One money, one cycle? The EMU experience ☆

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ABSTRACT

We examine whether the introduction of the euro had a significant impact on the synchronization of business cycles among members of Economic and Monetary Union (EMU). Empirical evidence on this relationship is rare so far and suffers from methodical weaknesses, such as the absence of time variability, which is crucial for addressing this issue. Using a synchronization index that is constructed on a year-by-year basis (1993–2011), we uncover a strong and robust empirical finding: the adoption of the euro has significantly increased the correlation of member countries' business cycles above and beyond the effect of higher trade integration. Thus, our results substantially strengthen the conclusion by Frankel and Rose (1998), i.e. a country is more likely to satisfy the criteria for entry into a currency union ex post rather than ex ante. Remarkably, however, this reasoning is even verified when controlling for the effect of increased trade linkages implied by entering a currency union.

1. Introduction

The theory of optimum currency areas, originally developed by Mundell (1961), McKinnon (1963) and Kenen (1969), proposes a broad set of prerequisites for a geographical area to consider a currency union.[1] While the topic lost some ground in the literature in the following decades, it regained momentum with the Maastricht Treaty in the early 1990s. The treaty outlined the course of action for the Economic and Monetary Union (EMU) and soon the discussion was at the center of economic policy relevance. In the years prior to the establishment of the euro area many studies examined business cycle synchronization among the prospective member states, as this measure can be seen as a 'meta-criterion' for entering a currency union.[2] The underlying argument is simple: if the potential members of a monetary union are subject to symmetric economic shocks, the benefits of a common currency are likely to exceed the cost of relinquishing a national autonomous monetary policy (e.g., Bayoumi and Eichengreen, 1997; Masson and Taylor, 1993).

☆ The opinions are strictly those of the authors and do in no way commit the OeNB.

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[1] In particular, the probability that the benefits of establishing a currency union outweigh the costs of a common monetary policy increases if member states exhibit (i) high trade integration, (ii) highly synchronized business cycles, (iii) flexible labor markets, and (iv) an appropriate system of risk sharing (e.g. fiscal transfers, financial integration, etc.).

[2] See de Haan et al. (2008) for a literature survey.

However, the seminal contributions of Frankel and Rose (1997, 1998) challenge this view with the argument that the suitability of a country to join a currency union is a more complex topic, as the optimal currency area criteria themselves are endogenous. In their paper, the authors demonstrate a clear positive empirical relationship between stronger bilateral trade links and more synchronous cycles. Further, they argue that the expected increase in trade among future EMU member countries would lead to a higher cyclical co-movement in the euro area.[3] Thus, member states of a currency union would fulfill the optimal currency area criteria rather ex post than ex ante. Following this, several studies have followed, which confirmed the positive relationship between trade and business cycle correlation (e.g., Artis and Okubo, 2011; Inklaar et al., 2008; Baxter and Kouparitsas, 2005).

Yet, the described trade link might not be the only channel through which a common currency is connected to more homogeneous business cycles. In fact, economies in a currency union might per se exhibit more synchronized cycles because of common monetary shocks under a single central bank. Furthermore, recent theoretical evidence also suggests a positive impact of EMU membership on business cycle synchronization due to stronger spill-over effects across member countries (Enders et al., 2013).[4] Also, increased labor mobility and the establishment of common risk sharing systems through various provisions and policies within EMU might have raised the co-movement of member countries' business cycles. After all, the increased frequency of high level meetings among policy makers and the associated informal coordination of policies across EMU countries should not be underestimated in this respect.

Against this background, the aim of this paper is to empirically explore whether the adoption of the euro has made EMU member countries' business cycles more homogeneous after their entry into the currency union while controlling for the influence of increased bilateral trade. As we take it for granted that monetary policy cannot permanently affect either a country's real income level nor its growth rate, we subsequently focus on the cyclical component of GDP. While our results confirm the findings by Frankel and Rose (1997, 1998) that increased bilateral trade leads to higher business cycle synchronization, we are also able to show that membership in EMU per se leads to further convergence of business cycles above and beyond the effect of higher trade integration. Yet, one could argue that the absence of national monetary policy shocks has to lead to a greater degree of business cycle correlation by definition when accepting that monetary policy is non-neutral in the short-term. However, as our results point to the fact that EMU membership has not only increased the co-movement but also decreased the absolute spread of cyclical components across member countries, we can conclude that it is indeed the symmetry of shocks which has increased since the introduction of the euro. Remarkably, the effect is still existent when additionally controlling for differences in fiscal policy, industrial specialization and financial integration.

So far, empirical evidence on the euro effect is relatively rare and predominantly does not point to any significant relationship between EMU entrance and business cycle synchronization.[5] Yet, our analysis differs considerably from previous approaches, either concerning the measurement of the cyclical component or the applied method. In particular, Giannone et al. (2008) and Lehwald (2013) focus on growth rates of output (p.c.) instead of cyclical components. Weyerstrass et al. (2011) and Furceri and Karras (2008) provide comprehensive analyses based on pre- and post-EMU descriptive comparisons of various business cycle measures. Thus, their findings are not directly comparable to our results which are derived from a regression-based panel analysis where we are able to control for important determinants of business cycle synchronization. Finally, we are aware of two empirical papers that aim to explore the impact of the euro on the synchronization of business cycles (i.e. the cyclical component of real GDP) by using regression-based methods. First, the analysis by Christodoulopoulou (2014), which suggests a negative euro effect, and Gonçalves et al. (2009) who find a positive impact of EMU membership on business cycle synchronization. The observed results are derived using a difference-in-difference approach where the overall sample period is divided into two subperiods, i.e. the pre- and the post-euro period, such that the correlation coefficient of business cycles is observed for two time spans.[6] The difference between those coefficients is then regressed against an EMU dummy and other control variables. Yet, this method is affected by several caveats often encountered in over-time cross-section analysis commonly applied in the business cycle convergence literature, which we aim to overcome.

First, exploring time variability is crucial for identifying the "euro effect", i.e. whether business cycle synchronization increased across member states after their entrance into the currency union ("within variability"), which is in contrast to the question whether countries are more synchronized within currency unions compared to non-members ("between variability"). For this purpose one also needs to evaluate deviations of business cycle synchronization from individual means over time, which can be accomplished by employing panel data methods. The same line of argument applies to the

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[3] While it is well established in the literature that a currency union has a significantly positive impact on trade integration (Glick and Rose, 2002; Baldwin, 2006), the magnitude of this effect is highly controversial and subject to an intensive discourse in the literature particularly for the EMU case (see, for instance, Frankel, 2010).

[4] In particular, based on a two-country business cycle model calibrated for the euro area, Enders et al. (2013) show that cycles exhibit a higher co-movement under EMU because of stronger spill overs of national shocks to other EMU members. The model is calibrated for Germany vis-à-vis the aggregate of six euro area countries. The reason for the observation by Enders et al. (2013) is that domestic shocks depreciate the real exchange rate by less under a common currency (compared to the pre-EMU period) because the nominal exchange rate channel is absent and prices are assumed to be sticky.

[5] The only exception is Gonçalves et al. (2009), which is discussed in detail below. Note also that empirical evidence for other currency areas is rare as well and yields mixed results. While Rose and Engel (2002) find that business cycles are more synchronized across currency union countries than across countries with sovereign monies, Baxter and Kouparitsas (2005) conclude that this relationship is not robust.

[6] In a robustness analysis, Christodoulopoulou (2014) provides results from panel data, arriving at the same conclusion, i.e. a negative euro effect. However, this result is derived by using correlation coefficients of real GDP growth rates as the dependent variable and is therefore not comparable to our results (see also Section 2). Moreover, as the author states in his conclusions, important control variables like trade integration are missing and potential endogeneity issues are not controlled for.