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Attracting Inward Foreign Direct Investment: An Analysis on E-government Practices and Ease of Doing Business among Countries in the ASEAN Region

Zulkifli Mohamed¹, Farah Aida Ahmad Nadzri², Shahzadah Fahed Qureshi³, Ahmed Abdullah Saad Al-Dhubaibi⁴, Johan Arifin⁵, and Nathrah Yacob⁶

ABSTRACT

E-government involves the application of the latest innovations while providing the provision of efficient services in the government's management systems. Whereas, ease of doing business is an index by World Bank that shows the easiness of doing business in particular country. These two variables are investigated in our study as they may contribute to the inflows of Foreign Direct Investment in the economy. Additionally, the study also includes two control variables which are the contribution of private industry and public industry in the GDP. Prior studies related to the topic are discussed in this study to develop various hypotheses. To conduct effective research, 26-years of data from the ASEAN countries were collected. After applying various approaches and techniques including panel co-integration test and DOLS estimation for testing different variables and their respective data, first major hypothesis of the study related to the e-government was rejected. Yet, another hypothesis emerged, regarding the impact of control variables such as contribution of private sector in GDP and contribution of public sector in GDP.

KEY WORDS:

E-government Practices, ease of doing business, foreign direct investment, ASEAN.

JEL Classification: F38, H5.

¹Faculty of Business Management, Universiti Teknologi MARA, Kelantan, Malaysia

²Accounting Research Institute, Universiti Teknologi MARA, Malaysia

³Institute of Banking and Finance, Bahauddin Zakariya University Multan

⁴Department of Accounting, College of Business Administration, Prince Sattam Bin Abdulaziz University, Saudi Arabia

⁵Accounting Department, Faculty of Business and Economics, Universitas Islam Indonesia

⁶Inti International College Subang

1. Introduction

Foreign direct investment (FDI) refers to the investment by one person or organization in the businesses running in another country or region. FDI is an actual investment, which is very much different from the portfolio investment which involves purchasing equities from a business in another country (OECD, 2016; Tan et al., 2018). In our study, we are focusing

on inward foreign direct investment which means a country receiving investments from another country or person. Inward FDI can be attracted by increasing the performance and development of the businesses in the economies (Uddin et al., 2019). The following figure illustrates the total value of FDI in ten ASEAN countries in USD for the year 2014 and 2015.

Figure 1 shows different FDI values of the ASEAN countries for various years. "Ease of doing business" is a concept introduced by the World Bank and is based on a ranking system which can be used to measure the environment and performance of a business. Various

Correspondence concerning this article should be addressed to: **Nathrah Yacob**, Inti International College Subang, No. 3, Jalan SS15/8, SS15, Subang Jaya, Selangor.

E-mail: nathrah.yacobmohdy@newinti.edu.my

rules can be established to improve the economic activity of a business. According to Tingley et al. (2015), these rules include property rights protection, reduction in dispute resolving costs, and increase in reliable partners. All these rules are actually a part of “ease of doing business” which is a crucial factor in the betterment of growth and development of any business. E-government involves the innovative practices and latest technology in various services provided by the government of a country towards its citizens. Al-Hujran et al. (2015) have declared in their studies that the main aim of using these technologies is to increase the efficiency of these services of government and to increase the trust in govt. of citizens towards the government. It is also helpful in strengthening the relationships between people and the government which is really important for the smooth functioning of a country and its systems, as well as for the development and growth of that country (Abu-Shanab, 2017). As a consequence of e-government, citizens of a country may also feel encouraged to participate in the decision-making practices of government and may also work in collaboration with the government, leading towards the progress of country (Bilan et al., 2020).

Adoption of e-government and ease of doing business are very important determinants to attract various kinds of inward FDI that is beneficial for the progress and growth of an organization (Alam, 2017). But sadly in ASEAN countries, e-government adoption and ease of doing business are much underrated concepts due to which the businesses of these countries find it very difficult to attract inward FDI from different resources. Beside the ASEAN countries, other developing and underdeveloped countries are also facing similar type of less FDI (Martins & Veiga, 2018). There will be drastic consequences of inward FDI if the situation remains unchanged for a longer time period. In consequence, the businesses in those countries will suffer. Therefore, this problem must be solved as soon as possible in order to avoid such consequences. This can be achieved by promoting e-government adoption and ease of doing business concept (Milner et al., 2019).

There are many studies about the concepts of e-government and ease of doing business (Anthopoulos et al., 2016). In addition, different factors of inward FDI have also been discussed in some studies. However, the impact of e-government and doing business has not

been studied yet. The basic objectives of this study are:

- To analyze the effect of e-government on inward foreign direct investment (FDI) in the ASEAN countries
- To analyze the impact of ease of doing business on inward FDI in the ASEAN countries.

As we know, in the ASEAN countries the economy and businesses are growing gradually, and the importance of technology is also increasing (Buffat, 2015). The scope of this study revolves around the e-government concept and “ease of doing business” and its impact on the inward FDI. This study mainly provides complete knowledge and information of e-government and “ease of doing business” and their impact on inward FDI. In addition, it will also help the businesses to adopt e-government practices and ease of doing business concept in order to attract the inward FDI (Kotataridi et al., 2019; Lee et al., 2016).

2. Literature Review

2.1. *Technology Acceptance Model*

Technology acceptance model is an important theory during the study about various technologies and innovation related factors. This theory shows that how a technology is accepted and used effectively by its potential users (Venkatesh & Davis, 2000). There are many factors that affect the decision of people in regard of using a newly introduced technology and other innovations. The most important factors according to this theory that may affect the decision of people in adopting a particular technology are as follows: perceived usefulness and perceived ease of use. Perceived usefulness is the idea that how much benefits can be derived by using that particular new technology as how it can be useful in a person's everyday life. Perceived ease of use refers to the idea that how much easy a new technology is for usage by its users. It is evident that the technology that has more benefits and useful aspects will be readily accepted and used by the users as compared to useless technologies. In the same way, the technology that is easy to use or providing effortless usage to its users will also be readily accepted by them as compared to the complicated and difficult technologies (Legris et al., 2003). As this study consists of the concepts of e-government and “ease of doing business” and their impacts on inward FDI, therefore this theory can

Country	FDI Value (Million USD)			Portion
	2014 (H1)	2014 (H2)	2015 (H1)	2015 (H1)
Indonesia	8,413	8,470	13,666	31%
Vietnam	7,504	16,274	7,532	17%
Malaysia	13,813	4,882	7,010	16%
Thailand	1,734	6,654	4,079	9%
Myanmar	1,893	2,925	4,066	9%
Singapore	4,925	6,535	3,818	9%
Philippines	5,353	1,677	2,788	6%
Cambodia	795	1,314	666	2%
Laos	861	155	294	1%
Brunei	91	43	12	0%

* Source: FdiMarkets.com by Financial Times, 2015

Graphic © Asia Briefing Ltd.

Figure 1. FDI values for ASEAN countries for different years.

be easily related with all these concepts and can also be applied in our study (Hussain et al., 2020).

2.2. Impact of E-government Practices on Inward Foreign Direct Investment

Inward FDI are really important for the economic growth of the country as well as to maintain healthy relationships with businesses and people related to it in other countries (Corcoran & Gillanders, 2015; Doshi et al., 2019). Governments of many countries are giving it great attention and are using the e-government concept readily to increase the attraction of inward FDI from other countries. Güler et al. (2019) argued that the usage of e-government is very useful in the reduction of many types of costs that are usually incurred by the foreign investors while doing the investment. The basic motive of using e-government in this regard is to attract people for increasing FDI. Another aim of e-government adoption is to increase efficiency of government of a country in the present conditions of competition for FDI in several countries. It is clear that e-government adoption is an important tool in increasing the transparency of a government and improving the accountability conditions for that government. It also decreases the rate of corruption in the country.

Due to these reasons, foreign businesses do not feel reluctant to invest in the businesses of that particular country. Garcia and Hinayon (2018) favored the fact that when someone wants to invest in any business, he searches for various types of information about that business in order to ensure that he will definitely get enough return on that investment.

Due to the application and adoption of e-government in that country, all the information about a business becomes public and available to all the potential investors of that business (Kurfali et al., 2017). They do not have to incur various costs for research about that business or company and easily invest there. There are several investment promotion agencies, the main purpose of which is to attract the investments from other countries. Gaur and Jasmin (2017) as well as Hurtado (2018) suggested that these agencies play an important role in the provision of required information about different businesses to the foreign businesses and people that are the investors for the purpose of increasing FDI attraction. For this purpose, these agencies use internet and upload all the related and respective information there, which is really helpful for the foreign investors (Sá et al., 2016). These investment promoting agencies target those countries for which it is quite easy to invest

in the businesses of local countries. From the above discussion, in a nutshell the adoption of e-government for provision of information to the foreign investors can effectively increase the inward FDI which ultimately increases the growth and development of the country. Here the development of hypothesis 1 is as follows.

H 1: Adoption of E-Government has a significant impact on Inward Foreign Direct Investment in the ASEAN Region

2.3. Impact of Ease of Doing Business on Inward Foreign Direct Investment

With the growing importance of FDI all over the world, many researchers studied various factors that may affect the attraction of inward FDI in any country (Bishop, 2016). Some of these important factors include taxation system, political conditions, political stability, foreign exchange rates etc. In this study, an under-considered factor in this regard is being studies i.e. ease of doing business which refers to the ranking system of different countries from 1 to 190 based on the economic or business conditions in these countries. Schnoll (2015) explained this idea in such a way that the country having first rank is considered to be the most feasible country to do business or invest in some business, with best economic and business conditions.

On the other hand, the country at 190th rank (i.e., Somalia) means that this country is having worst economic conditions and is not at all suitable for doing business or making investment (Boateng, et al., 2015; Canare et al., 2016). This rank has a major effect on the attractiveness of inward FDI and it can be improved by making various amendments and betterments in the economic system and different laws and regulations related to it. The data related to "ease of doing business" actually improves the business atmosphere of a country and various rules and regulations related to it, which ultimately attracts the inward FDI from other countries. Venkatesh et al. (2016) further added to this concept by arguing that the country having higher rank in this index of ease of doing business will be receiving more investments from foreign countries and vice versa. From this discussion we can conclude that ease of doing business rank has major impact on inward FDI all over the world. We can generate the fol-

lowing hypothesis:

H 2: "Ease of Doing Business" has significant impact on Inward Foreign Direct Investment in the ASEAN Region

3. Methodology

3.1. Data

For conducting research in this study, data have been collected on several variables employed in this study. The independent variables include e-government adoption and ease of doing business. The impact of these two variables is supposed to be studied on the dependent variable, which is the inward FDI. Along with these independent and dependent variables, two control variables have also been used in this study. They include public sector contribution of GDP and contribution of private sector in the GDP. Therefore, the data about these variables are collected from the various countries of ASEAN region for the span of 26 years. To ensure the accuracy of the research, data were collected from authentic and verified sources such as the E-government Development Index and World Bank.

3.2. Model Specification

As it is clear that the impact of two independent variables i.e. e-government adoption and ease of doing business is supposed to be studied in this research in the occurrence of two control variables, public sector contribution of GDP and contribution of private sector of GDP. Therefore, in order to proceed with this research, the relative data of all the above mentioned variables will be collected effectively. The measurement unit of all these variables will be defined here. Firstly, the independent variable, e-government (EGOV) is measured in terms of percentage of individuals using and adopting e-government concept. Next, the ease of doing business (EDB) which is measured by an index developed by the World Bank known as ease of doing business index. The dependent variable, inward FDI (FDI) is measured in the form of amount of money or currency. Finally, control variables, public sector contribution of GDP (PUB) and private sector contribution of GDP (PRV) are both measured by per capita GDP contribution of both the sectors respectively. All these units of measurements are very specific to each variable and effectively used in this study. By using all these variables, a regression equation

can be produced, which is given as follows:

$$FDI_{it} = \alpha + \beta_1 EGOV_{it} + \beta_2 EDB_{it} + \beta_3 PUB_{it} + \beta_4 PRV_{it} + \varepsilon_{it} \quad (1)$$

Where, FDI is inward foreign direct investment, EGOV is adoption of e-government, EDB is ease of doing business, PUB is public sector contribution of GDP, PRV is a contribution of private sector of GDP, α is used to denote constant and ε_{it} is an error term.

3.3. Estimation Procedure

In the research process, after data collection procedure, the next basic and most important concept that is employed in this research is to utilize and analyze the collected data for various purposes. The most important purpose of this analysis is that it assists the us to identify which hypothesis is accepted and which hypothesis is rejected after the completion of research process. Various results and interpretations can be derived from the results of various tests used for the research process. In this study, we used the following tests in order to fulfill the above-mentioned consequences; unit root test, cointegration test, coefficient estimation test etc. Various methods and techniques of using and applying these tests will be argued in the following section.

3.4. Panel Unit Root Test

The first and foremost test that is used in the study of panel data is panel unit root test. This test is really important as it provides more accurate and reliable results in research process as compared to the other old and conventional methods used for the same purpose. This benefit of more accuracy and reliability is because of the fact that variations in the collected data increases the power of unit root tests more as compared to the traditional ones. Another point of importance in this regard is that the panel unit root tests have the ability to provide a standard normal distribution of collected data. There are two different tests that come under the one basic category of unit root test i.e. Levin Lin Chu and Im Pesaran Shin. These two tests can be differentiated with the help of the fact that IPS give heterogeneous results while LLC gives homogeneous results in case of study of cross sectional data just as explained by Pedroni (1999). The most impor-

tant benefit of applying these techniques in this study is that it will provide a standard normal distribution of the data which author has collected for the research purpose. These tests will also give the information about the status of stationary or non-stationary state of the data involved in this study. The integration level or status can also be effectively seen through these tests. All these points show the importance and benefits of Dickey-Fuller extension tests of unit root. In this study the author has used IPS approach of unit root test and its general equation is given below:

$$\Delta y_{i,t} = a_i + \rho y_{i,t} - 1 + \sum_{j=1}^{pi} a_j \Delta y_{i,t-j} + \varepsilon_{i,t} \quad (2)$$

3.5. Panel Cointegration Test

After the application of unit root tests and the identification of stationary and non-stationary condition of data as well as the integration among various variables, the next aspect is usually to identify the cointegrated variables of the study. In order to serve this purpose, Pedroni and Kao tests are generally used. One of the common things of Pedroni and IPS unit root test is due to the reason that both of them give heterogeneous results for autoregressive nature of cross-sectional data. These two test, namely - Pedroni (2001) and Kao cointegration tests, are actually derived from Engle-Granger tests. These tests use two different approaches simultaneously which are named as "within dimension" and "between dimension". These two can be differentiated by the fact that within dimension uses four types of statistics while between dimension uses only three types of statistics. The statistics included in within dimension are "panel v statistic", "panel rho statistic", "panel PP statistic (non-parametric)" and "panel ADF statistic (parametric)". On the other hand, the statistics used in between dimension include "group rho statistic", "group PP statistic (nonparametric)" and "group ADF statistic (parametric)". From Kao and Pedroni, the we will use the Kao cointegration test, whose equation that is generally used is given as follows,

$$y_{i,t} = \alpha_i + \delta_{i,t} + \beta_1 X_{1,i,t} + \beta_2 X_{2,i,t} + \dots + \beta_n X_{n,i,t} + \varepsilon_{i,t} \quad (3)$$

3.6. Coefficient Estimation Test

The next step in our research or study is to check the

association between different variables of the study. The hypotheses made in the literature review section are also supposed to be confirmed through this coefficient estimation test. In order to serve this purpose, two coefficient estimation techniques are generally in use as discussed by Pedroni (2004). These techniques include FMOLS and DOLS, which are basically derived from OLS, the original test which does not provide correct or reliable results. Therefore, FMOLS and DOLS are used in its place for the same purpose. These two tests can be discriminated in such a way that FMOLS is a non-parametric technique while DOLS is a parametric technique and both of them deal with the issue of serial correlation. In this regard, the we have used DOLS test of coefficient estimation and its equation is also given below:

$$\hat{\beta}_{FM} = \left(\sum_{i=1}^N \sum_{t=1}^T (x_{i,t} - \bar{x}_i)^2 \right)^{-1} \sum_{i=1}^N \left(\sum_{t=1}^T (x_{i,t} - \bar{x}_i) FDI_{i,t} - T \hat{\delta}_{\epsilon 1} \right) \quad (4)$$

Here $FDI_{i,t}$ is the modified variable of inward foreign direct investment.

4. Empirical Analysis

4.1. Results of Unit Root Test

The stationarity state as well as the integration of different variables included in this study, namely, foreign direct inward investment, e-government adoption, ease of doing business, public sector contribution of GDP and contribution of private sector of GDP can be checked by using the unit root test. Unit root test results can be evidently shown in Table 1. This table clearly depicts that the “null hypothesis” at level position of panel unit root test of the series data should be accepted. So, for this portion i.e. level data, it is concluded that all the variables of the study are stationary. Besides, there is also a section of first difference in a table. When we observe the first difference section of Table 1, it can be viewed that the null hypothesis of all the data of that section will be clearly rejected with different significance levels, that is, 5% and 1% significance levels. This rejection clearly shows that the data of this portion is non stationary. The rejection of null hypothesis of zero integration means that the variables of our study are integrated of one order. We can conclude from the above discussion that the data in level

section of the table is stationary while the data at the first difference section of the table is non stationary.

4.2. Results of Panel Cointegration Test

After the identification of incorporation among various variables involved in our study, the next step involved identifying the cointegration of the variables of our study. Another aspect of this test is that it will provide the information about variables at non-steady and steady state. The results of this cointegration test on all the variables included in our study are presented in the Table 2. This table shows the statistics and p-values statistics. It is also seen that in the approach of “within dimension” the null hypothesis is rejected at panel rho statistics at 1% significance level and the null hypothesis of ADF statistics is rejected at 5% significance level. Beside that in the approach of “between dimension” null hypothesis is rejected for group PP statistics at 1% significance while null hypothesis is rejected for ADF statistics at 5% significance level. Therefore, 4 out of 7 statistics the reject null hypothesis by 1% and 5% respectively. It is also clear that parametric and non-parametric are very important for the measurements, therefore it is said that all the variables in the study are cointegrated.

4.3. Coefficient Estimation Test

After the identification of cointegration among various variables used in the study i.e. foreign direct inward investment, e-government adoption, ease of doing business, public sector contribution of GDP and private contribution of GDP, next, the coefficients of different variables need to be estimated. For this purpose, FMOLS technique has been selected among the two techniques, namely, FMOLS and DOLS. The FMOLS test results have been shown in Table 3. The coefficients of our first independent variable are 0.621 and 1.583 for pooled and grouped variables respectively. As there is no sign of significance shown in the table, it is clear that the impact of e-government adoption on inward FDI is not significant. The next independent variable which is the ease of doing business shows the coefficient values 1.466 and 1.689 for pooled and grouped types of data respectively. In addition, this result is also significant which gives the result that ease of doing business has significant impact on inward FDI. There are two control variables in this study, contribution of public sector

Table 1. Panel Unit Root Test

Variable	Level	First Difference
FDI	-2.82624 (0.6831)	-2.81638** (0.0012)
EGOV	-1.72368 (0.8163)	-3.53716* (0.0005)
EDB	-1.28642(0.5278)	-2.17638**(0.0643)
PUB	-2.82633(0.1379)	-3.52781* (0.0242)
PRV	-1.03771 (0.2578)	-0.82738** (0.0036)

Note: *, ** depicts the null hypothesis rejection of zero cointegration at significance of 1% & 5%, respectively.

Table 2. Panel Cointegration Test

Dimension	Tests	Statistics	T-value
Within Dimension	Panel v statistic	-0.51786	-0.78269
	Panel rho statistic	-0.18745*	-2.93854
	Panel PP statistic	-1.81568	-1.25784
	Panel ADF statistic	-2.57841**	-3.86432
	Group rho statistic	-1.18745*	-2.36768
Between Dimension	Group PP statistic	-0.81557*	-1.35676
	Group ADF statistic	-3.87958**	-3.88647

Note: *, ** and *** are used to show the rejection of non cointegrated variables at 1, 5 and 10% significance

in GDP and contribution of private sector in GDP. The impact of both these control variables is significant in the results presented in Table 3.

5. Discussion and Conclusion

5.1. Discussion

This study aimed to find the impact of independent variables examined in the study which are the e-gov-

ernment adoption and the ease of doing business by the government, namely, “inward foreign direct investment”. All the hypotheses of this study will be discussed one by one along with the status of their acceptance or rejection. Analysis the impact of e-government adoption on the FDI was the first hypothesis tested in the study. By applying different methods and techniques, this hypothesis was tested and evaluated effectively and resultantly rejected because of these tests. The study by

Table 3. Coefficient Estimation Test

Variables	Pooled	Grouped
EGOV	0.621(0.625)	1.583(0.648)
EDB	1.466**(2.276)	1.689*(2.799)
PUB	0.211*(2.123)	-0.069**(-2.044)
PRV	-1.678(-2.101)	1.622*(2.248)
R-Squared Adj.	0.668	0.901

Note: *, ** and *** are the significance levels of the variables at 1, 5 & 10% respectively.

Banerjee and Chau (2004) also shows the same rejection result, with regard to impact of e-government on the contribution of private sector in GDP. E-government could be useful for a small portion of country but has no major impact in inward FDI. Next hypothesis of this study was that ease of doing business has significant impact on inward FDI for ASEAN countries. After testing and evaluating, this hypothesis is accepted. Ease of doing business increases the trust of investors in various sectors of the country and thus FDI increases. Another research by Dreze and Sen (1999) has also accepted the same result. Public sector contribution in GDP was used as a control measure in the study and by employing several tests its impact is significantly accepted, which has also been accepted by another researcher (Moran, 2012). Public sector contribution in GDP increases the performance and growth of the public sectors resulting in increase in inward FDI. Lastly, the contribution of private sector in GDP used in the study also has significant impact and thus its hypothesis is accepted. Same results are also presented by the prior study of Jayasuriya (2011). Contribution of private sector towards GDP increases the attraction of FDI.

5.2. Implications

Different results and conclusions of this study provide different practical, theoretical and policy making benefits to various people. Firstly, it provides comprehensive knowledge of e-government adoption and ease of doing business and its impact on the inward FDI. Addition-

ally, this study also provide assistance for the businesses and government of the country that adoption of e-government improves the business condition, thus there is need to attract more flows FDI. Furthermore, an assistance is also provided for the government to make policies that are helpful in the usefulness of e-government and make it easy to do business activities for the people, so that a handsome amount of inward FDI can be attracted and used effectively for the economic development of the country.

5.3. Limitations and Future Indications

There exist various loopholes of this study. The most important limitations include small sample size, that focused only on ASEAN countries, employing only several selected tests and techniques for research purpose, on selected variables etc. The future researchers can increase the size of the samples for conducting an effective and reliable research. In addition, they can also focus on some other regions or set of countries of the world in data collection process. In future studies, authors can use more tests other than panel co-integration, unit root test, Granger Causality, and coefficient estimation test. Nevertheless, future researchers can also opt to expand the coverage of variables other than those examined in this study.

6. Conclusion

E-government refers to the concept of new technology usage in various government services and information

management aspects to increase efficiency and effectiveness of these services. Ease of doing business is an index of the World Bank in which various countries are given ranks according to the degree of “ease of doing business” in these countries. Inward FDI are the investments coming from people or businesses from foreign countries. The motive of this study is to seek the impact of e-government adoption and ease of doing business on inward FDI. For this purpose, data was collected from the ASEAN countries consisting of 26 years and several techniques and approaches were applied on the collected data. After that, by using the results of these approaches, several hypotheses of the study were accepted or rejected according to the results.

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