

# Fiscal policy responses of euro area countries to the economic crisis

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The euro area countries have attempted to use fiscal policy to constrain changes in output, employment and incomes that derive from business-cycle fluctuations. That is to say, policies have been counter-cyclical. During the crisis, policy responded more actively than before to cyclical changes in the economy, as the longer-term goals for public finances were partly put on hold in favour of business-cycle policy. Forecast errors concerning the euro area countries and subsequent data revisions were considerably larger during the crisis than in the earlier years. Economic uncertainty at the time of decision making substantially impacted fiscal plans and their implementation during the recession years.

As a result of the international financial crisis and attending global recession, active fiscal policy has moved to centre stage in the advanced economies. While automatic fiscal stabilisers have had a partial levelling effect on income losses due to the collapse of output, these countries have also resorted to discretionary increases in government spending and reductions in taxes. The result was severely weakened public-sector finances in all of the euro area countries. In the course of 2010 the trust of fiscal policy shifted from economic stimulation to consolidation of public finances, as the economic outlook improved and the issue of public-sector indebtedness

captured increased attention. And in the past year considerable effort has been expended to stabilise public finances across the euro area countries.

Active use of fiscal policy measures in the conduct of counter-cyclical policy entails a number of risks. Accommodative actions may prove ineffective or their effects on the economy may differ from estimated effects. It is, moreover, difficult to predict the impact lags of fiscal policy. Stimulus measures may not have effect until the economy has already recovered from the slump. But the central problem in gauging fiscal policy actions is the uncertainty attached to the future course of the economy. Appropriate fiscal-policy settings require an understanding not only of the appropriate counter-cyclical measures but also a sense of the room one has for fiscal-policy manoeuvring. That is, the uncertainty relates not only to future developments but also to the current economic situation. If one over-estimates the government's structural balance, ie the levels at which revenues and expenditures will stabilise after economic conditions return to normal, fiscal policy is not on a sustainable basis. Erroneous estimates of either the leeway for fiscal policy or coming economic developments can lead to policies that later prove to be inappropriate as well as to excessive indebtedness.



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Fiscal policy decisions are always made on the basis of an inadequate view of the economic situation and inadequate data. Nor is it easy to evaluate ex post the ultimate aims of fiscal policies. Statistical data are revised and the view concerning the cyclical position becomes clear only with time, so that an ex post examination can result in a distorted picture of the way fiscal policy has reacted to the economic situation. If one wants to study the extent to which fiscal policy has been counter-cyclically oriented, fiscal actions must be evaluated in light of the data available at the time when policy decisions are made. This article assumes that perspective in examining the euro area countries' discretionary fiscal policies during the time of monetary union (EMU). Thus the analysis is based on the data available

at times when decisions are made, ie on 'real-time' information.<sup>1</sup>

### Crisis took euro area countries by surprise

Fiscal policy in recent years has necessarily been conducted in an environment of huge uncertainty. The forecast errors tell us something about how abruptly the economic crisis came about. Three different measures of average forecast errors in the euro area countries are presented in table 1. The mean error (ME) indicates whether the forecasts systematically over- or under-

<sup>1</sup> This article is based on the authors' study, *Finanssipolitiikan reaktiot euromaissa: mitä kriisi muutti?*, published in the Bank of Finland's BoF Online series (in Finnish only). The study analyses more extensively euro area countries' fiscal policies, including estimation of reaction functions for the years 1999–2010 based on real-time data. Country-specific panel data from the OECD Economic Outlook are used in the study. See also Kinnunen and Paloviita, *Real time analysis of euro area fiscal policies: adjustment to the crisis*, forthcoming Bank of Finland Discussion Paper.

Table 1.

Average forecast accuracy in euro countries 1998–2010									
	Whole period (1998–2010)			Pre-recession (1998–2007)			Recession years (2008–2010)		
	Mean error	Mean absolute error	Root mean squared error	Mean error	Mean absolute error	Root mean squared error	Mean error	Mean absolute error	Root mean squared error
<i>Cyclically-adjusted</i>									
<i>primary balance, % of GDP</i>	-0.39	1.11	1.61	0.06	0.81	1.00	-1.71	2.05	2.63
<i>Public-sector debt, % of GDP</i>	0.79	3.24	4.39	-0.34	2.48	3.04	4.57	5.75	6.98
<i>Output gap, % of GDP</i>	-0.05	0.81	1.12	0.08	0.67	0.83	-0.54	1.31	1.65
<i>GDP growth, %</i>	-0.44	1.18	1.57	-0.14	0.90	1.10	-1.46	2.10	2.53

Sources: OECD Economic Outlook and authors' calculations.

estimate the outcome. The mean absolute error (MAE), in which signs of the errors are removed, is a measure of the average accuracy of the forecasts. The root mean squared error (RMSE) is another metric for the average absolute error, which puts more weight on outsized errors. All of these measures indicate that forecasts were not very accurate during the crisis. The forecast errors increased greatly: for all the variables, the MAE and RMSE were twice as large as in previous years. For instance, the average forecast error for GDP increased to more than two percentage points compared to just under one percentage point before the crisis. Moreover, all the euro area countries systematically underestimated the growth of the debt. Thus the gauging of fiscal policy has been based on highly erroneous forecasts, and realised fiscal policy in the recession years has been much more accommodative than the projected policy.

Differences in forecast errors across years and countries show that estimates of the output gap and cyclically-adjusted primary balance<sup>2</sup> (CAPB) have been relatively inaccurate even in normal times (charts 1a and 1b). The errors for individual countries have been

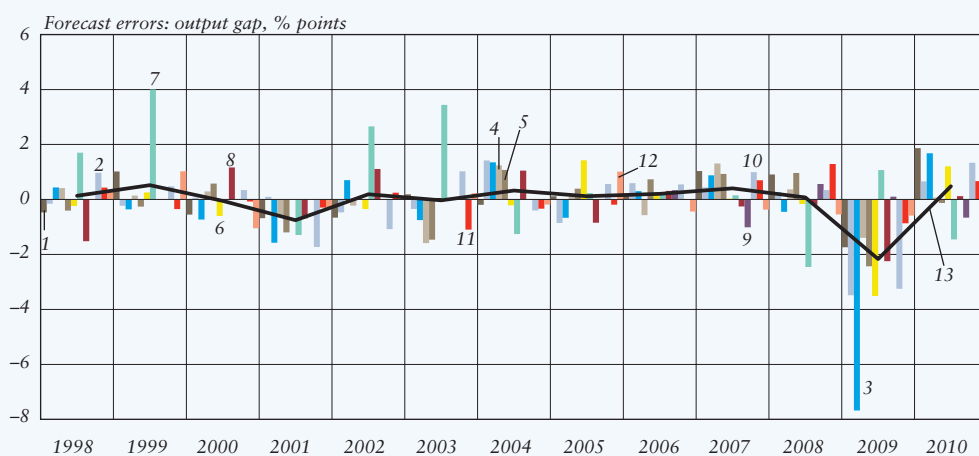
<sup>2</sup> The cyclically-adjusted primary balance is calculated by removing the effects of cyclical conditions and other discretionary factors - such as the aftereffects of changes in interest rates, debts and receivables - from the public-sector financial balance. In practice, interest costs and the portion of the financial balance due to the gap between potential and actual output are subtracted from the public-sector financial balance.

substantial; yet forecasts of the output gap persistently fluctuated fairly regularly until 2008, in terms of both country and sign. Errors relating to the CAPB, on the other hand, have been more systematic. The structural balance of the public sector was in many countries weaker than forecasted in 2002–2005 and stronger than forecasted in 2006–2007. The global recession impacted almost all of the euro area countries; at the same time, in the same direction and without warning. This is apparent in the fact that in 2009 forecast errors for the output gap in all the countries were negative, ie output performance was clearly worse than forecasted. Errors concerning the CAPB followed a similar pattern. Differences between countries also increased in 2009; eg developments in Greece and Ireland differed widely from the rest. Examination of forecast errors indicates that when budgets are prepared the prevailing view of economic conditions has often differed substantially from the actual situation. The huge uncertainty prevailing especially during the crisis has affected the planning of fiscal policy. Examination of forecast errors also reveals that developments in Greece and Ireland differed widely from events in the other countries. Because these developments would dominate average developments in the euro area, they are eliminated from our analysis of euro area policies.

Chart 1a.

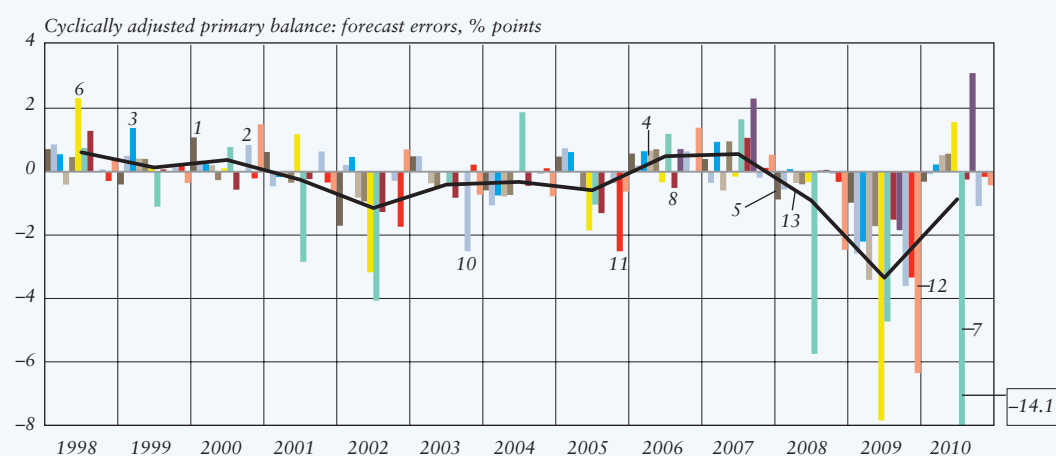
Forecast errors by country

- |            |            |               |                 |               |
|------------|------------|---------------|-----------------|---------------|
| 1. Austria | 4. France  | 7. Ireland    | 10. Netherlands | 13. Euro area |
| 2. Belgium | 5. Germany | 8. Italy      | 11. Portugal    |               |
| 3. Finland | 6. Greece  | 9. Luxembourg | 12. Spain       |               |



Sources: OECD Economic Outlook and authors' calculations.

Chart 1b.



Sources: OECD Economic Outlook and authors' calculations.

## What was the fiscal-policy response to recession?

Using the fiscal-policy reaction function we are able to demonstrate the importance of uncertainty and budget planning for fiscal policy. A reaction function provides information on how forecasts of economic performance over the budget year and longer-term policy goals impact budget planning. Discretionary fiscal actions (budget plans) of the euro area countries are evaluated in terms of the ratio of cyclically-adjusted primary balance to potential output. Economic performance during the budget year is defined in terms of the projected output gap and longer-term policy goals, the so-called persistence factors, ie the current year's primary balance. The persistence factors indicate the degree to which fiscal policy is rules based, ie the degree to which policy planning is long-term oriented.

If fiscal policy is counter-cyclical, taxes and/or spending are tightened when the projected output gap is positive, ie when actual output exceeds potential output, and visa versa in an economic downswing. Persistence factors indicate how persistently policy actions focus on long-term goals: the larger its estimated coefficient, the greater the long-term focus of policy. The tighter the rules for government spending limits and financial balance, the less the room for active discretionary

Table 2.

Estimation results: EMU period	
<i>Business-cycle coefficient</i>	0.267* (0.082)
<i>Policy persistence coefficient</i>	0.557* (0.086)
<i>Goodness of fit</i>	0.881
<i>Durbin-Watson-statistic</i>	1.619
<i>St. dev. in parentheses, * indicates significance at 5% level.</i>	
<i>Sources: OECD Economic Outlook and authors' calculations.</i>	

fiscal policy. A high degree of persistence in fiscal policy means that realised actions in one period will affect the policy choices for future periods.

In this study, fiscal policy reaction equations were estimated for ten euro area countries on the basis of real-time panel data for the years 1999–2010.<sup>3</sup> The estimation results show that during the time of monetary union the euro area countries have used discretionary policy measures to reduce cyclical fluctuations (table 2). That is, forecasts of cyclical conditions over the budget year have affected budget planning (statistically significant business-cycle coefficient). Euro area countries' discretionary fiscal policies have also been quite persistent (persistence coefficient 0.6).

The aim of the estimation exercise is to study planned fiscal

<sup>3</sup> Cross-country differences were taken into account via country-specific constants from panel-data estimations.

Table 3.

Correlation coefficients by country: planned budget vs output gap		
	Budget-year output gap	Current-year output gap
Netherlands	0.48	0.54
Belgium	0.67	0.54
Spain	0.86	0.87
Ireland	0.77	0.69
Italy	-0.27	-0.21
Austria	0.59	0.52
Greece	0.38	0.11
Luxembourg	-0.11	0.21
Portugal	0.40	0.45
France	0.79	0.69
Germany	0.59	0.73
Finland	0.57	0.63
<b>Average</b>	<b>0.48</b>	<b>0.48</b>

Sources: OECD Economic Outlook and authors' calculations.

policy, ie the budget actions for the next year.<sup>4</sup> The results show that fiscal policy in the euro area countries has been counter-cyclical on average during the time of monetary union: it has generally been tightened in booms and eased in recessions. It has also been long-term oriented, ie the euro area countries have generally conducted counter-cyclical fiscal policies in accord with prior commitments. In other words, repeated changes in fiscal policy strategy have been relatively small. A possible reason for this is that the fiscal rules for the different countries have prevented large deviations from the basic orientation of cyclical

<sup>4</sup> The data include next year's budget, as they are based on the December issues of the OECD's Economic Outlook.

policy; instead, policies are tied to long-term programmes. It is worthwhile emphasising that this result applies to policy responses relative to the economic prospects as seen by policy-makers when the regular budgets are being planned. One usually obtains a very different picture of fiscal policy from an ex post analysis based on final economic numbers. Developments in the financial balance also reflect changes in policy orientation in the course of the budget year.

An average result does not shed light on cross-country differences in response. Correlations for individual countries as between budget plans and real-time estimates of cyclical conditions point to responses in the same direction (table 3). The CAPB and cyclical situation (real-time estimate of current or next-year's output gap) have generally been highly positively correlated; only for Italy was the correlation coefficient negative. Budget plans have thus moved in opposition to the economic outlook (according to both metrics) and generally to the same extent in all the countries. This result suggests that there are probably not great differences in response between the countries, so that cyclical conditions have apparently impacted euro-country budget planning in a fairly uniform manner.

Fiscal policy has been crucial in euro area countries' stimulus measures during the current

recession. Using fiscal-policy reaction functions, one can examine whether fiscal stimulus reflected regular budget policy, ie the realisation of plans in connection with the regular budget process. One might ask whether during the severe crisis of recent years the euro area countries actually altered their long-run policy goals during the budget planning process. Moreover, did budget planning in the euro area become more counter-cyclical in the course of the crisis? The larger the estimated business-cycle coefficient, the more cycle oriented the fiscal policy. In order to analyse fiscal policy during the recession years, the data were divided into two periods via ‘dummy variables’.<sup>5</sup>

The estimation results (table 4) demonstrate that during the recession fiscal policy deviated to an extent from that conducted over the longer-term. When the crisis years are analysed separately from the earlier period, the persistence coefficient in both periods and the business-cycle coefficient in the crisis period are statistically significant at the 5% level. The estimated business-cycle coefficient for the recession years is larger than that for the earlier period. This means that business conditions played a larger role in fiscal strategy as a result of the recession. Policy persistence, on the other hand, was less important during the recession.

<sup>5</sup> The dummy variable takes the value zero for the years 1999–2007 and one for the years 2008–2010.

Table 4.

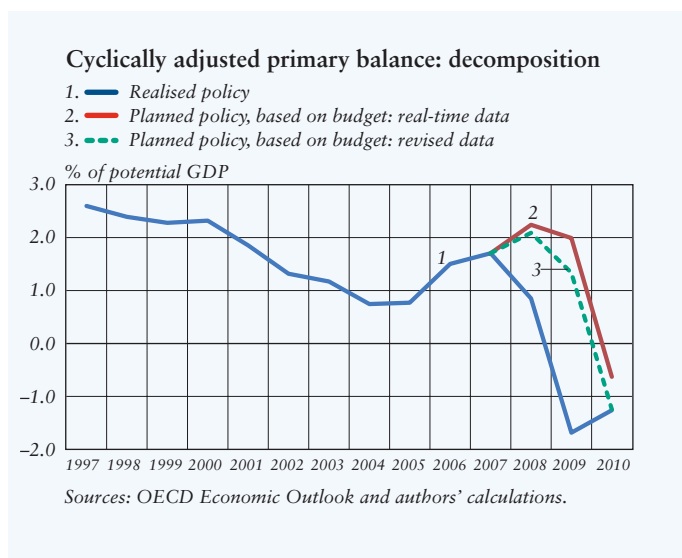
<b>Estimation results: crisis years and earlier period</b>	
<i>Business-cycle coefficient, crisis years (2008–2010)</i>	0.199* (0.073)
<i>Business-cycle coefficient, earlier period (1999–2007)</i>	0.121 (0.082)
<i>Policy persistence coefficient, crisis years (2008–2010)</i>	0.596* (0.098)
<i>Policy persistence coefficient, earlier period (1999–2007)</i>	0.640* (0.082)
<i>Goodness of fit</i>	0.907
<i>Durbin–Watson-statistic</i>	1.890
<i>Std. dev. in parentheses, * indicates significance at 5% level.</i>	
<i>Sources: OECD Economic Outlook and authors’ calculations.</i>	

However, the estimated persistence coefficient for the euro area countries in the crisis years is only slightly smaller than that for the earlier period. Therefore, the results suggest that, even during the recession, budget planning continued to adhere quite closely to fiscal policy rules.

### **Evaluation of fiscal policy during the recession years**

The recession years were an exceptionally challenging time for fiscal policy. Abundant uncertainty about economic performance and a simultaneous need for a more active fiscal policy posed a risk for the gauging of policy actions, but the conduct of policy was also marked by difficult challenges. Because the crisis was severe and unpredictable in the euro area countries, it required quick responses by policy-makers. In fact,

Chart 2.



fiscal plans for the next year often had to be revised in the course of the budget year. Using real-time data and estimated reaction functions, one can examine the extent to which realised fiscal easing is explained by the fact that cyclical conditions only gradually became clear. Budget plans were devised on the basis of projected economic performance that was better than the actual outcome.

Although euro area countries' budget planning became slightly more responsive to business-cycle conditions during the crisis, this would not produce the observed degree of fiscal easing had policy been gauged on the basis of actual economic conditions. To shed light on the issue, we examined the OECD's revised CAPB figures for recent years and two alternative primary balance

series, calculated using the estimated reaction function (chart 2). These observations reveal developments in the primary balance in the planned budget based on the data available at times when decisions were made (real-time data) and on subsequently revised data (final data).

If fiscal policy during the crisis years had been conducted in accord with planned budgets (without additional decisions during budget years) and economic performance had been in line with the perception of the economic situation when the policy decisions were made, fiscal easing would have not have occurred until 2010. If, on the other hand, economic performance had been correctly forecasted when policies were planned, substantial fiscal easing would have occurred already in 2009. Because primary balance figures for the last few years will not be finalised until later, partly due to revisions to potential output estimates, it should be emphasised that our estimates for the elements of fiscal policy during the recession years are merely indicative. Nonetheless, our results do suggest that during the recession the policy responses reflected in planned budgets differed substantially from what actual economic conditions would have required. The chart clearly shows the wide differences between planned and realised policy actions. The shrinking of the realised primary balance in 2010 reflects the change in fiscal-policy focus from

economic stimulus to consolidation of public finances.

Division of fiscal policy into its components shows that a substantial portion of realised stimulus during the recession years is explained by factors other than budget plans and statistical uncertainties. The difference between budget plans and realised policy is largely explained by additional decisions made during budget years and other factors such as changes in economic agents' behaviour in connection with stimulus measures. These factors largely explain the realised discretionary change in the structural balance.

Our analysis shows that during the crisis period it has been possible, using fiscal tools, to respond flexibly to a deteriorating economic situation, even in the course of the budget year. However, the results underline the fact that if we examine realised policy on the basis of ex post revised data, we may come to widely different conclusions about policy rules and fiscal policy as compared to those based on data that were available at the time when decisions are made.

### **The crisis increased fiscal policy responsiveness to cyclical conditions**

The above analysis indicates that forecast errors and ex post data revisions in the euro area countries were exceptionally large during the crisis. The results also suggest that during the time of monetary union

budget planning in the euro area countries has aimed at reducing business-cycle fluctuations. That is, fiscal policy has been used to reduce the changes in output, employment and income that derive from cyclical changes. The planned budgets of the euro area countries have on average entailed easing whenever economic conditions seemed to be worsening at the time when decisions were made. And fiscal policy has become less accommodative when the economy was in an upswing. It has also been typical that fiscal policy could be characterised as having a long-term focus, so that yearly changes in policy are restrained by long-term goals.

The recession changed the fiscal policy stance in the euro area countries; it became more responsive to business-cycle movements and simultaneously less persistent. This suggests that during the crisis the long-term goals of fiscal policy were to an extent put on hold in favour of counter-cyclical actions. This was quite natural in a situation where it was feared that the financial crisis could worsen further and where monetary policy was accommodative and inclusive of non-standard policy measures, as policy-makers did not want to invite the risks of excessive fiscal tightening. The realised fiscal policy of the crisis years was clearly more accommodative than that embedded in the planned budgets.

Developments in recent years highlight the uncertainty associated

with statistical data and the problems of gauging fiscal policy as well as the need to develop more reliable data and better methods of analysis and forecasting. The huge uncertainty concerning economic performance over the coming years means that the risk of pursuing poorly gauged (in ex post terms) business-cycle policies will continue to be a large risk. This, along with the public-sector debt problems, will pose even bigger challenges for fiscal policy. From the perspective of being able to adjust policies in light of economic conditions and the state of public finances, poorly gauged fiscal policy

can lead to higher financing costs. The huge difference between planned budgets and realised policies also causes problems for the closer coordination of fiscal policies within the EU. For example, based on our analysis, it appears advance budget approval would not be very effective if in future realised fiscal policy continues to differ as widely as in recent years from the policies intended when budget decisions are made.

*Key words: fiscal policy reaction function, economic crisis, real-time data*