

Measuring Regional Interdependence in Southeast Asia

- A Review of Quantitative Literature

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Summary of Presentation

The purpose of this presentation is to provide a lead up to session 3 by briefly taking stock of where we stand in terms of regional interdependence in Southeast Asia. After looking at the current trends, discussion on how peer reviews can be used in a regional context will follow.

The central question of this presentation is whether Southeast Asian economies are becoming more interdependent. The answer to this question is not that straightforward given that regional interdependence is a multi-faceted and evolving phenomenon and there is no universally accepted method for measuring the degree or the intensity of interdependence.¹ To provide a more nuanced answer to the above question, we first review the methodologies to measure regional interdependence and then survey the results of the relevant analytical literature on Southeast Asia.

From the point of view of methodology, in general, there are two approaches to measure regional interdependence.²

- The first considers *the outcome of economic activity*, which can be measured either by (i) quantity³ - for example the volume of trade or capital flows, etc. within a region or (ii) price - for example the degree to which the law of one price holds in equilibrium and the arbitrage condition between different markets, i.e. interest parity conditions.
- The other approach is based on *the regulatory and institutional measures* that may hinder interdependence, i.e. barriers to movement of goods, services, capital, people etc. across national boundaries (for instance legal restrictions on the capital account and tariff barriers).

The use of the above approaches depends on their purpose. Roughly speaking, quantity-based measures are widely applied to measure interdependence in product, labour and financial markets, while price-based approaches are mainly used for analysing financial linkages.

Owing to the progress in theory and methodology, a number of empirical studies to measure interdependence in Southeast Asia have emerged in recent years.

- Major representative studies measuring monetary/financial interdependence include De Brouwer (1999), whose analysis is comprehensive in terms of methods used, with the finding of deepening trends by the first half of the 1990s. Cheung *et al.* (2003) and Kawagoe *et al.* (2005) apply the priced-based approach and conclude that although parity conditions

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¹ Measuring the impact of regional interdependence is another important stream of recent research but this is not treated in this paper.

² There are many other classifications of the methods for measuring regional interdependence. In particular, on measuring financial/monetary linkages see Rajan (2005).

³ The quantity - based measurement further includes the savings-investment correlation and consumption correlation analyses.

do not hold, but measured by the degree of deviation from parity, interdependence in the region is deepening. Qin *et al.* (2006) measure financial integration by a dynamic factor error correction model approach and observe a marked progress since the late 1990s although the level of integration is not strong.

- In the area of trade, there are many studies using the quantity-based approach, i.e. measuring intra-regional trade flows and many of them identify a deepening trend in regional interdependence. Petri (2006) measures trade interdependence by using gravity-coefficient indices in a historical perspective and concludes that in East Asia, interdependence shows a U-shape, which started to decrease after WW II followed by a reversal of the trend from the 1990s.
- Also in the field of investment, using inward and outward FDI stock as a percentage of GDP from the 1980s to 2003, Kawai (2005) finds an increasing trend of interdependence.
- In the labour market, Hugo (2005) uses stocks of migrant workers and points out that the role of migration is important in deepening interdependence of Southeast Asian countries. There have also been some attempts to analyse interdependence in other areas.

As the above discussion of the literature shows, although estimates of the degree of interdependence differ according to methods used and the period under investigation, in general, it can be said that regional interdependence in Southeast Asia seems to be strengthening. This trend is expected to strengthen further, and the value of region-building will increase in importance.