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Trade, finance or policies: What drives the cross-border spill-over of business cycles?

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ABSTRACT

In this paper we investigate how income growth rates in one country are affected by growth rates in partner countries, testing for the importance of pairwise country links as well as characteristics of the receiving country (trade and financial openness, exchange rate regime, fiscal variables). We find that trade integration fosters the spill-over of business cycles, both bilaterally and as a country characteristic (trade openness). Results for financial integration are mixed; financial links as pairwise country characteristic are either insignificant or negatively signed (indicating a dampening of cross country spill-overs), but financial openness as characteristic of the receiving country amplifies spill-overs. We find no evidence for a role of the exchange rate regime. Finally, we find that higher government spending and debt reduces countries' vulnerability to foreign business cycles, presumably through the effect of automatic stabilizers.

1. Introduction

Understanding and properly managing international linkages and spill-overs between large and systemic economies is high on the agenda of policy makers at the international level. After some interruption with the global financial crisis, financial and real globalization continue by and large unabated, and global business cycle synchronization has if anything increased over recent years.

In this paper we provide an extensive analysis of how business cycles in one country are affected by macroeconomic conditions in partner countries. In a nutshell, understanding international linkages implies being able to compute, for a shock of type *s* taking place in country *j* (the sending country), which characteristics of country *i* (the receiving country), or link between *i* and *j* contribute to the effect of the shock on country *i* 's variables of interest (in this paper, real GDP

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growth). In this work, based on data for both advanced and emerging markets between 1970 and 2014, we test the role of trade, financial and FDI linkages, as well as the exchange rate regime and fiscal policy as transmission channels of foreign shocks into a domestic economy. We also test whether the transmission of shocks is different in normal and crisis times, when business cycle synchronization may increase.

Our paper is related to several previous contributions in the literature. A large number of studies point out that output co-movements across countries are mostly explained by a global component (Diebold and Yilmaz, 2013; Canova et al., 2007; Giannone and Reichlin, 2006; Kose et al., 2003a; Lumsdaine and Prasad, 2003). Other research supports the view that in a world where all major economies are significantly more open now than they were only one or two decades ago, international spill-overs are becoming increasingly important. For example, Kose et al. (2008) find that a common factor explains on average a larger fraction of output, consumption and investment in the globalization period (1986–2003) than in the Bretton Woods period (1960–1972).

The focus of our paper is somewhat less on synchronization and more on the effect of foreign GDP growth and foreign shocks on domestic variables, although the two questions are obviously interlinked. Clearly, one has to be careful in interpreting the effect of foreign aggregates and shocks as causal even when regressing country-level variables on leave-out means since (as noted, e.g., by Angrist, 2014) both domestic and foreign variables could be hit by common shocks. The effect of foreign variables therefore should be meant as including the exposure to common global shocks, as opposed to purely domestic factors.

A small recent literature (see Beetsma et al., 2006; Corsetti et al., 2010; Auerbach and Gorodnichenko, 2013) has looked at the cross border effect of fiscal shocks, where the effect is assumed to take place mostly through trade links. We also relate to some recent contributions that focus on the role of trade and FDI linkages as synchronization channels for output growth. Busl and Kappler (2013) find that the trade channel is not that important as suggested by cross-section models, but that FDI have the potential to increase business output co-movements in the EU. Keil and Sachs (2014) and Jansen and Stokman (2011) also find that FDI linkages are more relevant than trade linkages, which supports the idea that FDI links have become more important relative to trade links from the mid-1990s.

As in many other domains, the identification of the shocks remains a key challenge. Bayoumi and Bui (2010) have applied the identification by heteroscedasticity proposed by Rigobon (2003) and found that the international business cycle is largely driven by U.S. shocks and global shocks. This approach, however, does not allow to identify the structural nature of the domestic shocks, and the identifying assumptions are unrelated to the open-economy, two-country DSGE models that are a mainstream tool in international macroeconomics. Farrant and Peersman (2006), Peersman (2011), Corsetti et al. (2009), and Enders et al. (2011) all implement an empirical approach based on sign restrictions on relative variables (domestic vs. foreign). In particular, they identify either relative shocks (Farrant and Peersman, 2006) or symmetric and asymmetric shocks (Peersman, 2011) by imposing some restriction on the relative performance of a given country vs. another or by imposing that the reaction goes in opposite directions in two countries for asymmetric shocks. Another interesting piece of work in this domain is Mumtaz and Surico (2008) who extend the FAVAR approach developed by Bernanke et al. (2005) to the open economy. Using a large panel of data covering 17 industrialized countries, they quantify the dynamic effects on a wide range of UK aggregate and disaggregated variables of a common shock to short term interest rates and to real activity in the rest of the world.

The dominant role of US shocks for international business cycles has been emphasized in recent literature. Diebold and Yilmaz (2013) find that the US and Japan are the major net transmitters of shocks to other countries during 1980s and 2000s, whereas Germany is the major net receiver of shocks in 2000s. They also show that a net business cycle connectedness is closely related to the trade balance, with countries with trade surpluses tending to be net recipients of shock and vice versa. Other recent contributions find evidence of qualitative shifts in the cross-border impact of policy shocks starting from mid-1980s. For example, Ilzetzki and Jin (2013) find that a US contractionary monetary shock decreases foreign output before 1984, whereas it *raises* it after 1984. Beaton et al. (2010) study the transmission of U.S. and financial shocks to Canada and the role of real-financial linkages.

Finally, our paper also relates to the large literature on gravity in international trade and finance; see Kepaptsoglou et al. (2010) and Anderson (2011) for literature surveys. Aviat and Coeurdacier (2007) use a simultaneous gravity equations framework to explore the complementarity between bilateral trade in goods and bilateral asset holdings. More recently, Chaney (2013) proposes an explanation for the gravity equation in international trade based on the emergence of stable network of input–output linkages between firms.

Our main findings are four. First, FDI weights are more relevant than trade weights but the difference is quantitatively small, and data availability for trade links is much larger. Moreover, in line with our priors we find that trade integration fosters the spill-over of business cycles, both in terms of bilateral links and as a country characteristic (trade openness). Second, results for financial integration are more mixed. Bilateral financial links are mostly insignificant as a transmission channel, but negatively signed (in line with our priors) when statistically significant. By contrast, financial openness as a characteristic of the domestic economy is found to increase countries' sensitivity to foreign growth. Third, there is hardly any evidence for a significant role of the exchange rate regime as an absorber or amplifier of foreign shocks. Finally, fiscal policy, and in particular automatic stabilizers, play a dampening role for the spill-over of foreign growth. Higher government spending and debt reduce the sensitivity of domestic growth to foreign growth, and this effect is statistically and economically significant. This suggests in turn that government debt as such may be a poor measure of the fiscal space (see Ghosh et al., 2015).