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The Impact of Financial Integration on Economic Growth in Southeast Asia

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Abstract

This paper examines the impact of financial integration on economic growth in Southeast Asia over the period 1993-2013. This paper further investigates whether the relationship depends on the level of financial and economic development, government corruption, and macroeconomic policy. These questions raise important issues both from a theoretical and a policy perspective. We employ the generalized methods of moment (GMM) in the dynamic panel estimation framework to analyse several factors, including initial income, initial schooling, financial development, inflation, trade openness, corruption, and financial crisis. The study further analyzes the data using the EGLS model to examine the consistency of the GMM model. We found that financial integration has a significant positive effect on economic growth in Southeast Asia. Our findings suggest that increasing financial integration could improve the productive capacity of the economy, including more investments and efficient allocation of capital, and thus enhancing economic growth in this region. More specifically, the results suggest that the government should work towards eliminating corruption and stabilizing macroeconomics in order to enhance financial integration and economic growth. This paper sheds new insights on a better evaluation of the past and present theorizing on the subject of financial integration and economic growth; especially, in Southeast Asia.

Keywords: Financial Integration, Financial Development, Economic Growth, Generalized Methods of Moment, SoutheastAsia.

JEL Classification Code: B17, B27, F02, F13, F38.

1. Introduction

The Association of Southeast Asian Nations (ASEAN) member countries[2] have tapped in the global markets over the past decades. The average real GDP per capita growth in Southeast Asia was 5.5% over the period 1993-2013. Yang (2012) considered financial integration as facilitating capital flows, which leads to more efficient allocation of capital and allows international risk sharing. Financial integration is defined as a removal of market-based restrictions on capital movement across borders, regulatory, legal and tax discrimination. It may foster more efficient resource allocation, risk diversification, technological spin-offs, financial system development, and improve investment rates and growth (Mougani, 2012).

However, the relationship between financial integration and economic growth is one of the most debated issues among researchers. This raises the question whether financial integration plays a positive role in ehnancing economic growth in Southeast Asia. The empirical evidences between financial integration and economic growth were mixed (Naguib, 2015; Prasad, Rogoff, Wei, & Kose, 2003). The evidences of the real benefits for long term macroeconomic growth remains controversial (Prasad et al., 2003). According to Adam, Jappelli, Menichini, Padula, and Pagano (2002), the impact of financial integration on economic growth are not well-studied in theory. Theoretical models identified a number of channels which financial integration helps promote economic growth in the developing countries. However, it is difficult to empirically identify a strong and robust causal relationship between financial integration and economic growth. Financial integration may lead to larger risk of contagion within the

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[2] ASEAN member countries include Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam.

region. Specifically, it may cause additional risks in the presence of weak institutions. Hence, putting financial stability in danger, particularly in developing countries (Park & Lee, 2011).

Although financial integration may contribute to economic growth was partly acknowledged, the empirical studies in Southeast Asia have not yet been examined. To the best of our knowledge, there are limited empirical studies analyzing the impact of financial integration and economic growth, particularly in Southeast Asia. Therefore, this paper sheds new insights by examining whether financial integration promotes economic growth in Southeast Asia over the period 1993-2013. This paper further investigates whether the relationship depends on the level of financial and economic development, government corruption, and macroeconomic policy. These questions raise important issues both from a theoretical and a policy perspective. More specifically, this paper contributes to the existing literatures in two-folds. Firstly, our empirical analysis shed new insights on the critical issue whether financial integration matters for economic growth by examing key indicators, including initial income, initial schooling, the level of financial development and trade openness. Secondly, the generalized methods of moment (GMM) dynamic model used to fit in the context of Southeast Asia by further exploring the previous studies by Edison, Levine, Ricci, and Slok (2002) with an eye on the policy lessons for today.

This paper is classified into four sections. Section one provides introduction. Section two examines the literatures related to financial integration and economic growth. Section three dicussses the methodology, data and analysis. Final section offers conclusion and policy recommendations.

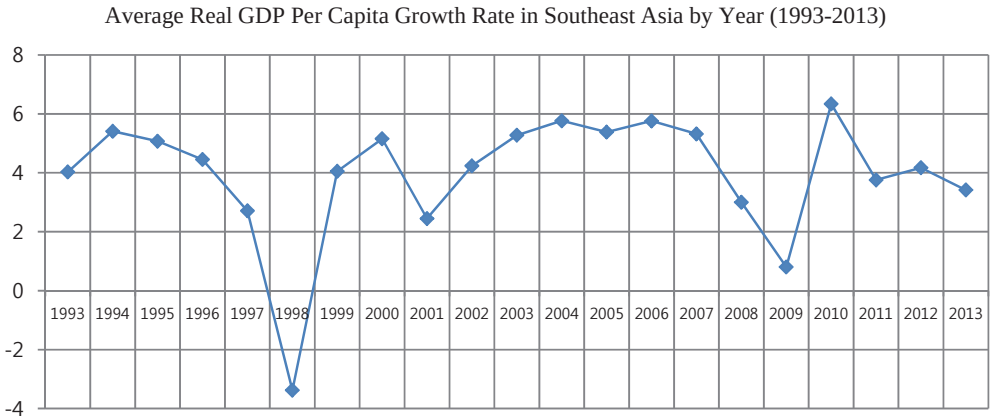


Figure 1.1: Average Real GDP Per Capita Growth Rate in Southeast Asia (1993-2013)

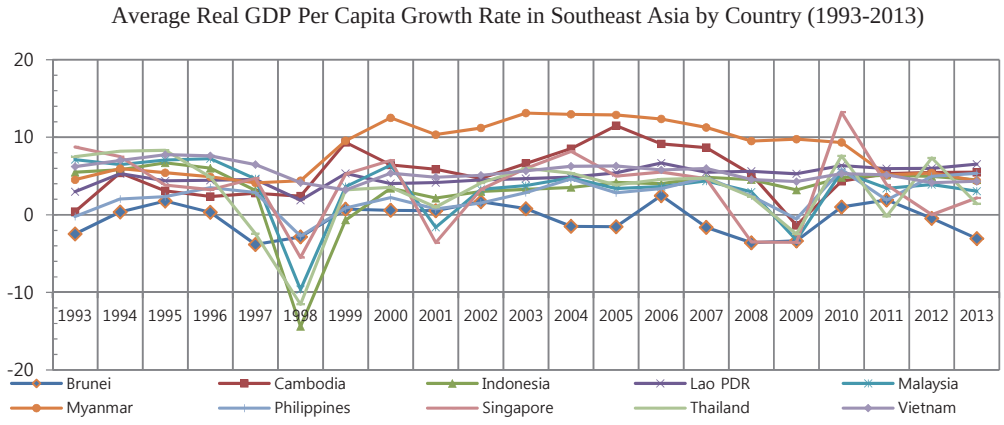
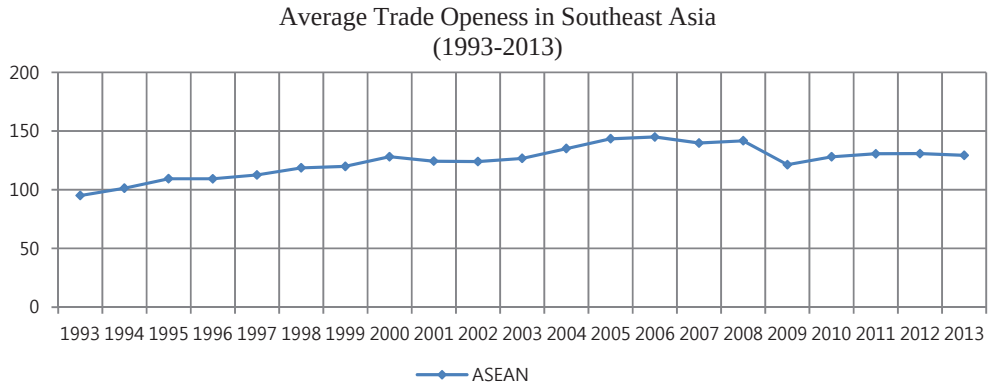


Figure 1.2: Average Real GDP Per Capita Growth Rate in Southeast Asia by Country (1993-2013)



Source: ADB, IMF, UNCTAD, UNESCO, WB.

Figure 1.3: Average Trade Openess in Southeast Asia (1993-2013)

2. Literature Review

This section examines the literatures related to financial integration and economic growth. Previous empirical studies on the impact of financial integration have not yet been widely discussed. Specifically, the significance of financial integration on growth are rather mixed (Juraev, 2013; Edison et al., 2002). On one hand, the relationship between financial integration and economic growth is positive (Yang, 2012; Osada & Saito 2010; Schularick & Steger, 2010; Schularick & Steger, 2006; Epaulard & Pommeret, 2005; Prasad et al., 2003). On the other hand, the empirical studies of financial integration on growth remained controversial (Chen & Quang, 2012; Mougani, 2012; Schularik & Steger, 2010; Prasad et al., 2003; Edison et al., 2002; Edwards, 2001; Stiglitz, 2000). However, their findings may depend on the different approaches and methodologies used, including the countries and period of studies (Yang, 2012; Schularick & Steger, 2006). Likewise, the literatures had limited evidences to establish a relationship between financial integration and growth due to the complexity of measuring financial integration across nations. Therefore, it is difficult to estimate its impact on the economy (Edison et al., 2002).

2.1. Financial Integration and Economic Growth

Brouwer and Allan (2005) defined financial integration as the process which financial market is more integrated with the other economies. It is considered as a process of unifying markets and enabling convergence of risk across the markets (Kang, 2009). It eliminates barriers to capital movement and leading to gain in saving and investment when there are competitive capital markets (Mongelli, 2002). However, there is no universal definition for financial integration. The empirical studies suggested that financial integration had a positive effect on growth under certain conditions, including good financial system, higher level of economic development, and macroeconomic policies (Yang, 2012; Osada & Saito, 2010). For instance, Osada and Saito (2010) collected a panel data of 83 countries from 1974-2007 to examine the effects of financial integration on growth. Their study found financial integration had an indirect effect on growth through its impact on the other determinants of growth, including international trade and the development of domestic financial markets. Therefore, capital flows, including FDI can help transfer advanced technology to the developing countries. This can have a significant impact on productivity growth.

According to Schularik and Steger (2010), the authors investigated financial globalization over the period 1880-1914 by analysing several factors, including financial development, institutional quality, trade integration, political integration, and financial integration. However, the authors did not examine econometrically for a cross-section of countries whether financial globalization could enhance growth. Schularick and Steger (2006) investigated the nexus between financial integration and growth by examining the evidences from the first era of financial globalization over the period 1880-1912 from 24 developed and developing countries. Their findings suggested that closer financial integration may allow the Asian region to take advantage of regional markets. According to Epaulard and Pommeret (2005), the authors calibrated a theoretical model of 32 developing and emerging economies over the period 1990-1998. Their results confirmed that financial integration leads to about 0.3 percentage of additional economic growth per year.

However, Edison et al. (2002) and Prasad et al. (2003) investigated the relationship between financial integration and growth. The authors collected the data over 20-25 years

from 57 countries by constructing a variety of measures of international financial integration. Their findings suggested after controlling for specific economic, financial, institutional and policy characteristics, financial integration did not promote growth. Edwards (2001) examined the effects of capital mobility on growth by using a cross-country data of 61 countries over the period 1981-1990. The results confirmed a positive relationship between capital account openness after a certain level of development. However, their studies found capital account openness in an economy with a low level of financial development may have a negative effect on growth. Recent empirical studies found there is a positive relationship between openness and economic growth (Bekaert, Harvey, & Lundblad, 2001; Edwards, 2001). Juraev (2013) used different methods to examine trade openness, financial and equity market development. Their findings suggested countries with high current account surplus are better under financial integration, especially with less inflation and less strict rule of law. In addition, the empirical studies suggested financial integration helps facilitate risk diversification, promote efficient resource allocation, financial system development, investment rates and boost growth (Prasad et al., 2003; King & Levine, 1993). Therefore, it could improve access to financial services and help rebalance growth by strengthening domestic demand.

However, the empirical studies suggested contradictory conclusion about the impact of financial integration on growth (Mougani, 2012; Edison et al., 2002; Stiglitz, 2000; Bhagwati, 1998). There was no robust impact of financial openness on growth. The results concluded capital controls are not correlated with the long-term economic performance. Their findings suggested controversial results of the earlier studies that may partly result from measurement error in capital account variables, time periods, and methods (Fratzscher & Bussiere, 2004; Edison et al., 2002; Edison, Michael, Luca, & Slok, 2004). Therefore, financial instability might impact on the economy resulting in a substantial reduction in growth (Park & Lee, 2011). Kose, Prasad, Rogoff, and Wei (2009) employed the GMM method to estimate the effects of various measures of financial openness on growth. They examined some variables that influenced growth, including population growth, years of schooling, inflation rate, trade openness, and institutional quality. Their results suggested the effects of financial openness on growth vary substantially depending on the type of external assets and liabilities. This implies that if financial integration contributed to growth, the effects would depend on certaintypes of capital flows or other factors, including the domestic institutional framework (Alfaro, Chanda, Kalemli-Ozcan, & Sayek, 2004).

2.2. Financial Integration and Macroeconomic Policy

Financial integration could impact macroeconomic conditions in Asia. There are advantages of consumption smoothing in macroeconomics (Cowen, Salgado, Shah, Teo, & Zanello, 2006). Firstly, it improved stable economic growth, which attracted more businesses. Secondly, with stable consumption, macroeconomic forecasts became more accurate. Therefore, policies being enacted will be more effective (Richard, 2002). However, the Asian financial crises in 1997 indicated a significant short term slowdown in growth. By increasing cross border linkages, the risks of financial integration on economic stability is greater volatility of capital flows (Poonpatpibol, Tanboon, & Leelapornchai, 2006). For instance, capital account openess to increased vulnerabilities and crisis insome emerging market economies. Therefore, efforts to increase financial cooperation played a key role in mitigating potential risks of regional integration (Chaipat, Surach, & Pornnapa, 2006).

Table 1: Summary of Studies on Financial Integration and Economic Growth

Authors	No of Countries	Years	Growth Effect
Juraev (2013)	217	1970-2012	Positive
Chen and Quang (2012)	80	1984-2007	Mixed
Mougani (2012)	15	1976-2009	Mixed
Ahmed (2011)	25	1976-2008	Negative
Osada and Saito (2010)	83	1974-2007	Positive
Afzal (2007)	1	1960–2006	Positive
Schularick and Steger (2006)	24	1880–1913	Positive
Edison, Klein, Ricci, and Slok (2002)	89	1973–95	Mixed
Edison, Levine, Ricci, and Slok (2002)	57	1980–2000	Negative
Arteta, Eichengreen, and Wyplosz (2001)	51-59	1973–92	Mixed
Bekaert, Harvey, and Lundblad (2001)	30	1981–97	Positive
Edwards (2001)	62	1980s	Positive
Klein and Olivei (2000)	92	1986–95	Positive
Chanda (2000)	116	1976–95	Mixed
Kraay (1998)	117	1985–97	Mixed
Rodrik (1998)	95	1975–89	Negative
Quinn (1997)	58	1975–89	Positive
Grilli and Milesi-Ferretti (1995)	61	1966–89	Negative

Source: Authors' extension from IMF (2016); Edison, Klein, Ricci, and Slok (2002).

In addition, the relationship between financial development and growth involved a range of econometric techniques and datasets. The authors investigated the correlation between financial depth and growth, including GDP per capita, total productivity, and capital stock (Estrada, Park, & Ramayandi, 2010; King & Levine, 1993). The correlation between financial development and economic growth has notably weakened since the Asian crisis (Estrada et al., 2010). Table 1 summarizes the empirical studies on the relationship between financial integration and economic growth from the relevant literatures.

3. Methodology

3.1. Model Specification

We employ the GMM dynamic panel estimation framework, which was introduced by Arellano and Bond (1991), to examine the relationship between financial integration and economic growth. The GMM panel estimation enhanced pure cross-section regression for several reasons. Firstly, this method uses both the cross-sectional and time dimension of the data. Secondly, it increases the number of observations and controls for country-fixed effects. Thirdly, it allows to take the potential endogeneity of the independent variables (Schularik & Steger, 2006). According to Rodrik (1998), financial integration has been measured in two different ways. Firstly, by the extent to which legal barriers impede the free flow of capital. Secondly, the literatures on trade openness and growth in which trade openness is typically measured by the value of traded goods and services over GDP. The fundamental identification conditions for this model is the strict exogeneity of some explanatory variables condition on the unobservable individual effects (Edison et al., 2004).

In addition, a basic assumption of the ordinary least squares (OLS) method suggested that the explanatory variables must be exogenous, $E[\varepsilon_t x] = 0$ (Greene, 2012). Hence, the error terms and the explanatory variables should be uncorrelated. However, this assumption may not always hold for some statistical and economic reasons. According to Verbeek (2004), the measurement errors in the regressors and simultaneity or endogeneity of the explanatory variables may also limit this assumption. For this reason, it is hardly to argue that the OLS estimator is unbiased or consistent. An alternative estimator which is capable of overcoming these problems should be considered. Therefore, the use of the GMM dynamic panel model is critical because it addresses some of the problems by controlling for endogeneity of the weakly exogenous variables which arise from potential simultaneity or reverse causality in the model. Moreover, it also allows to control country-fixed effects which is often captured in the error term of the estimation method.

We consider a number of control variables to control other factors which may affect growth. The choice of these variables are used in the growth regression analyses (Levine, Loayza, & Beck, 2000). Initial GDP per capita accounts for growth convergence effect. Years of schooling from Barro and Lee (2010) included to represent human capital accumulation on growth. The model controls for quality of governance by including the executive constraint indicator from Polity (Marshall & Jaggers, 2009). The other economic growth determinants controlled for are trade openness, inflation, and government consumption. The total FDI inwards and outwards to GDP ratio as proxies for financial integration. The potential problem with the actual capital flows is that growth and capital flows may be influenced by the same underlying factors, including the policy changes. The GMM method within panel data systems to the endogeneity problems (Yang, 2012). We consider some specifications to examine the possible differences in how financial sector development affects economic growth. The model also incorporate dummy variables to investigate the differential effects, including the Asian financial crisis, exchange rate, corruption, and levels of financial development. The Asian financial crisis dummy variable takes on a value of 1 during 1997-1998, and 0 otherwise.

The level of financial development is the domestic credit to private sector as a share of GDP. The empirical model is given as the following:

$$y_{it} = \gamma y_{it-1} + \alpha FI_{it} + \beta X_{it} + \eta_i + \varepsilon_{it} \quad (1)$$

Where y_{it} is real per capita GDP growth. FI_{it} is an indicator of financial integration. X_{it} is a vector of control variables. η_{it} is the unobservable country-specific fixed effects and ε_{it} is the disturbance term. The subscripts i and t represent country and time period respectively.

We use the total FDI inwards and outwards to GDP ratio as a measure of financial integration (FI_{it}). The control variables are $iniIncome$. It denotes the initial level of income measured by the initial per capita GDP of the country. Initial schooling denotes $iniSchooling$ measured by the school enrollment secondary as percentage growth as a proxy for human capital. Inflation denotes INF, as a proxy for macroeconomic policy and private sector credit to GDP ratio as a proxy for financial development which is denoted as FD. Control of corruption, which is denoted as Cor, represents the perceptions to which public power is exercised for private gain or any forms of corruption.

To eliminate the country specific effects(η_{it}), we take the first difference of the equation (1) to obtain:

$$y_{i,t} - y_{i,t-1} = \gamma(y_{i,t-1} - y_{i,t-2}) + \alpha(FI_{i,t} - FI_{i,t-1}) + \beta(X_{i,t} - X_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \quad (2)$$

The GMM estimator, introduced by Arellano and Bover (1995), combined the standard set of equations in first differences. We examine the validity of the internal instruments (Hansen test) and test for serial correlation of the error term. In order to check the robustness of the GMM panel estimation, we examine the estimates of the Random Effects Generalized Least Squares (GLS) estimator. This estimator is also known as the feasible GLS estimator (EGLS) or the Balestra-Nerlove estimator. The EGLS

estimator is a weighted average of between and within estimator. The weight depends on the relative variances of the two estimators (Verbeek, 2004). Although the OLS estimator is also a linear combination of between and within estimators, the EGLS estimator is more efficient than the OLS. The EGLS estimator transforms the OLS estimator to yield an error term which is independent and identically distributed over individual observation and time. The starting point for deriving the EGLS estimator is specified as the following:

$$y_{it} = \mu + X_{it}\beta + \eta_i + \varepsilon_{it}$$
$$\bar{y}_i = \mu + \bar{X}_i\beta + \eta_i + \bar{\varepsilon}_{it} \quad (3)$$

Where $(\eta_i + \epsilon_{it})$ is considered as an error term consisting of two components; an individual specific time-invariant factor and a remainder component which is assumed to be uncorrelated over time. To remove the heterogeneity, we take deviations from the group means to obtain:

$$y_{it} - \bar{y}_i = [X_{it} - \bar{X}_i]'\beta + [\varepsilon_{it} - \bar{\varepsilon}_i] \quad (4)$$

Where y_{it} is the dependent variable. $\bar{y}_i$ is the group mean of the dependent variable. X_{it} is a vector of explanatory variables, including financial integration indicator (FI). $\bar{X}_i$ is the group mean of the explanatory variables. ε_{it} is the disturbance term. $\bar{\varepsilon}_i$ is the group mean of the disturbance term. The subscripts i and t represent country and time period respectively. If the explanatory variables are not correlated with ε_{it} and η_i, the EGLS estimator is unbiased (Verbeek, 2004; Greene, 2012). Thus, $E[X_{it}\varepsilon_{it}] = 0$ for all t, and $E[X_{it}\eta_i] = 0$. The implication is that the explanatory variables should be exogenous. The justification for employing the EGLS estimator because most of the Southeast Asian countries have some particular qualities which directly or indirectly influence their growth. However, it is not captured in the control variables. For instance, the Southeast Asian member countries have various natural resource endowments, including oil, gold, diamond, which attracts foreign investments. In addition, the member countries have different political landscape influencing the degree in which foreign capital flows into each country. On the basis of the natural resource endowment and the political landscape, each country could infer that each country has its unique characteristics.

Unlike the previous studies (Mankiw, Romer, & Weil, 1992; Seetanah & Sannasee, 2010), we employ the GMM panel framework to examine the relationship between financial integration and growth. The GMM is used to overcome the problem of endogeneity (Hansen, 1982). Suppose the data consists of T observations $\{Y_t\}_{t=1,\ldots,T}$. In order to apply GMM, we need to have moment conditions.

$$m(\theta_0) = E[g(Y_t, \theta_0)] = 0 \quad (5)$$

where θ denotes a vector of parameter, E is the expectation, g is a dimension of vector and Y_t is an observation. Then, the sample moments:

$$\widehat{m}(\theta) = \frac{1}{T}\sum_{t=1}^{T} g(Y_t, \theta) \quad (6)$$

The GMM estimator can be written as:

$$\hat{\theta} = argmin_{\theta\varepsilon\Theta}\left(\frac{1}{T}\sum_{t=1}^{T} g(Y_t, \theta)\right)' \widehat{W}\left(\frac{1}{T}\sum_{t=1}^{T} g(Y_t, \theta)\right) \quad (7)$$

Where $\widehat{W}$ denotes a weighting matrix.

3.2. Data Source

The panel data was collected over the period 1993-2013 in Southeast Asia, including Brunei, Cambodia, Indonesia, Lao, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam in table 2. $IniIncome$ and FI are sourced from Asian Development Bank (ADB), International Monetary Fund (IMF), United Nations Conference on Trade and Development (UNCTAD), and World Development Indicators (WDI). FD was obtained from United Nations Statistics (UN Stats) and WDI. $IniSchooling$ and $initial\ income$ are collected from ADB, United Nations Educational, Scientific, and Cultural Organization (UNESCO) and WDI. TOP was sourced from ADB, UNESCAP, UNCTAD and WDI. INF are collected from WB. Cor were collected from Worldwide Governance Indicator (WGI) and the country's indicator scores ranged from -2.5 to 2.5.

Table 2: List of Variables and Expected Sign

Variable	Sign	Description
$IniIncome$	(-)	Real per capita GDP growth as an annual growth. We expect countries with lower initial income to experience higher growth than their counterparts with relatively higher initial income.
$IniSchooling$	(+)	Measured as school enrollment, secondary (% gross). In the initial year of the period under consideration.
FD	(+)	The domestic credit to private sector as a share of GDP. The level of financial development in an economy is very crucial to growth since it dictates the ease which entrepreneurs can access credit for productive activities.
INF	(-)	The annual growth rate of GDP deflator in an economy and used as a measure of macroeconomic stability and prudent economic management.
TOP	(+)	The total trade as a percentage of its gross domestic product (GDP).
FI	(+)	The total FDI inflow and outflow as annual growth.

3.3. Empirical Analysis

3.3.1. Panel Unit Root Test

We conduct a panel unit root test to check whether the variables are stationary. The unit-root test is conducted on the null hypothesis that all panels contain unit-roots. In table 3, we take the first differences, including $IniSchooling$, FD, INF, TOP, and FI. Rejecting the null-hypothesis, the results indicate Y, $IniIncome$, $IniSchooling$, FD, INF, TOP, FI are stationary at level. Therefore, it makes sense both from a theoretical and statistical viewpoint to include these variables in the model. In addition, the results of the augmented Dickey-Fuller(ADF) test for unit-root. The results fail to accept the null hypothesis for tests in all the variables. This implies that at least one of the panels in the data-set is stationary. In order to check the robustness of the ADF test, we carry out the Im-Pesaran-Shin (IPS) test. The results are captured in Table 3. The IPS test also confirms the ADF test that at least one panel is stationary. Therefore, the panel data-set is stationary and free from issues of time-series processes. We employ the GMM dynamic panel estimation model and the GLS Random-Effects (EGLS) estimator to examine the relationship between financial integration and growth.

3.3.2. GMM Estimation Result

Table 4 shows the regression results of the GMM dynamic estimation. In model 1-4, the results indicate the signs are consistent and statistically significant at 1 and 5 percent, including $IniIncome$ and INF. In model 4, the effect of $IniIncome$ is positive and statistically significant at 1 percent. Specifically, holding other effects constant, if $IniIncome$ is increased by 1 unit, we expect Y to increase by 0.52 unit. Therefore, it means that $IniIncome$ has a significant impact on growth in Southeast Asia. However, INF has a negative sign and statistically significant at 5 percent in model 4. This means that if INF is increased by 1 unit, Y will be decreased by 0.03. The adjusted R-squared improves notably, varying from 0.22 to 0.24. However, $IniSchooling$ and FDhave a negative sign. Both are not statiscally significant in model 2-4.This implies that $IniSchooling$ impacts growth only on the conditions of workers with higher level of education (Barro, 1997).

The empirical studies also examined whether FD enhanced economic growth was conditional on third factors, including income levels and a sound institutional framework. However, the results remained mixed (Edwards, 2001; Edison et al., 2002; Alfaro et al., 2004). The standard neoclassical-Solow model provides the argument for capital account liberalization and financial integration. Thus, under financial openness, real interest rate differential between capital-abundant countries and capital-scarce countries would lead to the flow of funds to the capital-scarce countries as foreign savings needed for investment and growth (La Marca, 2004). This result also in line with the study by Estrada et al. (2010). The authors argued the impact of financial development on the region's growth which is not noticeably different.

Table 3: Results of Panel Unit Root Test

Variable	Levin, Lin & Chu	Im, Pesaran& Shin W-Stat	ADF-Fisher Chi-square
Y	0.0000*	0.0000*	0.0000*
$IniIncome$	0.0000*	0.0000*	0.0000*
$IniSchooling$	0.0000*	0.0000*	0.0000*
FD	0.0000*	0.0000*	0.0000*
INF	0.0000*	0.0000*	0.0000*
TOP	0.0000*	0.0000*	0.0000*
FI	0.0000*	0.0000*	0.0000*

Note: the numbers given in the table record the p-value.* indicates statistically significant at 1%.

Table 4: GMM Dynamic Estimation Result (1993 - 2013)

Variable	**(M 1)**	**(M 2)**	**(M 3)**	**(M 4)**
$IniIncome$	0.4768*1	0.4761*	10.5005*	0.5209*
	(0.0617)	(0.0619)	(7.8298)	(0.0638)
$IniSchooling$		-0.0067	-0.0051	-0.0031
		(0.0203)	(0.0203)	(0.0201)
FD			-0.0386	-0.0416
			(0.0260)	(0.0257)
INF				-0.0355**
				(0.0151)
Const.	2.0557	2.0684	2.0106	1.8984*
Adj. R^2	0.2274	0.2239	0.2286	0.2458
DW stat	2.1572	2.1577	2.1774	2.2007
Prob(J-stat)	0.0000	0.0000	0.0000	0.0000
Obs. no.	200	200	200	200

Note: The standard error is in parentheses. *, **, *** indicates statistically significant at 1%, 5%, and 10% level respectively.

In addition, table 5 shows the regression results of GMM dynamic estimation result. In model 9, the results show $IniIncome$, Cor, and $ASEANC$ are statistically significant at 1 percent. But Cor and $ASEANC$ have a negative sign. $IniIncome$ is positive and statistically signicant at 1 percent in model 5-9. This means $IniIncome$ affects Y. If $IniIncome$ is increased by 1 unit, Y will be increased by 0.44 unit. The result found FI is positive and statistically at 5 percent. If FI is increased by 1 unit, Y is increased by 0.09 unit. This suggests increasing financial integration improves the productive capacity of the economy, and thus enhance growth. The result is in line with the study of Levine (2001). The finding suggested financial integration could

enhance domestic financial system, which results in higher growth, including more investment and efficient allocation of capital. However, FI is statistically insificant when $ASEANC$ is included in model 8. We found INF has a negative sign and statistically significant at 10 percent in model 8 and 9. If INF is increased by 1 unit, Y will be decreased by 0.02. INF remains negative and statistically significant at 1 percent when Cor and $ASEANC$ are not included in model 5 and 6. This implies higher inflation may result in slower economic growth (Ghosh & Phillips, 1998).

The economic model suggested a negative inflation and growth effect, which is stronger at lower levels of inflation. The model evaluation based on a large panel of APEC and OECD member countries from 1961-1997 (Gillman, Harris, & Matyas, 2002). According to Yang (2012), macroeconomic indicators, including budget deficits, inflation, exchange rate, and the quality of institution, have positive impact between financial development and growth. Furthermore, Cor has a negative sign and statistically significant at 1 percent in model 9. If Cor is increased by 1 unit, Y would decrease by 0.04 unit. This result suggests corruption could slower growth through adverse impacts on investment, political instability, physical and human capital (Hodge, Shankar, Rao, & Duhs, 2009). $ASEANC$ is negative and statistically significant at 1 percent during the financial crisis. If $ASEANC$ increases by 1 unit, Y will be decreased by 2.69 unit. This implies $ASEANC$ may result in slower financial integration during the financial crisis. However, this result likely affects from various dynamic factors, including social factors and large-scale economies (Balassa, 1961). Trade and capital flow significantly increase from the developed to developing countries. Concurrently, they increase the country's vulnerability to international financial crises which occurs during spontaneous reversals in international capital flows. The financial crisis of the 1990s in Southeast Asia are examples of the disruptive effects of fluctuations in capital flows (Chen & Quang, 2012).

However, $IniSchooling$ is statistically insignificant and has a negative sign. Although, we consider other controllable variables in model 5-9, $IniSchooling$ remains negative and statistically insignificant. This implies that $IniSchooling$ may impact growth only on the conditions of workers with higher level of education (Barro, 1997). This result is in line with the empirical studies of Edwards (2001), Edison et al. (2002) and Alfaro et al. (2004). Their findings suggested that financial integration enhanced growth, which was conditional on third factors, including income levels and a sound institutional framework. In model 8 and 9, FD is statiscally insignificant and has a negative sign. This means that FD does not affect Y. The evidences from the empirical literatures indicated financial depth has a significant positive effect on economic growth. Yet, the financial structure has no impact on economic growth. Although some econometric models were proposed to examine the impact of financial development on economic growth, there is still limited gap to measure financial development. The capital inflows into the underdeveloped financial systems may not operate efficiently (Estrada et al., 2010).

However, FD has a negative sign and statistically significant at 10 percent when Cor and $ASEANC$ are excluded in model 5-7. The result suggests that by flowing capita, financial development may result in an increase in investment, and thus it enhances economic growth through various channels. Yet, the results remain mixed (Chaipat et al., 2006; Rousseau, 2002). This highlights the importance of financial integration as a step towards financial development (Bekaert et al., 2001). For this reason, it seems to be conducive to enhancing economic growth. In contrast, Arteta, Eichengreen, and Wyplosz (2001) found capital account liberalization likely harms economic growth. Moreover, TOP has a positive sign but not statistically significant at 5 percent in model 8 and 9. This means that TOP does not impact Y. Although, the empirical literatures were still uncertain about the relationship between financial integration and economic growth. The authors have not confirmed a robust long-term impact of financial openness on economic growth (Edison et al., 2002; Fratzscher & Bussiere, 2004). Yet, TOP is statistically significantly at 10 percent in model 5-7 when Cor and $ASEANC$ are excluded in model 5 and 6. This suggests that while corruption and Asian financial crisis do not exist, trade openness may enhance economic growth. Likewise, the empirical studies supported a positive relationship between openness to the global capital market and economic growth (Bekaert et al., 2001; Edwards, 2001). Therefore, this paper sheds light on whether the positive financial integration affects economic growth depending on third factors, including a sound institutional framework. Yet, the results remained mixed (Edison et al., 2002; Klein, 2005).

3.4. Robust Testing

The negative sign of Cor remains unchanged, but statistically significant at 1 per cent in model 8. According to Nguyen and Nilsson (2013), the J-stat tests the validity of the over-identifying restrictions and model misspecification. The Durbin-Watson stat (DW stat) detects the presence of autocorrelation in the residuals. There may be caused for alarm if the DW stat is less than 1 (Benchimol, 2013). According to Johnson and Dinardo (1997), the DW stat below 1.5 indicates a strong indication of positive first order

serial correlation. In model 9, the DW stat is 2.30. This means we cannot reject the null-hypothesis of the validity of over-identifying restrictions. This implies we cannot reject the null-hypothesis. Therefore, our model is valid. Moreover, the panel dataset using the EGLS estimator are used to verify the robustness of the GMM estimation result. Prior to settling the Random effects-GLS model, we estimate the panel dataset using the fixed effects model and the random effects model. Then, we conduct the Hausman specification test to select the appropriate estimation model.

The Hausman specification test shows a p-value of 1.00, greater than the conventional 0.05 benchmark. This suggests we fail to reject the null hypothesis that there is no significant difference between the EGLS estimator and the fixed effects estimator. Thus, the EGLS is a consistent and efficient estimator. We conduct a diagnostic test to ascertain the appropriateness of the EGLS estimator and Breusch-Pagan LM test for random effects. Table 6 shows the results of the EGLS and pooled-OLS. $IniIncome$ remains positive and statistically signicant at 1 percent in model 10. This means $IniIncome$ affects Y. This suggests $IniIncome$ enhances growth. FI remains positive and statistically significant at 1 percent in model 10.

Therefore, the finding suggests financial integration could enhance domestic financial system, which results in higher growth, including more investment and efficient allocation of capital. The results support the empirical findings by King and Levine (1993), Levine and Zervos (1998). However, FD has a negative and statistically significant at 10 percent in model 10. INF has a negative and statistically significant at 5 percent in model 10. TOP also maintains the positive sign and statistically significant at 10 percent in model 10. This implies that trade openness could also enhance growth by boosting savings and investment rate (Estrada, 2010). In addition, Cor and $ASEANC$ remain a negative sign and statistically significant at 1 percent in model 10. The result suggests corruption could slower growth through adverse impacts on investment (Hodge et al., 2009). While $ASEANC$ may result in slower financial integration during the financial crisis (Balassa, 1961).

Table 5: GMM Dynamic Estimation Result (1993 - 2013)

Dependent variable: Y					
	(M 5)	(M 6)	(M 7)	(M 8)	(M 9)
Variables:	Coef.	Coef.	Coef.	Coef.	Coef.
$IniIncome$	0.5083*	0.5109*	0.4385*	0.5216*	0.4486*
	(0.0639)	(0.0643)	(0.0667)	(0.0613)	(0.0634)
$IniSchooling$	-0.0002	-0.0001	-0.0039	-0.0042	-0.0081
	(0.0201)	(0.0201)	(0.0197)	(0.0192)	(0.0187)
FD	-0.0433***	-0.0442***	-0.0407***	-0.0372	-0.0337
	(0.0256)	(0.0258)	(0.0252)	(0.0246)	(0.0240)
INF	-0.0394*	-0.0400*	-0.0389*	-0.0277***	-0.0266***
	(0.0153)	(0.0153)	(0.0150)	(0.0149)	(0.0145)
TOP	0.0328***	0.0327***	0.0334***	0.0282	0.0289
	(0.0197)	(0.0198)	(0.0193)	(0.0189)	(0.0184)
FI		0.0191	0.0913**	0.0248	0.0977**
		(0.0397)	(0.0449)	(0.0379)	(0.0426)
Cor			-1.0360*		-0.0461*
			(0.3232)		(0.3070)
$ASEANC$				-2.6773*	-2.6912*
				(0.5924)	(0.5767)
Const.	1.8865*	1.7703*	1.4424*	2.2478*	1.9192*
Adj. R^2	0.2525	0.2495	0.2839	0.3181	0.3538
DW stat	2.1850	2.1749	2.1602	2.3017	2.3096
Prob(J-stat)	0.0000	0.0000	0.0000	0.0000	0.0000
Obs. no.	200	200	200	200	200

Note: the standard error is in parentheses. *, **, *** indicates statistically significant at 1%, 5%, and 10% level respectively.

Table 6: Random Effects-GLS and Pooled-OLS Estimation Result (1993 - 2013)

Dependent variable: Y	(M 10)	(M 11)
	Random Effects-GLS	Fooled-OLS
Variables:	Coef.	Coef.
IniIncome	0.4486*	0.2510*
	(0.0597)	(0.0702)
IniSchooling	-0.0081	-0.0114
	(0.0176)	(0.0177)
FD	-0.0337***	-0.0177
	(0.0226)	(0.0230)
INF	-0.0266**	-0.0174
	(0.0136)	(0.0139)
TOP	0.0289***	0.0298***
	(0.0173)	(0.0175)
FI	0.0977*	0.1150**
	(0.0401)	(0.0505)
Cor	-1.0461*	-0.3040
	(0.2890)	(0.4475)
ASEANC	-2.6912*	-2.6635*
	(0.5428)	(0.5434)
Const.	1.9192*	2.7540
Adj. R^2	0.3538	0.4275
DW stat	2.3096	2.2120
Prob(J-stat)	0.0000	0.0000
Obs. no.	200	200

Note: The standard error is in parentheses. *, **, *** indicates statistically significant at 1%, 5%, and 10% level respectively. Source: Authors' own contribution.

3.5. Synthesis of the Results

The findings shows that financial integration has a positive and significant effect on economic growth in Southeast Asia over the period 1993-2013. The results are consistent with the existing literatures, including Juraev (2013), Estrada et al. (2010), King and Levine (1993), and Levine and Zervos (1998). Specifically, our control variables have the expected signs and significances supporting the robustness of the results. Moreover, we examine the results of the system GMM dynamic panel model, pooled-OLS model, and the robustness check results of EGLS to support our study. The GMM model and the EGLS model suggest a significant positive relationship between financial integration and economic growth in Southeast Asia. The results further suggest that financial integration could enhance economic growth, which was conditional on third factors, including income levels and macroeconomics (Edwards, 2001; Edison et al., 2002; Alfaro et al., 2004). For instance, initial schooling may impact growth only on the conditions of workers with higher level of education (Barro, 1997). Furthermore, the result suggests that corruption could slower economic growth through adverse impacts on investment, while the Asian financial crisis could result in slower financial integration (Hodge et al., 2009; Balassa, 1961).

4. Discussion and Conclusion

This paper examines the impact of financial integration on economic growth in Southeast Asia over the period 1993-2013. The paper further investigates whether the relationship depends on the level of financial and economic development, government corruption, and macroeconomic policy. We employ the system GMM in the dynamic framework to examine the relationship between financial integration and economic growth, while controlling for initial income, initial schooling, and other financial and economic factors. The study further analyzes the data using the EGLS model to examine the consistency of the GMM model. Our results found that financial integration and initial income have a significant positive relationship with economic growth in Southeast Asia. This suggests that increasing financial integration could improve the productive capacity of the economy, including more investment and efficient allocation of capital, and thus enhancing economic growth in this region. However, during the asian financial crisis, financial integration does not impact growth. This implies that the asian financial crisis could result in slower financial integration. This result likely affects from various dynamic factors, including social factors and large-scale economies. Although, trade and capital flow significantly increase from the developed to developing countries. At the same time, they increase a country's vulnerability to international financial crises which occurs during spontaneous reversals in international capital flows.

Moreover, financial development has a significant positive effect on real per capita GDP growth. The results suggest that by flowing capita, financial development may result in an increase in investment, and thus it enhances economic growth through various channels. Trade openness has the positive sign and statistically significant at 10 percent. This implies that a trade openness could also enhance economic growth by boosting savings and investment rate. This highlights the importance of financial integration as a step towards financial development. Thus, enhancing financial integration could bring the economy into the regional level. Our results are consistent with the existing literatures and support the empirical findings. In addition, initial schooling does not impact economic growth. This means that it may affect economic growth only on the conditions of workers with higher level of education.

We found inflation has a negative sign and statistically significant. This implies that higher inflation may result in slower economic growth. Corruption could slower economic growth through adverse impacts on investment. While the Asian financial crisis may result in slower financial integration during the financial crisis. More specifically, this paper contributes to the existing literatures in two-folds.

Firstly, our findings shed new insights on the critical issue whether financial integration affects economic growth by examing key indicators, including initial income, initial schooling, the level of financial development, trade openness, and financial and economic factors. Secondly, the GMM model is used to fit in the context of Southeast Asia with an eye on the policy lessons for today. The study further analyzes the data using the EGLS model to examine the consistency of the GMM model. Therefore, this paper sheds new light on a better evaluation of the past and present theorizing on the subject of financial integration and economic growth in Southeast Asia; especifically, the determinants of economic growth and policy formulations to achieve higher economic growth in Southeast Asia.

5. Policy Implications

Financial integration will be the key ingredients for regional economic growth. It could serve as an important vehicle not only for economic growth, but also for better financial development and strategic partnership with the member countries in Southeast Asia. Specifically, our findings suggest that the government should work towards eliminating corruption and stabilizing macroeconomics in order to enhance financial integration and economic growth. Therefore, the policymakers should concentrate their efforts on policy reforms benefiting financial integration and pay attention to the other determinants of economic growth to promote long-term growth in the region. The policies aimed at enhancing financial integration should consider the regulation of the activities of financial development and trade openness. However, further study maybe considered to determine to what extent the financial integration used as proxies to enhance economic growth in the region.

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