WOULD THE STRENGTHENED EU FISCAL AND ECONOMIC GOVERNANCE FRAMEWORK HAVE HELPED SIGNALLING SOVEREIGN DEBT CRISES?

Christophe Kamps,[*] *Roberta De Stefani,*[**] *Nadine Leiner-Killinger,*[***] *Rasmus Rüffer*[****] *and David Sondermann*[*****]

In light of the lessons learned from the euro area sovereign debt crisis, the EU fiscal and economic governance framework was overhauled. Against this background, we analyse whether the strengthened governance framework would have been sufficient in signalling emerging imbalances. We argue that the strengthened governance framework would likely have led to more prudent fiscal and economic developments and thus be less prone to vulnerabilities. At the same time, we conclude that the increased reliance of the EU fiscal governance framework on unobservable magnitudes, such as structural budget balances, which tend to be wrongly measured in real time, will continue to impede the timely identification of underlying fiscal imbalances. By contrast, we argue that the Macroeconomic Imbalance Procedure would have been partly in the position to have identified excessive macroeconomic developments in real time and could also have helped to correct the real-time bias in structural balance estimates. A further strengthening of the governance framework should build on gradually establishing a more integrated surveillance using the synergies of the until now largely unrelated fiscal and economic governance frameworks.

1 Introduction

In light of the lessons learned from the euro area sovereign debt crisis, the EU fiscal and economic governance framework was overhauled. Against this background, we analyse whether the strengthened governance framework would have been sufficient in signalling emerging imbalances.

We argue that despite the important enhancements of fiscal governance, the fiscal framework would have remained prone to misjudging underlying fiscal positions and thus potential imbalances in real time. This relates notably to the weaknesses of potential output and output gap estimates, which are key inputs in the computation of the structural budget balance, which itself has become an important indicator of underlying fiscal positions and efforts with the 2005 and 2011 Stability and Growth Pact reforms. The increased reliance on structural balances to set policy guidelines seems to have made the framework prone to Goodhart's law, whereby "*any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes*" (Goodhart, 1981).

By contrast, we argue that the Macroeconomic Imbalance Procedure (MIP) with its wealth of alternative indicators might have been partly in the position to identify excessive economic developments in real time. In addition, we suggest that the MIP indicators contain valuable information for correcting the real-time bias in existing measures of underlying fiscal positions. Thus, there seems to be a strong case for a closer connection of the fiscal and macro frameworks,

[*] E-mail: Christophe.Kamps@ecb.europa.eu

[**] E-mail: Roberta.De_Stefani@ecb.europa.eu

[***] E-mail: Nadine.Leiner-Killinger@ecb.europa.eu

[****] E-mail: Rasmus.Rueffer@ecb.europa.eu

[*****] E-mail: David.Sondermann@ecb.europa.eu

which so far have remained rather disconnected. Of course, early identification of imbalances is of little value unless the framework is rigorously implemented.

The paper is organised as follows. Section 2 first presents some stylised facts about the accumulation of fiscal imbalances in the euro area prior to the crisis, before assessing whether the strengthened fiscal governance framework would have been in a better position to signal arising imbalances. Section 3 reviews the build-up of economic imbalances prior to the crisis, before assessing whether the enhanced economic governance framework would have been able to identify accumulating imbalances. Section 4 builds upon the identified limitations of identifying fiscal imbalances and adjustment in real time and elaborates on a broader concept of fiscal and economic surveillance. Section 5 concludes.

2 Fiscal governance in the euro area

Fiscal developments varied widely across the euro area countries prior to the crisis. In some member states excessive budget deficits and high general government debt ratios had been prevalent for long, making them prone to sharp corrections in output growth. Others had recorded seemingly sound fiscal positions but at the same time accumulated very large macroeconomic imbalances, which painfully turned out to be unsustainable as the financial crisis erupted with very adverse feedback to fiscal positions. This section first presents some stylised facts regarding the accumulation of fiscal imbalances prior to the crisis and the underlying reasons. It then describes and assesses whether these issues have been remedied under the strengthened EU fiscal governance framework.

2.1 Fiscal imbalances prior to the crisis: A sketch of stylised facts

Looking back, the economic good times ahead of the crisis were in many euro area countries not sufficiently used to improve underlying structural fiscal positions. For the years for which ESA 95 data on structural budget balances is available prior to the crisis, Table 1 indicates that in eight euro area countries structural fiscal positions actually deteriorated in the economic good times of 2003-2007. In most of the other countries, the improvement in structural balances remained rather limited. Overall, the improvement in the underlying structural positions was much smaller than what the Stability and Growth Pact would have foreseen. As a reference, none of the euro area countries complied consistently with the 0.5 per cent of GDP structural benchmark under the preventive arm of the Pact and only three euro area countries kept their structural deficit consistently below the 1 per cent of GDP benchmark.

This insufficient structural fiscal consolidation was in many countries driven by the fact that strong revenue growth, buoyed by the unsustainable boom in domestic demand, gave rise to structural increases in public expenditure as windfall revenues were spent instead of saved. In a similar vein, in many countries the "EMU interest dividend" resulting in a strong fall in the government interest burden was in general not used for debt reduction.

Output gaps and cyclical components tended to be underestimated, structural positions overestimated in real time. Table 2 illustrates this for the case of Spain. It presents bi-annual European Commission forecast vintages for Spain's cyclically-adjusted budget balance in 2007. Since 2005 and even in 2007, the cyclical component for Spain had been estimated to be negative in real time. Only in autumn 2008, cyclical component estimates started being revised upwards to positive territory. As a result, Spain's underlying fiscal position was overestimated in real time. As the Table shows, the government's plans for the cyclically-adjusted budget balance suffered from an even larger real time bias. This can also be explained by common political economy

Table 1

The Preventive Arm: Developments in Structural Fiscal Positions

Country	2003	2004	2005	2006	2007	2003-07	percentage of years with 0.5 p.p. improvement 2003-07	percentage of years below –1% of GDP 2003-07
Belgium	–1.1	–1.4	–0.9	–1.2	–1.2	–0.1	20	20
Germany	–3.2	–2.9	–2.2	–1.7	–0.9	2.3	60	20
Estonia	0.4	1.5	0.1	–1.1	–1.5	–1.9	20	60
Ireland	0.3	1.6	1.7	2.3	–1.5	–1.8	40	80
Greece	–5.6	–7.8	–5.3	–7.2	–7.7	–2.1	20	0
Spain	–0.8	0.3	0.8	1.6	1.0	1.8	40	100
France	–4.6	–4.6	–4.5	–3.9	–4.4	0.3	20	0
Italy	–5.4	–5.1	–5.4	–4.1	–3.3	2.2	40	0
Cyprus	–8.0	–4.9	–2.9	–1.1	2.6	10.6	80	20
Luxembourg	0.6	–0.9	–0.2	0.6	1.6	1.0	60	100
Malta	–6.2	–5.9	–3.8	–2.8	–2.8	3.4	40	0.0
Netherlands	–1.8	–0.9	0.5	0.4	–1.1	0.7	40	60
Austria	–0.9	–0.7	–1.3	–1.8	–1.9	–1.1	0	40
Portugal	–5.6	–5.7	–6.0	–4.4	–3.7	2.0	40	0
Slovenia	–2.6	–2.5	–2.0	–2.8	–2.9	–0.4	0	0
Slovakia	–2.1	–2.1	–1.8	–3.3	–3.6	–1.5	0	0
Finland	3.3	2.5	2.8	3.0	2.4	–0.9	0	100
Euro area	–3.3	–3.0	–2.6	–2.1	–2.0	1.3	-	-

Note: The column to the right of the table represents the number of years in which the structural balance improved by the 0.5 percentage points of GDP benchmark as a percentage of the total 5 years and (ii) in which the structural balance was below the 1.0 per cent of GDP benchmark for euro area and ERM II countries. This analysis is based on *ex post* data from the winter 2013 vintage of the AMECO database. The picture look very different when real-time data are used.
Source: Eurostat, own calculation.

Table 2

Cyclically-adjusted Budget Balances and the Cyclical Component for 2007: Different Forecast Vintages for Spain
(percent of GDP)

EC Forecast Vintages			Stability Programme Vintages	
	Cyclical Component	**CAB**	**CAB**	
EC Autumn 2010 Forecast	0.6	1.3		
EC Spring 2010 Forecast	0.7	1.2		
EC Autumn 2009 Forecast	0.7	1.2		2009-10 Stability Programme
EC Spring 2009 Forecast	0.6	1.6	-	(EC recalculation)
EC Autumn 2008 Forecast	0.3	2.0		2008 Stability Programme
EC Spring 2008 Forecast	–0.2	2.4	-	(EC recalculation)
EC Autumn 2007 Forecast	–0.2	2.0		2007 Stability Programme
EC Spring 2007 Forecast	–0.5	1.8	2.2	(EC recalculation)
EC Autumn 2006 Forecast	–0.5	1.6		2006 Stability Progeramme
EC Spring 2006 Forecast	–0.6	1.0	1.5	(EC recalculation)
EC Autumn 2005 Forecast	–0.2	–0.2		2005 Stability Programme
EC Spring 2005 Forecast	-	-	1.2	(EC recalculation)
			0.5	2004 Stability Programme (EC recalculation)

Source: Stability programmes as stored under http://ec.europa.eu/economy_finance/economic_governance/sgp/convergence/index_en.htm. The cyclically-adjusted budget balances are those as presented in the stability programmes, recalculated by the European Commission based on the commonly agreed cyclical adjustment methodology.
Eurostat, own calculation.

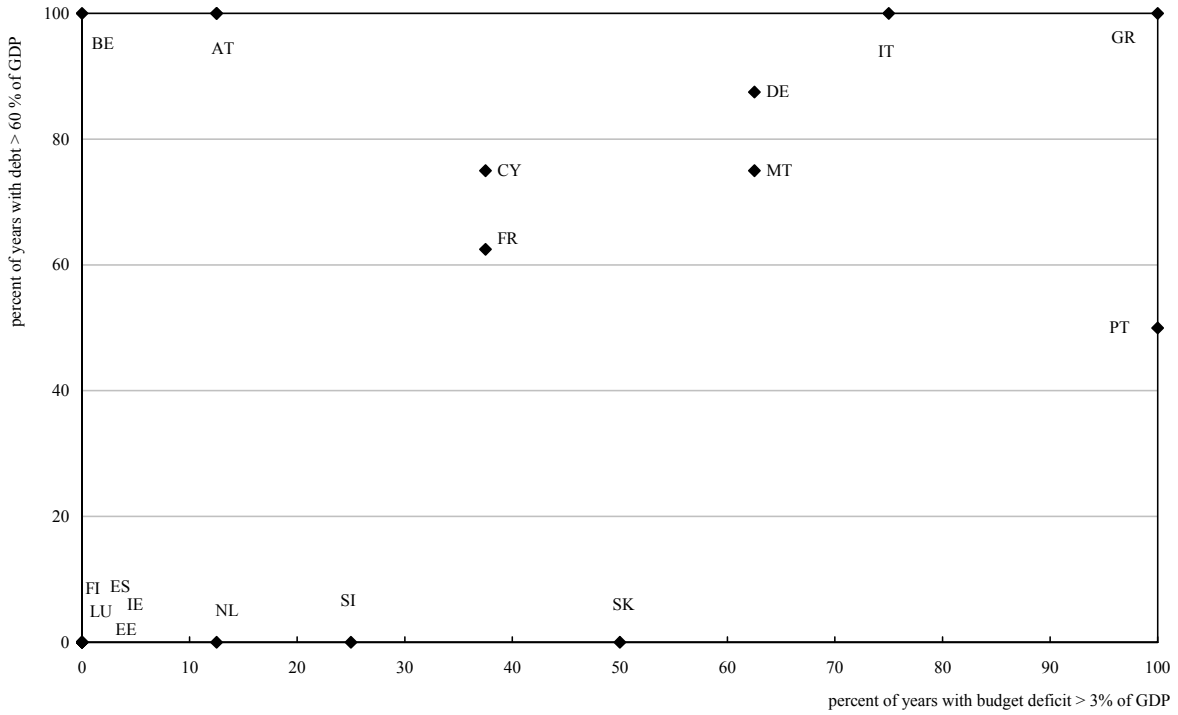
considerations according to which governments tend to rely on overoptimistic macroeconomic projections to profess compliance with the requirements of fiscal surveillance frameworks without commensurate effort.

Not only was the Stability and Growth Pact insufficient to enforce under its preventive arm that the economic good times ahead of the crisis were used to reduce fiscal imbalances. It also tended to prove insufficient under its corrective arm in timely following up breaches of the deficit and debt reference values.[1] Figure 1 presents the percentage of the eight years between 2000 and 2007 prior to the crisis in which a country breached the Maastricht reference values of 3 per cent of GDP for the general government deficit-to-GDP ratio and the 60 per cent for general government debt-to-GDP ratio. It shows that Greece had breached both Maastricht reference values in every single year of the time span considered. Portugal consistently recorded deficits above the 3 per cent of GDP reference value over 2000-2007, while Italy, Belgium and Austria recorded government debt ratios in excess of the reference value over the entire period. Ireland and Spain, which came under pressure during the financial crisis, did not expose imbalances under the Treaty's rules. Both countries had complied with the Maastricht reference values in each of the eight years considered.

[1] Note that under the corrective arm of the Pact, an excessive deficit procedure is triggered if an excessive deficit is identified, which shall be corrected one year thereafter. However, for example, Greece, Italy and Portugal recorded budget deficits above the reference value for a number of years without this triggering immediately an Ecofin Council decision on the existence of an excessive deficit. See for this aspect also Morris *et al.* (2006).

Figure 1

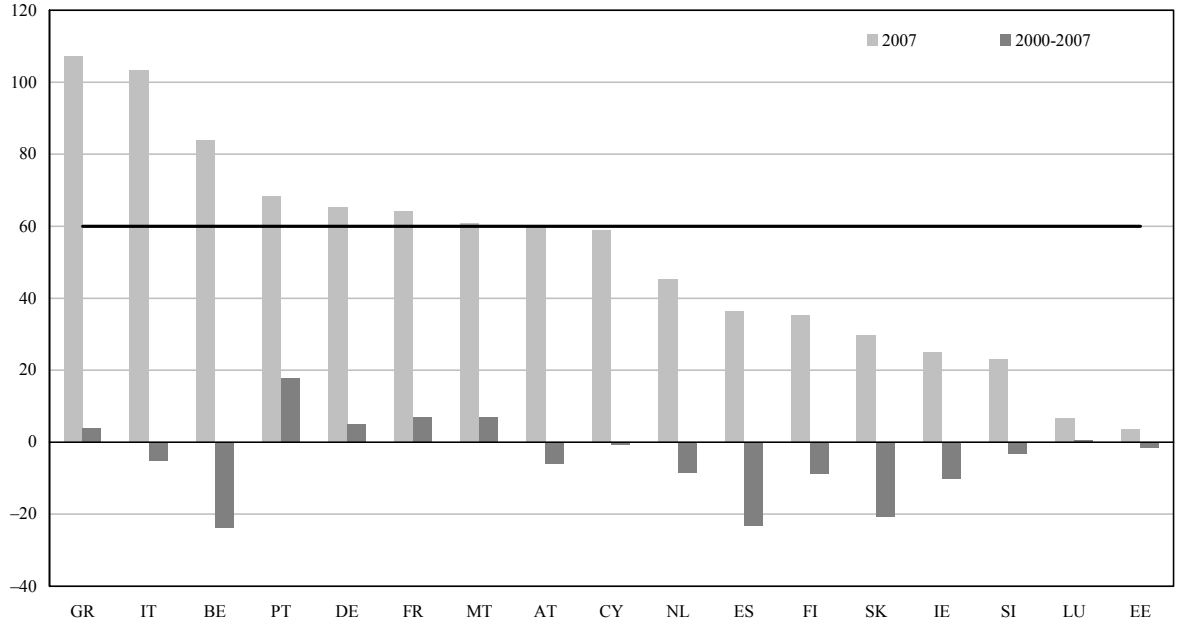
Fiscal Positions Ahead of the Crisis, 2000-07



Source: Eurostat, own calculations.

Figure 2

Change in Government-debt-to-GDP Ratios over 2000-07



Source: Eurostat, own calculations.

Consequently, while debt-to-GDP ratios declined in many euro area countries in the economic goods times ahead of the crisis, this reduction was much less than what would have been warranted at that time. As a consequence, half of the euro area member states entered the global financial and economic crisis with debt ratios at or above the Maastricht reference value (see Figure 2).

2.2 The new framework for fiscal governance

The Stability and Growth Pact foresees a complementary role for nominal and structural balances. It guides EU countries to avoid excessive deficits based on the 3 per cent of GDP deficit reference value and defines the fiscal effort required to achieve sound fiscal positions in structural terms. Specifically, with the reform of the Stability and Growth Pact in 2005, the so-called conditional compliance concept was introduced under its corrective arm, the excessive deficit procedure, which strongly relies on the structural balance as the key surveillance concept in order to account for unexpected developments outside the control of governments, such as severe economic downturns.

As the crisis brought the weaknesses of the Stability and Growth Pact to the surface, the EU's fiscal governance framework was overhauled.[2] On 11 December 2011, the so-called "six-pack" was ratified, which contains four reform elements pertaining to strengthened fiscal surveillance and enforcement (and two regulations related to strengthening economic governance, see Section 3). As regards fiscal surveillance, the six-pack includes (a) under the preventive arm of the Pact an expenditure rule linking real public spending growth to a potential growth benchmark as well as an increased focus on government debt, (b) under the corrective arm of the Pact an equal footing of the government debt criterion as well as (c) minimum requirements for national fiscal frameworks. As regards the enforcement of fiscal surveillance, a new regulation fostering earlier and gradually increasing sanctions was adopted, decided quasi-automatically based on the reverse majority voting principle in the Ecofin Council.

On 1 March 2012, 25 EU countries ratified the "Treaty on Stability, Coordination and Governance in EMU", which entails the so-called fiscal compact, to be introduced in countries' national laws. It notably requires countries to achieve balanced or in surplus structural budget balances (*i.e.*, the structural deficit must not exceed –0.5 per cent of GDP). This is more demanding when compared with the initial 1 per cent of GDP structural deficit target for euro area and ERM II countries under the preventive arm of the Pact. The fiscal compact entails an automatically triggered correction mechanism aimed at correcting deviations from the adjustment path towards Medium-Term Budgetary Objective (MTO), including their cumulative impact on the debt ratio.[3]

2.3 An assessment of the new framework for fiscal surveillance

The changes to the EU governance framework are an important step towards ensuring sounder fiscal policies. Several of these advances would likely have been unthinkable ahead of the crisis had the negative financial market reactions not put pressure on adjustments (see for this also Larch *et al.*, 2010). Still, the new governance framework has become highly complex, which

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[2] See for a survey of the new fiscal rules also Barnes *et al.* (2012).

[3] The most recent strengthening of the EU fiscal governance framework marks the agreement of the European Commission, the European Parliament and the EU Council on the so-called two-pack, which entered into force on 21 May 2013. It entails a regulation on draft budgetary plans, which requires countries to have in place binding numerical fiscal rules and envisages, inter alia, closer monitoring of countries in EDP. It further includes a regulation according to which countries experiencing severe difficulties with financial stability or receiving financial assistance on a precautionary basis become subject to enhanced surveillance.

renders the intended strengthened surveillance of fiscal policies difficult, even for experts. We have concluded above that the original governance framework did not properly identify fiscal imbalances in real time and that its rules were not properly enforced and implemented. The following will argue that the strengthened governance framework would have led to sounder fiscal positions than the old one but that important shortcomings remain. These relate notably to the fact that the role of unobservable magnitudes has overall increased within the strengthened governance framework.

(1) Identification

Assuming that the strengthened fiscal governance framework would have existed prior to the crisis, would it have signalled arising budgetary imbalances in a more satisfactory manner? We will argue that difficulties remain, notably as fiscal governance continues to rest strongly on the structural budget balance as surveillance indicator.

Looking back, the structural budget balance had received core prominence under the 2005 reform of the Stability and Growth Pact. Under its preventive arm, following the reform, countries are supposed to implement more structural adjustment in economic good times and less in economic bad times. Under its corrective arm, the structural balance became the core tool to assess effective action as incorporated in the so-called conditional compliance concept (see also Larch and Turrini 2009).

However, the structural balance as gauged under the EU fiscal governance framework tends to suffer from a real-time bias (as shown in the previous section), which can be traced back to distortions due to the pro-cyclicality of the potential output estimates (see Bundesbank, 2012).[4] As shown for the case of Spain in Figure 3, real time output gaps have been consistently underestimated in the economic good times ahead of the crisis and overestimated in the crisis years. Further to be expected *ex post* revisions to these latter data are unlikely to change this picture. As a consequence, cyclically-adjusted budget balances had to be revised downwards *ex post*, implying that the average structural position was on average much worse than anticipated. As Figure 3 further shows, this pattern is common to most euro area countries when looking at the period 2003-12. The average revision of the structural balance has been around ¾ per cent of GDP for euro area countries. Revisions were exceptionally large for Greece, but have also been large for Estonia, Italy, Portugal and Spain. For these countries the volatility of structural balance estimates is more likely to be related to the uncertainty surrounding the macroeconomic outlook. Less clear-cut conclusions derive when looking at *changes* in the structural balance. On average, however, the real time estimates of annual changes in the structural balance have in the past tended to lead to an overestimation of the consolidation effort for some countries. For six euro area countries the revision in structural adjustment even exceeded 0.5 per cent of GDP, which is the benchmark under the Stability and Growth Pact. The structural balance is thus not always a reliable measure, neither of the underlying fiscal position nor of fiscal efforts, notably in an environment of rapid changes in macroeconomic conditions.

These problems associated with the pro-cyclicality of potential output growth projections also affect the effectiveness of the newly introduced expenditure benchmark.[5] The expenditure benchmark constrains a measure of real public expenditure growth to potential output growth developments. Specifically, the benchmark to which this measure of expenditure growth is applied

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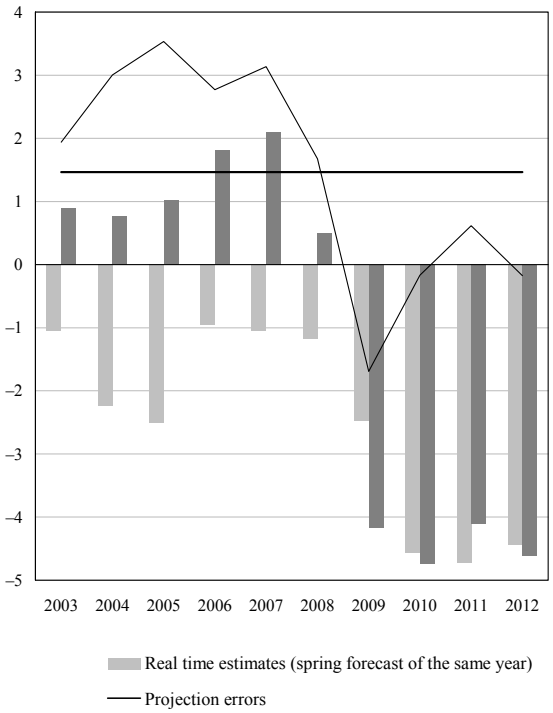
[4] See Ganzalez Cabanillas and Terzi (2012) for an assessment of forecast errors in the European Commission's macroeconomic forecasts. The authors review real GDP growth, inflation, the general government balance, total investment, the total unemployment rate as well as the current account-to-GDP rate, but exclude potential growth and output gap estimates.

[5] See Banco de España (2011) for an analysis of how an expenditure rule would have worked during the expansion period in Spain. See Hauptmeier *et al.* (2007) for an analysis of public expenditure reforms in industrialised countries.

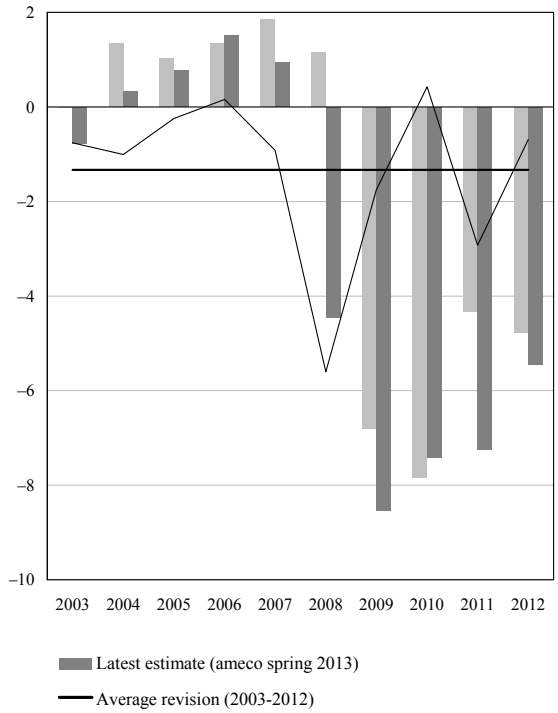
Figure 3

Quality of Structural Balance Estimates

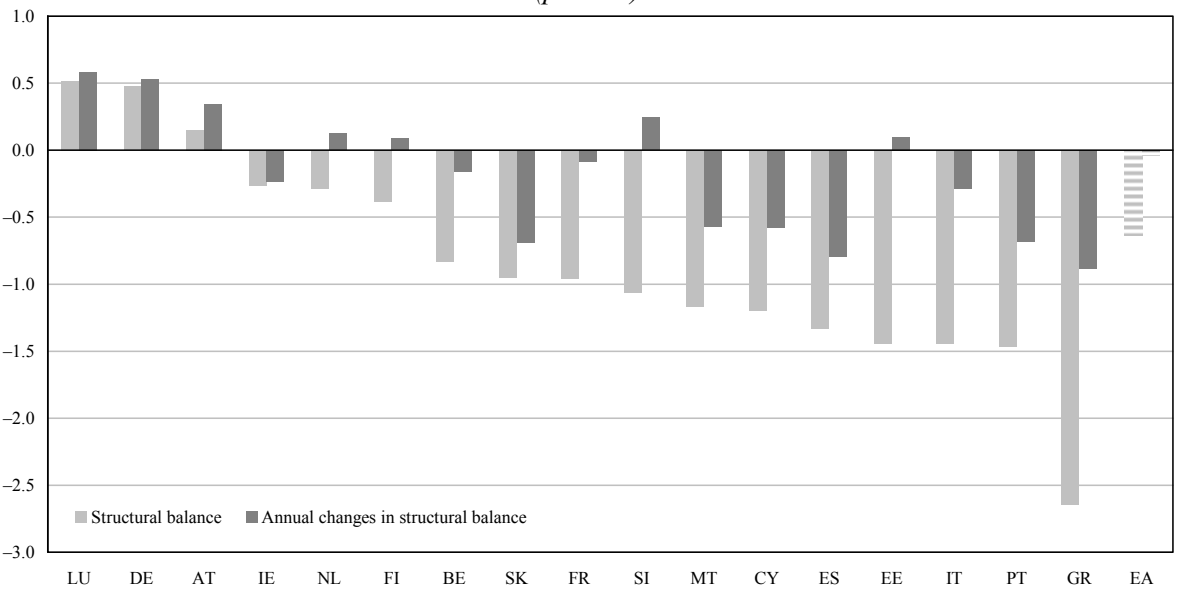
Spain: Output Gap Estimates
(percent of GDP)



Spain: Structural Balance
(percent of GDP)



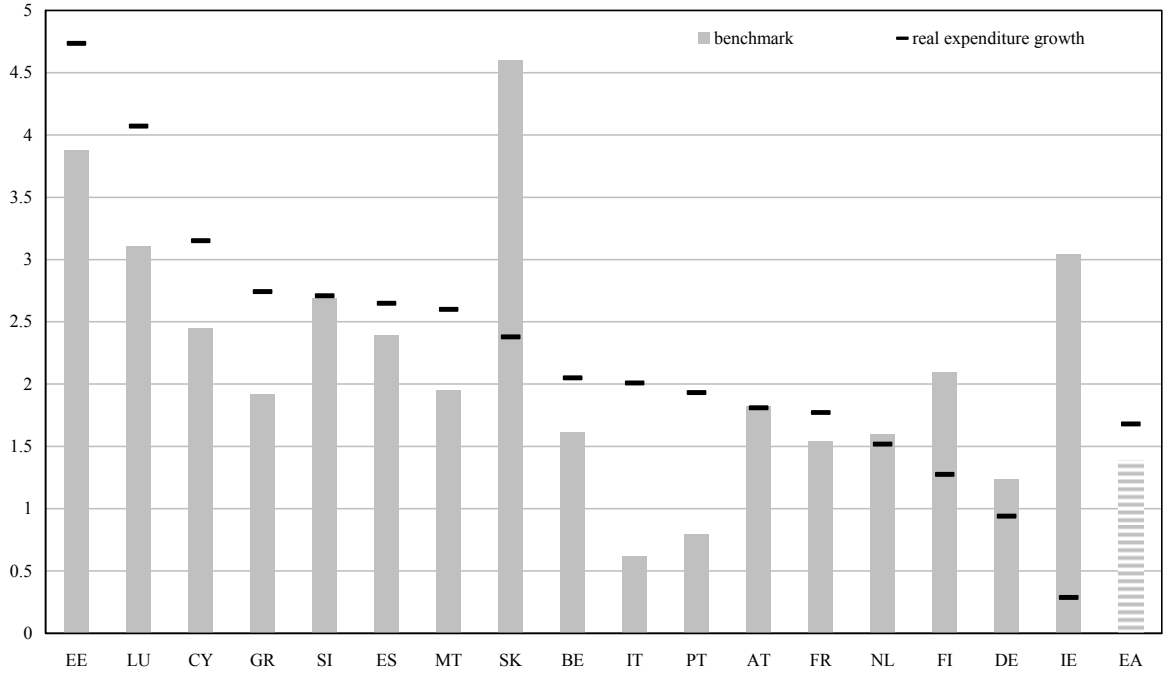
Average Revision of Structural Balance Over the Period 2003-12
(percent)



Source: Eurostat, own calculations.
Note: Real time structural balance estimates before autumn 2006 are based on temporary measures as specified in the spring 2007 European Commission's economic forecast.

Figure 4

The Expenditure Benchmark and Real Public Expenditure Growth
(average 2003-12)



Source: European Commission's spring 2013 economic forecast, own calculations.
Note: The expenditure benchmark is calculated as a moving average over 6 years (*i.e.*, the past 3 years, the current and the projected next 2 years).

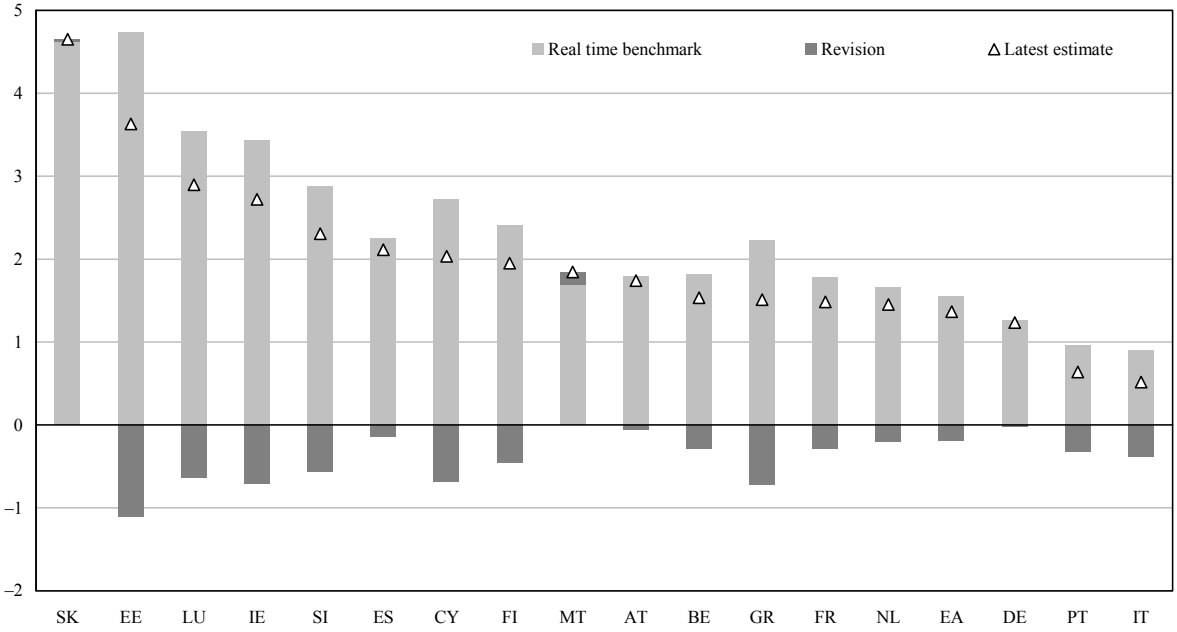
is a moving average of potential growth over the past 5 years, the current and the projected next four years. The expenditure rule constitutes an important improvement in the fiscal governance framework. In fact the application of a modified benchmark (set up as stretching out over 6 instead of over 10 years due to data availability and covering total real expenditure) as a ceiling to total public expenditure over the period 2003-2012 would have markedly restrained public expenditure growth in several countries (Figure 4).

Nevertheless, the expenditure rule is still subject to weaknesses. When reconstructing this benchmark in real time as a moving average over 6 years, it turns out that it would have shown systematically larger scope for expenditure increases than justified *ex post* over the period 2003-2012. Consequently, expenditure growth according to this benchmark would have been systematically larger in real time than what the benchmark aims for.

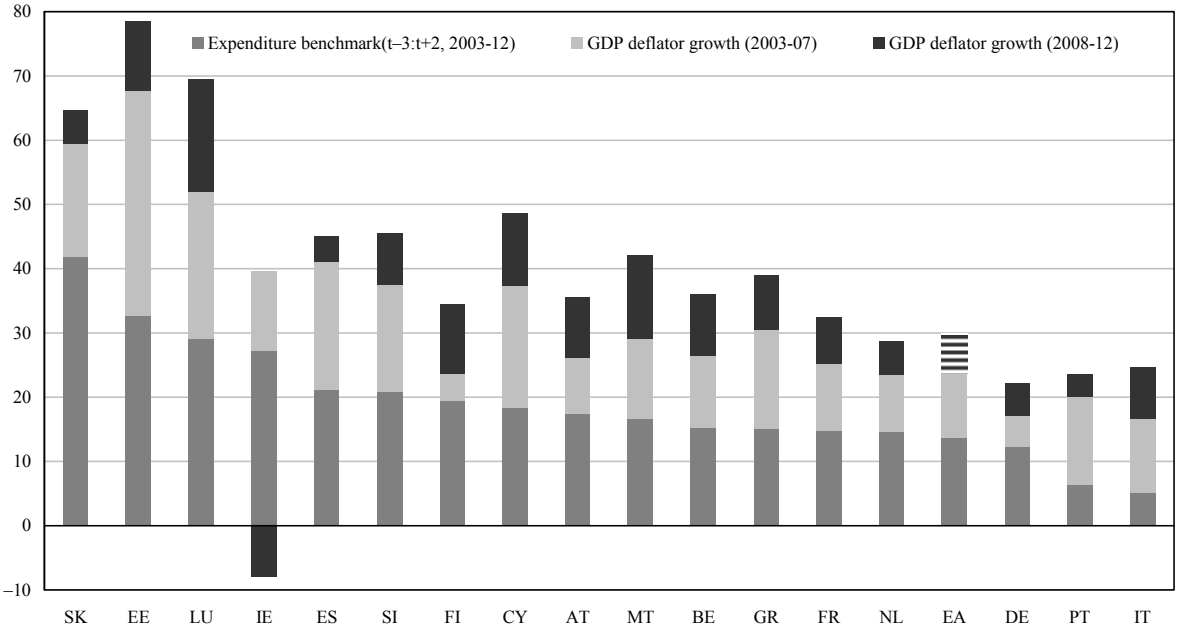
In addition, since the expenditure rule is defined in real terms, the inflation dimension is disregarded. In nominal terms in fact even a high expenditure growth can be compliant with the EU fiscal rules as these do not "penalize" high inflation countries. A comparison between the average benchmark in the period 2003-2012 and the average GDP deflator growth shows that the expenditure rule would have lead to a ceiling for expenditure which may still have resulted in unsustainable expenditure developments. The expenditure benchmark in its current form does thus not correct for the gradual erosion of competitiveness associated with persistent excess inflation compared to developments in the euro area as a whole. This is a major weakness of the current expenditure benchmark.

Figure 5

The Expenditure Benchmark Revisited in Real Time, 2003-12
Potential Growth Benchmark Revisions
(moving average, t–3:t+2)



Potential Growth Benchmark and GDP Price Deflator Growth
(2003-12, cumulative)



Source: European Commission's economic forecast.
Note: Actual data in line with spring 2013 EC economic forecast. Real time forecast are EC autumn projections for the same year. Revisions are calculated as actual - forecast. The expenditure benchmark is calculated as a moving average over 6 years (*i.e.*, the past 3 years, the current and the projected next 2 years). Negative revisions indicate overestimation of the expenditure benchmark.

One can therefore conclude that the strengthened fiscal governance framework would have contributed to more prudent fiscal positions, mainly through the requirement of reaching more demanding structural fiscal positions, by, *inter alia*, restraining real expenditure growth. Notwithstanding these improvements, weaknesses remain. These relate notably to the insufficient reliability of the structural budget balance as real-time surveillance indicator. It is therefore essential that fiscal governance is complemented by surveillance of other indicators, which may provide a better picture of underlying imbalances in real time.

(2) Enforceability and implementation

Under the strengthened governance framework, the EU semester was set up as the major tool to coordinate and steer the EU countries' economic and budgetary policies towards achieving sustainable growth and sound fiscal positions. To be effective, it requires that emerging economic and fiscal imbalances are identified and followed-up in a timely and strict manner. However, as outlined above, the fact that structural balances are an "unobservable" and difficult to measure in real time impedes the timely identification of fiscal imbalances. This notwithstanding, the so-called conditional compliance concept was further amended and first applied under the 2013 Spring assessments under the excessive deficit procedure. Countries that fail to meet the 3 per cent of GDP nominal deficit reference value by the EDP deadline and do not comply with the recommended structural adjustment effort may still be assessed as having undertaken effective action if their structural adjustments, corrected for revisions in potential output growth and revenue elasticities that occurred since the EDP was launched, remains in line with countries' initial commitments. With the application of this amended concept, the role of unobservable magnitudes for fiscal surveillance has further increased, further reducing the transparency of the framework.

From a fiscal perspective, it is therefore important that the assessment of a country's structural efforts to return to sound public finances encompasses a thorough so-called "careful analysis", which the Commission needs to conduct in case the corrected structural effort adjusted for revisions in potential output growth and revenue elasticities falls short of the required effort under the EDP. However, in the absence of a commonly agreed method, more reflection is still needed on its modalities.

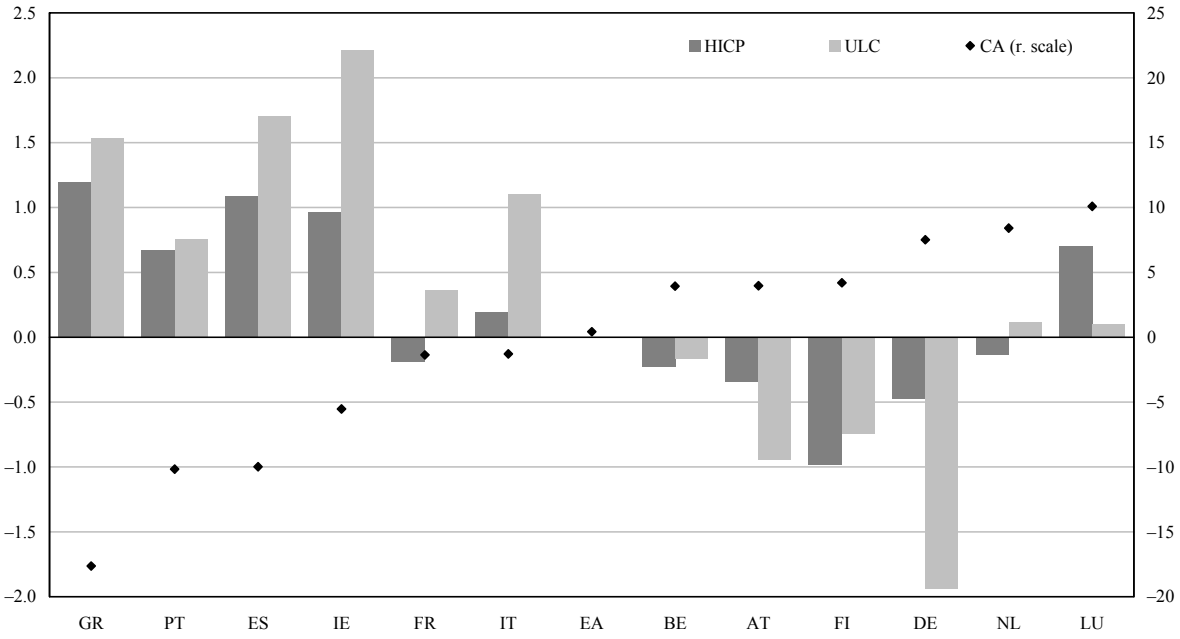
The strengthened EU fiscal surveillance thus continues to have problems in correctly assessing underlying fiscal positions imbalances in real time, which hinders the effective enforcement of the framework. To the extent that the conditional compliance concept leads to a delay in the reduction of excessive nominal deficits, it adds to government debt and thus negatively affects debt sustainability. It is thus not necessarily in line with the Stability and Growth Pact's overarching objective to ensure debt sustainability. The following therefore explores whether variables captured in the scoreboard of the MIP are better indicators for a country's position in the economic cycle than the real-time output gaps used in the strengthened Stability and Growth Pact.

3 Economic governance in the euro area

Since the inception of the euro, several euro area countries experienced a build-up of substantial macroeconomic imbalances, despite existing rules stipulating the need for sustainable economic policies in EMU countries. This section first presents some stylised facts about the accumulation of macroeconomic imbalances prior to the crisis. It then surveys and assesses the new economic governance framework.

Figure 6

Current Account Balance *(percent of GDP in 2007)*, **HICP Inflation and ULC Growth Relative to EA Average** *(average 2001-07)*



Source: European Commission. Note: Countries are grouped in ascending order of the current account balance (avg. 2001-07). It covers the countries which joint the EA by 2001.

3.1 Economic imbalances prior to the crisis: a sketch of stylised facts

In the year prior to the crisis, low real financing costs coupled with overly optimistic assumptions of households, firms and the public sector about future economic developments. These were some of the key factors contributing to the successive build-up of macroeconomic imbalances. In particular, they led to a significant cumulative deterioration in competitiveness, with wage growth persistently above productivity growth and inflation rates above the euro area average (see Figure 6).[6] A number of countries saw unsustainable credit-financed domestic demand growth and housing bubbles. Owing to deteriorating competitiveness and strong import growth on the back of robust domestic demand, current account deficits increased significantly in some euro area countries (Figure 6). Given that the strong demand largely reflected developments in private and public consumption and investment in the non-tradable sector (in particular in construction sector, leading to a housing bubble in some countries) there was no corresponding increase in the capacity to service the growing external debt burden.

With the start of the crisis in 2008, these macroeconomic imbalances, which were facilitated by unsustainable economic policies, became painfully exposed. However, caution needs to be

[6] In the first years of EMU substantially increasing relative costs and prices can be partly attributed to the normal process of real and nominal convergence. However, empirical work has been unable to find unambiguous evidence of catching-up effects (in the form of Balassa-Samuelson effects) at play after the start of Stage Three of EMU. Earlier studies on the Balassa-Samuelson effect in the euro area (e.g., Hofmann, B. and H. Remsperger (2005), "Inflation Differentials Among the Euro Area Countries: Potential Causes and Consequences", paper presented at the *ASSA Annual Meeting*, and Katsimi, M. (2004), "Inflation Divergence in the Euro Area: The Balsa-Samuelson Effect", *Applied Economics Letters*, Vol. 11, Issue 5, pp. 329-32) did not find any significant contribution of cross-country price convergence to national inflation rates in Stage Three of EMU.

applied when attributing these developments solely to a lack of awareness among political leaders about the consequence of unsustainable economic policies. At least the legal fundament of the EU suggests that European Head of State or Government have – at least to some extent – thought about their implications: In 1992 the Treaty on European Union ("Maastricht Treaty") elaborated about the importance of "conduct[ing] economic policies with a view to the achievement of the objectives of the Community" (Art. 102a), that the "Member States shall regard their economic policies as a matter of common concern and shall coordinate them within the Council" (Art. 103(1)). Moreover, it is defined that whenever the "economic policies of a Member State are not consistent with the broad guidelines […] or that they risk jeopardising the proper functioning of economic and monetary union, the Commission […] may make the necessary recommendation to the Member State concerned" (Art. 103(4)).[7]

Thus, while the potential risk of unsustainable national economic policies was already visible and identified early on, the shortcoming was related to the weak enforcement possibilities of the provisions and a limited willingness to pursue its implementation. With respect to the first, economic policies which were at risk to jeopardise the smooth functioning of EMU could at most receive a warning issued by the Commission, which however was not legally binding and was not linked to any form of sanctions which could help forcing the respective country to change its policies. Moreover, the recommendation would need to have been endorsed by the Council (including the targeted Member State) with a qualified majority. Beyond the question of how effective warnings against unsustainable economic policies could have been, it is important to note that this option has only been used once since the Treaty was enacted in 1992. In 2001, the Commission (endorsed by the Council) submitted a warning about the Irish economic policy being inconsistent with the Broad Economic Policy Guidelines adopted by the Council in 2000. Euro area governments heavily criticised the Commission at that time (the warning turned out to be fully appropriated with hindsight) and the Commission did not use this instrument anymore thereafter.

3.2 The new framework for macroeconomic surveillance

With the inception of the crisis, it became soon apparent that the existing EU economic governance framework has been insufficient in preventing the built-up of macroeconomic imbalances in euro area Member States. The shortcoming related to both the identification and correction of macroeconomic imbalances. As a result, the Council decided to implement an EU macroeconomic surveillance framework. The "Macroeconomic Imbalance Procedure" (MIP) was agreed upon as part of the "six pack" of economic governance reforms.

As laid down in two Council regulations[8], the MIP begins with the publication of the Alert Mechanism Report. In this report, the European Commission provides an economic reading of the scoreboard of eleven indicators[9] and corresponding thresholds, which try to capture the major sources of macroeconomic imbalances in all EU Member States. Countries currently subject of EU/IMF-programmes are excluded from the MIP given that enhanced macroeconomic surveillance is already conducted as part of the respective programmes.

On the basis of this report, the Commission selects countries which should receive an in-depth review, to see whether early indications regarding macroeconomic imbalances are confirmed.

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7 The provisions are today included in the Treaty of the Functioning of the European Union (TFEU, "Lisbon Treaty"), Art. 121.

8 The procedure of the MIP is laid down in Regulations (EU) No. 1176/2011 of 16 November 2011 and No. 1174/2011 of 16 November 2011.

9 See Table 3 for the eleven scoreboard variables capturing indicators of external imbalances, competitiveness, and internal imbalances. For a detailed description of all indicators and thresholds, see European Commission (2012), "Scoreboard for the Surveillance of Macroeconomic Imbalances", Occasional Paper, No. 92, February. During the first exercise in 2012, the scoreboard only consisted of 10 indicators, with the growth rate of financial liabilities being added only for the second exercise in 2013.

The in-depth reviews include fact-finding missions to the countries in question and go beyond the initial reading of the scoreboard.

On the basis of each in-depth review, the Commission issues an assessment as to whether the country in question (a) is not experiencing any imbalances, (b) experiencing imbalances, (c) experiencing excessive imbalances. In the first case, the MIP is terminated. Where it is decided that imbalances are identified, the country concerned will receive country-specific policy recommendations under the "preventive arm" of the procedure (together with the overall country-specific recommendations at the end of the European Semester) with a view to averting potentially harmful developments. Where macroeconomic imbalances are found to be sufficiently severe to be considered excessive, the Excessive Imbalance Procedure (EIP) is triggered under the "corrective arm" of the procedure. In this case, the country concerned has to submit a corrective action plan outlining policy measures aimed at addressing the excessive imbalances. This action plan has to be agreed with by the Council of the European Union. In order to ensure the implementation of such corrective actions, financial sanctions can be imposed in case of repeated failure to implement corresponding actions.

It is noteworthy that within the MIP, in contrast to the fiscal framework and its main surveillance indicators general government budget balance and debt, most indicators of macroeconomic imbalances are no direct control variables of policy makers and are therefore more difficult to adjust. More precisely, while the budget balance can be adjusted with law makers agreeing, e.g., on expenditure cuts, the current account deficit of an economy is the mirror image of saving and investment preferences of actors in the respective country and can largely be indirectly influenced through policy measures changing the economic conditions under which businesses and individuals operate.[10]

While the possibility to enforce recommendations to change national economic policies have clearly increased with the new governance framework, to be effective its actual implementation is crucial. The first application of the Macroeconomic Imbalance Procedure in 2012 resulted in a selection of 12 EU countries (including 7 euro-area Member States) for an in-depth review following an initial economic reading of the scoreboard of indicators. All 12 countries only received country-specific recommendations via the preventive arm, while for no country the corrective arm was applied. The Council followed with this decision the recommendation issued by the Commission.

The 2011 scoreboard of ten indicators used for the surveillance of macroeconomic imbalances (Table 3) depicts the respective thresholds breached by the individual euro area countries. The number of exceeding thresholds remains particularly high, since despite adjustment in flow variables (such as current account, unit labour costs and the REER) the stock variables pose severe vulnerabilities: External, private and public debt variables feature the highest number of exceeding thresholds (grey background).

3.3 An assessment of the new framework for macroeconomic surveillance

Recalling the shortcomings in the governance framework which existed prior to the crisis, we emphasised (1) the lack of identification tools, (2) the limited legal enforceability as well as (3) the implementation of the existing rules. In a stylised *ex post* analysis, the new governance framework is assessed against these shortcomings.

[10] While this holds overall, policy makers can also influence the current account balance more directly through changes in public investment and consumption, which would then in turn impact to some extent also the trade balances (through imports) and therefore the current account balance.

Table 3

European Commission Scoreboard 2011

	Current Account Balance *(percent of GDP, 3-year average)*	Net International Investment Position *(percent of GDP)*	Export Market Shares *(5-year percentage change)*	Real Effective Exchange Rate, HICP Deflated *(3-year percentage change)*	Nominal Unit Labour Cost *(3-year percentage change)*	Private Sector Credit Flow *(percent of GDP)*	Private Sector Debt *(percent of GDP)*	General Government Debt *(percent of GDP)*	House Prices, Consumption Deflated *(y-o-y percentage change)*	Unemploy-ment Rate *(3-year average)*	Financial Liabilities *(y-o-y percentage change)*
Threshold	**+6/–4%**	**–35%**	**–6%**	**+/–5%**	**+9%**	**+15%**	**160%**	**60%**	**+6%**	**+10%**	**+16.5%**
Belgium	–0.3	65.7	–10.2	–0.5	6.2	11.6	236	98	–0.1	7.8	4.7
Germany	5.9	32.6	–8.4	–3.9	5.9	4.8	128	81	1.4	6.9	2.1
Estonia	2.8	–57.8	11.1	0.8	–6.2	6.8	133	6	3.3	14.4	–4.4
Ireland	0.0	–96.0	–12.2	–9.1	–12.8	4.0	310	106	–15.2	13.3	–0.6
Greece	–10.4	–86.1	–18.7	3.1	4.1	–5.5	125	171	–5.1	13.2	–3.4
Spain	–4.3	–91.7	–7.6	–1.3	–2.1	–4.1	218	69	–10.0	19.9	3.7
France	–1.6	–15.9	–11.2	–3.2	6.0	4.0	160	86	3.8	9.6	7.3
Italy	–2.9	–20.6	–18.4	–2.1	4.4	2.6	129	121	–2.0	8.2	3.8
Cyprus	–8.4	–71.3	–16.4	–0.9	8.8	16.1	288	71	–8.5	6.6	–0.2
Luxembourg	7.5	107.8	–10.1	0.8	12.5	2.5	326	18	1.5	4.8	11.3
Malta	–4.3	5.7	11.7	–3.0	5.8	2.2	210	71	–2.3	6.8	1.4
Netherlands	7.5	35.5	–8.2	–1.6	5.8	0.7	225	66	–4.0	4.2	7.2
Austria	2.2	–2.3	–12.7	–1.0	5.9	4.1	161	72	–8.0	4.4	–0.3
Portugal	–9.1	–105.0	–9.5	–1.9	0.9	–3.2	249	108	–3.6	11.9	–0.7
Slovenia	–0.4	–41.2	–6.1	–0.3	8.3	1.9	128	47	1.0	7.1	–1.3
Slovak Rep.	–2.1	–64.4	20.9	4.3	4.4	3.3	76	43	–5.6	13.4	1.2
Finland	0.6	13.1	–22.9	–1.3	9.1	4.6	179	49	–0.3	8.1	30.8

Source: European Commission, *2013 Alert Mechanism Report*.
Note: Cells with grey background denote that the country has exceeded the respective threshold of the indicator.

1) Identification

Assuming the new MIP would have existed at the start of Stage 3 of EMU in 1999, would the scoreboard of indicators have issued early warnings for the current group of vulnerable countries[1]? Table 4 depicts a simple sum of indicators exceeding the relevant scoreboard indicators per country in a given year. The calculation of thresholds, which are based on statistical distributions from in most cases 1995-2007, is assumed to remain identical.[2] The calculations suggest that macroeconomic imbalances in the three EU/IMF-programme countries, particularly in Greece would have been identified early on (e.g., around 2003/2004). Interestingly alarm bells would have even been clearer for Spain, which exceeded six or even seven out of the eleven indicators continuously since 2005. Similarly, macroeconomic imbalances would have been identified more timely in Cyprus. However, several caveat needs to be attached to assessing the simple sum of indicators exceeding thresholds. This relates to both the selected variables as such, but also to the threshold computed.

With respect to the eleven scoreboard variables they were chosen as to provide a rough filter for a preliminary list of countries which could be exposed to macroeconomic imbalances. The respective regulation (1176/2011, Art. 4(4)), however, clearly indicates that underlying economic developments need to be considered, *i.e.*, an "economic reading" of the indicators applied. A comparison of Cyprus and Estonia, both with six to seven indicators exceeding the thresholds from 2005-2007, serves as an example which suggests that the scoreboard cannot offer more than a first indication. Both relatively new euro area Member States would have experienced several breaks of multiple thresholds. However, whereas for Estonia there are indications that typical catching-up processes were at work (e.g., current account deficits have been largely financed by foreign direct investment), though alongside some signs of overheating, the indicators for Cyprus suggest rather unsustainable, non-catching-up effects to prevail.

Moreover, the variables are used in different representations. While, e.g., for the current account balance its developments are assessed as percent of GDP on a three year average, the export market share is shown as five year percentage change, and again the financial liabilities or house prices as year on year change. In particular the variables which only look at shorter horizons are likely to miss the stock problem of the variables. E.g., while persistently and strongly rising house prices would indeed be captured by the scoreboard, once the strong rises stop, the indicator would not signal imbalances, despite the fact that house prices remain significantly overvalued (as, e.g., in Spain in 2008). Such developments need to be found in the economic reading of the variable.

Also the threshold symmetry of some scoreboard variables needs to undergo a close scrutiny during the economic reading. Such symmetry has been applied to the current account and the REER. While the current account surplus threshold is slightly higher than the deficit threshold (+6/–4 per cent of GDP), still exceeding the threshold on the positive side is seen as indication of macroeconomic imbalances. However, past experiences suggest that fundamental differences exist between current account surpluses and deficits, with the latter posing much more serious risks. This is also acknowledged by the ECOFIN concluding, "that unlike current account deficits, large and sustained current account surpluses do not raise concerns about the sustainability of external debt or financing capacity that affect the smooth functioning of the euro area; the risks of negative spill-overs for current account surpluses are therefore less pressing than for current account deficits."[3] Similar arguments can be found for a depreciation of the HICP deflated real effective

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1 The group of vulnerable countries captures the three full EU/IMF programme countries, plus Spain, Italy and Cyprus.

2 Due to data limitation with the Eurostat and European Commission datasets, backward calculations of thresholds before 1995 are hardly possible.

3 Council of the 2013 Annual Growth Survey (3220th Economic and Financial Affairs Council Meeting, Brussels, 12 February 2013).

Table 4

Retrospective Evaluation of the Scoreboard Since 1999

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Belgium	3	3	3	2	4	3	2	3	4	4	4	3	3
Germany	2	3	1	2	2	2	2	2	3	2	2	3	2
Estonia	(6)	(6)	(5)	(6)	(6)	(7)	(6)	(6)	(7)	(5)	(5)	(4)	2
Ireland	0	2	0	2	3	5	5	6	5	7	5	5	6
Greece	(3)	(5)	5	4	6	6	7	5	5	4	6	5	5
Spain	4	2	3	4	5	5	7	7	7	6	7	6	6
France	3	3	2	1	3	3	3	3	2	2	2	2	3
Italy	3	4	4	2	4	4	2	2	2	2	3	2	2
Cyprus	(3)	(3)	(2)	(4)	(4)	(6)	(7)	(6)	(6)	4	5	6	6
Luxembourg	2	1	2	2	2	2	2	2	3	3	4	3	4
Malta	(2)	(1)	(1)	(1)	(3)	(5)	(6)	(6)	(6)	7	5	5	3
Netherlands	3	3	3	2	3	2	2	2	2	3	4	3	4
Austria	3	3	2	1	1	1	2	1	2	1	3	3	3
Portugal	3	6	6	4	5	5	5	5	5	6	5	6	6
Slovenia	(2)	(2)	(2)	(2)	(2)	(1)	(2)	(1)	3	4	3	2	2
Slovakia	(3)	(4)	(4)	(4)	(4)	(4)	(6)	(5)	(6)	(5)	5	5	2
Finland	4	6	2	2	3	2	1	1	1	2	4	4	4

Source: European Commission, ECB calculations. Note: Cells with light (medium; dark) grey background denote that the respective country exceeded 5 (6; 7) thresholds of the 11 indicators. Countries are in brackets before they joined the euro area. Generally in these cases no background colouring has been attributed.

exchange rate, which is less problematic than a persistent appreciation, which in a monetary union is likely to reflect strong and persistently increasing prices.

Lastly, indicators are currently represented in absolute terms, *i.e.*, not relative to developments of other euro area countries. However, one of the main aims of the scoreboard, to identify losses in competitiveness, needs to be looked at in relative terms. More precisely, given that costs and prices in a monetary union are the main channels through which adjustment in cases of shocks can be achieved, their developments should be assessed relative to the euro area average to indicate losses versus other Member States.

One could therefore conclude that the new governance framework, with the implementation of the scoreboard of indicators of macroeconomic imbalances, has eliminated the lack of identification tools with respect to unsustainable economic policies in EU Member States. However, several issues with respect to the construction of the scoreboard indicators and thresholds need to be targeted, either by changes to the scoreboard itself or through an enhanced "economic reading" of the variables.

2) Enforceability

However, the ability to identify the problem does not imply that the necessary rules are in place to ensure the enforceability. Prior to the crisis, EU institutions couldn't act beyond the issuance of warnings in case a Member State conducted economic policies not in line with the smooth functioning of EMU. The Regulations covering the new Macroeconomic Imbalance Procedure, however, give the EU institutions sanction mechanism at hand for countries under the corrective arm which should ensure compliance with the set of actions required from Member States. Should a country fail twice to present a sufficient corrective action plan (CAP) the Council can decide to directly impose a fine of 0.1 per cent of GDP. On the contrary, if the Member State submits a sufficient CAP but fails to take sufficient action in implementing it, the Council is in the position to impose an interest-bearing deposit of 0.1 per cent of GDP. In case of repeated non-compliance the deposit can, upon decision of the Council, be converted into an annual fine of the same magnitude. The voting procedure for the overall procedure was changed as well in order to introduce a greater degree of automaticity: Following the so-called "reversed qualified majority voting", the recommendation of the Commission to, e.g., apply the corrective arm, or later impose fines would need to be rejected in the Council by a qualified majority.

However, these enforcement possibilities only exist for countries under the corrective arm of the MIP. Should a Member State not comply with recommendations received under the preventive arm, no instrument exists to enforce related policy measures. Consequently, recommendations under the preventive arm are not much different to the framework of economic policy coordination which existed before the crisis.

Consequently, given that tools to identify the problem and legal enforcement possibilities have been added, an effective implementation of the new governance framework remains the cornerstone.

3) Implementation

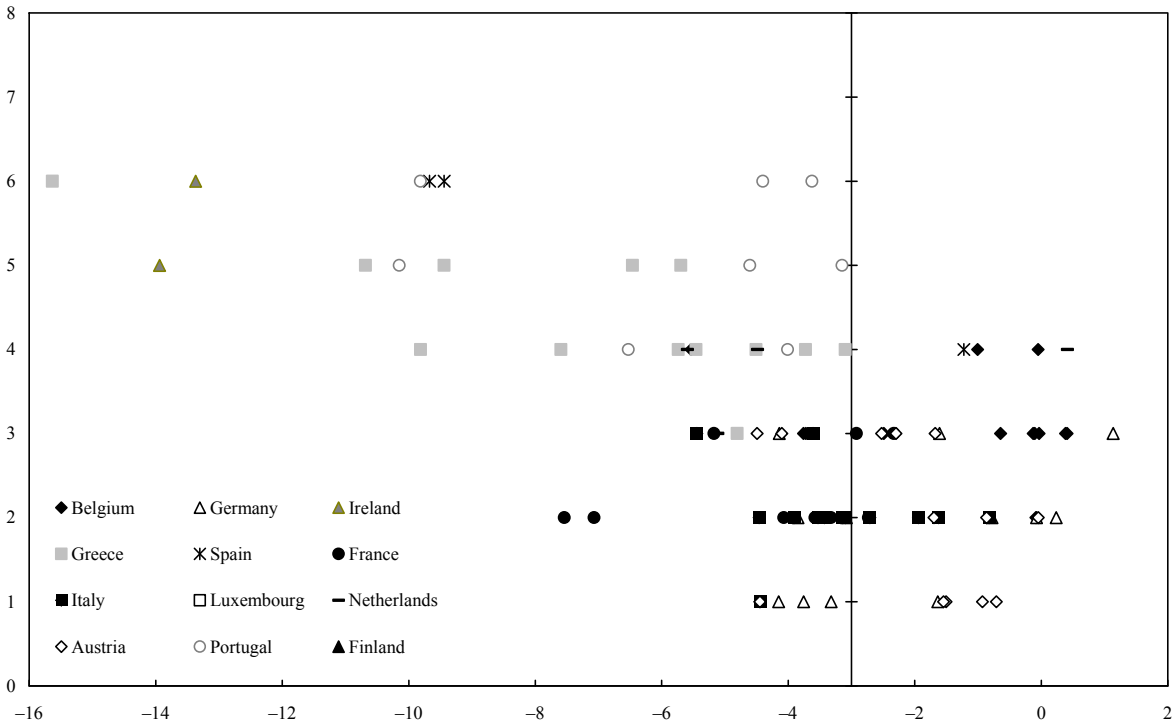
In contrast to the *corrective* arm of the SGP with the reference values for the budget deficit of 3 per cent of GDP and 60 per cent for the general government debt ratio which should automatically trigger corrective action via the launch of an excessive deficit procedure, the rules of the MIP framework do not imply the same degree of automaticity. However, as long as no automaticity is attached to the rules, room for discretion remains for the exercising and deciding bodies, rendering a bold interpretation of the framework most important to ensure an effective implementation.

With respect to the MIP, it is within the power of the European Commission, as the exercising body, to identify countries for an in-depth review (Art. 3(3)), and – at a later stage – to evaluate whether the Member State in question is affected by imbalances, and of whether these imbalances are excessive (Art 5(3)). However the final decision rests with the Council as, the issued recommendation of the Commission needs to be adopted by the Council (in accordance with Art. 121(4) TFEU). Eventually, assuming the case in which the Commission recommended the opening of the Excessive Imbalance Procedure and the Member State did not comply with the corrective actions agreed on, the Council has to reject by qualified majority the assessment of non-compliance and the subsequent sanctions. In a nutshell, this means that the full implementation of the procedure in case a country exhibits excessive imbalances requires two actions: First, the Commission needs to come to the conclusion that excessive imbalances exist in a Member State (and subsequently corrective actions not complied with) and issue recommendations accordingly. Second, the Council needs to adopt the Commission's recommendations, *i.e.*, not reject the recommendation by qualified majority.

Figure 7

Interconnection Between SGP/MIP (1999-2011)

(x-axis: deficit in percent of GDP; y-axis: number of indicators' thresholds exceeded in MIP)



Source: Authors calculations. Note: Only countries are shown which in a given year have a debt to GDP ratio above 60 per cent of GDP.

With the implementation of the "reversed qualified majority voting" the likelihood that a Commission recommendation will not be voted down has increased and with it the effective implementation of the procedure. However, in contrast to the fiscal governance framework, the Macroeconomic Imbalance Procedure is much more dependent on the assessment of indicators by the Commission. In contrast to the clearly defined Maastricht thresholds of not more than 3 per cent budget deficit and 60 per cent of public debt both in terms of GDP, the MIP regulations remain relatively vague on the criteria to establish "excessive imbalances" in a country. It therefore rests with the Commission to construct a conclusion from the large set of indicators available. Consequently, a rigorous implementation of the new procedure becomes to a much larger extent the responsibility of the EU.

4 Interaction between fiscal and macroeconomic governance framework

The limitations of identifying fiscal imbalances and adjustment in real time calls for a broader concept of fiscal and economic surveillance (see for this argument also Larch *et al*., 2010).

However, the SGP and MIP are rather separate from each other. Fiscal policy indicators are only to a little extent included in the MIP, precisely by the government debt to GDP ratio as one of the eleven scoreboard indicators. However, as the Commission clarifies this indicator is *"…included in the scoreboard not to monitor risks of unsustainable public finances, which are*

covered by the Stability and Growth Pact, but to be considered together with the indicator on private debt and thereby to offer a broader picture of Member States' indebtednes".[4] Conversely, the strengthened SGP is also not tied explicitly to the development of macroeconomic imbalances. However, the developments of past years have in fact indicated the interconnectedness of the unsustainable fiscal policies and macroeconomic imbalances. Applying the identification mechanism of both procedures retrospectively for each year suggests a similar set of problematic countries. Figure 7 suggests a high correlation between SGP and MIP outcomes. Looking at countries with a public debt of over 60 per cent of GDP, the higher their budget deficit to GDP ratio the higher tends to be the threshold exceeded in the scoreboard of the MIP. All three EU-IMF-programme countries as well as Spain rank in this upper/left part of the figure. This suggests a strong correlation of both procedures.

Against the finding presented in Section 2, it seems that the currently applied method to derive cyclically-adjusted budget balances by making use of the real-time output gap estimates would have led with hindsight to a substantial underestimation of the structural deficit and henceforth the need for consolidation. At the same time, Figure 7 suggests a strong correlation of fiscal and macroeconomic developments. Against this background it should be investigated whether specific variables captured in the scoreboard of the MIP, could provide valuable information for a country's position in the economic cycle in addition to the real-time output gaps used in the strengthened SGP.

Figure 8 recalls the substantial projection error of the output gap estimates in real-time by comparing it against the latest vintage of estimates (using the example of three[5] full-programme countries (Greece, Ireland and Portugal) as well as Spain with its financial sector programme).

In order to determine whether the MIP framework would outperform the output gap estimates in terms of accuracy, we apply a simple Principal Component Analysis (PCA). Primarily, we make use of the flow variables captured in the MIP scoreboard, *i.e.*, unit labour costs, inflation, the current account balance and the unemployment rate.[6] The first principal component of this set of variables has a surprisingly strong correlation with the final output gap measure. This suggests that the information used for the MIP might indeed help removing the real-time bias of the output gap, thereby potentially addressing some of the weaknesses in the fiscal governance framework.

While the above mentioned macro variables seem to provide a better fit of the final output gap measure, the question remains whether the final estimate is the appropriate underlying measure to derive the structural budget balance. It is sometimes argued, e.g., by Borio *et al*., 2013, that the output gap has been persistently underestimated applying the standard estimation framework. By contrast, the inclusion of financial indicators would result in a more precise mapping of the true output gap. We augmented the set of indicators used in the PCA, by adding private credit growth and financial liabilities and find that the financially augmented output gap would have been sizeably larger.[7] This, in turn, suggest that the cyclically-adjusted deficit would have been significantly larger, consequently implying the need for tighter fiscal policies (see Figure 9). While the approach applied here is admittedly simplistic and can only be a starting point, it should be seen as food for thought on further steps towards constructing measures of potential output which are less prone to revisions than current estimates.

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4 "Scoreboard for the Surveillance of Macroeconomic Imbalances", *European Economy*, Occasional Paper, No. 92, February 2012.

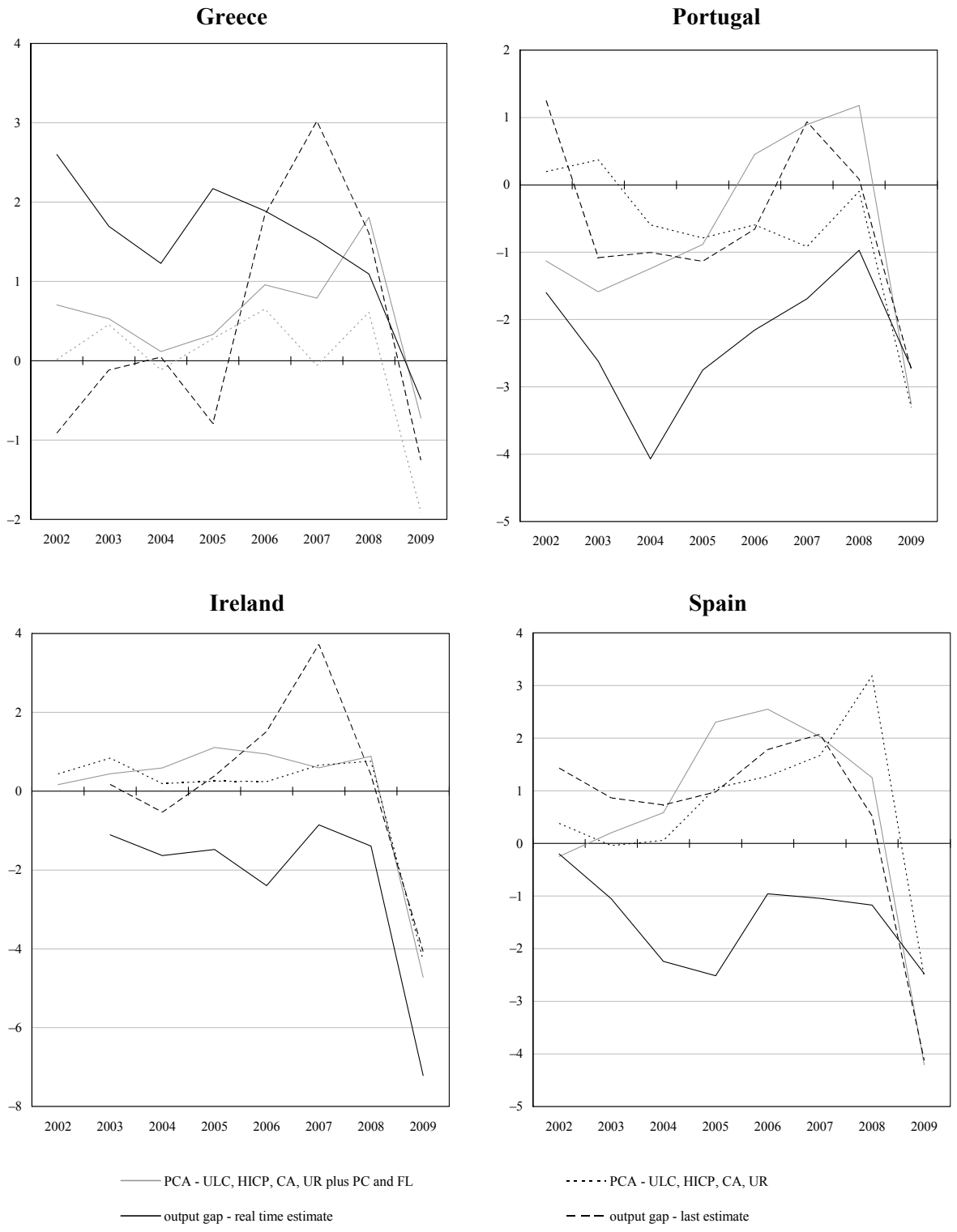
5 Cyprus is excluded given limited data availability.

6 The underlying variables are used for the exercise, since year on year developments give a timelier signal of economic developments, in contrast to the multiple year averages as for example the case for the current account indicator in the scoreboard.

7 Adding house prices exemplifies this trend for course with large housing booms, e.g., Spain. While this overall patterns remains largely unchanged when turning to several euro area non-programme countries (see Figure 10 in the Annex), the correlation with the final estimate is somewhat less strong.

Figure 8

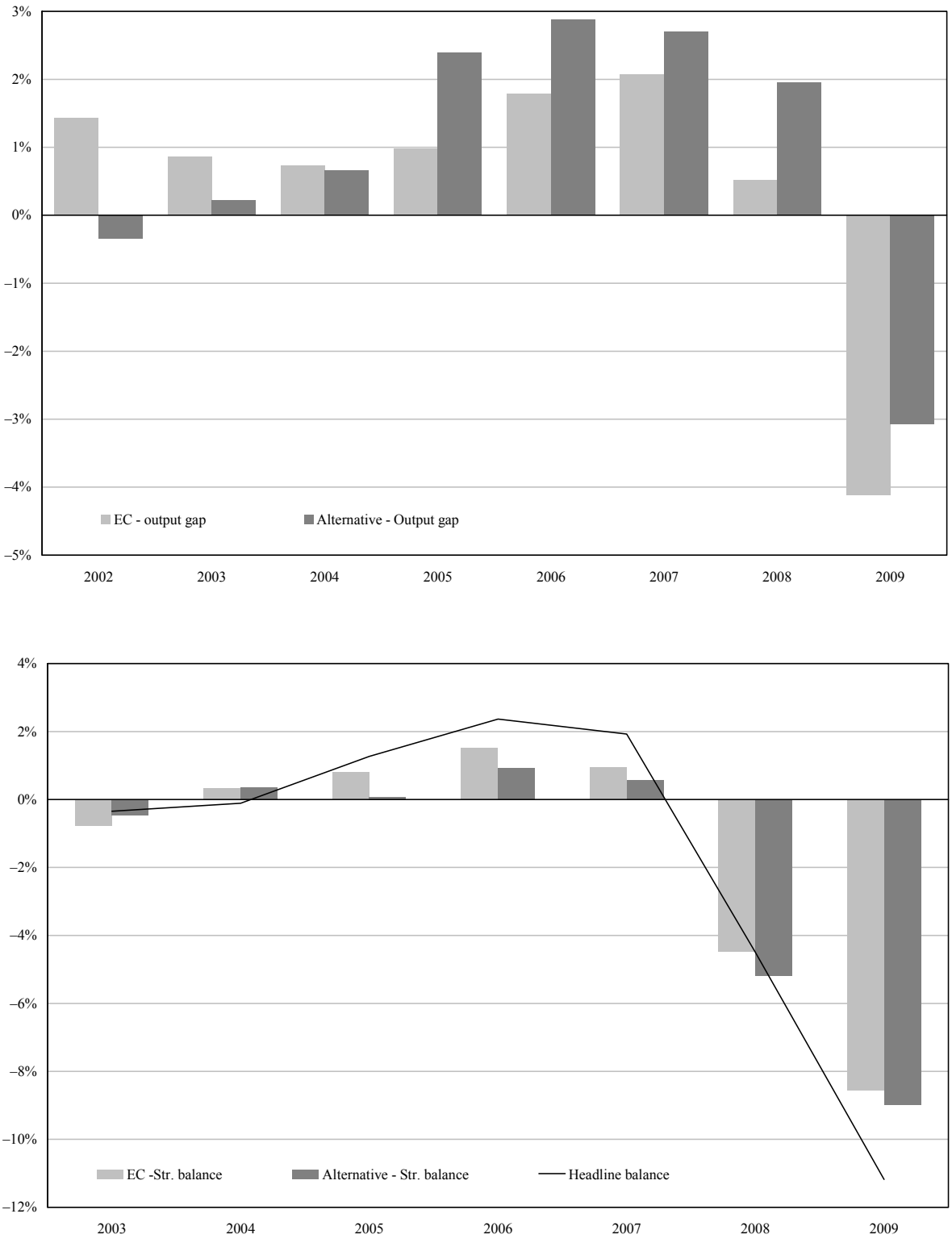
Comparison of Output Gap Estimates



Source: Data from Eurostat and European Commission, authors' calculations.
Note: Due to data limitations, output gap data for Ireland only start in 2003.

Figure 9

Structural Balances Based on Different Output Gap Measures



Source: European Commission.

5 Conclusions

Important progress in strengthening the resilience of EMU has been achieved since the start of this crisis, particularly through a new governance framework stipulating a stronger control of fiscal and economic policies. Would the current framework have been in place already at the start of Stage Three of EMU, it would most certainly have led to more limited economic and budgetary imbalances. As regards fiscal positions, the balanced budget rule, the expenditure benchmark as well as the debt benchmark provide important tools to constrain unsustainable fiscal policies. Still, the fiscal framework would have remained prone to misjudging underlying fiscal positions and thus potential imbalances in real time. This relates notably to the weakness of the structural budget balance as real-time surveillance indicator of underlying fiscal positions and efforts. Recent studies suggest that the real-time bias in structural balance estimates may be attenuated through inclusion of financial variables. Against this background, we take a related approach by using core information from the Macroeconomic Imbalance Procedure. First results are encouraging, although we argue that a broad economic reading or a slightly amended scoreboard would help to improve the identification of imbalances further. However, much more in-depth analysis and robustness checks are needed before firm conclusions should be drawn.

One of the key findings of the paper is therefore that a stronger connection between the EU fiscal and macro governance frameworks might in principle facilitate the early identification of unsustainable developments. The indicators captured in the MIP scoreboard turn out to be a good indicator of real-time fiscal and economic developments. Moreover, when also taking into account the financial indicators of the scoreboard, it seems that even the last vintage of output gaps underestimated the cyclical position. Assuming that this measure more accurately captures cyclical developments, fiscal policies would need to have been tighter to achieve sustainable structural positions.

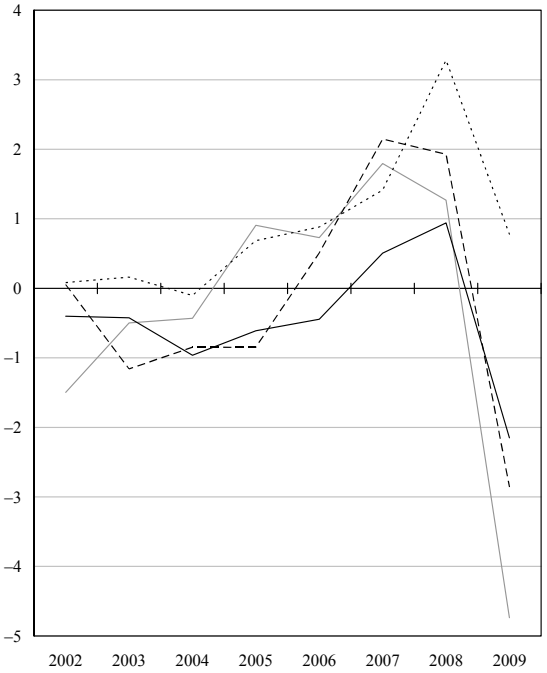
To conclude, the EU fiscal and economic governance has important tools at hand to identify fiscal and economic imbalances. A further strengthening of the governance framework should build on gradually establishing a more integrated surveillance using the synergies of the until now rather unrelated fiscal and economic governance frameworks. The effectiveness of any governance framework, however, always depends on the stringency with which its rules are implemented. The European Commission as the guardian of the strengthened EU governance framework therefore has an important role to play to ensure indeed fiscal and macroeconomic imbalances are prevented, identified and corrected in a timelier manner than ahead of the crisis.

ANNEX

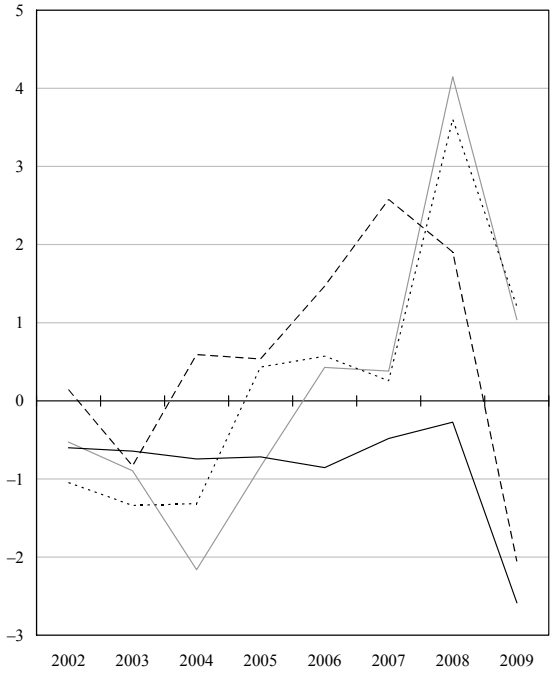
Figure 10

Comparison of Output Gap Estimates for Non-programme Euro-area Countries

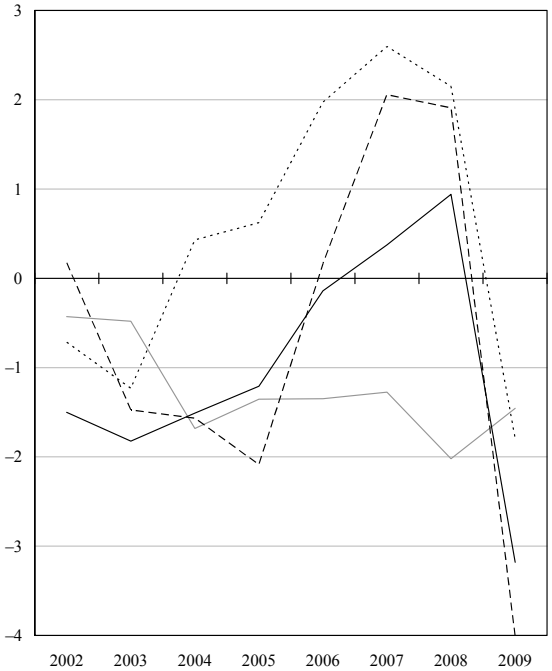
Austria



Belgium



Germany



Finland

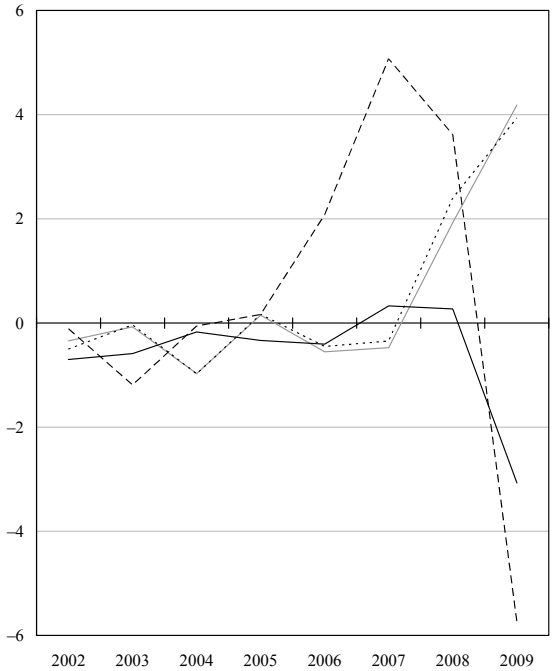


Figure 10 (continued)

Comparison of Output Gap Estimates for Non-programme Euro-area Countries

Source: Data from Eurostat and European Commission, authors' calculations. Limited data availability constrains the set of euro area countries used for this purpose.

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