

IT'S A SMALL WORLD AFTER ALL?

By **Jonathan Heathcote** and **Fabrizio Perri**

In recent years, the economies of the United States and its largest trading partners have increasingly marched to their own drummers – even as trade and financial integration have increased. It may sound like a paradox, but it's not.

In recent years, the United States economy has increasingly danced to its own tune. Between 1972 and 1986 the business cycles of the U.S., on the one hand, and an aggregate of Europe, Canada, and Japan, on the other, were rather close. But in more recent years, in a trend we've dubbed real regionalization, the paths of these developed economies have diverged. All the major world economies went, synchronously, through a deep recession in 1973, a recovery in the mid-1970s and another recession in the early 1980s. In the 1990s, by contrast, the U.S. experienced robust growth, Europe was mixed, while Japan and Asia experienced their worst post-war decade.

At the same time though, trade in international financial assets – or

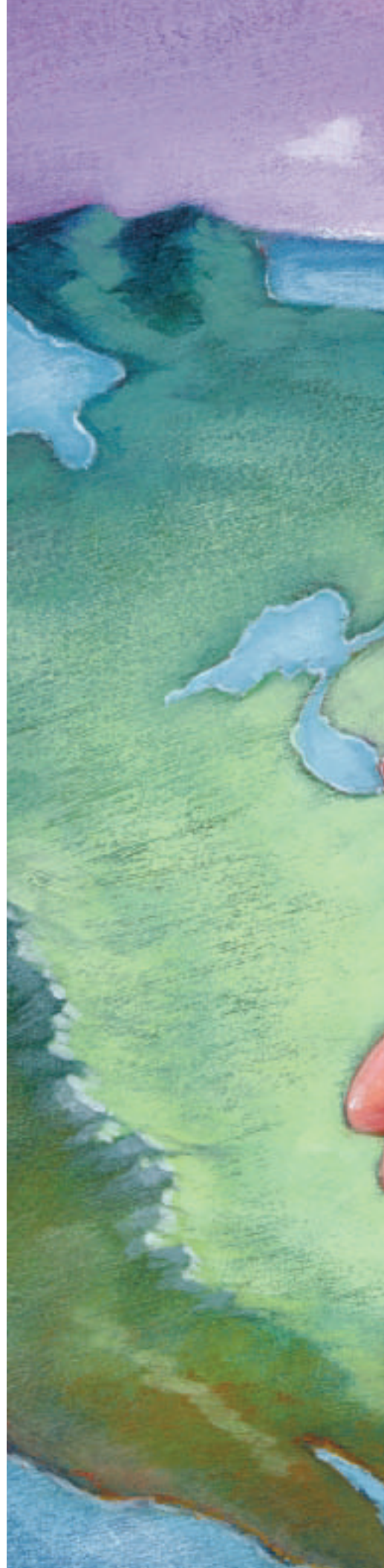
financial globalization – has sharply increased, with Americans holding far more direct investment and equity in foreign markets, and foreigners investing more in the U.S. markets.

Does one trend have anything to do with the other? Does financial globalization help explain real regionalization? Or vice versa? Thus far, very little research has addressed the effects of growth in foreign asset holdings on business cycle dynamics. By constructing models of how economies function, and then running experiments, we set out to answer these questions.

Going Separate Ways

The divergence among economies in the post-Bretton Woods period – 1972-2000 – can be seen in the decline in cross-regional correlations in business cycle frequency fluctu-

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	International Correlation of Macroeconomic Variables Between the U.S. and the Rest of the World			
	GDP	Consumption	Investment	Employment
Period 1, 72Q1-86Q2	0.76	0.51	0.63	0.66
Period 2, 86Q3-00Q4	0.26	0.13	-0.07	0.03

ations in factors such as Gross Domestic Product, consumption, investment, and employment between the U.S. and an aggregate of the rest of the world (comprising Europe, Japan, and Canada) (see Table 1). The fact that the correlations of all four variables have declined markedly between the two periods stands as compelling evidence of real regionalization.

While the declines might be simply due to a decline in the correlation of outside shocks – like the worldwide oil shocks in the 1970s – the relatively large falls in the correlations of investment and employment suggest a change in the asset market structure. In particular, the development of international financial markets increases the opportunities for specialization in production in different countries. After all, when capital moves more freely around the globe to pursue investment opportunities, economies are less likely to move in sync.

Trading Places

To measure financial globalization, we examined data on foreign direct investment and purchases of foreign equity. For U.S. assets, the key measure is the sum of the U.S. foreign direct investment (FDI) position and the equity part of the stock of portfolio investment abroad, relative to the U.S. capital stock. We focused on U.S. holdings of assets in Western Europe plus Canada and Japan, and these countries' holdings of U.S. assets. And the data show that U.S. holdings of

foreign stocks have grown strongly since the mid-1980s, while the stocks of FDI and foreign-owned equity in the U.S. have risen steadily over the entire period. Between 1972 and 1999, United States gross holdings of FDI and equity in this group of countries rose from four to 23 percent of the U.S. capital stock. The observed growth in diversification appears to be robust to a wider definition of the rest of the world, to broader classes of assets, and to alternative valuation methods.

For their part, Europe, Canada, and Japan jointly account for almost all foreign holdings of U.S. assets, and for the lion's share of U.S. asset holdings abroad – although other countries are attracting an increasing share of U.S. equity portfolio investment. Growth in diversification generally appears smaller when stock market capitalization – and not capital stock replacement cost estimates – is used as a denominator. But even in this case we find strong

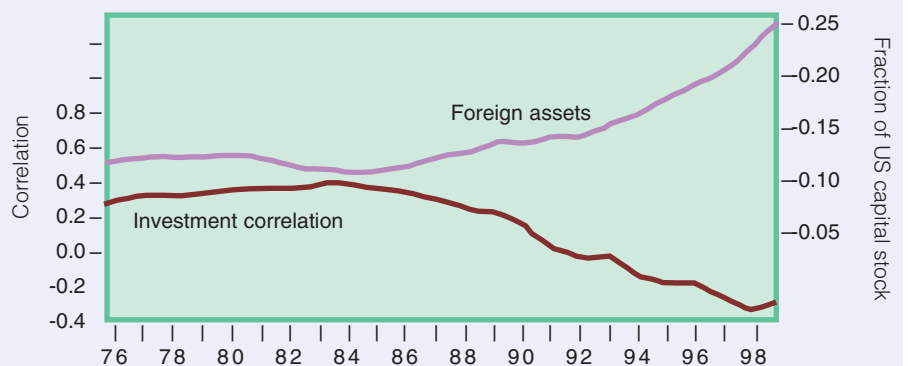
growth in the stocks of U.S. equity portfolio investment abroad and foreign direct investment in the U.S. Comparing the U.S. with the Europe/Canada/Japan aggregate, for example, U.S. holdings of foreign securities averaged 1.1 percent of total non-U.S. developed economies market capitalization over the first half of the sample, and 5.5 percent in the second half (see Figure 2).

There's more evidence that links together financial globalization and real regionalization. Figure 1 displays the evolution of correlation of business cycles and of international financial integration in the last 40 years. The picture shows that until the mid-1980s the correlation of business cycles (left scale) was quite high and stable while the share of foreign assets over the total value of U.S. assets (right scale) was stable and quite low (around five percent). Since the mid-1980s, the correlation of business cycles has markedly declined and the share of foreign assets has markedly increased.

The Story

Why should real regionalization and financial globalization be related? Our story is summarized in Figure 2. The driving forces are the shocks that shape both business cycles and portfolio decisions. These include oil shocks, technology

Figure 1 Financial globalization and real regionalization



Foreign assets are stocks of US FDI and equity investments in Europe, Canada, and Japan. Investment correlation is the correlation between US investment and investment in Europe, Canada, and Japan over the previous 58 quarters.

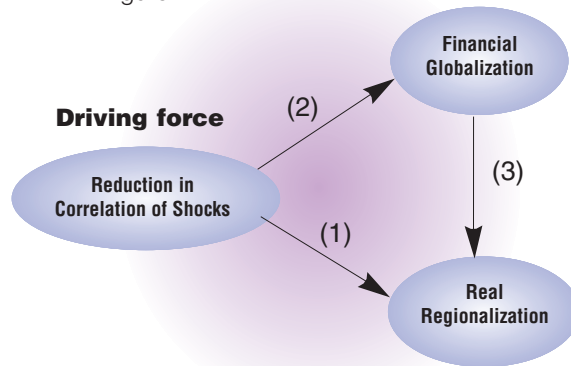
shocks, policy shocks, and other types of disturbances that affect a country's macroeconomic performance. We label them "productivity shocks." Assume that the correlation of these shocks has declined over time. This fact obviously leads to less correlated business cycles (**Arrow 1**). The reduction of the correlation also reduces the correlation of returns to capital; the simple logic of risk reduction through diversification implies that when returns to capital are less correlated it is more convenient to hold an internationally diversified portfolio. And thus financial globalization arises (**Arrow 2**). The final step is the link from financial globalization to business cycle (**Arrow 3**). When people hold internationally diversified portfolios, capital can easily flow from one country to another. Thus, in response to a small positive shock, say in the U.S., capital flows in from Europe and from Japan. These flows amplify the boom in U.S. and induce a recession in Japan and Europe, thus making business cycles even less correlated.

A Model Economy

To test our story about the relationship between real regionalization and financial globalization, we used artificial (computer simulated) economies. The modeling framework we employed was developed by David Backus, Patrick Kehoe, and Finn Kydland in 1994. Using a technique developed by Robert Solow in the 1960s we constructed a series for the productivity shocks hitting the U.S. and the rest of the world and we showed that the correlation of these shocks has indeed declined. We then plugged in the process for shocks into the model economies and ran tests upon them.

The tests we did were geared at answering two questions. First, can

Figure 2



a fall in the correlation of productivity shocks account for the magnitude of the observed increase in diversification? And second, is increased diversification important in accounting for the magnitude of the observed decline in business cycle correlations?

Regarding the first question, the model economies predict that, in response to the fall in shock correlation, the amount of foreign assets held by domestic consumers should increase from 5.5 percent to 15 percent of total asset holdings. This suggests that the correlation of shocks is a quantitatively important factor in determining the extent of international diversification.

Regarding the second question, the models show that both the fall in the correlation of productivity shocks and the resulting endogenous growth in international asset trade are essential elements needed to account for most of the observed changes in the international business cycle.

Implications

A fall in the correlation of macroeconomic shocks has increased equilibrium diversification by increasing the potential gains from international asset trade. This increased portfolio diversification has left asset holders less exposed to country-specific risk, and the flow

of capital to its most productive location is increasingly unhindered by restrictions on international borrowing and lending. The combination of less correlated shocks and the resulting deepening of international asset markets can account for the observed changes in the international real business cycle.

This coincidence of real regionalization and financial globalization has larger implications. It says that while the world may be coming together financially, we should be ready to see it growing apart economically. This is not necessarily a bad thing as households, by holding an internationally diversified portfolio, can diversify away the risk specific to their country of residence.

It also sheds light on the causes of the recent trend toward recent financial integration. Our explanation relies principally on the correlation of macroeconomic shocks that we view as an important determinant of the gain from international diversification.

Some researchers instead have focused on the diffusion of information technology as a leading cause. But this explanation is difficult to reconcile with evidence from the Gold Standard years. Then, although information technology was obviously not very well developed, international financial integration was, by some measures, as high as it is today. And it is interesting to note that business cycle correlations in those years also appear to be low. That suggests that our explanation might work for that period too.

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