Portuguese Exports in the Global Value Chains

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What are GVCs all about?

- The nature of international trade has changed dramatically after the end 80's. . . fragmentation of production is the new paradigm.
- Parts and components are produced in different locations and are assembled sequentially or in a final production stage.
- The trade literature has been studying this phenomenon along different dimensions. . . measuring, mapping and theory (Baldwin (2012), CEPR DP; Jonhson and Noguera (2012), JIE; Koopman et al. (2013), AER)
- GVCs are all about firms (firm-specific knowledge mixing with foreign inputs) and old comparative advantages make less sense

Why have GVCs developed?

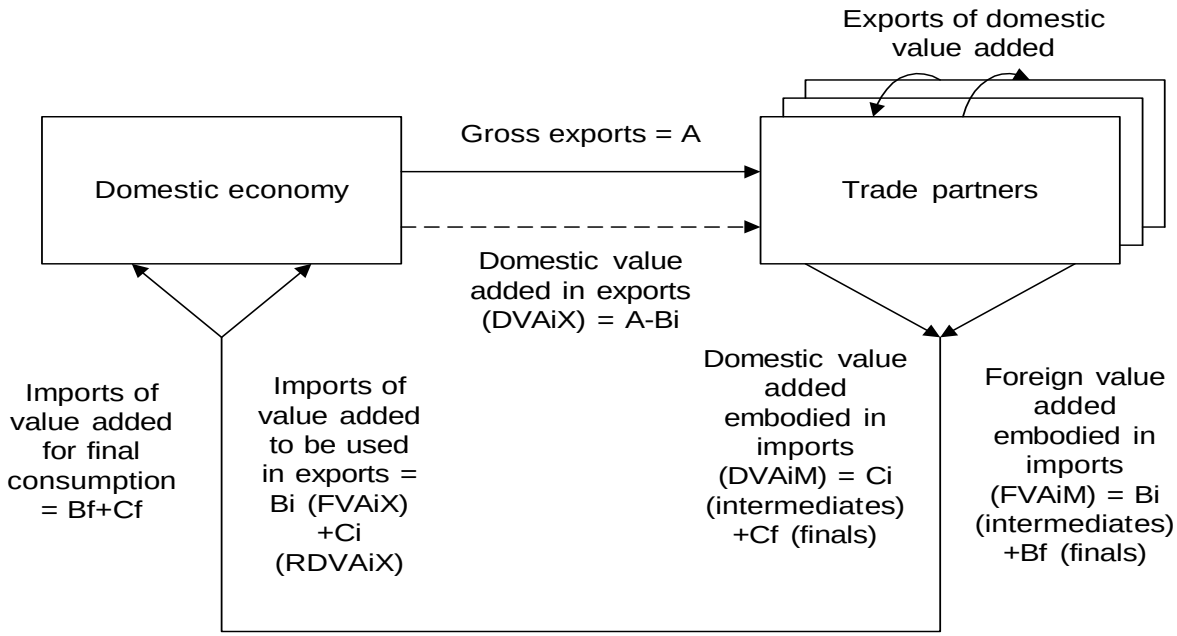
- The “second unbundling” (Baldwin, 2012) is a major structural change
- Reduction in transportation and (mostly) communication costs
- Reduction in barriers to trade and foreign investment
- Technological progress makes it possible to fit parts and components into complex products

What are the policy consequences?

- Traditional trade measures (gross terms) do not make much sense
- The positioning in the GVC is an important driver of welfare (upstreamness)
- Flexibility and innovation are the rules of the game
- New concerns... propagation of economic shocks (bullwhip effect)

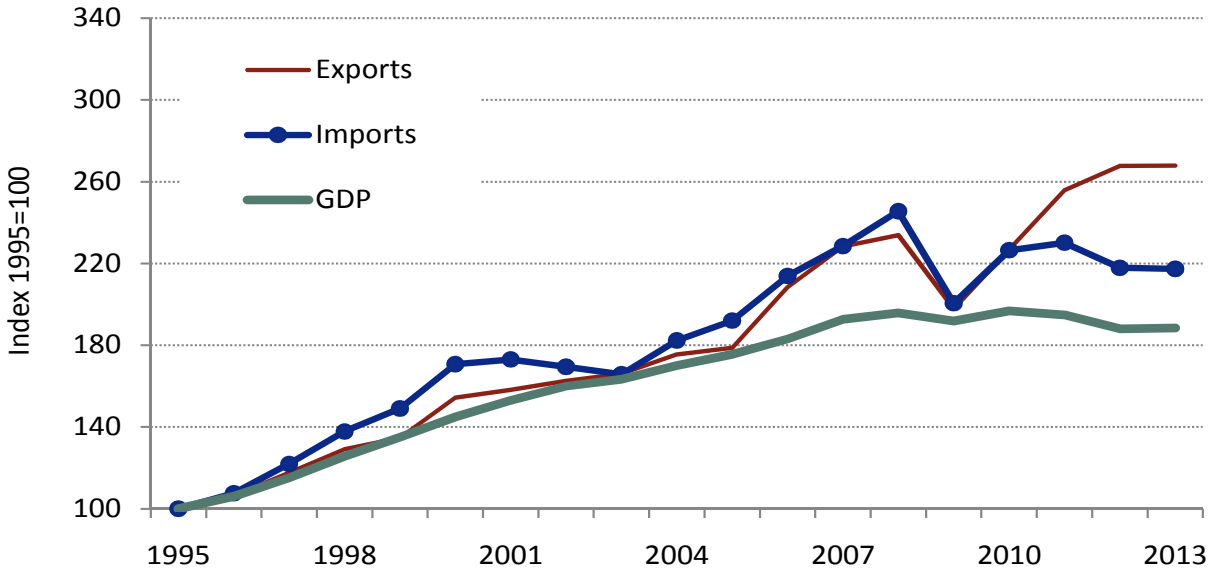
Flows of value added

- Value added in exports is smaller than gross exports
- Domestic value added circulates around the world and it may return do the domestic economy



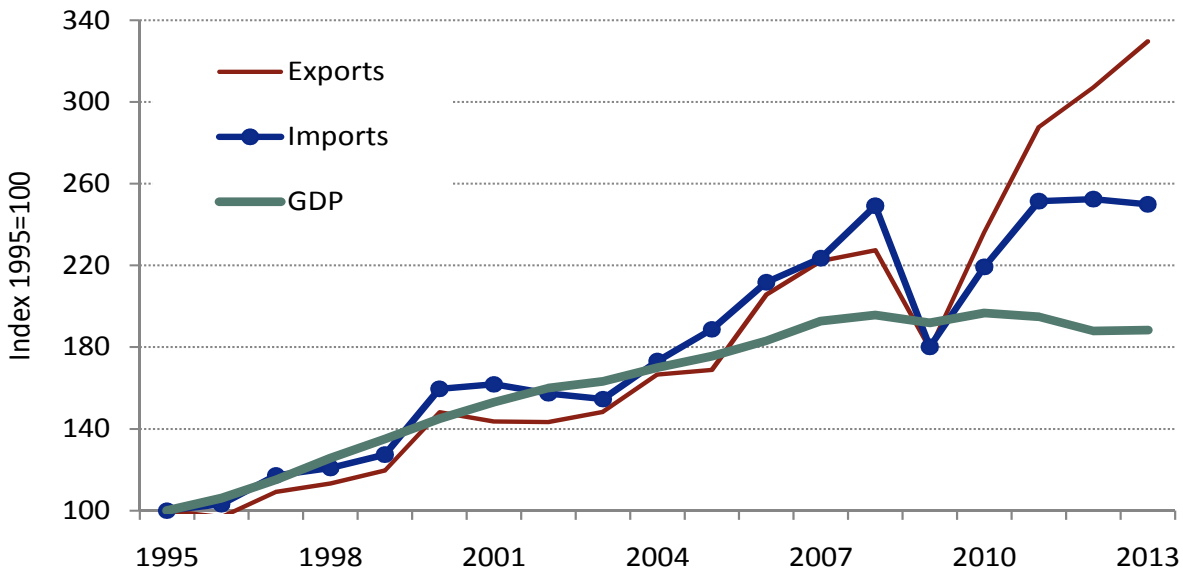
Gross trade flows in Portugal

- Nominal trade flows grow more than nominal GDP
- **Total goods and services (national accounts)**



Gross trade flows in Portugal

- Nominal trade flows grow more than nominal GDP
- **Intermediate and energy goods (international trade data)**



Global I-O matrices

- Domestic supply and use tables combined with bilateral trade data (WIOD, TiVA, GTAP)
- Many caveats still around . . .

		Country 1			Country 2			Country 1	Country 2	
		Industry 1	Industry 2	...	Industry 1	Industry 2	...	Final consumption	Final consumption	Total use of output
Country 1	Industry 1 Industry 2 ...	Use of domestic inputs (classical single country input-output table)			Use of foreign inputs			Final use of domestic products	Final use of exports of country 1 (imports country 2)	Sum of lines
Country 2	Industry 1 Industry 2 ...	Use of foreign inputs			Use of domestic inputs (classical single country input-output table)			Final use of exports of country 2 (imports country 1)	Final use of domestic products	
...	...	...	...	...	...	...	...	...	...	
Value-added		Use of primary inputs			Use of primary inputs			Final use of primary inputs	Final use of primary inputs	
Gross output		Sum of columns			Sum of columns					

FVAiX, DVAiM and RDVAiX

The workhorse is the inverse Leontief matrix $L = (I - A)^{-1}$, with dimension $NC \times NC$, where N stands for the number of sectors and C for the number of countries, I is the identity matrix and A is the $NC \times NC$ global I-O matrix.

Value-added created per unit of gross output in country r, is denoted by v^r, for country s is denoted as v^s, country r's exports are vector e^r and imports are m^r.

i) $\mathrm{DVAiX}^r = v^r L e^r$

ii) $\mathrm{FVAiX}^{sr} = v^s L e^r$

iii) $\mathrm{DVAiM}^r = v^r L m^r$

iv) $\mathrm{RDVAiX}^r = \mathrm{DVAiM}^r . \mathrm{DVAiX}^r$

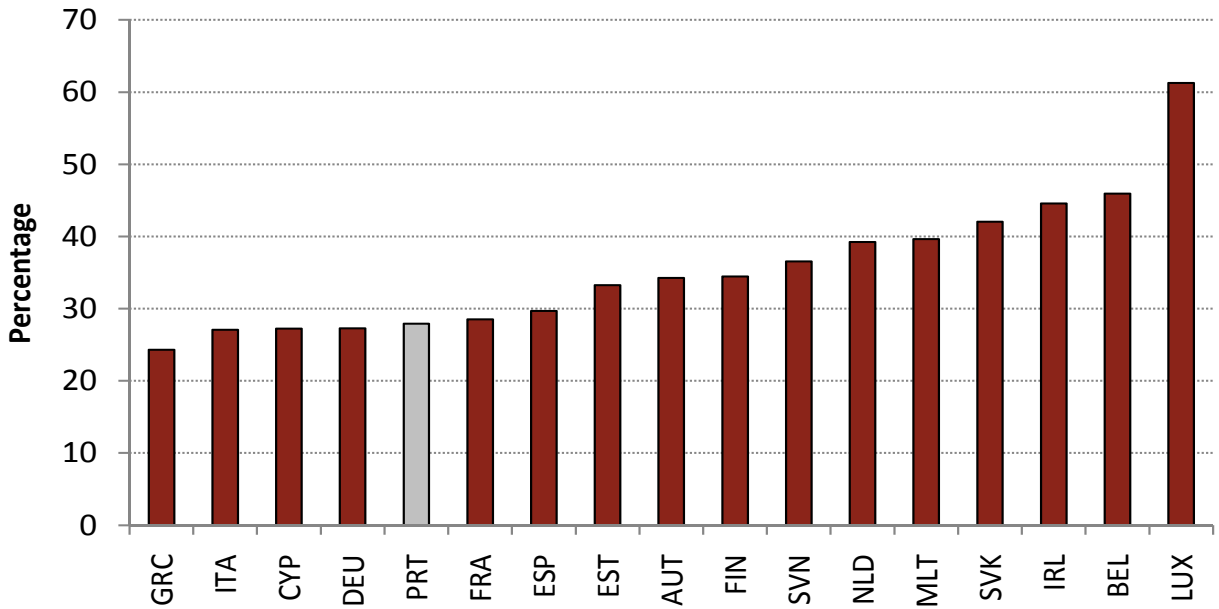
1995-2011 results

- Big trade collapse hit most countries. . . but they have recovered by 2011, not Portugal
- Composition effects are probably playing a role

	FVAiX % of exports						DVAiM % of imp	RDVAiX % of exp
	Total	Intra	Extra	Agricult.	Manuf.	Serv.		
1995	27.6	37.9	11.3	11.3	31.2	15.4	0.17	0.16
2000	30.0	43.0	12.6	14.2	34.7	15.4	0.21	0.22
2007	31.4	44.5	14.9	17.1	37.3	17.1	0.31	0.28
2009	27.5	37.5	13.2	16.2	32.3	16.4	0.24	0.29
2011	27.9	40.1	13.7	17.0	33.0	16.5	0.26	0.25

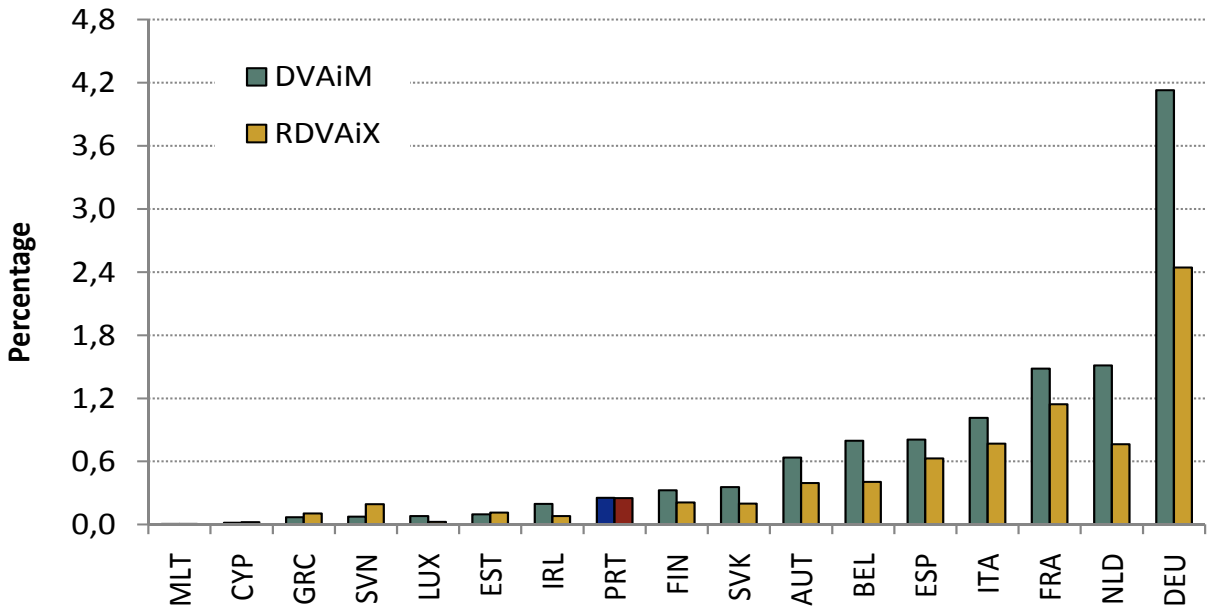
FVAiX

- *Year* = 2011, euro area 17
- Portugal stands in an intermediate position. . . but large margin for progress



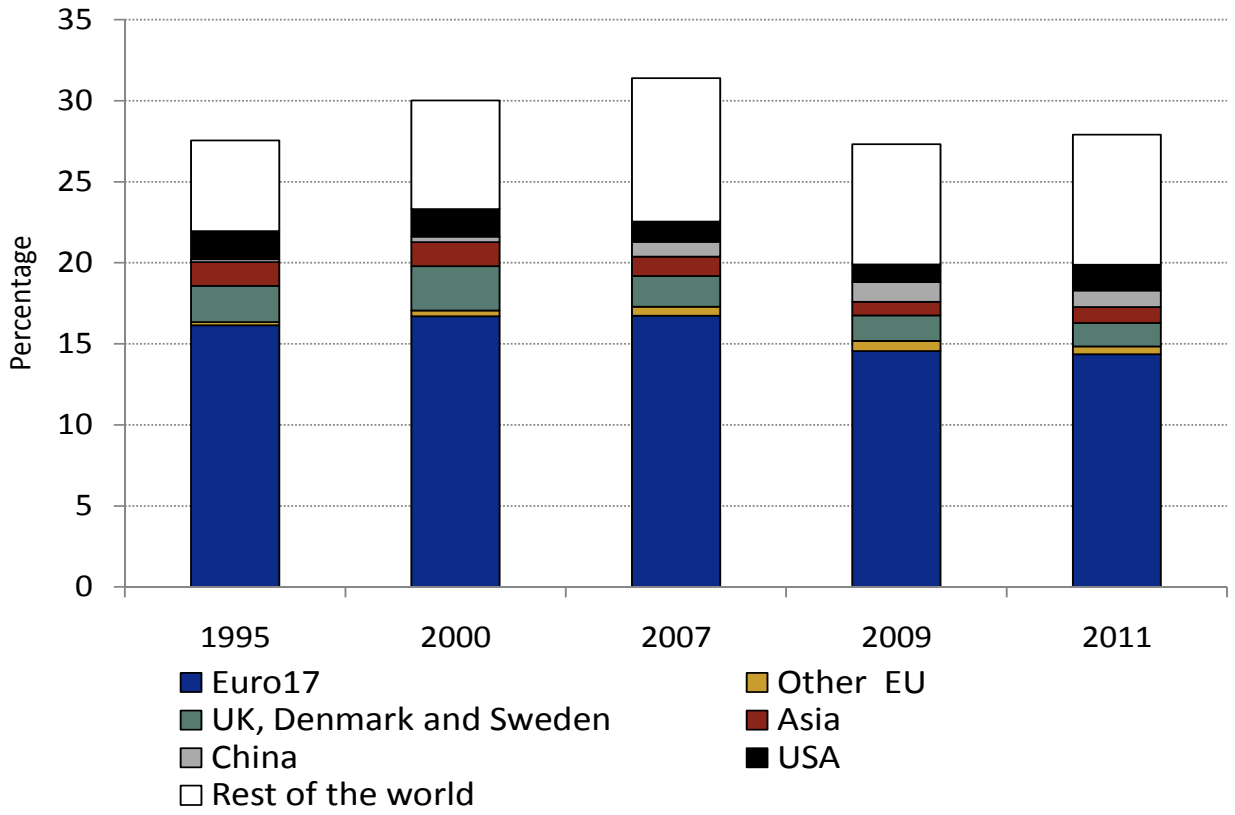
DVAiM and RDVAiX

- *Year* = 2011, euro area 17
- Portugal shows low numbers. . . indicating little participation in initial and final stages of production, where most value added is incorporated



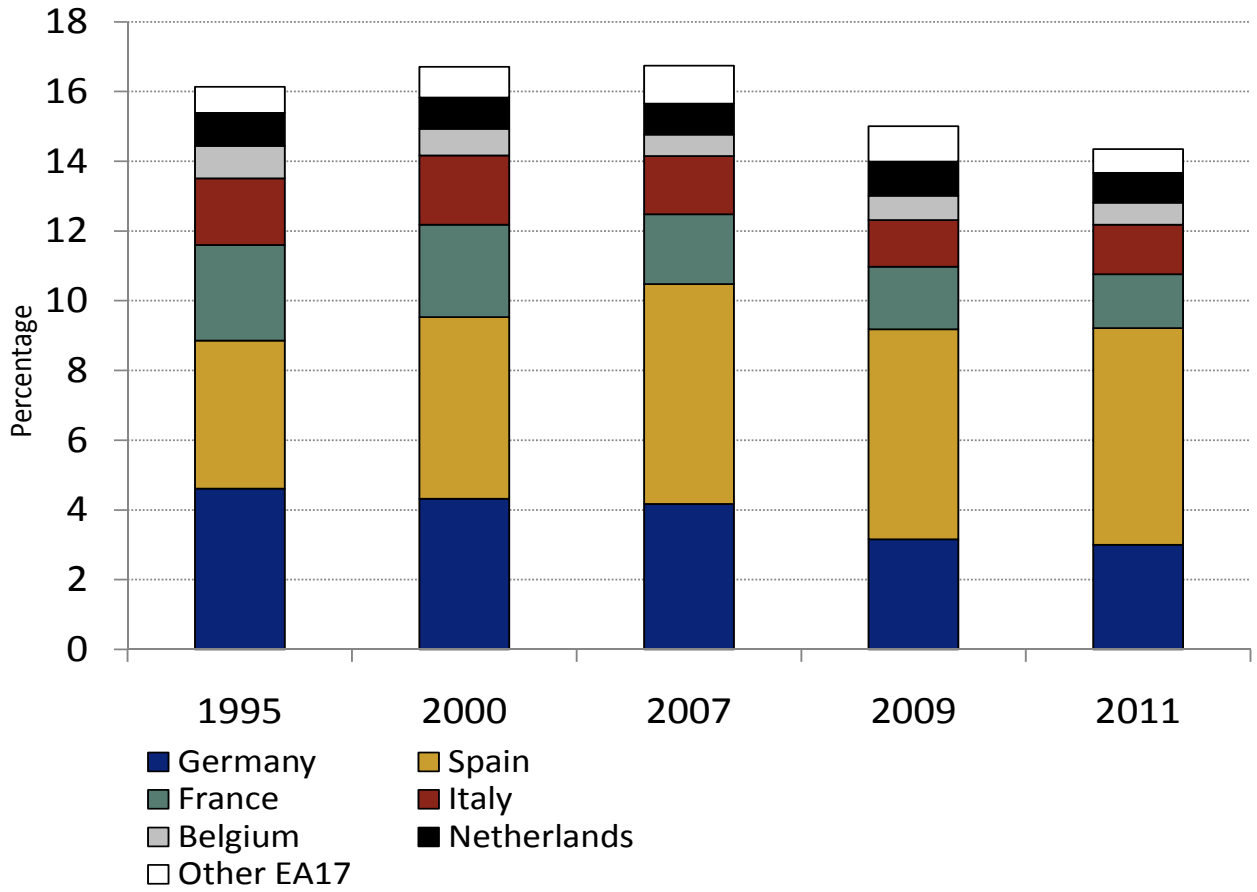
Origin of FVAiX

- Euro area is dominant
- GVCs have a regional nature (factory Europe)



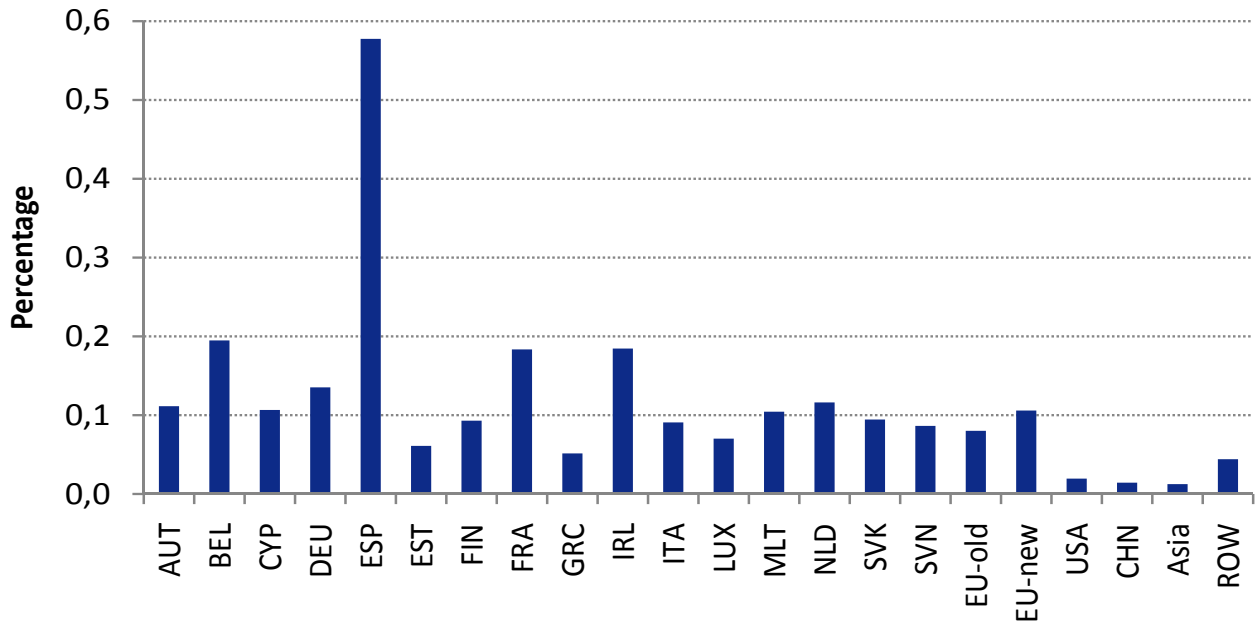
Origin of FVAiX

- Spain and Germany (decreasing)



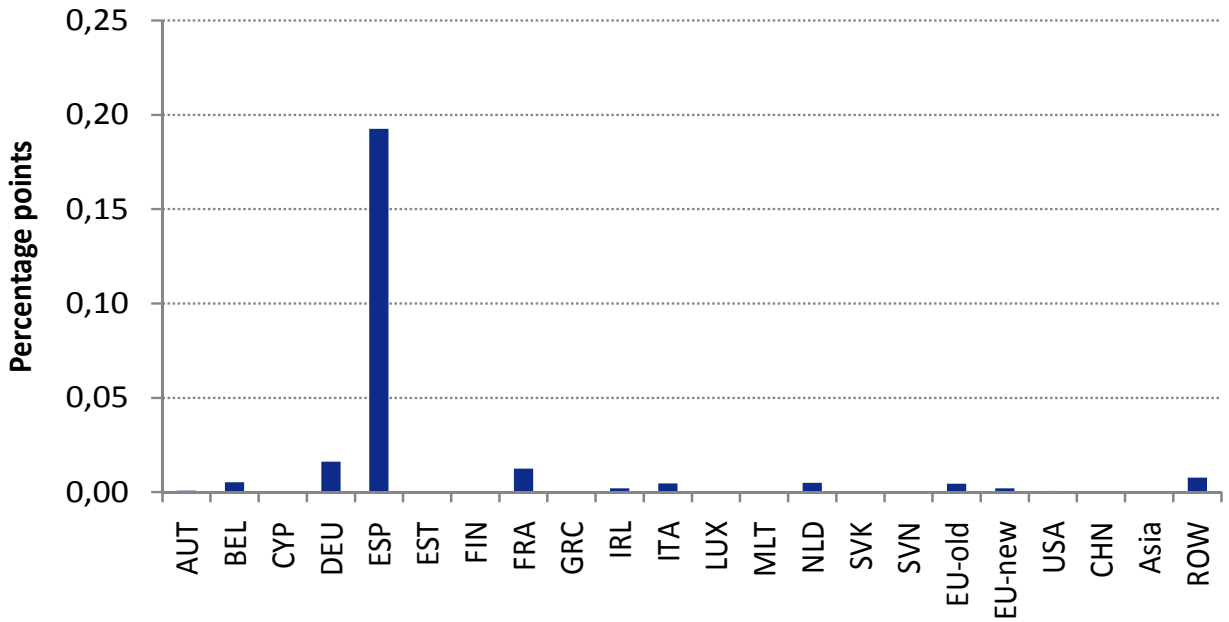
DVAiM (% of imports from country)

- Spain plays the largest role by far
- Iberian GVCs?



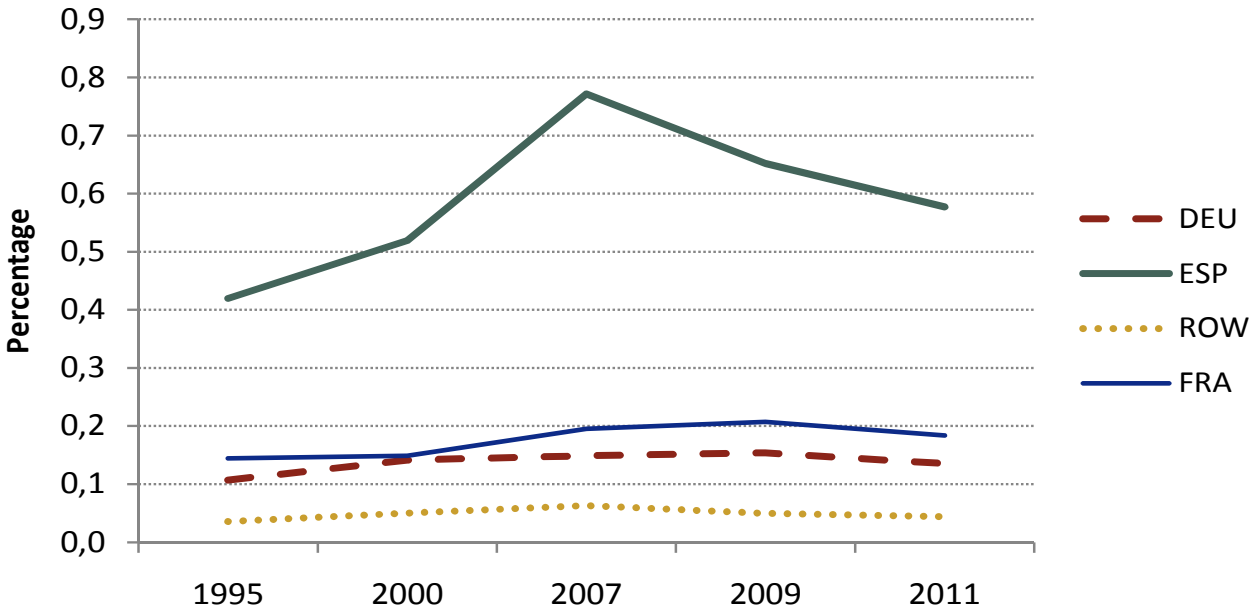
DVAiM (contribution to total)

- Even stronger in terms of contribution



DVAiM (% of imports from country)

- Though, they are not intensifying in recent years

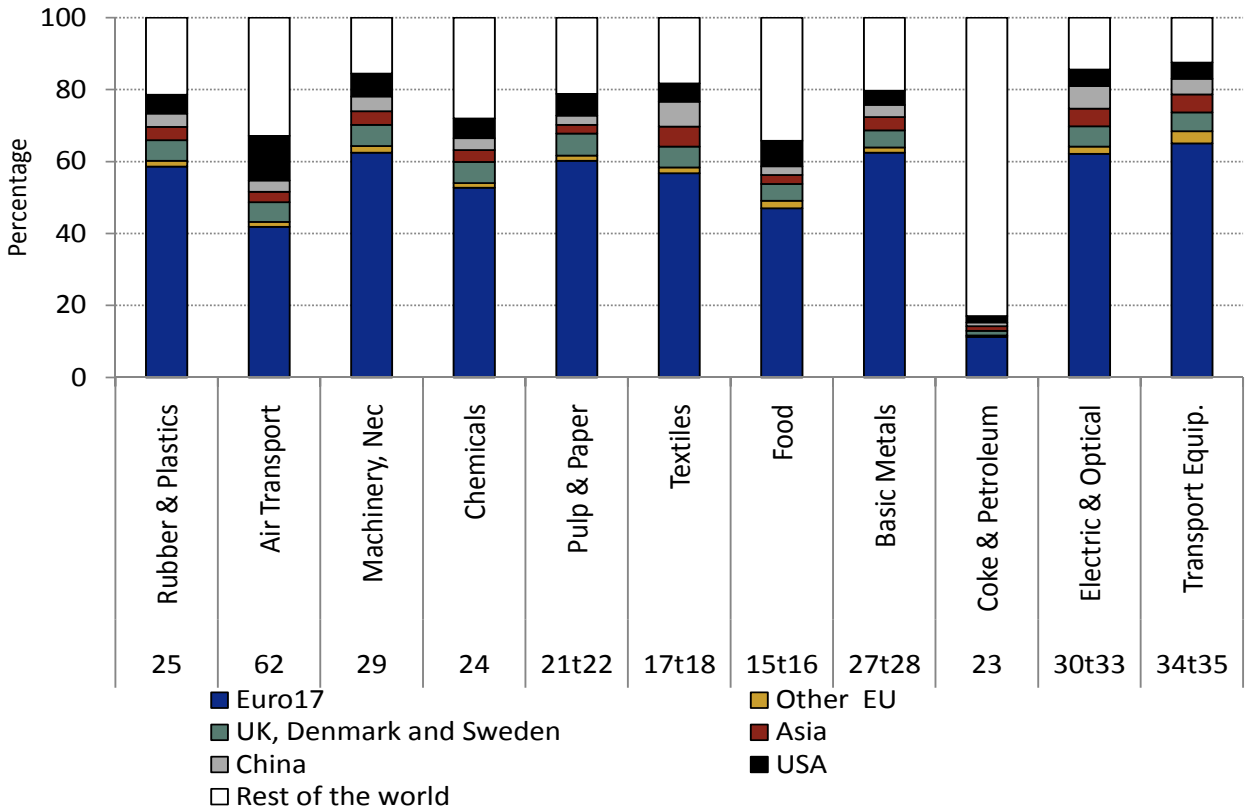


FVAiX by sector

	Sector	1995	2000	2007	2009	2011
AtB	Agriculture	10,6	14,0	17,6	16,6	17,6
C	Mining	12,3	15,5	16,4	15,2	15,5
15t16	Food	21,6	23,0	**25,5**	24,0	**25,5**
17t18	Textiles	**26,8**	**29,5**	**25,8**	22,1	22,9
19	Footwear	**28,0**	**29,5**	**28,7**	24,4	**26,8**
20	Wood	22,6	**27,0**	**25,1**	20,7	21,4
21t22	Pulp & Paper	18,9	22,5	24,6	21,9	22,6
23	Coke & Petroleum	**75,9**	**83,6**	**77,5**	**72,7**	**73,9**
24	Chemicals	**28,1**	**32,9**	**35,4**	**32,3**	**34,8**
25	Rubber & Plastics	**30,1**	**35,0**	**36,3**	**33,0**	**35,4**
26	Oth Non-Metallic Min	17,2	19,3	21,8	19,4	20,0
27t28	Basic Metals	**31,4**	**36,8**	**43,0**	**35,4**	**35,9**
29	Machinery, Nec	**31,1**	**33,5**	**35,4**	**31,8**	**33,3**
30t33	Electric & Optical	**39,3**	**42,9**	**47,2**	**40,0**	**37,3**
34t35	Transport Equip.	**43,6**	**43,2**	**46,0**	**42,2**	**42,9**
36t37	Manuf Nec	**25,7**	**30,5**	**30,4**	**26,0**	**26,9**
E	Electricity	12,8	19,5	23,1	21,0	21,2
F	Construction	18,2	20,5	21,0	18,6	19,1
50	Sale Vehicles	12,2	14,3	12,4	11,7	11,9
51	Wholesale	12,4	13,1	12,5	11,5	11,6
52	Retail & Repair	9,4	9,8	9,1	8,5	8,6
H	Hotels and Rest	14,4	14,6	13,4	12,8	13,7
60	Inland Transport	12,2	16,5	19,5	18,4	18,6
61	Water Transport	16,7	19,1	24,7	24,1	24,2
62	Air Transport	**28,3**	**26,6**	**26,8**	**27,0**	**27,2**
63	Oth Transp Act	6,2	10,6	13,1	12,8	12,9
64	Telecommunications	9,5	12,6	15,3	13,8	13,0
J	Financial Interm.	5,8	7,2	6,2	5,9	5,9
70	Real Estate	4,6	4,4	3,7	3,5	3,5
71t74	Oth Business Act	12,8	12,0	12,8	12,0	12,0
L	Public Admin	6,0	7,1	7,9	7,5	7,6
M	Education	3,5	3,7	3,3	3,1	3,2
N	Health	13,5	14,3	14,0	12,9	13,6
O	Social Services	17,1	16,3	16,1	15,2	15,4
	Total	**27,6**	**30,0**	**31,4**	**27,3**	**27,9**

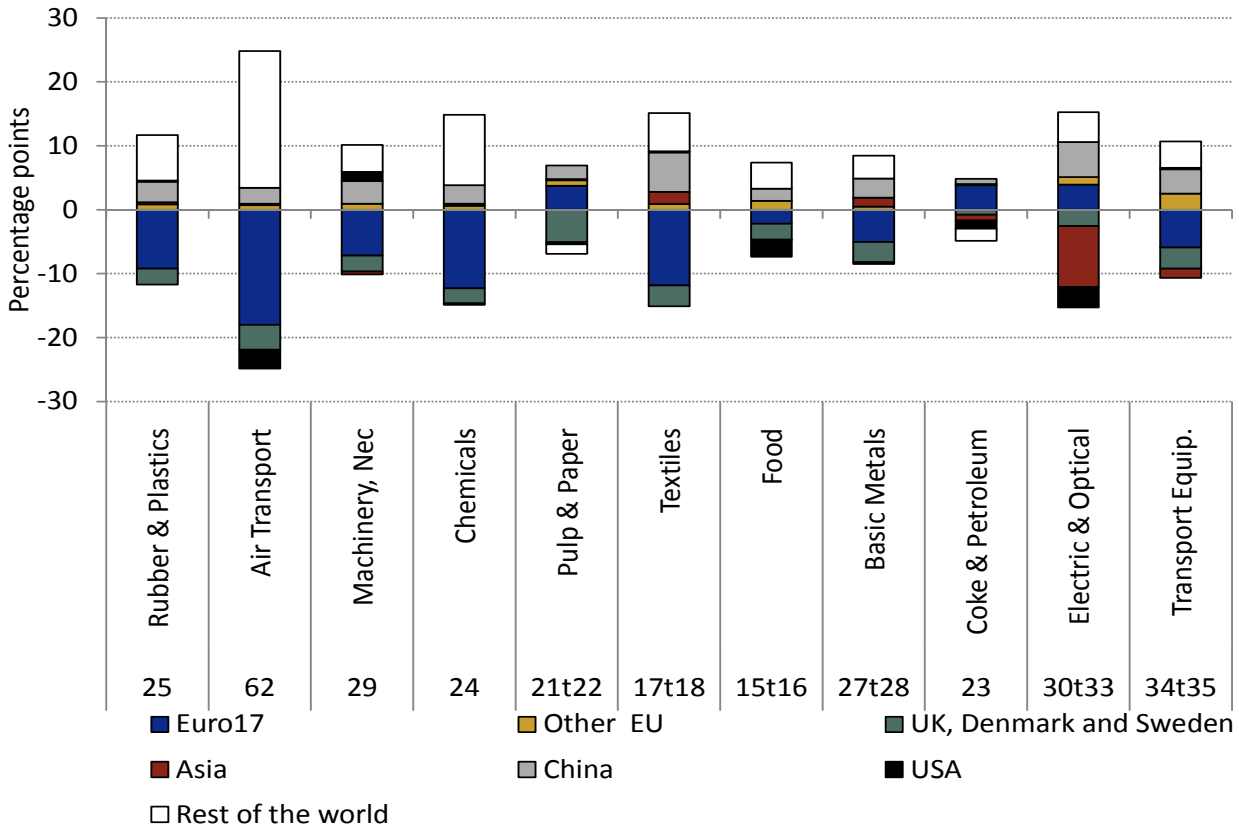
Sectoral usage of foreign value added

- 11 main sectors in terms of total FVAiX broken-down along countries of origin



Sectoral usage of foreign value added

- Now in terms of change from 1995 to 2011



- GVCs are here to stay and they are relevant
- Portugal shows limited participation
- There are challenges in terms of the positioning in the GVC
- This interlinks with (almost) all discussions about the Portuguese economy