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Common macroeconomic shocks and business cycle fluctuations in Euro area countries

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ABSTRACT

This paper investigates the dynamic effects of common macroeconomic shocks in shaping business cycle fluctuations in a group of Euro-area countries. In particular, by using the structural (near) VAR methodology, we investigate the effect of area-wide shocks, with particular attention to monetary policy shocks. The main conclusion is that: (a) contractionary monetary policy shocks cause similar recessionary effects in all countries; (b) as far as business cycle fluctuations are concerned, there is a separation into two distinct groups of countries, with a first group including the biggest European economies in which business cycle fluctuations are mainly explained by common, area-wide shocks and a second one, including Greece, Ireland and Portugal, in which the national shocks play, instead, a much greater role.

1. Introduction

An important question related to the Euro-area economy concerns the possibility that aggregate macroeconomic shocks may exert different effects in specific member countries. In this context, the transmission of monetary policy shocks is, of course, a main concern, given also the existence of a central authority, the European Central Bank (ECB), to which is attributed the task of conducting the monetary policy at the Euro-area level.

In fact, around fifteen years have elapsed from the start of the European Monetary Union (EMU) and hence we begin to dispose of enough data in order to study the influence of ECB's monetary policy choices on the economic activity of Euro area countries.

More generally, in this paper we aim to study the dynamic effects of a small number of macroeconomic shocks, identified at the Euro-area level, in shaping output fluctuations in a group of EMU countries which includes Germany, France, Italy and Spain, i.e. the largest economies of the Euro area, plus Belgium, Greece, Ireland and Portugal. In particular, we want to investigate if the dominant source of macroeconomic fluctuation at the national level is represented by exogenous, Euro-area shocks or, alternatively, by local shocks. Clearly, this is a central question, since in order to allow a smooth functioning of a monetary union, with a central bank conducting its monetary policy at a supra-national level, the convergence of business cycles is of paramount importance.

As stressed by Mihov (2001), even in the presence of a good degree of integration of the national business cycles in the European one, a common monetary policy may fail in stabilizing macroeconomic fluctuations in country members if its effects exhibit heterogeneity across countries.

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As far as the conduct of the monetary policy is concerned, it is worth pointing out that since we consider the joint dynamics of a set of national macroeconomic variables and a set of Euro-area macroeconomic variables from the start of the EMU, there is no ambiguity in the identification of monetary policy shocks, since there is one single monetary policy regime.

Further, in the specification of the monetary policy equation, concerning the Euro area, we take into account the potential influence exerted by movements in the US Federal Funds Rate. In other words, we allow for the possibility that the Federal Reserve System may exert a significant influence in the conduct of European monetary policy. In reality, this seems a quite reasonable choice since in the first years of EMU both the direction and the magnitude of monetary policy interventions in the Euro area were clearly anticipated by the US central bank (cf. Ribba, 2012). Nevertheless, in related research, Scotti (2011) by estimating a non-linear bivariate model concludes that the interdependence of Federal Reserve and ECB does not lead to the conclusion of follower behavior.

In this paper, we adopt a structural near-VAR approach where the equations for the Euro area include only the lags of Euro-area variables themselves while, as for the national economies, we have full VAR equations. Thus, in general, the near-VAR approach allows a separation of the dynamic system into two (or even more) distinct blocks: a first exogenous block of variables and a second fully endogenous block, with the second one unidirectionally caused by the variables included in the exogenous block. A clear presentation of near-VAR models is given in Doan (2010, chapter 7).

It is worth stressing that an important implication of this approach is that each member country is subject to the same area-wide macroeconomic shocks.

A conclusion of homogeneous effects exerted by common monetary policy shocks in a group of European countries was reached by Peersman (2004), in an investigation concerning the pre-EMU period. Peersman adopted a structural VAR approach. Nevertheless, over the sample period considered by Peersman (2004), i.e. 1980–1998, the central banks of the European economies were still independent, national institutions. Of course, since they conducted their monetary policy in the EMS fixed exchange rate environment, the policy choices were, at least partially, constrained. Hence, in that economic context, it is not possible to identify a single monetary policy regime.

In a very recent paper, Barigozzi, Conti, and Luciani (2014), by using a structural dynamic factor model, obtain instead a result of heterogeneity in the responses of Euro-area countries to ECB decisions. In particular, as far as the responses of prices and unemployment are concerned, they show that there are significant differences between North and South Europe.

To anticipate some conclusions, in the present research we obtain two main results: (a) there is no particular evidence of asymmetric effects of monetary policy shocks since an unexpected monetary tightening causes a recession in all countries; (b) business cycle fluctuations in the biggest European economies are predominantly driven by common, area-wide shocks but, and maybe not surprising, this conclusion does not hold for Greece, Ireland and Portugal.

Thus, our empirical investigation, covering the sample period 1999:1–2011:12, seems to support the conclusion that despite their recent, deep macroeconomic imbalances, both Italy and Spain have economic systems characterized by a good macroeconomic integration in the European economy.

It is important to stress that the near-VAR approach utilized in the present research implies the assumption that all the national economies considered in the investigation be small open economies interacting in a monetary union, i.e. there is unidirectional, macroeconomic causation (in the Granger sense) running from EMU to national economies. Clearly, at least for the case of Germany, this is a strong and hence easily falsifiable assumption.

We have tried to tackle this potential shortcoming concerning the results for the German economy by also estimating an alternative VAR model in which a full interaction between EMU and German variables is allowed and where the structural area-wide shocks are recovered by imposing sign restrictions. In fact, we find very similar results by comparing the responses of the variables to the monetary policy shock obtained by the two alternative identification strategies and hence we interpret this similarity as an encouraging indication of robustness of the econometric approach adopted in the present research.

The rest of the paper is organized as follows. In Section 2 we briefly review some results of (part of) the literature concerning the dynamic effects of macroeconomic shocks in the Euro area.

In Section 3 some facts concerning the Eurozone business cycle are presented. In particular, we study the correlations at different leads and lags between the cyclical component of national output and the aggregate, Euro-area cyclical component of output.

Section 4 presents the econometric approach of the paper, based on structural near-VAR models.

In Section 5 we show the impulse-response functions concerning the effect of a contractionary monetary policy shock, both at the Euro-area level and at the member-country level. In particular, as for the national economies, we show the dynamic responses of output and inflation to unexpected monetary policy decisions.

In Section 6 we investigate on the sources of output fluctuations in member countries. Our results reveal that the Euro-area shocks are the dominant source of output fluctuations at the business cycle frequencies for France, Germany, Italy, Spain and Belgium. Instead, the national shocks mainly explain the variability of output in Greece, Ireland and Portugal.

In Section 7 a sensitivity analysis is undertaken: we estimate a VAR model in which the dynamic interaction between the Euro-area variables and the German macroeconomic variables is not restricted. Moreover, the structural shocks are identified by imposing sign restrictions on the response of variables to selected shocks. We find a strong and thus surprising similarity with the results obtained by using the structural near-VAR approach.

Section 8 concludes and some policy implications for the Eurozone are also drawn.

2. Macroeconomic heterogeneity in the Euro area: literature summary

In this area of research, by using structural near-VAR techniques, Peersman (2004) provides empirical evidence on the effects of a common monetary policy shock for seven Euro-area countries. The author concludes that there is similarity in the response of output