Trade Linkages and Business Cycle Transmissions in Small Open East-Asian Markets

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Abstract

Growing economic integration and trade liberalization have increased economic openness, and have created interdependencies among various regions and economies. These developments changed the structure of global trade over time, along with the significance of channels through which trade related shocks are transmitted around the globe. This paper studies how economic and financial shocks propagate across small open Asian economies. We adapt a global VAR approach, considering the interdependencies and time varying nature of the underlying data to account for business cycle transmissions between the G4 and emerging Asian economies for the period 1980 to 2016. Specifically, we examine the evolution of different shocks across the NIE-4 and ASEAN-4 economies, effectively linking the sample economies in a global framework. This provides a rigorous framework to assess the spillover of economic and financial shocks across the selected economies, through the identification of important changes in the international economic landscape and trade patterns.

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Non-technical summary

The output shocks in the major economies substantially affect the business cycles of Asian economies. Over the last 20 years, the transmission mechanism has widely evolved due to prominent changes in trade patterns between Asia and the rest of the world (Gourinchas and Rey 2014 and Dungey et al. 2018). The implications of changes in trade and financial integration of Asian economies are prominent and have gained global importance as indicated by Quah (2011), who projected an Eastward shift in the global economic epicentre. The economic interdependency among the Asian economies has substantially increased since the 1997 Asian crisis (Kim and Lee, 2012). Because of the changing global trade and financial interactions, there is a growing interest in modelling the changing influence of economic shocks emanating from major economies on the Asian region. However, due to rapidly changing policies, economic landscape and short data samples, modelling the macroeconomic relationships in the small open economies of Asia is complex and provides significant limitations for implementing traditional econometric frameworks.

The dynamic trend in global economic patterns is likely to continue due to the rapid industrialisation within the Asian region, likely doubling its trade shares by 2030 (OECD 2015 and ADB 2015). Since mid-1990s, the Chinese economy grew exceptionally due to opening up of trade and debureaucratization of financial markets, and has emerged as one of the global growth drivers (see Devlin et al. 2006 and Dungey et al. 2018). The Chinese economic growth has favourably affected the real sector in both developing and developed world economies. More specifically, the Asian emerging markets have considerably influenced from the expansion in China's demand.[1] Therefore, it is essential to consider the time varying properties of international links to analyse the transmission of shocks across the Asian region.

This paper demonstrates the effects of the economic and financial shocks on developing Asian economies for the period 1980 to 2016, using a global VAR framework. Particularly, we study the dynamic role of major growth driver economies (G4) and their potential importance in disseminating regional and global shocks by considering the inter-dependency structure between Asia and the G4.[2] We show the economic implications of shift in the business cycles of G4 economies on the ASEAN-4 and NIE-4 and assess its evolution over time.[3] These small East Asian countries are selected because of their brisk economic growth along with prominent changes in the regional and international trade-links. Furthermore, the output growth in these economies is projected to be strong with an average of 6.3% per annum from 2018-2022 (OECD, 2018). Although the net trade inflows in some of these economies have declined, in general their external positions have remained robust. The NIE-4 and ASEAN-4 are

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[1] For more details see Fan et al. (2014).

[2] G4 includes the US, Euro area (EA), China and Japan.

[3] The ASEAN-4 group includes Indonesia, Malaysia, Thailand and Philippines while the NIE-4 is comprise of South Korea, Singapore, Taiwan and Hong Kong.

posed to maintain a GDP growth of 2.71% and 5.12% per year respectively.[4]

This study contributes to the empirical literature on emerging Asian markets by identifying factors that are important in the propagation of shocks. It also assesses how global economic shift has influenced the importance of major economies for the NIE and ASEAN economies over the last 20 years. We analyse the economic implications of shocks to domestic and foreign variables on Asian economies and evaluate the impact of common shocks across Asia. For this purpose, we consider macroeconomic and financial variables for 13 economies for the period 1980-2016, using a GVAR.

We account for changes in the regional and global economic landscape to study the dynamics of transmission mechanism across the selected Asian economies over time. As multiple factors are involved in the transmission mechanism, bivariate models may potentially underestimate the influence of some economies on a particular area or region. Therefore, we need a high dimension multilateral system to study the interaction between global and domestic variables. To incorporate multiple factors and assess the influence of changes in global economic condition on Asia, we adapt the Global Vector Autoregressive model (GVAR) developed by Pesaran et al. (2004) and Dees et al. (2007). Unlike the static annual trade weighted (W) analysis of Dees et al. 2007, our identification mechanism involves the time-varying quarterly export shares from 1980 to 2016.

We consider the output shocks with alternative weights (W) to implement the model, incorporating the shift in global economic patterns over the past two decades. The approach specifically allows us to examine how responses of the NIEs and ASEAN economies to exogenous shocks have altered. The responses of these emerging economies to exogenous innovations indicate the degree of their global dependence. We find that the influence of Chinese-generated shocks on the Asian markets has magnified, while those of the EA and Japan have declined over time. This identify the significant role of China as a growth driver and the source of demand for trade and capital flows. Our findings indicate that the US economy is still the most important growth driver of Asian markets, but its influence has reduced as compared to that of 1996. Furthermore, we also analyse the dynamic responses of the ASEAN and NIE economies to a global oil price shock, the US interest rate and equity price shock. This helps explain the changing role of economic and financial channels in the transmission mechanism across emerging Asia.

This study attempts to provide insights into the important role of trade and financial links on the output growth of Asian markets through macroeconomic variables. From the perspective of policy makers, it is crucial to understand the appropriate transmission channel. For instance, if the trade shocks are dominant, then economies could diversify their trade. Alternatively, if financial links are significant economies could set some capital restrictions.

Our empirical framework for examining the propagation mechanism is highly

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[4]Source: www.ceicdata.com.

appropriate to assess emerging economies with rapidly changing trade links.[5] It allows us to assess the changing importance of real and financial linkages on the macroeconomic environment of Asian markets, employing time varying weights. It is crucial to extend such analysis and include more emerging economies and regions to examine evolution of the international business cycle transmission mechanism. An important extension will be to account for the interdependence among G4 in understanding the transmission mechanism and its direct and indirect implications on the Asian economies.

References

ADB, 2015. Asian economic integration report 2015: How can special economic zones catalyze economic development? Asian Development Bank, Manila, Philippines.

Dees, S., Mauro, F.d., Pesaran, M.H., Smith, L.V., 2007. Exploring the international linkages of the euro area: a global VAR analysis. Journal of Applied Econometrics 22(1), 1–38.

Devlin, R., Estevadeordal, A., Rodríguez-Clare, A., 2006. The Emergence of China: Opportunities and challenges for Latin America and the Caribbean. Washington, DC: Inter-American Development Bank.

Dungey, M., Khan, F., Raghavan, M., 2018. International trade and the transmission of shocks: The case of ASEAN-4 and NIE-4 economies. Economic Modelling 72, 109–121.

Fan, S., Kanbur, R., Wei, S.J., Zhang, X., 2014. The oxford companion to the economics of China. Oxford University Press.

Georgiadis, G., 2017. To bi, or not to bi? differences between spillover estimates from bilateral and multilateral multi-country models. Journal of International Economics 107, 1–18.

Gourinchas, P.O., Rey, H., 2014. External adjustment, global imbalances, valuation effects. In Handbook of International Economics 4, 585–645.

Kim, S., Lee, J.W., 2012. Real and financial integration in East Asia. Review of International Economics 20(2), 332–349.

OECD, 2015. OECD Economic Outlook, Volume 2015 Issue 2. OECD Publishing, Paris .

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[5]The GVAR-model effectively accounts for multiple factors associated with economic interdependencies and avoids the identification problem faced with VAR. Georgiadis (2017) has demonstrated that the estimates of a bivariate model are less accurate as compared to GVAR due to omitted variables bias and failure to assess indirect spillover.

OECD, 2018. Economic Outlook for Southeast Asia, China and India 2018: Fostering Growth Through Digitalisation. OECD Publishing, Paris.

Pesaran, M.H., Schuermann, T., Weiner, S.M., 2004. Modeling regional interdependencies using a global error-correcting macroeconometric model. Journal of Business & Economic Statistics 22(2), 129–162.

Quah, D., 2011. The global economys shifting centre of gravity. Global Policy, 2(1), 3–9.