

## Convergence Clubs of Economic Liberalization in ASEAN, China, and India (Kelab Penumpuan Liberalisasi Ekonomi di ASEAN, China dan India)

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### ABSTRACT

*The emergence of China and India as major international forces alongside ASEAN has triggered interest in strengthening the economic ties between these countries; hence, this serves as the motivation for this study to embark upon an analysis on economic liberalization and its link to economic growth. The present study also aims to examine the possibility of convergence clubs to exist between ASEAN, China, and India. The pooled mean group (PMG) estimator approach was employed to assess the dynamic effects of economic liberalization, while Phillips and Sul methodology was used to assess the economic possibility of convergence clubs. The empirical evidence supports the positive nexus between economic liberalization and economic growth of ASEAN, China and India for the 1988 to 2014 period. The results also offered support to the hypothesis that not all countries converge to a single equilibrium state, and the results of Phillips and Sul's method revealed the existence of three convergence clubs. The first club consists of Singapore and Brunei Darussalam, the second club is represented by Thailand, China, and Indonesia, while the third group comprises of the Philippines, India, Vietnam, Lao PDR, and Myanmar. Interestingly, Malaysia was found to be the only outlier among the selected countries under study.*

*Keywords: Liberalization; economic growth; ASEAN; Convergence Club*

### ABSTRAK

*Kemunculan negara China dan India sebagai kuasa antarabangsa telah mencetus tumpuan ASEAN dalam usaha memperkukuh hubungan ekonomi di antara negara-negara tersebut; justeru, kajian ini memberi motivasi untuk mengkaji liberalisasi ekonomi dan interaksinya dengan pertumbuhan ekonomi. Kajian ini juga berhasrat untuk menganalisis kemungkinan kewujudan kelab penumpuan (konvergen) dalam kalangan negara-negara ASEAN, China dan India. Analisis kajian dijalankan dengan menggunakan kaedah 'pooled mean group' (PMG) untuk meneliti kesan dinamik liberalisasi ekonomi, manakala kaedah Phillips dan Sul pula digunakan untuk menyelidiki kelab penumpuan. Dapatan kajian empirikal menunjukkan kewujudan hubungan positif antara liberalisasi ekonomi dengan pertumbuhan ekonomi dalam kalangan negara-negara ASEAN, China dan India pada tahun 1988-2014. Selain itu, dapatan kajian mendapati bahawa konvergen secara agregat tidak dicapai, dan terdapat kewujudan tiga kelab konvergen. Negara Singapura dan Brunei Darussalam membentuk kelab pertama, manakala kelab kedua diwakili oleh Thailand, China dan Indonesia dan kelab ketiga mengandungi negara-negara Filipina, India, Vietnam, Lao PDR dan Myanmar. Menariknya, hasil kajian mendapati bahawa Malaysia tidak membentuk keseragaman dengan mana-mana kelab konvergen tersebut.*

*Kata kunci: Liberalisasi; pertumbuhan ekonomi; ASEAN; kelab konvergen*

### INTRODUCTION

Economic liberalization is the primary driver of globalisation, and authorities in developing economies are moving towards an open economy on the basis that liberalised trade and financial policies are beneficial to future economic growth and development (World Trade

Organization 2008). In this vein, many developing countries are lowering their tariffs and cutting exchange rate controls; similarly, local authorities are opening their markets to foreign competition (Germain 2009). Globalisation is fast becoming a key instrument in determining the rise and fall of economic growth. Rajan (2001) and Stallings (2001) stressed the importance



of globalisation, particularly on the growth impact of developing economies.

The effects of globalisation on developing economies can be precarious due to weak governance and instability in the global markets (Rodrik 2011). Certain aspects of globalisation and their effects on growth are mitigated by three factors. First is the move towards economic liberalization<sup>1</sup>, that is, the reduction in barriers to trade and investments implemented by the General Agreement on Tariffs and Trade (GATT), World Trade Organisation (WTO), and International Monetary Fund (IMF). This is followed by the transformation in the governments' role and the global consensus on the use of market incentives to achieve a more efficient economic system (Rodrik 2000). The third factor includes information communication technologies and transportation (Baldwin & Martin 1999). The abovementioned factors play a crucial role in promoting the globalisation of trade and financial and capital flows (Rajan 2001).

As developing countries move towards an integrated world economy, liberalization and globalisation have been extensively debated. Proponents of economic liberalization such as Bilquess et al. (2011) and Awojobi (2013) claimed that openness increases trade flows because producers are allowed access to international markets, thus profiting the economy of participating countries. In contrast, opponents of liberalization such as Kose (2003) and Seguino and Grown (2006) feared that liberalization policies cannot generate steady increases in income; hence dampening the economic environment. Despite the varying views on openness and globalisation, economic liberalization is still favoured by the authorities of developing nations (Rivoli 2005).

Asia has risen to become a dynamic region due to the sustainable economic growth among its member countries. To maintain this growth rate, market integration to ensure the free flow of goods, services, and capital across borders is required (Asian Development Bank 2013). Studies such as those by Okamoto (1994) and Lloyd and MacLaren (2004) showed that increased participation in trade among countries is an important contributor to economic growth. From 1960 to 2005, the share of exports to the world's gross domestic product (GDP) had increased from 12% to 27% (World Bank, 2008). By 2005, East Asia and Asia Pacific share of trade to GDP had risen to 47%. An increase in trade agreements among Asian countries as well as with countries from other regions has affected Asia's acceleration. The existence of trade agreements such as the ASEAN Free Trade Area (AFTA), Asia-Pacific Trade Agreement (APTA), and South Asia Free Trade Agreement (SAFTA) implies that Asian countries are pursuing economic liberalization (Bashar et al. 2008; Soukhakian 2007; Wong 2005).

Among the Asian countries, the Association of Southeast Asian Nations (ASEAN) deserves to be singly addressed. Even though ASEAN has been established

for less than 40 years, its free trade areas have grown rapidly. Efforts to create a single market had started with the formation of AFTA in 1992, followed by the ASEAN Investment Area (AIA) and ASEAN Economic Community (AEC) in 1998. Interestingly, ASEAN has always expressed interest in consolidating ties with two Asian dynamos, China and India (Rajan & Sen 2005), and this was realised with the establishment of the ASEAN-China Free Trade Agreement (FTA) and the ASEAN-India Free Trade Agreement. Thus, this situation offers unique features for this study to embark upon the issue of economic liberalization in ASEAN, China, and India.

Since its establishment in 1967, the different development paths of member countries have been a key challenge for ASEAN (OECD 2013). As a result, the ASEAN organisation had launched the Initiative of ASEAN Integration (IAI) in 2000 to narrow the development gaps among its member countries. Yet, the issue seemed unresolved as it is still uncertain if economic liberalization does offer an advantage to all ASEAN countries (Nugroho & Yanfitri 2011). Countries under ASEAN have undergone a few challenges over the last decade such as political instability, environmental crisis, terrorist attacks, and economic recession (Yeo et al. 2005). On top of that, there is a substantial divergence in the development paths of the ASEAN member countries (Chandra 2009). To narrow these development gaps, ASEAN countries' leaders have now asserted stronger commitments to speed up the realisation of the AEC 2015. Thus, this serves as a motivation for the paper to investigate the issues of economic liberalization in ASEAN. Liberalization provides opportunities for developing countries to economically catch up with high-income countries (Hakro & Fida 2009). With liberalization, the income per capita of poorer countries propagates at a faster rate than richer economies. Through the development of policies such as the AEC, AFTA, and AIA in ASEAN, regional economic integration is accelerating in South East Asia; thus ensuring that the less developed member countries such as Cambodia, Lao PDR, Myanmar, and Vietnam (CLMV) are not left behind (Vo 2007).

In recent years, ASEAN, China, and India have become increasingly important players in the global economy due to their rapid growth and increased openness since 1990. The sheer size of the two largest emerging Asian economies, China and India, make up for a substantial and growing contribution to the world output. Despite different political systems, both countries follow a reform path that reduces the role of government intervention in economic activity and allows for a greater degree of openness to international trade (Herd & Daugherty 2007). Alongside ASEAN, China and India have been moving forward to signing FTA. China has signed FTAs with ASEAN, India, Hong Kong, and several other countries, while India has signed a bilateral FTAs with Singapore, Thailand, and Sri Lanka (Panagariya 2005). India has also signed the South Asian

Free Trade Agreement (SAFTA) and is currently working on a framework agreement with ASEAN.

Through the effects of globalisation and liberalization, the growth of low- and middle-income countries has accelerated to the point that it is possible for them to catch up with high-income countries (Barro & Sala-i-Martin 1991) in a phenomenon known as convergence. The neoclassical growth theory, which is built on the foundational work of Solow (1956), Cass (1965), and Koopmans (1965), implies that over time, per capita income should converge to the same steady state while also incorporating differences in preferences such as population growth rate, savings rate, and depreciation rates. The theories predict that poorer countries can grow relatively faster than richer countries if these countries can control the determinants of their income level (Solow 1956). The growth theories and techniques postulated by Azariadis and Drazen (1990) and Galor (1996) showed that countries with similar features such as government policies and production technology might converge to diverse steady-state equilibrium even if conditions differ in the beginning - a phenomenon widely referred to as the club convergence hypothesis (Galor 1996). Barro and Sala-i-Martin (1991) suggested that the growth of low- and middle-income countries has accelerated to the point that they can catch up with high-income countries due to globalisation and liberalization.

Recent theories on convergence suggest that the income per capita distribution of countries or regions forms sub-groups around poles of attraction in the long run (Bernard & Durlaud 1995; Ben-David 1993; Quah 1993).<sup>2</sup> This supports the theories of convergence clubs, that is, there is no global convergence, but countries may converge to a similar group or pattern (Galor 1996). According to Li and Papell (1999), convergence clubs exist among richer countries and some middle-income groups, while poorer countries tend to produce a diverging trend. However, Park (2000) and Siano and Duva (2006) found that poorer regions have a higher growth rate than richer regions, although convergence does not hold during the period studied. Cuestas et al. (2013) analysed the existence of club convergence in the European Union (EU) and found evidence of different economic growth rates within the EU which converged into different steady states. Phillips and Sul (2009) added that while some regions have similar structures over time, others may diverge for certain periods and converge in others. Nevertheless, Bandyopadhyay (2011) offered caution as persistent disparities in income across countries may lead to widespread disparities in welfare and are often the cause of social and political tension. In line with the rapid pace of economic growth that developing countries have experienced in the past ten years, investigation on convergence has continuously been on the rise (Rodrik 2011).

Liberalization improves the prospects for developing countries to catch up economically with industrialised

countries (Hakro & Fida 2009). With liberalization, the income per capita of poorer countries will grow at a faster rate than for richer economies, thus resulting in income convergence. Through the development of policies such as the AEC, AFTA, and AIA in ASEAN, regional economic integration accelerates in South East Asia without leaving behind the less developed member countries: Cambodia, Lao PDR, Myanmar, and Vietnam (CLMV) (Thanh & Bartlett 2006). Through the removal of economic barriers, globalisation allows these countries the opportunity to develop, provided that they have a strong legal and regulatory framework within their economic system (International Monetary Fund 2008). The globalisation process enables developing countries that have low-cost labour to attract foreign direct investment (FDI). This makes it possible for developing economies to grow rapidly and catch up with developed countries. Although most developing countries were hit by the global financial crisis of 2008-2009, recovery was swift. By 2010, developing countries had grown to constitute half of the world's economy and were responsible for the bulk of global growth, thus providing evidence that developing countries are catching up with developed nations (Rodrik 2011). According to the World Bank (2011), the GDP of developing countries has increased to 7%, while the GDP growth rate of high-income countries is only 2.8%, and the largest GDP contribution comes from countries in East Asia and Asia Pacific.

An increasing number of studies on the topic of convergence in Asia had been conducted (Buckle & Cruickshank 2007; Ibrahim & Habibullah 2013; Masron & Yusop 2008; Wang 2012; Zhang 2005). Nevertheless, the results of these studies are ambiguous. For instance, Kim (2001) found evidence of conditional convergence in his study on 17 Asian countries; in contrast, Michelis and Neaime (2004) showed only weak evidence of convergence in 16 Asia-Pacific Economic Community (APEC) countries and 10 East Asia countries. While some research has been conducted on income convergence, the mechanism of economic liberalization and convergence has yet to be established. To the researchers' knowledge, this study is the first to investigate the link between economic liberalization and convergence in developing economies. The contribution of this study is twofold. First, past studies have tended to focus on the nexus between economic liberalization and economic growth of a country or a region; hence, this study attempts to examine the link between economic liberalization and convergence in ASEAN, China and India. The results of the study would be able to contribute to the policy implication of the developing nations either to further enhance future collaboration or focus on domestic rebalancing of their economy. Secondly, contributing to the field of convergence, this study departs from previous traditional regression method literature, and uses the Phillips and Sul (2007) methodology to identify convergence club. This method is able to address the issue of individual

heterogeneity that exist within and between the countries, given the rapid growth expansion of ASEAN, China and India. The remainder of this study proceeds as follows. The next section offers the theoretical motivation as well as empirical evidence on the issues of economic liberalization and convergence, and is followed by the data and methodology section. The subsequent section presents the study's empirical results, while the last section concludes the paper and presents the future research directions.

## LITERATURE REVIEW

The role of trade openness and its link to financial development has received growing attention since its foundational contribution by Rajan and Zingales (2003). Kletzer and Bardhan (1987) found that countries with well-developed financial systems tend to have a comparative advantage in industries that are more reliant on external finance. Beck (2002) showed that the level of financial development plays a crucial role in determining the structure of trade balances; hence, financial sector reform fosters the trade balance. The interest group theory postulates that a country that is more open to trade and capital flows is more likely to develop its financial system; thus leading to faster economic growth (Rajan & Zingales 2003).

The bulk of studies had examined the relationship between trade liberalization and economic growth (Falvey et al. 2012; Hassan 2005; Nannicini & Billmeier 2011; Kiyota 2012 Wacziarg & Welch 2007).<sup>3</sup> Studies such as Wacziarg and Welch (2007) and Nannicini and Billmeier (2011) advocated for positive trade liberalization and growth nexus, while Yannikaya (2003), Lee et al. (2004), Bashar et al. (2008), and Chandran (2009) found no robust effect stemming from trade liberalization on growth. A considerable number of studies have examined the relationship between trade liberalization and growth in developing countries, particularly in the context of Asian countries (Chandran 2009; Hassan 2005; Parikh & Shibata 2004). Nevertheless, the results of these studies appear to be mixed. Lee and Shin (2006) claimed that international trade works more effectively in developing countries that do not have large internal markets and an abundance of resources because it enables the countries to specialise and produce goods more efficiently.

Similarly, results of past studies on financial development also offer mixed evidence (Bekaert et al. 2005; Bilquess et al. 2011; Braun & Raddatz 2008; Dal Colle 2010; Gehringer 2012). Dal Colle (2010), who examined the finance-growth relationship, concluded that a positive long run relationship exists between financial development and growth. On the contrary, some past studies had reported pessimistic findings on financial development (Alessandria & Qian 2005; Ang

& McKibbin 2005). In the Asian context, some studies believed that financial development causes currency devaluation and even financial crisis (Goh et al. 2003; Jomo 1998). Others concluded that financial development helps the financial system, but has no long-term effect (Ang & McKibbin 2005; Ito 2006).

While the above-discussed studies focused on trade liberalization or financial development, little attention has been given to the analysis on the relationship between economic liberalization and economic growth (Awojobi 2013; Ahmed & Suardi 2009; Kim et al. 2010; Soukhakian 2007; Wong 2005). Studies such as those by Ahmed and Suardi (2009), Kim et al. (2010), and Awojobi (2013) offer optimistic findings on the liberalization-growth nexus, while Yannikaya (2003) and Bashar (2008) found that economic liberalization does not have a positive effect on economic growth. In view of this, this research attempts to fill the gap in the existing literature by examining the effects of economic liberalization on economic growth in the context of ASEAN, China, and India.

Over the past few decades, theoretical insights on the topic of convergence have caused a debate over the mixed results obtained in previous literature. Romer (1986) argued this by introducing a theoretical growth model with increasing returns to scale production technology, which posits that there is a tendency for rich countries to increase their lead over poorer countries. Convergence is defined as the catching up of relatively low-income countries with high-income countries (Barro & Sala-i-Martin 1991). Baumol (1994) suggested that a convergence club exists when countries to which convergence applies exist, while countries outside this club will not necessarily experience convergence. Club convergence is defined as when the income per capita of countries is identical in terms of structural characteristics (e.g., technologies, rates of population growth, preferences, government policies) and will converge with one another in the long run, given that their initial conditions are identical (Galor 1996). While some countries or regions have similar GDP structures across time, others show diverging GDP levels in some periods and convergence in others (Phillip & Sul 2009). While past studies tend to investigate the income convergence, the mechanism of economic liberalization and convergence has not been established. Thus, this study is the first to investigate the link between liberalization and convergence in developing economies, particularly in the ASEAN region.

## DATA AND METHODOLOGY

### DESCRIPTION OF DATA

A panel dataset of 12 countries (Brunei Darussalam, Cambodia, Indonesia, Laos PDR, Malaysia, Myanmar,

Philippines, Thailand, Singapore, and Vietnam.) over the period of 1988- 2014 extracted from the World Development Indicator (2015) is used in this study. To capture the effects of financial development, the ratio of private credit and GDP (DPC) is employed; this measure indicates that a high flow of credit into the private sector of a country represents a more liberalised and well developed financial policy. As for the trade openness (TO), the ratio of trade shares (sum of import and export) to GDP, measures the disclosure to trade interactions and considers integration level (Kim et al. 2010). This measure is associated with trade volume increases, indicating a country’s exposure to foreign trade (Wacziarg & Welch 2008). The above mentioned variables are most commonly used to measure trade and financial development in past studies (Bilquess et al. 2011; Falvey et al. 2012; Gehringer 2012; Kiyota 2012). Several control variables such as inflation rate (INF), government expenditure (GOV), and investment measured by the gross fixed capital formation as a share of GDP (GFCF) are also employed. These control variables are widely used in past studies (Blanco 2011; Huang & Chang 2013; Kim et al. 2014; Modak & Mukherjee 2014). A high gross fixed capital formation indicates a more liberalised economy. Inflation rate is used as a proxy for price stability, while government expenditure measures the government’s role in the economy. Table 1 summarizes the data employed in this study.

ECONOMETRIC SPECIFICATION

To assess the relationship between economic liberalization and economic growth, the panel technique which explicitly separates the trend effects of financial development and trade openness from the short run impact was employed. The autoregressive distributed lag (ARDL) model was specified for each country by pooling them together in a panel and testing the cross-equation restriction of a common long run relationship between

the two variables using the pooled mean group (PMG) estimator of Pesaran et al. (1999).<sup>4</sup> The country-specific ARDL approach enables adjustments for cross-country heterogeneity as well as captures both time-series and cross-section relations analyses. To estimate long-run effects of economic liberalization on growth, the following cross-sectional regression is specified as:

$$growth_{it} = \alpha + \beta_1 TO_{it} + \beta_2 FD_{it} + \beta_3 controls_{it} + u_{it} \quad (1)$$

where  $\alpha$  is the fixed effect (country specific), dependent variable growth represents GDP per capita growth, TO represents trade openness (trade shares over GDP) and financial development comprises of domestic private credit over GDP. Control variables include GFCF over GDP, inflation rate and government expenditure over GDP while  $u_{it}$  is the error term.

An auto-regressive distributive lag (ARDL (m, n, n, ..., n)) dynamic panel specification was applied for this estimator. Additionally, the vector error correction model (VECM) was employed whereby the short run dynamics of the variables in the system are subject to deviations from the equilibrium. To allow for dynamic heterogeneity over time, the ARDL (m, n, n, ..., n) used for the PMG estimator is specified as follows:

$$y_{it} = \sum_{j=1}^m \phi_{ij} \Delta y_{it-j} + \sum_{j=0}^n \delta'_{ij} \Delta x_{it-j} + \mu_i + u_{it} \quad (2)$$

Where  $i$  is a country index,  $t$  is a time index at annual frequency and  $j$  is the number of time lag.  $y_{it}$  is economic growth or uncertainty,  $x_{it}$  is the  $k \times 1$  vector of explanatory variables ( $TO_{it}$ ,  $FD_{it}$  and  $controls_{it}$ ) for group  $i$ , and  $u_i$  is the fixed effects. The coefficient lagged dependent variables  $\phi_{ij}$  are scalars, and  $\delta'_{ij}$  are  $k \times 1$  coefficient vectors. This panel is balanced as m and n can differ across countries. The re-parameterised version of this model given as the vector error correction model (VECM) is presented as:

$$\Delta y_{it} = \phi y_{it-1} + \beta' x_{it} + \sum_{j=1}^{m-1} \phi^*_{ij} \Delta y_{it-j} + \sum_{j=0}^{n-1} \delta^*_{ij} \Delta x_{it-j} + \mu_i + u_{it} \quad (3)$$

TABLE 1. Variable definitions

Variable	Measurement	Description	Source
Economic growth (GDP)	GDP per capita growth (%)	Annual percentage growth based on 2010 U.S. Dollars.	World Development Indicators
Financial development (FD)	Ratio of domestic credit to private sector to GDP	Financial resources provided to private sector.	World Development Indicators
Trade openness (TO)	Ratio of trade to GDP	Sum of exports and imports over GDP	World Development Indicators
Investment (INV)	Ratio of gross fixed capital formation to GDP	Proxy for domestic investment over GDP	World Development Indicators
Inflation rate (INF)	Consumer price index (%)	Calculated in annual percentage	World Development Indicators
Government expenditure (GOV)	Ratio of government expenditure to GDP	Government expenditure on purchase of goods and services over GDP	World Development Indicators

Source: World Bank (2015)

where  $\varphi_i = -(1 - \sum_{j=1}^{m-1} \phi_{ij}^*); \beta_i = \sum_{j=0}^n \hat{\rho}_{ij}^*$   
 $\phi_{ij}^* = -\sum_{p=j+1}^m \phi_{ip}, j = 1, 2, \dots, m-1$  and  
 $\hat{\rho}_{ij}^* = \sum_{p=j+1}^n \hat{\rho}_{ip}, j = 1, 2, \dots, n-1.$

By grouping the variables in levels, Equation (2) can be rewritten as:

$$\Delta y_{it} = \varphi_i(y_{i,t-1} - \theta_i' x_{it}) + \sum_{j=1}^{m-1} \phi_{ij}^* \Delta y_{it-j} + \sum_{j=0}^{n-1} \hat{\rho}_{ij}^* \Delta x_{it-j} + \mu_i + u_{it} \tag{4}$$

where  $\theta_i = -\frac{\beta_i}{\varphi_i}$  represents the long run parameters between  $y_{it}$  and  $x_{it}$ .  $\phi_{ij}^*$ . In addition,  $\hat{\rho}_{ij}^*$  are short run co-efficients relating growth to its past values and determinants  $x_{it}$ , while  $\varphi_i$  is the speed of adjustment coefficient that measures the speed of which  $y_{it}$  and  $x_{it}$  move towards the long run equilibrium. A change in  $x_{it}$ ;  $\varphi_i < 0$  confirms that there is a presence of a long run relationship. Resultantly, a significant negative value of  $\varphi_i$  is evidence in support of co- integration between  $y_{it}$  and  $x_{it}$ . The long run coefficients on  $x_{it}$  is restricted to be homogenous across countries and can be tested using the Hausman statistic.

CONVERGENCE

Phillips and Sul’s (2007; 2009) methodology is based on a nonlinear and time-varying factor model that incorporates the possibility of transitory heterogeneity and transitory divergence. Adopting the time-varying common factor representation for  $X_{it}$  of country  $i$ ,

$$X_{it} = \delta_{it} u_t \tag{5}$$

where  $\delta_{it}$  measures time-varying idiosyncratic distance between common factor  $u_t$  and the systematic parameter  $X_{it}$ . Within this framework, all  $N$  economies will converge at some point in the future irrespective whether the countries are near the steady-state.

By modelling the transition parameter  $\delta_{it}$ , the relative measure of the transition coefficient is constructed and shown below (Phillip & Sul 2007):

$$h_{it} = \frac{X_{it}}{\frac{1}{N} \sum_{j=1}^N X_{it}} = \frac{\delta_{it}}{\frac{1}{N} \sum_{j=1}^N \delta_{it}} \tag{6}$$

Variable  $h_{it}$  is known as the relative transition path and traces out the individual trajectory for each  $i$  relative to the panel average.  $h_{it}$  measures region  $i$ ’s relative departure from the common steady growth  $u_t$ . Defining a formal econometric test of convergence as well as an empirical algorithm that defines club convergence requires the following assumption for the semi-parametric form of the time-varying coefficients  $\delta_{it}$ .

$$\delta_{it} = \delta_i + \sigma_i \zeta_{it} L(t)^{-1} t^{-\alpha} \tag{7}$$

where  $\delta_i$  is fixed  $\sigma_i > 0$ ,  $\zeta_{it}$  is i.i.d (0,1) across  $i$  but weakly dependent on  $t^1$ , and  $L(t)$  is a slow varying function for which  $L(t)$  tends to infinity as  $t$  also goes to infinity.  $L(t)$  is assumed to be  $\log t$ .  $\zeta_{it}$  denotes the time-varying and region-specific components to the model. The size of  $\alpha$  determines the convergence or divergence of  $\delta_{it}$ .

Phillip and Sul showed that the hypothesis can be tested by following the ‘log t’ regression model:

$$\log\left(\frac{H_i}{H_t}\right) - 2 \log(\log(t)) = \alpha + b \log t + u_t \tag{8}$$

where  $t = [rT], [rT] + 1, \dots, T$  with  $r > 0$ . Based on simulation experiments, Phillips and Sul (2007) suggested  $r = 0.3$ .

The parameter  $b$  is related with  $\alpha$ . The fitted value of  $\log t$  is  $\hat{b} = 2\hat{\alpha}$  where  $\hat{\alpha}$  is the estimated value of  $\alpha$  under the null hypothesis. The regression model (8) has three stages. Firstly, the  $\frac{H_i}{H_t}$  cross-sectional variance ratio is constructed, followed by the conventional robust  $t$  statistic  $t_{\hat{b}}$  for the coefficient  $\hat{b}$ . In the third step, the autocorrelation and heteroscedasticity robust one-side t-test of the inequality null hypothesis  $\alpha \geq 0$  is applied with the estimated coefficient  $\hat{b}$ . At 5 %, the null hypothesis is rejected if the statistic has a value below  $-1.65$ . Patterns of convergence can be assessed using the log  $t$  regressions, i.e. the existence of club convergence. This is relevant since the rejection of the null of convergence does not necessarily imply divergence as different scenarios such as separate points of equilibrium or steady-state growth paths as well as convergence clusters and divergent regions in the full panel can be met.

EMPIRICAL RESULTS

ECONOMIC LIBERALIZATION

Table 2 presents the descriptive statistics of the model consisting of the minimum values, maximum values, mean values, and the values of standard deviations of all four variables. Mean value provides an idea about the central tendency of the values of a variable. The number of observations for each variable is 210. Standard deviations and the extreme values (minimum in comparison to the maximum value) give an idea about the dispersion of a variable’s values from its mean value. The preliminary correlation results reveal that financial development is positively related to growth while there is a negative trade-growth correlation. Control variables investment (proxied by GFCF) is positively correlated with annual GDP per capita with 0.359. The inflation rate is negatively correlated with annual GDP per capita with  $-0.033$ , while government expenditure is shown to have a negative nexus with  $-0.202$ . It is also noteworthy

TABLE 2. Descriptive statistics of variables

N = 210	GDP	FD	TO	GOV	INV	INF
Panel A: Summary Statistics						
Mean	4.30	57.13	108.64	11.56	27.05	7.78
Standard Deviation	4.62	43.67	91.66	4.89	7.64	12.13
Minimum	-37.00	0.96	0.17	3.46	10.47	-2.31
Maximum	13.63	166.50	441.60	29.86	45.51	125.52
Panel B: Correlation						
GDP	1.000					
FD	0.022	1.000				
TO	-0.126	0.471	1.000			
GOV	-0.202	0.273	-0.081	1.000		
INV	0.359	0.491	0.050	0.086	1.000	
INF	-0.033	-0.343	-0.225	-0.329	-0.064	1.000

Note: GDP = the annual growth rate of GDP per capita; FD = the ratio of domestic private credit divided by GDP; TO = the ratio of exports and imports and GDP; GOV = the ratio of government expenditure and GDP; INV = the ratio of gross fixed capital formation and GDP; and INF = annual inflation rate.

to mention that trade shares is positively correlated to financial development indicator (domestic private credit) with 0.471.

Table 3 reports the empirical results of four different specifications: ASEAN, China, and India; ASEAN; ASEAN-5; and Cambodia, Lao PDR and Vietnam

TABLE 3. Economic liberalization and economic growth

	Group 1 ASEAN, China & India	Group 2 ASEAN	Group 3 ASEAN-5	Group 4 CLV
Dependent Variable: GDP per capita growth				
Long-Run Coefficients				
Financial Development	-0.467***	-0.882**	-8.620***	-0.616
Trade Openness	0.023***	2.509*	2.402	5.681***
Investment	0.094***	0.659	5.721***	-0.339
Inflation	-0.010**	-0.140**	-0.478***	-0.232***
Government Expenditure	0.035	1.555*	1.504	1.298
Error-Correction Coefficient ( $\phi$ )	-0.949***	-0.923***	-1.015***	-0.845**
Short-Run Coefficients				
d(FD) <sub>t</sub>	0.081	2.011	8.844*	1.372
d(FD) <sub>t-1</sub>	-0.152**	-9.575*	-24.27**	-3.492
d(FD) <sub>t-2</sub>	0.072**	5.781*	12.689***	1.045
d(TO) <sub>t</sub>	-0.033	-0.894	0.455	3.937
d(INV) <sub>t</sub>	0.258***	0.262**	0.139	0.093
d(INF) <sub>t</sub>	0.134	0.127	0.279	0.022
d(GOV) <sub>t</sub>	-0.696	-9.503	-18.816**	1.758*
Intercept	1.783**	-9.492***	8.816	-16.952***
No. of Countries	10	8	5	3
No. of Observations	181	144	90	54

Note: GDP = the annual growth rate of GDP per capita; FD = the ratio of domestic private credit divided by GDP; TO = the ratio of exports and imports and GDP; GOV = the ratio of government expenditure and GDP; INV = the ratio of gross fixed capital formation and GDP; and INF = annual inflation rate.

Akaike information criteria (AIC) ARDL (1,3,1,1,1,1) on ASEAN, China and India, ASEAN, ASEAN5, and CLV.

\*, \*\* and \*\*\* indicate significance at 10%, 5% and 1% percent respectively.

(CLV)<sup>5</sup>. The four specifications based on the different regions were based on the traditional growth model, which explores whether trade openness and financial development affect economic growth.

Based on Table 3, the results show the existence of a long run relationship (dynamic stability) between liberalization and economic growth proven with its negative and significant error correction term (ECT). Additionally, the coefficient estimates were significantly negative and fall within the dynamically stable range for all specifications (ASEAN, China, and India; ASEAN; ASEAN-5; and CLV). This suggests strong evidence of co-integration between the explanatory variable and growth and a mean reversion to a nonspurious long run relationship. In the context of ASEAN, China, and India, the long run coefficients of all variables except government expenditure were significant at the 5% level. All variables in the model had signs as expected, except for the coefficient sign for domestic private credit. Nevertheless, the short run estimates showed that domestic private credit and financial development are statistically significant to economic growth, while the first difference of the first lag for domestic private credit has a negative effect on economic growth and the first difference of the second lag is positively significant. The positive and negative effects in the long and short runs are consistent with Loayza and Ranciera (2006) and Blanco (2011).

The long run estimations for financial development (denoted by domestic private credit) and trade openness (denoted by trade shares) are significantly linked to economic growth in the ASEAN region. Using the PMG estimator, domestic private credit has a negative relationship with economic growth with a coefficient of 0.882, while trade shares is positively linked to economic growth at a magnitude of 2.51. The overall results of ASEAN-5 illustrated that while financial depth and financial development have a significant effect on economic growth, trade openness provides conflicting results. Hallaert (2010) highlighted that although on average, trade fosters growth, the responses vary across countries for several reasons. The first is the delay in adjustments to reforms - some countries take longer than what is captured to react to the increase in growth rate. Macroeconomic instability also plays a crucial part in causing trade openness to hamper growth (Wacziarg & Welch 2003; Rodrik 2011). Contrary to the results of ASEAN-5, only trade openness is strongly significant to economic growth for the CLV countries. In the short run, neither financial development nor trade openness affects growth. This result is similar to Kaminsky and Schmukler (2008), Bussière and Fratzscher (2008), and Bumann et al. (2013). According to Kaminsky and Schmukler (2008) and Campos et al. (2011), it can be argued that financial development aggravates financial instability and crises due to weak institutions.

The results further showed that financial development has a negative relationship with economic growth in the long run, with short run estimates illustrating mixed evidence. Although the short-run estimates are not restricted to be similar across countries, the average short-run coefficients present mixed findings, while long run estimates (with imposed homogeneity restrictions) show consistent negative financial development effect on growth. The negative effect of domestic private credit is in accordance to Loayza and Ranciera (2006), Mehl et al. (2006), Blanco (2011), and Dudian and Popa (2013), and could be due to a few reasons. Firstly, it could be due to the 1997 financial crisis alongside the effective allocations of loans to the private sector (Dudian & Popa 2013). Mehl et al. (2006) suggested that the significant negative effect of private credit in countries is based on the influence of the financial sector which depends on the quality of the economic environment. As the ASEAN countries together with China and India are in the midst of transitioning, the economies of this region are continuously evolving. In most of the countries included in the sample, an immense portion of domestic credit is allocated to consumption. A rise in demand is shadowed by an increase in imports, which brings a negative effect to the current account. In the case of most countries in Asia, a higher rate of domestic credits to GDP leads to fewer products made in the economy; thus causing a higher deficit in the trade balance and a lower GDP growth rate.

Overall, the findings supported economic liberalization and growth in the long-run. However, it is also worth noting that financial depth has a negative effect on economic growth. In the short run, financial depth and financial development affect economic growth but not trade openness in ASEAN, China, and India; ASEAN; and ASEAN-5, but no evidence is found for the CLV countries. In relation to openness, investment seems to be the key player in explaining financial development in ASEAN, China, and India. One possible explanation for this finding is that in the sample period of 1988 to 2014, the financial markets sampled had opened up significantly.

## CONVERGENCE

Table 4 reports the results of the panel convergence for the GDP per capita series filtered with the Hodrick-Prescott filter for the ASEAN countries, China, and India. The first row reports the findings of the full convergence (i.e., convergence among all countries) test. The result of the full sample rejects the null hypotheses of income convergence with a point estimate of the log (t) statistic of -3.04 (and a critical value of -1.67). The subsequent rows display the results of the club-clustering procedure. Subsequently, three club convergences were formed, alongside one outlier country. It is important to point out



TABLE 4. Convergence clubs in ASEAN, China, and India

Group	Countries	t-stat
Full sample	Brunei Darussalam, Cambodia, China, India, Indonesia, Malaysia, Myanmar, Lao PDR, Philippines, Singapore, Thailand, Vietnam	-3.04
1 <sup>st</sup> Club	Singapore, Brunei Darussalam	-1.21
Outlier	Malaysia	
2 <sup>nd</sup> Club	Thailand, China, Indonesia	10.08
3 <sup>rd</sup> Club	Philippines, India, Vietnam, Lao PDR, Myanmar	4.40

that the first club represented by Singapore and Brunei Darussalam is characterised by strong income levels. The second is comprised by Thailand, China, and Indonesia, while the third group comprises of the Philippines, India, Vietnam, Lao PDR, and Myanmar.

Based on Table 4, Malaysia is an outlier among the sampled countries. There are several reasons that can explain this. The first may be the middle-income trap phenomenon experienced by Malaysia. Recently, the middle-income trap issue has been explored in many studies (Cherif & Hasanov 2015; Kumagai 2014; Woo 2009). Malaysia has the highest placing among the other developing countries of ASEAN, ranks 4<sup>th</sup> in terms of financial market development, and has one of the lowest poverty rates (Schwab 2015). Moreover, Malaysia’s recent participation in the Trans-Pacific Partnership Agreement (TPPA) proves its full-fledged commitment in further liberalising its economy. Albeit the remarkable performance shown by Malaysia over the last decade, the country however is still far from ready to reach

the status of a developed country. A slowing economy together with heightening social tensions and political corruption hinder the Malaysian government’s objective to achieve Vision 2020 (developed country status). To make matters worse, the recent global financial crisis had also affected the country’s growth. To offset this, the Malaysian government had implemented spending cuts on its development expenditure.

Figure 1 displays the cross-sectional variation of the 12 countries of ASEAN, China, and India from 1988 to 2013. To avoid the initial effort of base year initialisation, the first seven years of observation were discarded, and 19 filtered observations were used in the following analysis. The relative transition parameters for this period were smoothed using the Whittaker-Hodrick-Prescott (WHP) smoothing filter. This technical mechanism is commonly used to separate the cyclical component of a time series from raw data. The figure shows that Singapore and Brunei are constantly on a transition path above the other ASEAN countries, while

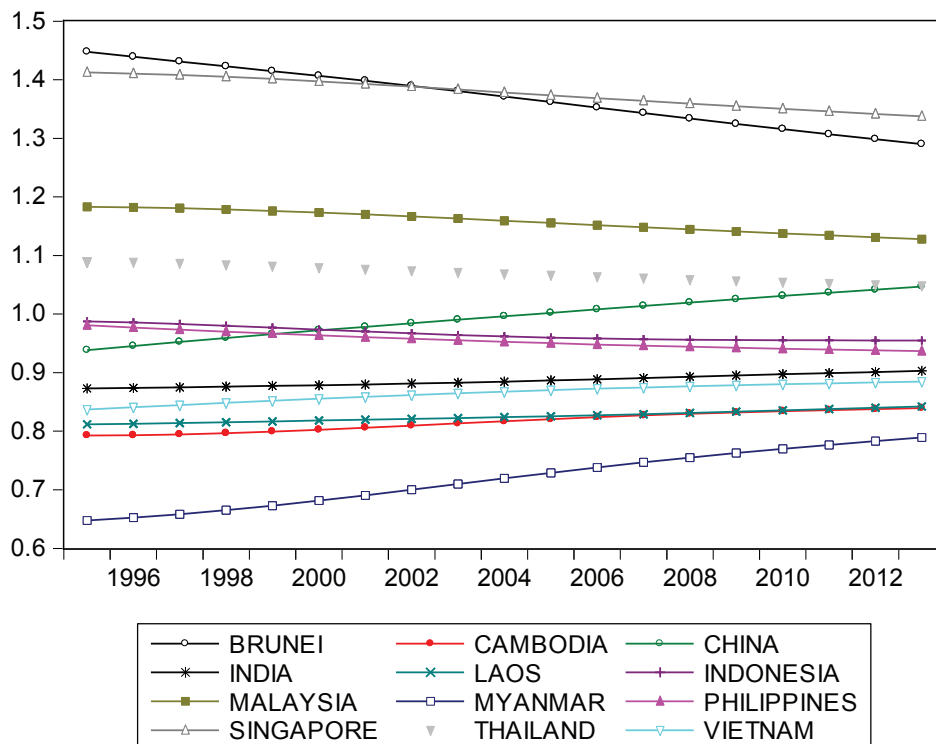


FIGURE 1. Cross-sectional variation of the 12 countries of ASEAN, China, and India.

Malaysia was seen to be on a transition path of its own and is not clustered around any other countries.

## CONCLUSION

This paper aimed to shed some light on the continuous controversy over the impact of economic liberalization on economic growth, as well as examined the existence of income convergence clubs. In doing so, countries of ASEAN, China, and India were employed over the period from 1988 to 2014. The PMG model is employed to estimate the relationship between economic growth, financial development and trade openness. The analysis of the impact of economic liberalization on economic growth yielded two main findings. First the evidence of financial development in ASEAN, China, and India is seen to adversely affect economic growth, which is inconsistent with *a priori* beliefs. A possible reason for the negative impact is could be due to the 1997 financial crisis faced by the sample countries during the period of study, which has a strong influence of the allocations of loans to the private sector. Second, while trade openness has a positive effect in the long run, it however has a negative effect in the short run. The results calls for the need of further reduction of trade barriers and promotion of international trade. However, this should be done with caution; as heavy dependence of trade may affect the stability of fiscal sustainability. The findings of this study recommend further encouragement of liberalizing trade policies, however not without a well-developed financial system, as trade promotes investments, particularly in capital incentive sectors. The process of financial development is characterized not only by long-run financial deepening but also by short-run financial fragility; an inefficient financial development policy may be harmful to international trade at cyclical frequencies. Therefore well executed fiscal and monetary policies are eminent to ensure that the countries are protected from external shocks. Based on the results of income per capita convergence club, the empirical findings suggest that countries did not form a homogenous convergence club. Consistent with theory, the results show a clustering of countries with similar stages of development. That is, there appear to be three clubs formed with one outlier country. Malaysia is seen to be the outlier country, providing evidence of the middle-income trap experienced by the country. To escape the middle-income trap, Malaysian government should impose reforms in many areas such as government-linked companies, educational and research institutions the civil service and the fiscal system. Furthermore, coherent with the process of liberalization, various programs focus its efforts on more liberalized restrictions, particularly in service and manufacturing sectors. The existence of the convergence clubs is based on the level of

development and policies. Club convergence also proposes that stronger groups can grow at the expense of weaker groups. Thus, these countries should consistently engage in more unified policies to promote convergence, as improved effectiveness of trade and financial policies is necessary to encourage further integration. This study adds that it would be important for future studies to extend the findings of this study by employing several financial and trade indicators, thereby determining which factor to include in the liberalization-growth model. Consequently, examining the possibility of financial development and trade clubs will certainly be useful to provide a sense in the clustering of countries, based of country specific stages of development.

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## NOTES

- <sup>1</sup> Economic globalization is broadly defined by the intensification of cross-border movement of goods, services, capital and technology via the increasing economic integration among countries (Al-Rodhan 2006). The term of economic liberalization which refers to trade openness and financial development is used throughout this research (Bashar et al., 2008; Fujita & Hu 2001; Soukhakian 2007; Wong 2005).
- <sup>2</sup> According to Canova (2004), countries will form clubs around several poles of attractions including the endowment factors of productions, similarities in technologies and preference as well as government policies.
- <sup>3</sup> Please refer to Goldberg and Pavcnik (2004) and Santos-Paulino (2005) for a comprehensive review of trade liberalization and economic growth.
- <sup>4</sup> Please refer to Kim, Lin, and Suen (2010) for an explanation of appropriateness of the PMG estimator.
- <sup>5</sup> The estimator excludes Brunei Darussalam and Myanmar due to data unavailability.

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