International trade and the transmission of shocks: The case of ASEAN-4 and NIE-4 economies

Mardi Dungey [a,b], Faisal Khan [a,*], Mala Raghavan [a,b]

[a] *University of Tasmania, Private Bag 84, Hobart, TAS, 7001, Australia*
[b] *CAMA, Australian National University, J.G. Crawford Building 132, Lennox Crossing, ANU, Canberra, ACT, 0200, Australia*

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ABSTRACT

We investigate the effects of the increasing importance of ASEAN-4 and NIE-4 economies in global trade for the transmission of shocks using a structural VAR framework. We specifically account for time variation, using the changing trade links to provide a means of identifying the propagation of economic shocks and spillovers across the US, EU and Asia Pacific economies from 1978 to 2015. The results include evidence of China's emergence as a major driver of growth in Asian markets. The identification mechanism highlights the relative importance of changing trade relationships versus changing shocks in propagating shocks between global markets, and shows that the international transmission mechanisms have changed substantially over the sample period.

1. Introduction

Asia is currently one of the most dynamic regions in global trade and is increasingly a major driver of global economic growth. In the past ten years, the US economy grew by 1.6%, the EU by 1.7% and Latin America by 4.6% while emerging Asia grew by 5.9% resulting in a substantial increase in the regional share of Asia on the world GDP (OECD, 2015). To put this in historical context the growth rate of China in the last decade is comparable to those achieved by the US in the post-civil war expansion and the UK during the industrial revolution (Farmer, 2016). Trade expansion in emerging Asian economies over the last 20 years (see Fig. 1) includes both increasing numbers of partners and growth in volume. This is expected to continue due to rapid industrialization within the Asian region, potentially doubling its export share by 2030 (ADB, 2015).

We consider specifically the time varying nature of trade patterns in transmitting shocks to and from ASEAN-4 and NIE-4 economies and the G4 (China, US, Japan and EU). The ASEAN-4 and NIE-4 economies have experienced rapid economic growth, regional integration, diverse responses to global economic turmoil as well as changing trade structure. The ASEAN-4 includes Indonesia, Malaysia, Philippines, and Thailand while the NIE-4 includes Singapore, South Korea, Taiwan and Hong Kong. We observe that whilst the export shares of ASEAN-4 and

NIE-4 have increased to China, India and Australia, those of the G3 economies (US, EU and Japan) have declined. These Asian economies display considerable interdependence via their trade links, with dramatic increases since the 1997 Asian crisis (Kim and Lee, 2012).

We empirically identify how shocks propagating from the world's major economies affect Asian markets, and how these impacts may have altered over time. We analyse the evolution of changing trade patterns on the direct and indirect effects of a shock via fluctuations of output growth in the major trade partners of ASEAN-4 and NIE-4 using an extension of the SVAR identification scheme proposed by Abeysinghe and Forbes (2005). Direct effects refer to the influence of one country's output growth on that of another, through the bilateral trade connections between them. The indirect effects capture the impact of one country on another via its influence on the output growth of its trading partners - through supply chains and third markets. Indirect effects mean that shocks in one economy can affect other economies and regions despite weak direct trade linkages. Existing related literature estimating direct and indirect trade effects may be found in Sato and Shrestha (2012) and Cheewatrakoolpong and Manprasert (2015). In essence, a Chinese demand shock transfers directly to the Korean economy by trade linkages, and indirectly to Japan, Malaysia and Thailand through multilateral-trade chains and income effects operating via the Chinese economy.
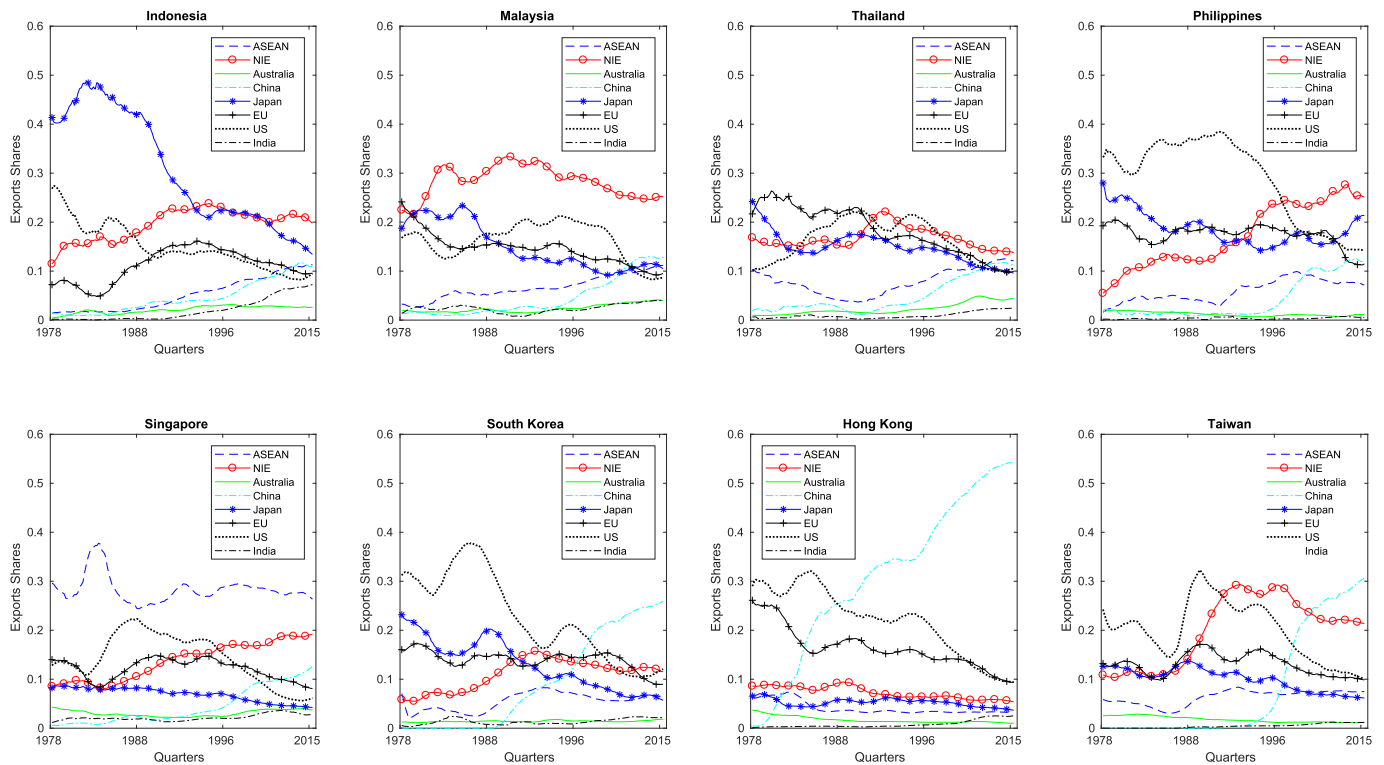
* Corresponding author.
E-mail addresses: mardi.dungey@utas.edu.au (M. Dungey), f.khan@utas.edu.au (F. Khan), mala.raghavan@utas.edu.au (M. Raghavan).

Note: Figure 1(a) shows series of export shares, indicating changes in trade patterns of NIE-4 and ASEAN-4 economies over time.

Fig. 1. (a), (b) Export Shares.

The identification mechanism proposed by Abeysinghe and Forbes (2005) relies on a trade weighted matrix, (*W*), which in our application is time varying with the changing nature of trade links between international markets. In contrast to the static weight analysis of Abeysinghe and Forbes (2005), we apply time-varying weights to quarterly data from 1978 to 2015. We show that ASEAN-4 and NIE-4 markets benefit through trade links, and that these links can amplify the exposure of these economies to external shocks. In particular we show how the results are responsive to the use of time varying trade weight (*W*).

The empirical results show the significance of the changing nature of cross-border trade linkages in output co-movement across emerging Asia and G4 economies, represented by changing multiplier effects. We find that the US, EU and Japan were the main drivers of growth in early 1990s. However, in last twenty years, China has overtaken the EU and Japan, and is now one of the main growth drivers in Asia. The importance of ASEAN-4 and NIE-4 economies has also increased during this period. Both the direct effect via bilateral trade-links and the indirect effects through third countries are important channels of the international transmission mechanism of business cycles. The indirect-effects provide an additional dimension to the exposure of economies to external shocks from the direct bilateral trade-links alone. For instance, although Singapore's exports to Indonesia are less than those of the Philippines and South Korea, the influence of Singaporean shocks on Indonesia is larger than those of the Philippines and South Korea.

This paper is structured as follows. Section 2 reviews the extant literature. Section 3 describes data and changes in export-shares. Section 4 explains the methodology and estimation procedures. Section 5 presents the empirical results and Section 6 concludes.

2. Literature review

Increasing trade links may lead to co-movements, increased volatility or result in less diversified production and specialization effects. Despite the empirical research devoted to evaluating the role of trade in the international propagation mechanism, there is no consensus on the importance of trade links in transmitting economic shocks. Canova (1991) finds that trade interdependence plays a moderate role in the propagation of economic disturbances using a general equilibrium model. However, in later research Canova and Dellas (1993) found the trade channel to be only weakly significant in the propagation of economic instability across countries. Masson (1998), Baig and Goldfajn (1999) and Harrigan (2000) also report the trade channel as insignificant as a transmission mechanism, as trade-linkages between crisis and affected countries tend to be relatively small. The evidence is similar for emerging markets; Blanchard et al. (2010) and Berkmen et al. (2012). In contrast literature such as Dungey and Martin (1998), Ito and Hashimoto (2005) and Haidar (2012) identify that trade (both bilateral and competition via a third market) had some explanatory power in explaining the propagation of instabilities and output shocks in the international markets.[1]

Economic shocks may transmit internationally via product competitiveness and income effects. Currency devaluation leads to changes in relative international competitiveness as relative prices shift for trade partners, leading to direct and indirect effects on both the traded and non-traded sectors of other economies via income effects which may

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[1] See also Sachs et al. (1996), Eichengreen and Rose (1999), Glick and Rose (1999), Corsetti et al. (2000), Glick and Rose (2002), Ahearne et al. (2003), Forbes (2004), Eickmeier (2007), Haile and Pozo (2008) and N'Diaye and Ahuja (2012) etc.