

BY AUBREY GEORGE

Hidden Effects of Global Trade

Paul Ho, Pierre-Daniel Sarte, and Felipe Schwartzman. “Multilateral Comovement in a New Keynesian World: A Little Trade Goes a Long Way.” Federal Reserve Bank of Richmond Working Paper No. 22-10, November 2022.

Economists have long studied the parallel movement of inflation and output growth. But although this correlation occurs in the data as strongly across countries as within, standard models in macroeconomics tend to focus only on inflation-output relationships within countries, perhaps because most large countries purchase roughly 80 percent of goods domestically. Nonetheless, economic disturbances are not confined within the country where they originate; they propagate throughout that country’s trading network as both its immediate trading partners and trading partners of trading partners react. In a recent working paper, Richmond Fed economists Paul Ho, Pierre-Daniel Sarte, and Felipe Schwartzman demonstrated how trade networks can explain a large proportion of cross-country comovement in inflation and GDP growth even though foreign trade constitutes a small part of many economies. Inflation movements in a country are related not only to that country’s own production, but also to movements in output growth, consumption, and exchange rates in every other country.

To quantify the effects of country-specific shocks across that country’s trading network, Ho, Sarte, and Schwartzman added international trade in goods and financial assets to the standard model used by macroeconomists to analyze business cycles. Their model includes the typical three agents within each country: firms that produce outputs and maximize profits, households that maximize utility from consumption

given a budget constraint, and a monetary authority that determines interest rates according to some rule.

In their model, adding international linkages results in important changes in all three groups’ decisions compared to the traditional model. First, the marginal costs faced by firms in their model depend not only on domestic input costs, but also on foreign input costs and exchange rates. Further, these input costs, such as wages, depend on

Almost 90 percent of the parallel movement in GDP growth is attributable to trade.

foreign demand conditions. Because input costs for firms affect the domestic price level, foreign shocks affect domestic inflation. Second, households may invest both in domestic bond markets as well as in foreign exchange markets, which means they have access to internationally and domestically traded assets to finance their consumption. Finally, monetary authorities across countries may coordinate their policy responses to global shocks.

Using this model and data on GDP growth, trade, inflation, interest rates, and exchange rates from the United States, the European Union, Canada, Japan, and China from 2004 to 2019, the researchers determined the proportion of cross-country inflation and output growth comovement that results from trade versus from global factors affecting countries simultaneously. When countries are allowed to trade but are not exposed to any global shocks, correlation in GDP growth across countries falls by roughly 10 percent. Therefore, almost 90 percent of the comovement is attributable to trade even though trade constitutes a small portion of domestic consumption.

Further, trade accounts for a little over half of the cross-country comovement in inflation and output. This result derives from the network effects of trade; a country’s shocks propagate to its immediate trading partners and instigate third-country effects as other economies respond to a changing environment. Of course, the importance of trade versus global shocks in explaining comovement varies according to the relationship between any two countries. Countries engaged in substantial trade with one another are more affected by the trade channel.

Ho, Sarte, and Schwartzman suggested that their research can provide insight into current economic questions. For example, how did the inflationary shock in Europe caused by war in Ukraine affect inflation in the United States? Assuming three-quarters of the observed 4.4 percent increase in inflation from the fourth quarter of 2021 to the first quarter of 2022 in Europe was due to the war, they estimated the EU inflationary shock accounted for around 50 percent of U.S. price increases during the same period. Another such question they considered was how monetary tightening in the United States would influence output abroad; they found that a 0.25 percentage-point increase in the federal funds rate causes output to fall in other countries by almost 70 percent of the U.S. domestic response.

An implication of Ho, Sarte, and Schwartzman’s research is that the indirect effects of trade mean disruptions in countries with whom the United States trades very little can have significant effects on the U.S. economy. As the authors noted in a recent *Economic Brief* about their paper, their findings emphasize “a need for policymakers to be attentive not only to local conditions, but also developments internationally.” **EF**