



# Macroeconomic imbalances and business cycle synchronization. Why common economic governance is imperative for the Eurozone<sup>☆</sup>



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## ABSTRACT

This paper investigates a new category of influential factors on business cycle synchronization (BCS), so far hardly regarded in the BCS literature. It provides an empirical assessment of the impact of macroeconomic imbalances, as monitored by the European Commission by the scoreboard indicators since 2011, on BCS in the Eurozone. We use a quarterly data set covering the period 2002–2012 and estimate the direct and indirect effects of macroeconomic imbalances in the pre- and post-crisis period in a simultaneous equations model. Business cycle correlation between EA members is measured by the recently proposed dynamic conditional correlation of Engle (2002) which can better identify synchronous and asynchronous behaviour of BC than the commonly used measures. We find that appearing differences between EA members in current account, in government deficit and public debt, in private debt and unit labor cost developments have reduced BCS in the EA, even more in the post-crisis period than before. Moreover, these explanatory factors of BCS, generally reinforce each other and are also influenced by other critical macro imbalances. Since BCS is essential in a monetary union, this paper provides clear support that a stronger, common economic governance would be important for the functioning and survival of the Eurozone.

## 1. Introduction

Since the introduction of the Euro in 1999, the degree of business cycle synchronization (BCS) within the European Monetary Union (EMU) has varied substantially. EA business cycles exhibit a stronger co-movement in the economic downturn but drift apart in the upswing. According to Fig. 1 which shows the correlation of business cycles in the EA, BCS was relatively high during the economic stagnation in 2002–2003 and even more during the latest global financial and economic crisis of 2008–2009. In contrast, business cycles in the EA decoupled each time in the period following these downturns. After 2002/03 the periphery countries experienced an extraordinary boom compared to the core countries. After the great economic crisis the beginning of the recovery varied widely, with the core recovering faster than the periphery.

The importance of business cycle synchronisation for the smooth operation of a common currency area has been highlighted in the seminal works on optimum currency area (OCA) theory (see, Kenen, 1969; McKinnon, 1963; Mundell, 1961), as well as, in more recent contributions (see, for instance, Mundell, 1997; Frankel and Rose, 1998; Alesina et al., 2002). The decoupling of EA business cycles has

raised concerns whether the European Monetary Union can function optimally (see, for instance, Kouparitsas, 1999; Agnello et al., 2013).

Macroeconomic imbalances are potentially important for business cycle synchronization. Arising imbalances in one country are likely to lead to different output development in the respective Euro country and thus to a decoupling in economic activity from the Eurozone. The European Union, aiming to establish an early warning mechanism when a crisis in one of its members builds up which could threaten the stability of the Euro, introduced the surveillance of macroeconomic imbalances with EU regulation 1176/2011 in November 2011.

This procedure assesses macroeconomic imbalances on the basis of the so-called scoreboard indicators which include: (i) the real effective exchange rate (which inside the Eurozone is equivalent to the inflation differential), (ii) the nominal unit labor cost, (iii) the export market share, (iv) the development of real housing prices, (v) the unemployment rate, (vi) the current account balance, (vii) the net international investment position, (viii) the private sector credit flows and private debt and (ix) the public sector debt.

Indicators (i) and (ii) relate to the development of a country's competitiveness. Its deterioration will reduce the export performance (indicator iii) which reduces output growth and leads to a deterioration

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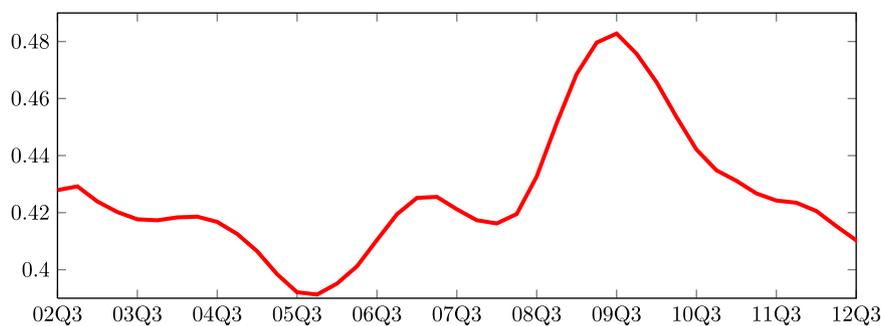


Fig. 1. Development of business cycle correlation in the Euro Area.

of the current account balance (indicator vi). Persistent current account deficits need to be financed by international debt which worsens the international investment position (indicator vii) and can lead to a worsening of financing conditions. Indicators (iv) and (v) reflect deviations of a country's economic activity from the group which makes a common monetary policy unsuitable for that country and may even aggravate it. Indicators (vii), (viii) and (ix) relate to the financial stability of a country. Excessive accumulation of debt in a EA member raise the interest level and may finally result in a debt crisis which would be followed by a serious fall in economic activity. In summary, the appearance of such macroeconomic imbalances in the Eurozone would indicate the risk that a EA member drifts apart from the rest in economic activity. The further short and medium consequence would be that BCS in the EA deteriorates.

How important are the phenomena addressed by the scoreboard indicators in fact for business cycle synchronization in the Eurozone? Do differences in competitiveness among Euro countries lead to current account imbalances and reduce BCS? To which extent do real estate booms in one country or excessive unemployment problems decouple a country from the Euro business cycle? To which extent does the accumulation of private or public debt in a Euro country reduce its BC co-movement? This paper wishes to propose answers to these important issues.

While the existing literature on BCS in the Eurozone has emphasized the contribution of trade relations (Akin, 2012; Déés and Zorell, 2012; Duval et al., 2014; Imbs, 2004; Siedschlag and Tondl, 2011), elimination of exchange rate fluctuation (Akin, 2012; Böwer and Guillemineau, 2006; Duarte et al., 2007), financial integration (Akin, 2012; Herrero and Ruiz, 2008; Kalemli-Ozcan et al., 2013), sector specialization (Imbs, 2004; Herrero and Ruiz, 2008; Siedschlag and Tondl, 2011; Akin, 2012; Déés and Zorell, 2012) and differentials in public sector deficits (Frankel and Rose, 1998; Clark and van Wincoop, 2001; Darvas et al., 2005; Antonakakis and Tondl, 2014), hardly any of the existing studies, to our best knowledge, has addressed the importance of the full set of macroeconomic imbalances as addressed by the macroeconomic imbalance procedure (MIP) scoreboard indicators.<sup>1</sup>

We evaluate the effect of macroeconomic imbalances in a EA member and the consequently arising imbalances across members in a model of simultaneous equations following Imbs (2004) and Antonakakis and Tondl (2014). The model will focus on the effects on BCS arising from the phenomena of (i) competitiveness and current account imbalances, (ii) imbalances in fiscal deficits and public/private debt, (iii) imbalances in wage development, and (iv) decoupling (as shown by housing prices and unemployment). Knowing about the role of these phenomena on BCS will permit to judge the potential of the surveillance of macroeconomic imbalances to prevent decoupling of business cycles in the Eurozone. If we can detect a strong impact of the

scoreboard indicators, we will have supportive evidence for strengthening the role of the EU in economic governance. The simultaneous equations model will permit us to account for reverse causality between imbalances and BC correlation as well as for endogeneity between macroeconomic imbalances indicators. In this way we will see the direct and indirect effect of a scoreboard indicator on BCS. We will be able to understand the transmission channels of such imbalances.

The investigation will cover the period 2002–2012 and distinguish further between the pre-crisis period until the end of 2007 and the recession- and post-crisis period from 2008–2012 accounting for the changing pattern of relationships between these distinct periods.

To measure BCS we will use the dynamic conditional correlation (Engle, 2002) proposed recently in the BC literature (Antonakakis, 2012; Siklos, 2012).

This approach takes into account both time variation and conditional heterogeneity in business cycles correlations, and thus has several advantages. First, it is able to identify negative correlations due to episodes in single periods, synchronous behavior during stable periods and asynchronous behavior in turbulent periods. Unlike rolling windows, the proposed measure does not suffer from the so-called ghost feature, as the effects of a shock are not reflected in  $m$  consecutive periods, with  $m$  being the window span. In addition, under the proposed measure there is neither a need to set a window span, nor a loss of observations, nor is subsample estimation required.

We find in our estimations that imbalances across EA members in current account balance, in government deficit, in public and private debt, and in the development of unit labor costs have a decoupling effect on BCS in the EA which increased in the post-crisis period. Moreover, these explanatory factors of BCS are mostly interlinked with each other in such a way that they reinforce each other. Therefore, the Eurozone is advised to establish a political, institutional framework that guarantees that in the key areas addressed by the scoreboard indicators its members follow highly coordinated economic policies, guided by common economic policy goals. Even more, our study provides clear support that the establishment of strong, common economic governance in the Eurozone is imperative for the functioning and survival of the European Monetary Union. However, in our estimations we also find that there exists generally endogeneity between the regarded key scoreboard indicators and BCS. If a coordinated economic governance in the Eurozone succeeds to achieve stronger BCS this would subsequently make it more easy for EA members to agree on common economic policies.

The rest of the paper is organized as follows. Section 2 presents the main hypotheses, discusses empirical developments and relates to the existing literature. Section 3 presents the model specification for the empirical estimation, Section 4 the data set and employed measures, Section 5 the results. Section 6 concludes.

## 2. Main hypotheses, empirical developments and relation to existing literature

In this section, we set out our main hypotheses concerning the role

<sup>1</sup> Exceptions are the studies of Inklaar et al. (2008) and Siklos (2012) that consider business cycle synchronization determinants similar to some of the scoreboard indicators.

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