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Determinants of business cycle comovement: a robust analysis[☆]

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Abstract

This paper investigates the determinants of business cycle comovement between countries. Our dataset includes over 100 countries, both developed and developing. We search for variables that are "robust" in explaining comovement, using the approach of Leamer (Amer. Econom. Rev. 73 (1983) 31). Variables considered are (i) bilateral trade between countries; (ii) total trade in each country; (iii) sectoral structure; (iv) similarity in export and import baskets; (v) factor endowments; and (vi) gravity variables. We find that bilateral trade is robust. However, two variables that the literature has argued are important for business cycles— industrial structure and currency unions—are found not to be robust.
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1. Introduction

There is longstanding interest in the channels through which business fluctuations in one country are transmitted to other countries. It is often said that "When America sneezes, Europe catches a cold." But despite the theoretical and empirical analyses to date, it seems fair to say that there is no consensus on the important determinants of business-cycle comovement. The difficulty is that there are many potential candidate explanations.

One leading candidate is trade. Frankel and Rose (1998) present empirical evidence that higher bilateral trade between two countries is associated with more-correlated business cycles. Another explanation for business-cycle comovement is similarity in industrial structure. This linkage has been stressed in a series of papers by Jean Imbs (1998, 1999, 2003). A third variable studied by Rose and Engel (2002) is currency unions. Other variables that may be important for business-cycle comovement are the following: (i) the extent of total trade in each country; (ii) factor endowments and (iii) gravity variables such as distance between countries, common language, adjacency, and so on.[1]

Our paper uses a dataset that includes over 100 countries, both developed and developing. We have collected data for each country on each of the variables described above. To say something definite about the important determinants of comovement, we use the "robustness" approach advocated by Leamer (1983), and used so effectively by Levine and Renelt (1992) in their analysis of growth regressions. With this approach, a variable is said to be a robust determinant of business-cycle comovement if the variable has a significant coefficient in a regression when all other potential explanatory variables have had a chance to "knock the variable out of the equation."

Our results are as follows. Nearly, all of the variables considered are significant determinants of trade when considered in isolation. However, there are only a few robust variables. Bilateral trade is robust: countries that trade more with each other have more-correlated business cycles. Further, our results indicate that bilateral trade is robust to the inclusion of gravity variables, suggesting an independent role for trade in transmitting business cycles.

Other variables that are robustly, positively related to business-cycle comovement are (i) an indicator variable that indicates that both countries are industrialized countries; (ii) an indicator variable that indicates that both countries are developing countries; (iii) a variable measuring the distance between the two countries. Variables that are not robust include (i) measures of industrial similarity, (ii) currency union, (iii) total trade undertaken by the two countries, (iv) measures of similarity in export and import baskets, and (v) measures of factor intensity.

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[1]See also papers by Calderon et al. (2002), Fidrmuc (2002), Kose et al. (2003a,b), Otto et al. (2003) and Shin and Wang (2003). These authors study the determinants of business-cycle synchronization using a variety of country samples and economic variables. Recent contributions by Kose and Yi (2001, 2004) explore the ability of dynamic, stochastic general equilibrium models to explore various theoretical explanations for the finding that stronger trade linkages are associated with more-correlated business cycles.