THE RELATIONSHIP BETWEEN MACROECONOMIC VARIABLES AND FOREIGN DIRECT INVESTMENT: EVIDENCE FROM ASEAN-5 COUNTRIES

By

NAQIUDDIN NAQIB BIN MOHAMAD KHAIRRI

Project Paper Submitted to
School of Economics, Finance and Banking,
Universiti Utara Malaysia,
in Partial Fulfilment of the Requirement for the
Master of Science (MSc) Economic

Pusat Pengajian Ekonomi, Kewangan dan Perbankan
SCHOOL OF ECONOMICS, FINANCE, AND BANKING
Universiti Utara Malaysia

PERAKUAN KERJA KERTAS PROJEK
(Certification of Project Paper)

Saya, mengaku bertandatangan, memperakukan bahawa
(I, the undersigned, certified that)
NAQIUDDIN NAQIB BIN MOHAMAD KHAIRRI (826113)

Calon untuk Ijazah Sarjana
(Candidate for the degree of)
MASTER OF ECONOMICS

telah mengemukakan kertas projek yang bertajuk
(has presented his/her project paper of the following title)

THE RELATIONSHIP BETWEEN MACROECONOMIC VARIABLES AND FOREIGN DIRECT INVESTMENT: EVIDENCE FROM ASEAN-5 COUNTRIES

Seperti yang tercatat di muka surat tajuk dan kulit kertas projek
(as it appears on the title page and front cover of the project paper)

Bahawa kertas projek tersebut boleh diterima dari segi bentuk serta kandungan dan meliputi bidang ilmu dengan memuaskan.
(that the project paper acceptable in the form and content and that a satisfactory knowledge of the field is covered by the project paper).

Nama Penyelia : Associate Prof. Dr. Nor Azam bin Abdul Razak
(Name of Supervisor)

Tandatangan : _____
(Signature)

Tarikh : 1 September 2020
(Date)

PERMISSION TO USE

In presenting this project paper in partial fulfilment of the requirement for a Post Graduate degree from the Universiti Utara Malaysia (UUM), I agree that the Library of this university may make it freely available for inspection. I further agree that permission for copying this dissertation in any manner, in whole or in part, for scholarly purposes may be granted by my supervisor or in their absence, by the Dean of School of Economic, Finance and Banking where I did my project paper. It is understood that any copying or publication or use of this dissertation parts of it for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the UUM in any scholarly use which may be made of any material in my dissertation.

Request for permission to copy or to make other use of materials in this dissertation in whole or in part should be addressed to:

Dean of School of Economics, Finance and Banking
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman

ABSTRACT

Foreign direct investment (FDI) is an investment which involves a long-term alliance and represents a long influential effect by the resident in a single economy. FDI stimulates economic stability and development of a country. The objective of this study is to examine the relationship between macroeconomic variables and FDI inflows in ASEAN-5 countries over the period 1988-2018. The dependent variable is FDI inflows whereas as the independent variables are economic growth, exchange rate, interest rate, inflation and trade openness. Findings from the panel unit root test reveals that all variables are stationary at 1% significance level. Based on the cointegration test, all variables are cointegrated and has a long run relationship among the variables. From the FMOLS method, this study finds that there is a negative and significant relationship between interest rate and FDI inflow. This implies that an increase in interest rate discourages foreign investment into the country. Also, there is a positive and significant relationship between trade openness and FDI inflow. Thus, an increase in trade openness attracts FDI inflows into the country. Furthermore, this study discovers that economic growth, exchange rate and inflation are not statistically significant in influencing FDI inflows in ASEAN-5 countries. Therefore, this study will provide assistance for policy makers in improving the current strategy and policies on FDI inflow.

Keywords: FDI inflow, Economic growth, Exchange Rate, Interest Rate, Inflation

ABSTRAK

Pelaburan langsung asing (FDI) adalah pelaburan yang melibatkan perikatan jangka panjang dan mewakili kesan berpengaruh panjang oleh penduduk dalam ekonomi tunggal. FDI merangsang kestabilan ekonomi dan pembangunan sesebuah negara. Objektif kajian ini adalah untuk mengkaji hubungan antara pemboleh ubah makroekonomi dan aliran masuk FDI di negara-negara ASEAN-5 dalam tempoh 1988-2018. Pemboleh ubah bersandar adalah aliran masuk FDI sedangkan sebagai pemboleh ubah bebas adalah pertumbuhan ekonomi, kadar pertukaran, kadar faedah, inflasi dan keterbukaan perdagangan. Penemuan dari ujian akar unit panel menunjukkan bahawa semua pemboleh ubah tidak bergerak pada tahap kepentingan 1%. Berdasarkan ujian kointegrasi, semua pemboleh ubah disatukan dan mempunyai hubungan jangka panjang antara pemboleh ubah. Dari kaedah FMOLS, kajian ini mendapati bahawa terdapat hubungan negatif dan signifikan antara kadar faedah dan aliran masuk FDI. Ini menunjukkan bahawa kenaikan kadar faedah tidak menggalakkan pelaburan asing ke dalam negara. Juga, terdapat hubungan positif dan signifikan antara keterbukaan perdagangan dan aliran masuk FDI. Oleh itu, peningkatan keterbukaan perdagangan menarik kemasukan FDI ke negara ini. Selanjutnya, kajian ini mendapati bahawa pertumbuhan ekonomi, kadar pertukaran dan inflasi tidak signifikan secara statistik dalam mempengaruhi aliran masuk FDI di negara-negara ASEAN-5. Oleh itu, kajian ini akan memberi bantuan kepada pembuat dasar dalam memperbaiki strategi dan dasar semasa aliran masuk FDI.

Kata kunci: Aliran masuk FDI, Pertumbuhan Ekonomi, Kadar Pertukaran, Kadar Faedah, Inflasi

ACKNOWLEDGEMENT

First of all, I would like to praise to Allah The Almighty for giving me the strength and health to pursue my study and finished this project paper successfully. This research would have not been possible without significant contribution of many people. I am greatly indebted and wish to extend my deepest gratitude and sincere appreciation to my supervisor, Ass. Prof. Dr. Nor Azam Bin Abdul Razak for constructive ideas, invaluable cooperation, professional guidance, advice, and thoughtful criticisms in completing this research.

Special thanks to my parents, Mohamad Khairri Bin Arshad and Normah Binti Ahmad, for their patience, forbearance and prayers throughout my studies and process of writing this project paper.

I also wish to convey my gratitude to my friends especially Amin Bukhari and Naqiyudin Misran for their understanding, concern and care. I offer my regards and blessings to all of those who directly and indirectly contributed to the success of this study.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ASEAN	Association of Southeast Asian Nations
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
ER	Exchange Rate
INF	Inflation
IR	Interest Rate
TRA	Trade Openness
UNCTAD	United Nations Conference on Trade and Development
USD	United States Dollar

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Foreign direct investment (FDI) is vital for the economic growth and development of a country (Pradhan, 2009). FDI can be described as investing in foreign assets (either in domestic institutions, facilities and/or organization) that are not traded on the stock exchange. This form of investment establishes a longstanding relationship as well as a long influential effect on the residents in a single economy (UNCTAD, 2007). Duce (2003) posits UNCTAD's FDI concept is consistent with IMF and OECD concept in which the aim of FDI is to gain a longstanding concentration in a host country by a business residing in other country. Further, the United Nations (2007) define FDI inflows as the amount of inwards foreign investment that may comprise invested profits, intra-company investments, net capital repatriation and repayment of loans in the reporting economy.

Many countries, especially the developing countries, are urged by their policymakers to increase FDI inflows. Particularly, the economic growth of ASEAN-5 countries is strongly linked with the FDI inflows (Tamajaj, 2000). Thus, a fall in FDI inflows will be problematic for developing countries to sustain their economic growth. The attempts to increase FDI are motivated by the gains from direct expenditure in infrastructure, favourable externalities, spill over impacts, resource efficiency gains from technological transitions of new practices and management expertise (Lee, 2013).

Furthermore, FDI inflows increase will enhance economic growth and development of a country. A great example could be seen from the Chinese economy

where the country's economy had grown significantly over the last decade through FDI inflows. The FDI of China is strongly related to economic growth and the rise in overall non-current assets investment (Chen et al, 1995). Buckley et al. (2001) support the relationship between economic growth and FDI inflows. They had observed output of Chinese companies immensely enhanced with FDI inflows. This demonstrates that an improvement in FDI inflows not only improves the country's economic growth but also boosts domestic business performances that will allow them to succeed and compete in the market.

Many studies recognize FDI inflows of both emerging and developed nations have both constructive and destructive influences on economic growth. For example, introduction of new innovations or processes into the domestic sector and domestic businesses profited from the accelerated proliferation of modern technology (Teece, 1977). According to De Mello (1999), the spill over of technical know-how from contributing countries endures economic development of developing or host countries. However, destructive and detrimental consequence is that domestic companies will be outperformed by foreign companies which have superior skilled labour and advanced technology in the country (Arnold and Javorcik, 2009). Developing countries may have difficulties in developing new technology, therefore, it is important to integrate technological transfer from FDI operations into domestic companies. This will help to increase productivity, efficiency and lower production costs. However, it is arguable that the spill over effects of FDI inflows are also destructive influences on host countries. For example, it may affect small domestic companies in terms of production costs as multinational enterprises have lower marginal costs and higher productivity.

FDI inflows constructive spill over effects provides opportunity in improving labour skills and hiring workers in the host country. As companies acquire new

technologies, workers are trained to obtain innovative skills to manage new technology (Glass and Saggi, 2002; Fosfuri et al., 2001). Moreover, companies may also employ more skilled workers to increase their efficiency to work with the new technology. This improves the skills of domestic workers and may lower the country's unemployment rate. However, due to labour mobility, these skilled workers tend to search company that offers higher wages or themselves being head-hunted by other bigger domestic or foreign companies that offer higher wages. This affects the companies as they will be required to increase wages to secure workers.

Additionally, the rise in FDI inflows in domestic firms has a favourable effect on firms' export capacity. Capability to export encompasses expenditures and costs linked to transport, infrastructure and logistic systems but also the need to understand preferences of international market. Greenaway et al. (2004) agree information and expertise acquired from FDI inflows allow domestic companies to minimize these costs and reduce the costs of entering international market.

Despite constructive effects of FDI inflows towards host countries, there are also risks associated with FDI inflows. For example, transnational corporation may provide finances to hosts countries but increase money flow leads to a rise in aggregate demand (Ilie, 2014). Thus, causes increase in prices; creating an inflationary situation in the economy. As more people start to borrow, interest rate rises. Eventually, local investment will be crowded. Besides, capital account of host countries will also be affected as these transnational corporations tend to send their profits and funds gained back to their home country. Hence, reducing the capital account of the host country.

Thus, while there are some risks of FDI inflows, it is still regarded as the main element for improving economic growth and development of a country. The FDI

inflows are decided by certain factors that represent the condition of the economy that will be helpful in attracting more FDI into the region. Hence, concentrating on five macroeconomic factors of FDI inflows in ASEAN-5 countries is feasible. Factors studied are economic growth, exchange rate, interest rate, inflation rate and trade openness.

1.2 ASEAN-5 Countries and Foreign Direct Investment

The five original members of ASEAN (ASEAN-5) are Indonesia, Malaysia, Singapore, the Philippines and Thailand and was formed on the 8th of August, 1967. FDI inflows are crucial elements for economic growth and development of these five countries. The development of FDI inflows had grown substantially since 1970s. According to Ridzuan et al. (2018), the FDI inflows had gradually increased from USD0.37 billion in 1970s to USD2.2 billion in 1985 and had grown significantly between 1980s and 2013, when the FDI's 2013 value was three hundred times higher than FDI's 1970s value.

The Malaysian economy has been rising steadily and the FDI inflows are one of the key reasons behind this economic growth and development. Elements that led Malaysia to become an attractive FDI nation involve well-developed infrastructure, well-managed macroeconomics, sound and steady economic growth, and a healthy financial system (Hamood et al., 2018). In 1968, the Malaysian government implemented the incentives to invest which ignite the country's free trade region. According to Ang (2008), the open reform of export incentives clause in the late 1980s created a massive attraction for FDI into the country. The net FDI inflows had substantially increased since 1980 onwards which can be seen in Figure 1.1. Referring to data of the World Bank (2020), Malaysia's FDI net inflows in 2018 amounted USD8.570 compared to USD3.787 billion in 2000. However, we can see that Malaysia

experienced fluctuations in the FDI inflows. In 1997, 2002, and 2009, Malaysia experienced a substantial decline in FDI inflows because of economic crisis. Malaysia also experienced stock market downturn.

The increase in FDI inflows had raised Malaysia's gross domestic product (GDP) per capita four times greater compared to in 1970. The explanation for this increase is attributed to the rise of the manufacturing sector which has rendered an immense contribution to the GDP of the county. The rise of FDI inflows are mainly due to the transition from the agricultural economy to the industrial economy which attracts global companies to invest in Malaysia (Hamood et al, (2018). The shift in market orientation culminated in the growth of modern infrastructure and well-equipped human resources that rendered Malaysia as one of FDI's largest recipients. Thus, FDI is vital in growing the economy which not only boosts economic growth but also provides local market with job opportunities, new technology and increase exports to foreign market.

Furthermore, Indonesia has always been established as a desirable target for FDI inflows. The implementation of free-fluctuating interchange system by the Indonesian government in the 1970s, accompanied by the liberalization of the financial market in the 1980s, views the country as a favourable target for FDI inflows and a comparatively extended entree for investment flows (Khaliq and Noy, 2007). However, according to Patunru and Rahardja (2015), the Indonesian FDI system was usually very conservative and liberalized only in periods of economic distress. After the liberalization strategy in the early 1990s, the reforms in terms of business policy and relaxed ownership rules had increased the FDI which had grown by more than 800 percent from 1989 to 1996 (Sjoholm, 2016). The FDI inflows of Indonesia has

increased substantially and their base has increased; recognitions to growing economic development, low national debt and rational fiscal management. (Sjoholm, 2016).

The net inflows of FDI in Indonesia had gradually increased from 1980s onwards and fluctuated strongly due to Asian financial crisis, political and economic turmoil which caused a collapse in FDI inflows. Based on Figure 1.1, Indonesia had registered negative FDI inflows from 1998 to 2001 and on 2003. From 2003 onwards, the FDI inflows of Indonesia had grown substantially and in 2014, the FDI was the highest among the Southeast Asian country (Sjoholm, 2016). The swift rise in FDI inflows was likely attributed to FDI general growth worldwide and a catch-up from historically weak inflows induced by restrictive policies (Sjoholm, 2016).

In the last two decades from 2000 to 2019, the Philippines had an increase in the FDI inflows. The country had allowed up to 100% foreign equity participation under the laws of Foreign Investment Act (FIA) or Republic Act 7042 of June 1991 which boost FDI inflows (Aldaba and Aldaba, 2010). As referred to Figure 1.1 in the early 1980s, the FDI inflows had fluctuated steadily. However, owing to the liberalization initiatives in the 1990s, the FDI inflows had been slowly increasing from 1991 to 1994. Although major declines occurred in the period 2001 to 2003 and 2008 to 2010, an improvement was felt as FDI inflows grew from 2004 to 2007 and from 2011 to 2018. After the world financial disaster, and in not more than a decade, FDI inflows had amplified ten times from 2010 to 2018; approximately USD1 billion to USD10 billion; rendering Philippines the fastest emergent FDI receiver in Asia (Jiao, 2020). According to Aldaba and Aldaba (2010), the FDI inflows seemed to shift the economic structure in which involvements of the industrial segment had reduced but involvements of the service sector continued to develop, especially in the finance and telecommunication.

The rapid rise in FDI inflows raised attention to other foreign investors due to the country's potential. Trade tensions between the US and China expect to cause an industry relocation which may be beneficial for the Philippines to be an ideal industry relocation. The changes in the investment rule and markets open to external investments in the previous period have added to a major rise in the country's FDI inflows. The efforts by the government and positive developments substantially changed the foreign investors' confidence thus, increasing the FDI inflows of the country.

Moreover, among the Southeast Asian countries, Singapore holds the highest FDI inflows. The pragmatic basis of Singapore's economic growth policy has successfully drawn FDI inflows through trade openness. The country has been an enticing investment destination due to its straightforward regulatory structure, political strength, tax benefits, industrial real property park and lack of fraud. The Singapore government had introduced an aggressive industrial strategy such as tax incentives to support industries with high growth prospects (Lim and McAleer, 2002). According to Chuang (2020), most of the FDI growth in Southeast Asian countries in 2018 was driven by the rise in Singapore's investment which accounted 94% in acquisition activities and cross-border merger.

The intervention by the Singaporean government to boost its economy has proven effective. The nation has been the ideal location to invest, drawing more FDI inflows into the region. The figure below depicts that the net FDI inflows had increased substantially since 1990s. The country was still able to bounce-back from the economic and global financial crisis. Hence, Singapore's economic growth can be largely traced to the country's degree of foreign investment, arising from a healthy

macroeconomic climate, foreign investment policies and free trade (Lim and McAleer, 2002).

In addition, in the late 1970s, Thailand's FDI was predominated by import-substitution industries such as textiles, chemical and automobiles. Over the years, as the Thai government noticed its advantages over other Southeast Asia nations in terms of natural resources, low-cost labour and large domestic market, it had introduced several different policies to encourage FDI inflows (Kohpaiboon, 2010). The country had experienced a shift from the policy of import substitution (from 1960s to 1970s) to the system of export promotion (1970s onwards) (Kohpaiboon, 2010). Rising in export promotion policy focuses on light-weight production sectors such as textiles, toys and accessories. However, as FDI flowed into the country, Thailand has attracted foreign investors from labour exhaustive assemblage companies, especially in the electrical and electronic businesses.

The change in regime constitutes a large increase in FDI inflows from 1987. The transition towards export-oriented had attracted more foreign investors into Thailand. Referring to Figure 1.1, net FDI inflows of Thailand had increased substantially after the transition from just USD55.3 million in the late 1970s, to USD1.8 billion in the late 1980s. In 2018, Thailand had successfully attracted more than USD13.2 billion of FDI inflows. The spill over effect of the rise in FDI inflows benefitted Thailand but is also beneficial for other neighbouring countries as well. A high proportion of investment flows into the Southeast Asia was flourished by Thailand in attracting foreign investors. The beneficial results of FDI inflows not only enhance the economic development but also improve the production process from the new technology transfer gained from FDI inflows.

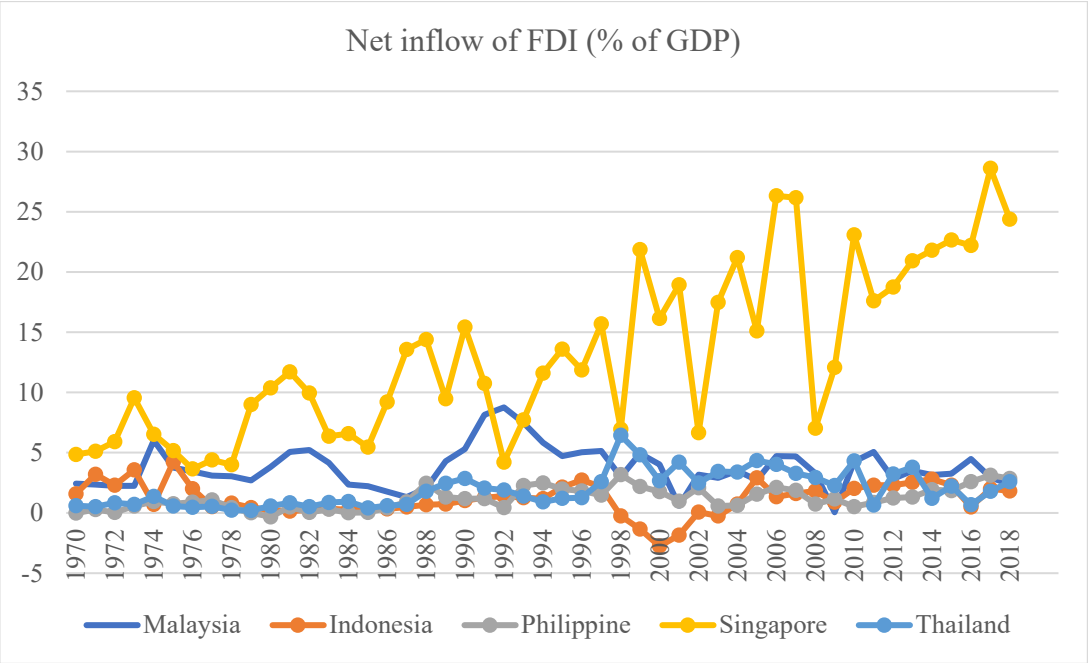

Figure 1.1

Net inflow of FDI (% of GDP) for ASEAN-5 countries

Source: World Bank Data, 2020

1.3 Problem Statement

The policy makers have emphasized the importance of inflows of FDI in which it will improve the overall economy. FDI inflows seek to boost the economy by increasing and transferring capital, technologies, and expertise as well as information sharing. Various analysts have explored extensively on the position of FDI in economic growth, but most studies have concluded that FDI inflows are extensive projects in which shareholders have control and power over the resident body of the country.

Furthermore, FDI inflows are vital contributing factor of growth and development for a country's economy. However, past literature viewed unclear relationship between economic growth and FDI inflows. Evidence showed that in certain regions, countries are more reliant on other sectors as compared to FDI inflows

to boost their economy. The contribution of FDI inflows leads to an increase in productivity which improves economic growth depending on the technological transfer into the host nation. However, Ilie (2014) believes that contribution of FDI inflows have destructive impact on the allocation of resources and physical capital and technology made available for domestic companies which affect the economic growth of the host country. Therefore, further research is required to look into this relationship.

Besides, past researchers had conducted on this topic but most of the studies did not include other macroeconomic variables in consideration. According to Choong and Liew (2009), the macroeconomic uncertainty has a contrary outcome on driving force of FDI inflows and economic growth of ASEAN countries. Therefore, further research is required to be conducted in this area to determine which macroeconomic variables affect negatively on FDI inflows.

By examining FDI data across countries, it can be shown that the degree of FDI inflows among the ASEAN-5 countries are different. For instance, during certain period, Singapore experienced a large increase in FDI inflows whereas other countries, Malaysia, Indonesia, the Philippines and Thailand still cannot go beyond and excel to attract FDI inflows. The actions in terms of policy making and legislation taken by the government of each country are different in which it can directly or indirectly affect the flow of FDI inflows. Policies made may affect the interest rate and inflation rate of respective country. Thus, influences flow of FDI inflows into the economy. Hence, the flow of FDI inflows are related to other macroeconomic variables that can be direct or indirectly affect the FDI inflows of a country.

The discussion highlighted a variety of issues regarding the increase and downturn of FDI inflows in different countries as well as the uncertainty in the driving

force of FDI inflows. As FDI inflows are considered significant engine of economic growth and development, policy makers should consider factors influencing the level of FDI inflows in depth. Hence, a study is conducted to analyse the link between the macroeconomic issues (economic growth, exchange rate, interest rate, inflation rate and trade openness) and FDI inflows of ASEAN-5 countries.

1.4 Research Questions

Among the prime foundations of capital that is critical for growth and development of ASEAN-5 countries is mainly pursued by global integration of FDI inflows. Economic legislators of each country recognize the importance in raising the FDI inflows. However, the dimensions of attracting FDI inflows depend on the macroeconomic variables which reflect on the stature of the country. Thus, research question is formed to direct collecting evidences and to achieve research objective.

What are the relationships between FDI inflows and selected macroeconomic factors (namely, economic growth, exchange rate, interest rate, inflation rate and trade openness) of ASEAN-5 countries?

1.5 Research Objectives

To investigate the relationship of FDI inflows and selected macroeconomic factors (economic growth, exchange rate, interest rate, inflation rate and trade openness) of ASEAN-5 countries.

1.6 Scope of the Study

Only ASEAN-5 countries: Malaysia, Indonesia, Philippines, Singapore and Thailand are included in the study. Macroeconomic factors studied are economic growth, exchange rate, interest rate, inflation rate and trade openness and the dependent factor is FDI inflows. The study span over 31 years from 1988 to 2018.

1.7 Significance of the Study

Result in analysing the link between macroeconomic variables and FDI inflows of ASEAN-5 countries could add to the previous literature and methodology. The econometric panel data research used could be helpful for any parties in searching answer for problem related studies in this topic area.

This research is carried out to help policymakers to understand the situations and the problem arise in this area of topic in which will provide them the understanding required for policy making relevant to their country. The findings from this study can serve as a guide for legislators to devise legislation centred on certain criteria of which the country is facing the problem. High interest rate and inflation rate not only impact FDI inflows but also present a danger to the stabilisation and growth of a country. Empirical results can be helpful for policymakers in making decision on how and which determinants are helpful to boost FDI inflows as well as economic growth. It can also facilitate and be as a guideline for other developing countries to increase FDI inflows. Furthermore, this study can be viewed as an attempt to broaden the view in literature by examining on the influence of macroeconomic variables in attracting FDI inflows in ASEAN-5 countries.

Consequently, the findings obtained from this study are hoped to give policy makers a deeper understanding and value of FDI inflows to enhance growth and achieve economic stability.

1.8 Structure of the Dissertation

This study consists of five chapters.

Chapter 1 presents the context of the analysis, a summary of ASEAN-5 countries FDI inflows, problem statement, research questions, research objectives, the scope of the study, the significance of the study and the structure of the study.

Chapter 2 reviews on related literatures on the relationship between macroeconomic variables and FDI.

Chapter 3 presents on data collection and the research methodology. This chapter also provide explanation on the statistical techniques used for regression analysis.

Chapter 4 discusses and analyses the empirical findings of the study.

Chapter 5 provides the summary and recommendation of the study. The limitations of the study are also discussed.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses specific macroeconomic determinants and its relationship with FDI inflows from past literature. Numerous literature has discussed this topic in ASEAN countries as well as in other countries. Sources are drawn from several journals and include unpublished theses and policy papers. This study uses the literature review to develop theoretical framework and hypotheses. It is also used to synthesize the methodology as well as findings.

2.2 Relationship between Economic Growth and FDI Inflows

Southeast Asian countries have undergone fast FDI development and economic growth over the last periods. Higher economic growth increases domestic confidences and encourages external financiers to make sensible returns from investment in that region. A rise in economic activity has a beneficial outcome on FDI inflows and implies more enticements and prospects in the developing countries for manufactured goods and services.

Empirical studies had identified strong correlation between economic growth and FDI inflows. The connectedness between two factors is either unidirectional or bidirectional. The difference in nature of a country reflect on whether economic growth influence FDI and vice versa. A country may focus on other sectors to attract FDI or lower FDI inflows as it does not affect much on economic growth. A study by Ndubuisi (2017) and Chakraborty and Basu (2002) explored on the relationship between FDI and GDP for Nigeria and India using the Vector Error Correction Model

(VECM). Empirical evidence finds that FDI and GDP have an extended relationship and unidirectional connectedness for both countries.

Furthermore, a research by Ridzuan et al. (2014) analysed on the growth-level of FDI inflows from 1970 to 2010 which showed a favourable relationship existed in the short term between GDP per person and FDI for Malaysia, the Philippines, Singapore and Thailand. However, on the continuum, only Malaysia, Singapore and Philippines have a major effect on economic growth, whereas further determinants for example exports have more substantial influence on Thailand and Indonesia's economic growth.

Similarly, Ridzuan et. al. (2018) investigated long and short-term relationship between economic growth and FDI inflows in ASEAN-5 countries from 1970 to 2013. The results obtained through using Autoregressive Distributed Lag (ARDL) testing disclosed a positive connection between economic growth and FDI inflows for Thailand, Indonesia and Malaysia. This implies FDI inflows may not be attractive as compared to other countries. Thus, other factors are required to calculate the effect on a country's FDI inflows. This shows that rise in FDI inflows may not be desirable as opposed to other nations.

However, certain research found that economic growth does not influence on FDI. A study by Oloyede and Kolapo (2018) investigated the sensitivity of FDI to macroeconomic factors in Nigeria from 1986 to 2016. Their projections from the Ordinary Least Square (OLS) method revealed the importance of economic growth but has detrimental effect on FDI inflows (Oloyede and Kolapo, 2018). This means that economic growth has adverse relationship with FDI inflows in Nigeria. Consequently, a rise in GDP could cause a decline in FDI inflows in a particular region.

Likewise, in Kenya, Kwoba and Kibati (2016) whom had analysed the influence of GDP on FDI inflows from 2005 to 2014 concluded that the GDP negatively and insignificantly influences FDI inflows.

The economic growth of a nation is represented by the country's market size. The GDP growth does not only constitute the market potential but also reflects the size of the market. A study by Artige and Nicolini (2006) showed market size as one of the primary elements of FDI which has favourable result on FDI inflows. Erdal and Tatoglu (2002) posited FDI inflows of host country is relatively associated with market size of host country. Market size increase, investment from external financiers would also increase. Ali and Guo's (2005) researched on the Chinese market and concluded that China's wide market and great levels of growth are important aspects in encouraging FDI inflows. The foreign investment decision will be based on these two determinants in investing into foreign countries.

Furthermore, Miankhel et al (2009) analysed FDI inflows, GDP and exports of six countries (Pakistan, Malaysia, Mexico, Chile, Thailand and India). Their results using causality test showed important variables varied across all the six nations. Their findings indicated that economic growth in India encourages FDI inflows in the long term while GDP impact on exports of Pakistan. Their study also suggest GDP is a bidirectional relationship with FDI inflows in Thailand; indicating the direction in inviting FDI are influences of GDP is different across countries.

2.3 Relationship between Exchange Rate and FDI Inflows

Exchange rate is indeed a key factor of FDI inflows since it indicates the value of the currency of a nation. The exchange rate is the expense or interest of currency from one country, in return for money from another country. Fluctuation in exchange

rate influences the process of FDI inflows. If the exchange of a nation is undervalued, external financiers would invest in that nation and acquire assets or properties at a lower rate. Recent findings on relationship among exchange rate and FDI inflows in developing countries show mixed results. A research by Kandiero and Chitiga (2006) whom had analysed 38 African countries discovered an inverse relation between increase in real exchange rate and FDI inflows. This is backed by results on Ghana by Coleman and Tettey (2008) in which unpredictability of exchange rate detriments FDI inflows. Thus, currency increase has an adverse outcome on FDI inflows into host nation.

Additionally, direction of impact influencing host country's exchange rate not only from exchange rate to FDI inflows, but also from FDI inflows to exchange rate. A research by Biswas and Dasgupta (2012) had studied the response between 1994-95Q1 and 2009-10Q4 of FDI inflows to exchange rate in India. Their result from Johansen multivariate cointegration test, generalised variance decompositions and impulse response function revealed that FDI inflows have positive long term effect on exchange rate. Their findings suggest FDI inflows increase, currency of host country also appreciates. Similarly, Kiyota and Urata (2004) investigate the value of FDI inflows and the outcome of fluctuating exchange rate on FDI in Japan between 1990 and 2000. They found FDI inflows increases although the currency of the host nation devalues.

The outcome of exchange rate on FDI inflows are also observed from different sectors of the host country. Sazanami et al. (2003) studied the Japanese FDI industry over the period of 1978 to 1999. Their work is based on four machinery sectors and found exchange rates in electronics and general machinery had a larger influence on FDI inflows relative to the transport and precision sectors. Similarly, Xing and Wan

(2006) had explored the role of exchange rate on FDI inflows of Asia from 1981-2002. Their empirical findings using the pooled regression analysis and fixed effect model suggest that exchange rate is vital in shaping FDI inflows for manufacturing industries for Japan. Across sectors analysed, the authors find that the machinery sector contributes the most FDI inflows whereas other sectors (food, textiles, chemicals, metals and others) contribute less. Therefore, studies demonstrate impact of exchange rate on FDI inflows differs across various sectors.

Wong et al. (2019) investigated influence of exchange rate and macroeconomic policy on FDI inflows of selected ASEAN countries. Their results from cointegration test and Dynamic Ordinary Least Squares (DOLS) demonstrated that all variables are cointegrated and positively significant. This indicates alignment trend of exchange rate and FDI inflows with each other and pushes the amount of FDI inflows in the country. Thus, if the recipient country's currency depreciates, FDI inflows will increase.

Using Johansen cointegration test, Khan et al. (2012) posited effectiveness of Pakistan's exchange rate during 1980- 2009 showed a long term relationship between the exchange rate and FDI. The authors had also conducted a causality test in which the results showed a bidirectional relationship between exchange rate and FDI inflows, which means that the exchange rate affects FDI inflows and FDI inflows affect exchange rate in Pakistan.

There are certain studies which contradict the findings in theory in which an increase in exchange rate increases FDI inflows of a country. Lily et al. (2014) studied the movement of exchange rates and FDI inflows from 1971 to 2011 of Malaysia, Singapore, Philippines and Thailand. Their empirical results on three countries (Malaysia, Phillipines and Singapore) from ARDL bound test showed exchange rate

has long term significant cointegration with FDI inflows. The authors also record a negative coefficient in the model for these countries on the relationship between exchange rate and FDI inflows. This indicates currency of host country increases, FDI inflows also increase. Findings by Lily et al. (2014) revealed continuum unidirectional relationship between exchange rate and FDI inflows for Malaysia but a short-run unidirectional relationship between exchange rate and FDI inflows for Singapore. Takagi and Shi (2010) discover Japanese market also showed a decline of FDI inflows if Yen depreciates.

2.4 Relationship between Interest Rate and FDI Inflows

Interest rate depicts investing expense and can also shows yield on savings. Financiers may choose either finance low costs investment or invest in higher yield rates at lower prices. Low interest rate in host countries would appeal international companies to raise financial sources domestically. However, higher interest rate raises funding costs for manufacturing and this will discourage entry of FDI. Past literature had showed conflicting relationships between interest rate and FDI inflows.

Additionally, Ho and Booth (2017) analysed the outcome between interest rate and FDI inflows in Malaysia and the United States of America (USA) from 1981-2013. They concluded that local interest rate and transnational trade are important drivers to increase FDI inflows. Higher interest rate in developing countries indicates higher degree of economic activity which a favourable market environment could offer opportunities in increasing production and stimulating FDI inflows. This implies developing countries are more reliant on domestic interest rate and trades to increase their FDI inflows. Similarly, research by Hasli et al. (2015) on Asia countries for the period 1993-2013, showed lending interest rate significantly and positively affect FDI inflows.

Furthermore, Yang et al (2000) assessed factors of FDI inflows of Australia. Australia is known to be one of the receivers with immense sum from investors to the nation for investments. The researchers' econometric analysis of the aggregate FDI inflows factors showed interest rate, change in wages, an indicator of the economy's openness and a vector describing industrial disputes as major factors of FDI inflows for Australia. Yang et al (2000) claimed that FDI inflows have a favourable connection to the country's interest rate.

Majeed and Ahmad (2008) had diverse views on the effect of lending interest rate on FDI. They had adopted a fixed effects model based on 23 selected developing countries over the 35-year spanning from 1970-2004 and revealed the effect of low interest rate upon loans is affirmative on FDI. This implies that lower lending interest rate in host countries is cost benefit for multinational companies to borrow from host nation.

A study by Siddiqui and Aumeboonsuke (2014) on five ASEAN countries from 1986-2012 suggested that the interest rate of Malaysia, Indonesia and Thailand has an inverse relationship with FDI inflows. Their findings were from using Vector Autoregression (VAR) techniques. Further, it was established that low interest rate in Malaysia and Singapore could not attract FDI inflows.

A research by Ismail and Yussof (2003) on the relationship between interest rate and FDI inflows of ASEAN-3 countries (Malaysia, Philippine and Thailand) found a rise in interest rate does not endanger Malaysia's FDI inflows. They argued the continued increase of interest rate would not affect FDI inflows but would promote domestic savings. Further, the authors found FDI inflows of Malaysia is adversely affected by a decrease in interest rate.

Variability of interest rate as factor influencing FDI inflows is also investigated by Cavallari and D"Addona (2011). The researchers learned variability interest rate is more effective in discouraging foreign investment rather than promoting it. Their research dataset consists of bilateral FDI inflows among OECD economies from 1985-2007. The outcomes from their research displayed FDI's responses are asymmetric in which the volatility of interest rate decreases FDI inflows more during boom period as compared during recession.

Mokuolu (2018) explored effect of interest rate on FDI inflows in Nigeria. Based on Autoregressive Distributed Lag (ARDL) model, he discovered the level of encouragement in attracting FDI from interest rate is not significant. This contradicts with the views in which interest rate intensify performance in FDI inflows. The researcher suggested growth of Nigeria's FDIs occurs regardless whether the country is expanding or not.

2.5 Relationship between Inflation Rate and FDI Inflows

The inflation rate is also seen as the significant factor of FDI inflows. Inflation rate can affect positively or negatively to the FDI inflows. The fluctuation of inflation rate reflects stability of financial market thus, impacting on FDI activities of a country.

The cost in conducting business in foreign land is subjected to the inflation rate of a country. Foreign firms will enter developing nation for long term contracts if the inflation rate is maintained and benefitted them. However, if actual inflation rate differs with expected inflation rate, overseas companies could exit the market as they lose out their purchasing power. Therefore, according to Hailu (2010), a great inflation rate will affect negatively on the FDI inflows of a country. Similarly, Nonnemberg and Mendonca (2004) found inflation rate and FDI inflows are correlated and low level of

inflation increases FDI inflows of the country. Thus, in an unstable economic environment, high inflation rate will raise investment costs thus, deceases the return in FDI (De Mello, 1997).

A study by Othman et al. (2018) presented a model by Grossman and Helpman on FDI factor which focused on risk diversification where foreign investors are prone to risk in the market including inflationary risk. The model proposed high inflation rate could drive market volatility and increases production costs, hence, deter FDI inflows. This is supported by Bekhet and Al-Smadi (2012) who explored relationship among FDI determinants for a case in Jordan for the period from 1980 to 2011. From their findings using Johansen's cointegration test displayed inflation rate and FDI are cointegrated in the long term. Granger causality check showed a unidirectional relationship between inflation rate and FDI inflows. This shows inflation rate affect FDI inflows but FDI inflows have no impact on inflation rate of host nation. However, Okafor (2016) found FDI inflows has an affirmative and significant effect on inflation in the Nigerian economy over the period 1987- 2012, based on adopting ADF, OLS and Granger causality tests.

Vijayakumar (2010) observed factors influencing FDI inflows of BRICS countries (Brazil, Russia, India, China and South Africa) from 1975 to 2007. He applied inflation rate as variable that constitutes economic stability for the study. The empirical results reveal inflation rate for BRICS countries is the central cause for FDI inflows. Inflation rate does not only represent an important variable for attracting FDI but also reproduces economic strength of a country. Thus, high inflation rate, more volatile the country and lower FDI inflows.

Bajo-Rubia and Sosvila-Rivero (1994) also described inflation as factor affecting FDI inflows in Spain. Based on their study, a gradual rise in price level contributes to a decline in domestic asset valuation. Inevitably, rises in price level lead to a decline in investment and asset valuation. Thus, the inflow of capital into the country decreases. This implies that inflation increases country's liability as it risks foreign investment into the country. Inflation is therefore a sign of uncertainty and lack of control in macroeconomic policies for a country where it is uncontrollable (Ndubuisi, 2017).

There are further findings from past literature on various countries that showed inflation rate is not the major factor influencing FDI inflows. A study by Omankhanlen (2011) on inflation rate and FDI inflows of Nigeria for the period 1980-2009 discovered that inflation rate had no major impact on the Nigerian economy's FDI inflows. Similarly, Ehimare (2011) discovered that inflation rate does not contribute nor significantly impact FDI inflows, but exchange rate and political stability are affirmative in drawing FDI.

A study by Kurihara (2012) examined "The deterministic elements of FDI inflows into ASEAN countries" from 2002 to 2011. The outcomes of least square method showed no relation amid volatility of FDI and local GDP but discovered domestic prices have an affirmative influence on FDI inflows.

Moreover, Mason and Vracheva (2017) analysed effect of inflation targeting to raise FDI inflows in 25 developed and 25 developing countries. Inflation targeting is an action by the central bank to establish particular inflation rate as their aim. This allows the central bank to respond to shocks appropriately and helps to reduce

economic uncertainty. Their findings demonstrated inflation targeting raises FDI inflows. Thus, FDI inflows are more drawn to developing than developed countries.

2.6 Relationship between Trade Openness and FDI Inflows

Another vital aspect in FDI inflows is trade openness. Trade openness is the degree to which a nation engages in global trade processes and mechanism. Trade openness is the amount of total trade compared to the amount of GDP. Trade openness has a beneficial bearing on host countries and home-based countries as it provides job opportunities, spurs economic growth and reduces poverty. In trading, both host and home countries gain opportunities in increasing productivity, innovation, and also market opportunities for domestic firms. According to Keho (2017), trade openness potentially enhances a country's economic growth through technological diffusion and whole aspects of productivity. Although trade openness may have beneficial effect in increasing growth however, the effect on FDI inflows differ depending on countries as certain countries do not depend on trade openness to enhance FDI inflows.

Zaman et al. (2018) investigated relationship between trade openness and FDI inflows in India, Iran and Pakistan during the period 1982-2012. To analyse panel data, the researchers adopt fixed effect model and Pooled Ordinary Least Square methods. They found an upsurge in trade openness favourably affect FDI inflows. They suggested long-term sustainability of FDI inflows is attributed to a rise in trade openness. This means trade openness has affirmative effect in luring FDI inflows and ensuring long-term FDI inflows for developing nations.

Furthermore, Kariuki (2015) found substantial affirmative outcome of trade openness on FDI inflows of African countries. Findings from 35 African countries between 1984 and 2010 found a 1% rise in trade performance, raises African countries'

FDI inflows by 0.81%. The positive influence of trade openness on FDI suggests reliance on trade openness to increase FDI inflows. Trade restriction may be lifted to increase and encourage trade. Kandiero and Chitiga (2006) supported growing trade openness positively affect African countries' FDI inflows. Their findings further showed possibility of trade liberalization in boosting FDI inflows in service sector.

A study by Mohan (2007) on trade openness and trade liberalization on ASEAN-5 countries' economic growth over the period 1980-1997 showed that ASEAN-5 countries are prone to shift in trade openness. They had observed and found trade openness positively affect economic growth. They suggested that foreign investment and international trade are more likely to occur in region where trade openness is apparent. Evidently, trade openness naturally facilitates FDI inflows into ASEAN-5 countries.

In addition, Boateng et al. (2015) studied on macroeconomic issues of FDI inflows of Norway. Their quarterly data from 1986 to 2009 analysed using Fully Modified OLS (FMOLS), vector autoregressive and error correction model (VAR/VECM) showed trade openness is strongly and substantially affect FDI inflows.

Ho et al. (2013) had examined factors of FDI inflows of rapid emerging countries (Malaysia and BRICS countries: Brazil, China, India, Russia, South Africa) for 1977-2010. Their empirical evidences indicate trade openness positively affect FDI inflows and Malaysia is the only significant country with trade openness. The researchers also found trade openness draws foreign investment into Brazil.

However, certain studies reveal a contrary finding as compared to the literature above. Rehman and Raza (2011) studied the impact of trade openness on Pakistan's FDI inflows. Their trade openness is the proportion of exports of products and services

to GDP. Their findings suggested trade openness badly affect Pakistan's FDI inflows. Further, Mateev (2009) had established insignificance of trade openness as an element for FDI inflows for Central and South-Eastern countries. Similarly, Vijayakumar and Sridharan (2010) found trade openness not the key element for FDI inflows of BRICS. Naveed and Shabbir (2006) also agreed trade openness do not significantly affect FDI inflows of 23 developed countries during 1971-2000 through adopting fixed effect method.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This segment describes how the framework for this research is established and how data are collected and analysed. It also provides rationale for the selected five macroeconomic variables to influence FDI inflows into the five ASEAN countries.

3.2 Research Framework

The research framework is based on the previous studies examined in countries around the world. The five macroeconomic factors are independent variables and the dependent variable is FDI inflows as depicted in Figure 3.1 below.

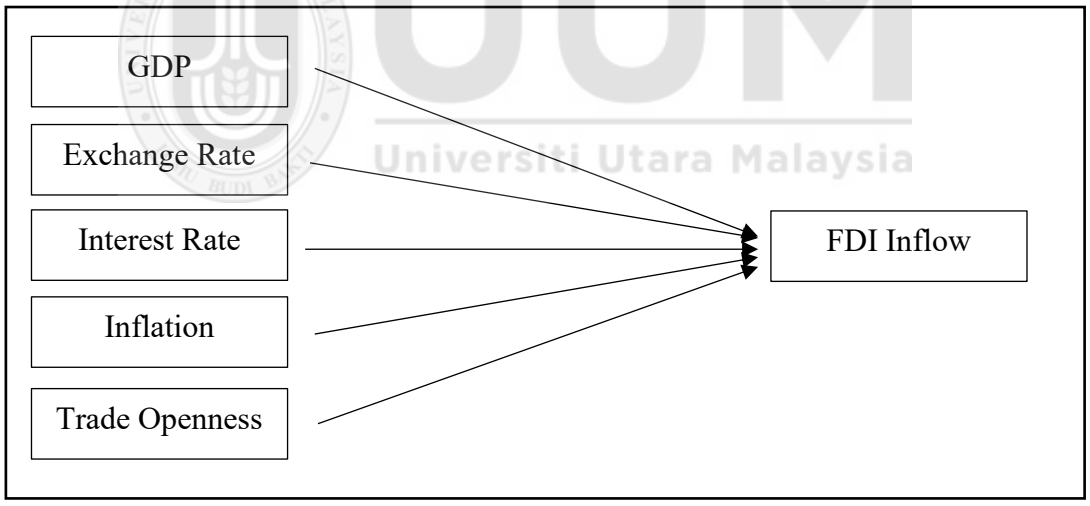

Figure 3.1

Research Framework

3.3 Hypotheses Development

The review of literature in Chapter 2 shows economic growth, exchange rate, inflation rate, interest rate and trade openness could influence the FDI inflows into the five countries of ASEAN. The hypotheses are developed according to the selected variables as follows:

3.3.1 Economic Growth and FDI Inflows

Economic growth reflects market size capability and purchasing power of a country. GDP is used to measure economic growth in this study. The variable is expressed in logarithmic form. Previous studies proposed that GDP to be used as a guide to economic growth. Thus, in this research, relationship between economic growth and FDI inflows is hypothesised positive.

Hypothesis 1: There is a positive relationship between ASEAN-5 GDP and FDI inflows.

3.3.2 Exchange Rate and FDI Inflows

Exchange rate represents currency value between country of origin and host nation. This study uses official exchange rate (LCU per US$, average for the period). The variable is denoted into logarithmic form. Previous literatures reviewed that foreign investment depend on the value of the currency of the host nation. The fluctuation of the exchange rate reflects economic volatility of a country. Therefore, this study argues that as exchange rate increases, FDI inflows flows into the country.

Hypothesis 2: There is a positive relationship between ASEAN-5 exchange rate and FDI inflows.

3.3.3 Inflation rate and FDI Inflows

The inflation rate measures price stability of a country and imitates economic stability and volatility. High inflation rate has detrimental effect on FDI inflows because the costs for foreign investors to invest in the host country would increase. Therefore, there will be a negative relationship between inflation rate and FDI inflows.

Hypothesis 3: There is a negative relationship between ASEAN-5 inflation rate and FDI inflows.

3.3.4 Interest rate and FDI Inflows

Interest rate represents lending interest rate of a country. Host country with high interest rate will discourage FDI inflows. Investors prefer to seek finance from countries with lower lending rate. On the contrary, a higher interest rate may be viewed to be favourable as it indicates higher degree economic activity. However, in the case for developing country, it is desirable for the government or the central bank to impose low lending rate to encourage investment in the domestic market and reduces borrowing costs. Therefore, there will be negative relationship between interest rate and FDI inflows.

Hypothesis 4: There is a negative relationship between ASEAN-5 interest rate and FDI inflows.

3.3.5 Trade openness and FDI Inflows

Trade openness measures the degree of exchange in trade the country participates. Trade openness encourages FDI inflows because improvement of exchange in trade represents promising market of the nation that could draw external investors. Therefore, in this study, there will be positive relationship between trade openness and FDI inflows.

Hypothesis 5: There is a positive relationship between ASEAN-5 trade openness and FDI inflows.

3.4 Data Collection

Secondary data is used and the dataset used is composed of data on the five macroeconomic determinants (economic growth, exchange rate, interest rate, inflation rate and trade openness) and FDI inflows for ASEAN-5: Malaysia, Indonesia, the Philippines, Singapore and Thailand. Data were compiled from records of the World Bank. The sampling of the dataset is collected on an annual basis from 1988 to 2018 covering a period of 31 years.

3.5 Econometric Model

The regression model is intended to analyse and forecast the relationship concerning macroeconomic factors and FDI inflows. Below is the econometric model:

$$\mathbf{FDI_{it} = \beta_0 + \beta_1 LnGDP_{it} + \beta_2 LnER_{it} + \beta_3 IR_{it} + \beta_4 LnINF_{it} + \beta_5 TRA_{it} + \varepsilon}$$

where,

FDI : Foreign Direct Investment inflow

GDP : Level of economic growth

ER : Exchange rate for country

IR : Interest rate for country

INF : Inflation rate for country

TRA : Trade openness for country

ε : Error term

Ln : Natural Log

i : Index of countries

t : Index in years

3.6 Data Analysis Technique

The panel econometric model is adopted to test the relationship concerning macroeconomic factors and FDI inflows. First, three different panel unit root tests are used to check stationarity of data. Secondly, cointegration test is conducted to assess enduring relationship between macroeconomic determinants and FDI inflows. Next, diagnostic check is performed to determine estimation problems Finally, panel cointegration estimation is conducted to test for continuing cointegration vector.

3.6.1 Panel Unit Root Tests

Panel unit root test is used to analyse the stationarity of the determinants. Panel data calculation is an extended test taken from the Augmented Dickey Fuller (ADF) study. Past literature had used Levin, Lin and Chu (LLC) (2002), Im, Pesaran and Shin (IPS) (2003) and Maddala and Wu (ADF-Fisher test) (1999). LLC and IPS tests are commonly used by past researchers. In this research, LLC, IPS and ADF-Fisher tests are used to check the fix-ability of the factors.

Levin, Lin and Chu (2002) test as opposed to ADF test showed that the power in the finite samples improved significantly. They had suggested a panel-based version which restrict βi by holding it equal across sectional regions as seen below:

$$\Delta y_{i,t} = p y_{i,t-1} + \alpha_{0i} + \alpha_{1i} t + \varepsilon_{it}$$

where Δ is the difference operator, $y_{i,t}$ is the variable we interact with, time trend ($\alpha_{1i} t$) and individual effects (α_i) are incorporated, i, is the noise distortion with variance of σ2, t = 1, 2, …, t index time intervals, i = 1,2,…, n is the cross-sectional index and ε_{it} is assumed to be independently distributed across individuals.

The hypotheses of LLC test are as follows:

$H_0 :$ $\rho_i = 0$

-series is not stationary and unit root is present

$H_1 :$ $\rho_i < 0$

-series is stationary and unit root is not present

If p < 5% significance level, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, unit root is not present and the series is stationary. However, if p > 5% significance level, the null hypothesis is fail to be rejected. Thus, the series is not stationary and unit root is present.

Meanwhile, Im, Pesaran and Shin (2003) test is the extended version of LLC test. They had proposed independent unit root test for the cross-section N units instead of data pooling. Thus, the IPS method allows parametric values, residual variance and lag lengths to be calculated independently. The equation below was computed:

$$\Delta y_{i,t} = a_i + \rho_i Y_{i,t-1} \sum_{k=1}^{n} \emptyset_k \Delta y_{i,t-k} + \varepsilon_{it}$$

Where i = 1,2,…N, t = 1,2,…T

However, according to Im, Pesaran and Shin (2003), problem emerges when measuring for *u* and σ2. Thus, they continue by introducing Monte Carlo methods and tabulate them into their own analysis. Below are the hypotheses of IPS test:

$H_0 :$ $\rho_i = 0$

-series is not stationary and unit root is present

H_1 : $\begin{cases} \rho_i < 0 \; for \; i = 1, \dots N_1 \\ \rho_i = 0 \; for \; i = N_1 + 1, \dots, N \; with \; 0 < N_1 \leq N \end{cases}$

-series is stationary and unit root is not present

If p < 5% significance level, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, unit root is not present and the series is stationary. However, if p > 5% significance level, the null hypothesis is fail to be rejected. Thus, the series is not stationary and unit root is present.

In addition, Maddala and Wu (1999) established ADF-Fisher test by expanding usage of Fisher's findings and the probability values from individual root unit tests. Maddala and Wu (1999) proposed the following assumptions:

$$P_{MW} = -2 \sum_{i=1}^{N} \log(\rho_i)$$

Where it has a chi-square distribution with 2N degree of freedom, t towards infinity and N is fixed. They define the following hypothesis:

H_0 : $\rho_i = 0$

-series is not stationary and unit root is present

H_1 : $\begin{cases} \rho_i < 0 \; for \; i = 1, \dots N_1 \\ \rho_i = 0 \; for \; i = N_1 + 1, \dots, N \; with \; 0 < N_1 \leq N \end{cases}$

-series is stationary and unit root is not present

If p < 5% significance level, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, unit root is not present and the series is stationary. However, if p > 5% significance level, the null hypothesis is fail to be rejected. Thus, the series is not stationary and unit root is present.

3.6.2 Panel Cointegration Tests

The panel cointegration test check the presence of continuing relationship between the macroeconomic variables and FDI inflows. The Pedroni (1999) and Kao (1999) cointegration test is performed to analyse cointegration among the factors studied.

Pedroni cointegration test allows considerable heterogeneity depending on the residuals of the Engle and Granger (1987). The panel regression model developed by Pedroni is shaped as follows:

$$y_{i,t} = a_i + \delta_t + \sum_{m=1}^{m} \beta_{mi} x_{mi,t} + u_{i,t}$$

In the Pedroni cointegration test, there are seven different cointegration statistics which are divided into two different categories.

Pedroni cointegration test hypotheses are:

H_0: No cointegration in the series

H_1: There is cointegration in the series

If p < 10%, 5% or 1% significance level, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, the series is cointegrated and there is a long run relationship among the series.

Kao cointegration test is similar to Pedroni test but requires unique cross-section intercept and homogenous coefficients in the first stage regressors. Kao developed the regression model shaped as follows:

$$y_{i,t} = \alpha_i + \beta x_{it} + u_{it}$$

Where α_i is the fixed effect varying the cross section observation, β is the slope parameter x_{it} are the independent random walks for all i and u_{it} is the residual. The null and alternative hypothesis developed are:

H_0: $\rho_i = 1$

H_1: $\rho_i < 1$

3.6.3 Diagnostic Tests

The diagnostic test is conducted to determine whether there is any problem that may result in the OLS regression model being made specified in the analysis. In this study, multicollinearity test, heteroskedasticity test and auto correlation test is conducted.

The multicollinearity test is conducted to account for strong similarity between variables. The basis is the outcome of the Variance Inflation Factor (VIF) in which the value should not be more than 10 for each variable. If the value is more than 10, there will be multicollinearity issues.

The heteroskedasticity test evaluates the presence of heteroskedasticity in a model. If presence, the model will prove that the variances are not constant. In this study, panel cross-section and period heteroskedasticity LR test are used to search for heteroskedasticity issues.

Further, the autocorrelation test is conducted by using Durbin-Watson test. Outcomes from the test depends on its value. There is no serial correlation for value closer to two. However, there is a positive serial relationship for value less than 2. If the statistics lie in between two and four, there is a negative relationship.

3.6.4 Panel Cointegration Estimation

The Fully Modified Least Square (FMOLS) estimates continuing cointegration vector. FMOLS was originally developed by Phillips and Hansen (1990). They had suggested an estimator with semi-parametric adjustment to eradicate the issues generated by the continuing relationship of the development in cointegrating model and stochastic regressors. The estimator of FMOLS utilizes approximate estimates of the residuals' symmetric and one-sided continuing covariance matrices. FMOLS methodology was selected to be used in this study as applied to the cointegrated panel as suggested by Pedroni (2001) to eliminate bias and inaccurate OLS estimator.

CHAPTER 4

EMPIRICAL FINDINGS AND DISCUSSION

4.1 Introduction

This segment discusses the empirical results. This chapter begins with presenting the results of panel unit root test. Firstly, the panel unit root from LLC, IPS and ADF are explained. Next, the results from Pedroni and Kao cointegration test on continuing relationship among variables. Diagnostic checking results are then discussed and followed by an explanation on Fully Modified OLS result.

4.2 Panel Unit Root Tests

Panel unit root tests of Levin, Lin and Chu (LLC), Im, Pesaran and Shin (IPS) and ADF-Fisher are used to assess the fix-ability of the panel data. Based on the null hypothesis, if p > 5% significance level, the series is not stationary. The results from the tests applied is presented in Table 4.2 for all variables. It shows that all series of the p-value can be rejected in first difference form at 1% significance level. In level form, only FDI inflows can be rejected in both dimensions at 1% significance level. Next, the panel cointegration tests are used to validate the existence of a long run relationship among variables.

Table 4.2

Results of panel unit root tests

Series	FDI		GDP		ER	
	No trend	With trend	No trend	With trend	No trend	With trend
	LEVEL					
LLC	-3.03777*** (0.0012)	-3.58085*** (0.0002)	-7.04196*** (0.0000)	-0.33428 (0.3691)	-1.19428 (0.1162)	0.89086 (0.8135)
IPS	-3.92886*** (0.0000)	-4.30148*** (0.0000)	-3.70813*** (0.0001)	0.96167 (0.8319)	-0.19463 (0.4228)	1.22515 (0.8897)
ADF	33.3767*** (0.0002)	36.6793*** (0.0000)	32.6119*** (0.0003)	8.42459 (0.5874)	7.94524 (0.6342)	4.35642 (0.9298)
	1ST DIFFERENCE					
LLC	-11.4980*** (0.0000)	-9.65779*** (0.0000)	-6.06868*** (0.0000)	-7.31185*** (0.0000)	-7.04706*** (0.0000)	-5.92167*** (0.0000)
IPS	-11.4980*** (0.0000)	-11.0815*** (0.0000)	-6.37900*** (0.0000)	-7.90115*** (0.0000)	-6.90983*** (0.0000)	-5.66958*** (0.0000)
ADF	114.972*** (0.0000)	94.4318*** (0.0000)	57.1253*** (0.0000)	66.4979*** (0.0000)	61.2947*** (0.0000)	46.2576*** (0.0000)

Continue results of panel unit root tests

Series	IR		INF		TRA	
	No trend	With trend	No trend	With trend	No trend	With trend
	LEVEL					
LLC	-1.31329* (0.0945)	-2.64412*** (0.0041)	-8.45028*** (0.0000)	-1.74523** (0.0405)	-0.96170 (0.1681)	-1.36798* (0.0857)
IPS	0.43502 (0.6682)	-1.85367** (0.0319)	-4.47009*** (0.0000)	1.01499 (0.8449)	-0.80720 (0.2098)	0.21314 (0.5844)
ADF	6.72676 (0.7510)	17.5315* (0.0634)	45.7713*** (0.0000)	8.76449 (0.5546)	11.8876 (0.2926)	8.52655 (0.5775)
	1ST DIFFERENCE					
LLC	-11.0893*** (0.0000)	-7.65678*** (0.0000)	-5.15982*** (0.0000)	-5.78784*** (0.0000)	-10.3883*** (0.0000)	-8.69896*** (0.0000)
IPS	-9.81039*** (0.0000)	-7.83174*** (0.0000)	-5.23980*** (0.0000)	-5.74951*** (0.0000)	-10.5073*** (0.0000)	-9.32540*** (0.0000)
ADF	91.3662*** (0.0000)	65.6822*** (0.0000)	45.1083*** (0.0000)	46.7151*** (0.0000)	96.2946*** (0.0000)	82.0851*** (0.0000)

Notes: 1. The parentheses denotes p-values

2. (***), (**), (*) denotes rejection of null hypothesis at 1%, 5% and 10% significance level respectively.

4.3 Panel Cointegration Tests

The Pedroni and Kao cointegration tests validate presence of long run relationship among variables. Two assumptions were chosen based on the Pedroni cointegration test which are model with and without trend. Table 4.3.1 shows the test results. Findings suggest majority of the statistics (12 out of 22) indicate that we should reject the null hypothesis. Hence, the variables are cointegrated based on Pedroni cointegration test.

Table 4.3.1

Pedroni cointegration test

	Model with no trend	Model with trend	Model with no trend	Model with trend
	Within dimension			
	Statistic	Weighted statistic	Statistic	Weighted statistic
Panel v-Statistic	0.401875 (0.3439)	0.861411 (0.1945)	-0.749290 (0.7732)	-0.227184 (0.5899)
Panel rho-Statistic	-1.002366 (0.1581)	-0.513134 (0.3039)	0.462367 (0.6781)	0.707323 (0.7603)
Panel PP-Statistic	-8.575574*** (0.0000)	-4.992770*** (0.0000)	-11.88111*** (0.0000)	-5.787849*** (0.0000)
Panel ADF-Statistic	-7.137881*** (0.0000)	-4.863731*** (0.0000)	-7.036481*** (0.0000)	-4.913445*** (0.0000)
	Between dimension			
Group rho-Statistic	0.064267 (0.5256)		1.467561 (0.9289)	
Group PP-Statistic	-6.313461*** (0.0000)		-8.921103*** (0.0000)	
Group ADF-Statistic	-5.739791*** (0.0000)		-5.577954*** (0.0000)	

Notes: 1. The parentheses denotes p-values

2. (***), (**), (*) denotes rejection of null hypothesis at 1%, 5% and 10% significance level respectively.

This is supported by Kao cointegration test in Table 4.3.2 where the probability value is 0.0042 which is less than the 1% significant level. Therefore, the null

hypothesis is rejected, hence the variables are cointegrated. Therefore, the variables have a long run relationship between them.

Table 4.3.2

Kao cointegration test

	t-statistic
ADF	-2.633041*** (0.0042)

Notes: 1. The parentheses denotes p-values

2. (***), (**), (*) denotes rejection of null hypothesis at 1%, 5% and 10% significance level respectively.

4.4 Diagnostic Tests

In this research, three diagnostic checks are conducted to discover diagnostic problems in the model. Firstly, the VIF approach is used to find multicollinearity issues in the regression model. The optimum value for VIF is in the range of 1 to 10. Table 4.4.1 shows VIF result on multicollinearity test. Based on the result, there is no severe multicollinearity issues exist for all variables since the value is in the range of 1 to 10.

Table 4.4.1

Results of VIF Multicollinearity test

Variables	VIF
GDP	5.866855
ER	6.662235
IR	2.878561
INF	5.172421
TRA	3.669140

Next, to check on the heteroskedasticity problem, the panel cross section and period heteroskedasticity test is conducted. If p < 5% significance level, the null

hypothesis is rejected which indicate that heteroskedastic problem exists in the model. The results for panel cross-section and period LR heteroskedasticity test are shown in Table 4.4.2.

Table 4.4.2

Results of panel cross-section heteroskedasticity LR test

	Value	Probability
Likelihood ratio	156.5020	0.0000***

(***), (**), (*) denotes rejection of null hypothesis at 1%, 5% and 10% significance level respectively.

Results of panel period heteroskedasticity LR test

	Value	Probability
Likelihood ratio	63.18562	0.0000***

(***), (**), (*) denotes rejection of null hypothesis at 1%, 5% and 10% significance level respectively.

From the results, the null hypothesis in both panel sections are rejected. Therefore, heteroskedastic problem is present.

Next, the Durbin-Watson test is performed to search for serial correlation inside the panel results. Estimation for the Durbin-Watson vary from 0 to 4. If the value is closer towards 2, it is assumed that no autocorrelation exists in the panel results. The result is shown in Table 4.4.3. If the value is between 2 to 4, there is a positive autocorrelation. Meanwhile, if the value lies between 0 and 2, there is a negative autocorrelation. The findings showed that the Durbin-Watson test value is less than the optimum point. Therefore, this indicate that there is a negative autocorrelation exist in the panel data.

Table 4.4.3

Results of Durbin-Watson test

	Value
Durbin-Watson stat	1.203961

As both heteroskedasticity and autocorrelation exist, the Fully Modified OLS method is used to accommodate and eliminate these problems.

4.5 Panel Cointegration Estimation

After applying panel cointegration to test continuing relationship variables, we then proceed with panel cointegration estimation using Fully Modified Least Squares (FMOLS) proposed by Pedroni (2001) to measure cointegration function.

The results of the FMOLS are presented in Table 4.5. The FDI inflows is dependent variable and economic growth, exchange rate, interest rate, inflation rate and trade openness are independent variables. Table 4.5 shows that the coefficient value of the interest rate is -0.6977367 which indicates a negative and statistically significant at 1% significance level. Thus, increase of 1 unit in interest rate decreases FDI inflows by 69.73%. This means an increase in interest rate will affect negatively on FDI inflows for ASEAN-5 countries. Furthermore, the findings show that trade openness is positive and significant at 1% significance level. It informs a rise in trade openness by 1 unit raises FDI inflows by 2.04% and vice versa. It is consistent with the hypothesis established where trade openness and FDI inflows are positive relationship. Thus, trade openness positively affects FDI inflows. Meanwhile, all other remaining variables: GDP, exchange rate and inflation rate are not significant. This indicate that these three variables have no significant effect in attracting FDI into the countries. Investors may not depend on the contribution of these variables towards the

countries to invest as the indication reflects that they are insignificant. In previous studies, Kwoba and Kibati (2016) had also found that GDP is negatively insignificant in attracting FDI inflows. This shows that GDP may not be an ideal factor to focus on in attracting FDI inflows. Besides, this is aligned from findings by Ehimare (2011) in which that inflation rate does not contribute or significantly impact FDI inflows. This shows that a change in the price level have no effect on FDI inflows.

Table 4.5

Results of Fully Modified Least Squares (FMOLS)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP	-0.916302	1.063473	-0.861612	0.3903
ER	-0.951617	2.003849	-0.474894	0.6356
IR	-0.697367	0.254654	-2.738488	0.0069***
INF	8.486049	5.678620	1.494386	0.1372
TRA	0.020423	0.007823	2.610510	0.0100***

(***), (**), (*) denotes rejection of null hypothesis at 1%, 5% and 10% significance level respectively.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

FDI inflows is an essential economic stimulus to boost a country's economic growth and development. Benefits of FDI inflows include transfer of technology, job opportunities, market competition, etc. The transfer in technology helps in enhancing the productivity of the companies thus, increase in economies of scale. Besides, the FDI increase market opportunities and competition in which companies will be able to enter into a larger and foreign competitive market improving the quality of goods and lower price for consumers. The transfer of knowledge helps in improving managerial skills and creating job opportunities in developing countries. However, the values of FDI inflows depend on other factors and a country's economy.

The primary objective of this research is to investigate the relationship of FDI inflows and selected macroeconomic variables (economic growth, exchange rate, interest rate, inflation rate and trade openness) of ASEAN-5 countries.

In order to accomplish the above objective, this study analyse past related literature and adopt analytical methods to assess the relationships. The recorded statistics are derived from the World Bank archive spanning the 31-year period from 1988 to 2018.

5.2 Summary of Findings

Referring to the objectives of this study and in examining the relationship between economic growth and FDI inflows, the results indicate that economic growth is negative and statistically insignificant based on the FMOLS data (-0.916302,

p>0.05). Hence, there is no connection between economic growth and FDI inflows. This is consistent with Kwoba and Kibati (2016) results in which economic growth and FDI inflows are negatively insignificant. Thus, the hypothesis developed for this study is rejected as the empirical result reveal contrary findings. Findings also show a negative and insignificant relationship between exchange rate and FDI inflows (-0.951617, p>0.05).

Furthermore, part of the primary objective is to investigate the effect of interest rate on ASEAN-5 countries' FDI inflows. The result indicates that the estimation coefficient of interest rate is negative and significant to FDI inflows (-0.697367, p<0.05). Therefore, interest rate and FDI inflows has a negative relationship. A rise in interest rate causes FDI inflows to decline. This is because as interest rate rises, cost of borrowing rises and deter foreign direct investment from entering the economy.

In addition, one of the objectives is to investigate inflation rate and FDI inflows of ASEAN-5 countries. The result demonstrates favourable but insignificant relationship between inflation rate and FDI inflows (8.486049, p>0.05). This is supported by findings from Omankhanlen (2011) and Ehimare (2011) in which they discover that inflation rate does not contribute to FDI inflows. As the findings shows that the relationship is insignificant thus, inflation is not a significant factor for FDI inflows.

Moreover, the objective is also to assess effect of trade openness on FDI inflows in ASEAN-5 countries. The finding indicates a favourable and significant relationship between trade openness and FDI inflows (0.020423, p<0.05). This is aligned with the findings by Kariuki (2015) where trade openness has a major influence on FDI inflows.

Table 5.1

Summary of Findings

Variables	Findings	Analysis
Economic growth	Reject H1	*There is an insignificant relationship between ASEAN-5 GDP and FDI inflow.*
Exchange rate	Reject H2	*There is an insignificant relationship between ASEAN-5 exchange rate and FDI inflow.*
Interest rate	Accept H3	*There is a significant negative relationship between ASEAN-5 GDP and FDI inflow.*
Inflation rate	Reject H4	*There is an insignificant relationship between ASEAN-5 inflation rate and FDI inflow.*
Trade openness	Accept H5	*There is a significant positive relationship between ASEAN-5 trade openness and FDI inflow.*

5.3 Policy Implications

Given that macroeconomic factors have various impact on FDI inflows, policy makers should observe and develop strategies accordingly to ensure flows of FDI increases along with economic stability, development and welfare. Policy makers should revise their current policy and strategy implication from time to time as the macroeconomic variables is affected by the global economic situation. Focusing on interest rate and trade openness will help to improve FDI inflows as well as economic growth. However, policy makers should be wary about FDI inflows that can affect domestic companies as they may not be able to compete with foreign firms. The government can consider in implementing an improve monetary policy by lowering the interest which reduces the costs of borrowing for investors to borrow domestically.

This will encourage investors to invest or take loans as it is more convenient, thus expanding productions of goods and services.

Therefore, policy makers should consider and revise their strategies on FDI inflows and take precautionary measure on the side effects of FDI inflows in the long run.

5.4 Contribution of Study

There are several contributions of this study. The empirical findings from this study would expand current literature concentrating in ASEAN countries. Besides that, the findings may provide assistance for policy makers to develop and revise new strategies on FDI inflows in ASEAN countries focusing on interest rates and trade openness.

5.5 Limitations and Recommendations

There are few limitations in this study. This study is limited to findings on ASEAN-5 countries and not comparing with other developed and developing countries. Thus, future research is recommended to include and widen the scope of countries to cover equally on developed and emerging countries. Besides, this study investigates only influence of economic growth, GDP, interest rate, inflation rate and trade openness on FDI inflows. Other microeconomics factors such as government expenditure, political instability, etc, may also influence FDI inflows. Hence, it is suggested that future researches should include other internal or microeconomics variables which can affect FDI inflow.

REFERENCES

Aitken, B. J., & Harrison, A. E. (1999). Do domestic firms benefit from direct foreign investment? Evidence from Venezuela. *American Economic Review*, *89*(3), 605–618. https://doi.org/10.1257/aer.89.3.605

Aldaba, Rafaelita M.; Aldaba, Fernando T. (2010) : Assessing the Spillover Effects of FDI to the Philippines, PIDS Discussion Paper Series, No. 2010-27, Philippine Institute for Development Studies (PIDS), Makati City

Ali, S., & Guo, W. (2005). Determinants of FDI in China. *Journal of Global Business and Technology*, 1(2), 21-33

Ang, J. (2008) "Determinants of Foreign Direct Investment in Malaysia". *Journal of Policy Modeling 30*, 185-186

Arnold, J. M., & Javorcik, B. S. (2009). Gifted kids or pushy parents? Foreign direct investment and plant productivity in Indonesia. *Journal of International Economics*, *79*(1), 42-53.

Artige, L., & Nicolini, R. (2006). Evidence on the Determinants of Foreign Direct Investment: The Case of Three European Regions, *CREPP Working Paper 2006/07,* Centre of Research in Public Economics and Population Economics, HEC-Management School, University of Liège.

Bajo-Rubio, 0. & Sosvilla-Rivero, S. (1994). An Econometric Analysis of Foreign Direct Investment in Spain, 1964-89. *Southern Economic Journal*, 61, 104-120

Bekhet, Hussain & Al-Smadi, Raed. (2012). Exploring The Relationships Among FDI Determinants Evidence From Jordan.

Biswas, S., & Dasgupta, B. (2012). Real exchange rate response to inward foreign

direct investment in liberalized India. *International Journal of Economics and Management*, *6*(2), 321–345.

Blomstrom, M. and Kokko, A., 2001. Foreign direct investment and spillovers of technology. *International journal of technology management*, 22 (5/6), 435–454.

Boateng, A and Hua, X and Nisar, S and Wu, J (2015) Examining the determinants of in- ward FDI: Evidence from Norway. *Economic Modelling*, 47. 118 - 127. ISSN 0264-9993 DOI: https://doi.org/10.1016/j.econmod.2015.02.018

Buckley, Peter J., Jeremy Clegg and Chengqi Wang (2001). "The impact of foreign direct investment on the performance of Chinese locally owned firms". Paper presented in the 27th Annual Conference of European International Business Academy (Paris: ESCP-EAP), mimeo.

Cavallari, L and D"Addona, S. (2011), "Output and interest rate volatility as determinants of FDI", Working Papers, CREI Università degli Studi Roma Tre

Chakraborty, C., and P. Basu (2002). Foreign Direct Investment and Growth in India: A Cointegration Approach. *Applied Economics* 34: 1061-1073.

Chee-keong Choong Ph.D and Venus khim-sen Liew Ph.D, (2009) "Impact of foreign direct investment volatility on economic growth of asean-5 countries ", *Economics Bulletin*, Vol. 29 no.3 pp. 1829-1841.

Chen, Chung, Lawrence Chang and Yimin Zhang (1995). "The role of foreign direct investment in China's post-1978 economic development", *World Development*, 23 (4), pp. 691-703.

Chidlow, A., Salciuviene, L., & Young, S. (2009). Regional Determinants of Inward FDI Distribution in Poland. *International Business Review*, 18, 119-113.

Chuang, P., (2020). Strong FDI Flows To Singapore And Rest Of S-E Asia Despite US Tax Reforms. [online] Edb.gov.sg. Available at: <https://www.edb.gov.sg/en/news-and-events/insights/headquarters/strong-fdi-flows-to-singapore-and-rest-of-s-e-Asia-despite-us-tax-reforms.html>

Coleman, A.K. and Tettey, K.A. (2008), "Effect of exchange-rate volatility on foreign direct investment in Sub-Saharan Africa: The case of Ghana," *The Journal of Risk Finance*, vol. 9, no. 1, pp. 52-70.

De Mello, L. R., (1997). Foreign direct investment in developing countries and growth: A selective survey. *The Journal of Development Studies*, 34(1), 1-34.

Duce, M., (2003). *Definitions Of Foreign Direct Investment (FDI): A Methodological Note*. [online] Bis.org. Available at: <https://www.bis.org/publ/cgfs22bde3.pdf>

Ehimare, A. (2011). The Effect of Exchange Rate and Inflation on Foreign Direct Investment and Its Relationship with Economic Growth in Nigeria. *Annals of Dunărea de Jos University. Fascicle I : Economics and Applied Informatics*, *1*(1), 5–16.

Erdal, F., & Tatoglu, E. (2002). Locational Determinants of FDI in an Emerging Market Economy: Evidence from Turkey. Multinational Business Review, 10(1), 21-28.

Fisher R. A, (1932). Statistical Methods for Research Workers. 4th edition. London: Oliver and Boyd, Chapter III, 15-19.

Fosfuri, A. and M. Motta (1999), "Multinationals Without Advantages", Scandinavian Journal of Economics, 101(4), pp. 617-630.

Greenaway, D., N. Sousa and K. Wakelin (2004), "Do Domestic Firms Learn to Export

from Multinationals?", *European Journal of Political Economy*, 20(4), pp. 1027-1043.

Glass, A. and K. Saggi (2002), "Multinational Firms and Technology Transfer", Scandinavian Journal of Economics, 104(4), pp. 495-513.

Hailu, Z (2010) "Demand Side factors affecting the inflow of foreign direct investment to African countries: Does capital market matter?" *International Journal of Business and Management*, vol. 5, no. 5.

Hasli, A., Ho, C. and Ibrahim, N., (2015). Determinants of FDI inflow in Asia. *Journal of Emerging Economies and Islamic Research*, 3(3), p.9.

Ho, C. S. F., Ahmad, N., & Dahan, M. H. (2013). Economic freedom, macroeconomic fundamentals and foreign direct investment in fast emerging BRICS and Malaysia. *The International Journal of Banking and Finance*, 10(1), 57–73.

Ho, C. S. F., & Booth, L. (2017). Fundamentals and country specific determinants of FDI: Evidence from United States and Malaysia. *Pertanika Journal of Social Sciences and Humanities*, *25*(2), 705–722.

Ilie, G. (2014). Positive Versus Negative Effects of Foreign Direct Investments on Host Countries. *Knowledge Horizons - Economics*, *6*(4), 162–166.

Im, K. S., M. H. Pesaran, and Y. Shin. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics* 115: 53–74.

Ismail, R., & Yussof, I. (2003). Labour market competitiveness and foreign direct investment: The case of Malaysia, Thailand and the Philippines. *Papers in Regional Science*, *82*(3), 389–402. https://doi.org/10.1007/s10110-003-0170-2

Jiao, Z., (2020). *Unlocking The Potential For FDI To The Philippines | Businessworld*. [online] Bworldonline.com. Available at: <https://www.bworldonline.com/unlocking-the-potential-for-fdi-to-the-philippines/>

Kalirajan, K. P., Miankhel, A. K., & Thangavelu, S. M. (2011). Foreign Direct Investment, Exports, and Economic Growth in Selected Emerging Countries: Multivariate VAR Analysis. *SSRN Electronic Journal*, (May). https://doi.org/10.2139/ssrn.1526387

Kandiero, T and Chitiga, M (2006), "Trade openness and foreign direct investment in Africa," *South African Journal of Economic and Management Sciences*, vol. 9, no. 3, pp. 355-370.

Kao, C., and M.-H. Chiang. (1997). On the estimation and inference of a cointegrated regression in panel data. Syracuse University Manuscript.

Keho, Y. (2017). The impact of trade openness on economic growth: The case of Cote d'Ivoire. *Cogent Economics and Finance*, *5*(1), 1–14. https://doi.org/10.1080/23322039.2017.1332820

Khaliq, A. and Noy, I., (2007). Foreign Direct Investment and Economic Growth: Empirical Evidence from Sectoral Data in Indonesia.

Khan, Rana Ejaz Ali; Sattar, Rashid; Rehman, Hafeez Ur (2012) : Effectiveness of exchange rate in Pakistan: Causality analysis, *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, ISSN 2309-8619, Johar Education Society, Pakistan (JESPK), Lahore, Vol. 6, Iss. 1, pp. 83-96.

Kiyota, K., & Urata, S. (2004). Exchange rate, exchange rate volatility and foreign

direct investment. *World Economy*, *27*(10), 1501–1536. https://doi.org/10.1111/j.1467-9701.2004.00664.x

Kohpaiboon, A., (2010). Foreign trade regimes and the FDI–Growth Nexus: a case study of Thailand. *Journal of Development Studies*, 40(2), pp.55-69.

Kurihara, Y. (2012). The Deterministic Elements of FDI to ASEAN Countries: The Relationship between FDI and Macroeconomic Variables. *Journal of Management and Sustainability*, *2*(2), 11–17. https://doi.org/10.5539/jms.v2n2p11

Levin, A., Lin, C.F., and Chu, C.S., (2002) Unit root tests in panel data: asymptotic and finite-sample properties, *Journal of Econometrics*, 108, 1-24.

Lee, W.J. (2013). The contribution of foreign direct investment to clean energy use, carbon emission and economic growth. *Energy Policy*, 55,483-489.

Lily, J., Kogid, M., Mulok, D., Thien Sang, L. and Asid, R., (2014). Exchange Rate Movement and Foreign Direct Investment in Asean Economies. *Economics Research International*, 2014, pp.1-10.

Lim, L. K., & McAleer, M. (2004). Convergence and catching up in ASEAN: A comparative analysis. *Applied Economics*, *36*(2), 137–153. https://doi.org/10.1080/0003684042000174038

Maddala, G.S., and Wu, S., (1999) A comparative study of unit root tests with panel data and a new simple test, *Oxford Bulletin of Economics and Statistics*, 61, 631-52.

Majeed, M. T., & Ahmad, E. (2009). An Analysis of Host Country Characteristics that Determine FDI in Developing Countries: Recent Panel Data Evidence. *The*

Lahore Journal of Economics, 14(2), 71-96.

Mason, R. L., & Vracheva, V. (2017). The Impact of Inflation Targeting on Attracting Foreign Direct Investment. *Journal of Applied Business and Economics*, *19*(4), 79.

Mateev, M. (2009). Determinants of foreign direct investment in Central and Southeastern Europe, *Oxford Journal*, 8(1), 133-149.

Mokuolu, J. O. (2018). *Effect of Exchange Rate and Interest Rate on Fdi and Its Relationship With Economic Growth in Nigeria*. 33–47. https://doi.org/10.5281/zenodo.1168515

Mohan, R. (2007). A Panel Data Analysis of FDI , Trade Openness , and Liberalization on Economic Growth of the ASEAN-5. *The Empirical Economic Letters,* 6(1), p 25-44.

Naliaka Kwoba, M. (2016). Impact of Selected Macro Economic Variables on Foreign Direct Investment in Kenya. *International Journal of Economics, Finance and Management Sciences*, *4*(3), 107. https://doi.org/10.11648/j.ijefm.20160403.13

NAVEED, A., & SHABBIR, G. (2006). TRADE OPENNESS, FDI AND ECONOMIC GROWTH: A Panel Study. *Pakistan Economic and Social Review*, 44(1), 137-154. Retrieved August 11, 2020, from www.jstor.org/stable/25825288

Ndubuisi, P. (2017). *An Analysis of the Impact of Macroeconomic Variables and Foreign Direct Investment in Nigeria : A VECM Granger Causality Framework*. *2*(3), 187–197. https://doi.org/10.11648/j.jbed.20170203.18

Nonnenberg and Mendonça. (2004) 'The determinants of direct foreign investment in developing countries', IPEA Working paper.

Okafor, I., (2020). The Impact of Foreign Investments on Domestic Inflation in Nigeria: A Disaggregated Analysis. *IOSR Journal of Economics and Finance (IOSR-JEF)*, 7(2), pp.25-32.

Oloyede, J. A., & Kolapo, F. T. (2018). Sensitivity of Foreign Direct Investment to Macroeconomic Variables in Nigeria. *Advances in Social Sciences Research Journal*, *5*(7), 409–427.

Omankhanlen, A., (2020). The Effect of Exchange Rate and Inflation on Foreign Direct Investment and Its Relationship with Economic Growth in Nigeria. *Economics and Applied Informatics*, "Dunarea de Jos" University of Galati, Faculty of Economics and Business Administration, issue 1, pages 5-16.

Othman, N., Yusop, Z., Andaman, G., & Ismail, M. M. (2018). Impact of government spending on fdi inflows: The case of asean-5, China and India. *International Journal of Business and Society*, *19*(2), 401–414.

Patunru, A.A. and S. Rahardja (2015), Trade Protectionism in Indonesia: Bad Times and Bad Policy. Sydney: Lowy Institute.

Pedroni, P. (1999). Critical values for cointegration tests in heterogeneous panels with multiple regressors. *Oxford Bulletin of Economics and Statistics* 61: 653–670.

Pedroni, P. (2001). Purchasing power parity tests in cointegrated panels. *Review of Economics and Statistics* 83: 727–731.

Phillips, P. and Hansen, B., (1990). Statistical Inference in Instrumental Variables Regression with I(1) Processes. *The Review of Economic Studies*, 57(1), p.99.

Phillips, Peter C. B. & Perron, P. (1988). Testing for a Unit Root in Time Series Regression. *Biometrika, 75*(2), 335-346. doi:10.2307/2336182

Rehman, A. and Raza, A. (2011). Determinants of foreign direct investment and its impact on GDP growth in Pakistan, *Interdisciplinary Journal of Contemporary Research in Business*, 2(9), 198- 205.

Ridzuan, A. (2014). Foreign Direct Investment and Gross Domestic Investment: Evidence from Asean 5. *Asian Journal of Agricultural Extension, Economics & Sociology*, *3*(6), 505–520. https://doi.org/10.9734/ajaees/2014/10430

Ridzuan, A. R., Khalid, M. W., Zarin, N. I., Ridzuan, A. R., Ismail, I., & Norizan, N. (2018). The Impact of Foreign Direct Investment, Domestic Investment, Trade Openness And Population on Economic Growth: Evidence from Asean-5 Countries. *International Journal of Academic Research in Business and Social Sciences*, *8*(1). https://doi.org/10.6007/ijarbss/v8-i1/3799

Sazanami, Yoko, Seiji Yoshimura and Kozo Kiyota (2003) "Japanese Foreign Direct Investment to East Asia and Exchange Rate Policies: Some Longer Term Policy Implications after the Crisis," *Keio Economic Studies*, 40(1): 1-26.

Siddiqui, H. A. A., & Aumeboonsuke, V. (2014). Role of Interest Rate in Attracting the Fdi : Study on Asean 5 Economy. *International Journal of Technical Research and Applications*, *2*(1), 59–70.

Sjöholm, Fredrik (2016) : Foreign direct investment and value added in Indonesia, IFN Working Paper, No. 1141, Research Institute of Industrial Economics (IFN), Stockholm.

Sultan Hamood, M., Pandurengan, M. and Kalam, K., (2018). Foreign Direct Investment Determinants in Malaysia. *British Journal of Business Design & Education*, 11(1).

Takagi, S. and Shi, Z., (2011). *Exchange Rate Movements And Foreign Direct Investment (FDI): Japanese Investment In Asia, 1987–2008*. [online] Citeseerx.ist.psu.edu. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1053.2923&rep=rep1&type=pdf>

Tamajaj, A. (2000). The impact of capital inflows on Asian economic growth (Doctoral dissertation, Fordham University, 2000) (UMI Ni. 9981409).

Teece, David J (1977). "Technology Transfer by Multinational Firms: The Resource Cost of Transferring Technological Know-how." *Economic Journal*, 87(346), pp. 242–61.

UN, (2007). Foreign Direct Investment (Fdi) Net Inflows And Net Outflows As Share Of Gdp. [online] Un.org. Available at: https://www.un.org/esa/sustdev/natlinfo/indicators/methodology_sheets/global_econ_partnership/fdi.pdf

UNCTAD, (2007). World Investment Report 2007: Transnational Corporations, Extractive Industries And Development. UNCTAD.

Vijayakumar, Narayanamurthy; Sridharan, Perumal; Rao, Kode Chandra Sekhara (2010): Determinants of FDI in BRICS countries: A panel analysis, *International Journal of Business Science & Applied Management (IJBSAM)*, ISSN 1753-0296, s.l., Vol. 5, Iss. 3, pp. 1-13.

Wong, M., Fai, C., Yee, Y. and Cheng, L., (2019). Macroeconomic Policy and Exchange Rate Impacts on the Foreign Direct Investment in ASEAN Economies. *International Journal of Economic Policy in Emerging Economies*, 12(1), p.1.

World Bank, (2020). *Consumer Price Index (2010 = 100) - Malaysia | Data*. [online] Data.worldbank.org. Available at: <https://data.worldbank.org/indicator/FP.CPI.TOTL?locations=MY>

World Bank, (2020). *GDP (Current LCU) - Malaysia | Data*. [online] Data.worldbank.org. Available at: <https://data.worldbank.org/indicator/NY.GDP.MKTP.CN?locations=MY>

World Bank, (2020). *Lending Interest Rate (%) - Malaysia | Data*. [online] Data.worldbank.org. Available at: <https://data.worldbank.org/indicator/FR.INR.LEND?locations=MY>

World Bank, (2020). *Official Exchange Rate (LCU Per US$, Period Average) - Malaysia | Data*. [online] Data.worldbank.org. Available at: <https://data.worldbank.org/indicator/PA.NUS.FCRF?locations=MY>

World Bank, (2020). *Trade (% Of GDP) - Malaysia | Data*. [online] Data.worldbank.org. Available at: <https://data.worldbank.org/indicator/NE.TRD.GNFS.ZS?locations=MY>

Xing, Y. and Wan, G., (2006). Exchange Rates and Competition for FDI in Asia. *The World Economy*, 29(4), pp.419-434.

Yang, Jeannie, Nicolaas Groenewold, and Moonjoong Tcha, (2000). "The Determinants of Foreign Direct Investment in Australia". *The Economic Record* 76.232: 45-54.

Zaman, Q., Donghui, Z., Yasin, G., Zaman, S., & Imran, M. (2018). Trade Openness and FDI Inflows: A Comparative Study of Asian Countries. *European Online Journal of Natural and Social Sciences*, *7*(2), 386–396.

APPENDICES

Panel unit root test: foreign direct investment (FDI)

Level-without trend

Panel unit root test: Summary
Series: FDI
Date: 08/12/20 Time: 14:37
Sample: 1988 2018
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-3.03777	0.0012	5	150
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.92886	0.0000	5	150
ADF - Fisher Chi-square	33.3767	0.0002	5	150
PP - Fisher Chi-square	34.3278	0.0002	5	150

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Level-with trend

Panel unit root test: Summary
Series: FDI
Date: 08/12/20 Time: 14:37
Sample: 1988 2018
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-3.58085	0.0002	5	150
Breitung t-stat	-3.76213	0.0001	5	145
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-4.30148	0.0000	5	150
ADF - Fisher Chi-square	36.6793	0.0001	5	150
PP - Fisher Chi-square	56.8616	0.0000	5	150

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

1st difference-without trend

Panel unit root test: Summary
Series: D(FDI)
Date: 08/12/20 Time: 14:39
Sample: 1988 2018
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-11.4980	0.0000	5	143
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-12.2364	0.0000	5	143
ADF - Fisher Chi-square	114.972	0.0000	5	143
PP - Fisher Chi-square	137.714	0.0000	5	145

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

1st difference-with trend

Panel unit root test: Summary
Series: D(FDI)
Date: 08/12/20 Time: 14:39
Sample: 1988 2018
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-9.65779	0.0000	5	143
Breitung t-stat	-8.55329	0.0000	5	138
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-11.0815	0.0000	5	143
ADF - Fisher Chi-square	97.4318	0.0000	5	143
PP - Fisher Chi-square	618.936	0.0000	5	145

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel unit root test: economic growth (gdp)

Level-without trend

Panel unit root test: Summary
Series: LNGDP
Date: 08/12/20 Time: 14:40
Sample: 1988 2018
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-7.04196	0.0000	5	150
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.70813	0.0001	5	150
ADF - Fisher Chi-square	32.6119	0.0003	5	150
PP - Fisher Chi-square	49.4657	0.0000	5	150

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Level with trend

Panel unit root test: Summary
Series: LNGDP
Date: 08/12/20 Time: 14:42
Sample: 1988 2018
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 2
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-0.33428	0.3691	5	148
Breitung t-stat	1.15438	0.8758	5	143
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	0.96167	0.8319	5	148
ADF - Fisher Chi-square	8.42459	0.5874	5	148
PP - Fisher Chi-square	10.0701	0.4344	5	150

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

1st difference-without trend

Panel unit root test: Summary
Series: D(LNGDP)
Date: 08/12/20 Time: 14:42
Sample: 1988 2018
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-6.06868	0.0000	5	144
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-6.37900	0.0000	5	144
ADF - Fisher Chi-square	57.1253	0.0000	5	144
PP - Fisher Chi-square	65.1733	0.0000	5	145

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

1st difference-with trend

Panel unit root test: Summary
Series: D(LNGDP)
Date: 08/12/20 Time: 14:43
Sample: 1988 2018
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-7.31185	0.0000	5	145
Breitung t-stat	-6.31168	0.0000	5	140
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-7.90115	0.0000	5	145
ADF - Fisher Chi-square	66.4979	0.0000	5	145
PP - Fisher Chi-square	74.9928	0.0000	5	145

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel unit root test: Exchange rate (ER)

Level-without trend

Panel unit root test: Summary
Series: LNER
Date: 08/12/20 Time: 14:45
Sample: 1988 2018
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-1.19428	0.1162	5	149
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-0.19463	0.4228	5	149
ADF - Fisher Chi-square	7.94524	0.6342	5	149
PP - Fisher Chi-square	7.79442	0.6489	5	150

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Level-with trend

Panel unit root test: Summary
Series: LNER
Date: 08/12/20 Time: 14:45
Sample: 1988 2018
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	0.89086	0.8135	5	149
Breitung t-stat	-1.00573	0.1573	5	144
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	1.22515	0.8897	5	149
ADF - Fisher Chi-square	4.35642	0.9298	5	149
PP - Fisher Chi-square	3.42988	0.9694	5	150

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

1st difference-without trend

Panel unit root test: Summary
Series: D(LNER)
Date: 08/12/20 Time: 14:45
Sample: 1988 2018
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-7.04706	0.0000	5	145
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-6.90983	0.0000	5	145
ADF - Fisher Chi-square	61.2947	0.0000	5	145
PP - Fisher Chi-square	60.9207	0.0000	5	145

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

1st difference-with trend

Panel unit root test: Summary
Series: D(LNER)
Date: 08/12/20 Time: 14:46
Sample: 1988 2018
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-5.92167	0.0000	5	145
Breitung t-stat	-7.00165	0.0000	5	140
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.66958	0.0000	5	145
ADF - Fisher Chi-square	46.2576	0.0000	5	145
PP - Fisher Chi-square	46.0673	0.0000	5	145

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel unit root test: Interest rate (IR)

Level-without trend

Panel unit root test: Summary
Series: IR
Date: 08/12/20 Time: 14:47
Sample: 1988 2018
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-1.31329	0.0945	5	150
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	0.43502	0.6682	5	150
ADF - Fisher Chi-square	6.72676	0.7510	5	150
PP - Fisher Chi-square	5.48762	0.8563	5	150

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Level-with trend

Panel unit root test: Summary
Series: IR
Date: 08/12/20 Time: 14:48
Sample: 1988 2018
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 3
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-2.64412	0.0041	5	147
Breitung t-stat	-3.49864	0.0002	5	142
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-1.85367	0.0319	5	147
ADF - Fisher Chi-square	17.5315	0.0634	5	147
PP - Fisher Chi-square	17.6217	0.0617	5	150

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

1st difference-without trend

Panel unit root test: Summary
Series: D(IR)
Date: 08/12/20 Time: 14:48
Sample: 1988 2018
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-11.0893	0.0000	5	143
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-9.81039	0.0000	5	143
ADF - Fisher Chi-square	91.3662	0.0000	5	143
PP - Fisher Chi-square	119.961	0.0000	5	145

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

1st difference-with trend

Panel unit root test: Summary
Series: D(IR)
Date: 08/12/20 Time: 14:48
Sample: 1988 2018
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-7.65678	0.0000	5	140
Breitung t-stat	-4.33073	0.0000	5	135
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-7.83174	0.0000	5	140
ADF - Fisher Chi-square	65.6822	0.0000	5	140
PP - Fisher Chi-square	204.099	0.0000	5	145

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel unit root test: Inflation (INF)

Level-without trend

Panel unit root test: Summary
Series: LNINF
Date: 08/12/20 Time: 14:50
Sample: 1988 2018
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-8.45028	0.0000	5	149
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-4.47009	0.0000	5	149
ADF - Fisher Chi-square	45.7713	0.0000	5	149
PP - Fisher Chi-square	45.9705	0.0000	5	150

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Level-with trend

Panel unit root test: Summary
Series: LNINF
Date: 08/12/20 Time: 14:50
Sample: 1988 2018
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-1.74523	0.0405	5	149
Breitung t-stat	3.68868	0.9999	5	144
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	1.01499	0.8449	5	149
ADF - Fisher Chi-square	8.76449	0.5546	5	149
PP - Fisher Chi-square	8.23528	0.6059	5	150

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

1st difference-without trend

Panel unit root test: Summary
Series: D(LNINF)
Date: 08/12/20 Time: 14:50
Sample: 1988 2018
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-5.15982	0.0000	5	145
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.23980	0.0000	5	145
ADF - Fisher Chi-square	45.1083	0.0000	5	145
PP - Fisher Chi-square	44.8649	0.0000	5	145

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

1st difference-with trend

Panel unit root test: Summary
Series: D(LNINF)
Date: 08/12/20 Time: 14:51
Sample: 1988 2018
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-5.78784	0.0000	5	145
Breitung t-stat	-5.50766	0.0000	5	140
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.74951	0.0000	5	145
ADF - Fisher Chi-square	46.7151	0.0000	5	145
PP - Fisher Chi-square	46.0361	0.0000	5	145

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel unit root test: Trade openness (TRA)

Level-without trend

Panel unit root test: Summary
Series: TRA
Date: 08/12/20 Time: 14:52
Sample: 1988 2018
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-0.96170	0.1681	5	150
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-0.80720	0.2098	5	150
ADF - Fisher Chi-square	11.8876	0.2926	5	150
PP - Fisher Chi-square	12.7665	0.2370	5	150

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Level-with trend

Panel unit root test: Summary
Series: TRA
Date: 08/12/20 Time: 14:52
Sample: 1988 2018
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-1.36798	0.0857	5	149
Breitung t-stat	0.59835	0.7252	5	144
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	0.21314	0.5844	5	149
ADF - Fisher Chi-square	8.52655	0.5775	5	149
PP - Fisher Chi-square	11.4519	0.3234	5	150

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

1st difference-without trend

Panel unit root test: Summary
Series: D(TRA)
Date: 08/12/20 Time: 14:52
Sample: 1988 2018
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-10.3883	0.0000	5	145
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-10.5073	0.0000	5	145
ADF - Fisher Chi-square	96.2946	0.0000	5	145
PP - Fisher Chi-square	97.4607	0.0000	5	145

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

1st difference-with trend

Panel unit root test: Summary
Series: D(TRA)
Date: 08/12/20 Time: 14:53
Sample: 1988 2018
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-8.69896	0.0000	5	144
Breitung t-stat	-8.38023	0.0000	5	139
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-9.32540	0.0000	5	144
ADF - Fisher Chi-square	82.0851	0.0000	5	144
PP - Fisher Chi-square	108.264	0.0000	5	145

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel cointegration test

Pedroni-without trend

Pedroni Residual Cointegration Test
Series: FDI LNGDP LNER IR LNINF TRA
Date: 08/12/20 Time: 14:54
Sample: 1988 2018
Included observations: 155
Cross-sections included: 5
Null Hypothesis: No cointegration
Trend assumption: No deterministic trend
Automatic lag length selection based on SIC with a max lag of 5
Newey-West automatic bandwidth selection and Bartlett kernel

Alternative hypothesis: common AR coefs. (within-dimension)

	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	0.401875	0.3439	0.861411	0.1945
Panel rho-Statistic	-1.002366	0.1581	-0.513134	0.3039
Panel PP-Statistic	-8.575574	0.0000	-4.992770	0.0000
Panel ADF-Statistic	-7.137881	0.0000	-4.863731	0.0000

Alternative hypothesis: individual AR coefs. (between-dimension)

	Statistic	Prob.
Group rho-Statistic	0.064267	0.5256
Group PP-Statistic	-6.313461	0.0000
Group ADF-Statistic	-5.739791	0.0000

Pedroni-with trend

Pedroni Residual Cointegration Test
Series: FDI LNGDP LNER IR LNINF TRA
Date: 08/12/20 Time: 14:56
Sample: 1988 2018
Included observations: 155
Cross-sections included: 5
Null Hypothesis: No cointegration
Trend assumption: Deterministic intercept and trend
Automatic lag length selection based on SIC with a max lag of 5
Newey-West automatic bandwidth selection and Bartlett kernel

Alternative hypothesis: common AR coefs. (within-dimension)

	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	-0.749290	0.7732	-0.227184	0.5899
Panel rho-Statistic	0.462367	0.6781	0.707323	0.7603
Panel PP-Statistic	-11.88111	0.0000	-5.787849	0.0000
Panel ADF-Statistic	-7.036481	0.0000	-4.913445	0.0000

Alternative hypothesis: individual AR coefs. (between-dimension)

	Statistic	Prob.
Group rho-Statistic	1.467561	0.9289
Group PP-Statistic	-8.921103	0.0000
Group ADF-Statistic	-5.577954	0.0000

Kao cointegration test

Kao Residual Cointegration Test
Series: FDI LNGDP LNER IR LNINF TRA
Date: 08/12/20 Time: 14:56
Sample: 1988 2018
Included observations: 155
Null Hypothesis: No cointegration
Trend assumption: No deterministic trend
Automatic lag length selection based on SIC with a max lag of 7
Newey-West automatic bandwidth selection and Bartlett kernel

	t-Statistic	Prob.
ADF	-2.633041	0.0042
Residual variance	11.42747	
HAC variance	2.518091	

Panel cointegration estimation

Fully Modified Least Squares (FMOLS)

Dependent Variable: FDI
Method: Panel Fully Modified Least Squares (FMOLS)
Date: 08/12/20 Time: 14:58
Sample (adjusted): 1989 2018
Periods included: 30
Cross-sections included: 5
Total panel (balanced) observations: 150
Panel method: Grouped estimation
Long-run covariance estimates (Bartlett kernel, Newey-West fixed bandwidth)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDP	-0.916302	1.063473	-0.861612	0.3903
LNER	-0.951617	2.003849	-0.474894	0.6356
IR	-0.697367	0.254654	-2.738488	0.0069
LNINF	8.486049	5.678620	1.494386	0.1372
TRA	0.020423	0.007823	2.610510	0.0100

R-squared	-1.768554	Mean dependent var	5.245723
Adjusted R-squared	-1.844928	S.D. dependent var	6.582681
S.E. of regression	11.10295	Sum squared resid	17874.95
Long-run variance	3.505017		