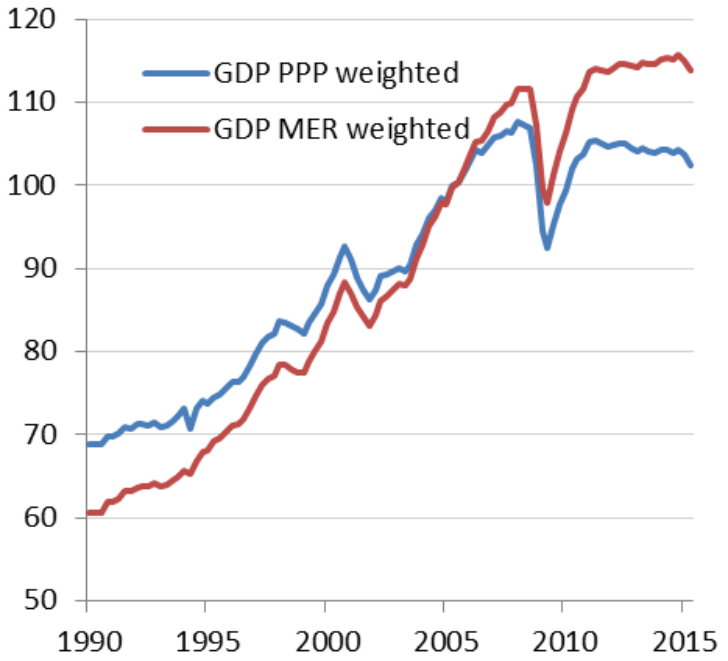
Global import growth relative to GDP growth *(in PPP)*



Source: ECB staff calculations.

Global trade relative to GDP

(ratio of world imports to world GDP, index 2005 = 100)



Source: National data.

Notes: The last observation refers to 2015Q2.

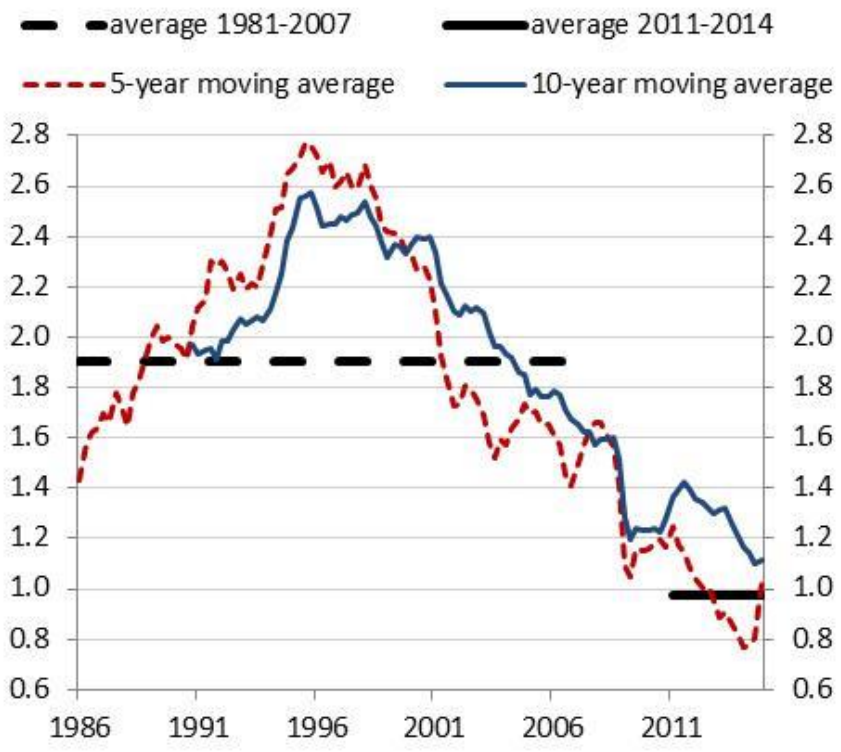
Motivation

Puzzle 1: Trade grew consistently faster than GDP.

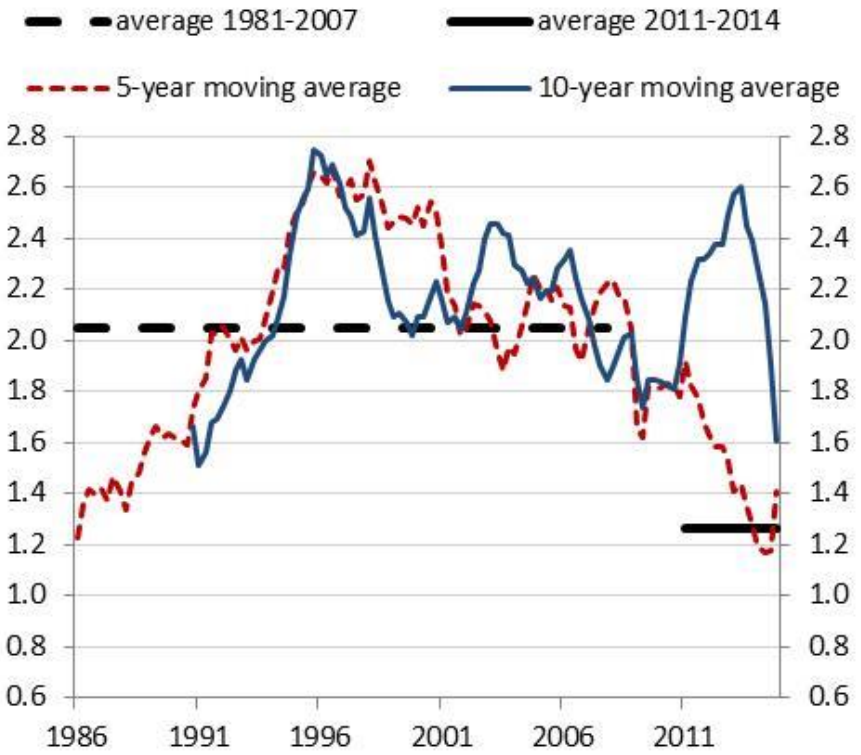
Puzzle 2: The trade-GDP ratio declined since the mid-90s.

Ratio of global import growth to GDP growth

(in PPP)



(in USD)



Source: ECB staff calculations.

Ratios of global import to GDP growth

Sample period	Ratio[1]	Trade variable	Output variable
1981Q1-2007Q4	1.9	Imports of goods	GDP (PPP)
2011Q3-2015Q2	0.8	and services	
1981Q1-2007Q4	2.1	Imports of goods	GDP (MER)
2011Q3-2015Q2	1.1	and services	
1951-2007	1.6	Merchandise	Merchandise
1981-2007	2.0	exports	production
2011-2014	1.4		
1951-2007	1.6	Manufacturing	Manufacturing
1981-2007	2.1	exports	production
2011-2014	1.5		

- Trade weak relative to GDP across various sectors and aggregation methods.
- Decline in trade growth geographically broad based

Sources: WTO, national data, Haver and IMF.
1 Imports and GDP: quarterly data; exports and production, annual data.

Motivation

- **Standard trade models failed to explain changes in trade-GDP growth ratio**
- **Reasons for these changes are unknown, cyclical or structural?** 
- **This paper analyses the role of GVCs in this context (= possible structural reason).**
- **We include indicators for the participation in GVCs in a standard import demand equation.**
- **Alternatively, one could analyse differences between gross and value added trade.**

Overview

Literature

- **Yi (2001):**
  - Falling trade barriers too weak and too early to explain high trade growth, but vertical specialisation can explain the puzzle
- **Eaton, Kortum & Romalis (2011):**
  - During the crisis, spending shifted away from durable goods → composition effect hypothesis
- **Alessandria, Kaboski & Midrigan (2010); Altomonte, di Mauro, Ottaviano, Rungi & Vicard (2012); Bems, Johnson & Yi (2012):**
  - Disproportionally large inventories in GVC trade, higher sensitivity of trade to foreign income shocks, bullwhip effect → supply chain effect hypothesis
- **Constantinescu, Mattoo & Ruta (2015):**
  - decline in trade-GDP ratio started long before the crisis, thus reflecting longer term structural reasons
- **Ollivaud & Schwellnus (2015):**
  - No decline in the ratio with correct GDP measurement and treatment of intra-EU flows, thus weak global demand is responsible

Overview

Import demand function

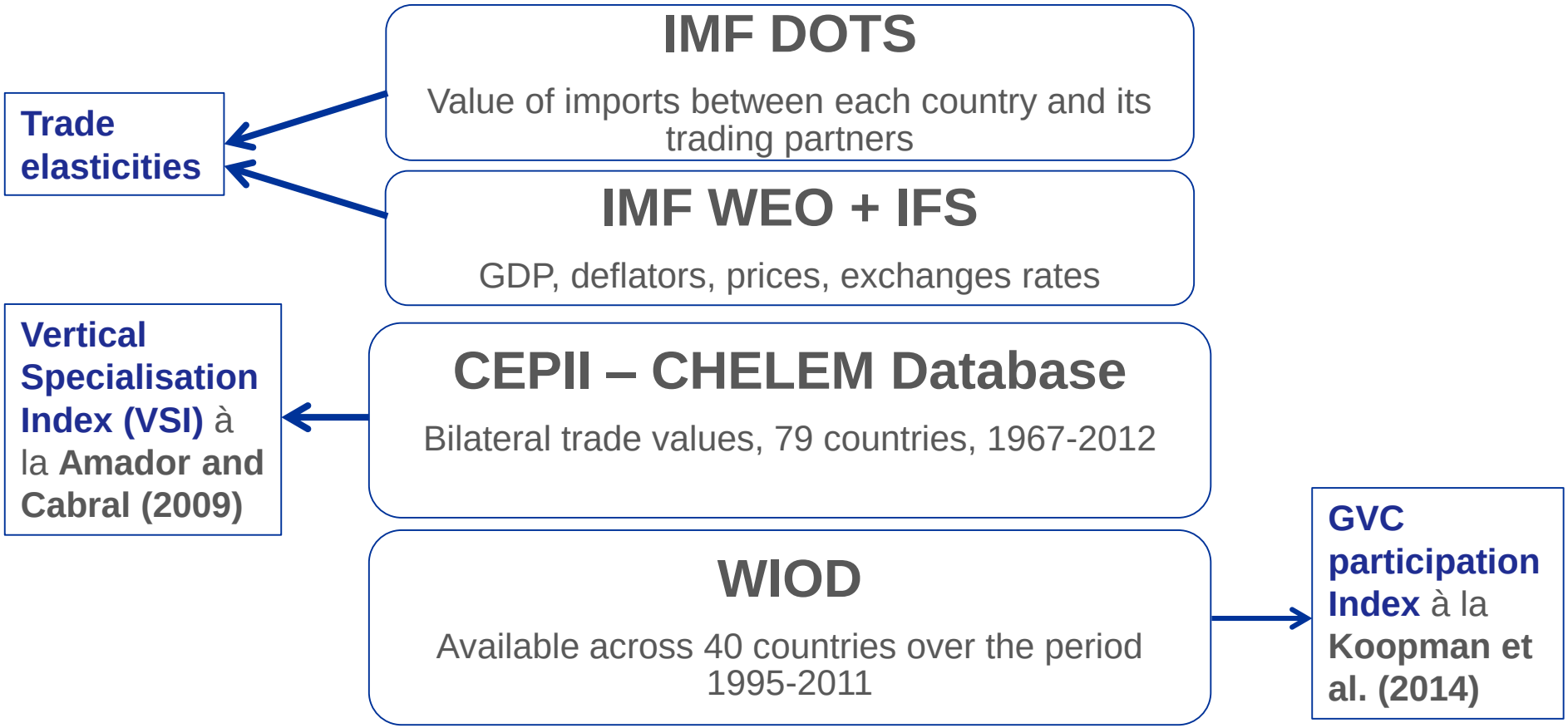
$$ln(M_{ijt}) = \alpha_{ij} + \alpha_1 ln(TFE_{it}) + \alpha_2 ln\left(\frac{P_{jt}}{P_{it}}\right) + \alpha_3 ln(ER_{ijt}) + \varepsilon_{ijt}$$

… augmented by an index of GVC participation:

$$ln(M_{ijt}) = \gamma_{ij} + \gamma_1 ln(TFE_{it}) + \gamma_2 ln\left(\frac{P_{jt}}{P_{it}}\right) + \gamma_3 ln(ER_{ijt}) + \gamma_4 ln(GVC\_part_{it}) + \varepsilon_{ijt}$$

- **14 countries (7 advanced, 6 emerging)**
- **Estimations for 1980-2012 and 1995-2012**
- **2 alternative GVC integration measures:**
  - **Vertical specialisation index (only backward integration)**
  - **GVC participation (based on decomposition of gross exports)**

Data sources

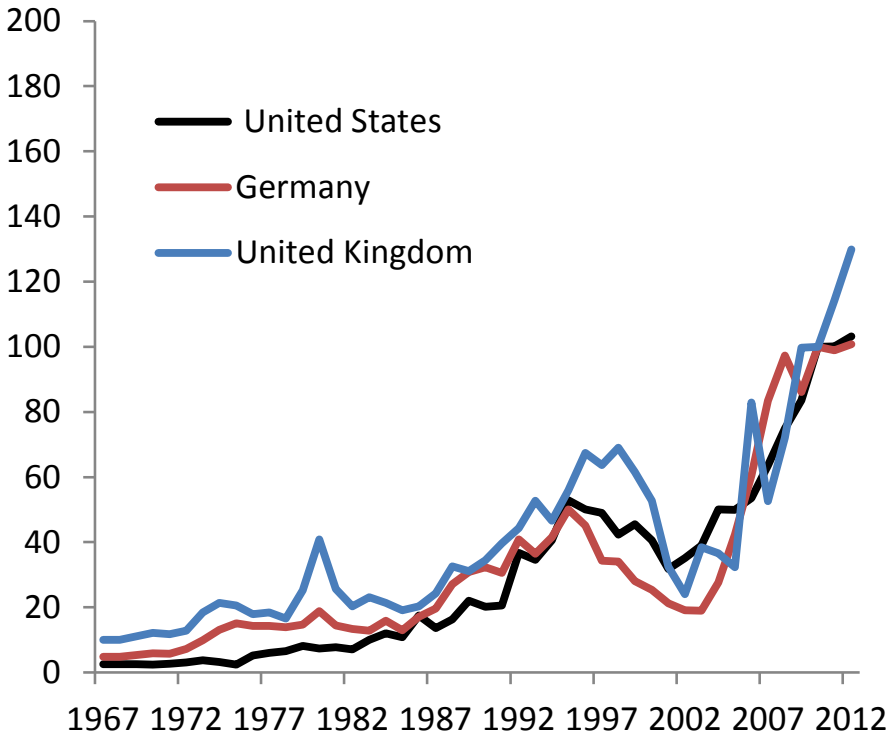


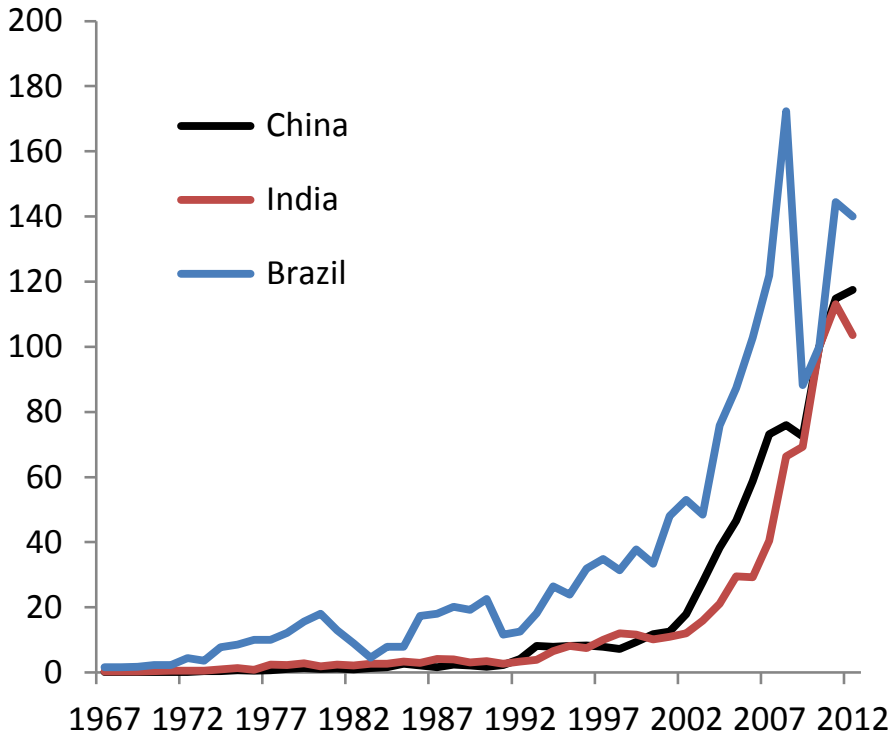
1st GVC-integration measure: VSI

We observe increasing vertical specialization, especially by EMEs

Vertical Specialisation Index (VSI)

2010=100





Source: update of Amador & Cabral, 2009.

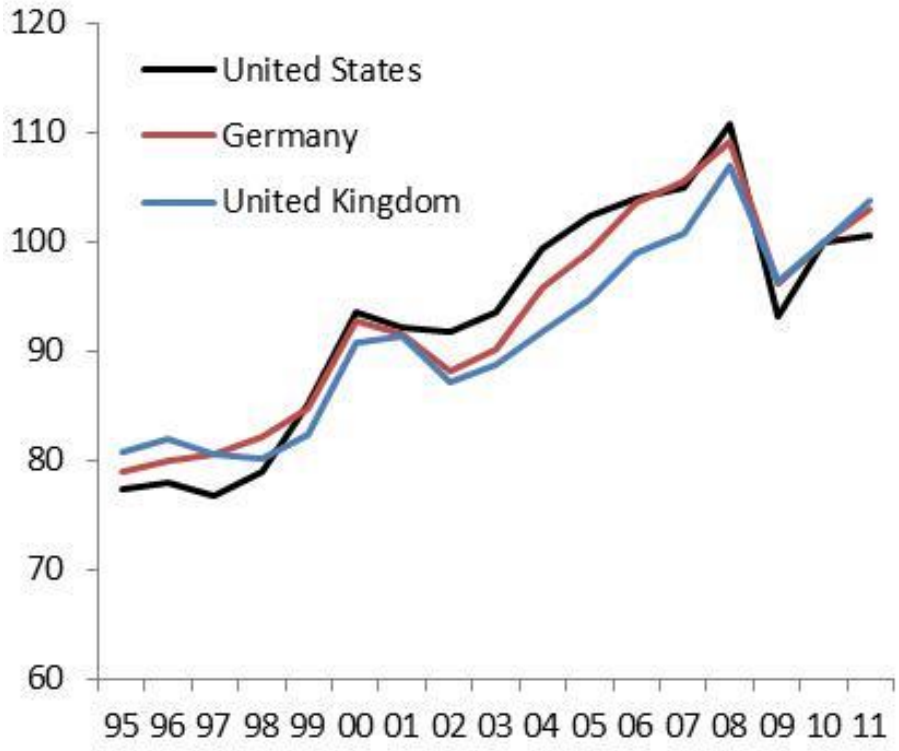
2nd GVC-integration measure: GVC-participation

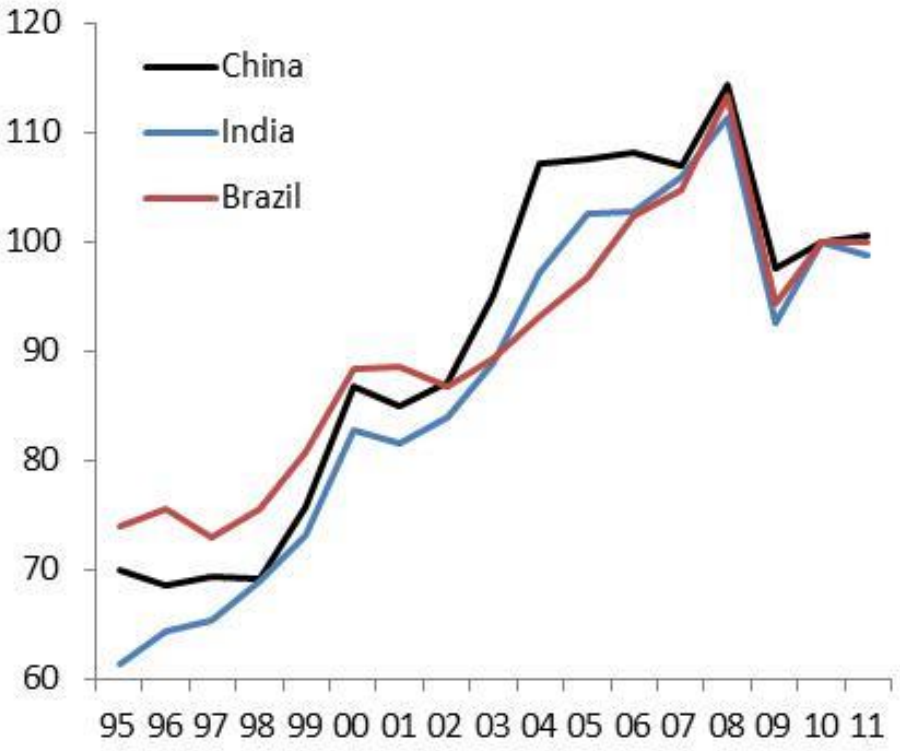
Global Crisis induced a reversal in GVC participation intensity

GVC participation index

2010=100

$$GVC\ Participation_{it} = VS1_{it} + FV_{ijt}$$





Source: authors' calculations based on WIOD.

Overview

Regression results for import values, 1995-2011

	Advanced economies Fixed effects with AR(1) dist.		Emerging economies Fixed effects with AR(1) dist.	
Lagged dep.				
TFE	1.51***	1.41***	1.42***	1.40***
Long-term coef.				
Relative prices	-0.02	-0.05*	-0.023	-0.06
Long-term coef.				
ER	0.43***	0.3***	0.40***	0.38***
Long-term coef.				
TFE*GVC_part		0.05***		0.03***
Long-term coef.				

- **Check for influence of prices -> deflate all variables**
- **Start estimation in 1980**
- **Estimate GVC participation separately and as interaction term**

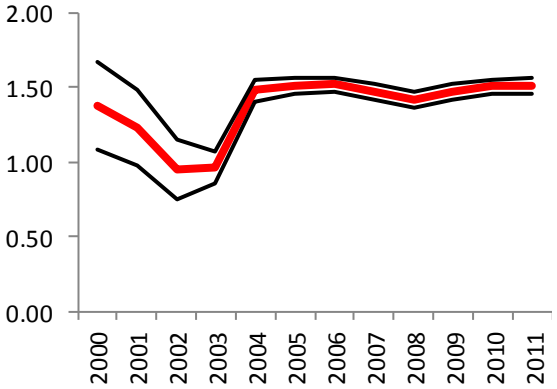
Results

Recursive estimates, including TFE*GVC-part interaction term

Fixed effects with AR, advanced economies

recursive

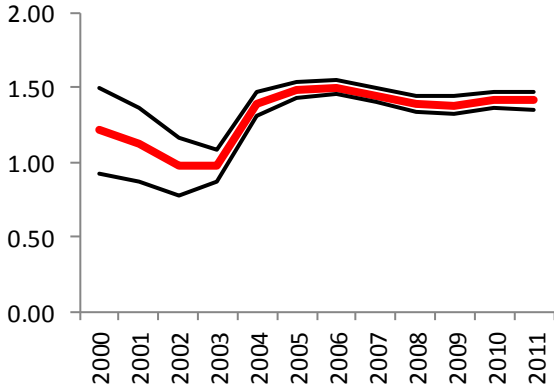
lntfe_d



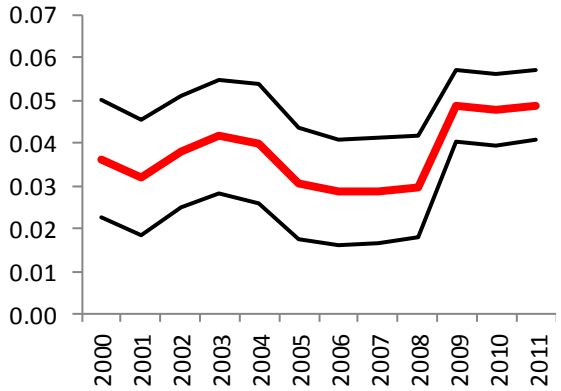
with interaction term

recursive

lntfe_d



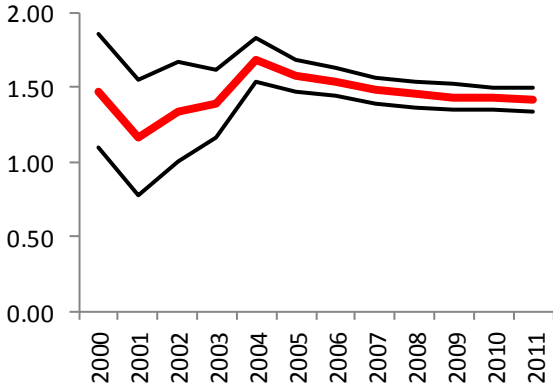
lntfe_d_part



Fixed effects with AR, emerging economies

recursive

lntfe_d

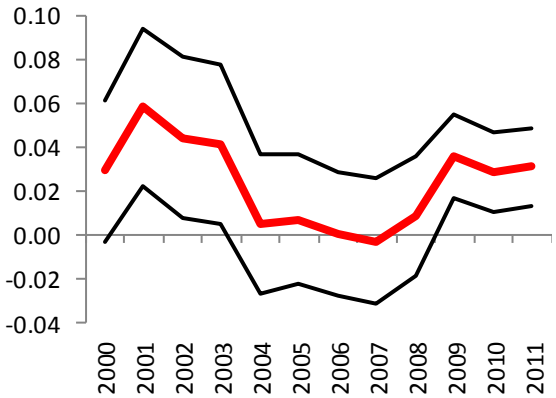


with interaction term

recursive

lntfe_d

lntfe_d_part



Regression results for import volumes, 1995-2011

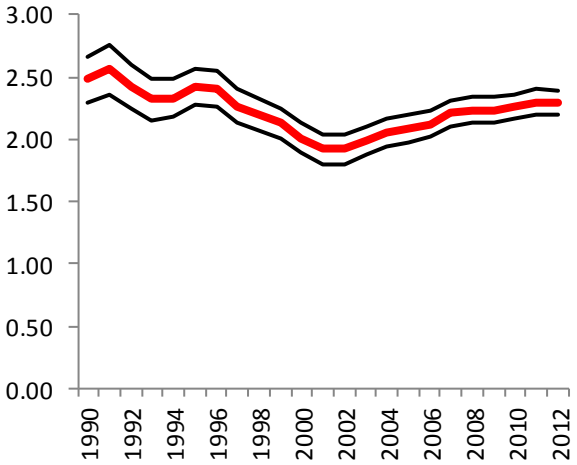
	Advanced economies			Emerging economies		
			1995-2012			
GDP	2.63***	2.69***	2.62***	2.11***	1.32***	1.10***
Rel. MP	-0.74***	-0.73***	-0.73***	-0.73***	-0.69***	-0.67***
ER	-0.063**	-0.063**	-0.064**	-0.43***	-0.39***	-0.36***
VSI		0.060***			0.31***	
GDP*VSI			0.014***			0.069***
total GDP & interact			2.66 (2.65-2.67)			1.33 (1.22-1.41)
			1980-2012			
GDP	2.29***	2.08***	1.99***	2.13***	1.31***	1.04***
Rel. MP	-0.84***	-0.84***	-0.84***	-0.34***	-0.31***	-0.30***
ER	0.0028	0.0049	0.0058	-0.21***	-0.20***	-0.19***
VSI		0.085***			0.32***	
GDP*VSI			0.021***			0.075***
total GDP & interact			2.06 (2.02-2.09)			1.25 (1.04-1.4)

Results

Recursive estimates, including TFE*VSI interaction

Advanced economies

lnyer_usd_d



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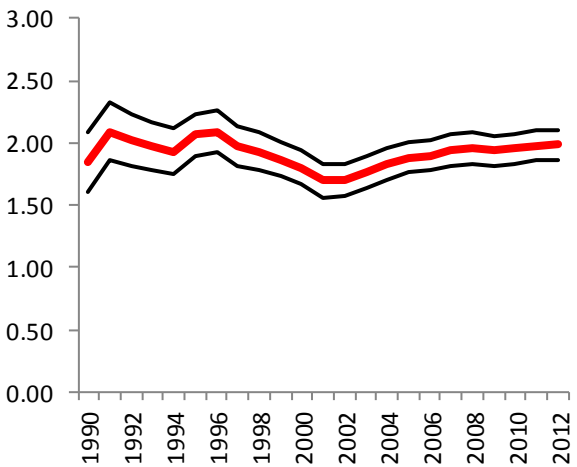
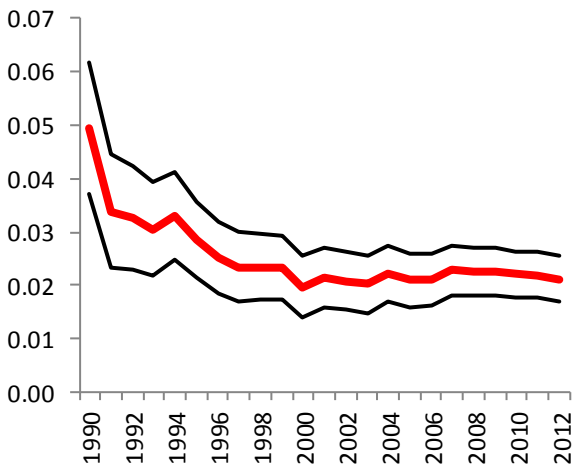
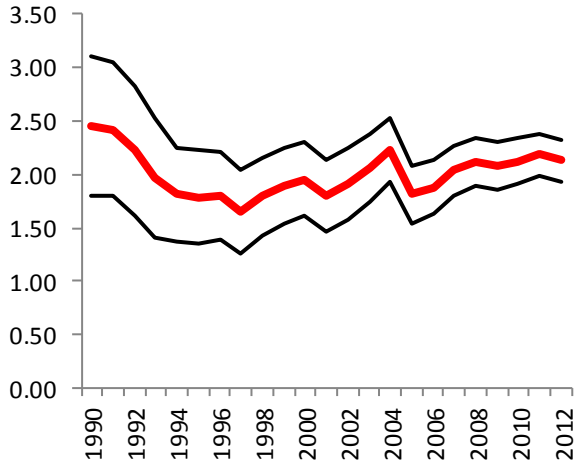


lnyer_usd_d_part

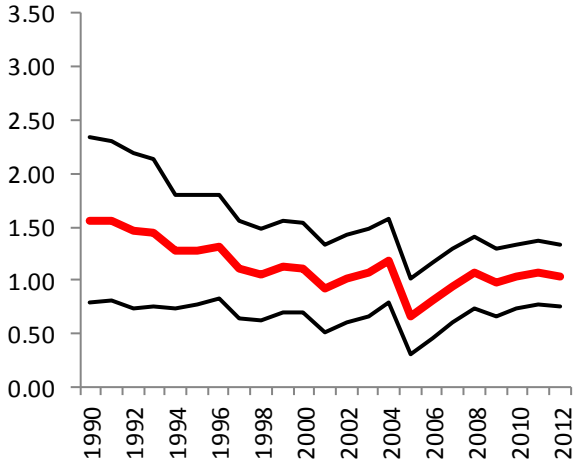


Emerging economies

lnyer_usd_d



lnyer_usd_d



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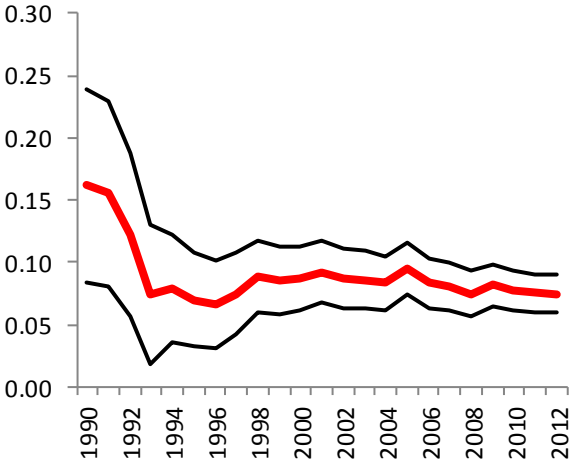

Overview

Conclusions and way forward

- **Countries with stronger involvement in GVCs tend to import more, beyond the effect of the demand variable**
- **Omitting these variables leads to higher estimates of income elasticities**
- **Sensitivity to GVC-participation higher in EMEs**
- **Among structural factors, a deceleration in the expansion of global value chains would have a dampening effect on trade.**

- **On the agenda: more (and proper) robustness checks, proper measurement of GVC participation, allow for time-varying effect of GVC-participation**


HANIHE
PANAMA