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Towards Expenditure Rules and Fiscal Sanity in the Euro Area

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TOWARDS EXPENDITURE RULES AND FISCAL SANITY IN THE EURO AREA

by Sebastian Hauptmeier,
Jesus Sanchez Fuentes
and Ludger Schuknecht

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TOWARDS EXPENDITURE RULES AND FISCAL SANITY IN THE EURO AREA[1]

by Sebastian Hauptmeier,[2] Jesus Sanchez Fuentes[3] and Ludger Schuknecht[4]

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Abstract: The study looks at primary expenditure developments in the euro area, its three largest members and four "macro-imbalances" countries for the period 1999-2009. It compares actual expenditure trends with those that would have prevailed if countries had followed neutral policies based on expenditure rules since the start of EMU. It also calculates the implications for debt trends. It finds that, all sample countries except Germany applied expansionary expenditure policies. This resulted in much higher expenditure and debt paths compared to a counterfactual neutral expenditure stance. Simple and prudent rules-based spending policies could have led to much safer fiscal positions much more in line with the EU's Stability and Growth Pact rules.

Keywords: Expenditure policies, public debt, expenditure rules, sustainability, fiscal stance
JEL code: E17, E61, E65, H50, H60

Non-technical summary:

The study first looks at the role of expenditure policies in explaining adverse fiscal dynamics during EMU. It asks how expenditure paths and public debt developments would have looked like if countries had followed a neutral expenditure stance based on the pursuit of expenditure rules during EMU (1999-2009). The study focuses on i) the euro area 12, ii) its largest three member countries that have a major influence on euro area averages, Germany, France, and Italy, iii) the countries that accumulated significant macroeconomic imbalances and which have attracted particular attention from the perspective of the functioning of EMU, i.e., Ireland, Greece, Portugal and Spain, and iv) various measures of long term or potential growth in economic activity based on real time and ex post data underlying the choice of expenditure rules.

In a first step, the study assesses the impact of the fiscal stance on primary expenditure ratios and public debt ratios and, thus, provides a measure of prudence or imprudence of past expenditure policies. The study finds that on the basis of real time rules, expenditure and debt ratios in 2009 for the euro area aggregate would not have been much different with neutral expenditure policies than actually experienced. But this masks the offsetting effect of strongly restrictive expenditure policies in Germany and more or less expansionary policies in the other sample countries (and notably in the "macro-imbalances countries") of the euro area. Neutral expenditure policies over the 1999-2009 period in all countries and with Germany's policies unchanged would have implied lower primary expenditure ratios by 2-3 ½ pp in 2009.

Moreover, the results for real time rules are much more benign than those based on ex post rules because all countries experienced more or less significant annual and cumulative downward revisions in trend growth. Primary expenditure ratios would have been 2-3½ pp of GDP lower for the euro area aggregate, 3-5pp of GDP for the euro area without Germany and up to over 10 pp of GDP lower in certain countries if expenditure policies had been neutral during EMU.

Taking into account macroeconomic feedback and compound interest effects, the study also suggests that the deviation from neutral expenditure policies before and during the crisis has contributed strongly to public debt dynamics, notably in the macro-imbalances countries. Public debt ratios in the euro area would not have been much above 60% and in the macro-imbalances countries near or below 60% at the end of 2009 if a neutral expenditure stance had been pursued. This would have hardly precipitated the fiscal crisis that was experienced in the spring of 2010.

Second, the study conducts a tentative empirical analysis of the determinants of euro area countries' expenditure stance during EMU. It finds that the policy stance tends to be pro-cyclical whereas strong budgetary institutions limit this spending bias. Moreover, spending growth above that implied by a neutral policy rule tends to be correlated with the political business cycle and the stability of governments. High public debt and the existence of an excessive deficit procedure in the context of the Stability and Growth Pact do not seem to have significantly affected the expenditure stance.

From the policy perspective of creating sound fiscal institutions in Europe, the paper recommends expenditure rules with an added margin of prudence for guiding public budgets. A potential GDP growth rule with a deduction of ½ pp from annual expenditure growth looks broadly reasonable given the experience of growth revisions of almost ½ pp of GDP per annum in EMU in 1999-2009. Moreover, capping the deflator at the ECB price stability objective may be warranted for "high inflation" countries. However, the normative exercise of this study is to define rules for a neutral expenditure stance that is appropriately prudent and robust to economic uncertainties. It does not aim per se to change the expenditure ratio or solve any pre-existing macro-imbalances problems. In such cases, an additional expenditure consolidation margin needs to be built in. Finally, there is also a case for strongly anchoring expenditure rules in countries' institutional framework to strengthen their credibility.

1. Introduction

EMU has been a great success in many ways, as it has contributed to macroeconomic stability, financial integration, and growth convergence in Europe. However, EMU has also got a mixed record as regards public finances and public debt developments, the emergence of macroeconomic imbalances in some countries and the interplay between the two. A number of studies have pointed to expansionary expenditure policies in many European countries for much of the EMU period (Holm-Hadulla, Hauptmeier and Rother, 2010; Schuknecht, 2009 and 2010; Turrini, 2008). If expenditure policies were at the root of much of the current, significant fiscal imbalances, this would have important implications for future fiscal reform strategies.

This study takes an in-depth look at the expenditure stance in the euro area and a number of its member states since the start of EMU. In particular, it derives the fiscal stance in the sample economies against the benchmark of a number of expenditure rules (based on both real time and ex post information) which define a neutral fiscal stance. By quantitatively assessing the impact of the fiscal stance on primary expenditure ratios and public debt ratios, it provides a measure of prudence or imprudence of past expenditure policies. The study focuses on i) the euro area 12, ii) its largest three member countries that have a major influence on euro area averages, Germany, France, and Italy, and iii) the countries that accumulated significant macroeconomic imbalances and which have attracted particular attention from the perspective of the functioning of EMU, i.e., Ireland, Greece, Portugal and Spain.

Taking into account macroeconomic feedback and compound interest effects, the study finds that on the basis of real time rules, expenditure and debt ratios in 2009 for the euro area aggregate would not have been much different with neutral expenditure policies than actually experienced. But this masks the offsetting effect of strongly restrictive expenditure policies in Germany and more or less expansionary policies in the other sample countries (and notably in the "macro-imbalances countries") of the euro area. Neutral expenditure policies over the 1999-2009 period in all countries and with Germany's policies unchanged would have implied lower primary expenditure ratios by 2-3½ pp in 2009. Moreover, the results for real time rules are much more benign than those based on ex post rules because all countries experienced more or less significant annual and cumulative downward revisions in trend growth. Primary expenditure ratios would have been 2-3½ pp of GDP lower for the euro area aggregate, 3-5pp of GDP for the euro area without Germany and up to

over 10 pp of GDP lower in certain countries if expenditure policies had been neutral during EMU.[1] It is important to note that - for the euro area excluding Germany - more than half of the spending above that implied by neutral policy rules already accumulates in the pre-crisis period up to 2007. For the macro-imbalances countries this share amounts to almost two thirds.

The study also suggests that the deviation from neutral expenditure policies before and during the crisis has contributed strongly to public debt dynamics, notably in the imbalances countries. Public debt ratios in the euro area would not have been much above 60% and in the macro-imbalances countries near or below 60% at the end of 2009 if a neutral expenditure stance had been pursued. This would have hardly precipitated the fiscal crisis that was experienced in the spring of 2010.

Moreover, the study conducts a tentative empirical analysis of the determinants of euro area countries' expenditure stance during EMU. It finds that the policy stance tends to be pro-cyclical whereas strong budgetary institutions limit this spending bias. Moreover, spending growth above that implied by a neutral policy rule tends to be correlated with the political business cycle and the stability of governments. High public debt and the existence of an excessive deficit procedure in the context of the Stability and Growth Pact do not seem to have significantly affected the expenditure stance.

From the policy perspective of creating sound fiscal institutions in Europe, the paper recommends expenditure rules with an added margin of prudence for guiding public budgets. A potential GDP growth rule with a deduction of ½ pp from annual expenditure growth looks broadly reasonable (given average cumulative GDP growth revisions of 4.5% of GDP for 1999-2009 in the euro area). Moreover, capping the deflator at the ECB price stability objective may be warranted for "high inflation" countries. However, the normative exercise of this study is to define rules for a neutral expenditure stance that is appropriately prudent and robust to economic uncertainties. It does not aim per se to change the expenditure ratio or solve any pre-existing imbalances problems. In such cases, an additional expenditure consolidation margin needs to be built in. Finally, there is also a case for strongly anchoring expenditure rules in countries' institutional framework to strengthen their credibility.

[1] Note that the results presented in this paper are based on mechanical simulations. The aim of the exercise is to quantify the degree of expansionary spending policies and not necessarily to assess the appropriateness of the fiscal policy stance during the financial and economic crisis.

The next section provides some stylised facts on key fiscal and economic variables. Section 3 looks at methodological issues. Section 4 derives the assessment of the expenditure stance and the implications for primary expenditure ratios in the sample economies before Section 5 examines debt developments as implied by the expenditure stance. Section 6 provides an empirical analysis of the factors determining the governments' tendencies to deviate from neutral spending policies. Section 7 derives some normative conclusions for the choice of expenditure rules while section 8 concludes.

2. Public expenditure trends since the start of EMU

At the start of monetary union in 1999, the euro area budget deficit averaged 1.4% of GDP in nominal and cyclically adjusted terms (Table 1). Over the next 8 years and until before the financial crisis, the nominal fiscal balance improved marginally to -0.6% even though in cyclically adjusted terms it even worsened to -1.9%. Over the crisis the aggregate euro area budgetary position deteriorated significantly further in nominal and cyclically adjusted terms to deficits of about 6% and 5% of GDP respectively. Three well-known messages emerge from this: the starting position in EMU was not sound, it remained unsound in good times and it worsened significantly further during the crisis[2].

-Table 1 about here-

The main "culprit" for these deficit developments as revealed by fiscal accounts is public primary expenditure which closely mirrors developments in the overall balance. Of the 5% deficit increase since the start of EMU almost 4% reflect a higher primary expenditure ratio. When looking at the expenditure composition, the very modest initial decline in primary spending until 2007 reflects mainly a cut in transfer spending, notably in Germany. The subsequent increase reflects higher government consumption (in particular public wages) and transfers in almost equal proportion. Revenue developments played only a modest role in explaining budgetary developments.

As regards individual countries, there is also a close match between developments in the expenditure and in the fiscal balance ratio with the exception of

[2] See Van Riet (ed.) (2010) for an overview of the role of euro area fiscal policies during the financial and economic crisis.

Germany. Only Germany reports no increase in the primary and total expenditure ratio over 1999-2009. In all other countries, the primary expenditure ratio has increased significantly between 1999 and 2009 while the difference is close to the deficit increase over the period. It is also noteworthy that all economies with significant macroeconomic imbalances experienced an increase in government consumption and all except Spain also a rise in public transfers already in good times before major further increases occurred in the crisis. Ireland almost doubled its transfer spending as a share of GDP over the 11-year period while in Portugal transfers increased by about 6pp of GDP.

These "naked" accounting facts already signal that over "boom and bust", public finance developments were very much determined by expenditure policies in these countries. This is also reflected in the last line of all panels in Table 1 which shows the euro area aggregate without Germany. The primary expenditure ratio, for example, even increased slightly over the 1999-2007 period before the strong rise during the crisis. By 2009, primary expenditure ratios had reached levels near or above historic records.

Before turning to a more in-depth, technical analysis of expenditure trends in EMU, some stylised facts can help further pin-point certain aggregate and country-specific trends. Figure 1 provides GDP, inflation and expenditure trends across euro area countries relative to the euro area average. Two findings are striking: First, public expenditure trends are even more diverse than nominal GDP trends and this holds particularly for public transfers. Second, expenditure dynamics are particularly buoyant in Ireland, Spain and Greece. Expenditure growth and nominal GDP growth broadly follow the euro area average in France and Italy while expenditure was somewhat more buoyant in Portugal notably on transfers. Only Germany displays expenditure dynamics that are even more below average than its GDP growth.

-Figure 1 about here-

All in all, these stylised facts show rising public deficits and expenditure ratios in the euro area and most of its member countries with particularly strong expenditure dynamics in the macro-imbalances countries. Only Germany reported significant declines in public expenditure ratios in the good times until 2007.

3. Methodological issues

As discussed above, the main aim of our study is to offer simulations highlighting what would have occurred on the spending side of national budgets if governments had followed "neutral" expenditure policies based on a set of rules.

Our simulation exercise follows a sequence of steps: First, numerical spending rules in terms of predefined growth rates are applied in a recursive manner to country-specific and euro area aggregate spending levels starting with the base year of our analysis, i.e. 1999. This allows us to compute "alternative" - rule- and country-specific - spending paths for primary expenditure and other major spending categories. These can then be contrasted with actual developments. In a second step, the resulting gaps between actual and "neutral" spending are used to assess the implications of alternative expenditure paths for the accumulation of government debt. The analysis also takes into account macroeconomic feedback effects of changes in the fiscal stance as well as compound interest effects.

Given that our study focuses on euro area countries the choice of using the European Commission AMECO macroeconomic database is straightforward. At the same time, it allows us to recover "real-time" data from its different vintages which for our purpose is important to ensure that policies are assessed on the basis of the information set available to policy-makers at the time of implementation of policy measures. Substantial data revisions, which have occurred repeatedly in the past, may result in a different assessment of the underlying policy stance when using ex-post and real-time data respectively (see Cimadomo, 2008). Our real-time dataset is constructed such that the one-year ahead forecast of the Commission's autumn macroeconomic projection in year *t-1* constitutes the information set available to the policy-makers when setting up expenditure plans for year *t*.

Before turning to the computation of alternative expenditure paths, we have to choose the specific policy rules to be applied. In practice, expenditure rules tend to define ceilings or target growth rates, either in real or nominal terms.[3] For the purpose of this study we focus on the latter type of rules. The objective of ensuring neutrality of expenditure policies constitutes the guiding principle for our choice. A natural benchmark that immediately comes to mind in this context is to restrict spending growth to some measure of long-term or potential growth in economic activity.

[3] See Chapter 3 in European Commission (2006) for an overview of different types of fiscal rules in EU countries.

Consequently, the following alternative rules were applied in the context of our simulation exercise:

(1) *Nominal Potential GDP Growth (NPG):* According to this rule, the growth rate of spending in a given year is set equal to nominal potential GDP growth. The *NPG* rule is applied both on the basis of ex-post and real-time data.

(2) *Real Potential GDP growth + ECB price stability objective (RPECB):* This rule restricts expenditure growth to real potential GDP growth plus the ECB price stability objective of inflation rates of below, but close to, 2% over the medium term.[4] The *RPECB* rule is applied both on the basis of ex-post and real-time data.

(3) *Nominal average growth 1999-2009 (AV 99-09):* This rule applies a constant growth rate over the period, capturing the average nominal GDP growth rate over the time horizon of our analysis.

(4) *Nominal 10 years moving average growth (10–MA):* Similar to the *AV 99-09* rule, this rule restricts spending growth to a long-term average nominal GDP growth rate, i.e. that of the previous ten years, but captures the real-time aspect due to the moving average calculation.

As discussed above, these rules are applied to actual spending levels in a recursive manner in order to compute alternative spending paths both for the individual countries in our sample as well as for the euro area aggregate. Table A1 in the Appendix gives a formula-based representation of the calculations that have been carried out. In this context, note that we distinguish marginal and cumulative effects of applying the above described set rules. Concretely, the marginal analysis reflects the impact of the deviation from the respective rule on a year-to-year basis whereas the cumulative analysis also takes into account the base effects from deviations in previous years.

Of course, a change in the expenditure stance implied by the ex-post application of any given spending rules, in reality, would exert macroeconomic effects, in particular on the level of output, which needs to be taken into account when recalculating the rule-based path of expenditure-to-GDP ratios for a certain country or the aggregate euro area level. Such macroeconomic feedback effects are incorporated in our analysis by applying standard GDP multipliers in order to estimate the effect of deviations from actual spending levels on nominal GDP. For this purpose, we build on Coenen *et al*

[4] To operationalise the ECB's price stability objective in the context of our simulations we set the annual growth rate of the GDP deflator to 2.0% as an upper bound.

(2010) who carry out a model comparison exercise on the basis of the European Commission's QUEST model, the IMF's GIMF model, the ECB's NAWM and the OECD's Small Fiscal Model. All models have been calibrated or estimated for the euro area in order to compute multipliers for a set of macroeconomic variables. We construct on this basis, considering the middle point of the range presented, country-specific GDP multipliers by taking into account the structure of government spending in each country of our sample, i.e. the share of government consumption, government investment and transfers (see Table A3 for an overview). Using this approach, the size of the GDP multiplier varies from 0.47 in Greece to 0.57 in the case of Ireland.

Once alternative spending paths have been computed, the next step is to assess the implication for the accumulation of government debt. Here, we introduce the simplifying and conservative assumption of constant revenue-to-GDP ratios (implying a GDP elasticity of taxes equal to one) to generate alternative rule-specific deficit paths both for the countries in our sample as well as for the euro area as whole.[5] These deficits are then cumulated into government debt levels, also taking into account compound interest effects. The bottom panel of Table A4 contains the interest rate assumptions applied. In our baseline simulations, we (again conservatively) proxy country-specific interest rates with implicit rates, (i.e. the interest rate paid on average on the given stock of government debt).[6]

Given that the calculation of alternative paths for government debt-to-GDP ratios is affected through a number of channels, i.e. (i) the direct effect of deviations of rule-based spending from actual spending, (ii) the indirect effect of deviation of rule-based spending from actual spending via the GDP multiplier and (iii) the increase in the interest burden due to changes in the accumulation of government debt, these different channels are disentangled analytically and quantitatively. Moreover, alternative assumptions have been considered to explore the sensitiveness of our results with respect to changes in the underlying assumption. While of course quantitative

[5] This is a conservative assumption because we do not assume any second-round/confidence/general equilibrium effects that could result in higher long term growth and revenue from less expansionary expenditure policies. However, as a robustness check we also run the simulations with higher or lower tax elasticities (0.8-1.2). The simulation results show very little change compared to the baseline assumption, as reflected in Annex Figure A1.

[6] Note that we assume the interest rate to be exogenous as we do not incorporate feedback effects of changes in debt accumulation on the interest rate level. This is again a very conservative assumption because if lower spending, deficits and debt also implied lower interest rates the impact of a neutral expenditure stance on the debt ratio would have been even greater. Results change little with different interest rate assumptions as can also be seen in Annex Figure A1.

differences are observed they are limited to that the resulting conclusions remain broadly unaffected (see Annex A, Figure A1 for detailed information).

4. Assessing the public expenditure stance

a. Primary expenditure stance and cumulative expenditure effects

This sub-section analyses public primary expenditure developments over the first 11 years of EMU for the euro area and the seven selected member countries against the benchmark of a neutral expenditure stance. As discussed in the previous section, the neutral stance is proxied by applying a set of six expenditure rules and comparing these to actual primary expenditure developments. Table 2 provides the main findings. Positive figures measure the degree of expansionary policies in pp of GDP accumulated over the period 1999 up to 2007/2009 compared to a neutral expenditure stance. Negative numbers account for the degree of restrictiveness of policies. This is calculated for the six different rules and the 8 economies (euro area + 7 countries).[7]

-Table 2 about here-

When looking, first, at real time expenditure rules, the expenditure stance for the euro area average varied significantly depending on the rule applied. Based on the nominal potential growth (NPG) rule, the euro area stance was around neutral (column 1 and 2 of Table 2). This is reflected in an effect of expenditure policies that is slightly restrictive (the primary expenditure ratio was 0.5pp of GDP lower than with a neutral stance) until 2007 and that turns slightly expansionary until 2009 (0.3%). When capping nominal expenditure growth with the ECB inflation benchmark plus real potential growth (RPECB) rule, the stance was expansionary (column 3-4) as reflected in a primary expenditure ratio increase by 0.6 and 1.6pp of GDP. Recall that this is because countries with a higher inflation than the ECB objective have a lower neutral expenditure growth path than under the unadjusted NPG rule. The 10-year moving average growth rate (10MA) rule, by contrast, suggests a broadly neutral stance (-0.2pp) (column 5-6). The less restrictive effect of this rule is straightforward given that the 11-year period under consideration was characterised to a significant degree by

[7] For example, a figure of 1.2 for 2010 implies that expenditure policies were expansionary by roughly 0.1pp of GDP per annum on average over the 12 year period. However, this can mean that policies were restrictive or neutral in some years.

favourable economic developments, i.e. nominal GDP growth above that of potential output and very high growth at the end of the boom in some countries. At the same time, the strongly negative impact of the crisis on growth is only taken into account when calculating the moving average for the year 2009.

As regards individual countries, however, real time analysis based on potential growth rules finds huge differences across countries. A strongly restrictive stance in Germany resulted in expenditure restraint of over 3% of GDP accumulated over the 11-year period (columns 1-4). Or in other words, Germany consolidated about ¼ pp of GDP per annum via restrictive expenditure policies since the start of EMU. By contrast, a moderately expansionary stance in France and Italy led to a cumulative expenditure increase of 1½ -3 pp of GDP. For Italy, expansionary spending policies had mostly accumulated before the crisis, while policies were more neutral in 2008-09.

A very expansionary stance in the four macro-imbalances countries is reflected in an expenditure increase of up to 10pp of GDP above neutral, depending on the country and method. The normative rule based on the ECB price stability objective (RPECB) "naturally" shows more expansion in the economies where inflation had been typically higher than 2%. Greece and Spain show the highest figures. Moreover, the expansionary effect had already been accumulated to a significant extent by the end of the good years in 2007. Further expansion during the crisis (2008-09) amounted to around 2pp of GDP for the macro-imbalances countries.

For the 10MA rule, a very restrictive stance in Germany is almost counterbalanced by expansion in the other countries. Portugal and Italy report an almost neutral stance.

The last line of panel A in Table 2 illustrates how much the euro area expenditure stance in real time is affected by Germany. This selective exercise is justified by the fact that almost all euro area countries were in unsound fiscal positions at the start of EMU and only Germany has exercised determined expenditure restraint in our sample. When excluding this country, the euro area-De expenditure ratio had been rather expansionary.[8] It was about 2-3½ pp of GDP higher than if all other countries had followed a neutral stance based on these rules since the start of EMU.

A second general pattern of the findings is that ex post rules judge actual expenditure trends as much more expansionary than real time rules. This is because

[8] The euro area-De figures represented here and elsewhere refer to euro area 12 excluding Germany and thus include the results for the analysis on Belgium, Netherlands, Luxembourg, Austria and Finland.

potential GDP was significantly revised down ex post, as can be seen in columns 13-14 of Table 2. Cumulative downward revisions during EMU averaged over 4pp of GDP over the sample economies. The 5.2 pp figure for Germany implies that potential growth had on average been overestimated by almost ½ pp of GDP per annum.

On the basis of ex-post rules, expenditure policies turn out to be much more expansionary (columns 7-12). Depending on the rule, euro area primary expenditure has been 3-5pp of GDP higher by 2009 than it would have been with neutral expenditure policies since the start of EMU. Only Germany conducted modestly restrictive expenditure policies on balance. Expenditure savings of 2pp of GDP by 2007 had been partly reversed over the crisis period.

Expenditure policies were very expansionary across the other countries. According to the NPG rule, French spending should have been about 2pp of GDP lower and Italian spending about 3 ½ pp lower if neutral spending policies had been pursued. Figures for the four macro-imbalances countries tend to be significantly higher. When looking at the RPECB rule, Greece and Ireland experienced expenditure growth that was about 1pp of GDP per annum higher than neutral spending policies would have suggested. Corresponding figures for Spain and Portugal are only modestly lower.

The last line of panel B shows just how expansionary expenditure policies were on average when excluding Germany. On the basis of ex post rules, primary expenditure would have been 3-5pp of GDP lower if euro area-De countries had followed a neutral stance based on these expenditure rules.

It could be argued that the analysis presented above should be conducted on primary expenditure adjusted for unemployment spending as this is the spending item that reacts automatically to cyclical developments rather than discretionary government decisions. However, due to limited availability of unemployment-related spending even for our sample of countries we could not carry out the baseline simulations with the adjustment of unemployment-related spending. Therefore, we tested the robustness of our results with respect to the exclusion of this spending item within the scope of available data (see Table A4 for results). This exercise confirms very similar figures for the expenditure stance across countries and, thus, the validity of our baseline results.

b. Profile of the expenditure stance

In this sub-section, we look at the time profile of the primary expenditure stance in the euro area and the seven member countries, again differentiated across

expenditure rules. Figure 2 expresses this stance for each economy with index numbers relative to a neutral stance. While we only discuss developments up to 2009, the figure also shows the stance of 2010 if it materialises as expected in the Commission 2010 spring forecasts. A positive number (say of 105) reflects an expansionary stance (in that case of 5% higher spending growth than the neutral spending path in that year). As a general pattern and in line with the findings of the previous sub-section, the lower lines tend to reflect expenditure developments with real time rules while the higher ones report the findings for ex post rules.

-Figure 2 about here-

For the euro area as whole and notably on the basis of real time rules, public spending was broadly neutral at the start of EMU, in 2004-2007 and prospectively in 2010. Public spending was slightly expansionary in 2001-2003 and again in 2008-2009. When taking a look at country profiles it emerges the Germany's expenditure policies were quite restrictive from 2004 to 2007 and expansionary in 2009-2010. France recorded expansionary policies in 2002-2005 and 2009 and broadly neutral ones in all other years. Italy's spending profile resembles a roller-coaster between neutral and expansionary policies except for clearly restrictive policies in one single year (2007).

The four macro-imbalances countries show expansionary policies in most years. In some instances public spending grew by around 10% more than suggested by a neutral expenditure stance. Greece, Ireland and Portugal had restrictive policies in only one single year before the crisis.[9]

c. Public expenditure ratios with neutral expenditure policies

This sub-section first derives the profile of primary expenditure ratios and that of its main components (public consumption and transfers) that would have prevailed in the euro area if countries had pursued neutral expenditure policies since the start of EMU. The thick line in Figure 3a reports the actual primary expenditure ratio, the other lines mark the expenditure that would have followed from the six expenditure rules. Had all countries followed a neutral expenditure stance on the basis of real time rules, the aggregate euro area primary expenditure ratio would have been between 46% and 48% of GDP in 2010, thus up to 2pp of GDP lower than the actual ratio. On the basis of

[9] The projection for 2010 reflects the significant planned expenditure consolidation in Greece, Ireland and Spain.

ex post rules, the expenditure ratio would have dropped much more in good times and would have ended up at between 44 ½ - 46% of GDP compared to 48% of actual spending. The primary spending ratio would then not have been much higher in 2009 than at the start of EMU.

-Figure 3a about here-

The corresponding results are also reported for public consumption and transfers. We note that neutral expenditure policies on the basis of real time rules would have suggested somewhat lower public consumption ratios and broadly unchanged public transfer ratios. Ex post rules would have resulted in 2-3 pp of GDP lower government consumption and about 1-2pp of GDP lower transfer ratios.

The profile of neutral primary expenditure ratios changes again quite significantly when looking at the euro area excluding Germany. With neutral spending policies, primary expenditure ratios would have been significantly lower in the euro area-De already before the crisis and even more so by 2009 on the basis of all rules.

When looking at individual countries, Germany again sticks out (Figure 3b). As reported above, ex post rules would have suggested a slightly restrictive fiscal stance for the average of the EMU period. As a result primary expenditure ratios were roughly identical around 45-46% of GDP in 1999 as in 2009. On the basis of real time rules, a neutral stance would have implied a higher primary expenditure ratio of 49% to over 50% of GDP by 2009. This illustrates yet again the impact of chronic overestimations of potential growth on the assessment of expenditure paths.

For all other countries the situation is very different, and primary expenditure ratios increased almost continuously since the start of EMU. If a neutral stance had been followed, French primary expenditure ratios would by 2009 have been much closer to 50% of GDP than above 53%. Italian primary expenditure would still mostly be in the 40-45% range. The four macro-imbalances countries would have lowered their primary expenditure to the higher 20s (Ireland) or at most the higher 30s (Portugal) in the period up to 2007. By 2010, primary expenditure ratios would have been much lower in all these countries (except on the basis of the 10MA rule). On the basis of ex post rules, primary spending ratios would have even been below or at least not much above those prevailing in 1999.

-Figure 3b around here-

All in all, only Germany employed a restrictive expenditure stance on average since the start of EMU. All others would be judged to have applied more or less expansionary expenditure policies. As a result, public primary expenditure ratios in the euro area and its member countries would mostly have been much lower at the start of the crisis and by 2010 and potentially not higher than at the start of EMU if governments had applied the examined expenditure rules (except 10 MA).

5. Implications for public debt dynamics

In this section, we look at the implications of public expenditure policies for debt developments. Taking into account the assumptions about fiscal multipliers, tax elasticities and compound interest effects discussed in section 3, we derive counterfactual debt paths that would have emerged if countries had followed neutral expenditure policies, as defined by our six rules. The main findings are reported in Table 3, which shows how much lower or higher in percentage points of GDP the public debt ratio would have been if countries had employed neutral expenditure policies.

-Table 3 about here-

The pattern of counterfactual debt developments is very similar to that of expenditure ratios as reported in the previous section, except that the compound effects result in much more diverse figures and trends. Looking again first at real time rules and starting with the euro area, the fiscal stance at the aggregate level reported in the previous section would have also implied not much change in the debt ratio compared to the actual level in 2009. Debt would be broadly unchanged if the NPG rule had been applied. It would have been somewhat lower by 5pp of GDP if all countries had followed the RPECB rule and 4pp of GDP higher if they had all followed the 10MA rule. By contrast, the application of ex post rules would have resulted in much more restrictive expenditure policies and hence lower debt ratios by 3-13pp of GDP.

When looking at individual countries, the diversity of compound effects on public debt ratios is striking. In the case of Germany, it is comforting that the government did not apply the real time rules as the debt ratio would then have been 24-38 pp of GDP higher. This is because ex post revisions in potential growth were particularly large but also because initially deficits would have increased significantly further and, thus, contributed to rising debt. On the basis of ex post rules, the debt ratio would have been only modestly (6-7pp) higher given the on average modestly restrictive stance. By contrast, for France and Italy, the debt ratio would have been significantly lower especially on the basis of ex post rules (up to 30pp of GDP for Italy and up to 14pp of GDP for France). The four macro-imbalances countries would have all reported much lower debt paths with figures up to 57pp of GDP lower for some countries and rules.

Again it is informative to study the euro area excluding Germany. Ex ante and ex post rules would have resulted in 8-21pp of GDP lower debt ratios by 2009 and already markedly lower debt before the start of the crisis.

The effect of neutral expenditure policies on debt ratios is decomposed in Table 4. It shows the calculated effect of less (or more expansionary) expenditure policies, the compound interest effect and the impact of standard fiscal multipliers from lower (or higher) spending on GDP. It can be seen that chronically expansionary policies exhibit their debt increasing effect in an exponential manner with the direct effect of expenditure policies remaining the main component (see Annex Figure A1 for robustness analysis with different interest, tax elasticity and multiplier assumptions).

-Table 4 about here-

The impact of neutral expenditure policies on the debt path for the sample economies and across expenditure rules is shown in Figure 4. Consistent with the previous section, real time rules typically lead to higher debt paths than ex post rules. The French debt path would have overall been more benign and public debt would have been much closer to the 60% of GDP reference value than was actually the case in 2009. If a neutral spending path had been followed Italian public debt would have been between roughly 80% and 100% of GDP in 2009 (except on the basis of the 10MA rule) rather than near 120% of GDP.

-Figure 4 about here-

For the macro-imbalances countries, the difference becomes even more drastic. Neutral spending policies in Portugal would have led to debt ratios of 40-60% of GDP in 2009 (again except with 10MA) rather than over 80% of GDP in reality. Spanish debt would have been at a trough of 10-40% in 2007-08 and would have remained well below the reference value in 2009 under all rules. Ireland would have just about eliminated all its debt in good times and thus created significant room for the subsequent rise. Under all rules, debt would have remained below 60% of GDP in 2009. Finally, Greek public debt would have fallen to 60-80% of GDP (rather than remain broadly constant around 100% of GDP until the start of the crisis) and increased much more slowly in the crisis.

All in all, public debt positions in the euro area would have been much more sound at the start of the crisis and in 2009. Public debt could have been well around or below the reference value in the euro area in most of its members by 2009 and nowhere above 100% of GDP. If Germany had conducted unchanged policies and all other countries had pursued neutral expenditure policies, the euro area-De debt ratio would have been about 10-20 pp of GDP lower and thus around or not much above the 60% reference value for public debt enshrined in the SGP (not indicated).

6. Determinants of the expenditure stance

As a further step we conduct a first, tentative empirical analysis of factors that influence countries' expenditure stance. We apply standard fixed-effects panel estimation techniques on a sample of up to 12 euro area countries for the 2000-2009 period that we have analysed thoroughly in this study. The measure of the expenditure stance, i.e. the (marginal) deviations of actual spending growth from rule-based or neutral spending (under the NPG and the RPECB rule in ex-post terms) is used as the dependent variable.

The choice of independent variables is based on the following hypotheses. First, we control for the macroeconomic environment by including the output gap as a percent of potential GDP. This is done to capture the impact of automatic stabilisers which on the spending side are limited to unemployment benefits. We expect a positive

sign on the output gap. At the same time, the pro-cyclicality of the expenditure stance should be lower in the presence of strong budgetary institutions on the expenditure side. To control for the extent to which national expenditure policy faces domestic institutional constraints, we use the expenditure rules index as developed by Debrun et al. (2008).[10] It includes all budgetary provisions which fix numerical targets or ceilings to government expenditure. To attach weights to different institutions, the index takes into account both the share of overall public spending covered by the rule and qualitative features such as the type of enforcement mechanisms and media visibility. We interact the expenditure rule index with the output gap and expect a negative coefficient as strong institutions should reduce spending profligacy notably in good times. Moreover, an EDP dummy is included, capturing whether a country is facing an excessive deficit procedure (EDP) due to deficits above the 3% of GDP reference value of the Stability and Growth Pact. One could expect a less expansionary expenditure stance in the presence of an EDP.

We expect that the crisis with its call for expansionary policies in the late autumn of 2008 (post Lehmann) had an expansionary effect on the expenditure stance. This is reflected in a dummy for the year 2009.

It could be argued that positive surprises on the revenue side of the budget translated into more expansionary expenditure policies with a lag. This is reflected by including the excess revenue growth in a given year relative to previous year's Autumn forecast by the European Commission. We would expect that the revenue surprise is positively correlated with the expenditure stance. We also test whether strong expenditure rules limit the spending of revenue windfalls by incorporating an interaction with the rules index.

Parliamentary national elections are expected to lead to higher expenditure growth in that year. We expect a positive sign of the coefficient of this dummy variable. Moreover we include the variable *YRCURNT* from the World Bank Database of Political Institutions which captures the years left in the current election term, expecting a negative sign since the incentives for fiscal discipline can be expected to be higher at the beginning of the legislative period. We also control for the stability of the government by using the variable *stabs* from the Database of Political Institutions.

[10] For a definition and a detailed description of the computation of this index see European Commission (2006) and Debrun et al. (2008). The index is normalised to have a zero mean and unit variance.

Finally, we control for the size of government debt as one could expect a restrictive effect of higher debt on expansionary policies and thus the fiscal stance (negative sign).

- Table 5 about here –

The results of the analysis are presented in Table 5 both using the results from our NPG and RPECB rule for the euro area 12. Results are very similar if we limit the sample to just the seven countries analysed in the rest of the study. We find robust support for our hypotheses of a positive correlation between the output gap and the expenditure stance across rules and estimations. As expected, the strength of the national institutional framework on the expenditure side significantly reduces the pro-cyclicality of the expenditure stance. This result is in line with the finding in Holm-Hadulla et al (2010) that the strength of numerical rules reduces the spending slippages in the presence of macroeconomic surprises. The crisis dummy has the right sign but the significance of coefficients is not robust across all estimations.

Surprisingly, the level of public indebtedness does not seem to significantly affect our measure of the expenditure stance. We also do not find robust evidence for our hypothesis that revenue windfalls translate into a spending profligacy. While we see the expected positive sign the effect is not significant. The same holds true for the related interaction term.

The variables capturing the effect of the political business cycle are highly significant suggesting that parliamentary elections increase the excess spending growth above our neutral policy rules. Moreover, and in line with the previous finding, the expenditure stance tends to be reversely related to the remaining number of years in the election period. Our results suggest that the policy stance on the spending side is less expansionary if a government scores a higher value in the stability index of the World Bank. Finally, the regression analysis suggests that whether a euro area country is subject to an excessive deficit procedure in the context of the Stability and Growth Pact does not play a significant role regarding a government's expenditure stance.

7. Towards an expenditure rule for future fiscal sanity

As regards implications for the design of fiscal institutions and notably expenditure policy rules, the findings of this study hold important lessons. The pursuit of expenditure policies based on real time rules in all countries except Germany would have resulted in sounder public finances. However, these rules provided a too optimistic picture on the state of the economy and public finances as trend growth was typically revised down markedly ex post. This made the adverse impact of expansionary policies even more drastic, notably in the macro-imbalances countries. Surprisingly, the most expansionary policies would have arisen from a 10 year-moving average rule. If countries had applied the potential growth rules, they would have fared somewhat better, especially if the impact of inflation had been capped with the ECB price stability objective. All in all, and on the basis of these findings, these expenditure rules would have provided better guidance for policy makers than what was actually done, but not sufficient to prevent policies to be judged expansionary ex post.

From this experience, one can derive two approaches that might be fruitful in the context of choosing effective expenditure rules:

The first one is simple: if we broadly expect the past to be the future and expect that potential growth continues to be revised down on average by almost ½pp of GDP per year, countries would fare well with an adjusted nominal potential GDP rule where expenditure growth is also ½ pp less per annum than suggested by projected nominal potential growth (NPG – ½ pp). Such a rule might be considered even if we expect smaller revisions in the future as it would provide a margin against expenditure slippages. Population aging is potentially reducing growth prospects, thus providing another argument for a margin of prudence. Of course, any consolidation needs would then have to be subtracted in addition from planned expenditure growth.

A second approach would be to look at the experience in EMU by type of country and see whether any parallels can be drawn for the future. Our sample countries include four types: 1) Germany where post-unification excesses required economic restructuring and balance sheet adjustment which, in turn, contributed to low growth, 2) France which experienced potential growth revisions but which did not feature particular imbalances, 3) Italy which experienced the largest cumulative growth revisions and very low growth prospects, and 4) the economies of Spain, Ireland, Portugal and Greece where expansionary spending policies coincided with the accumulation of large imbalances.

Looking forward, the following normative lessons may be drawn from this perspective. First, the performance of macro-imbalances countries in the future may resemble Germany in the past. Hence, the application of an NPG rule minus a large margin of prudence would seem to be a reasonable approach.

Moreover, within this group, there are still "catching up economies", notably Portugal but perhaps also Spain and Greece to some extent. These may experience a renewed boom and "above-average" inflation. A simple NPG-1/2pp rule could then be inappropriately pro-cyclical. For these countries, a rule based on real potential growth plus the ECB price stability objective minus a margin of prudence might be appropriate (e.g., RPECB-1/2 pp).

It is more difficult to judge which group Italy, France and Germany will belong to. Perhaps the arguments provided above suggest that all three countries will continue to experience low growth with a continuing though hopefully slower trend to even less growth. An NPG rule minus a margin of prudence (e.g. NPG-1/2pp) would then perhaps be reasonable.

Some further considerations are worth discussing. If due to the correction of past imbalances or the benefits of past and future reforms growth were to pick up, such a rule would seem overly prudent. At the same time, it would facilitate the rapid achievement of fiscal consolidation that most countries need. Capping the nominal component of expenditure growth at 2% would imply some "automatic" consolidation in high inflation years which would most likely be countercyclical. This could help to reduce fiscally induced macroeconomic imbalances. In addition, there is a political economy snag. If expenditure were to grow continuously below the economy, for example, by reflecting lower public wage and transfer growth, there might be pressure to abandon the rule. If large safety margins were accumulated through such a rule, this could be spent in an expansionary explosion as was done, for example, by Ireland and Greece just before and into the crisis.

But these are not really arguments against a prudent expenditure rule. They are more reason for giving them a strong legal-institutional standing. This leads us to the final consideration: expenditure rules are only worth pursuing if they are implemented and if expenditure overruns can in principal be avoided. Empirical evidence suggests that expenditure rules indeed tend to improve budgetary discipline. The results presented in Holm-Hadulla, Hauptmeier and Rother (2010) suggest that EU governments - in the presence of effective numerical expenditure rules - tend to deviate

to a significantly lesser extent from their spending plans as announced in the Stability and Convergence programmes. Also for selected EU countries, Turrini (2008) finds that pro-cyclical expenditure dynamics in good times tend to be less pronounced in countries with strong expenditure rules. Moreover, the empirical analysis presented in Wierts (2008) shows that government spending in EU members states displayed a less pro-cyclical response to revenue shocks in the presence of strict numerical expenditure rules. Overall, empirical evidence highlights that well-designed expenditure rules can be useful devices to limit government spending profligacy. Of course, in order to be effective, any expenditure rule needs to be imbedded in a strong fiscal institutional framework with suitable mechanisms to ensure monitoring and enforcement.

To see what a prudent expenditure rule would have implied in the first 11 years of EMU we conduct a final simulation exercise. We derive counterfactual expenditure and debt trends on the basis of expenditure following the rule of nominal potential GDP growth adjusted for a ½ pp margin of prudence (NPG- ½ pp rule) and the adjusted rule that caps the deflator at the ECB price stability objective (RPECB- ½ pp rule). Table 5 reports the results for primary expenditure and public debt ratios (columns 4-5 and 6-7 respectively). It compares these to actual developments (columns 1-3) and developments that would have resulted from a nominal potential GDP rule based on ex post data (NPG ex post; columns 8-9).

-Table 6 about here-

On the basis of this rule, public expenditure ratios for the euro area and most countries would have been much lower than actually experienced (2-3 pp of GDP for the euro area and up to 10pp of GDP for certain countries). It would have also been more prudent than the NPG ex post rule. The public debt ratio for the euro area would have been 8-15pp of GDP lower by 2009 than the actual ratio to stand at 65-71% of GDP and it would also have been significantly below the NPG ex post rule.

However, again these findings are strongly influenced by Germany. If all countries apart from Germany had followed the two rules including a margin of prudence, primary expenditure would have been 4-5 pp of GDP lower and public debt about 17-25pp of GDP lower in 2009. Much lower expenditure ratios (and thus also deficits) would have led to Greek debt of around 60% of GDP, and Portuguese, Spanish

and Irish debt in the 6-51% of GDP range by 2009. This would have hardly precipitated the debt crisis that was experienced in 2010.

The German figures warrant further consideration. The fact that even the two proposed rules would have implied higher spending and debt ratios does not imply that the stance in Germany was too tight. First, initial fiscal balances and public debt ratios were unsound. Second, the difference between an ex ante and ex post neutral stance in Germany were huge. Hence, in countries with strongly declining or uncertain growth (as had been the case for Germany over the first decade of EMU) there may be reason to increase the margin of prudence even further.

The counterfactual expenditure and debt paths for the macro-imbalances countries and notably for Spain and Ireland also warrant further discussion. The much lower spending ratios would have also implied much better fiscal balances and even high surpluses. In Spain and Ireland public debt would have almost disappeared. While this might have been difficult to sustain from a political economy perspective it is not unreasonable from an economic one. In fact, high surpluses were the experience of Finland and Luxembourg during the boom so that these countries also report very low gross debt and positive net asset positions. And it is these two countries that "survived" the financial crisis the best from a fiscal perspective up to the writing of this study.

Finally, how do these results link to the debate on reforming the EU institutional framework? The Commission proposes to base fiscal surveillance on an implicit expenditure growth rule "consistent with prudent fiscal policy making" and linked to a "prudent medium term rate of growth". This could lead to a better result for the coming decade if "prudent growth" assumptions were really sufficiently prudent. If real time nominal potential growth projections were to be the basis, the study has shown that this would not have been prudent enough for the past decade.

8. Conclusion

The study compares actual expenditure trends with those that would have prevailed if countries had followed expenditure rules since the start of EMU. It also calculates the implications for debt trends by taking into account compound interest and growth multiplier effects. The study finds that on the basis of real time rules, average expenditure and debt ratios in 2009 for the euro area aggregate would not have been much different than actually experienced. But this masks the offsetting effect of

strongly restrictive expenditure policies in Germany and more or less expansionary policies in the other sample countries (and notably in the "macro-imbalances countries") of the euro area. Neutral expenditure policies over the 1999-2009 period in all countries and with Germany's policies unchanged would have implied lower primary expenditure ratios by 2-3 ½ pp in 2009. If one were to apply ex post rules, expenditure policies would be judged even more expansionary because all countries experienced more or less significant annual and cumulative downward revisions in trend growth. Primary expenditure ratios would have been up to around 10 pp lower in certain countries if expenditure policies had been neutral over the EMU horizon.

It is important to note that - for the euro area excluding Germany - more than half of the spending above that implied by our neutral policy rules already accumulated in the pre-crisis period up to 2007. For the macro-imbalances countries this share amounts to almost two thirds.

The study also suggests that the deviation from neutral expenditure policies before and during the crisis has contributed strongly to public debt dynamics, notably in the macro-imbalances countries. Public debt ratios in the euro area would not have been much above 60% and in the macro-imbalances countries near or below 60% at the end of 2009. This would have hardly precipitated the fiscal crisis that was experienced in the spring of 2010.

The study also conducts a first, tentative empirical analysis of the determinants of euro area countries' expenditure stance. It finds that the policy stance tends to be pro-cyclical whereas strong budgetary institutions limit this spending bias. Moreover, spending growth above that implied by a neutral policy rule tends to be correlated with political business cycle and the stability of governments. High public debt and the existence of an excessive deficit procedure in the context of the Stability and Growth Pact do not seem to significantly affect the expenditure stance of governments.

From the policy perspective of creating sound fiscal institutions in Europe, and in light of the experience of imprudent expenditure growth and downward revisions in potential growth, the paper recommends that real time rules can provide useful guidance for policies provided that an extra margin of prudence is added. An extra ½ pp of deduction from annual expenditure growth targets looks reasonable on the basis of counterfactual evidence for the past 11 years (although in instances where potential growth could be strongly over-estimated an even larger margin might be advisable). Capping the deflator at the ECB price stability objective may be warranted for "high

inflation" countries. Moreover, the normative exercise of this study is to define rules for neutral expenditure policies that are appropriately prudent and robust given economic uncertainty. It does not aim per se to help solving imbalances problems or reducing the size of the state for which an additional expenditure consolidation margin would need to be built in.[11] At the same time, the rules proposed in this paper, intentionally, are kept simple and general in nature to ensure transparency (e.g. the rules do not distinguish between different types of government spending). Finally, there is also a case for strongly anchoring expenditure rules in countries' institutional framework to strengthen their credibility.

[11] Note that both adjustments to the expenditure rule, i.e. the ½ pp safety margin and the cap at the ECB price stability objective, imply an in-built "consolidation bias" if either the annual revision to potential GDP growth remains below ½ pp or if the annual growth of the GDP deflator exceeds 2%.

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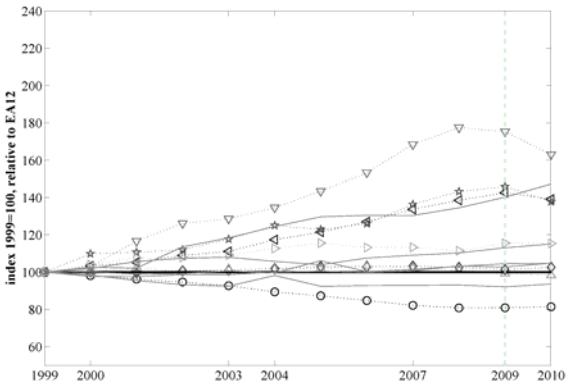
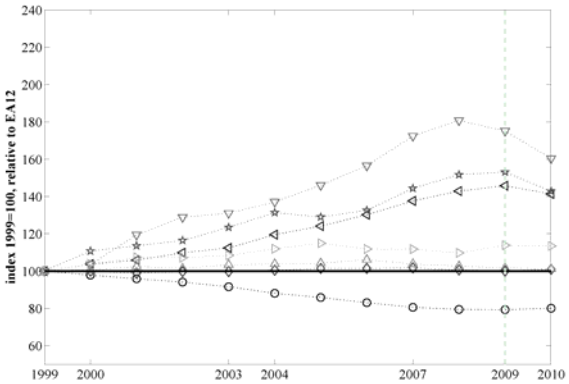
Figure 1: Cross-country comparison of main fiscal and economics indicators

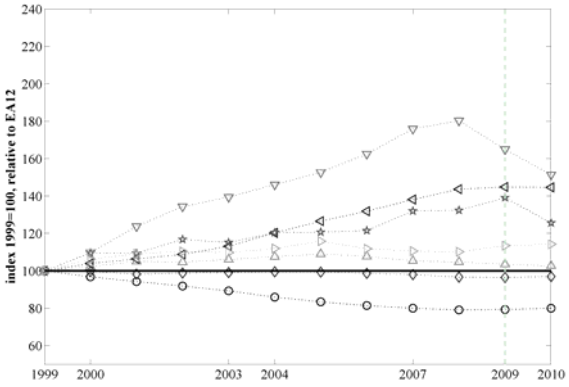
Total public expenditures



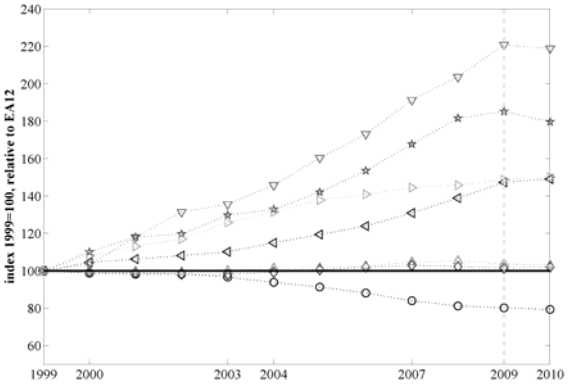
Primary expenditures



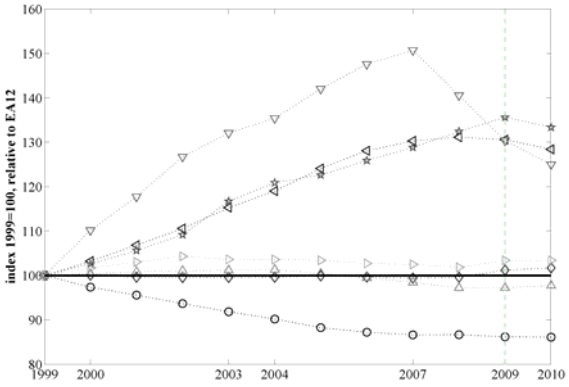
Government consumption



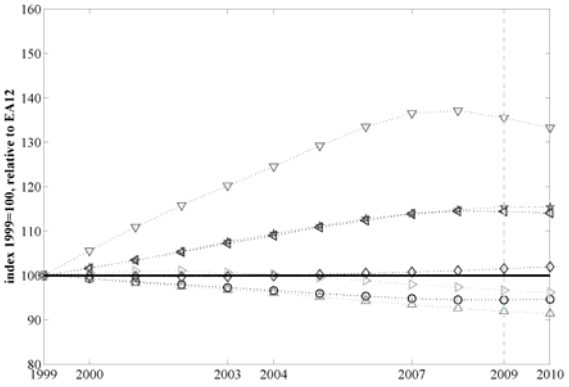
Transfers



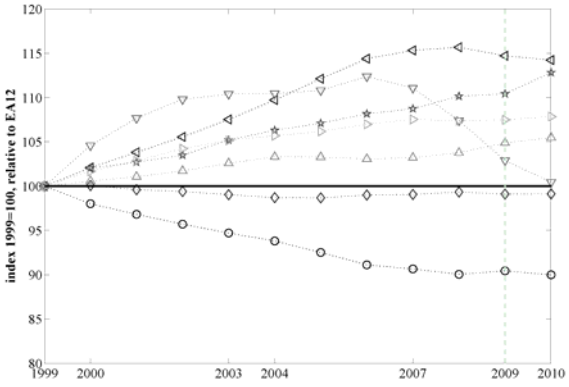
Nominal GDP



Potential GDP



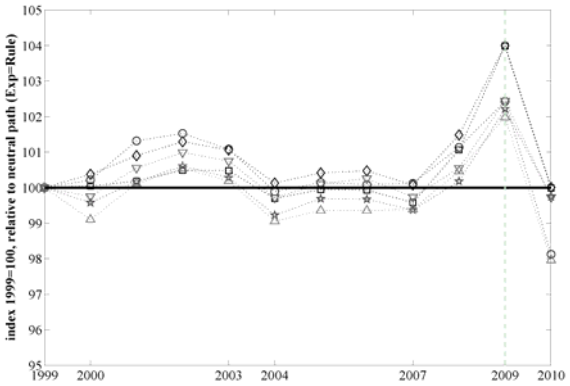
GDP deflator



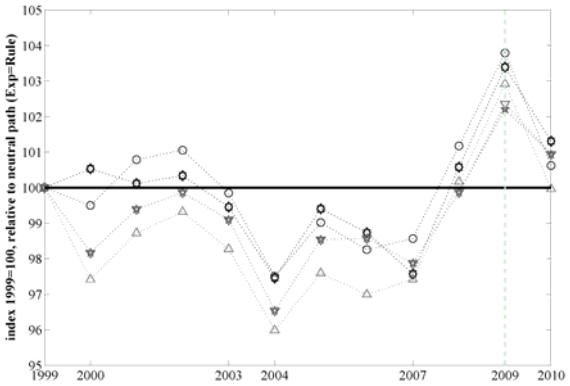
Legend:

Figure 2: Primary expenditure developments compared to a neutral expenditure stance across countries and rules.

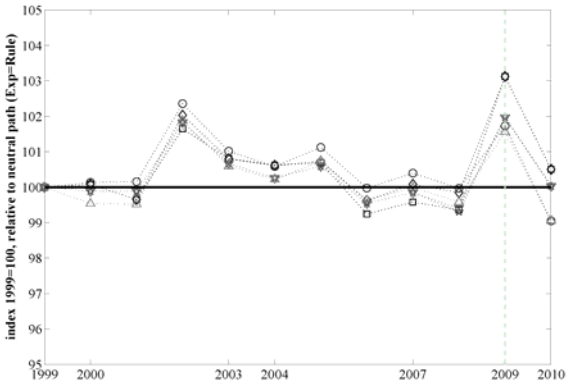
Euro area (12)



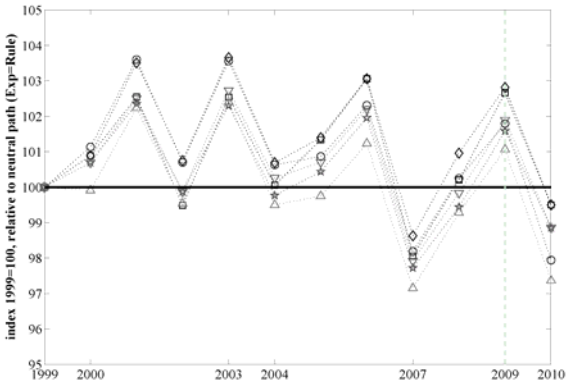
Germany



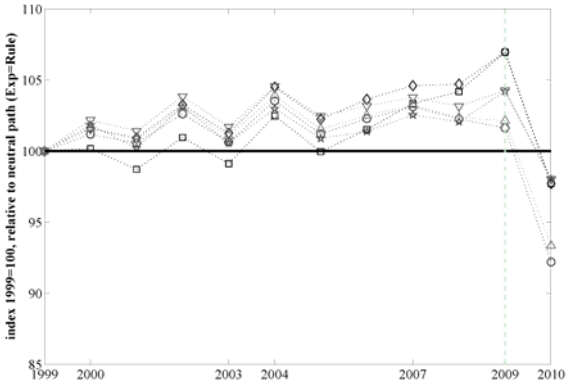
France



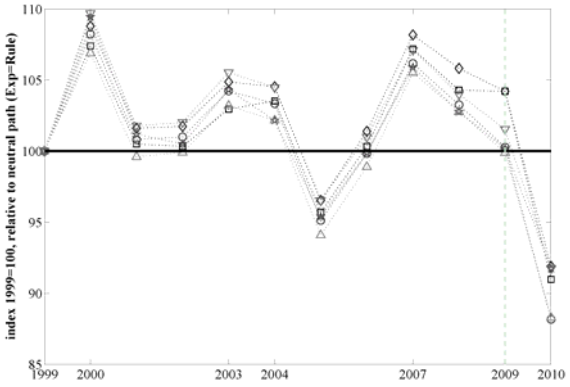
Italy



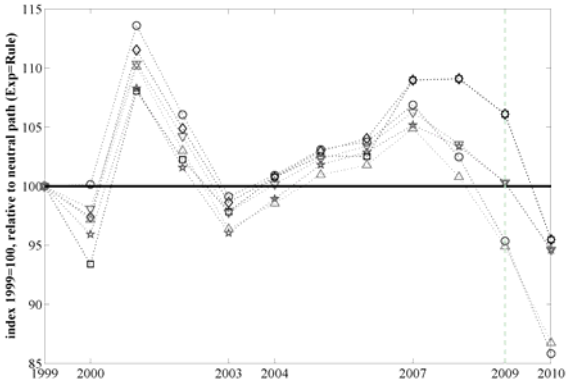
Spain



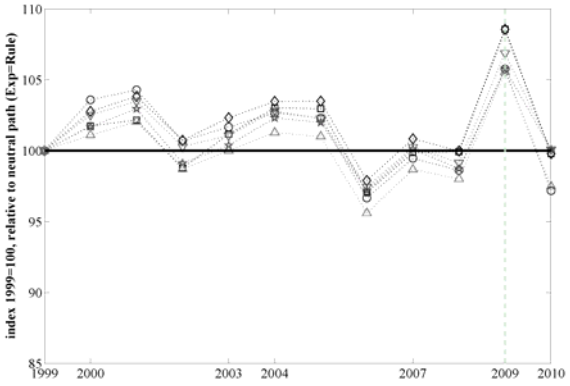
Greece



Ireland



Portugal



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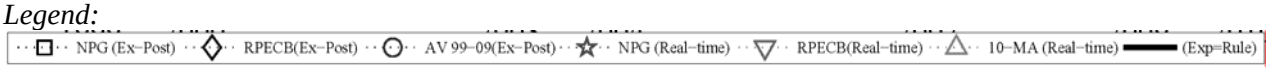
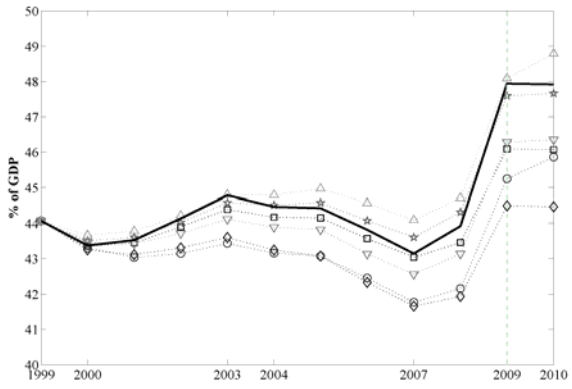
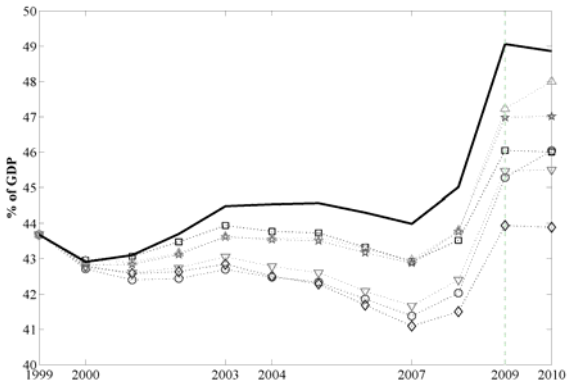


Figure 3a: Euro Area (12). Expenditures ratios as implied by a neutral expenditure stance, across rules.

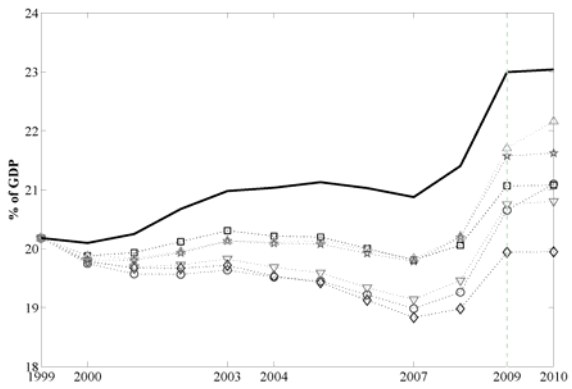
Primary expenditures
Euro area (12)



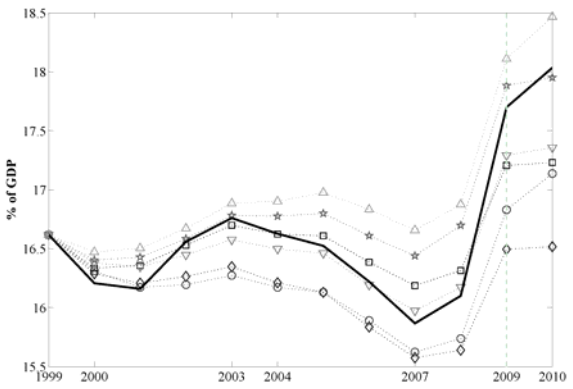
Primary expenditures
(Euro area (12) – Germany)



Government consumption



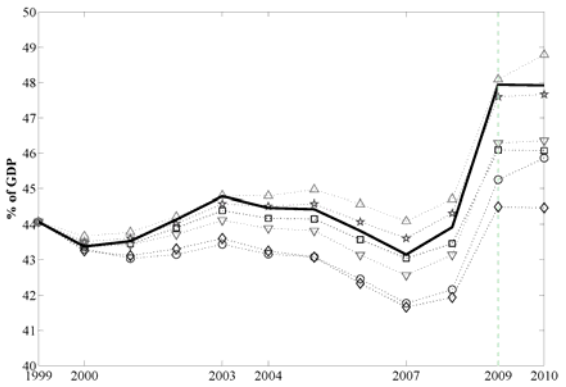
Transfers



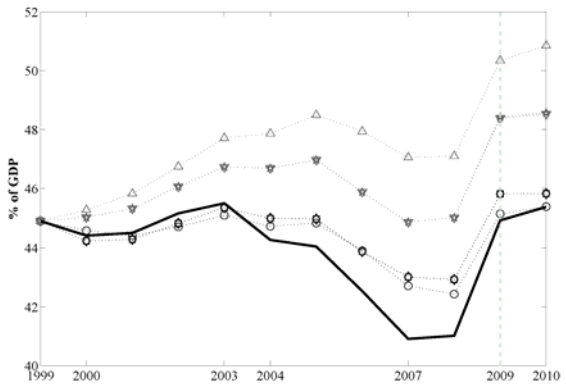
Legend:

Figure 3b: Primary expenditure ratios as implied by a neutral expenditure stance across rules and countries.

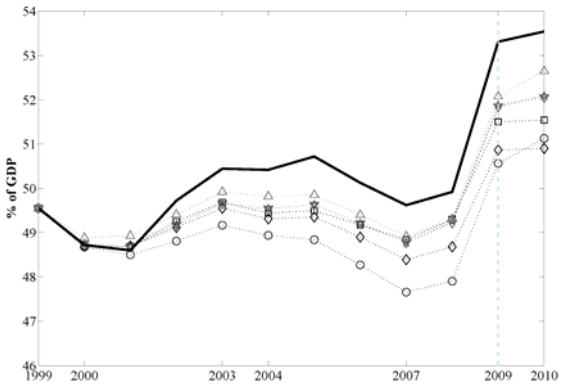
Euro area (12)



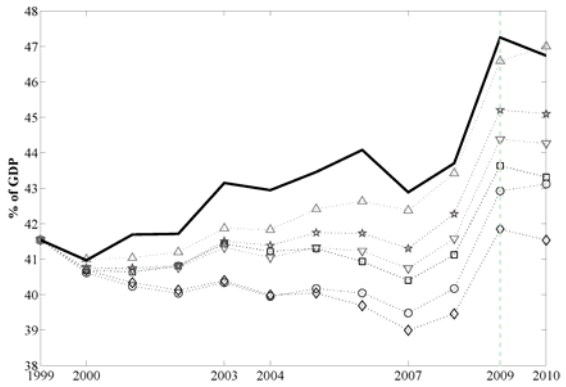
Germany



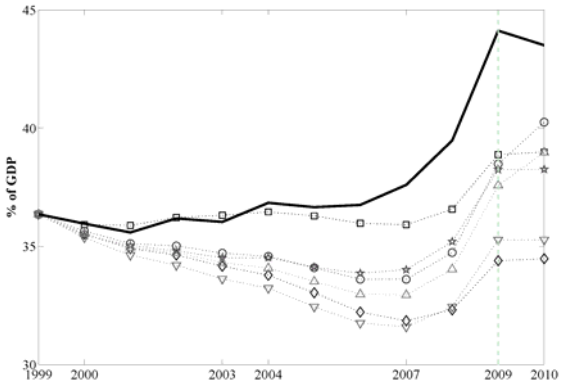
France



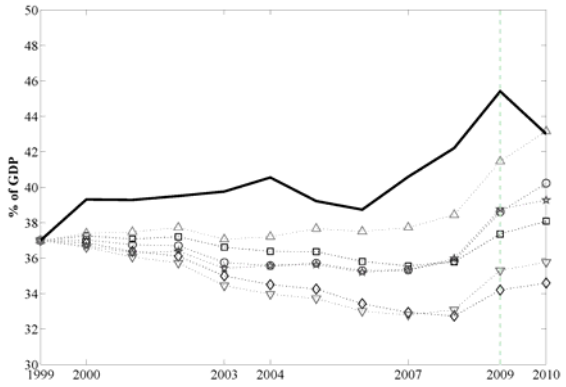
Italy



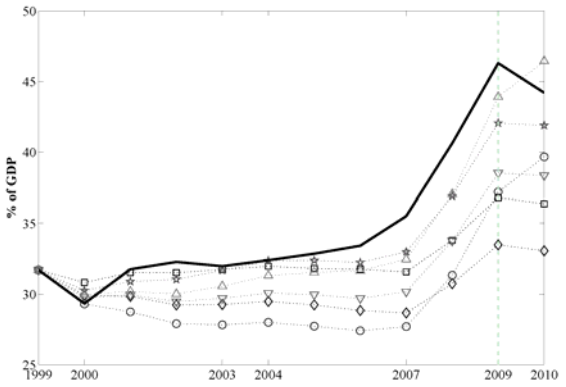
Spain



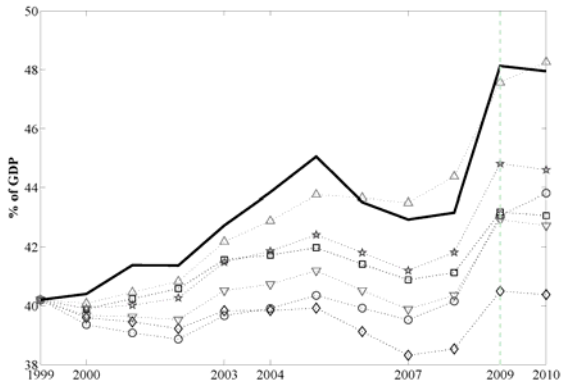
Greece



Ireland



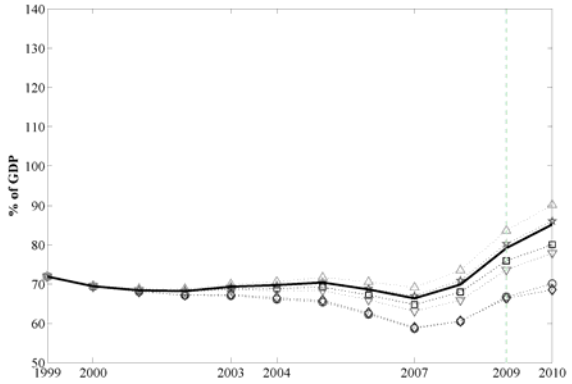
Portugal



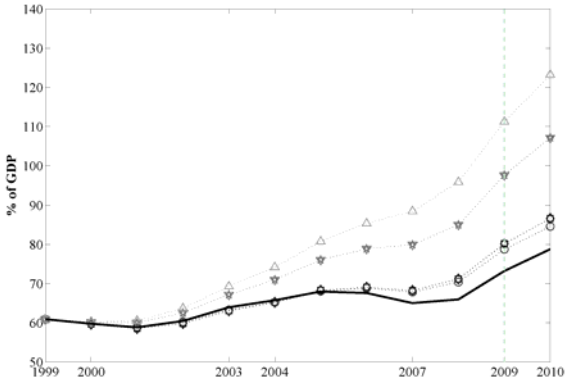
Legend:

Figure 4: Public debt ratios as implied by a neutral primary expenditure stance across countries and rules.

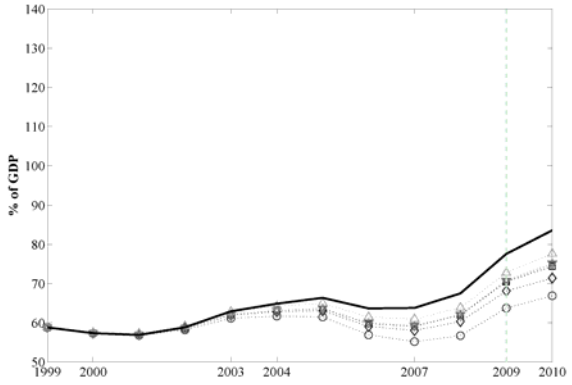
Euro area (12)



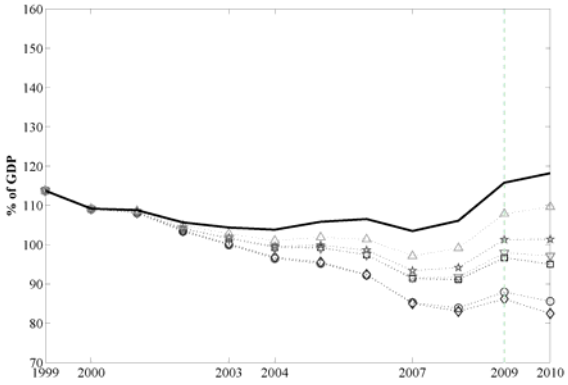
Germany



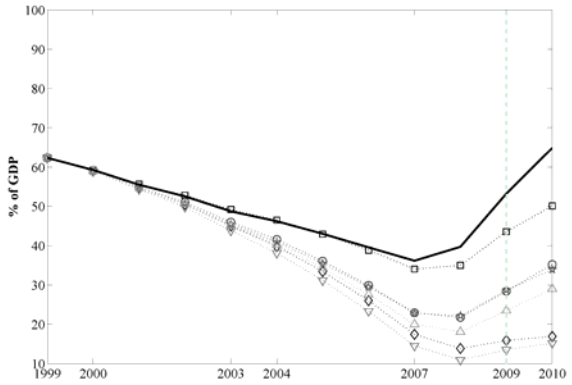
France



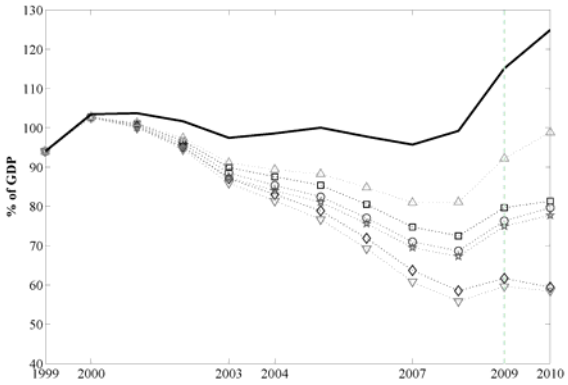
Italy



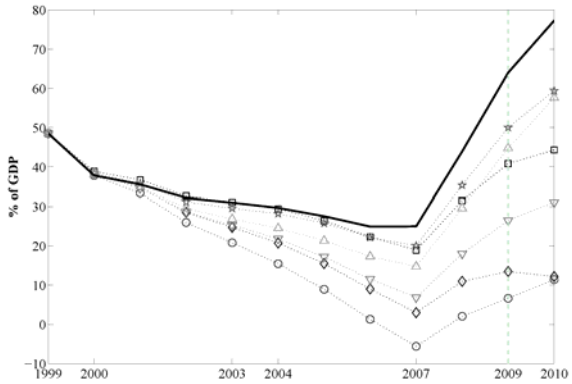
Spain



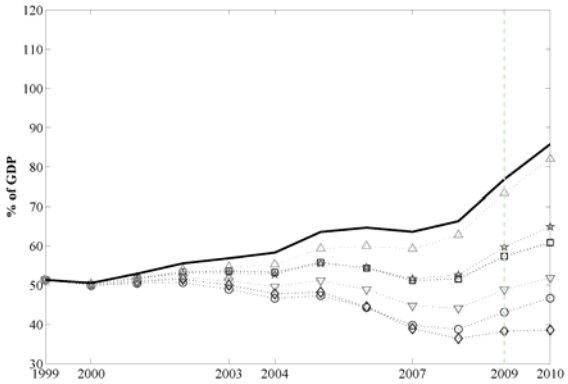
Greece



Ireland



Portugal



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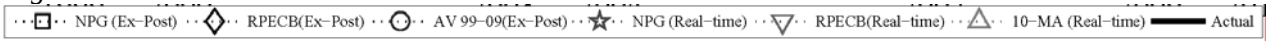


Table 1: Main fiscal indicators (% of GDP)

	Fiscal Balance			Cyclical Adjusted Fiscal Balance		
	1999	2007	2009	1999	2007	2009
	(1)	(2)	(3)	(4)	(5)	(6)
Euro Area (12)	*-1.4*	*-0.6*	*-6.3*	*-1.4*	*-1.9*	*-4.8*
Germany	-1.5	0.2	-3.3	-1.3	-1.2	-1.8
France	-1.8	-2.7	-7.6	-1.8	-3.7	-6.2
Italy	-1.8	-1.5	-5.2	-1.1	-3.0	-3.3
Spain	-1.4	1.9	-11.2	-1.6	1.2	-9.6
Greece	-3.1	-5.4	-13.5	-2.5	-7.0	-14.1
Ireland	2.6	0.1	-14.3	1.6	-1.6	-11.4
Portugal	-2.8	-2.7	-9.4	-3.4	-3.0	-8.3
Memorandum: EA(12) - DE	-1.4	-0.9	-7.4	-1.4	-2.1	-5.9

	Total expenditures			Primary expenditures		
	1999	2007	2009	1999	2007	2009
	(7)	(8)	(9)	(10)	(11)	(12)
Euro Area (12)	*48.1*	*46.1*	*50.8*	*44.1*	*43.1*	*47.9*
Germany	48.1	43.7	47.6	44.9	40.9	44.9
France	52.6	52.3	55.6	49.6	49.6	53.3
Italy	48.2	47.8	51.9	41.5	42.9	47.3
Spain	39.9	39.2	45.9	36.4	37.6	44.1
Greece	44.4	45.0	50.4	37.0	40.6	45.4
Ireland	34.1	36.6	48.4	31.7	35.5	46.3
Portugal	43.2	45.8	51.0	40.2	42.9	48.1
Memorandum: EA(12) - DE	48.1	47.0	52.0	43.7	44.0	49.1

	Government consumption			Transfers		
	1999	2007	2009	1999	2007	2009
	(13)	(14)	(15)	(16)	(17)	(18)
Euro Area (12)	*19.9*	*20.1*	*22.1*	*16.6*	*15.9*	*17.7*
Germany	19.2	17.9	19.7	18.6	17.2	18.4
France	23.2	23.0	24.5	17.7	17.4	18.8
Italy	18.2	19.7	21.6	16.9	17.1	19.2
Spain	17.2	18.4	21.2	12.1	11.6	14.6
Greece	16.8	17.4	19.1	14.1	17.6	20.6
Ireland	13.8	16.2	19.4	8.5	10.3	15.3
Portugal	18.6	20.3	22.7	11.3	15.2	17.2
Memorandum: EA(12) - DE	20.2	20.9	23.0	15.7	15.4	17.4

	Total revenues			Public Debt		
	1999	2007	2009	1999	2007	2009
	(19)	(20)	(21)	(22)	(23)	(24)
Euro Area (12)	*46.7*	*45.5*	*44.5*	*71.9*	*66.4*	*79.2*
Germany	46.6	43.9	44.3	60.9	65.0	73.2
France	50.8	49.6	48.1	58.8	63.8	77.6
Italy	46.4	46.4	46.6	113.7	103.5	115.8
Spain	38.4	41.1	34.7	62.3	36.2	53.2
Greece	41.3	39.7	36.9	94.0	95.7	115.1
Ireland	36.7	36.7	34.1	48.5	25.0	64.0
Portugal	40.5	43.2	41.6	51.4	63.6	76.8
Memorandum: EA(12) - DE	46.8	46.1	44.6	77.0	66.9	81.4

Table 2: Cumulative changes to primary expenditure ratios compared to a neutral expenditure stance across countries and rules (in percentage points of GDP)

Panel A: Real-time analysis

	Nominal Potential GDP (NPG)		Real Potential GDP + ECB inflation objective (RPECB)		Nominal growth 10 year moving average (10-MA)	
	2007 (1)	2009 (2)	2007 (3)	2009 (4)	2007 (5)	2009 (6)
Euro Area (12)	***-0.5***	***0.3***	***0.6***	***1.7***	***-0.9***	***-0.2***
Germany	-4.0	-3.5	-4.0	-3.4	-6.1	-5.4
France	0.8	1.4	0.8	1.5	0.7	1.2
Italy	1.6	2.0	2.1	2.9	0.5	0.7
Spain	3.6	5.9	6.0	8.9	4.7	6.5
Greece	5.3	6.6	7.8	10.1	2.9	3.9
Ireland	2.5	4.2	5.3	7.8	3.0	2.4
Portugal	1.7	3.3	3.1	5.2	-0.6	0.6
Memorandum: EA(12) - DE	*1.1*	*2.1*	*2.3*	*3.6*	*1.0*	*1.8*

Panel B: Ex-post analysis

	Nominal Potential GDP (NPG)		Real Potential GDP + ECB inflation objective (RPECB)		Nominal average growth 1999-2009 (AV 99-09)	
	2007 (7)	2009 (8)	2007 (9)	2009 (10)	2007 (11)	2009 (12)
Euro Area (12)	***0.1***	***1.9***	***1.5***	***3.4***	***1.4***	***2.7***
Germany	-2.1	-0.9	-2.1	-0.9	-1.8	-0.2
France	0.8	1.8	1.2	2.4	2.0	2.7
Italy	2.5	3.6	3.9	5.4	3.4	4.3
Spain	1.7	5.2	5.7	9.7	4.0	5.6
Greece	5.0	8.0	7.6	11.2	5.3	6.8
Ireland	3.9	9.5	6.8	12.8	7.8	9.1
Portugal	2.0	5.0	4.6	7.6	3.4	5.1
Memorandum: EA(12) - DE	*1.1*	*3.0*	*2.9*	*5.1*	*2.6*	*3.8*

Memorandum: Cumulative Potential GDP revisions		
	99-07 (13)	99-09 (14)
Euro Area (12)	***-3.0***	***-4.5***
Germany	-3.9	-5.2
France	-3.3	-3.7
Italy	-5.5	-7.5
Spain	1.0	-1.4
Greece	0.5	-3.3
Ireland	-5.7	-9.6
Portugal	-5.1	-6.7
Memorandum: EA(12) - DE	*-2.7*	*-4.3*

Notes: (i) Positive (negative) figures indicate that actual path was more expansionary (restrictive) than the corresponding rule. They are expressed as percentage points of GDP. (ii) Positive (negative) figures indicate that real-time growth rates were lower (higher) than actual figures.

Table 3: Cumulative changes to public debt ratios compared to a neutral expenditure stance across countries and rules (in percentage points of GDP)

Panel A: Real-time analysis

	Nominal Potential GDP (NPG)		Real Potential GDP + ECB inflation objective (RPECB)		Nominal growth 10 year moving average (10-MA)	
	2007	2009	2007	2009	2007	2009
	(1)	(2)	(3)	(4)	(5)	(6)
Euro Area (12)	***-0.6***	***-1.1***	***3.3***	***5.5***	***-2.8***	***-4.4***
Germany	-14.9	-24.3	-14.9	-24.3	-23.5	-38.0
France	4.5	6.8	4.5	6.9	2.9	4.8
Italy	10.1	14.5	11.8	17.8	6.3	7.9
Spain	13.3	24.6	21.7	39.8	16.2	29.7
Greece	26.2	40.2	34.9	55.5	14.8	22.9
Ireland	4.9	14.0	18.1	37.5	10.2	19.2
Portugal	11.9	17.1	18.8	27.9	4.3	3.5
Memorandum: EA(12) - DE	*5.5*	*8.9*	*10.1*	*16.8*	*5.0*	*8.2*

Panel B: Ex-post analysis

	Nominal Potential GDP (NPG)		Real Potential GDP + ECB inflation objective (RPECB)		Nominal average growth 1999-2009 (AV 99-09)	
	2007	2009	2007	2009	2007	2009
	(7)	(8)	(9)	(10)	(11)	(12)
Euro Area (12)	***1.6***	***3.2***	***7.4***	***12.8***	***7.7***	***12.4***
Germany	-3.2	-7.0	-3.2	-7.0	-2.8	-5.5
France	4.7	7.1	5.8	9.5	8.6	13.9
Italy	12.1	19.1	18.5	29.6	18.2	27.8
Spain	2.1	9.7	18.7	37.4	13.2	24.9
Greece	21.0	35.5	32.0	53.4	24.7	38.8
Ireland	6.1	23.2	22.0	50.5	30.6	57.4
Portugal	12.4	19.5	24.7	38.6	23.8	33.7
Memorandum: EA(12) - DE	*3.8*	*7.8*	*11.7*	*20.6*	*11.9*	*19.5*

Notes: (i) Positive (negative) figures indicate that the debt ratio would have been lower (higher) with a neutral expenditure stance as the actual path was more expansionary (restrictive) than the corresponding rule. They are expressed as percentage points of GDP.

Table 4: Euro area (12). Decomposition of the debt effects of a neutral expenditure stance across rules.

			Euro area (12)		*Memorandum: EA(12) - DE*
			2007	2009	2009
Real-time analysis	Nom. Pot. GDP	**Total**	**-0.6**	**-1.1**	**8.9**
		due to expenditures policies	-1.0	-1.1	11.6
		due to interest rates	-0.1	-0.2	1.7
		due to multiplier effects	0.5	0.1	-3.9
	Real Pot. GDP + ECB	**Total**	**3.3**	**5.5**	**16.8**
		due to expenditures policies	4.1	7.4	21.4
		due to interest rates	0.5	0.9	3.0
		due to multiplier effects	-1.2	-2.6	-6.9
	Nom. Avg. MA-10Y	**Total**	**-2.8**	**-4.4**	**8.2**
		due to expenditures policies	-3.8	-5.1	10.6
		due to interest rates	-0.4	-0.9	1.5
		due to multiplier effects	1.4	1.3	-3.5
Ex-post analysis	Nom. Pot. GDP	**Total**	**1.6**	**3.2**	**7.8**
		due to expenditures policies	1.9	5.0	11.3
		due to interest rates	0.3	0.5	1.1
		due to multiplier effects	-0.5	-2.1	-4.3
	Real Pot. GDP + ECB	**Total**	**7.4**	**12.8**	**20.6**
		due to expenditures policies	9.4	16.6	26.7
		due to interest rates	1.1	2.3	3.4
		due to multiplier effects	-2.8	-5.5	-8.8
	Nom. Avg. 99-09	**Total**	**7.7**	**12.4**	**19.5**
		due to expenditures policies	9.6	15.5	24.4
		due to interest rates	1.2	2.4	3.6
		due to multiplier effects	-2.8	-4.9	-7.7

Notes: (i) Positive (negative) figures indicate that the debt ratio would have been higher (lower) with a neutral expenditure stance as the actual path was more expansionary (restrictive) than the corresponding rule. They are expressed as percentage points of GDP. (ii) NPG=Nominal Potential GDP, RPECB = Real Potential GDP + ECB price stability objective, AV 99-09 = Nominal average growth 1999-2009, 10-MA = Nominal growth 10 years moving average.

Table 5: Determinants of expenditure stance

Dependent variable: Marginal changes to primary expenditures ratios as compared to a neutral expenditure stance across countries and rules

Panel A: Ex-post Nominal Potential GDP (NPG) rule

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)
Output gap (based on Potential GDP)	0.525 [3.78]***	0.476 [3.01]**	0.401 [2.50]**	0.463 [3.04]**	0.274 [1.65]	0.374 [2.22]*	0.476 [3.00]**
Public debt ratio (t-1)	0.054 [0.96]	0.056 [1.04]	0.035 [0.62]	0.071 [1.20]	0.042 [0.83]	0.033 [0.67]	0.057 [1.03]
Crisis dummy	3.946 [2.17]*	3.649 [1.74]	4.028 [1.64]	3.138 [1.75]	2.241 [1.08]	2.34 [1.13]	3.341 [1.22]
Strenght of expenditure framework * Output Gap		-0.262 [2.09]*					-0.262 [2.08]*
Surprises in Revenues growth			0.09 [0.46]				
Strenght of expenditure framework * Surprises in revenues growth			-0.08 [0.86]				
Electoral cycle 1				2.204 [3.64]***			
Electoral cycle 2					-0.812 [3.66]***		
Government Stability						-2.699 [3.26]***	
EDP							0.308 [0.16]
Constant	-2.941 [0.72]	-2.998 [0.77]	-1.47 [0.39]	-4.148 [0.97]	-0.006 [0.00]	-0.512 [0.13]	-3.079 [0.78]
Observations	108	108	108	108	90	90	108
Number of countries	12	12	12	12	10	10	12
R-squared	0.1	0.11	0.11	0.14	0.13	0.11	0.11
corr u_i and Xb	-0.76	-0.76	-0.57	-0.79	-0.52	-0.47	-0.77
adjusted R-squared	0	0.01	-0.01	0.05	0.01	-0.02	0
R-squared overall model	0.02	0.02	0.05	0.03	0.07	0.06	0.02
R-squared within model	0.1	0.11	0.11	0.14	0.13	0.11	0.11
R-squared between model	0.56	0.53	0.58	0.57	0.49	0.38	0.53

Panel B: Ex-Post Real Potential GDP +ECB price stability objective (RPECB) rule

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)
Output gap (based on Potential GDP)	0.469 [3.92]***	0.429 [2.74]**	0.299 [2.39]**	0.419 [3.20]***	0.277 [1.94]*	0.377 [2.58]**	0.429 [2.72]**
Public debt ratio (t-1)	0.057 [1.19]	0.059 [1.33]	0.031 [0.64]	0.071 [1.40]	0.053 [1.18]	0.044 [0.98]	0.058 [1.33]
Crisis dummy	2.882 [1.56]	2.634 [1.26]	3.267 [1.26]	2.223 [1.22]	1.685 [0.74]	1.793 [0.78]	2.654 [0.90]
Strenght of expenditure framework * Output Gap		-0.219 [1.75]					-0.219 [1.74]
Surprises in Revenues growth			0.172 [0.91]				
Strenght of expenditure framework * Surprises in revenues growth			-0.044 [0.59]				
Electoral cycle 1				1.798 [3.40]***			
Electoral cycle 2					-0.798 [4.17]***		
Government Stability						-2.544 [3.48]***	
EDP							-0.02 [0.01]
Constant	-2.808 [0.75]	-2.855 [0.82]	-0.747 [0.22]	-3.792 [0.97]	-0.392 [0.10]	-0.879 [0.23]	-2.85 [0.83]
Observations	108	108	108	108	90	90	108
Number of countries	12	12	12	12	10	10	12
R-squared	0.08	0.09	0.09	0.11	0.14	0.11	0.09
corr u_i and Xb	-0.82	-0.82	-0.55	-0.83	-0.61	-0.58	-0.82
adjusted R-squared	-0.02	-0.02	-0.02	0.01	0.01	-0.01	-0.03
R-squared overall model	0.01	0.01	0.04	0.01	0.07	0.06	0.01
R-squared within model	0.08	0.09	0.09	0.11	0.14	0.11	0.09
R-squared between model	0.61	0.61	0.58	0.62	0.4	0.37	0.61

Notes: Baseline (I), Baseline + Institutional framework (II and III), Baseline + electoral cycle and government stability , (IV - VI) and Baseline + European Institutions (VII).

Table 6: Expenditure and debt ratios - actual vs. normative ex-ante rule

Panel A: Primary expenditure ratios (% of GDP)

	Actual			NPG (real-time) - 1/2 pp. of expenditure growth		RPECB (real-time) - 1/2 pp. of expenditure growth		Ad memoriam: NPG (ex-post)	
	1999	2007	2009	2007	2009	2007	2009	2007	2009
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Euro Area (12)	***44.1***	***43.1***	***47.9***	***42.3***	***45.9***	***41.3***	***44.6***	***43.0***	***46.1***
Germany	44.9	40.9	44.9	43.5	46.7	43.5	46.6	43.0	45.8
France	49.6	49.6	53.3	47.4	50.1	47.4	50.0	48.8	51.5
Italy	41.5	42.9	47.3	40.1	43.5	39.5	42.7	40.4	43.6
Spain	36.4	37.6	44.1	33.0	36.8	30.6	33.9	35.9	38.9
Greece	37.0	40.6	45.4	34.2	37.3	31.8	33.9	35.6	37.4
Ireland	31.7	35.5	46.3	32.0	40.6	29.2	37.1	31.6	36.8
Portugal	40.2	42.9	48.1	40.0	43.2	38.7	41.4	40.9	43.2
Memorandum: EA(12) - DE	*43.7*	*44.0*	*49.1*	*41.6*	*45.3*	*40.4*	*43.8*	*42.9*	*46.0*

Panel B: Public debt ratios (% of GDP)

	Actual			NPG (real-time) - 1/2 pp. of expenditure growth		RPECB (real-time) - 1/2 pp. of expenditure growth		NPG (ex-post)	
	1999	2007	2009	2007	2009	2007	2009	2007	2009
	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Euro Area (12)	***71.9***	***66.4***	***79.2***	***61.7***	***71.5***	***57.9***	***64.9***	***64.8***	***76.0***
Germany	60.9	65.0	73.2	74.2	88.1	74.2	88.1	68.2	80.2
France	58.8	63.8	77.6	53.6	61.4	53.6	61.4	59.1	70.5
Italy	113.7	103.5	115.8	88.5	92.9	86.8	89.6	91.4	96.7
Spain	62.3	36.2	53.2	18.8	21.5	10.4	6.4	34.0	43.6
Greece	94.0	95.7	115.1	65.3	67.8	56.7	52.7	74.8	79.7
Ireland	48.5	25.0	64.0	16.3	42.6	3.2	19.3	18.9	40.8
Portugal	51.4	63.6	76.8	46.6	51.2	39.7	40.4	51.2	57.4
Memorandum: EA(12) - DE	*77.0*	*66.9*	*81.4*	*56.4*	*63.9*	*51.8*	*56.1*	*63.1*	*73.6*

Notes: (i) NPG = Nominal Potentital GDP, RPECB = Real Potential GDP + ECB price stability objective.

Annex A

Table A1: Computation of neutral expenditure paths and the corresponding debt level

Concept	Formula
Expenditure path	$\overline{G}_{1999} = G_{1999}, \overline{G}_t = \overline{G}_{t-1} * (1+gr_t), t = 2000,2010$ (Cumulative effects) $\overline{G}_{1999} = G_{1999}, \overline{G}_t = G_{t-1} * (1+gr_t), t = 2000,2010$ (Marginal effects) where: $\overline{G}$, **G**, and $\mathbf{gr_t}$ are the rule based expenditure level, the actual expenditure level and the growth rule applied according to each of our rules, respectively.
Debt developments (*)	$\overline{D}_t = D_t + \sum_{s=1999}^{t} \Delta G_s + \sum_{s=1999}^{t} \overline{I}_s, t = 1999, 2010$ where: $\overline{D}$, **D**, $\mathbf{\Delta G_s}$ and $\overline{I}_s$, are the rule based public debt level, the actual debt level, the deviation of public expenditures from rule-based expenditures (*) and the Interest flow generated from the deviations of our rules from the actual levels at each period.

(*) Note that, for the sake of clarity of presentation, we assume in this formula implicitly that GDP elasticity of the tax is equal to 1. Alternative scenarios with values of 0.8, 0.9, 1.1 and 1.2 were considered. Main conclusions remain.

Table A2: Assumptions and definitions of multiplier and interest rates effects.

Concept	Definition	Scenarios	Assumptions
GDP Multiplier	$\overline{Y}_t = Y_t * (1 + \Delta\%G_t * g)$ where: $\mathbf{\Delta\%G_t}$ and **g** are the deviation of public expenditures to our rule-based expenditures (in percentage points of GDP) and the estimated effect on GDP after one period.	*Weighted average*	$g = \sum_j \omega_j g_j$ where: $\mathbf{w_j}$ and $\mathbf{g_j}$ are correspondingly the weight and the estimated effect of the expenditure components.
		Uniform	$g = \sum_j g_j / J$ where: $\mathbf{g_j}$ is the estimated effect of the expenditure components (Coanen et al., 2010)
		Constant	$g \in \{0 : 0.1 : 1\}$
Compound Interest rate	$\overline{I}_s = \Delta G_s * r_t^N$ where: $\mathbf{\Delta G_s}$, **r** and **N** are the initial amount (the deviation of public expenditures to our rule-based expenditures at period ***s***), the annual nominal interest rate, and the number of years, respectively.	*Implicit interest rate*	$\mathbf{r_t = I_t / GCD_t}$ where: $\mathbf{I_t}$ and $\mathbf{GCD_t}$ represent the current interest payments and the Gross Consolidated Debt at period t, respectively.
		Average interest rate	$r_t = \sum_i r_t^i / I$ where: $\mathbf{r^i_t}$ (i=1, …, I) is the different maturities each country has ever used.
		Uniform	$r_t = r_t^i$ where: $\mathbf{r^i_t}$ represent one uniform maturity for all the countries (10 years)
		Fixed-term *(short, médium and long-term)*	$r_t = \sum_i r_t^i / I$ where: $\mathbf{r^i_t}$ (i=1, …, I) is the maturities at short-term (2-5 years), medium-term (6-9 years) and long-term (10, 15 years), respectively.

Table A3: Cumulative changes to primary expenditure ratios (adjusted for unemployment benefits) as implied by a neutral expenditure stance across countries and rules (in percentage points of GDP)

Panel A: Real-time analysis

	Nominal Potential GDP (NPG)		Real Potential GDP + ECB inflation objective (RPECB)		Nominal growth 10 year moving average (10-MA)	
	2007	2009	2007	2009	2007	2009
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Euro Area (12)	***-0.2***		***0.8***		***-0.7***	
Germany	-3.4	-3.0	-3.4	-2.9	-5.5	-4.8
France	0.9	1.4	0.9	1.5	0.8	1.2
Italy	1.6	1.9	2.2	2.7	0.6	0.5
Spain	3.4	4.5	5.8	7.4	4.5	5.2
Greece	5.2		7.7		2.8	
Ireland	3.1	4.7	5.8	8.1	3.6	2.9
Portugal	1.4	2.9	2.7	4.8	-0.8	0.2
Memorandum: EA(12) - DE	*1.2*		*2.4*		*1.1*	

Panel B: Ex-post analysis

	Nominal Potential GDP (NPG)		Real Potential GDP + ECB inflation objective (RPECB)		Nominal average growth 1999-2009 (AV 99-09)	
	2007	2009	2007	2009	2007	2009
	(7)	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*
Euro Area (12)	***0.3***		***1.7***		***1.6***	
Germany	-1.7	-0.5	-1.7	-0.5	-1.4	0.1
France	0.9	1.8	1.3	2.4	2.0	2.7
Italy	2.5	3.5	3.9	5.2	3.4	4.2
Spain	1.6	3.9	5.5	8.2	3.8	4.3
Greece	4.9		7.5		5.1	
Ireland	4.4	9.7	7.2	12.9	8.1	9.4
Portugal	1.7	4.5	4.3	7.2	3.1	4.6
Memorandum: EA(12) - DE	*1.1*		*2.9*		*2.6*	

Notes: (i) Positive (negative) figures mean that actual path was more expansionary (restrictive) than the corresponding rule. They are expressed as percentage points of GDP. (ii) Positive (negative) figures mean that real-time growth rates were lower (higher) than actual figures. (iii) Blank cells mean that unemployment benefits are not available for these countries and periods.

Table A4: Overview of assumptions

Panel A: Multipliers assumptions

	Weigthed average			Uniform		
	2004	2007	2009	2004	2007	2009
	(1)	(2)	(3)	(4)	(5)	(6)
Euro Area (12)	***0.52***	***0.53***	***0.53***	***0.65***	***0.65***	***0.65***
Germany	0.49	0.50	0.50	0.65	0.65	0.65
France	0.54	0.54	0.54	0.65	0.65	0.65
Italy	0.52	0.51	0.51	0.65	0.65	0.65
Spain	0.56	0.56	0.55	0.65	0.65	0.65
Greece	0.49	0.48	0.47	0.65	0.65	0.65
Ireland	0.57	0.56	0.52	0.65	0.65	0.65
Portugal	0.55	0.54	0.54	0.65	0.65	0.65
Memorandum: EA(12) - DE	0.54	0.54	0.54	0.65	0.65	0.65

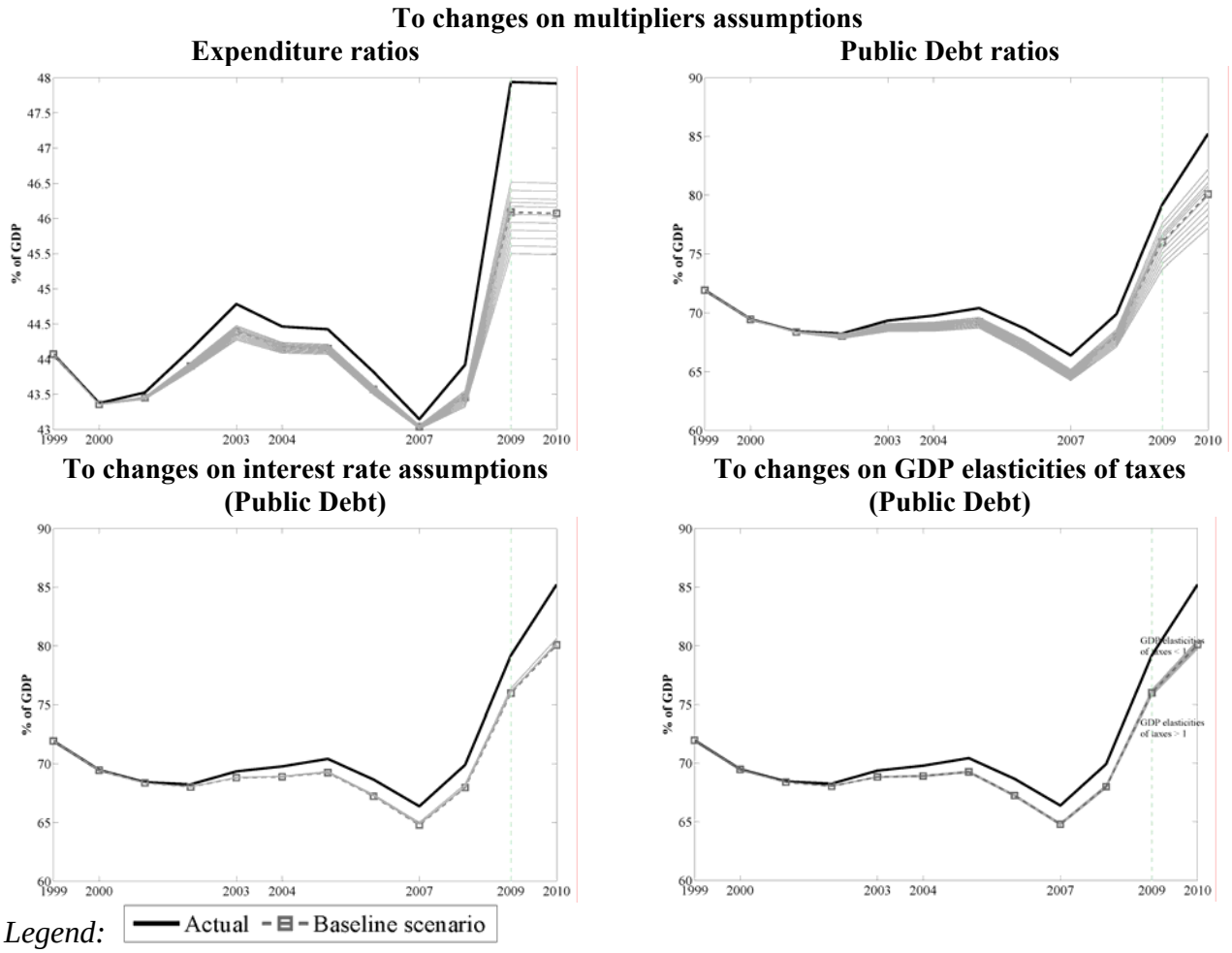
Panel B: Compound interest assumptions

	Implicit interest rate			Average Interest rate			Uniform *(10 Y Government Bond Yield)*		
	2004	2007	2009	2004	2007	2009	2004	2007	2009
	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Euro Area (12)	***4.47***	***4.48***	***3.60***	***3.52***	***4.20***	***2.87***	***3.13***	***3.13***	***3.13***
Germany	4.29	4.26	3.61	3.40	4.17	2.74	3.97	4.21	5.05
France	4.28	4.21	3.00	3.52	4.23	4.01	4.00	4.28	14.68
Italy	4.62	4.80	3.98	3.58	4.35	3.38	4.07	4.44	4.05
Spain	4.42	4.45	3.36	3.47	4.21	3.20	3.99	4.27	3.81
Greece	4.91	4.64	4.32	3.74	4.37	4.14	4.95	4.95	4.95
Ireland	3.81	4.19	3.29	3.63	4.21	4.04	4.87	4.87	4.87
Portugal	4.58	4.53	3.72	3.50	4.29	3.38	4.03	4.37	4.01
Memorandum: EA(12) - DE	4.54	4.56	3.60	3.52	4.20	2.87	3.13	3.13	3.13

	Short-term *(2-5 Y Government Bond Yield)*			Medium-term *(6-9 Y Government Bond Yield)*			Long-term *(10, 15 Y Government Bond Yield)*		
	2004	2007	2009	2004	2007	2009	2004	2007	2009
	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Euro Area (12)	***3.13***	***3.13***	***3.13***	***3.76***	***4.20***	***3.43***	***3.13***	***3.13***	***3.13***
Germany	2.89	4.12	1.92	3.75	4.20	3.43	4.06	4.23	3.27
France	2.89	4.15	2.08	3.77	4.23	6.02	4.27	4.37	3.84
Italy	2.90	4.23	2.51	3.83	4.36	3.70	4.42	4.56	4.49
Spain	2.83	4.14	2.39	3.75	4.23	3.50	4.21	4.31	4.21
Greece	3.09	4.24	3.25	3.63	4.33	4.32	4.44	4.58	5.38
Ireland	3.06	4.15	3.08	4.87	4.87	4.87	4.12	4.30	5.30
Portugal	2.89	4.20	2.53	3.78	4.30	3.76	4.19	4.46	4.34
Memorandum: EA(12) - DE	3.13	3.13	3.13	3.76	4.20	3.43	3.13	3.13	3.13

Notes: (i) Scenarios in which there is no variety cross-country and have been shown in Table A1 are not included here.

Figure A1: Sensitive analysis. Euro Area (12). Nominal Potential GDP (NPG) rule.



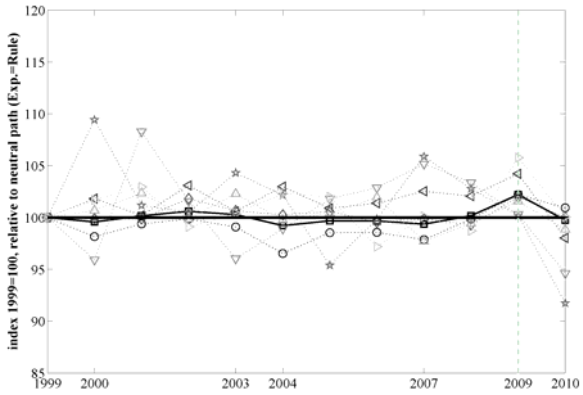
Legend:

Note: Baseline scenario means we consider weighted average of estimated effects for the main expenditure components, implicit interest rate for the actual level of debt and GDP elastisticity of taxes equal to one regarding the GDP multiplier, compound interest rate and tax elasticity effects, respectively.

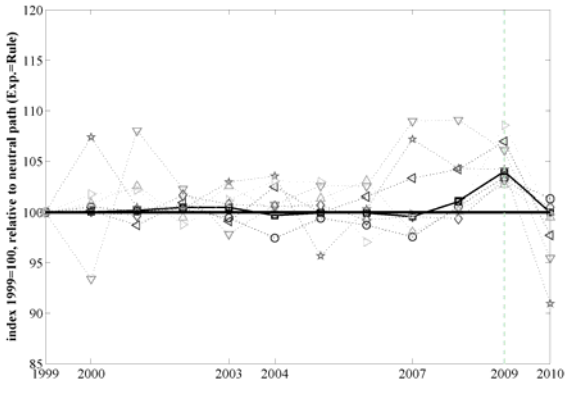
Annex B

Figure B1: Marginal changes to primary expenditures ratios compared to a neutral expenditure stance across countries and rules.

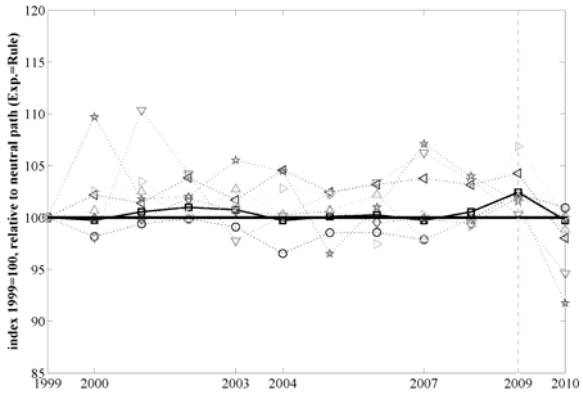
Real-time: Nominal Potential GDP (NPG)



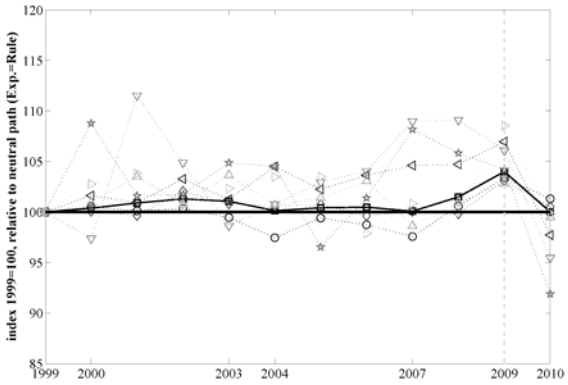
Ex-post: Nominal Potential GDP (NPG)



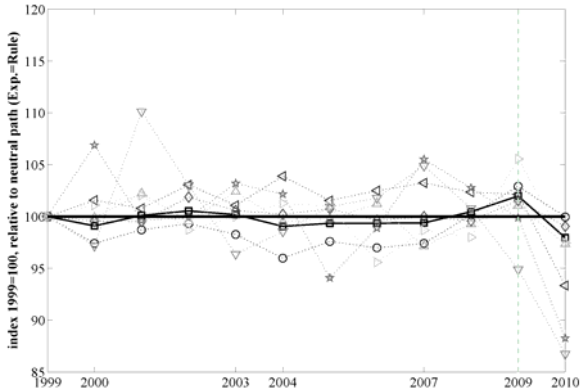
Real-time: Real Potential GDP + ECB price stability objective (RPECB)



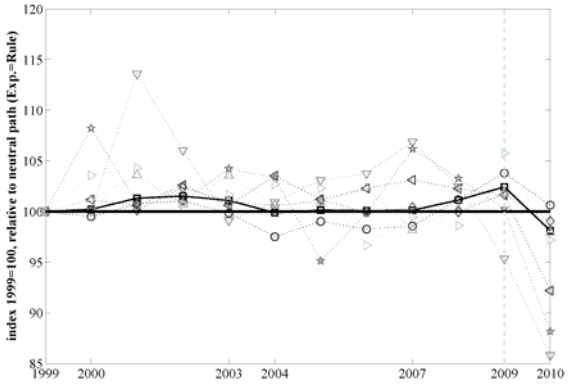
Ex-post: Real Potential GDP + ECB price stability objective (RPECB)



Real-time: Nominal average 10 year moving average growth (10-MA)



Ex-post: Nominal average growth 1999-2009 (AV 99-09)



Legend:

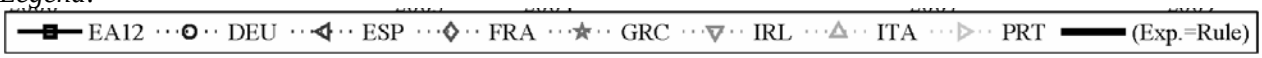
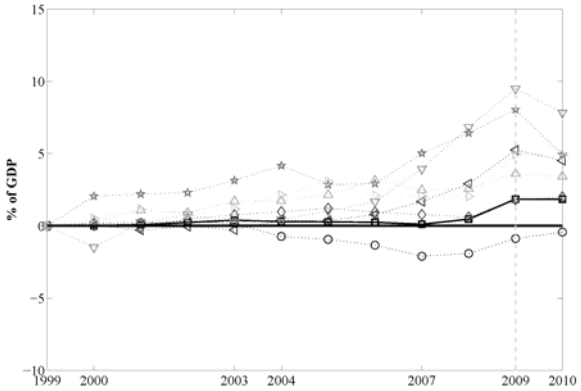
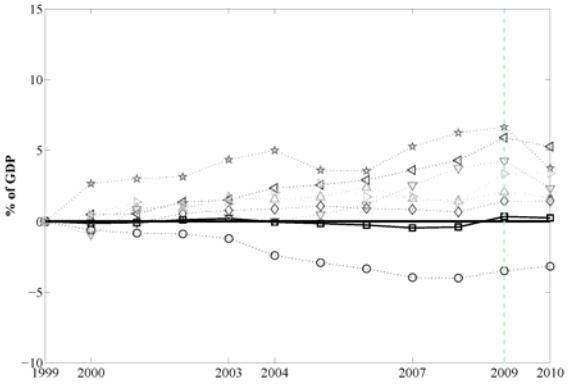


Figure B2: Cumulative changes to primary expenditures ratios compared to a neutral expenditure stance across countries and rules (in percentage points of GDP).

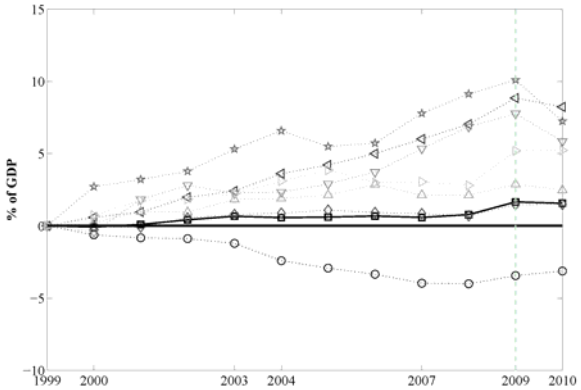
Real-time: Nominal Potential GDP (NPG)



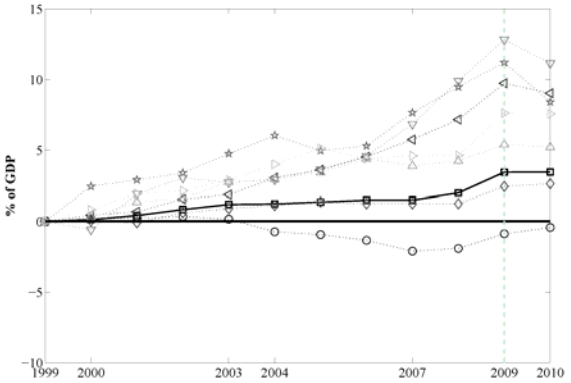
Ex post: Nominal Potential GDP (NPG)



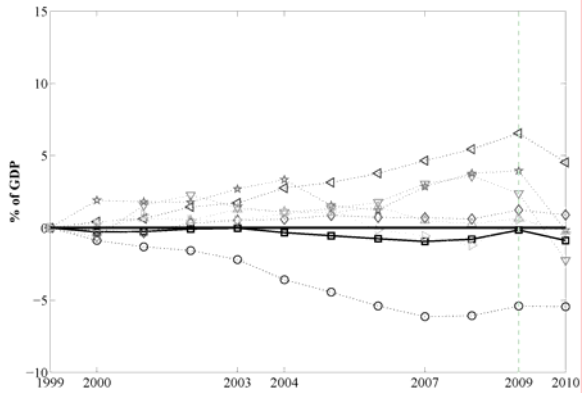
Real-time: Real Potential GDP + ECB price stability objective (RPECB)



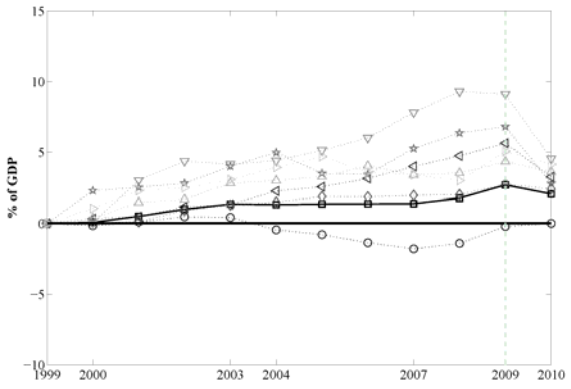
Ex-post: Real Potential GDP + ECB price stability objective (RPECB)



Real-time: Nominal average 10 year moving average growth (10-MA)



Ex-post: Nominal average growth 1999-2009 (AV 99-09)



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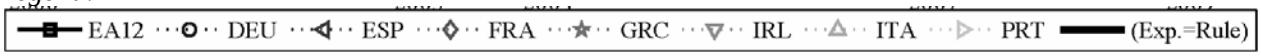
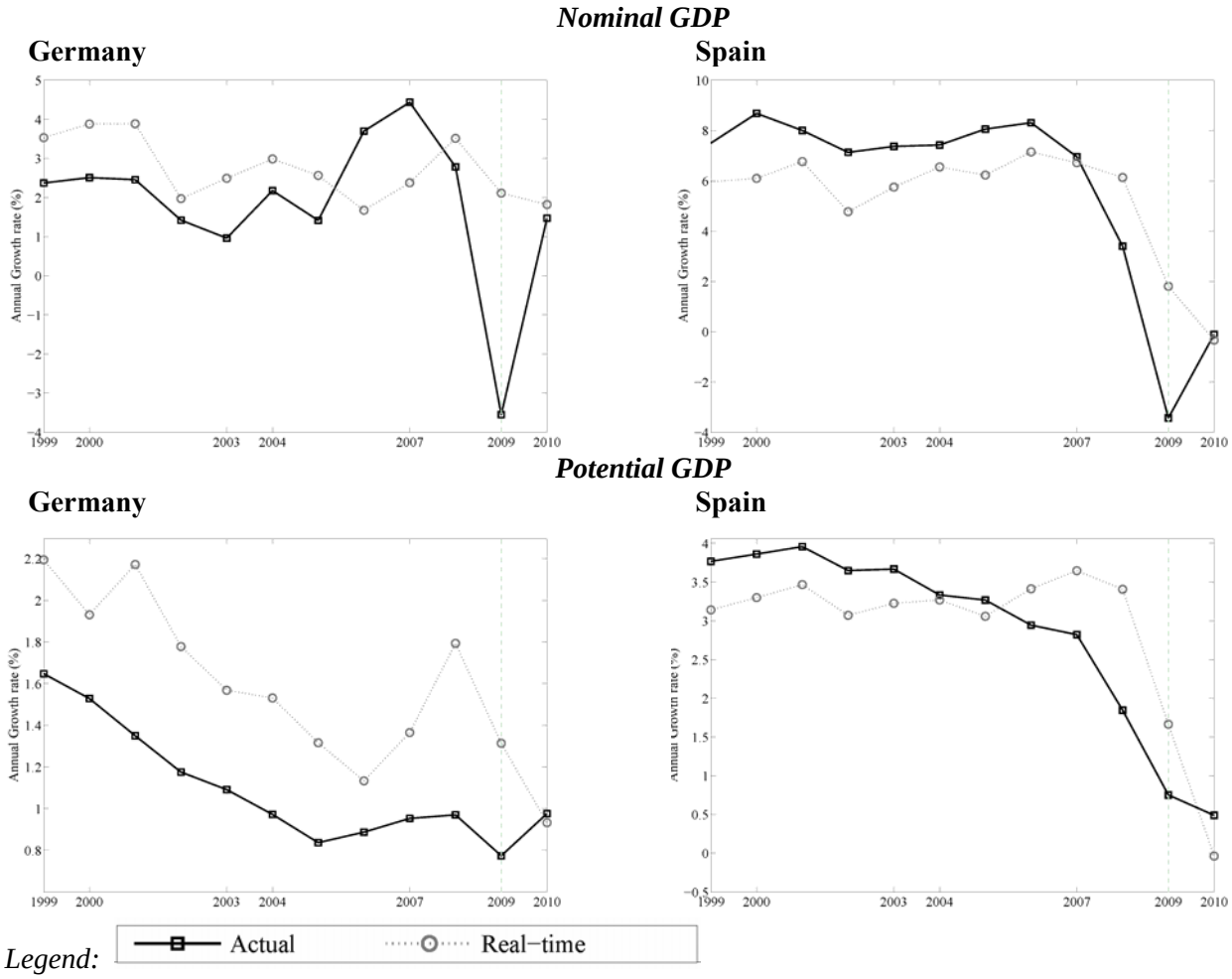
Figure B3: Ex-post *vs.* real-time data. Revisions over the EMU period for selected indicators and countries