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Fiscal Adjustments and Business Cycle Synchronization

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Fiscal Adjustments and Business Cycle Synchronization

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1. Introduction

The financial crisis of 2008-9 forced many governments in developed countries to adopt expansionary fiscal policies with the aim of boosting the economy (Castro, 2010; Cimadomo et al., 2010; Agnello and Schuknecht, 2011; Agnello and Sousa, 2011, 2012; Cimadomo, 2012), and ultimately developed into a sovereign debt crisis. As concerns about long-term sustainability started mounting and government bond yields began hitting record levels, the shift from stimulus to austerity was not surprising: fiscal consolidation programmes were quickly designed and restrictive fiscal packages were put in place.

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Our analysis is related to various other studies on the determinants of business cycle synchronization. In particular, Artis (2008) shows that as the process of international trade deepens, regional business cycle affiliations are superseded by wider business cycle clubs.[1] Devereux and Engel (1999, 2003) find that floating exchange rates protect the domestic economy from foreign monetary shocks (the so-called "insulation" effect). Baxter and Kouparitsas (2005) conclude that the degree of bilateral trade between a pair of countries has a robust effect on business cycle synchronization. Araújo and Oliveira Martins (2009a, 2009b) show that the deep fall in economic activity during the so-called "Great Recession" largely reflected the "Great Synchronization" of trade flow declines across countries. Kose et al. (2003, 2012) and Imbs (2006) emphasize that countries with closer financial ties tend to have more synchronized business cycles. Darvas and Szapáry (2000) do not find a significant impact of the exchange rate regime on capital flows across countries. Darvas and Szapáry (2008) examine business cycle synchronization in the new EU members of Central and Eastern Europe and the euro zone countries. They show that, despite the dramatic improvement in the correlation of the cyclical components of GDP, industrial production and exports among the new EU members, the degree of synchronization of private consumption with the euro zone countries remained low. Flood and Rose (2010) argue that business cycles in countries targeting inflation are only slightly synchronized with foreign ones.

We contribute to this literature by assessing the impact of fiscal adjustments on business cycle synchronization, an issue that, to the best of our knowledge, has not been investigated yet or for which somewhat related research is still at a seminal stage. Fatás and Mihov (2003) show that fiscal policy discretion leads to macroeconomic instability, while Kose et al. (2003) argue that fiscal policy amplifies country-specific idiosyncrasy, and Lane (2003) finds a positive link between output volatility and pro-cyclical fiscal policy. Fatás and Mihov (2006) conclude that budgetary restrictions reduce fiscal policy volatility and, therefore, fluctuations in economic activity. Darvas et al. t that, ET7tdhigh 442.8og19(cons

synchronization.

synchronization when both countries fix their exchange rates and when countries become members of a monetary union. Finally, we uncover a positive effect of bilateral trade on business cycle synchronization.

The paper is organised as follows. Section 2 describes the econometric methodology and presents the data. Section 3 provides the empirical results. Section 4 concludes.

2. Empirical Methodology

In order to explore the empirical relationship between business cycle

We also account for the effect of fiscal stimuli on business cycle synchronization. To that end, the dummy variables *Cons(1)* and *Cons(2)* are replaced with the dummy variables *Stim*(1) and *Stim*(2), which take the value of one if one or both countries have adopted fiscal stimuli packages for m consecutive years within the five-year non-overlapping window. Therefore, we run the following panel-data regression using a Fixed-Effects (FE) estimator:

$$ {}_1MU\,1_{i,j} \quad {}_2MU\,2_{i,j} \quad {}_1Stim\,1_{i,j\ m} \quad {}_2Stim\,2_{i,j\ m} \quad \boldsymbol{X}_{i,j} \quad {}_{i,j} \quad (2) $$

We identify fiscal consolidation programmes and fiscal stimulus episodes using a statistical approach based on the work of Alesina and Ardagna (2010). More specifically,

Finally, when looking at the control variables, we find that bilateral trade makes business cycles significantly more synchronized, while an increase in the distance among countries only weakly reduces business cycle synchronization.

[INSERT TABLE 4 HERE.]

3.2. Fiscal stimulus programmes

We now examine the effects of fiscal stimulus programmes on business cycle synchronization. We consider unilateral adjustment episodes (*Stim(1)*) that last *exactly* 1 year, 2 years, 3 years and 4 years[4] and synchronized adjustment episodes (*Stim(2)*) that last *exactly* 1 year and 2 years (i.e. the maximum duration of such type of synchronized events) over the 5-year window period. In our sample, the percentage of unilateral fiscal stimuli episodes lasting exactly 1 or 3 year is 53.39% and 4.63% respectively. The likelihood of synchronized fiscal stimulus episodes is much lower: the percentage of those lasting exactly 1 year and 2 years was 9.74% and 0.35% respectively.

We estimate our baseline model (2) with and without control variables (i.e. the bilateral trade and the log distance); Tables 5 and 6 summarize the main results using the two measures of business cycle synchronization. As in the case of fiscal consolidation programmes, the empirical findings suggest that unilateral fiscal stimulus episodes (*Cons(1)*) of short duration have a weakly significant impact on business cycle synchronization and lead to some decoupling, but no statistically significant effect is uncovered for longer programs. As for fiscal stimulus packages adopted by both countries, the results show that they increase significantly the synchronization of business cycles, especially in the case of programmes with longer duration (i.e. 2-year fiscal stimulus episodes).

Moreover, we find that when one country adopts inflation targeting (*IT(1)*), there is a fall in business cycle synchronization. By contrast, when both countries do so (*IT(2)*), the results do not support the existence of a statistically significant impact on business cycle synchronization. Further, it appears that while the adoption of a fixed exchange rate by a single country (*Fix(1)*) does not affect the synchronization of business cycles, when both countries fix their exchange rates (*Fix(2)*), business cycles become more synchronized.

Regarding the effects of membership of a monetary union, both *MU(1)* and *MU(2)* are found to be statistically significant and positively related with business cycle synchronization, with the effects being particularly large when both countries are members. Finally, the results confirm the role played by bilateral trade in increasing the correlation of the cyclical component of economic activity across countries, but

[4] There is no record of fiscal stimuli programmes with a 5-year length.

geographical distance does not appear to have a significant impact on business cycle synchronization (Agnello and Sousa (2013a) also show that higher public deficit volatility is magnified in countries with a high degree of openness).

[INSERT TABLE 5 HERE.]

[INSERT TABLE 6 HERE.]

We also investigate the effect of fiscal stimulus programmes on business cycle synchronization using a more flexible approach that considers adjustment programmes with a minimum duration of 1 year and 2 years: 77.03% (10.09%) of unilateral (synchronized) fiscal stimulus episodes lasted at least 1 year and 26.51% (0.35%) had a length of at least 2 years over the 5-year window periods under consideration.

Tables 7 and 8 report the main findings based on the two measures of synchronization.

episodes of synchronized fiscal consolidation (stimulus) increase the correlation coefficient of the business cycle across countries by between 0.09 and 0.19 (0.09 and 0.69).

Our empirical findings also provide weak evidence that business cycles have become less synchronized across countries after the adoption of an inflation targeting regime. By contrast, fixing the exchange rate or membership of a monetary union leads to bigger co-movement of business cycles. We also find that while bilateral trade has a positive effect on business cycle synchronization, the distance between countries does not have a significant impact on the co-movement of the cyclical component of economic activity.

Finally, all these results are not sensitive to using different measures of business cycle synchronization or considering fiscal adjustments with an *exact* or a *minimum* duration in years.

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Table 2: Fiscal consolidation and business cycle synchronization - Growth detrending.

	duration (in years) of fiscal consolidation episodes within the 5-year window periods							
	1 year		2 years		3 years		4 years	
IT(1)	-0.016	0.0163	-0.0094	0.0295	-0.0183	0.0177	-0.0082	0.0233
	[0.0605]	[0.0531]	[0.0606]	[0.0536]	[0.0594]	[0.0516]	[0.0620]	[0.0548]
IT(2)	0.0793	0.098	0.1068*	0.1239*	0.0614	0.0838	0.0856	0.0998
	[0.0745]	[0.0785]	[0.0468]	[0.0562]	[0.0453]	[0.0600]	[0.0475]	[0.0579]
Fix(1)	0.0129	-0.0137	0.0156	-0.0165	0.0176	-0.011	0.0179	-0.0052
	[0.0183]	[0.0179]	[0.0199]	[0.0217]	[0.0175]	[0.0173]	[0.0174]	[0.0164]
Fix(2)	0.1547***	0.1224***	0.1559***	0.1233***	0.1553***	0.1123**	0.1487***	0.1197**
	[0.0296]	[0.0243]	[0.0299]	[0.0245]	[0.0326]	[0.0342]	[0.0356]	[0.0347]
MU(1)	0.0458	0.0669*	0.0957***	0.1126***	0.0607***	0.0776***	0.0510***	0.0692***
	[0.0239]	[0.0279]	[0.0150]	[0.0242]	[0.0131]	[0.0186]	[0.0109]	[0.0164]
MU(2)	0.0764**	0.009	0.0974***	0.0238	0.0819***	0.0095	0.0831***	0.0133
	[0.0236]	[0.0625]	[0.0183]	[0.0594]	[0.0181]	[0.0592]	[0.0166]	[0.0583]
Cons(1)	-0.0333	-0.0499	0.0537***	0.0847***	0.0163	0.0185	0.0912*	0.0681
	[0.0613]	[0.0469]	[0.0051]	[0.0098]	[0.0255]	[0.0296]	[0.0450]	[0.0449]
Cons(2)	0.1234	0.0954	0.1218**	0.1206**	0.1448**	0.0888	0.1278***	0.0777*

Table 5: Fiscal stimuli

Table 6: Fiscal stimuli and business cycle synchronization - Growth detrending.

duration (in years) of fiscal stimuli episodes within the 5-year window periods

1 year

Table 8: Fiscal stimuli and business