BANCA D'ITALIA
EUROSISTEMA

Understanding the mystery of price-competitiveness indicators: A comparison across the largest economies in the euro area

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Outline

1. Why focus on competitiveness?
2. Measuring price competitiveness in Italy
3. Solving the puzzle:
   a) Within countries: PPI and ULCM developments;
   b) Between countries: the arithmetics of REERs and a numerical example
4. Links between price competitiveness and export/import performance in the four largest euro-area countries, 1993Q1-2012Q4
5. 5. Research agenda and conclusions

1. Motivation

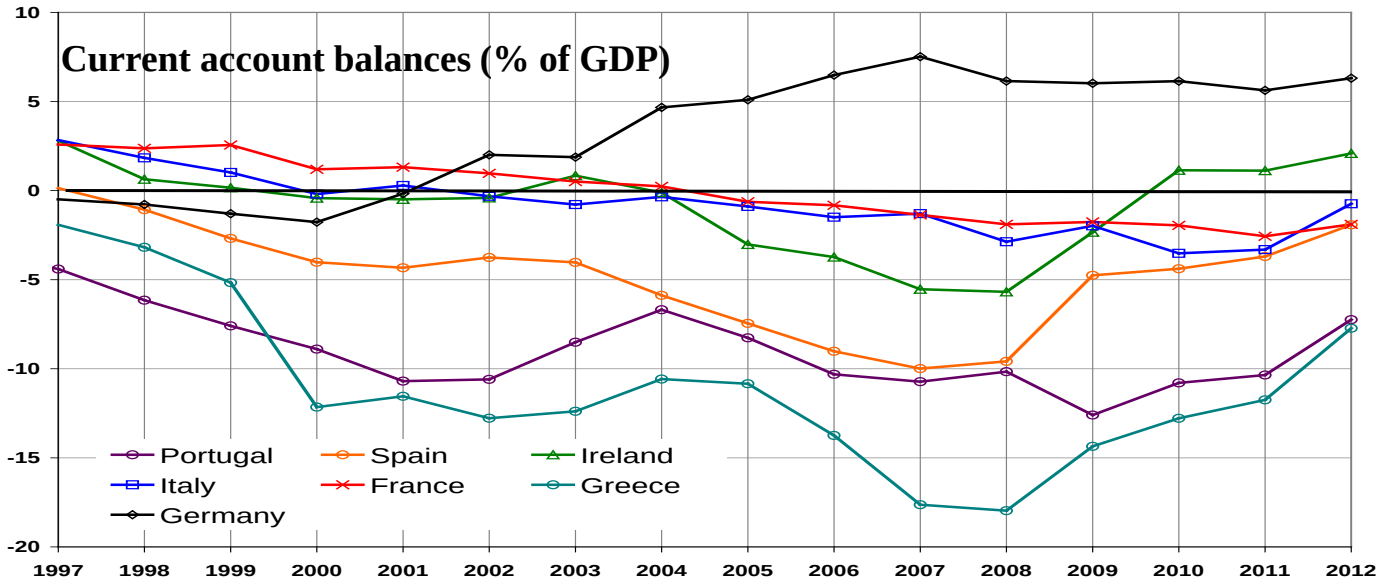
The concept of "competitiveness" has been a strong feature of the economic and policy debate in recent years. Amongst the drivers of the – often persistent – current account imbalances within the euro area, **price competitiveness** has been considered a key factor.

YET….

… **many alternative price-competitiveness indicators** are available;

….in some countries they have recorded an increasingly **significant divergence**;

…in the academic and public debate there is **no consensus on the ideal indicator** of a country's competitiveness, in terms of its ability to explain export performance.



1. Price-competitiveness indicators (1)

- The price competitiveness of a country is approximated by the **real effective exchange rate** (REER) of its currency, i.e. a weighted (geometric) average of nominal exchange rates of a country's main trading partners, deflated by relative deflators.

$$REER = \prod_{i=1}^{n} \left(\frac{P}{P_i^*} e_i\right)^{w_i}$$

- Pinning down the weighting scheme and the deflators is crucial in order to extract reliable signals of a country's price competitiveness from REERs:

- As for the **weighting scheme**, a country's pattern of trade, related also to its number of trading partners, is the most relevant variable.
- As for the **deflators**, they may be either price- or cost-based.

1. Price-competitiveness indicators (2)

The main deflators used are the following, all presenting pros and cons:

1. **Consumer prices indices (CPIs-HICPs):** available on monthly basis for large number of countries using homogeneous methodologies; inclusion of traded services; BUT focus solely on consumer goods; subject to fiscal distortions; inclusion of imports.

2. **Producer price indices (PPIs):** available on monthly basis; less subject to taxation and subsidies; refer to all categories of manufactured goods; BUT omit any information on services; inclusion of imports.

3. **GDP deflators:** refer to all sectors, goods and services; BUT available on a quarterly basis, with significant delay relative to reference period and frequent revisions; tricky measurement of services' activity; subject to composition effects between public and private sectors.

1. Price-competitiveness indicators (3)

4. **Unit labour costs in manufacturing (ULCMs)**: less subject to fiscal measures; available for most advanced economies; BUT refer solely to manufacturing; ignore components of production costs other than labour costs; affected by the substitution between capital, labour and material inputs.

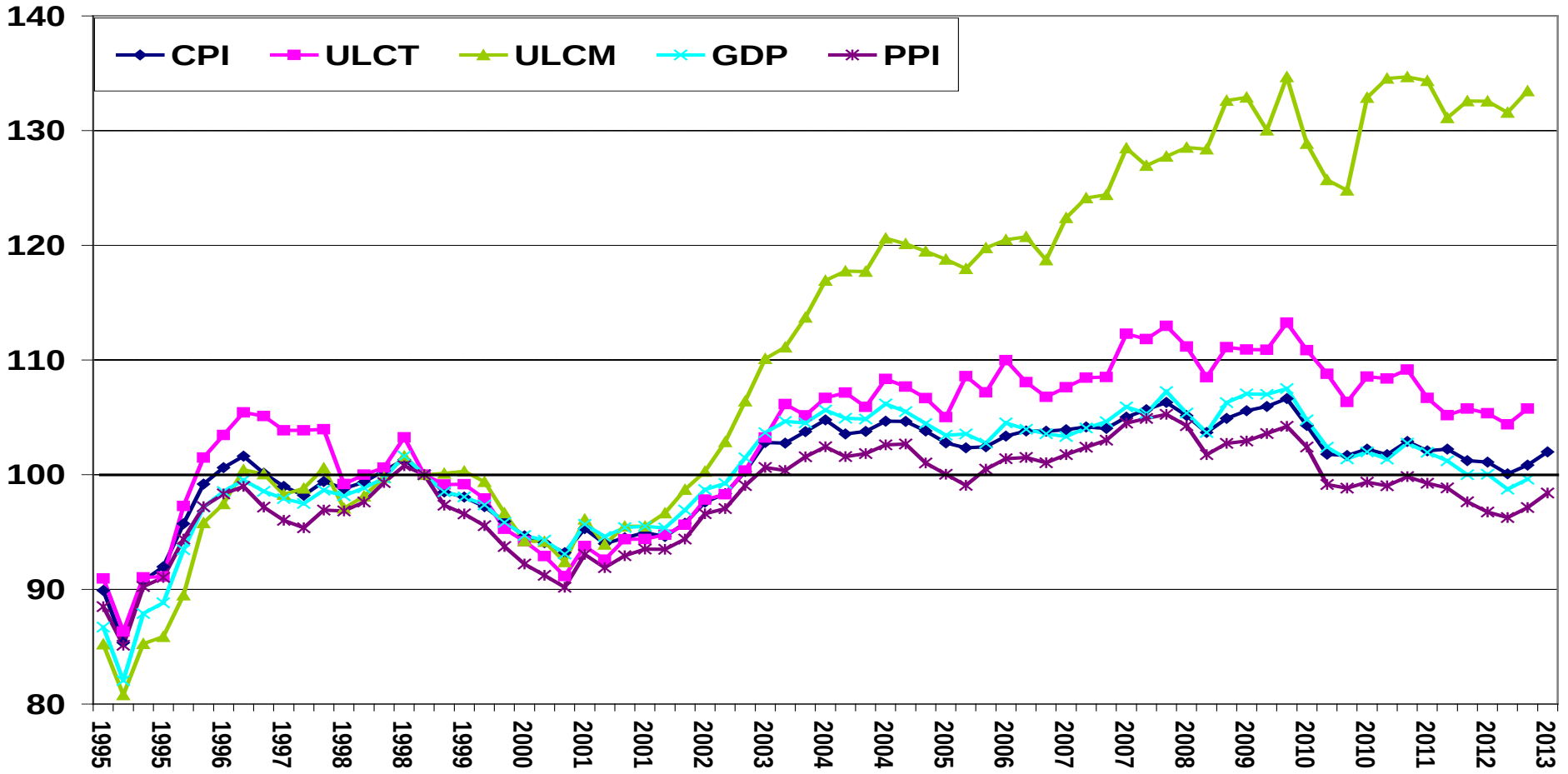
5. **Unit labour costs in total economy (ULCTs)**: refer to all sectors of the economy; BUT suffer from all other shortcomings of ULCMs; affected by tricky measurement of services' activity and by sectoral composition effects.

6. **Relative export prices** (not considered in this presentation): refer solely to traded goods; BUT often measured via export unit values and subject to composition effect; poorly comparable across countries.

2. A price competitiveness puzzle for Italy?

Italy's price competitiveness indicators

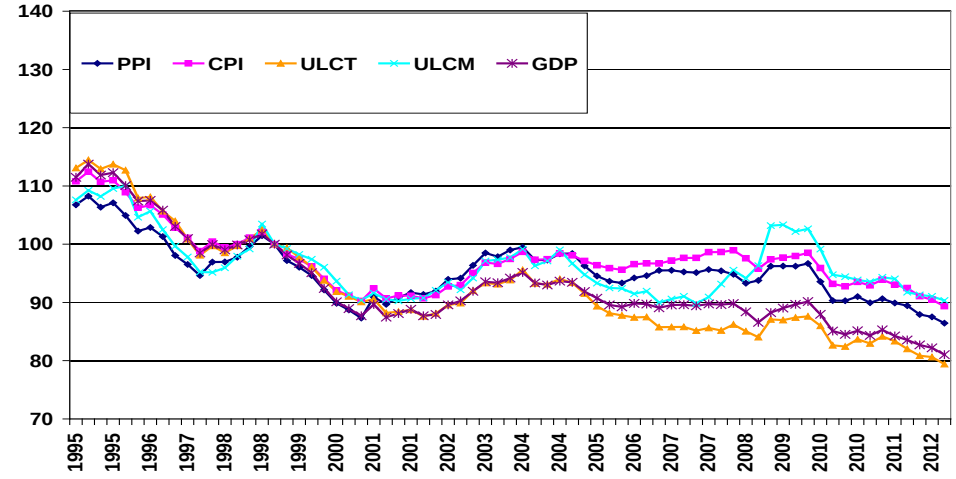
(average quarterly data; indices 1999Q1=100)



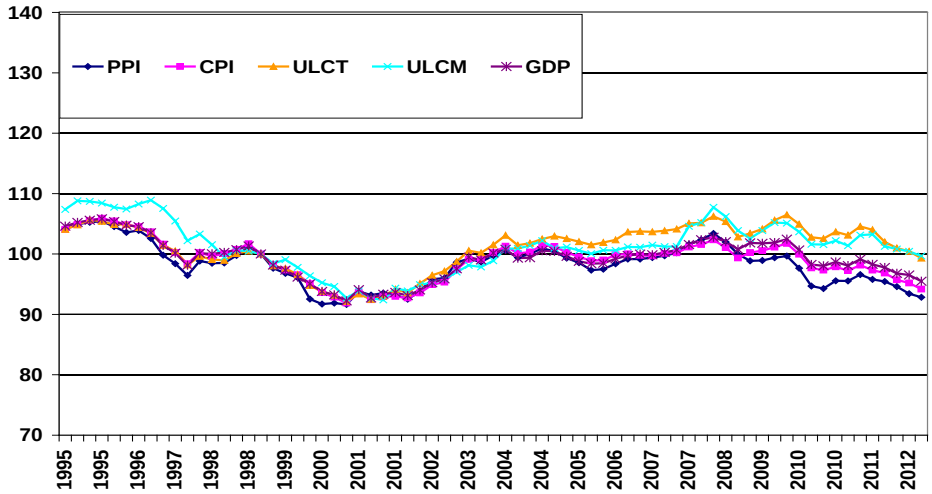
2. The indicators for the 4 largest economies in the euro area (a)

Largely conflicting signals since the late 90s, notably in Italy

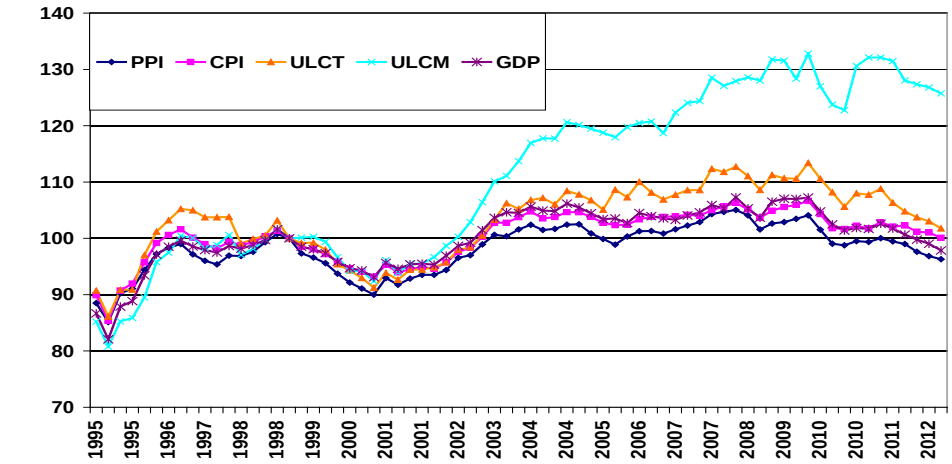
Germany



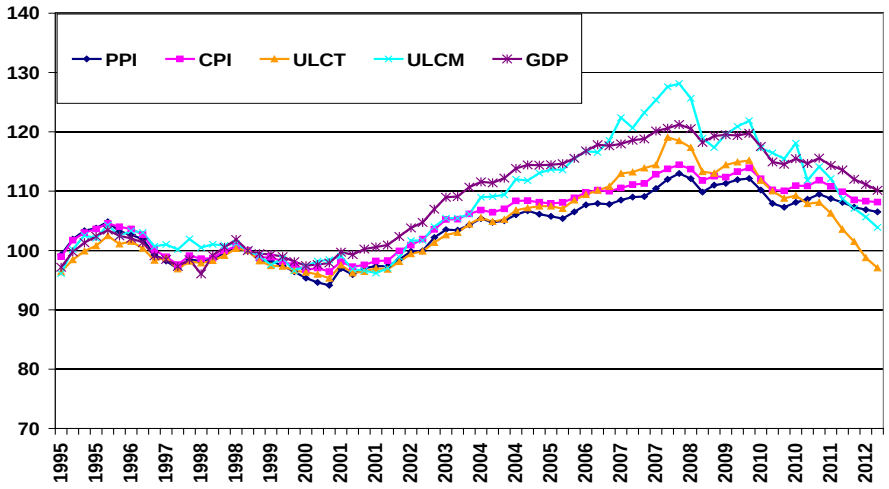
France



Italy



Spain



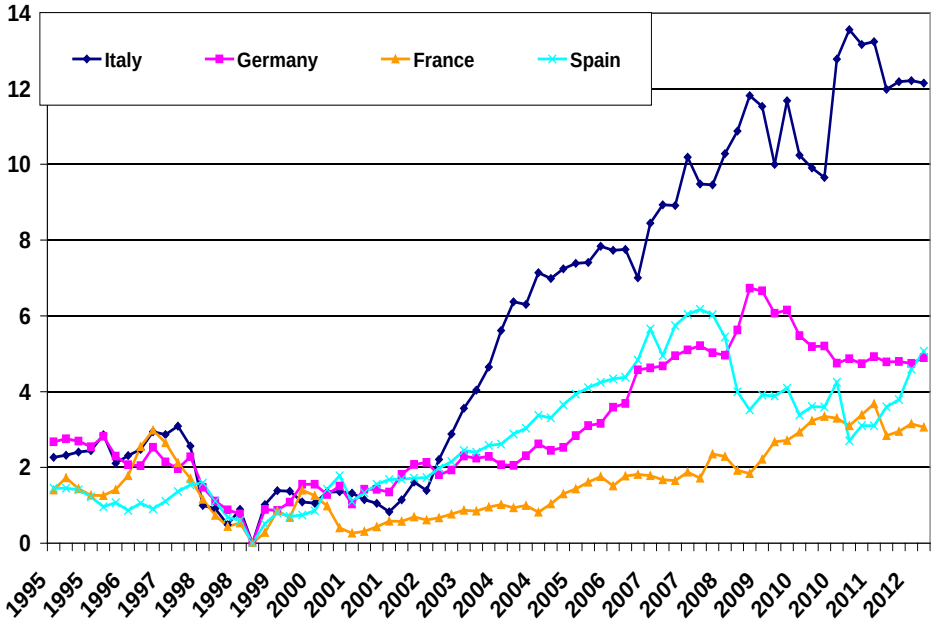
2. The indicators for the 4 largest economies in the euro area (b)

…but dispersion in Italy shrinks as ULCM-based indicator is ruled out.

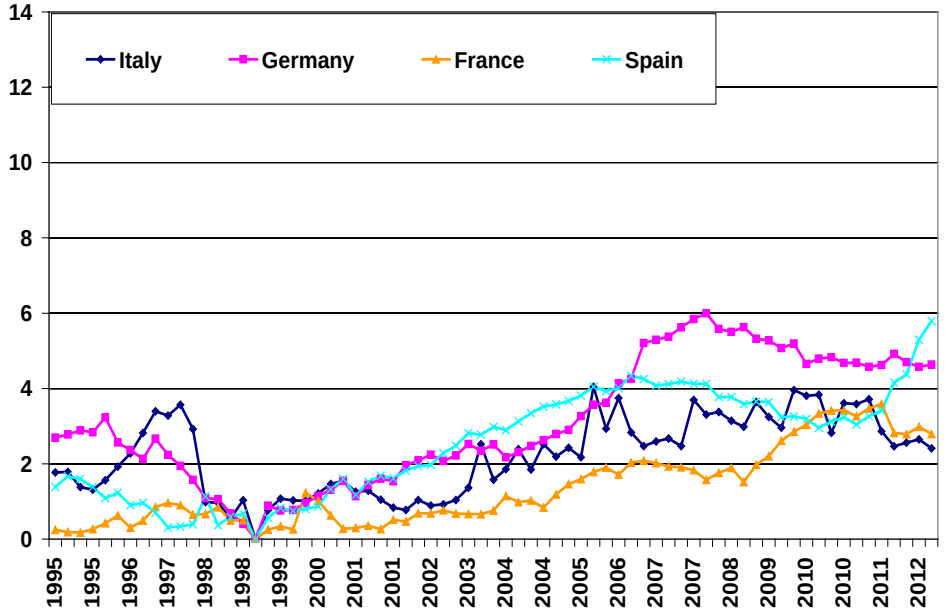
All indicators (A) and all indicators excluding the ULCM-based REER (B)

(yearly standard deviations computed across the country indicators)

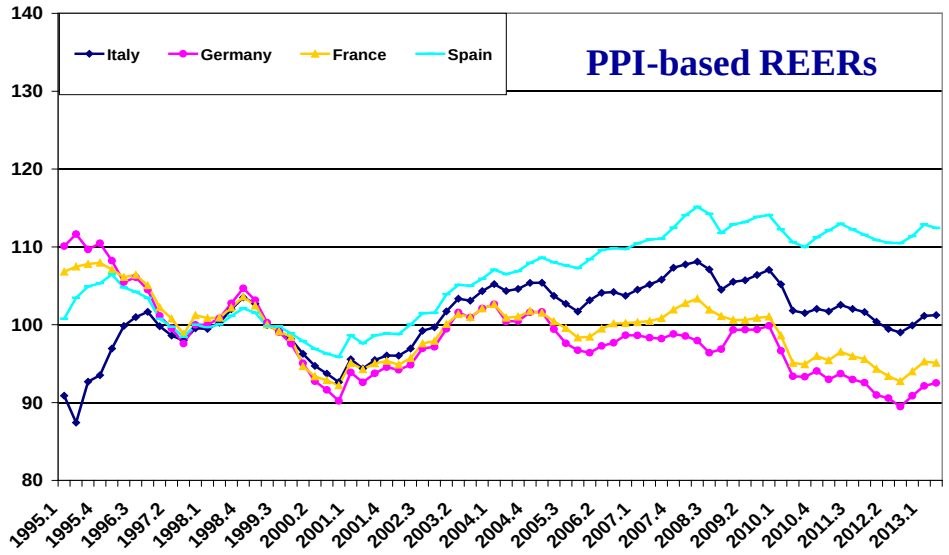
A

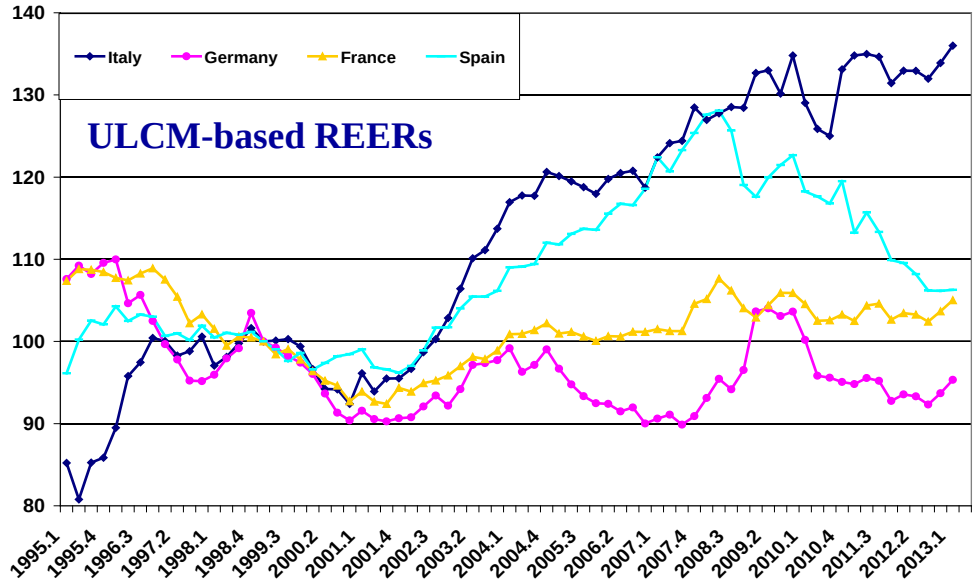


B



2. The indicators for the 4 largest economies in the euro area (c)





Policy implications from alternative indicators may be largely different:

PPI-based REERs: over the 1999-2007 period Italy lost over **6 pp** in competitiveness, which have been fully recovered since (similar losses and gains are recorded on the basis of the other price-based indicators); the gap wrt Germany currently stands at **9 p.p.**.

ULCM-based REERs: since 1999 Italy has lost **36 p.p.** in competitiveness;
the gap wrt Germany is currently of **40 p.p.**.

If the conflicting behaviour of PPI- and ULCM-based indicators is due to diverging domestic labour costs and prices, it may signal an alarming build-up of cost pressures on Italian firms; the process for Italy could be unsustainable in the long run.

3. Solving Italy's puzzle: a) *within countries*

A visual inspection of producer price and labour cost developments in the manufacturing sectors over the past two decades, however, suggests a **comovement in Italy and in Spain** (with the exception of the recent years for the latter), **but not in Germany** (since the mid-2000s) **and in France**.

3. Solving Italy's puzzle: a) *within countries*

Table 1. Cointegrating regressions
(average quarterly data; natural logarithm of indices 2005Q1=100)

Dependent variable: PPI *Sample: 1994Q1-2012Q3*					
A. Italy			**C. Spain****		
FMOLS estimation	Coefficient	P-value	*FMOLS estimation*	Coefficient	P-value
ULCM	1.65	0.000	ULCM	1.08	0.000
*ADF test on residuals**	P-value		*ADF test on residuals**	P-value	
ADF test statistic	0.019		ADF test statistic	0.837	
B. Germany			**D. France**		
FMOLS estimation	Coefficient	P-value	*FMOLS estimation*	Coefficient	P-value
ULCM	0.64	0.248	ULCM	-0.69	0.119
*ADF test on residuals**	P-value		*ADF test on residuals**	P-value	
ADF test statistic	0.682		ADF test statistic	0.118	

* Null hypothesis: the residuals have a unit root.
** The sample period for Spain is 2000Q1-2012Q3 due to data availability.

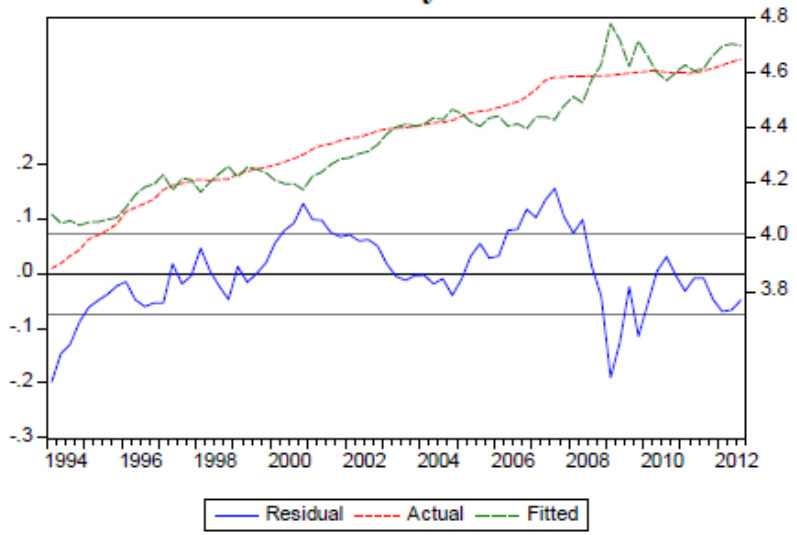
A formal cointegration analysis confirms the lack of significant misalignment between unit labour costs and producer prices in **Italy**'s manufacturing in the long-run, thus dismissing the haunt of non-viable restraints on profit margins due to excessive labour costs.

Conversely, a long-run comovement between the two series is rejected in **Germany** and **France**.

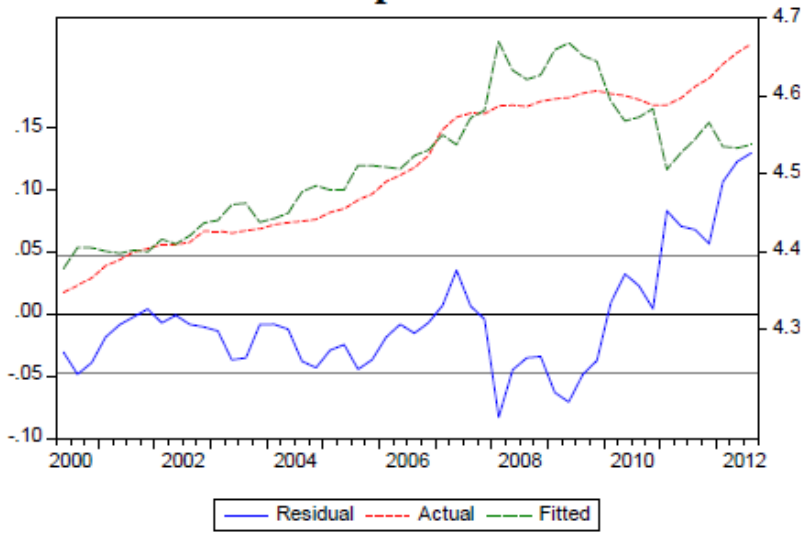
3. Solving Italy's puzzle: a) *within* countries

FMOLS regression of producer prices on unit labour costs;

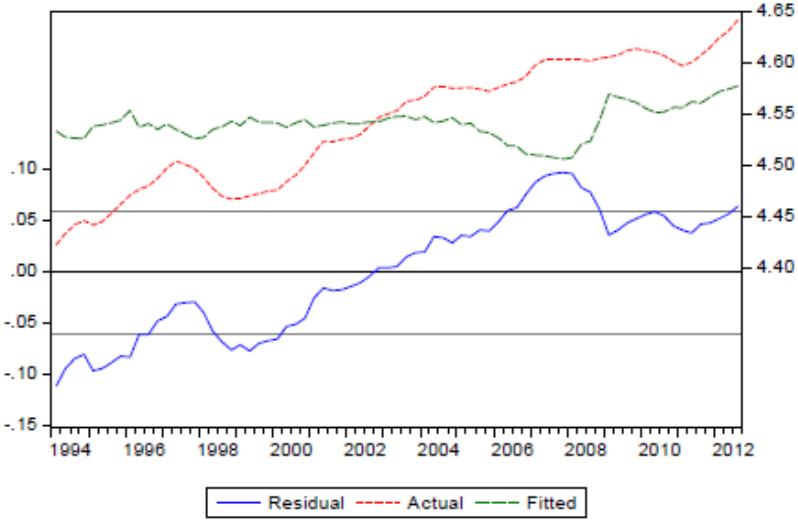
Italy



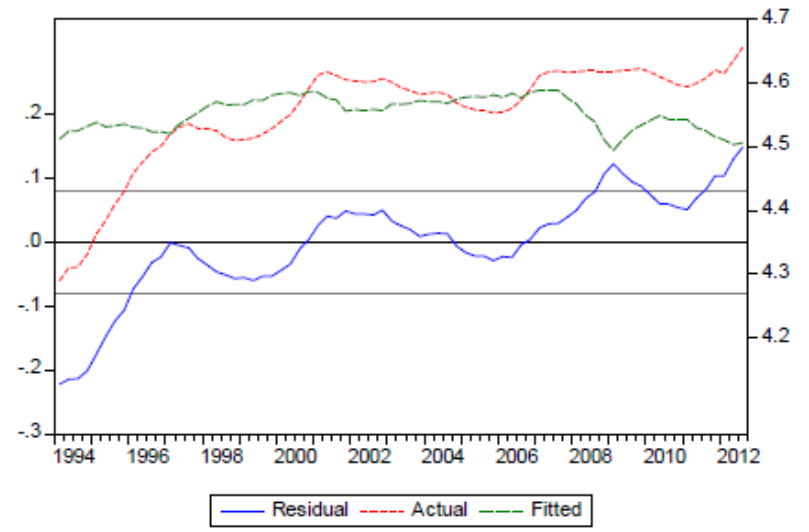
Spain



Germany



France



3. Solving Italy's puzzle: a) *within* countries

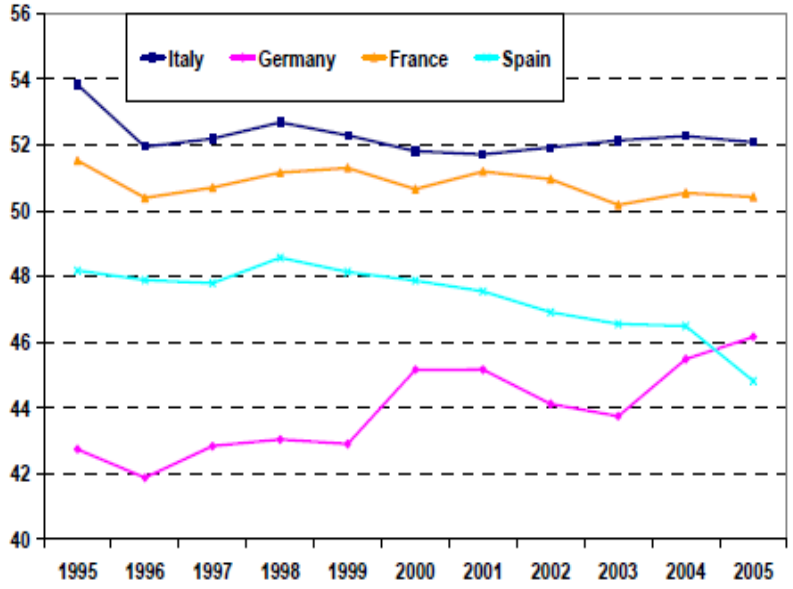
Explaining the diverging producer price-labour cost developments in Italy's main trading partners goes beyond the scope of this presentation.

Yet **less pronounced offshoring in Italian manufacturing**, and therefore less sizeable changes in the shares of wages and intermediate inputs on gross output relative to other advanced economies, could be a possible explanation of the broad stability of the long-run price-cost relationship in Italy.

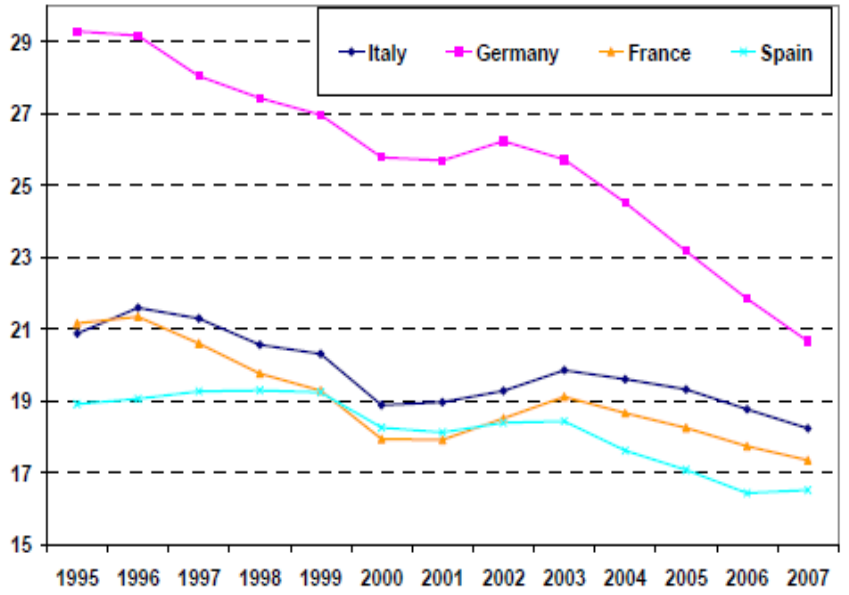
Figure 5. Structural changes in the manufacturing sector

(current prices)

Shares of material intermediate inputs in gross output



Wage shares (labour compensation on gross output)



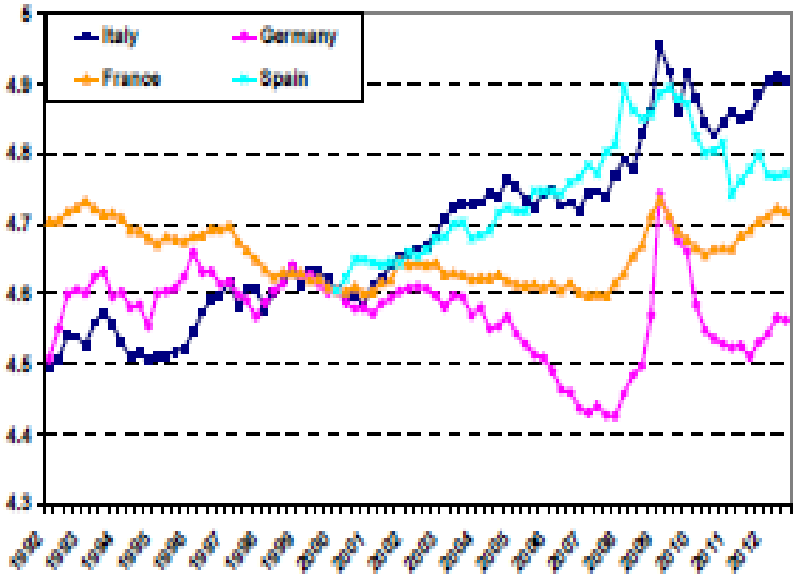
3. Searching for drivers: b) *between* countries

But if a sound long-run relationship between PPIs and ULCMs shows up only for Italy, whereas a long-run comovement is rejected for Germany and France…

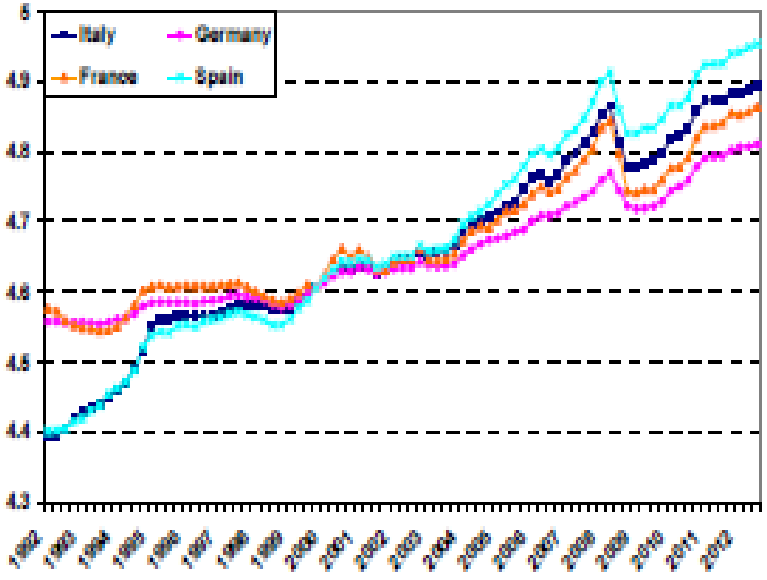
….why is the divergence between ULCM- and PPI-based indicators larger in Italy?

The answer can be obtained by examining the **arithmetics of REERs**.

ULCMs



PPIs



3. Searching for drivers: b) *between* countries

A simple **simulation** of the developments of artificial price-competitiveness indicators may shed light on actual trends.

Let us suppose there exist **three trading partners**: A, B and RoW, under the following assumptions:

(i) Nominal exchange rates are fixed;

(ii) *Weights:* B is a major trading partner of A, whereas the relevance of A for B is much smaller (as is the case of Italy and Germany, respectively);

(iii) *Within-country trends*: Trends in PPIs and ULCMs are broadly similar in country A, whereas the dynamics of ULCMs are more contained than those of PPIs in countries B and RoW;

(iv) *Between-country trends*: Trends in ULCMs are lower in countries B and RoW than in A; developments in PPIs are similar across the three countries (as seen in the previous slide).

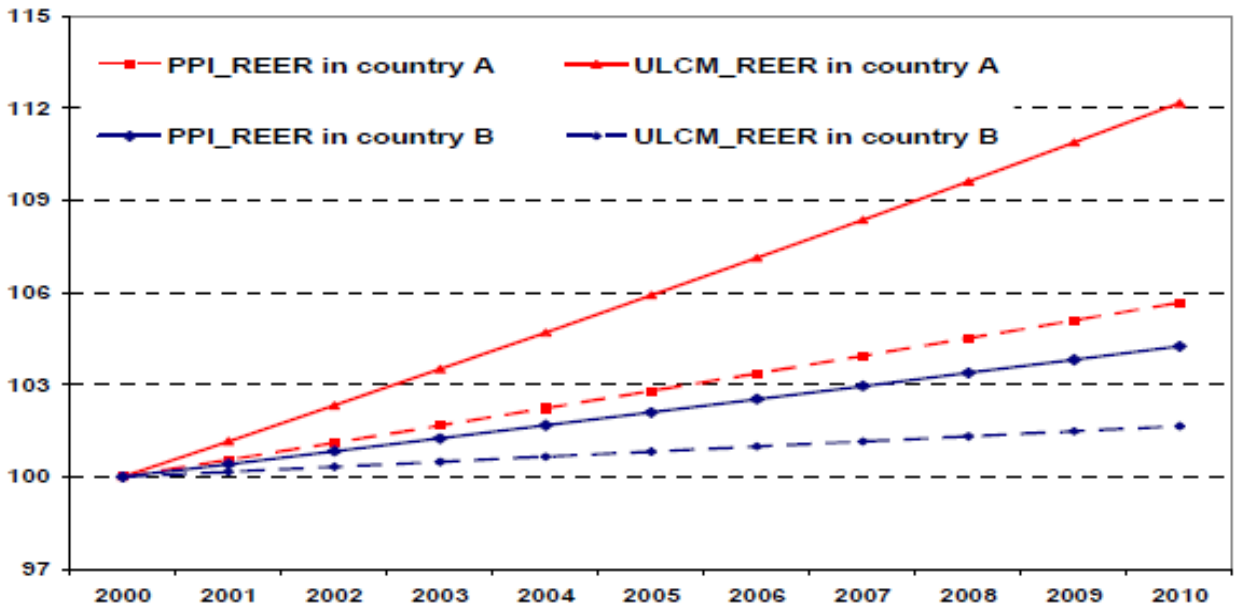
3. Searching for drivers: b) *between* countries

By rescaling the weights actually used by the BoI in its computation of PPI-based REERS, it turns out that:
-country A faces 2 partners (B and RoW) that benefit from lower ULCM relative to PPI growth;
- country B faces only 1 partner (RoW) with slower ULCMS than PPIs, as well as directly gaining from its domestically lower ULCM dynamics than PPIs.

It follows that the discrepancy in the PPI-based REERs of the two countries would be limited, and that the **ULCM-based REER would signal a larger loss of competitiveness in country A**.

Figure 4. PPI- and ULCM-based indicators in an artificial world

(average yearly data; indices 2000=100)



Assumed average growth rates:

PPI_A=2.1%; PPI_B=2.0%; PPI_RoW=2.0%;

ULC_A=2.1%;
ULC_B=1.5%;
ULC_RoW=1.5%.

Weights for A: 18% B, 72% RoW.

Weights for B: 7% A, 93% RoW.

4. Explaining trade performance: do price-competitiveness indicators play a role?

- Preliminary results for the four largest euro-area countries (**Italy; Germany; France; Spain**).
- The standard formulation for the export and import equations is based on the partial equilibrium model of international trade presented in Goldstein and Khan (1985), where:

$$X = f(REER; FD)$$

$$M = g(X; REER; DD)$$

- This reduced-form model has been estimated empirically in many policy papers, such as Allard et al. (2005), Bussière et al. (2013), Ca' Zorzi and Schnatz (2007), Di Mauro and Forster (2008), European Commission (2010) and Christodoulopoulu and Tkacevs (2013, in progress).

4. Empirical results: the data

- We use quarterly national account data (Istat, Eurostat) of the volume of **exports and imports of goods** (the latter net of energy products, only for Italy so far) over the period **1993Q1-2012Q4**.
- We alternately use our five **price-competitiveness indicators** of ECB and Bank of Italy sources.
- **Potential demand of goods** is computed as the weighted average of real imports of Italy's 75 trading partners, where the (rolling) weights represent Italy's export shares in the previous 3-year period (BI elaborations on IMF-WEO, Istat and CPB Netherlands); for Germany, France and Spain world demand is of ECB source.
- **Domestic demand** is taken from national accounts data (Istat, Eurostat).

- Since our data are I(1), **first (log) differences** are taken. Single-country regressions are run via OLS both separately and as systems of 2 equations (results very similar; the second set of results are here shown).

4. Empirical results: the baseline export equation

A. ITALY

	Constant	Potential demand	REER	*N. observations*	*Adjusted R^2*
1. PPI	-0.0045	1.0159	-0.4828		
	(0.0407)	(0.0000)	(0.0000)	79	0.6859
2. CPI	-0.0044	1.0051	-0.5166		
	(0.0426)	(0.0000)	(0.0000)	80	0.6908
3. GDPDEFL	-0.0039	0.9834	-0.4742		
	(0.0701)	(0.0000)	(0.0000)	79	0.6968
4. ULCM	-0.0053	1.0097	-0.2572		
	(0.0223)	(0.0000)	(0.0026)	72	0.6917
5. ULCT	-0.0065	1.0290	-0.2940		
	(0.0032)	(0.0000)	(0.0011)	72	0.6979

B. GERMANY

	Constant	Potential demand	REER	*N. observations*	*Adjusted R^2*
1. PPI	-0.0010	1.1465	-0.2100		
	(0.6772)	(0.0000)	(0.0980)	79	0.6601
2. CPI	-0.0017	1.1772	-0.2940		
	(0.4529)	(0.0000)	(0.0439)	80	0.6678
3. GDPDEFL	-0.0016	1.1635	-0.2550		
	(0.4938)	(0.0000)	(0.0652)	79	0.6630
4. ULCM	0.0010	1.0540	-0.3545		
	(0.6244)	(0.0000)	(0.0005)	72	0.7377
5. ULCT	-0.0009	1.1545	-0.3060		
	(0.67381)	(0.0000)	(0.0161)	72	0.7142

C. FRANCE

	Constant	Potential demand	REER	*N. observations*	*Adjusted R^2*
1. PPI	-0.0037	1.0146	-0.1140		
	(0.0772)	(0.0000)	(0.3745)	79	0.6166
2. CPI	-0.0034	1.0080	-0.1929		
	(0.0954)	(0.0000)	(0.2215)	81	0.6154
3. GDPDEFL	-0.0037	1.0086	-0.1772		
	(0.0791)	(0.0000)	(0.2773)	79	0.6192
4. ULCM	-0.0033	0.9774	-0.3352		
	(0.0876)	(0.0000)	(0.0120)	72	0.6534
5. ULCT	-0.0030	0.9537	-0.3978		
	(0.1163)	(0.0000)	(0.0090)	72	0.6559

D. SPAIN

	Constant	Potential demand	REER	*N. observations*	*Adjusted R^2*
1. PPI	0.0011	1.1083	0.0754		
	(0.7735)	(0.0000)	(0.7942)	71	0.3654
2. CPI	0.0013	1.1239	-0.0746		
	(0.7363)	(0.0000)	(0.8199)	73	0.3564
3. GDPDEFL	0.0009	1.1104	0.1145		
	(0.7999)	(0.0000)	(0.6742)	71	0.3668
4. ULCM	0.0013	1.1013	0.1066		
	(0.7269)	(0.0000)	(0.4832)	73	0.3605
5. ULCT	0.0010	1.1407	-0.1473		
	(0.7886)	(0.0000)	(0.5071)	73	0.3600

In the export equations of all countries bar Spain, the three drivers are significant (satisfactory R-squared) and show the signs predicted by the theory.

Potential demand affects exports positively, with coefficients not significantly different from unity (stable export market shares).

Each **price-competitiveness indicator** enters the export equations, significantly and negatively (with the exception of Spain and France, partially), but with a varying coefficient.

Noticeably, in **Italy** the magnitude of the coefficients of the cost-based measures is significantly smaller (according to *Wald tests*) than that of the price-based ones. *Pair-wise encompassing tests* "step out" the ULCM- and ULCT-based measures.

In **Germany** the difference proves not significant, but price-based indicators are "stepped out". In **France** solely cost-based measures are significant. In Spain exports are insensitive to price competitiveness, however measured.

4. Empirical results: the baseline import equation

A. ITALY

	Constant	Exports	REER	Domestic demand	*N. observations*	*Adjusted R^2*
1. PPI	0.0015	0.3836	-0.4417	2.6872		
	(0.5443)	(0.0001)	(0.0034)	(0.0000)	79	0.6885
2. CPI	0.0019	0.3919	-0.3872	2.6196		
	(0.4511)	(0.0001)	(0.0142)	(0.0000)	80	0.6743
3. GDPDEFL	0.0015	0.4095	-0.2764	2.6036		
	(0.5703)	(0.0001)	(0.0565)	(0.0000)	79	0.6680
4. ULCM	0.0023	0.4905	-0.1339	2.2932		
	(0.4232)	(0.0000)	(0.2721)	(0.0000)	72	0.6332
5. ULCT	0.0018	0.4940	-0.1557	2.2869		
	(0.5159)	(0.0000)	(0.2281)	(0.0000)	72	0.6346

B. GERMANY

	Constant	Exports	REER	Domestic demand	*N. observations*	*Adjusted R^2*
1. PPI	0.0037	0.4421	-0.1750	1.4774		
	(0.0584)	(0.0000)	(0.1389)	(0.0000)	79	0.6337
2. CPI	0.0031	0.4650	-0.1996	1.4925		
	(0.1168)	(0.0000)	(0.1491)	(0.0000)	80	0.6366
3. GDPDEFL	0.0033	0.4500	-0.1937	1.4829		
	(0.0890)	(0.0000)	(0.1350)	(0.0000)	79	0.6340
4. ULCM	0.0033	0.4827	-0.0154	1.5090		
	(0.1332)	(0.0000)	(0.8971)	(0.0000)	72	0.6196
5. ULCT	0.0033	0.4991	0.0452	1.5280		
	(0.1255)	(0.0000)	(0.7428)	(0.0000)	72	0.6201

C. FRANCE

	Constant	Exports	REER	Domestic demand	*N. observations*	*Adjusted R^2*
1. PPI	-0.0027	0.4636	-0.1775	2.2717		
	(0.0117)	(0.0000)	(0.0080)	(0.0000)	79	0.8837
2. CPI	-0.0025	0.4648	-0.1774	2.2602		
	(0.0164)	(0.0000)	(0.0326)	(0.0000)	80	0.8799
3. GDPDEFL	-0.0026	0.4677	-0.1542	2.2589		
	(0.0171)	(0.0000)	(0.0761)	(0.0000)	79	0.8777
4. ULCM	-0.0021	0.4232	-0.1395	2.2527		
	(0.0462)	(0.0000)	(0.0586)	(0.0000)	72	0.8845
5. ULCT	-0.0022	0.4027	-0.2254	2.3034		
	(0.0357)	(0.0000)	(0.0067)	(0.0000)	72	0.8905

D. SPAIN

	Constant	Exports	REER	Domestic demand	*N. observations*	*Adjusted R^2*
1. PPI	-0.0092	0.7273	-0.0651	2.0721		
	(0.0001)	(0.0000)	(0.7181)	(0.0000)	71	0.8393
2. CPI	-0.0087	0.7439	-0.0467	2.0263		
	(0.0001)	(0.0000)	(0.8177)	(0.0000)	73	0.8396
3. GDPDEFL	-0.0093	0.7278	-0.0359	2.0768		
	(0.0000)	(0.0000)	(0.8391)	(0.0000)	71	0.8391
4. ULCM	-0.0090	0.7539	-0.0884	2.0529		
	(0.0001)	(0.0000)	(0.3485)	(0.0000)	73	0.8415
5. ULCT	-0.0089	0.7425	-0.0925	2.0604		
	(0.0001)	(0.0000)	(0.5188)	(0.0000)	73	0.8405

Given the high import content of exports, **import growth** reacts positively to contemporaneous export growth in all four countries (elasticity of 0.4-0.5%; 0.7% for Spain) .

Domestic demand also plays a key role in activating imports, particularly in Italy, France and Spain (where elasticities are greater than 2.0%, relative to 1.5% circa in Germany).

Italian imports do not react to cost-based **competitiveness indicators** (as found in Allard et al. 2005), but they respond negatively, and to a varying degree, to price-based ones. In Germany and Spain imports are insensitive to REERs, whereas in France they are negatively correlated to both price- and cost-based indicators. The negative link, also found in the existing empirical literature, will be object of future research.

CA in Italy

4. Adding some dynamics to the export equations

A. ITALY

	Constant	Potential demand	REER	REER(-4)	*N. observations*	*Adjusted R^2*
1. PPI	-0.0055	1.0255	-0.5215	-0.2491		
	(0.0109)	(0.0000)	(0.0000)	(0.0197)	75	0.7204
2. CPI	-0.0054	1.0169	-0.5694	-0.2775		
	(0.0102)	(0.0000)	(0.0000)	(0.0113)	76	0.7284
3. GDPDEFL	-0.0049	0.9972	-0.5101	-0.2430		
	(0.0172)	(0.0000)	(0.0000)	(0.0172)	75	0.7320
4. ULCM	-0.0044	1.0342	-0.2384	-0.1761		
	(0.0550)	(0.0000)	(0.0087)	(0.0318)	68	0.7158
5. ULCT	-0.0062	1.0202	-0.3089	-0.0706		
	(0.0045)	(0.0000)	(0.0034)	(0.4182)	68	0.7081

B. GERMANY

	Constant	Potential demand	REER	REER(-4)	*N. observations*	*Adjusted R^2*
1. PPI	-0.0003	1.1320	-0.2552	-0.0775		
	(0.8890)	(0.0000)	(0.0506)	(0.5286)	75	0.6656
2. CPI	-0.0010	1.1675	-0.3249	-0.0315		
	(0.6502)	(0.0000)	(0.0296)	(0.8319)	76	0.6710
3. GDPDEFL	-0.0010	1.1574	-0.2601	-0.0315		
	(0.6750)	(0.0000)	(0.0647)	(0.8197)	75	0.6632
4. ULCM	0.0014	1.0417	-0.3698	-0.0203		
	(0.5341)	(0.0000)	(0.0006)	(0.8223)	68	0.7388
5. ULCT	-0.0002	1.1530	-0.3169	0.0804		
	(0.9355)	(0.0000)	(0.0176)	(0.5196)	68	0.7174

C. FRANCE

	Constant	Potential demand	REER	REER(-4)	*N. observations*	*Adjusted R^2*
1. PPI	-0.0031	0.9894	-0.1628	-0.1530		
	(0.1253)	(0.0000)	(0.2139)	(0.2279)	75	0.6411
2. CPI	-0.0029	0.9913	-0.2248	-0.1410		
	(0.1468)	(0.0000)	(0.1674)	(0.3581)	77	0.6369
3. GDPDEFL	-0.0031	0.9810	-0.2398	-0.1841		
	(0.1319)	(0.0000)	(0.1591)	(0.2455)	75	0.6434
4. ULCM	-0.0029	0.9604	-0.3530	-0.0749		
	(0.1429)	(0.0000)	(0.0098)	(0.5883)	68	0.6570
5. ULCT	-0.0028	0.9451	-0.4028	-0.1570		
	(0.1591)	(0.0000)	(0.0099)	(0.3087)	68	0.6592

D. SPAIN

	Constant	Potential demand	REER	REER(-4)	*N. observations*	*Adjusted R^2*
1. PPI	-0.0003	1.1585	0.0434	-0.0707		
	(0.6631)	(0.0000)	(0.8760)	(0.8119)	67	0.4129
2. CPI	-0.0008	1.1768	-0.0273	-0.2893		
	(0.8261)	(0.0000)	(0.9288)	(0.3796)	69	0.4147
3. GDPDEFL	0.0012	1.1078	0.1244	-0.1120		
	(0.7520)	(0.0000)	(0.6512)	(0.6771)	71	0.3589
4. ULCM	0.0013	1.1034	0.1580	-0.0422		
	(0.7479)	(0.0000)	(0.3340)	(0.7939)	69	0.3762
5. ULCT	0.0005	1.1569	-0.1417	-0.0591		
	(0.8898)	(0.0000)	(0.5453)	(0.8145)	69	0.3716

Including lags of price-competitiveness indicators in the export equation confirms the previous findings.

The long-run effect of price-based competitiveness indicators on export growth in **Italy** is larger than that of the cost-based ones.

In Germany, France and Spain lagged indicators are not significant, suggesting that short and long-run elasticities roughly coincide.

Lagged competitiveness measures are not significant across countries in the **import equation.**

Sensitivity analysis

5. Further extensions (in progress)

A. Better account for participation in global value chains:

•**Extend the time-span** considered, at least for Italy, **in order to verify the possible occurrence of structural breaks** in the estimated coefficients (in particular in that of price-competitiveness indicators in the import equation), owing to a different positioning over time of the country in global value chains;

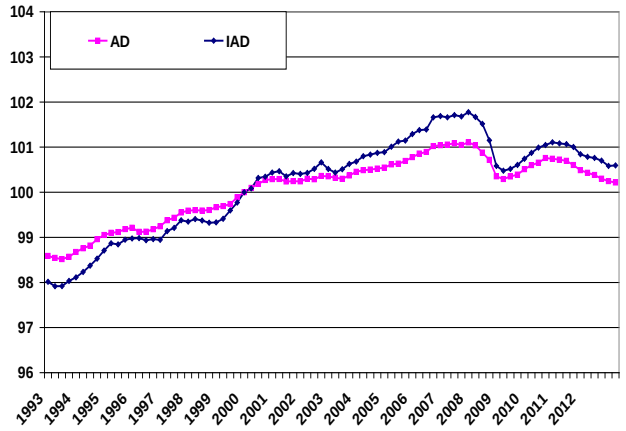
•Substitute exports and domestic demand in the baseline import equation with a **measure of import-intensity adjusted demand** (i.e a weighted average of total investment, exports, private consumption and government expenditure), as in Bussière et al (2013). => See next slides.

B. Better quantify the role of domestic demand:

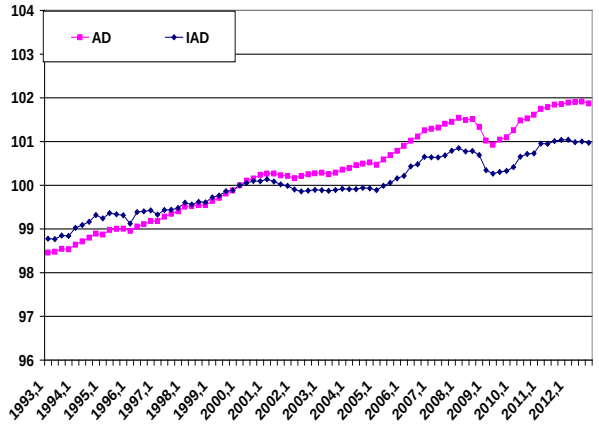
• Better investigate **the direct and indirect** (via the price-competitiveness channel) **role of domestic demand** in explaining export and import performance.

5. The import-adjusted demand

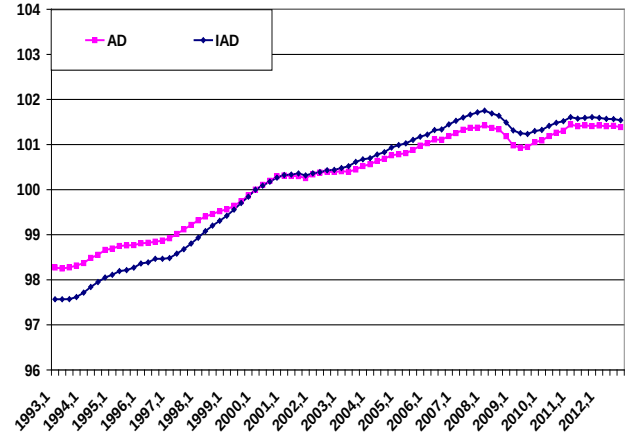
Italy



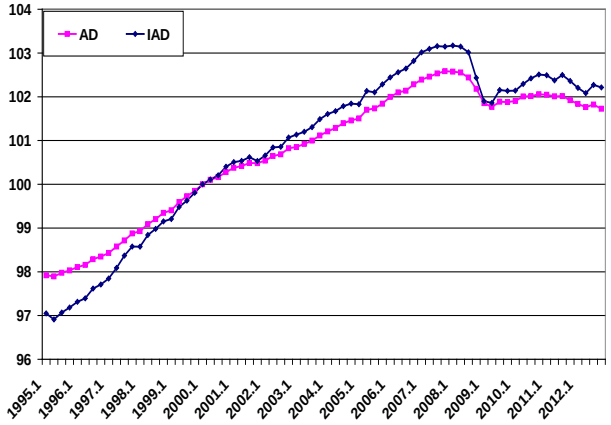
Germany



France



Spain



We construct a measure of **import-intensity adjusted demand** (IAD):

$$IAD_t = C_t^{\omega_{C,t}} G_t^{\omega_{G,t}} I_t^{\omega_{I,t}} X_t^{\omega_{X,t}}$$

i.e. a weighted average of total investment (I), exports (X), private consumption (C) and government expenditure (G), where the weights are the import contents of the final demand components.

Demand component data are taken from Istat and Eurostat; the import contents are computed on the basis of the OECD Input-Output Database, as in Bussière et al. (2013). Since I-O tables are available only every five years, we linearly interpolated the weights to obtain quarterly series. For the period after 2005, we assumed the same weights as in 2005.

5. The adjusted import equation

Imports of goods, 1993Q2-2012Q4, log-differences

A. ITALY

	Constant	Import-Adjusted Exports	REER	Import-Adjusted Domestic demand	*N. observations*	*Adjusted R^2*
1. PPI	0.0028	1.6352	-0.3192	1.6722		
	(0.4766)	(0.0000)	(0.0951)	(0.0004)	79	0.4239
2. CPI	0.0031	1.6221	-0.2814	1.6197		
	(0.4299)	(0.0000)	(0.1565)	(0.0001)	80	0.4134
3. GDPDEFL	0.0027	1.6518	-0.2011	1.6561		
	(0.4965)	(0.0000)	(0.2648)	(0.0005)	79	0.4120
4. ULCM	0.0026	1.7185	-0.1841	1.3217		
	(0.5444)	(0.0000)	(0.2291)	(0.0082)	72	0.4051
5. ULCT	0.0018	1.7285	-0.2146	1.3189		
	(0.6590)	(0.0000)	(0.1878)	(0.0082)	72	0.4080

B. GERMANY

	Constant	Import-Adjusted Exports	REER	Import-Adjusted Domestic demand	*N. observations*	*Adjusted R^2*
1. PPI	0.0089	1.1718	-0.4184	0.9540		
	(0.0009)	(0.0000)	(0.0068)	(0.0000)	79	0.3313
2. CPI	0.0087	1.2574	-0.3866	1.0029		
	(0.0017)	(0.0000)	(0.0441)	(0.0000)	80	0.3024
3. GDPDEFL	0.0079	1.2583	-0.4326	0.9544		
	(0.0040)	(0.0000)	(0.0159)	(0.0000)	80	0.3181
4. ULCM	0.0061	3.1653	-0.1975	0.4805		
	(0.0374)	(0.0000)	(0.1688)	(0.0947)	72	0.3791
5. ULCT	0.0050	3.4516	-0.1649	0.5163		
	(0.0875)	(0.0000)	(0.3511)	(0.0790)	72	0.3696

C. FRANCE

	Constant	Import-Adjusted Exports	REER	Import-Adjusted Domestic demand	*N. observations*	*Adjusted R^2*
1. PPI	-0.0031	2.5767	-0.3453	2.7449		
	(0.1405)	(0.0000)	(0.0028)	(0.0000)	79	0.6509
2. CPI	-0.0018	2.2812	-0.4128	2.4427		
	(0.3973)	(0.0000)	(0.0058)	(0.0000)	81	0.6225
3. GDPDEFL	-0.0019	2.2933	-0.3705	2.4643		
	(0.3758)	(0.0000)	(0.0019)	(0.0000)	79	0.6322
4. ULCM	-0.0009	2.1149	-0.2590	2.2863		
	(0.6810)	(0.0000)	(0.0619)	(0.0000)	72	0.6094
5. ULCT	-0.0009	2.1173	-0.3682	2.3055		
	(0.6851)	(0.0000)	(0.017)	(0.0000)	72	0.6217

D. SPAIN

	Constant	Import-Adjusted Exports	REER	Import-Adjusted Domestic demand	*N. observations*	*Adjusted R^2*
1. PPI	-0.0055	2.0396	0.0368	2.4698		
	(0.0090)	(0.0000)	(0.8278)	(0.0000)	71	0.8581
2. CPI	-0.0055	2.0390	0.0619	2.4685		
	(0.0086)	(0.0000)	(0.7400)	(0.0000)	73	0.8582
3. GDPDEFL	-0.0055	2.0388	0.0376	2.4630		
	(0.0089)	(0.0000)	(0.8152)	(0.0000)	71	0.8581
4. ULCM	-0.0055	2.0589	-0.0412	2.4740		
	(0.0085)	(0.0000)	(0.6398)	(0.0000)	73	0.8585
5. ULCT	-0.0054	2.0412	0.0011	2.4666		
	(0.0095)	(0.0000)	(0.9933)	(0.0000)	73	0.8580

- The **fit of the model** improves (marginally) only in the case of Spain, whereas it deteriorates for the remaining countries.
- The role of **export dynamics** in explaining import growth increases substantially across countries relative to our baseline model.
- The role of **price-competitiveness indicators** remains ambiguous. In Italy and Spain they turn out to be non-significant (with the exception of the PPI-based measure for the former), but in Germany price-based measures and in France all indicators become significant and with a negative sign.

back

5. Conclusions (1)

- Traditionally, **relative labour costs** are a good proxy of a country's price competitiveness in the medium-term, beyond the short-term adjustments in profit margins.

- BUT, in a context of intense **globalization** and of restructuring of **global value chains**, to a varying degree across countries, owing to the subsequent fading representativeness of labour costs on overall production costs, relying solely on ULCM-based indicators may provide a biased assessment of a country's price competitiveness.

- We join good company in highlighting the potential pitfalls of the ULCM-based measure (Bundesbank 1998; ECB 2003; Bundesbank 2004).

5. Conclusions (2)

•Our **preliminary empirical findings** point to a different informative content of alternative price-competitiveness indicators across countries. Not only do results vary according to the **deflator** used, but also owing to the differences in countries' **patterns of trade** which underlie the (different) weights employed in their REER formulae.

• In particular, in Italy we find that cost-based competitiveness indicators play a smaller role relative to price-based ones in explaining Italy's recent export dynamics. This result would confirm that the contribution to the loss of price competitiveness and of Italy's export performance of **increasing labour costs** is likely to be much less relevant than argued by some international commentators.

• All findings are in line with those available in the existing empirical literature, yet those concerning the link between **imports and price-competitiveness indicators** warrant further research.

5. Conclusions (3)

•If on the one hand the ULCM-based indicator is conveying a biased indication of the source of Italy's price-competitiveness gap relative to its trading partners, it is clear, on the other, that **structural reforms aimed at boosting overall productive efficiency** (e.g. by speeding up the sluggish restructuring of production processes by Italian firms, including their pattern of participation in increasingly pervasive global value chains) could play a key role in improving Italy's price and non-price competitiveness and therefore its export performance.

Thank you for your attention

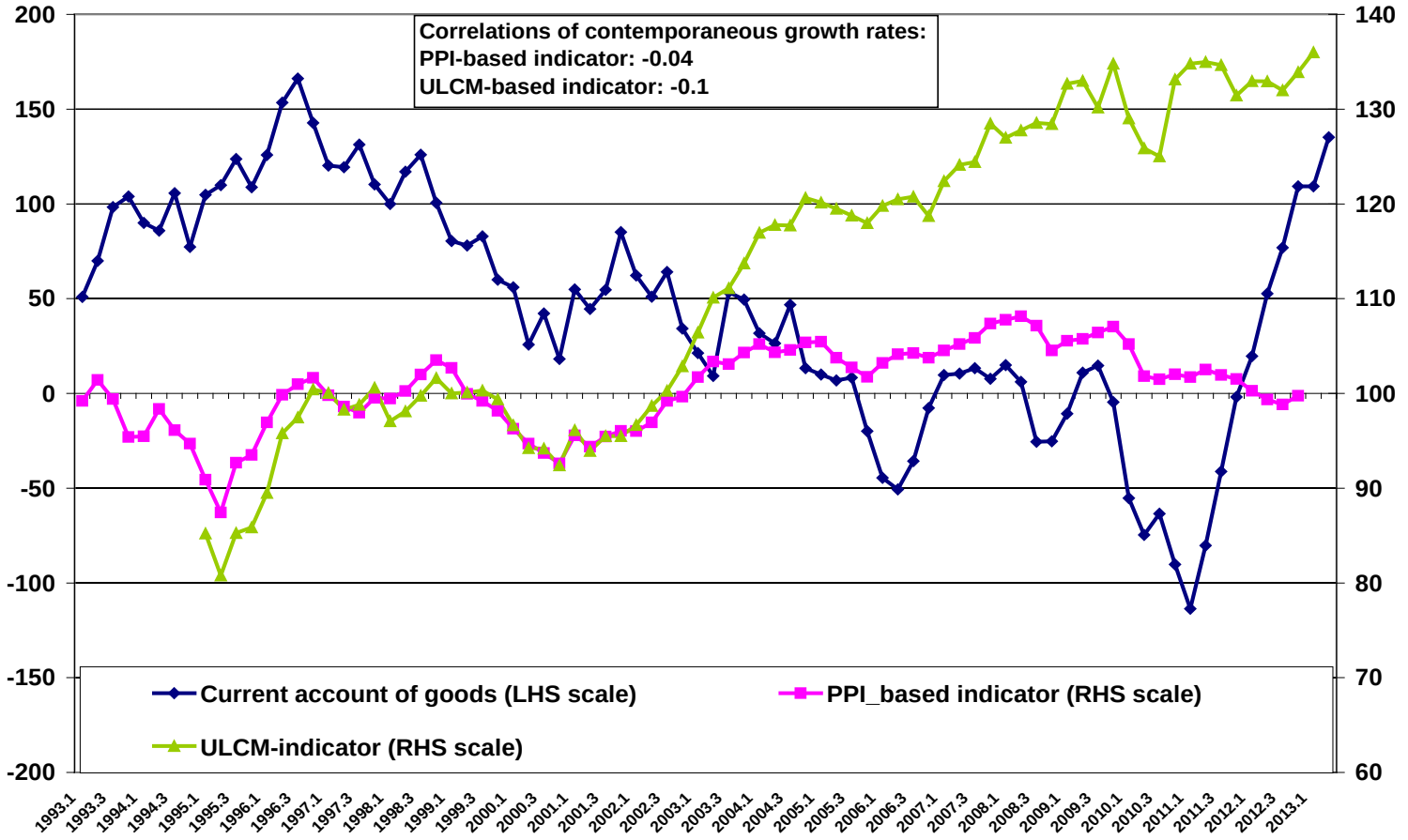
4. Sensitivity analysis

- Findings are very similar when considering **total trade volumes**, whereas for **service flows** the fit of the models considered is unsatisfactory (adjusted R^2=0.2-0.3) and therefore a more appropriate specification is required.
- Results do not change for Italy when replacing potential demand of goods with **world merchandise trade**, the proxy used for Germany and France.
- An **EMU dummy** taking value 1 as of 1999Q1 (as in Bayoumi et al. 2011) is not significant, nor are its interactions with the explanatory variables.
- A **crisis dummy** taking value 1 as of 2007Q3 is not significant, nor are its interactions with the explanatory variables.
- Limiting the analysis to the **1995Q1-2012Q4** period to net out possible distortions of the 1992 devaluation does not change our results.
- Linear **trends** do not enter significantly in the equations.
- **Lags** up to 4 of the dependent and independent variables are not significant (with the exceptions presented in the previous slide).
- In the export equation the inclusion of the **volume of imports of intermediate goods**, as in European Commission (2010), which we constructed employing Istat and Eurostat monthly trade data, does not affect our baseline results since the variable is found to be non-significant across the board.
- **Capacity utilization rate** in the import equation is significant only in the case of France, as in Allard et al (2005).
- **Non-price competitiveness factors** are not available on a quarterly basis, although their role in explaining export behaviour is beyond doubt. A rough estimate of quarterly TFP obtained by applying quarterly labour productivity dynamics to annual (Istat and OECD) TFP estimates was not significant, but this is not deemed reliable evidence.

back

Current account and price-competitiveness indicators in Italy

(indices 1999Q1=100)



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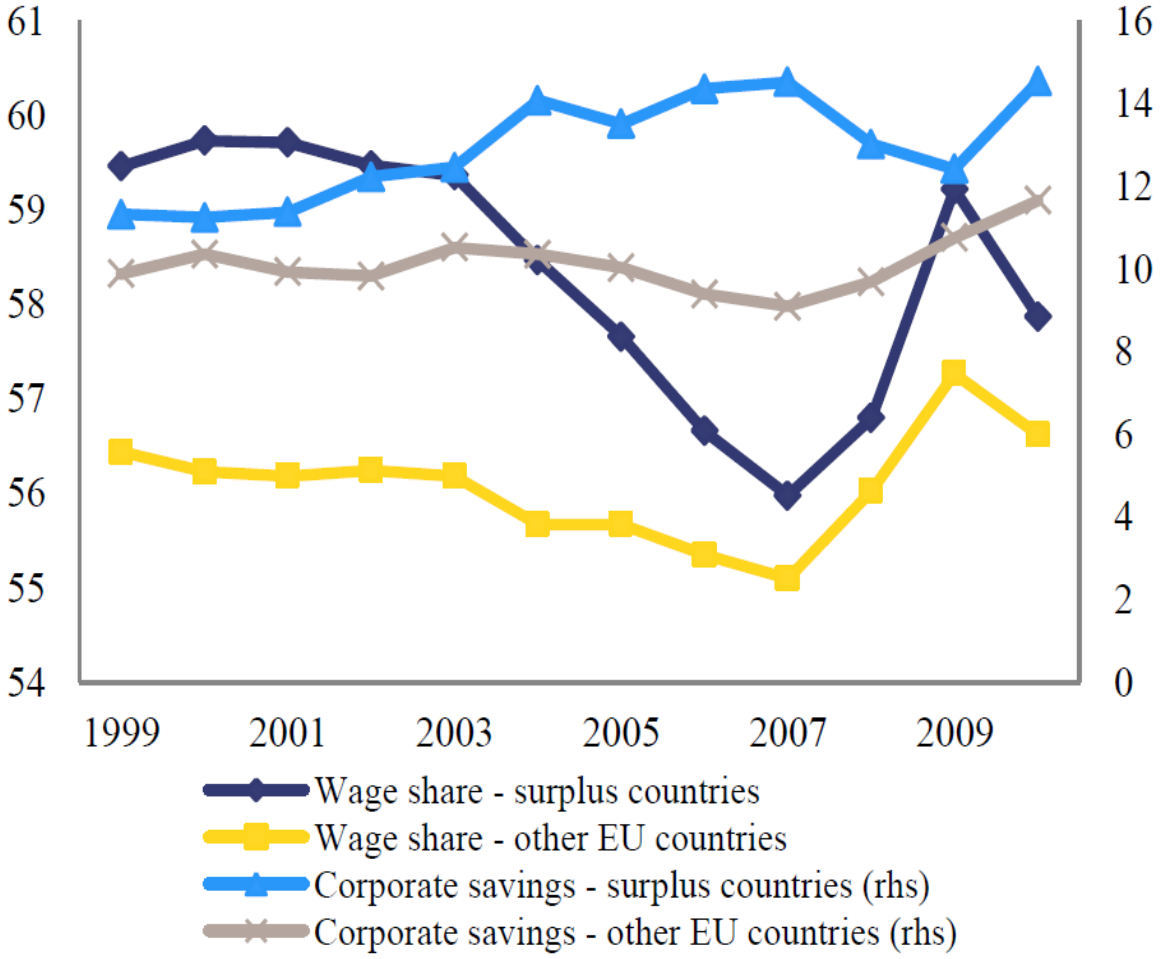
Wages shares

Graph 4.15: **Wage shares and corporate savings ratio over GDP**

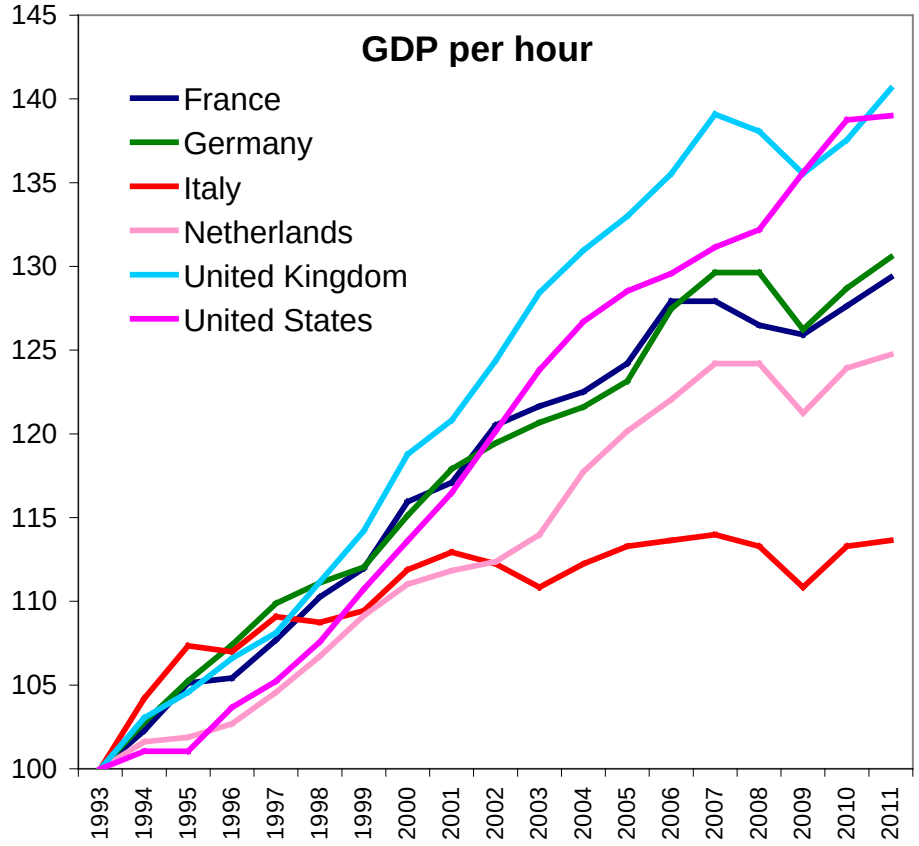


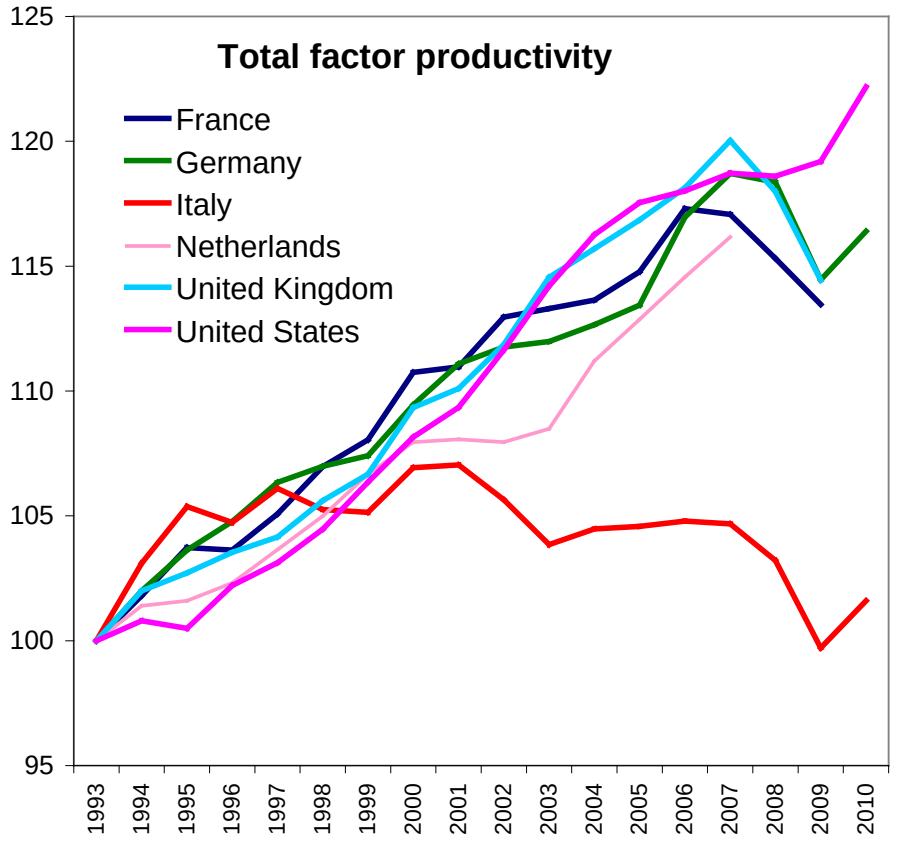
Source: European Commission (2012)

Productivity growth rates

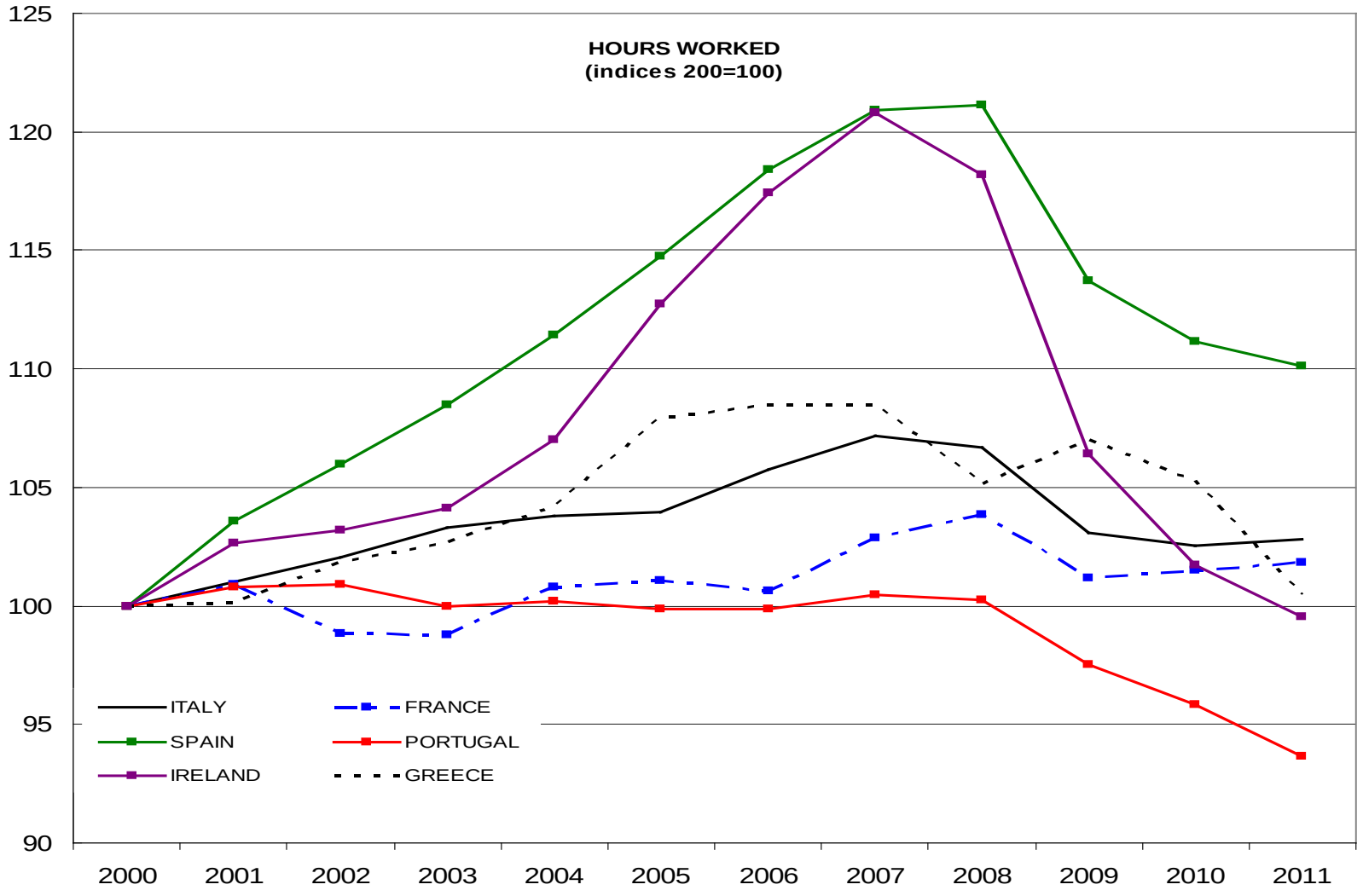
GDP per hour and Total Factor Productivity

(selected countries)





Hours worked



Hourly wages