Gauging the effects of fiscal stimulus packages in the euro area

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ABSTRACT

We seek to quantify the impact on euro area GDP of the European Economic Recovery Plan (EERP) enacted in response to the financial crisis of 2008–2009. To do so, we estimate an extended version of the ECB's New Area-Wide Model with a richly specified fiscal sector. The estimation results point to the existence of important complementarities between private and government consumption and, to a lesser extent, between private and public capital. We first examine the implied present-value multipliers for seven distinct fiscal instruments and show that the estimated complementarities result in fiscal multipliers larger than one for government consumption and investment. We highlight the importance of monetary accommodation for these findings. We then show that the EERP, if implemented as initially enacted, had a sizeable, although short-lived impact on euro area GDP. Since the EERP comprised both revenue and expenditure-based fiscal stimulus measures, the total multiplier is below unity.

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1. Introduction

The launch of large-scale fiscal stimulus packages following the financial crisis of 2008–2009 has triggered a lively debate in both academic and policy circles about the effectiveness of fiscal policy. Two such large-scale fiscal packages were the American Recovery and Reinvestment Act (ARRA) in the United States and the European Economic Recovery Plan (EERP) in the European Union. In response to the debate, a growing academic literature has emerged analysing the economic effects of the fiscal stimulus packages. Most of this literature studies the impact of the ARRA. Prominent examples are the studies by Cogan et al. (2010), Drautzburg and Uhlig (2011), and Coenen et al. (2012a).[1]

In this article, we seek to quantify the impact of the EERP on euro area GDP. To this end, we estimate an extended version of the ECB's New Area-Wide Model (NAWM; see Christoffel et al., 2008) with a rich fiscal sector. Our specification of the fiscal sector aims at balancing the need for a high degree of detail, which is deemed important for conducting a meaningful quantitative analysis of the impact of fiscal policy on GDP, and tractability, which permits identifying the relevant economic mechanisms. Specifically, the extended NAWM features: (i) non-Ricardian households, so that government transfers have real effects, (ii) government consumption, which is valued by households in a non-separable way, (iii) public capital subject to a time-to-build technology, which can be either a complement or a substitute of private capital, (iv) time-varying distortionary tax rates, and (v) fiscal rules governing the endogenous adjustment of fiscal policy.

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[1] A more voluminous body of literature has focused on the size and sensitivity of fiscal multipliers, as opposed to the effects of comprehensive fiscal packages. See e.g. Christiano et al. (2011a), Coenen et al. (2012a), Corsetti et al. (2009), Drautzburg and Uhlig (2011), Eggertsson (2011), Erceg and Lindé (2010), Uhlig (2010), and Woodford (2011). A review of this literature can be found in Coenen et al. (2012a).

The estimation of the extended model makes use of 25 quarterly time series, eight of which are from a newly available database for fiscal revenue and expenditure data, as well as government debt. The estimation results point to the existence of important complementarities between private and government consumption and, to a lesser extent, between private and public capital. Employing the estimated model, we first examine the implied present-value multipliers for seven distinct fiscal instruments. The estimated complementarities result in fiscal multipliers larger than one for government consumption and investment. We highlight the importance of monetary accommodation for these findings. Assuming that its implementation was carried out in line with the initial enactment, we then show that the EERP had a sizeable, although short-lived impact on euro area GDP. Since the EERP consisted of revenue and spending-based fiscal measures, the total EERP multiplier is below unity.

Based on a growth accounting exercise, as detailed in Coenen et al. (2012b), we furthermore study the role of endogenous adjustments of fiscal policy for euro area GDP during the crisis, with findings that hint at the importance of fiscal stabilisation beyond the effects of purely discretionary measures. In a similar vein, we provide evidence that the EERP alone does not account for the total discretionary fiscal stimulus.

Our analysis is related to Cwik and Wieland (2011) who evaluate the spending part of the EERP and conclude that the associated multiplier is below unity. Relative to Cwik and Wieland, our study emphasises the following dimensions. First, we highlight the importance of possible complementarities between private and government consumption. Second, our analysis provides a more encompassing analysis of the effects of the EERP since we take into account a variety of instruments for government spending and revenue. Third, none of the models used by Cwik and Wieland is estimated using fiscal data, while we use a model that is estimated on lots of fiscal data. Fourth, we emphasise the importance of monetary accommodation for the assessment of the overall efficacy of fiscal stimulus packages.

The remainder of the article is structured as follows. Section 2 provides an overview of the model, while Section 3 reports on the data and the main estimation results. Section 4 studies the estimated present-value fiscal multipliers and highlights the importance of monetary accommodation. Section 5 presents the results regarding the effectiveness of the EERP in stabilising economic activity in the euro area and provides extensive sensitivity analysis. In Section 6, we contrast the EERP results with an alternative measure of discretionary fiscal policy based on historical decompositions. Finally, Section 7 concludes.

2. The model

In this section we give a brief overview of the extended version of the ECB's New Area-Wide Model (NAWM) with a detailed specification of the fiscal sector. As the main elements of the model's baseline version are relatively standard, we just provide a non-technical sketch of its basic structure and highlight subsequently those features that are most relevant for understanding the enhanced role of fiscal policy in the extended model.

2.1. The baseline model: a bird's eye view

The baseline version of the NAWM is an open-economy DSGE model of the euro area designed for use in the (Broad) Macroeconomic Projection Exercises regularly undertaken by ECB/Eurosystem staff and for analysis of topical policy issues; see Christoffel et al. (2008) for a detailed description of the model's structure. Its development has been guided by the principal consideration of covering a comprehensive set of core projection variables, including a small number of foreign variables, which in the form of exogenous assumptions, play an important role in the projections.

The NAWM features four types of economic agents: households, firms, a fiscal authority, and a monetary authority. Households make optimal choices regarding their purchases of consumption and investment goods, the latter determining the economy-wide capital stock. They supply differentiated labour services in monopolistically competitive markets, they set wages as a mark-up over the marginal rate of substitution between consumption and leisure, and they trade in domestic and foreign bonds.

As regards firms, the NAWM distinguishes between domestic producers of tradable intermediate goods and domestic producers of three types of non-tradable final goods: a private consumption good, a private investment good, and a public consumption good. The intermediate-good firms use labour and capital services as inputs to produce differentiated goods, which are sold in monopolistically competitive markets domestically and abroad. Accordingly, they set different prices for domestic and foreign markets as a mark-up over their marginal costs. The final-good firms combine domestic and foreign intermediate goods in different proportions, acting as price takers in fully competitive markets. The foreign intermediate goods are imported from producers abroad, who set their prices in euro in monopolistically competitive markets, allowing for an incomplete exchange-rate pass-through. A foreign retail firm in turn combines the exported domestic intermediate goods, where aggregate export demand depends on total foreign demand.

Both households and firms face nominal and real frictions, which have been identified as important in generating empirically plausible dynamics. Real frictions are introduced via external habit formation in consumption, through generalised adjustment costs in investment, imports and exports, and through fixed costs in intermediate goods production. Nominal frictions arise from staggered price and wage-setting à la Calvo (1983), along with (partial) dynamic indexation of price and wage contracts. In addition, there exist financial frictions in the form of domestic and external risk premia.