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Synchronization of business cycles and economic policy linkages in ASEAN

Yuthana Sethapramote *

School of Development Economics, National Institute of Development Administration, 118 Seri-Thai Road, Bangkapi, Bangkok 10240, Thailand

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ABSTRACT

We investigate business cycle synchronization and economic policy linkage in the Association of Southeast Asian Nations (ASEAN). Two important findings are addressed. First, we measure static and dynamic correlations in both macroeconomic variables and policy variables. The vector autoregression and the dynamic conditional correlation model are applied to capture the dynamics of the co-movement pattern in particular. The empirical results show evidence of synchronization in key macroeconomic variables such as gross domestic product, inflation, export, and exchange rates within ASEAN. However, supporting evidence of economic policy linkages are found in only a few cases. Second, the panel regressions show that trade integration is the main factor in the synchronization of the business cycles within ASEAN. Moreover, monetary policy linkage contributes to this co-movement pattern. Financial integration is an important factor only in the correlation between ASEAN and the United States, while the role of fiscal policy linkage is not significant in every case.

1. Introduction

Since the establishment of the Association of Southeast Asian Nations (ASEAN) in 1967, economic corporation and liberalization in Southeast Asia has improved. As a result, the issues of economic linkage and policy coordination among ASEAN countries have attracted substantial interest in empirical studies. For instance, Kawai (2005) and Rana (2007) investigated macroeconomic interdependence in the region. They found that the movement of macroeconomic variables has become more synchronized, particularly during recent decades.

In this paper, we investigate business cycle co-movement among ASEAN countries. This issue is particularly important today because, as in 2015, ASEAN countries have expanded their economic collaboration from the ASEAN Free Trade Area (AFTA) to the ASEAN Economic Community (AEC). We extend the results from previous studies in two aspects. First, two dynamic measures of correlation coefficients are used for macroeconomic variables and policy variables: the correlation based on the vector autoregressions (VAR) forecast errors at different horizons (Den Haan, 2000) and the dynamic conditional correlation generalized autoregressive conditional heteroskedasticity (DCC-GARCH) model (Engle, 2002). Second, we examine the influences of monetary and fiscal policy linkages in business cycle synchronization.

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* Tel.: +668 3 0507962.
   E-mail address: yuthana.s@nida.ac.th

The remainder of this paper is organized as follows. Related literature on business cycle synchronization in ASEAN are reviewed in Section 2. In Section 3, we examine the interdependence of macroeconomic and policy variables among ASEAN countries by using simple correlation coefficients and VAR-based methods. In Section 4, we calculate time-varying behavior in conditional correlations. The relationships between economic policy coherence and business cycle synchronization are investigated in Section 5. Finally, in Section 6, we conclude the paper and discuss policy implication.

2. Synchronization of business cycles in ASEAN

Synchronization of business cycles is an important part of the process of economic integration under the theory of optimum currency areas. Several studies have investigated the co-movement of business cycles in European countries (e.g., Camacho, Perez-Quiros, & Saiz, 2006), where economic integration has made significant progress under the European Union (EU) agreement[1]. Kim, Kose, and Plummer (2003) investigate the characteristics of Asian business cycle fluctuation by comparing it with those of G7 countries. They find that there is a high degree of co-movement in the macroeconomic aggregates among the Asian countries. Moreover, cross-country correlations can be seen to be increasing over time. Plummer and Wignaraja (2006) review empirical studies on economic integration in Asia and conclude that the synchronization in this region is high and increases after the Asian financial crisis.

Recently, several empirical studies have focused on the determinants of business cycle synchronization in Asia. Crosby (2003) finds that trade and other macroeconomic variables do not explain the business cycle correlations in the Asia-Pacific region. However, the importance of trade linkages has been documented in subsequent studies. Particularly, Rana (2007) examines the economic linkages in East Asia resulting from trade integration and the effect of AFTA. He demonstrates empirical evidence of an increasing degree of synchronization after the Asian financial crisis in 1997–1998, and explains this phenomenon according to the trade intensity within the region. Additionally, Moneta and Ruffer (2009) show that the degree of synchronization has fluctuated over time but has demonstrated a long-term increasing trend. They also find that the export co-movement, oil price, and exchange rate play an important role in synchronization. Furthermore, He and Liao (2012) also explain that vertical trade integration is the primary source of business cycle synchronization in emerging Asian economies. Subsequently, the roles of financial integration in business cycle synchronization in the Asian region are examined. Imbs (2011) shows that trade intensity and financial openness are important determinants of business cycles correlations in East Asia. Later, Kim and Kim (2013) find that capital inflows are correlated within the Asia Pacific region and explain the business cycle correlations in the 1990s according to the synchronization of capital flows after financial market liberalization.

Even though the synchronization of business cycles and the roles of trade and financial integration in Asia have been intensively investigated in empirical studies, there are relatively limited studies on the economic policy linkages in the Asia Pacific region. Kim et al. (2003) show that while the patterns of business cycle fluctuation in macroeconomic variables (e.g., aggregate output, exports) are quite similar, the movements in fiscal policy variables and monetary policy variables are significantly different across the Asian countries. However, to the best of our knowledge, the association between the business cycle correlations and the co-movement in the economic policy variables has not been well investigated in ASEAN. Therefore, the aim of this paper is to examine whether economic policy linkages are able to explain business cycle synchronization among the ASEAN countries.

3. Interdependence in macroeconomic and policy variables among ASEAN countries

In this section, we examine the co-movement of the macroeconomic and policy variables among the ASEAN6 countries[2]. We consider two methods for measuring the degree of co-movement in key macroeconomic and policy variables. First, a static measure is computed by using standard coefficients of correlation. Next, the short-term and long-term components in economic correlations are examined by using the VAR analysis proposed by Den Haan (2000) and Den Haan and Sumner (2004).

3.1. Static measure of correlations

We first compute the simple correlations of the macroeconomic and policy variables between all pairs of six ASEAN countries. Then, we calculate the correlations of these variables of each country with the mean value of other ASEAN economies. The quarterly data from 2000, quarter 1, to 2012, quarter 4 are used. In addition, the USA, Japan, and China are included in order to provide the benchmark of correlations with the major economies[3]. Three macroeconomic factors – real output growth, inflation, and export – are calculated from growth rate of real GDP, the consumer price index, and nominal goods export in terms of local currency, respectively. Next, three policy variables – exchange rate policy, fiscal policy, and monetary policy – are defined as follows. Exchange rate policy is measured according to percentage changes in the value of local currency in terms of US dollars. For the USA, the exchange rate is the trade-weighted US dollar index. For fiscal policy,

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