

Understanding the evolution of world business cycles [☆]

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Abstract

This paper studies the changes in world business cycles during the period 1960–2003. We employ a Bayesian dynamic latent factor model to estimate common and country-specific components in the main macroeconomic aggregates (output, consumption, and investment) of the G-7 countries. We then quantify the relative importance of the common and country components in explaining comovement in each observable aggregate over three distinct time periods: the Bretton Woods (BW) period (1960:1–1972:2), the period of common shocks (1972:3–1986:2), and the globalization period (1986:3–2003:4). The results indicate that the common (G-7) factor explains, on average, a larger fraction of output, consumption and investment volatility in the globalization period than it does in the BW period.

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1. Introduction

An often repeated view in the popular press in recent years is that the nature of world business cycles has changed over time due to “globalization”, which is often associated with rising trade and financial linkages.¹ It is indeed the case

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¹ There were numerous articles in the press about the rapid spread of the economic slowdown in the United States to other industrialized countries in 2001 reflecting this view as the following examples show: “As the world economy has become more integrated, a downturn in one economy spreads faster to another...” (*The Economist*, August 25, 2001). “...Increased interdependence...means that much of the world can move down in tandem...” (*NY Times*, August 20, 2001).

that globalization has picked up momentum in recent decades. For example, the cumulative increase in the volume of world trade is almost three times larger than that of world output since 1960. More importantly, there has been a striking increase in the volume of international financial flows during the past two decades as these flows have jumped from less than 5% to approximately 20% of GDP of industrialized countries.² Has the nature of world business cycles really been changing over time in response to stronger global linkages?³

Economic theory does not provide definitive guidance concerning the impact of increased trade and financial linkages on the comovement amongst macroeconomic aggregates across countries. For example, trade linkages generate both demand and supply-side spillovers across countries. Through these types of spillover effects, stronger trade linkages can result in more highly correlated business cycles. However, if stronger trade linkages are associated with increased inter-industry specialization across countries, and industry-specific shocks are dominant, then the degree of comovement of cycles might be expected to decrease (see [Frankel and Rose, 1998](#)). Financial linkages could result in a higher degree of business cycle comovement by generating large wealth effects. However, they could decrease the cross-country output correlations as they stimulate specialization of production through the reallocation of capital in a manner consistent with countries' comparative advantage (see [Kalemli-Ozcan et al., 2003](#)).

Recent empirical studies are also unable to provide a concrete explanation for the impact of stronger trade and financial linkages on the nature of business cycles. Some of these empirical studies employ cross-country or cross-region panel regressions to assess the role of global linkages on the comovement properties of business cycles in advanced countries.⁴ While [Imbs \(2004a,b\)](#) finds that the extent of financial linkages, sectoral similarity, and the volume of intra-industry trade all have a positive impact on business cycle correlations, [Baxter and Kouparitsas \(2005\)](#) and [Otto et al. \(2003\)](#) document that international trade is the most important transmission channel of business cycles. The results by [Kose et al. \(2003b\)](#) suggest that both trade and financial linkages have a positive impact on cross-country output and consumption correlations.

Other empirical studies take a different route and directly examine the evolution of comovement properties of the main macroeconomic aggregates over time. The results of these studies indicate that differences in country coverage, sample periods, aggregation methods used to create country groups, and econometric methods employed could lead to diverse conclusions about the temporal evolution of business cycle synchronization. For example, some of these studies find evidence of declining output correlations among industrial economies over the last three decades. [Helbling and Bayoumi \(2002\)](#) find that correlation coefficients between the United States and other G-7 countries for the period 1973–2001 are substantially lower than those for 1973–1989. In a related paper, [Heathcote and Perri \(2004\)](#) document that the correlations of output, consumption, and investment between the U.S. and an aggregate of Europe, Canada, and Japan are lower in the period 1986–2000 than in 1972–1985. [Stock and Watson \(2005\)](#) employ a factor-structural VAR model to analyze the importance of international factors in explaining business cycles in the G-7 countries since 1960. They conclude that comovement has fallen in the 1984–2002 period relative to 1960–1983 due to diminished importance of common shocks.⁵

In contrast, other studies document that business cycle linkages have become stronger over time. [Kose et al. \(2003b\)](#) study the correlations between the fluctuations in individual country aggregates (output, consumption, and investment) and those in corresponding world (G-7) aggregates using annual data over the period 1960–1999. They find that for industrial countries, the correlations on average increase over time. Using a much longer sample of annual data (1880–2001), [Bordo and Helbling \(2003\)](#) document that the degree of synchronization across industrialized countries has increased over time. However, results by [Doyle and Faust \(2005\)](#) paint a different picture about the evolution of cross-

² [Lane and Milesi-Ferretti \(2001, 2006\)](#) provide an extensive documentation of changes in the volume of international financial flows.

³ Understanding changes in the nature of world business cycles is of considerable interest from a policy perspective in a number of respects. For example, with stronger business cycle transmission, policy measures taken by one country could have a larger impact on economic activity in other countries, implying that the degree of synchronization of business cycle fluctuations has important implications for international policy coordination ([Obstfeld and Rogoff, 2002](#)).

⁴ [Frankel and Rose \(1998\)](#), [Clark and van Wincoop \(2001\)](#), and [Kose and Yi \(2006\)](#) show that, among industrialized countries, pairs of countries that trade more with each other exhibit a higher degree of business cycle comovement. [Imbs \(2004b\)](#) documents that financial integration leads to higher cross-country output and consumption correlations among industrialized economies. [Burnstein et al. \(2007\)](#) and [Kose and Yi \(2006\)](#) employ dynamic models to analyze the roles played by trade and production structure in explaining cross-country output correlations.

⁵ In related research, [Monfort et al. \(2003\)](#) employ Kalman filtering techniques to estimate a dynamic factor model using the output series of the G-7 countries for the period 1970–2002. They find that the correlations between the common factor and individual country outputs exhibit a declining trend which they interpret as an indication of declining comovement over the past three decades. [Lumsdaine and Prasad \(2003\)](#) find evidence for a world business cycle and for a European business cycle. Using dynamic factor models, [Kose et al. \(2003a\)](#), [Canova et al. \(2007\)](#), and [Artis \(2003\)](#) find that while business cycles in European countries do display comovement, the source is not distinctly European, but rather, worldwide.

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