Causal Relationship between International Financial Reporting Standard (IFRS) and Foreign Direct Investment (FDI): A Panel Data Analysis of ASEAN Countries

MARYAM YOUSEFINEJAD, AZLINA AHMAD, FAIRUZ MD. SALLEH & RUZITA ABDUL RAHIM

ABSTRACT

This study investigates the causal relationship between International Financial Reporting Standard (IFRS) adoption and Foreign Direct Investment (FDI) inflows in ASEAN countries during the period of 2001 to 2016. This study applies panel co-integration and causality test to examine the short and long run and causal relationship between variables. IFRS adoption was measured based on dummy variable in Model 1 and level of IFRS compliance in Model 2. Findings of this study confirm the presence of co-integration between variables and the Dynamic Ordinary Least Square (DOLS) estimation analysis reveals positive and significant relationship between IFRS adoption, based on both measures and FDI inflows. Furthermore, the causality test shows that there is short run causality from IFRS to FDI inflows and long run causality between variables. This study extends knowledge on the relationship between IFRS adoption and FDI inflows by examining this relationship in the setting of ASEAN countries. Findings of this study could be useful for countries which are IFRS adopter and also non-adopters to understand the economic consequences of IFRS adoption, in their effort to attract more investors so as to accelerate economic growth.

Key words: IFRS adoption; Foreign Direct Investment (FDI); ASEAN countries; Dynamic Ordinary Least Square (DOLS); Causality relationship

INTRODUCTION

Foreign direct investment (FDI) has been recognized as an important contributor towards enhancing a country's economic growth (Gordon et al. 2012; Zaidi & Huerta 2014; Nor, Wah & Nor 2015; Lungu et al. 2017). As such, most countries, especially developing countries target to increase economic growth by attracting FDI into their economies (Iamsiraroj 2016; Thampanishvong & Kannika 2015; Feeny, Iamsiraroj & McGillivray 2014). Indeed, it has been established that foreign investors select markets which have high quality financial information to enable them to have accurate evaluation of investment prospects at a lower cost (Gordon, Loeb & Zhu 2012; Akisik 2014). Adoption of global accounting standards such as the International Financial Reporting Standard (IFRS) have been found to improve financial reporting quality for the purpose of investment decisions (Ball 2006; Daske 2006; Ahmed, Neel & Wang 2013; Chen, Ding & Xu 2014; Kao & Wei 2014; Zaidi & Paz 2015; Lungu et al. 2017; Owusu, Suppiah & Hook 2017).

Although FDI has been identified as an economic consequences of IFRS adoption (Samaha & Khlif 2016; Utama, Farahmita & Anggraita 2016), very few studies have addressed this issue in greater detail (Zeghal & Mhedhbi 2006; Gordon et al. 2012; Brüggemann, Hitz & Sellhorn 2013; Lourenço & Branco 2015). Most studies that looked at economics consequence of IFRS adoption tend to focus on cost of equity capital (CEC) (Daske, Hail, Leuz & Verdi 2008; Castillo-merino, Menéndez-plans & Orgaz 2014; Utama et al. 2016). Furthermore very few

studies have looked at the economic consequence of IFRS adoption in developing countries (Gordon et al. 2012; Samaha & Khlif 2016; Lungu et al. 2017). Therefore, this study aims to fill the gap by focusing on IFRS adoption and FDI in the Association of Southeast Asian Nations (ASEAN). In recent years, in line with globalization, more and more multinational firms have chosen to expand by setting up plants and regional offices in ASEAN. In 2016 ASEAN regional expansion by multinational firms has resulted in inflows of US$120 billion, representing almost 16% of world FDI among developing countries in 2015 (ASEAN, Nations 2017). Therefore, ASEAN which consist of ten member countries, with different stages of economic development, provides a good setting for studying IFRS adoption and FDI (ASEAN, Nations 2017).

Past studies have showed that adoption of IFRS leads to improved financial information quality (Naranjo, Saavedra & Verdi 2013; Chen et al. 2015; Zaidi & Paz 2015). Higher financial information quality leads to more transparency and more comparability which consequently may improve information asymmetry (Ball 2006; Epstein 2009; Ahmed et al. 2013; Zaidi & Paz 2015; Siyi Li, Sougiannis & Wang 2017). Therefore it could be concluded that more transparent financial information or lower information asymmetry are more likely to attract more foreign investors and consequently results in economic growth. However, within ASEAN, two countries which is Indonesia and Vietnam have received high FDI inflows even though these countries have not adopted IFRS (IASB 2016) (Figure 1). Hence is it true that

IFRS adoption really leads to higher transparency and more inflows of FDI?

As highlighted earlier, studies which examined the relationship between IFRS adoption and FDI are limited. Additionally, thus far, all of them applied a statics panel and Ordinary Least Squares (OLS) estimator for testing the relationship between the variables (Gordon et al. 2012; Lungu et al. 2017). In examining the relationship between IFRS and FDI there may exist endogeneity problem that is not addressed via the use of the OLS estimator (Gordon et al. 2012). According to Kao and Chiang (2000) the OLS is a biased estimator[1] and for such cases Dynamic Ordinary Least Squares (DOLS) would provide a better estimator, as DOLS estimator is constructed by making corrections for endogeneity to the OLS estimator. In other words, the endogeneity of OLS could be controlled by DOLS. Therefore, this study applis panel co-integration and DOLS estimator to solve the endogeneity problem and examine the long run relationship between variables. Panel co-integration approach has been used in many studies that examined the relationship between FDI and economic growth (Mohamed, Singh, Singh & Liew 2013; Omri & Kahouli 2013; Iamsiraroj & Ulubaşoğlu 2015), as well as studies which determined the FDI determinants (Oladipo 2010; Bekhet & Raed Walid Al-Smadi 2014; Kinuthia & Murshed 2015; Dondashe & Phiri 2018). However, to the best of our knowledge, no studies have applied co-integration and DOLS to examine the relationship between IFRS adoption and FDI inflows. Therefore, this study applies panel co-integration and DOLS estimator to examine the relationship between IFRS adoption and FDI inflows. Besides the methodological contribution as discussed above, findings of this study could be useful for countries which are IFRS adopter to understand the economic consequences of IFRS while for non-adopter, the findings would be useful inputs in deliberating adoption.

The remainder of this study will proceed as follows. In the next section, a brief review of the relevant literature is provided, which is then followed by the hypothesis development. After that, the research design, sample and research models used for testing the hypothesis are discussed. The estimation strategy of co-integration panel and causality test are discussed in next section. The findings of this study are presented in the last section. The limitation and suggestion for potential future research also are provided in the final section of this paper.

LITERATURE REVIEW

In recent years, IFRS adoption in different regions is an issue that has generated significant interest. Several past studies have identified IFRS adoption to be amongst the important factors which contributes towards economic growth of a country (Larson & Kenny 1995; Zaidi & Huerta2014). In general, past studies on IFRS adoption suggested that IFRS adoption leads to improved transparency (Ball 2006; Lambert, Leuz & Verrecchia 2007; Christensen, Glover & Wood 2012; Lourenço & Branco 2015). Indeed, they believed that transparency improvement leads to reduce information uncertainty, information asymmetry, cost of equity capital and leads to better risk estimations. More transparent financial information also leads to comparability enhancement, increased accuracy, higher information quality and market liquidity and more capital market efficiency (Gordon et al. 2012; Ball 2016; Aliabadi & Shahri 2016).

Recently, many countries have adopted IFRS to achieve better and more transparent accounting reporting systems (Chen et al. 2014; Zaidi & Paz 2015; Joshi, Yapa & Kraal 2016). Therefore, it might be important to understand the economic consequences of IFRS adoption between different regions or countries. Several studies have examined economic consequences of IFRS (Ismail & Kamarudin 2013; Elbannan 2011; Utama, Farahmita & Anggraita 2016; Brüggemann et al. 2013; Lourenço & Branco 2015; published between 2000 and 2013, it is concluded that, as a general rule, IFRS adoption has a positive effect on information quality, the capital market, analysts' ability to predict, comparability, and information use. Nevertheless, this effect depends on some factors, such as country's characteristics (namely, the enforcement levelZeghal & Mhedhbi 2006). These studies looked at economic consequences of IFRS adoption based on three indicators which are economic growth, cost of equity capital and IFRS and FDI.

Past studies widely examined the relationship between IFRS adoption and economic growth (Daske 2006; Zehri & Abdelbaki 2013; Zaidi & Huerta 2014; Özcan 2016) as well as cost of equity capital (Hail & Leuz 2007; Daske, Hail, Leuz & Verdi 2008; Li 2010; Castillo-merino, Menéndez-plans & Orgaz 2014; Houqe et al. 2016). It is generally accepted that IFRS plays a vital role in more rational and accurate investment decision by investors, leads to improved reporting quality and significantly enhances the comparability of financial statements prepared by different countries and consequently create positive impacts on international trade. In terms of cost of equity capital, majority of the past studies reported a negative association between IFRS adoption and cost of equity capital. This suggest that if more information with higher quality was made available to investors, their investments would become less risky and therefore the investors would accept a lower return from investments.

However, there has been very limited studies on the relationship between IFRS adoption and FDI inflows. Akisik (2014) explored the relationship between FDI and changes in financial reporting system in 12 Latin American countries during the period from 1997 to 2010. The empirical analyses indicated that accounting standards have a positive effect on FDI. DeFond, Hu, Hung and Li (2011) examined changes in FDI between EU firms after mandatory IFRS adoption from 2003–2007. Consistent with Akisik (2014), DeFond et al. (2011) concluded that FDI increases after mandatory IFRS adoption because of comparability enhancement. Chen, Ding and Xu (2014) examined whether convergence from a domestic standard

to IFRS leads to increase FDI. The study used 30 OECD countries for the period 2000 to 2005. The study found positive association between IFRS and FDI due to reduce information processing costs for foreign investors. Gordon et al. (2012) also examined the effect of IFRS adoption on FDI inflows. Their study covered 124 countries, for the period from 1996 to 2009. Their findings supported the positive association between IFRS adoption and FDI inflows. Beneish, Miller and Yohn (2015) investigated whether mandatory IFRS adoption is associated with increased foreign investment for 51 countries in 2005. The study found that IFRS adoption has a positive and significant relationship with FDI. Lungu et al. (2017) also examined the effect of IFRS adoption on FDI between 26 emerging countries from 1996 until 2014. The study found that countries which adopted IFRS are more likely to benefit from a higher increase in FDI inflows than non-adopters.

Despite of above studies which reported a positive association between IFRS adoption and FDI, Nnadi and Soobaroyen (2015) reported a negative result. The study covered 34 African countries over 20 years. Nnadi and Soobaroyen (2015) found IFRS adoption to be negatively associated to FDI. Owusu et al. (2017) also examined the relationship between IFRS adoption and FDI between 116 developing countries covering the period of 1996 to 2013. The study found that IFRS adoption does not affect FDI inflows. As can be seen, evidences which looked at IFRS adoption and FDI are still limited especially in developing countries. Furthermore, empirical studies which are known about this topic with respect to members of ASEAN region is also few.

According to Gordon et al. (2012) one of the main reason that lead countries to adopt IFRS is the strong signal to the investors that their companies prepare more transparent financial information compare with countries without IFRS adoption. Since, more transparent financial information may lead to information asymmetry improvement, therefore, this signal should have a positive effect on attracting more foreign investors. Therefore, based on the above discussion and the assertion of signaling theory, this study hypothesizes that:

H_1: *IFRS adoption has a positive association with foreign direct investment inflows.*

RESEARCH METHODOLOGY

This study applies panel data research design which combines time-series and cross-sectional data. There are three method for estimating a panel data, which are Static Panel, Panel Co-integration and Dynamic Panel. The estimation technique for static panel is Ordinary Least Squares (OLS), for panel co-integration is Dynamic Ordinary Least Squares (DOLS) and Fully Modified Ordinary Least Squares (FMOLS), while for dynamic panel is Generalized Method of Moments (GMM). Most past studies which examined the effects of IFRS adoption on FDI inflows such as Gordon et al. (2012) and Lungu et al.

(2017) employed the static panel data analysis and an OLS estimation technique, while Owusu et al. (2017) applied the dynamic panel analysis and GMM estimation technique. According to Kao and Min-Hsien Chiang (1999) the OLS estimator has a non-negligible bias in finite samples and the FMOLS estimator does not improve over the OLS estimator in general. Furthermore GMM estimator is designed for situation with small time-series and large cross-sections, and thus is not appropriate for this study. Kao and Chiang (2000) also indicates that the DOLS estimator may be more promising than the OLS or FMOLS estimators in estimating co-integration panel regressions.

Additionally, in relationship between IFRS and FDI may be an endogeneity problem that is not addressed via the use of the OLS estimator (Gordon et al. 2012). According to Kao and Chiang (2000) the DOLS estimator is constructed by making corrections for endogeneity to the OLS estimator. In the best of our knowledge, no previous study has applied panel co-integration to examine the relationship between IFRS adoption and FDI inflows. Therefore, this study employs DOLS estimation technique to examine the relationship between variables.

SAMPLE SELECTION

This study uses South East Asian Nations (ASEAN) as sample. The ASEAN was established in 1967 with founding members made up of Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore and Thailand. In the late 1990s Vietnam, Laos, Cambodia and Myanmar joined ASEAN. This study focuses on ASEAN because, it is observed that the ASEAN's economic growth has been very impressive over recent years. The overall score of ASEAN economic growth has increased by 98 percent from 2012 to 2016 (Heritage Foundation reports), a record that is unique and has not been observed in other regions. In addition, based on Figure 1, FDI of ASEAN has increased by 81 percent from 2012 to 2016 i. In 2016 ASEAN regional expansion by multinational firms has resulted in inflows of US$120 billion, representing almost 16% of world FDI among developing countries in 2015 (ASEAN 2017). Moreover, ASEAN consist of different stages of economic development and freedom, which based on Sovbetov and Moussa (2017) is the main factor for attracting foreign investors. Therefore, ASEAN countries provides a different setting to examine the issue of IFRS adoption and FDI.

Data for this study was collected from 2001 to 2016. This study uses 2001 as the starting year for data collection as it is the year that FDI data became available in database for all ASEAN countries. Therefore, the sample for examining equation models consist of 10 ASEAN countries and a total of 160 observations.

RESEARCH MODELS

In line with Gordon et al. (2012) and Lungu et al. (2017) this study uses two equation models to examine the relationship between IFRS and FDI inflows. The first model

Ln(FDI)
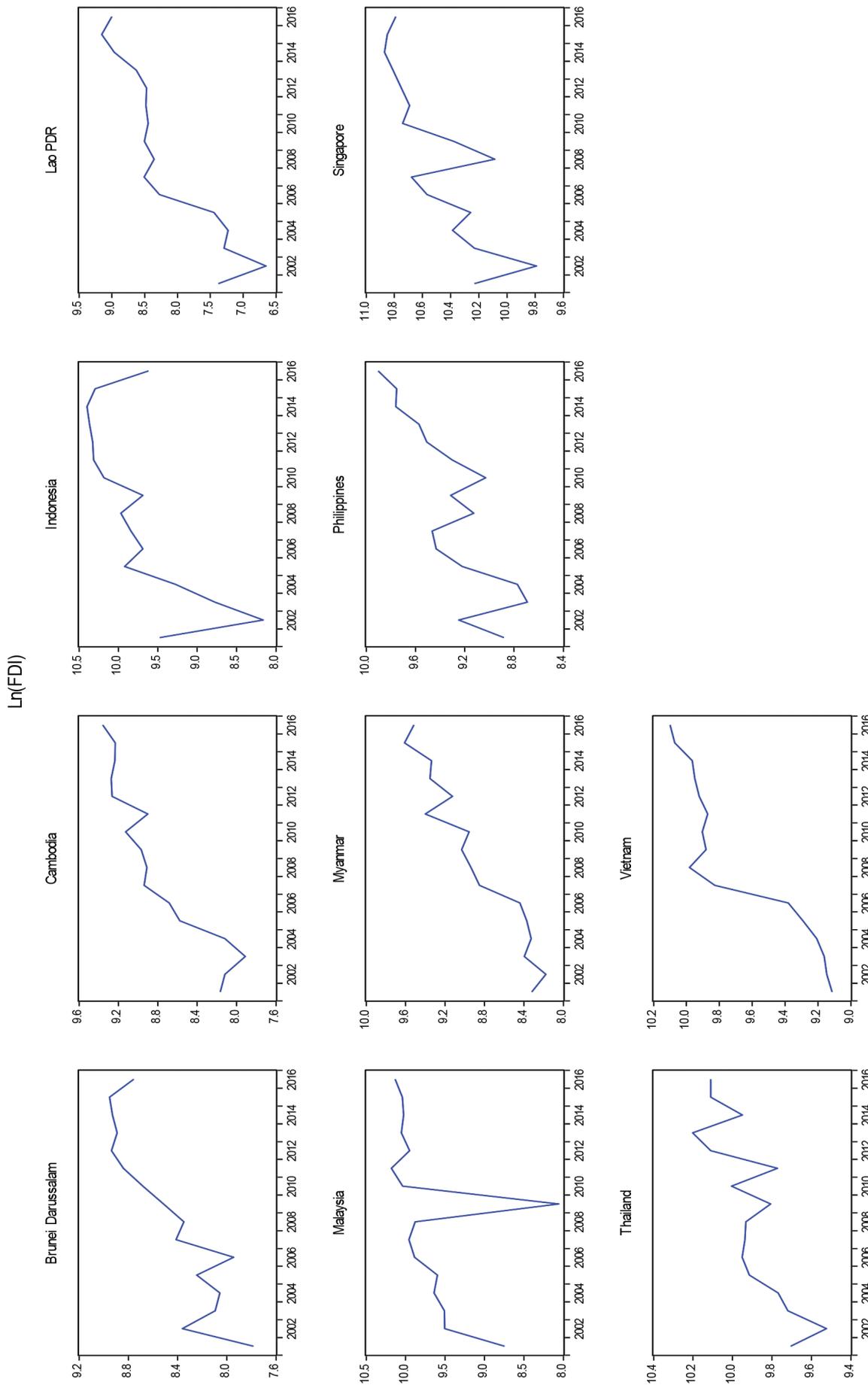
FIGURE 1. FDI inflows in ASEAN from 2001 to 2016

examines the effects of IFRS using dummy variables to explore its effect on FDI between ASEAN countries. The second model considers the effect of IFRS based on score to explore effect of compliance level of IFRS on FDI between ASEAN countries. Table 1 presents the equation models applied in this study.

DEFINITION OF VARIABLES

The dependent variable of this study is FDI, whereas, the independent variable is IFRS adoption. This study uses the natural logarithm of absolute FDI value (lnFDI) for FDI inflows variable. IFRS adoption is measured based on dummy variable for Model 1 and score which represent level of IFRS compliance for Model 2. For Model 1, a dummy variable equal to 1 is given if a country has adopted IFRS and 0, if otherwise. For further understanding of the effects of IFRS on FDI inflows, this study considers the differences in the level of compliance in Model 2. The score for level of compliance ranges from 0 to 7, (Table 2). In Model 2 the level of compliance score replaces dummy variables in Model 1. In line with Lungu et al. (2017) the score was constructed based on IFRS Foundation's Jurisdictional Profiles (IASB'2016). As discussed before, Indonesia and Vietnam have not adapted IFRS, however, based on IFRS Foundation's Jurisdictional Profiles, Indonesia has a score of 2 because it has made a public commitment in support of moving towards a set of high quality global accounting standard which is the IFRS. However, Vietnam has a score of zero.

Each ASEAN country has different starting date of IFRS compliance (IFRS Foundation's Jurisdictional Profiles (IASB 2016)), therefore, this study applies dummy and level scores based on different starting dates for each countries. Table 3 presents the starting date of IFRS compliance in ASEAN countries.

In line with Gordon et al. (2012), this study uses gross domestic product (GDP) (as the country's size), annual year-end exchange rates (EXCH) and education level (EDU) as control variable. Table 4 shows the variables which are used in the equation models, as well as, variable definitions, measurements and data sources. Past studies which addressed the relationship between IFRS adoption and FDI such as Gordon et al. (2012) and Lungu et al. (2017) used more control variables in their estimation. However, this study applied GDP, EXCH and EDU as control variables based on the principle of parsimony. The principle of parsimony propose that unnecessary assumptions should be avoided. Indeed, this principle is used as a logical tool to filter out all unnecessary from scientific and philosophical arguments

that leads to complication. Hence, as long as the models follow the standard econometric technique and the results seems to followed the theory, therefore the models are adequate or parsimonious.

ESTIMATION STRATEGY

As mentioned before, this study applies a panel co-integration technique. The first step in applying this technique is to check the stationary or non-stationary properties of variables via the panel unit root test. The result of the panel unit root tests determines the order of integration of the variables. If all variables are integrated then proceed with panel co-integration test. If there are co-integration among variables based on the Pedroni tests, then proceed with long-run estimation or DOLS. Finally the Granger-causality test is carried out to explore the short and long run causality among variables.

PANEL UNIT ROOTS TESTS

To determine the stationary or non-stationary properties of variables this study applies Levin, Lin and Chu (2002) (LLC) and Im, Pesaran and Shin (2002) (IPS) unit root tests. The LLC allows for two-way fixed effect, one coming from the and the second from the θ_t.

$$\Delta Y_{i,t} = \alpha_i + \delta Y_{i,t-1} + \beta_i t + \sum_{k=1}^{n} \varnothing_i \Delta Y_{i,t-K} + \theta_t + \varepsilon_{it}$$

The hypotheses of this test are;

H_0: $\delta = 0$ $(\rho = 1)$
H1: $\delta < 0$ $(\rho < 1)$

The LLC assumes that pooled estimation for each i cross-section. The IPS test extended the LLC test by allowing heterogeneity on the coefficient of the $Y_{i,t-1}$,

$$\Delta Y_{i,t} = \alpha_i + \delta_i Y_{i,t-1} + \beta_i t + \sum_{k=1}^{n} \varnothing_i \Delta Y_{i,t-K} + \varepsilon_{it}$$

The hypotheses of this test are;

H0: $\delta_i = 0$ for all i $(\rho = 1)$
H1: $\delta_i < 0$ for at least one i $(\rho < 1)$

If ρ is in fact 1, we face what is known as the unit root problem, that is, a situation of non-stationarity. However, if $\rho < 1$, then it can be concluded that the data is stationary. If the results of LLC and IPS were non-stationary at level, but their first difference, were stationary, therefore, it

TABLE 1. Equation models of this study

Equation Models	NO
$LnFDI_{i,t} = \beta_0 + \beta_1 FRS(DUMMY)_{i,t} + \beta_2 LogGDP_{i,t} + \beta_3 EXCH_{i,t-1} + \beta_4 EDU_{i,t-1} + \varepsilon_{i,t}$	(1)
$LnFDI_{i,t} = \beta_0 + \beta_1 FRS(LEVEL)_{i,t} + \beta_2 LogGDP_{i,t-1} + \beta3 EXCH_{i,t-1} + \beta4 EDU_{i,t-1} + \varepsilon_{i,t}$	(2)

TABLE 2. IFRS adoption scores

Score	Characteristics of IFRS adoption	Brunei	Cambodia	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam
1	Has the jurisdiction made a public commitment in support of moving towards a single set of high quality global accounting standards?	1	1	1	1	1	1	1	1	1	0
2	Has the jurisdiction made a public commitment towards IFRS Standards as that single set of high quality global accounting standards?	1	1	1	1	1	1	1	1	1	0
3	For domestic companies are IFRS Standards REQUIRED or PERMITTED?	0	1	0	1	1	1	1	1	0	0
4	Are IFRS Standards also required or permitted for more than the consolidated financial statements of companies whose securities trade in a public market?	0	1	0	0	1	1	1	1	0	0
5	Are all or some foreign companies whose securities trade in a public market either REQUIRED or PERMITTED to use IFRS Standards in their consolidated financial statements?	0	1	0	0	1	0	1	1	1	0
6	Are IFRS Standards incorporated into law or regulations?	0	1	0	0	1	1	1	0	0	0
7	Has the jurisdiction adopted the IFRS for SMEs Standard for at least some SMEs?	0	1	0	0	1	1	1	1	0	0
Total		2	7	2	3	7	6	7	6	3	0

Source: Scores attributed by authors, based on characteristics defined by IASB (2016).

TABLE 3. The IFRS adoption date of ASEAN countries

ASEAN Countries	Year of IFRS adoption
Brunei Darussalam	2014
Cambodia	2012
Indonesia	Has not adopted (public commitment in support of moving towards IFRS from 2012)
Laos	2014
Malaysia	2012
Myanmar	2011
Philippines	2005
Singapore	2010
Thailand	2011
Vietnam	Has not adopted

Source: Information is synthesized and disclosed for each country from the IASB's webpage

TABLE 4. Variables, measurements and data collection sources

Variables	Measurements	Data Collection Sources
LnFDI	Natural logarithm of foreign direct investment inflow data in current US dollars.	World Development Indicator (WDI) database published by World Bank
IFRS(DUMMY)	Dummy variable equal to 1, if a country has adopted IFRS; 0, otherwise.	The IASB's webpage (http://www.ifrs.org/Use-around-the-world/Pages/ Jurisdiction-profiles.aspx)
IFRS(LEVEL)	A score measured on a 0–7 scale (Table 2)	based on characteristics defined by IASB (2016)
LogGDP	Log of GDP in current US dollars, a market factor that attracts FDI.	World Development Indicator (WDI) database published by World Bank
EXCH	Annual year – end exchange rates measured by national currency units per SDR[b] scaled by 100	World Development Indicator (WDI) database published by World Bank
EDU	Education level	World Development Indicator (WDI) database published by World Bank

could be concluded that variables are integrated of order 1, denoted as l(1) and the process can be continued as panel co-integration (1st generation). Table 5 presents the estimated results of panel unit root with trend at level and first difference for all the variables of this study. The findings show that all variables are non-stationary in their level form, however, all of them are stationary at first difference. Thus, the null hypothesis of non-stationary is rejected and results show all variables are stationary and integrated of order 1 in the panel of ASEAN countries.

THE PANEL CO-INTEGRATION TESTS

As mentioned earlier, if the results of LLC and IPS were non-stationary at level, but their first difference, were stationary, therefore, it could be concluded that variables are integrated of order 1, denoted as $I(1)$ and the process can be continued as panel co-integration (1st generation). Based on the panel unit root tests (Table 5) all variables are integrated of order 1 or l (1), hence we can proceed with panel co-integration test in order to establish if a long-run equilibrium relationship among the variables exists. This study utilizes a panel co-integration test which is suggested by Pedroni (1999, 2000) in order to check

co-integration. The Pedroni's panel co-integration can be expressed as follow;

$$LnFD_{it} = \alpha_{it} + \delta_i t + \beta_{1i} IFRS(DUMMY\ or\ LEVEL)_{it} + \beta_{2i} LogGDP_{it} + \beta_{3i} EXCH_{it} + \beta_{4i} EDU_{it} + \varepsilon_{it}$$

where $\varepsilon_{it} = \rho_i \varepsilon_{it-1} + \mu_{it}$ are the estimated residuals from the panel long-run relationship.

The parameters and allow for the possibility of country fixed effects and deterministic trends, respectively. To test the null hypothesis, i.e. $\rho = 1$, Pedroni (1999, 2000) proposed seven statistics, four within dimension or panel and three between dimension or group statistics to check co-integration of this study panel data. The within dimension tests consist of 4 statistics, namely, *panel v-statistic*, *panel rho-statistic*, *panel PP-statistic* and *panel ADF-statistic*. The between dimension tests include 3 statistics, *group rho-statistic*, *group PP-statistic* and *group ADF-statistic*. It there is co-integration among variables with using Pedroni test, then can be proceed with long-run estimation. Table 6 presents the results of the panel co-integration tests. Four of the seven panel co-integration tests indicate that the null hypothesis of no

TABLE 5. Panel unit root test results

Variables	At level		At first differences	
	Statics	P-value	Statics	P-value
LLC test				
LnFDI	-0.117	0.453	-3.469	0.000
IFRS(DUMMY)	-	-	-	-
IFRS(LEVEL)	-	-	-	-
LogGDP	5.342	1.000	-5.058	0.000
EXCH	1.042	0.851	-4.694	0.000
EDU	1.116	0.867	-2.455	0.007
IPS test				
LnFDI	-0.575	0.282	-3.657	0.000
IFRS(DUMMY)	-	-	-	-
IFRS(LEVEL)	-	-	-	-
LogGDP	4.915	1.000	-1763	0.038
EXCH	2.392	0.991	-1.587	0.056
EDU	1.852	0.968	-1.607	0.072

TABLE 6. Pedroni panel co-integration test results

Test	Panel v-Statistic	Panel rho-Statistic	Panel PP-Statistic	Panel ADF-Statistic	Group rho-Statistic	Group PP-Statistic	Group ADF-Statistic
Static	-0.966	1.721	-4.029	-1.733	2.490	-11.169	-3.307
P-value	0.833	0.957	0.000	0.041	0.994	0.000	0.000

An intercept and trend is included in the co-integration equations.

co-integration is rejected at the 1% level (Panel PP-Statistic, Group PP-Statistic and Group ADF-Statistic) and 5% level (Panel ADF-Statistic) significance. The findings of within dimension statistics and between dimensions statistics demonstrate the rejection of the null hypothesis in most statistics (4 statistics is significant around 1%). Therefore, LnFDI, IFRS (DUMMY or LEVEL), LogGDP, EXCH and EDU are co-integrated in ASEAN for the period 2001-2016 and can proceed with long run estimation.

ESTIMATION OF PANEL CO-INTEGRATION REGRESSION

Based on Pedroni's panel co-integration tests (Table 6) all variables of this study are co-integrated, the next step is to estimate long-run co-integration. As discussed earlier, Kao and Chiang (2000) proposed that the Ordinary Least Square (OLS) is known to yield biased and inconsistent results, therefore, they proposed several estimators such as Dynamic OLS (DOLS) and Fully Modified OLS (FMOLS) to estimate the long-run coefficient. Dynamic OLS (DOLS) estimator is promising in small samples and it is appropriate for co-integrated panels. Based on Kao and Chiang (2000) the DOLS estimator may be more promising than the OLS or FMOLS estimators in estimating co-integrated panel regressions. Therefore, this study applied DOLS technique. Table 7 presents the results of the DOLS for both regression models.

Table 7 illustrates results of both models (Model 1, DUMMY variables and Model 2, compliance level of IFRS). This study argues that by adopting IFRS, countries signal to investors from other countries that they are following a global accounting standards and have more transparent financial information. Therefore, IFRS may affect foreign investors' decision making.

The results of Model 1 supports a positive relationship between IFRS adoption (dummy variables) and FDI inflows at 0.10 with DOLS estimator technique. This result is consistent with Gordon et al. (2012) and Lungu et al. (2017) findings with OLS estimator technique. Consequently, this result means that in general IFRS adoption results in increase of FDI in flows by 17%. Therefore, this study supports the choice of IFRS adoption for ASEAN countries as a determinant factor which leads to increase its investment inflows.

Model 2 of Table 7 also demonstrates a positive significant relationship between IFRS (Level of compliance) and FDI inflows at 0.01 with DOLS estimator technique. The DOLS results is also consistent with Lungu et al. (2017) findings with OLS technique. The DOLS results demonstrate IFRS compliance may be an important motivation for foreign investors. Consequently, this result means that an increase in the level of IFRS compliance in ASEAN countries which adopt IFRS, has an impact of 2.9% increase in FDI inflows. Therefore, the hypothesis of this study is accepted. As can be seen in Table 7 the results of the both models illustrate that the LogGDP is positively associated with FDI inflows. This result also is consistent with findings of the past studies. However, Exchange and EDU are not significantly associated with FDI inflows.

TABLE 7. DOLS estimation technique results

Variables	Coefficient	P-value
Model 1		
IFRS(DUMMY)	0.177*	0.076
LogGDP	1.195***	0.000
EXCH	5.25E-04	0.948
EDU	7.83E-03	0.421
Model 2		
IFRS(LEVEL)	0.029*	0.067
LogGDP	1.239***	0.000
EXCH	-0.003	0.224
EDU	0.013*	0.097

PANEL CAUSALITY TESTS

Next the Granger-causality test is carried to determine the causality between variables in a long-run co-integration relationship (Hamit-haggar 2012). Pesaran, Shin and Smith (1999) developed a panel vector error correction model (VECM) which is applied for Granger causality tests. Based on Granger (1969) co-integration between variables shows that there is causality in at least one direction between variables. The VECM models used in this study are as follows;

$$\Delta LnFDI_{it} = \beta_{2j} + \sum_{m=1}^{p} \beta_{im} \Delta LnFDI_{it-m} + \sum_{m=1}^{p} \vartheta_{im} \Delta IFRS_{it-m} + \sum_{m=1}^{p} k_{im} \Delta LogGDP_{it-m} + \sum_{m=1}^{p} \theta_{im} \Delta EXCH_{it-m} + \sum_{m=1}^{p} \alpha_{im} \Delta EDU_{it-m} + \omega_1 ECT_{t-1} + \varepsilon_{1t}$$

$$\Delta IFRS_{it} = \beta_{2j} + \sum_{m=1}^{p} \beta_{im} \Delta IFRS_{it-m} + \sum_{m=1}^{p} \vartheta_{im} \Delta LnFDI_{it-m} + \sum_{m=1}^{p} k_{im} \Delta LogGDP_{it-m} + \sum_{m=1}^{p} \theta_{im} \Delta EXCH_{it-m} + \sum_{m=1}^{p} \alpha_{im} \Delta EDU_{it-m} + \omega_1 ECT_{t-1} + \varepsilon_{1t}$$

$$\Delta LogGDP_{it} = \beta_{2j} + \sum_{m=1}^{p} \beta_{im} \Delta LogGDP_{it-m} + \sum_{m=1}^{p} \vartheta_{im} \Delta LnFDI_{it-m} + \sum_{m=1}^{p} k_{im} \Delta IFRS_{it-m} + \sum_{m=1}^{p} \theta_{im} \Delta EXCH_{it-m} + \sum_{m=1}^{p} \alpha_{im} \Delta EDU_{it-m} + \omega_1 ECT_{t-1} + \varepsilon_{1t}$$

$$\Delta EXCH_{it} = \beta_{2j} + \sum_{m=1}^{p} \beta_{im} \Delta EXCH_{it-m} + \sum_{m=1}^{p} \vartheta_{im} \Delta LnFDI_{it-m} + \sum_{m=1}^{p} k_{im} \Delta IFRS_{it-m} + \sum_{m=1}^{p} \theta_{im} \Delta LogGDP_{it-m} + \sum_{m=1}^{p} \alpha_{im} \Delta EDU_{it-m} + \omega_1 ECT_{t-1} + \varepsilon_{1t}$$

$$\Delta EDU_{it} = \beta_{2j} + \sum_{m=1}^{p} \beta_{im} \Delta EDU_{it-m} + \sum_{m=1}^{p} \vartheta_{im} \Delta LnFDI_{it-m} + \sum_{m=1}^{p} k_{im} \Delta IFRS_{it-m} + \sum_{m=1}^{p} \theta_{im} \Delta LogGDP_{it-m} + \sum_{m=1}^{p} \alpha_{im} \Delta EXCH_{it-m} + \omega_1 ECT_{t-1} + \varepsilon_{1t}$$

where Δ is the lag operator and is one period lagged error term to identify long run causality between variables used by this studies. Short run causality estimate with testing of various hypotheses. For example, short run causality from IFRS to LnFDI is estimated by testing hypothesis: H_0: for all i and m. The rejection of this hypothesis implies that IFRS is causing LnFDI in the short run. A similar hypothesis procedure will be employed to test various hypotheses. The significance of the error correction terms in each set of equations can be tested using t-tests. Short run dynamics can be tested using Granger causality F tests. Table 8 reports short run and long run causality results.

Table 8 displays the outcomes of the short and long run causality tests. The short run test shows that changes in IFRS adoption (DUMMY or LEVEL) or decision to adopt IFRS have significant impact on FDI inflows. The causality test normally indicates the direction between variables. The results of causality test show there is a direction from IFRS to FDI which means that IFRS adoption affect FDI inflows. The results of short run panel causality test also show that the changes in GDP or size of ASEAN countries

70

TABLE 8. Panel causality test results

Dependent variable	Source of causation (Independent variables)						
	Short run						Long run
	$\Delta LnFDI$	$\Delta IFRS$ (DUMMY)	$\Delta IFRS$ (LEVEL)	$\Delta LogGDP$	$\Delta EXCH$	ΔEDU	ECT
Model 1							
$\Delta LnFDI$		2.972* [0.105]		4.100** [0.042]	6.028** [0.014]	0.064 [0.799]	-4.892* [0.043]
$\Delta IFRS$ (DUMMY)	0.033 [0.854]			0.070 [0.791]	0.494 [0.482]	0.026 [0.872]	0.330** [0.034]
$\Delta LogGDP$	3.733** [0.053]	0.412 [0.520]			0.424 [0.514]	0.319 [0.572]	-4.330*** [0.006]
$\Delta EXCH$	0.230 [0.631]	0.092 [0.761]		0.054 [0.815]		1.861 [0.172]	-0.001 [0.496]
ΔEDU	0.134 [0.713]	1.141 [0.285]		4.683 [0.030]	1.290 [0.255]		-1.295 [0.277]
Model 2							
$\Delta LnFDI$			2.825* [0.107]	3.915** [0.048]	5.417** [0.019]	0.089 [0.764]	-4.927** [0.044]
$\Delta IFRS$ (Level)	0.048 [0.826]			0.219 [0.639]	0.483 [0.487]	0.128 [0.721]	0.063 [0.210]
$\Delta LogGDP$	3.564** [0.059]		0.014 [0.904]		0.219 [0.639]	0.454 [0.500]	-4.366*** [0.006]
$\Delta EXCH$	0.171 [0.679]		0.549 [0.461]	0.068 [0.796]		1.979 [0.159]	0.063 [0.504]
ΔEDU	0.113 [0.736]		0.426 [0.514]	4.766** [0.029]	1.170 [0.279]		-1.478 [0.283]

have significant impact on FDI inflows. The results also show that there is a strong short run causality between changes in FDI inflows and changes in GDP or size of ASEAN countries. According to the long run test, results show a causality relationship between variables, from EXCHANGE, GDP and IFRS adoption to FDI inflows. This means that, all variables may affect FDI inflows. Additionally, there is a strong causality from FDI inflows to GDP, it means that FDI may affect GDP growth.

SUMMARY AND CONCLUSION

The objective of this study was to explore the long run relationship and the existence of causality relationship between IFRS adoption and FDI inflows in the context of ASEAN for the period 2001– 2016. Hence, this study have implemented panel unit root to test the integrating properties of variables. This study has implemented Pedroni co-integration approaches to test co-integration between variables. As well as, The Granger causality are used to examine the direction of causality between variables.

Results shows that all of the variables of this study are integrated at l(1). This result is confirmed by panel unit root tests which show the existence of co-integration between IFRS (DUMMY or LEVEL), GDP, EXCH, EDU and FDI inflows.

The DOLS estimation analysis, shows a positive significant relationship between IFRS (DUMMY or LEVEL) and FDI inflows at 10%, indicating that IFRS adoption improves the FDI inflows. The estimation exposes also a positive and significant relationship between GDP was also found to be positively related to FDI inflows. Moreover, when the compliance LEVEL of IFRS adoption was considered, the DOLS estimation technique also shows a positive and significant relationship between FDI inflows and education at 5%. The causality test also confirms short run causality between IFRS and FDI inflows, GDP and FDI inflows and EXCH and FDI inflows. The result also confirms short run causality between FDI inflows and GDP. Additionally there is also long-run causality from IFRS adoption to FDI inflows and from FDI inflows to GDP. However, there is no long run causality between FDI inflows and IFRS adoption.

Indeed, the result of this study shows that IFRS adoption attracts more foreign investments into a country. The results also show that the level of compliance with IFRS is an important driver for foreign investors even for Indonesia which had not adopt IFRS but is taking steps to comply with IFRS.

As with all empirical studies, this study has limitation. There are empirical studies in literature which examined the determinants of FDI inflows, however, this study was not able to utilize all of those determinants as control

variables. Taking into consideration the sample size, the analysis used in this study limits the number of variables. Therefore only three control variables were examined in the pursuit of parsimony. Therefore, this study suggests that for future study more control variables are taken into consideration. Additionally this study suggests that future studies consider the role of information asymmetry on relationship between IFRS adoption and FDI inflows. Pervious empirical studies mentioned that IFRS adoption leads to information asymmetry improvement, however, there are very limited studies which tested the effect of information asymmetry on relationship between IFRS adoption and FDI inflows. To the best of our knowledge, there is no study which examined the relationship between information asymmetry and FDI inflows.

NOTES

[1] The OLS estimator is consistent for its true value, but the t-statistic diverges so that inferences about the regression coefficient, β, are wrong with a probability that goes to one.

REFERENCES

ASEAN, Nations, S.A. 2017. Investing in ASEAN 2017. *Eastspring Investment*.

Ahearne, A.G., Griever, W.L. & Warnock, F.E. 2004. Information costs and home bias : An analysis of US holdings of foreign equities 62: 313-336.

Ahmed, A.S., Neel, M. & Wang, D. 2013. Does mandatory adoption of IFRS improve accounting quality? preliminary evidence. *Contemporary Accounting Research* 30(4): 1344-1372.

Akisik, O. 2014. Financial reporting and foreign direct investments in Latin America. *Research in Accounting in Emerging Economies* 14: 135-149.

Aliabadi, F.J. & Shahri, A.M. 2016. Transparency in financial reporting with or without IFRS: The case of Iran. *Muhasebe Bilim, Dünyası Dergisi*, *18*.

Ball, R. 2006. (IFRS): Pros and cons for investors International Financial Reporting Standards (IFRS): Pros and cons for investors, (June 2013), 37-41.

Ball, R. 2016. IFRS – Ten Years Later (October 2015).

Bekhet, H.A. & Raed Walid Al-Smadi. 2014. Determining the causality relationships among FDI determinants: Evidence from Jordan. *Int. J. Sustainable Economy* 6(3): 261-274.

Beneish, M.D., Miller, B.P. & Yohn, T.L. 2015. Macroeconomic evidence on the impact of mandatory IFRS Adoption on equity and debt markets. *Journal of Accounting and Public Policy 1*.

Brüggemann, U., Hitz, J.-M. & Sellhorn, T. 2013. Intended and unintended consequences of mandatory IFRS adoption: A review of extant evidence and suggestions for future research. *European Accounting Review* 22(1).

Castillo-merino, D., Menéndez-plans, C. & Orgaz, N. 2014. Mandatory IFRS adoption and the cost of equity capital : Evidence from Spanish firms 10(3): 562-583.

Chen, C.J.P., Ding, Y. & Xu, B. 2014. Convergence of accounting standards and foreign direct investment. *International Journal of Accounting* 49(1): 53-86.

Chen, Davis, Dopuch, King & Leuz. 2015. The effect of mandatory IFRS adoption on international cross-listings. *The Accounting Review* 90(4): 1395-1435.

Christensen, B.E., Glover, S.M. & Wood, D.A. 2012. Extreme estimation uncertainty in fair value estimates: Implications for audit assurance. *Auditing: A Journal of Practice & Theory* 31(1): 127-146.

DASKE, H. 2006. Economic benefits of adopting IFRS or US-GAAP – Have the expected cost of equity capital really decreased ? *Journal of Business Finance & Accounting* 33(5): 329-373.

Daske, H., Hail, L., Leuz, C. & Verdi, R. 2008. Mandatory IFRS reporting around the world: Early evidence on the economic consequences. *Journal of Accounting Research* 46(5).

DeFond, M., Hu, X., Hung, M. & Li, S. 2011. The impact of mandatory IFRS adoption on foreign mutual fund ownership: The role of comparability. *Journal of Accounting and Economics* 51(3): 240-258.

Dondashe, N. & Phiri, A. 2018. Determinants of FDI in South Africa: Do macroeconomic variables matter? *Munich Personal RePEc Archive*, (83636).

Elbannan, M. 2011. Accounting and stock market effects of international accounting standards adoption in an developing economy. *Review of Quantitative Finance and Accounting 36*.

Epstein, B.J. 2009. The economic effects of IFRS adoption. *The CPA Journal* 79(3).

Feeny, S., Iamsiraroj, S. & McGillivray, M. 2014. Growth and Foreign Direct Investment in the Pacific Island countries. *Economic Modelling* 37: 332-339.

Gordon, L.A., Loeb, M.P. & Zhu, W. 2012. The impact of IFRS adoption on foreign direct investment. *Journal of Accounting and Public Policy* 31(4): 374-398.

Granger, C.W.J. 1969. Investigating causal relationships by econometric models and cross-spectral methods. *Econometica* 37.

Hail & Leuz. 2007. Capital market effect of mandatory IFRS reporting in the EU: Empirical evidence. *Working Paper*.

Hamit-haggar, M. 2012. Greenhouse gas emissions , energy consumption and economic growth : A panel cointegration analysis from Canadian industrial sector perspective. *Energy Economics* 34(1): 358-364.

Houqe, M.N., Monem, R.M. & Zijl, T. van. 2016. The economic consequences of IFRS adoption: Evidence from New Zealand. *Journal of International Accounting, Auditing and Taxation* 27: 40-48.

Iamsiraroj, S. 2016. The foreign direct investment-economic growth nexus. *International Review of Economics and Finance* 42: 116-133.

Iamsiraroj, S. & Ulubaşoğlu, M.A. 2015. Foreign direct investment and economic growth : A real relationship or wishful thinking ? *Economic Modelling* 51: 200-213.

Im, K.S., Pesaran, M.H. & Shin, Y. 2002. Testing for Unit Roots in Heterogeneous Panels, (9526).

Ismail, W.A. & Kamarudin, K. 2013. Earnings quality and the adoption of IFRS based accounting standards: Evidence from an emerging market. *Asian Review of Accounting*, *21*.

Joshi, M., Yapa, P. & Kraal, D. 2016. IFRS adoption in ASEAN Countries Perceptions of Professional Accountants.

Kao, C. & Chiang, M. 2000. On the estimation and inference of a cointegrated regression in panel data. *Center for Policy Research*. *Paper 145*. 15: 179-222.

Kao, C. & Min-Hsien Chiang. 1999. On the Estimation and Inference of a Cointegrated Regression in Panel Data. *Center*

for Policy Research Maxwell School of Citizenship and Public Affairs Syracuse University.

Kao, H.-S. & Wei, T.-H. 2014. The effect of IFRS, information asymmetry and corporate governance on the quality of accounting information. *Asian Economic and Financial Review* 4(2): 226-256.

Kinuthia, B.K. & Murshed, S.M. 2015. FDI determinants: Kenya and Malaysia compared. *Journal of Policy Modeling*.

Lambert, R., Leuz, C. & Verrecchia, R.E. 2007. Accounting information, disclosure, and the cost of capital. *Journal of Accounting Research* 45(2): 385-420.

Larson, R.K. & Kenny, S.Y. 1995. An empirical analysis of international accounting standards, equity markets, and economic growth in developing countries. *Journal of International Financial Management & Accounting* 6(2).

Levin, A., Lin, C. & Chu, C.J. 2002. Unit root tests in panel data: Asymptotic and Ÿnite-Sample properties. *Journal of Econometrics* 108: 1-24.

Li, S. 2010. Standards in the European Union reduce the cost of equity capital? *The Accounting Review* 85(2): 607-636.

Li, S., Sougiannis, T. & Wang, I.-L. 2017. Mandatory IFRS Adoption and the Usefulness of Accounting Information in Predicting Future Earnings and Cash Flows, (April 2017).

Lourenço & Branco. 2015. Main consequences of IFRS adoption: Analysis of existing literature and suggestions for further research. *Revista Contabilidade & Finanças* 26(68): 126-139.

Lungu, C.I., Caraiani, C. & Dascălu, C. 2017. The impact of IFRS adoption on foreign direct investments: Insights for Emerging Countries. *Accounting in Europe*, *9480*(September).

Márquez-Ramos, L. 2014. European accounting harmonization: Consequences of IFRS adoption on trade in goods and foreign direct investments. *Emerging Markets Finance and Trade* (April 2015): 37-41.

Mohamed, M.R., Singh, K., Singh, J. & Liew, C. 2013. Impact of foreign direct investment & domestic investment on economic growth of Malaysia. *Malaysian Journal of Economic Studies* 50(1): 21-35.

Naranjo, P., Saavedra, D. & Verdi, R.S. 2013. Financial reporting regulation, information asymmetry and financing decisions around the world, (617).

Nnadi, M. & Soobaroyen, T. 2015. International financial reporting standards and foreign direct investment: The case of Africa. *Advances in Accounting* 31(2): 228-238.

Nor, Wah, L.S. & Nor, A.H.S.M. 2015. Foreign direct investment, economic growth and quality of stock market development a panel analysis. *Jurnal Ekonomi Malaysia* 49(1).

Oladipo, O.S. 2010. Foreign direct investment (FDI): determinants and growth effects in a small open economy. *The International Journal of Business and Finance Research* 4(4): 75-88.

Omri, A. & Kahouli, B. 2013. Causal relationships between energy consumption , foreign direct investment and economic growth: Fresh evidence from dynamic simultaneous-equations models. *Energy Policy*: 1-10.

Owusu, Suppiah & Hook, S. 2017. IFRS adoption, institutional quality and foreign direct investment inflows: A dynamic panel analysis. *Asian Journal of Business and Accounting* 10(2): 43-76.

Özcan, A. 2016. Assessing the effects of IFRS adoption on economic growth: A cross country study. *ACU International Journal of Social Sciences* (2): 70-86.

Pagano, M., Roell, A.A. & Zechner, J. 2002. The geography of equity listing: Why do companies list abroad? *Journal of Finance* 57(6): 2651-2694.

Pedroni, P. 1999. Critical values for cointegration tests in heterogeneous panels with multiple regressors. *Oxford Bulletin of Economics and Statistics* (61).

Pedroni, P. 2000. Fully-modified OLS for heterogeneous cointegration panel. *Adv. Econometrics*, 15.

Samaha, K. & Khlif, H. 2016. Adoption of and compliance with IFRS in developing countries. *Journal of Accounting in Emerging Economies* 6(1): 33-49.

Thampanishvong, C. & Kannika, A. 2015. Determinants of foreign direct investment in Thailand: Does natural disaster matter? *International Journal of Disaster Risk Reduction* 14: 312-321.

Utama, S., Farahmita, A. & Anggraita, V. 2016. Economic consequences of IFRS adoption in Indonesia 6(1): 79-85.

Zaidi, S. & Huerta, E. 2014. IFRS adoption and enforcement as antecedents of economic growth 4(1): 95.

Zaidi, S. & Paz, V. 2015. The impact of IFRS adoption: A literature review. *Journal of Theoretical Accounting Research* 10(2): 116-141.

Zeghal, D. & Mhedhbi, K. 2006. An analysis of the factors affecting the adoption of international accounting standards by developing countries. *The International Journal of Accounting* 41.

Zehri, C. & Abdelbaki, A. 2013. Does adoption of international accounting standards promote economic growth in developing countries? *International Open Journal of Economics* 1(1).

Maryam Yousefinejad*
Faculty of Economics and Management
Universiti Kebangsaan Malaysia
43600 UKM Bangi Selangor
MALAYSIA
E-mail: maryam_youssefinejad@yahoo.com

Azlina Ahmad
Faculty of Economics and Management
Universiti Kebangsaan Malaysia
43600 UKM Bangi Selangor
MALAYSIA
E-mail: azlina@ukm.edu.my

Fairuz Md. Salleh
Faculty of Economics and Management
Universiti Kebangsaan Malaysia
43600 UKM Bangi Selangor
MALAYSIA
E-mail: fairuz@ukm.edu.my

Ruzita Abdul Rahim
Faculty of Economics and Management
Universiti Kebangsaan Malaysia
43600 UKM Bangi Selangor
MALAYSIA
E-mail: ruzitaar@ukm.edu.my

*Corresponding author