

The Architecture of Globalization

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Using recent advances in the study of networks, two University of Arkansas economists suggest alternative measures of international economic integration, popularly referred to as globalization. Rather than focusing on trade levels of individual countries, the new measures consider the pattern of linkages that tie together countries around the world.

"Despite greater interest in the issues of globalization, discussions are often handicapped by the dearth of appropriate measures to understand its nature and impact," said Raja Kali, associate professor of economics in the Sam M. Walton College of Business. "Most studies in the economics literature focus only on volume of trade. We combined a network approach with data on international trade linkages to examine the global trading system as an interdependent complex network."

A network approach enabled Kali and Javier Reyes, assistant professor of economics, to derive statistics that describe the structure and evolution of global trade in ways that existing measures do not capture, such as the number of actual and potential trading partners, the structure of regional trading, and the influence of individual countries and groups of countries on the whole network and specific regions.

While popular usage of the term "globalization" provokes strong and polarizing opinions across the world, such sentiments are usually associated with the effects, real or perceived, of what economists refer to as international economic integration. The increase in globalization that has characterized the last half-century has been associated with the

spectacular economic performance and move out of poverty for large parts of the world. But globalization has also caused an increase in volatility of economic performance, reflected in several recent episodes of economic and financial crises. There is also a growing perception that the process of globalization has accelerated over the last decade and that the benefits and costs of increasing economic integration have not been evenly distributed across the world.

Kali and Reyes first mapped the topology of the international trade network with a view to understanding its structure and properties. Armed with such an understanding, they then suggested new measures of international economic integration, at both a local- or country-level and a global or systemwide level, that incorporate the structure and function of the network. These measures were used to examine economic integration along a number of different lines: geography, income and legal origin.

The exercise allowed the researchers to gain an understanding of whether global trade has become more integrated or balkanized. Using data on the network of international trade linkages in 1992 and 1998, Kali and Reyes constructed these measures for both years and examined how the network and thus globalization evolved over the 1990s.

Applying the new measures, the researchers discovered that at low levels of trade - countries that have a relatively low number of links to other countries - the global trading network had become much more integrated and homogeneous throughout the 1990s. In other words, the network acquired more participant countries with roughly the same number of trading partners. At higher levels of trade - the small number of well-connected countries - not much had changed from previous years. At this level, the network was much more hierarchical and heterogeneous, meaning it was dominated by a small core of highly developed economies - the United States, Japan and several European countries - with many links to countries with both high and low levels of trade.

Overall, the researchers found support for the hypothesis that a country's position in the network, based on all factors, including volume of trade, had substantial implications for economic growth. A country's position may also explain its reaction to a financial crisis. For example, with data from 1992, Kali and Reyes found that Thailand, a country at the center of the 1997-98 Asian financial crisis, ranked 22nd in terms of global trade share but 12th by their measure of network importance.

The researchers study has been published in the July 2007 issue of the *Journal of International Business Studies*.

Source: University of Arkansas

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