Understanding Global Interdependencies: The Contribution of Economic Models

Badye Essid *Economist, Centre for International Governance Innovation*

Paul Jenkins *Distinguished Fellow, Centre for International Governance Innovation*

Introduction

The global financial crisis and the great recession dramatically illustrated how integrated the world economy is and how economic interdependencies have become more complex than previously understood or recognized. The crisis also made clear that these interdependencies and associated spillover effects demand ever greater attention to the design of domestic policy with international implications in mind. Indeed, one of the pressing global governance issues is the need to further develop a consensus on the nature of global interdependencies.

Without a clear understanding of the nature and scale of economic interdependencies, policymakers will not posses sufficient evidence of the benefits of international policy cooperation. While the global economy is no longer on the verge of collapse, it is critical that nations cooperate on adjustment policies to address global imbalances, put the recovery on a robust and sustainable path, and strengthen the international monetary and financial systems. One of the most demanding tasks facing the G-20 is this challenge of multilateral policy cooperation.

International policy cooperation is more likely to happen when there is agreement among nations about the economic outlook, the nature of the challenges they are facing individually and collectively, and the effectiveness of policies to be undertaken. Cooperation therefore needs to be underpinned by an analytic framework where objectives, an understanding of interdependencies, and policies are deemed consistent with desired outcomes. This essay argues for the need for the G-20 to devote more resources to enhance its analytic capabilities, especially through the development of economic models, to better understand the gains from cooperation.

The Mutual Assessment Process and Interdependencies

Surveillance and peer review have been used extensively to help identify objectives within an international context and to monitor progress against agreed objectives. However, these processes have been severly hampered by credibility and accountability issues. To overcome these problems, G-20 leaders at the Pittsburgh Summit in 2009 initiated the Mutual Assessment Process (MAP).

The MAP represents an important step in policy collaboration. It is owned by its members and is designed to ensure that members' national policies collectively fit together to achieve stated G-20 objectives. Three elements make up the MAP: aggregating G-20 members' policy and macroeconomic frameworks; assessing whether members' policies are the ones needed to meet G-20 objectives; and evaluating alternative policy scenarios.

The MAP thus draws on elements of both surveillance and the peer review processes, but it is also an attempt to overcome the credibility and accountability shortcomings of these earlier processes to monitor the progress on agreed objectives. The G-20, for example, faced internal disagreements about how quickly to unwind the exceptional fiscal and monetary stimulus measures taken during the crisis and there were real risks of a reversion to protectionism. The MAP has helped address and reduce those tensions. Likewise, the MAP is

providing a basis for analysis of the issues surrounding the need to address global imbalances.

The MAP, however, is still in its beginning and it is too early to judge how successful it has been. In particular, it is still uncertain whether the process is capable of producing policy prescriptions and whether countries will put into action the commitments they have signed up to. The next round of MAP discussions will provide a clearer indication of how far countries are prepared to subordinate short-term national interests in favor of international cooperation and coordination of policies. Also, as the global economy becomes more diverse and multipolar but also more interdependent, it will show whether a system of country-led mutual peer review is more effective than current surveillance processes.

The step toward credibility that the MAP offers is the collective call from the G-20 for a "candid assessment," or greater openness, in how countries exchange data, scenarios and views on how their individual policies interact in support of the health of the global economy. Moreover, it is the effectiveness of this information sharing process that will be critical in engaging the leaders and subsequently domestic constituents in meeting objectives of the global economy. By providing a framework for identifying the benefits of cooperation, the MAP provides G-20 nations a promising opportunity to sustain greater levels of cooperation.

However, capitalizing on this opportunity will require additional resources to enhance the analytic capabilities of the G-20 in support of the MAP. One important avenue is through the further development of economic models that better capture the scope and complexities of global interdependencies. Economic models provide policymakers with a diagnosis and choices and trade-offs of different adjustment paths. A key challenge in the development of models is to come to an agreed characterization of the functioning of the global economy. In reality, what we should look for is a suite of models that over time will help us build a better understanding of what ties countries together.

Economic Models

Economic models can help analyze global economic interdependencies, quantifying the benefits of cooperation. However, the macroeconomic models in current use, while intellectually advanced, tend to be limited in their geographical or sectoral coverage. Moreover, there is a general perception that economic models failed to predict and even replicate ex-post the financial crisis scenario.[2] There is also a lack of agreement in terms of their ability to demonstrate the benefits of international cooperation, certainly for all G-20 countries.

A high degree of uncertainty surrounds the characterization of economic relationships employed for modeling. This includes data uncertainty—a factor exacerbated by problems of small data samples. Furthermore, developing accurate statistics becomes a more complex process when involving developing economies as well as advanced economies. Capacity building to improve data quality is therefore vital. Alongside developing consistent statistical standards, the data that is disseminated must be reliable—it must be trusted by the countries' international partners. The dangers of the misreporting of statistics are starkly illustrated by the 2010 Eurozone debt crisis, sparked by Greece unveiling drastic revisions to its debt and deficit figures. Not only did the Greek statistical revisions destroy the credibility of its data, but it also occurred within the Maastricht Treaty—purportedly one of the most internationally rule-bound constraints on fiscal policy.

In addition, there is uncertainty about key parameters in models, such as the response of aggregate demand to interest rates and changes in fiscal policy. Also, there is uncertainty as to whether shocks that hit the economy are short-lived, relatively long lasting or permanent. As the International Monetary Fund notes of its own Global Integrated Monetary and Fiscal (GIMF) model, "as with any modeling framework, the analysis of policies and their effects is stylized and indicative. The simulation results are subject to uncertainty."[3]

While current economic models are sophisticated, they work at a low level of disaggregation. For example, the IMF's GIMF model uses only five stylized regions—the United States, the Eurozone (split between Germany and the rest), Japan, developing Asia and the rest of world. GIMF is utilized by the G-20's MAP to collate the policies of G-20 countries and to demonstrate the benefits of cooperation through scenario analysis. Without the finesse to consider the G-20 economies as stand-alone components, it seems unlikely that this process can convincingly replicate all the macroeconomic facts to promote lasting cooperation. For these reasons alone, the G-20 needs to look to support the development of a suite of models that over time will deepen its analytic capabilities for measuring the benefits of cooperative, collective outcomes.

In addition, model structures typically used to assess the international transmission of business cycles only consider trade flows as the major link among economies. However, the growing literature on the channels of transmission shows that international financial integration amplifies the business cycle co-movement and that financial linkages were more important than trade flows (certainly among advanced economies) in explaining the severity of the global downturn. Devereux and Yetman demonstrate that when financial linkages are incorporated in the international business cycle models, the shocks are powerfully transmitted across countries.[4] The scale of the transmission of the shock depends, in turn, on the level of financial integration and the degree of portfolio diversification. The financial crises revealed the existence of liquidity spirals that amplified the crisis caused by high leverage ratios and maturity mismatches, and highlighted the necessity of incorporating banks as well as the interplay between leverage and asset prices into models.[5] Work to incorporate these types of channels into macroeconomic models would need to build on earlier theories that recognized the failure, in the context of asymmetric information and moral hazard[6], of classical theorems stipulating the irrelevance of the financial structure.

There are many reasons why economic models may be found to be lacking for the purpose of quantifying the nature of interdependences across economies. Still, it is important to understand the evolutionary nature of model development. No one model can answer all questions. What is critical at any point in time is to know what questions need to be asked and to then develop the right models to gain insight and understanding to assist authorities to make informed policy decisions. If the G-20 is to successfully play the role as the premier forum for international cooperation, it will only be able to do that if supported by an analytic framework that increasingly moves us closer to a consensus on global economic interdependencies—what ties us together. Put differently, we now realize that we live in an exceptionally tightly correlated world economy with the potential for highly correlated fluctuations in economic activity. To better understand the nature and channels of these international linkages and more generally to assess the need for economic policy cooperation and coordination, we need to further invest in the development of economic models.

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Endnotes

[1] This essay draws on a forthcoming report on international policy cooperation produced jointly by the Centre for International Governance Innovation and Chatham House.

[2] For example, the commonly used dynamic stochastic general equilibrium models do not model financial markets. See Tovar (2008).

[3] IMF (2010).

[4] Devereux and Yetman (2010).

[5] The IMF is currently undertaking work on addressing and incorporating these issues in the GIMF model. See Kumhof et al. (2010), Dib (2010) and Meh and Moran (2010).

[6] Bernanke and Gertler (1989) and Kiyotaki and Moore (1997).