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The effects of globalization on macroeconomic dynamics in a trade-dependent economy: The case of Korea[☆,☆☆]

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ABSTRACT

This paper studies the implications of globalization for the dynamics of macroeconomic variables over the business cycle for a small open trade-dependent economy, such as South Korea.

We study the impact of globalization through the lens of a structural model. Globalization is modeled as a time-varying degree of openness in the economy. We estimate the model allowing for non-fully rational expectations, learning by economic agents, and incomplete international financial markets.

The empirical results show that globalization led to important changes in the macroeconomic environment. Domestic variables have become much more sensitive toward global measures over the 1991–2012 sample. In particular, domestic output and inflation are significantly affected by global output. Fluctuations in Korean output, inflation, and interest rates, which were driven for the most part by domestic shocks in the early 1990s, are, by the end of the sample, due in large part (roughly 70%) to global shocks (and shocks that are open-economy in nature).

1. Introduction

One of the most significant changes that affected the world economy over the last three decades has been the rapid increase in trade integration among national economies. In terms of economic research, the process of globalization has spawned interest, in particular, in the fields of international trade and labor economics, with researchers predominantly focusing their attention on the role of globalization as a potential leading cause of the increase in wage inequality across skill levels in the U.S. and other countries. Research on the implications of globalization at the macroeconomic level, however, has somewhat lagged behind.

But globalization is also likely to produce a variety of effects on the macroeconomy. Various researchers (e.g., Ball, 2008; Rogoff, 2003; Taylor, 2008, and so forth) and policy-makers (e.g., Fisher, 2006; Bernanke, 2007; Mishkin, 2009, and so forth) have noticed and debated the potential impact of globalization on macroeconomic variables and monetary policy, as well as the challenges that it poses for state-of-the-art models. With regard to the dynamics of macrovariables, these debates played a central role in the literature that introduced the so-called globalization hypothesis (GH), or, alternatively, the 'global slack' hypothesis, whose central claim states that global factors, in contrast to domestic factors, have become progressively more influential in determining domestic macroeconomic aggregates.

The existing empirical evidence on the effects of globalization at the macroeconomic level, however, has so far been mixed at best. For example, Borio and Filardo (2007) find that domestic inflation rates, even in the U.S., have become more a function of global measures of economic activity, rather than of conventional domestic indicators. On the contrary, Ihrig et al. (2010) explore different specifications and conclude that global output does not have significant effects on domestic U.S. inflation: conventional closed-economy Phillips curves are still sufficient descriptions of the data. Milani (2012) shows that globalization has only a limited impact on macroeconomic relationships in the U.S., providing empirical evidence that corroborates the theoretical arguments made in Woodford (2007) and Galí (2010); they both exploit open-economy two-country settings to claim that it is very unlikely that U.S. inflation and monetary policy effectiveness may be affected by globalization in a quantitatively significant way. Overall, most of the empirical evidence is therefore consistent with a limited impact of globalization on macroeconomic relationships.

The focus on the U.S. is, however, not ideal if one is interested in assessing the changes that globalization may have caused in single

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economies. Although the trade component of GDP has progressively increased, the U.S. economy still remains quite closed.

In this paper, we take a different direction and choose to study the impact of globalization in a highly globally-integrated economy, instead. In this regard, Korea is an ideal example to assess whether globalization played any role in the behavior of macroeconomic aggregates. The country's economy heavily depends on international trade with the rest of the world and the role of trade has substantially increased over time, particularly so over the last two decades. Fig. 1 shows the ratio of combined export and import to nominal GDP for five countries over the last two decades. The level of openness in Korea is two or three times higher than that in other countries. Also, the increase in the ratio in Korea is over 40%, while the increase for other countries, with the exception of India, remains below 20%.

Our analysis for Korea as an example of a small open economy subject to globalization aims to shed light on a number of questions:

- have domestic variables become more responsive to global, rather than domestic, measures of slack?
- has monetary policy become less effective because of globalization?
- what shares of macroeconomic fluctuations are due to external and global, rather than internal, factors?
- have these shares changed over time as a result of globalization?

To answer those questions, we use a structural approach by exploiting and estimating a small open economy model, which includes several features that have been shown necessary in fitting aggregate time series data in both closed and open-economy frameworks, such as habit formation in consumption, sticky prices, indexation to past inflation, and so forth.

As a departure from conventional estimations, we relax the assumption of rational expectations, which is a standard in open-economy macroeconomics. In a changing economy, the informational assumptions required by rational expectations would be exceedingly strong (i.e., agents would be required to optimize taking into account changes in future openness: this complicates the microfoundations and it doesn't seem realistic), more so than in typical constant-parameter environments. We instead model expectations as near-rational, and allow private-sector agents to learn over time the relevant economic relationships. In the spirit of the macroeconomic adaptive learning literature (e.g., Evans and Honkapohja, 2001), we constrain agents in the model to have no information advantage over the researchers and econometricians working with the model (i.e., if econometricians do not observe the shocks and the model parameters, neither do the agents in the model).

Moreover, given the plethora of evidence against the existence of financial market completeness at the international level, we assume incomplete international financial markets. Among other things, this assumption allows us to attenuate the restrictions imposed by the uncovered interest parity condition on exchange rate fluctuations, by allowing for a debt-elastic interest rate premium.

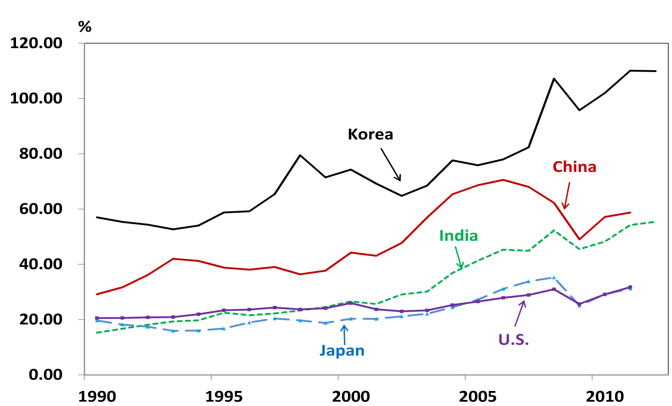

Fig. 1. Trade openness (ratio of combined exports and imports to nominal GDP). Source: World Development Indicator (World Bank).

The structural small open economy model is estimated using full-information Bayesian methods. The coefficients in the state-space representation of the model are time-varying because they are a function of the degree of openness in the economy, which is itself time-varying and is the key channel exploited here to model globalization, and also because of economic agents' gradual learning about the economy.

1.1. Results overview

The empirical results reveal the significant effects that globalization has had on business cycle dynamics in Korea. The relationships among the major domestic and foreign variables have fundamentally changed. Korean output has progressively become more sensitive to global output and less dependent on domestic consumption. Domestic inflation is also driven to a large extent by global, rather than exclusively domestic, slack. The influence of open-economy variables, such as the terms of trade and exchange rate or risk premium shocks, has risen over the sample. These developments are clearly exemplified by a variance decomposition exercise. While domestic shocks to preferences, technology, and monetary policy account for more than 70% of business cycle fluctuations at the beginning of the 1990s, the situation is reversed as it is external shocks (either global variables or variables related to open economy in nature such as the terms of trade or exchange rates) that come to dominate by the end of the sample. Those explain roughly 70% of the observed variability in output, inflation, and interest rates.

1.2. Related literature

At the broadest level, this paper aims to contribute to our understanding of the changes in the structure and dynamics of economies that are brought by the process of globalization. While economists have focused a large deal of attention on globalization as a potential cause of the increase in wage inequality between high-skilled and low-skilled workers, research on its implications for business cycle dynamics has been less common. As discussed above, the papers that looked at the potential effects of globalization with a more macroeconomic focus emphasized how globalization could change the dynamics of inflation, by making it more a function of global, rather than domestic, measures. This paper contributes to this line of research by providing evidence from a country that has been potentially more sensitive to the forces of globalization.

On a methodological level, the paper presents an estimation of a microfounded small open economy model, which departs from conventional estimations in the literature in two main respects: first, it incorporates globalization, modeled in a highly tractable way, as a time-varying structural parameter; and second, it departs from the assumption of rational expectations, which can be unrealistically strong for economies that have moved from emerging to developed, and have been subject to major structural changes over the period. As the estimation recognizes the difficulties economic agents face in forming expectations in real time, it models expectations as non-fully rational (although still close to rational), but also allows agents to progressively learn about the economy.

At a more specific level, the paper provides an empirical investigation of the Korean economy, which reveals major changes in its characteristics over time. There are several studies that address how the Korean economy is affected by external shocks or foreign factors. These papers generally show that the business cycle in Korea is influenced by external shocks, although domestic monetary policy still remains effective. For example, Kim and Park (2009) and Kim (2011) use SVAR and find that output and inflation rate in Korea are affected by external shocks. Kang and Mook (2009) claim, based on the results from factor-augmented VARs, that monetary policy in Korea is still effective even though domestic economic variables are unilaterally affected by foreign factors. These studies, however, neither show how