FACTORS AFFECTING FOREIGN DIRECT INVESTMENT IN MALAYSIA: A BAYESIAN MODEL AVERAGING APPROACH

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By

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ABSTRACT

FACTORS AFFECTING FOREIGN DIRECT INVESTMENT IN MALAYSIA: A BAYESIAN MODEL AVERAGING APPROACH

Tiong Kui Ming

In the past, FDI studies were developed mainly based on Dunning's Ownership-Location-Internalisation paradigm. However, digitalisation has brought the importance of information and communications technology, while globalisation has brought the importance of political and social institutions in facilitating investment. In addition to location-specific advantages which focus on macroeconomic factors, digitalisation and institutional factors should be considered to explain FDI. Hence, this study identified key factors affecting FDI in Malaysia by taking into consideration the current development of digitalisation and globalisation. In the presence of many potential FDI factors, the Bayesian Model Averaging (BMA) approach was selected to overcome the uncertainty in variable selections. At the country-level study, the Information and Communications Technology-Economic-Institutional, ICT-E-I model was developed. Based on a panel of 32 economies for the period 2010 to 2017, the BMA findings show that Logistics Index (PIP = 1.00) and Bilateral Trade (PIP = 1.00) have a very strong effect on FDI, while Governance Index (PIP = 0.93), Cultural Distance (PIP = 0.85), Geographic Distance (PIP = 0.78) and ICT Telecommunication Infrastructure (PIP = 0.76) have a moderate effect on FDI. Besides, at the firm-level study, based on the Enterprise Surveys 2015 of 692 firms, the BMA findings show that access to land (PIP = 1.00) and crime, theft, and disorders (PIP = 1.00) have a very strong effect on FDI. The BMA

approach highlights the relative importance of institutional factors in explaining FDI. Hence, improving the investment climate relies more on the soft and hard “infrastructure”. Soft infrastructure refers to a conducive institutional environment for investment, while hard infrastructure refers to the ICT telecommunication and transport infrastructure. The finding signifies a shift in the importance of FDI factors from an economic to an institutional lens.

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APPROVAL SHEET

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LIST OF ABBREVIATIONS/NOTATION/GLOSSARY OF TERMS

2SLS	Two-Stage Least Squares
4G	Fourth-generation mobile technology
5G	Fifth-generation mobile technology
AANZFA	ASEAN-Australia and New Zealand Free Trade Agreement
ACFTA	ASEAN-People's Republic of China Free Trade Agreement
AEC	ASEAN Economic Community
AFTA	ASEAN Free Trade Area
AHKCFTA	ASEAN-Hong Kong, China Free Trade Agreement
AI	Artificial intelligence
AIFTA	ASEAN-India Free Trade Agreement
AJCEP	ASEAN-Japan Comprehensive Economic Partnership
AKFTA	ASEAN-Republic of Korea Free Trade Agreement
APEC	Asia-Pacific Economic Cooperation
ARDL	Autoregressive Distributed Lag
ASEAN	Association of Southeast Asian Nations
ASW	ASEAN Single Window
B2B	Business to business
B2C	Business to consumer
B2G	Business to government
BEEPS	Business Environment and Enterprise Performance Surveys
BIC	Bayesian Information Criterion
BIMP-EAGA	Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area
BMA	Bayesian model averaging
BRI	Belt and Road Initiative
BRICs	Brazil, Russia, India, and China
CAGE	Cultural Distance, Administration Distance, Geographic Distance, Economic Distance
COVID-19	Coronavirus
DB	Doing Business
DIO	Digital Investment Office
DW	Durbin-Watson
EFI	Economic Freedom Index
EMNES	Emerging multinational enterprises
e-MNEs	Electronic multinational enterprises
EOI	Export-Oriented Industrialization
ES	Enterprise Surveys
EU	European Union
FDI	Foreign direct investment
FE	Fixed-effects
FIDA	Federal Industrial Development Authority
FTAs	Free Trade Agreements
GCI	Global Competitiveness Index
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
HDI	Human Development Index
HICOM	Heavy Industries Corporation of Malaysia

ICA	Industrial Co-ordination Act 1975
ICT	Information and communications technology
IDP	Investment Development Path
IIA	Investment Incentive Act
IMF	International Monetary Fund
IMP1	First Industrial Master Plan
IMP2	Second Industrial Master Plan
IMP3	Third Industrial Master Plan
IMT-GT	Indonesia-Malaysia-Thailand Growth Triangle
IoT	Internet of Things
IPLC	International Production Life Cycle
IPRs	Intellectual Property Rights
ISI	Import-Substitution Industrialisation
KMO	Kaiser-Meyer-Olkin
LLL	Linkage, Leverage and Learning
LMIs	Labour Market Institutions
LMW	Licensed Manufacturing Warehouse
LPI	Logistics Performance Index
MAFTA	Malaysia-Australia Free Trade Agreement
MCFTA	Malaysia-Chile Free Trade Agreement
MCMC	Markov Chain Monte Carlo
MCMC	Malaysian Communications and Multimedia Commission
MDEC	Malaysia Digital Economy Corporation
MDGs	Millennium Development Goals
MH	Metropolis-Hastings
MHODA	Heart of Digital ASEAN
MICECA	Malaysia-India Comprehensive Economic Cooperation Agreement
MIDA	Malaysian Industrial Development Authority
MIER	Malaysian Institute of Economic Research
MINT	Mexico, Indonesia, Nigeria, and Turkey
MITI	Ministry of International Trade and Industry
MJEPA	Malaysia-Japan Economic Partnership Agreement
MNEs	Multinational enterprises
MNZFTA	Malaysia-New Zealand Free Trade Agreement
MPCEPA	Malaysia-Pakistan Closer Economic Partnership Agreement
MSC	Multimedia Super Corridor
MTFTA	and Malaysia-Turkey Free Trade Agreement
NAFTA	North American Free Trade Agreement
NDP	National Development Policy
NEP	New Economic Policy
NERP	National Economic Recovery Plan
NFCP	National Fiberisation and Connectivity Plan
NIA	National Investment Aspiration
NRI	Networked Readiness Index
NSWs	National Single Windows
NVP	National Vision Policy
OECD	Organization for Economic Co-operation and Development
OEM	Original Equipment Manufacturing
OLI Paradigm	Ownership-Location-Internalisation paradigm

OLS	Ordinary Least Squares
PCA	Principal Component Analysis
PICS	Productivity and Investment Climate Survey
PIP	Posterior inclusion probability
PMP	Posterior Model Probability
RCEP	Regional Comprehensive Economic Partnership
RE	Random effects
RIAs	Regional Integration Agreements
SAARC	South Asian Association for Regional Cooperation
SADC	Southern African Development Community
SPV2030	Shared Prosperity Vision 2030
TEIN	Trans-Eurasia Information Network
TIPO	Taiwan Intellectual Property Office
UNCTAD	United Nations Conference on Trade and Development
UIP	Unit Information Prior
UNDP	United Nations Development Program
VIF	Variance Inflation Factor
WDI	World Development Indicators
WGI	World Governance Indicators
WTO	World Trade Organisation

CHAPTER ONE

INTRODUCTION

1.1 Research Background

Malaysia has been quite successful in attracting foreign direct investment (FDI) in the 1980s and 1990s; however, Malaysia’s performance in attracting FDI has weakened since the 2000s, thus making it necessary to understand the relevant FDI factors. There are pull and push factors to explain the FDI flows. Push factors focus on the characteristics of the home countries or domestic factors that motivate FDI. While pull factors focus on the characteristics of the host countries or the destination countries that attract FDI (Odedokun, 2004). Hence, to understand the reasons behind the weak performance of Malaysia in attracting FDI since the 2000s, this study approaches the matter from the host country's perspective, which focuses on the pull factors.

Globalisation has witnessed a structural shift in FDI from Europe and America to Asia over the past few decades. Globalisation has thus given rise to the importance of political and social institutions in facilitating investment. Likewise, the intensifying digital globalisation has transformed the global economy into a new economy. Digitalisation has redefined globalisation with the emergence of digital technologies. Digital globalisation enables broader and deeper connectivity between individuals, businesses, and governments. Digitalisation has thus given rise to the importance of information and communications technology (ICT) in facilitating investment. Hence, it is important to consider the effects of globalisation and digitalisation on FDI.

1.1.1 Globalisation and Institutions

There is no specific definition of when globalisation begins. However, globalisation has brought unprecedented global economic integration through migration, trade, and capital flows (World Bank, 2002). In other words, globalisation enables connections among actors at multicontinental distances, mediated through the flows of goods, capital, people, ideas and information (Clark, 2000). It is also a multifaceted phenomenon of increasing trade, capital flow, migration, ideas, technology, communications and remittances (Dunning, 1991; Griffin and Khan, 1992; Biersteker, 1998; Kohler, 2002; Pekarskiene and Susniene, 2015) as well as a process that erodes national boundaries, integrates national economies, governance, technology, culture and produces complex relations of mutual interdependence (Dreher, Gaston and Martens, 2008). There are three interrelated dimensions of globalisation, i.e., economic, political and social (Dreher, 2006).

There are two main channels of economic globalisation related to international production activities, i.e., trade and FDI that have accelerated over the past decades. The rapidity of technology change is one of the important drivers of globalisation (Ghai, 1997). Since the First Industrial Revolution in the late 1700s to 1800s, globalisation has been the main cause of trade expansion (Held, McGrew, Goldblatt and Perraton, 1999), and the emergence of the managed multi-plant firm that occasionally extended beyond its national boundaries (Dunning and Lundan, 2008b). Next, the Second Industrial Revolution was characterised by the maturing of the United States and European multinational enterprises (MNEs) in the inter-war period. There was an increasing significance of FDI from the United States and the United Kingdom from 1945 to the late 1960s, and later the European countries and Japan (Dunning and Lundan, 2008b).

The Third Industrial Revolution has seen a rapid pace of scientific and technological development, resulting in the increasing significance of FDI from emerging markets, e.g., Brazil, Russia, India, and China, and electronic multinational enterprises (e-MNEs). Unlike the past decades, the Fourth Industrial Revolution is characterised by the tangible flows of physical goods, increasing flows of intangible data and information, and greater FDI participation from emerging markets and e-MNEs.

On the political front, the government is playing an important role in regulating the economy and promoting trade and investment through establishing, enforcing and monitoring the rules and regulations of economic governance. Political globalisation has taken place through the liberalisation of trade and investment policies and the establishment of global and regional integrations. At the global level, World Trade Organisation (WTO), while at the regional level, the North American Free Trade Agreement (NAFTA), European Union (EU), Asia-Pacific Economic Cooperation (APEC) and Association of Southeast Asian Nations (ASEAN) are the organisations that play an important role in regulating and facilitating trade and investment activities.

On the cultural front, globalisation has promoted the spread of multiculturalism as well as greater cultural diversity and international cultural exchanges in many economies (Dreher, Gaston and Martens, 2008), leading to a shift in the FDI landscape from Europe and America to Asia over the past two decades. The world has also witnessed a rapid FDI expansion in Asia, a region that emerged as the second most important region for FDI in 2003 and was recorded as the top world recipient region for FDI in 2013. Cultural distance, therefore, matters for MNEs when deciding the location to invest. This is especially for MNEs from Europe and America, upon entering any markets in Asia. Other than having to face competition against the local firms, the MNEs also need to learn and adapt to the new institutional environments that they are not familiar involving language, customs, tradition, culture religion and others.

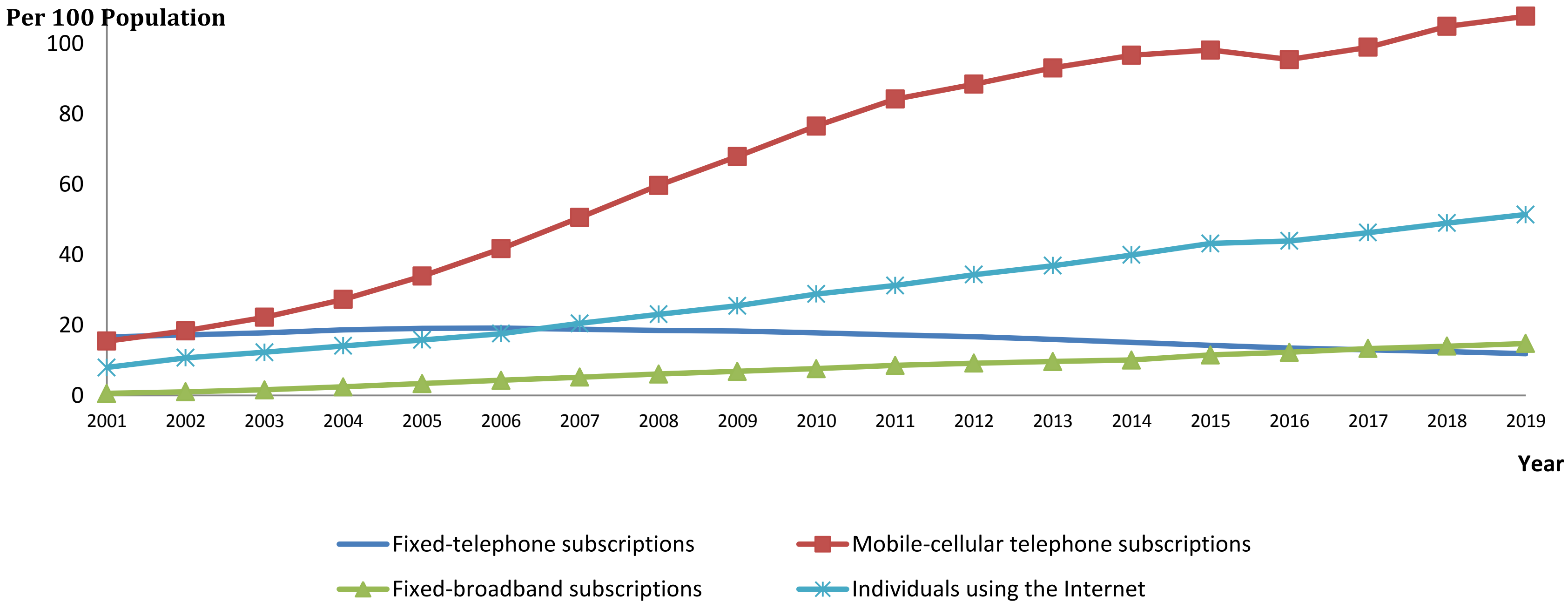
The importance of institutions can be seen from different empirical analyses. For instance, Mengistu and Adhikary (2011), Masron and Naseem (2017) and Camarero, Moliner and Tamarit (2021b) analysed the importance of political institutions on FDI. They found that the rule of law is a significant factor in determining FDI. Besides, the importance of social institutions was highlighted in various studies (Flores and Aguilera, 2007; Buckley, Forsans and Munjal, 2012; Camarero, Montolio and Tamarit, 2019). In particular, they found that cultural distance is a significant factor in determining FDI in 147 countries (Flores and Aguilera, 2007). Hence, the effect of institutional factors on FDI cannot be neglected in FDI studies.

1.1.2 Digitalisation and Information and Communications Technology

The recent wave of globalisation witnessed an increasing intensity of digitalisation. The digital economy is growing in the Fourth Industrial Revolution with the emergence of new technologies such as Artificial intelligence (AI), big data, Internet of things (IoT), cloud computing, Fintech and others. Digitalisation changes the economics of globalisation in various ways in the presence of ICT telecommunication tools such as fixed telephones, mobile telephones, the internet, and broadband. The availability of digital platforms enables a borderless connection between business to business (B2B), business to consumer (B2C) and business to government (B2G), which helps to drive down cross-border transactions and communications costs. It also allows digital MNEs to build a global presence without a significant amount of FDI. At the same time, digital globalisation enables greater participation of small-medium enterprises (SMEs) to go global. Business competitors emerge quickly from each corner of the world and put pressure on the industrial incumbents (Manyika et al., 2016).

The impacts of ICT on FDI are often measured in terms of fixed telephone in past studies despite there being other forms of digital technologies (Naudé and Krugell, 2007; Xaypanya, Rangkakulnuwat and Paweenawat, 2015). However, along with the increasing intensification of digitalisation, the use of the fixed telephone no longer adequately addressed the impacts of different telecommunication tools on FDI; hence, the call for an in-depth discussion on the use of mobile telephone, fixed broadband and internet users.

In this sense, the development of ICT telecommunication has been thoroughly discussed for the past two decades. There was an increasing global trend in ICT telecommunication development as shown in Figure 1.1 and this trend is expected to increase further. A growing trend for global mobile-cellular telephone subscriptions, internet users and fixed broadband subscriptions has been observed from 2001 until 2019, except for fixed telephone subscriptions; in which the trend was declining due to the increasing popularity of mobile access.



Source: ITU World Telecommunication

Figure 1.1 Global ICT Developments, 2001-2019 (Per 100 population)

The adoption of the Millennium Development Goals (MDGs) in the year 2000 marked an important milestone for digital development over the past 15 years. The ICT revolution has driven global development. In particular, the deployment of infrastructure and technological progress has brought growth in global ICT connectivity. The key achievements of MDGs were seen in the growth of mobile-cellular telephone subscriptions, mobile broadband penetration, internet users and fixed-broadband. Statistically, mobile-cellular telephone subscriptions worldwide grew from less than 1 billion in 2000 to more than 7 billion, and mobile broadband penetration increased 12 times since 2007 to a record of 47% in 2015. Globally, there were 3.2 billion internet users by 2015, of which 2 billion internet users were from developing economies. The number of households with internet access at home was also increased by 28% since 2005. However, fixed-broadband grew at a slower pace with an annual increase of 7% over the past three years to 11% penetration by 2015 (ITU, 2015).

The growing use of ICT is transforming the global economy into a more digitalised economy. The digital economy is growing and contributing to an important component of the country's gross domestic product (GDP). According to UNCTAD (2019), the digital size of the economy was about 4.5% to 15.5% of the country's GDP. For instance, the United States and China accounted for almost 40% of the total world value-added in the ICT sector. While Taiwan, Ireland, and Malaysia accounted for the largest share of ICT sector value-added per GDP. On average, the ICT sector value-added per GDP for Taiwan was 15.3%, Ireland 9.7%, and Malaysia 9.4%, respectively.

Besides, the global value of e-commerce was US$29 trillion in 2017, which contributed to 36% of the global GDP, and digitally deliverable service exports were US$2.9 trillion, which was equivalent to 50% of global services exports in 2019.

Besides, ICT has proven to be the key technology (OECD, 2004) and an important driver of growth (Kuppusamy, Murali and Geoffrey, 2009; Sassi and Goaied, 2013; Latif et al., 2018) and FDI (Xaypanya et al., 2015; Asongu, Akpan and Isihak, 2018). According to Waverman, Meschi, and Fuss (2005), an additional 10 mobile users per 100 people would increase GDP per capita growth by 0.59% in developing countries, and developing countries with better telecommunications networks received greater FDI inflows (Lydon and Williams, 2005). In addition, there is a long-run positive relationship between telecommunications infrastructure and usage of FDI in Asian countries (Pradhan, Arvin, Nair, Mittal and Norman, 2017). Hence, the effect of ICT factors on FDI should be reflected in the FDI studies.

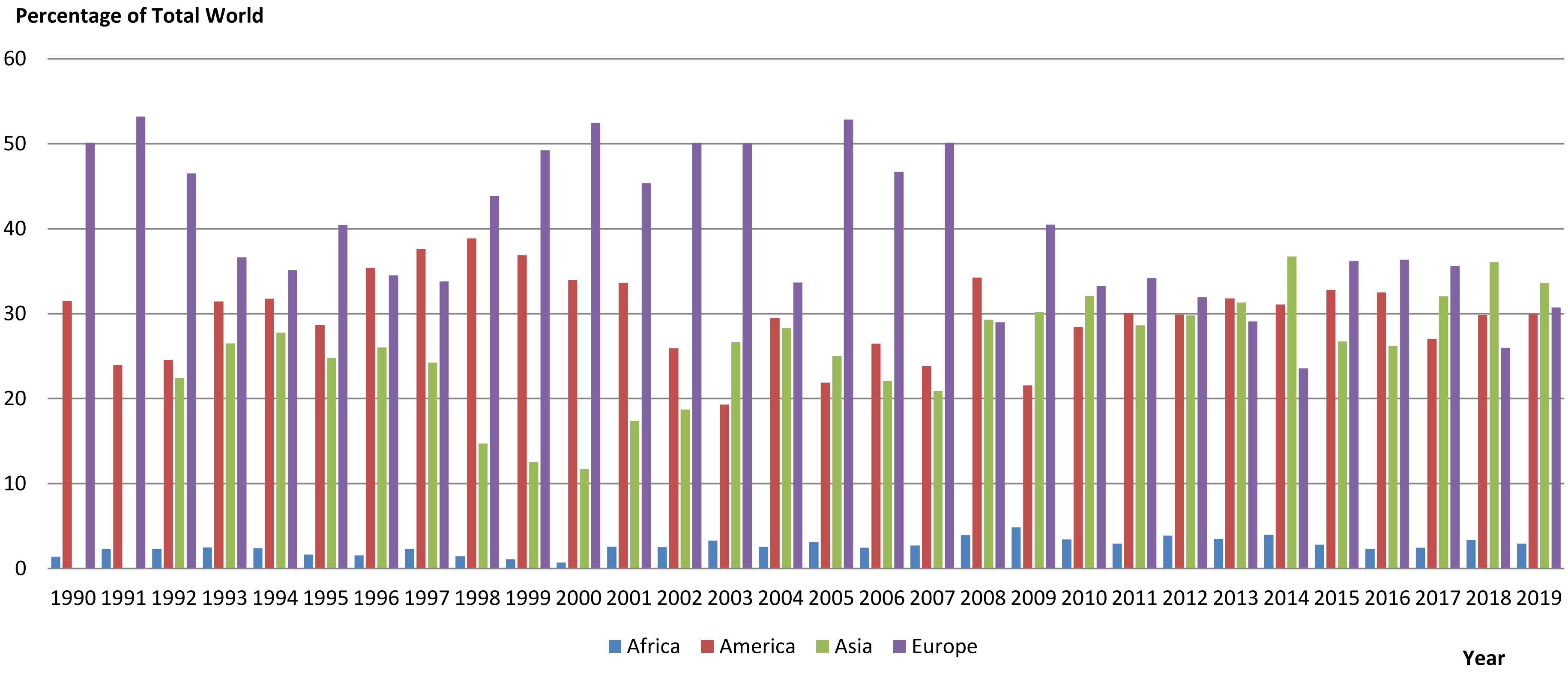
1.2 Development of Foreign Direct Investment

Understanding the development of FDI would provide a better picture of the FDI performance in Malaysia over the past decades. There are two major FDI statistics to monitor, namely FDI flows and FDI stocks. FDI flows record the value of cross-border transactions related to direct investment during a given period, while FDI stocks record the total level of direct investment at the end of the year or the cumulation of the past flows (OECD, 2008b; Wacker, 2016).

1.2.1 Globalisation and the Distribution of Foreign Direct Investment

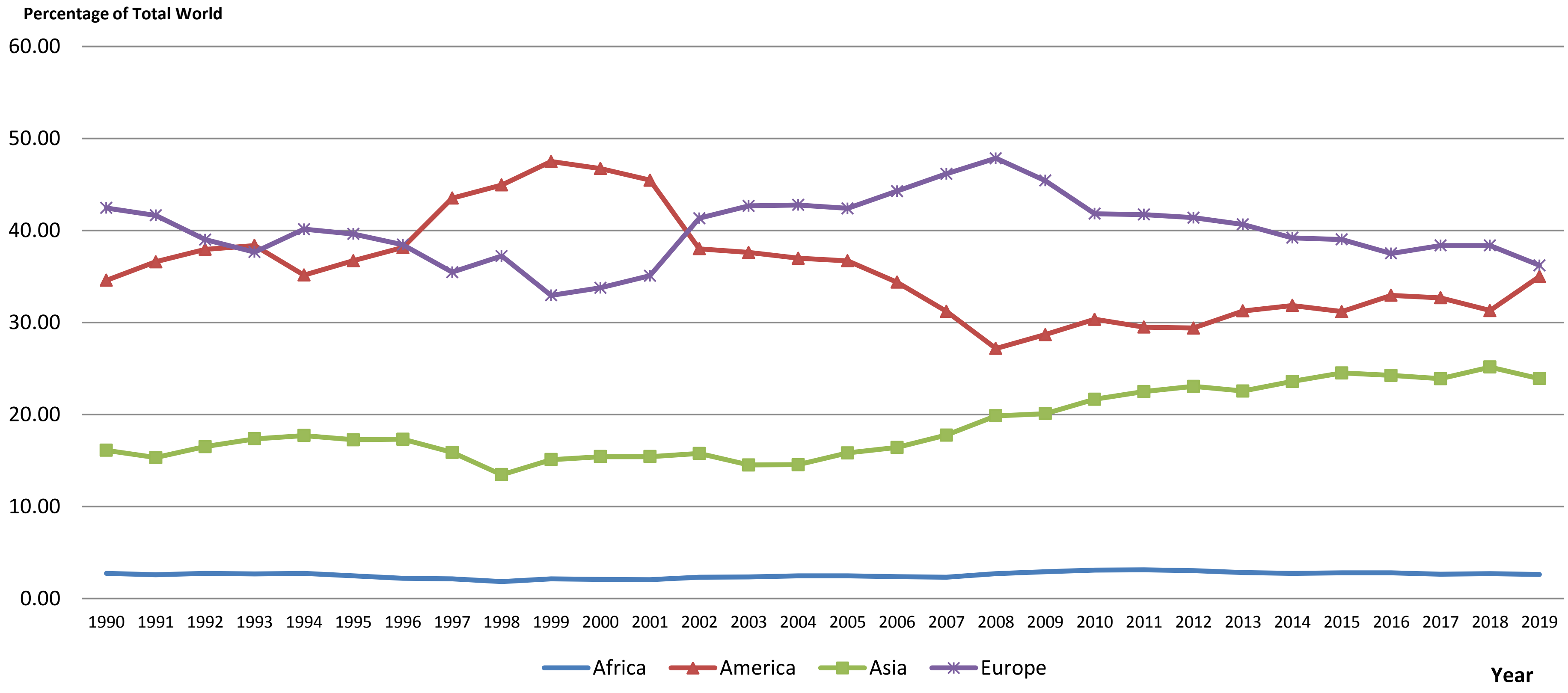
This section looks at the regional distribution of FDI to see how Asia has emerged as an important FDI destination as a result of the increasing intensification of globalisation. In 1990, Europe was one of the most important regions for FDI (Figure 1.2), which comprised around 50.14% of the total world FDI inflows. Despite a dropped in 1997 due to the global financial crisis, Europe remained the most important FDI destination in 2000. However, in the 2000s, Asia started to pick up as the second preferred destination for FDI. As the second preferred destination for FDI, Asia made a record of 26.62% of total world FDI flows in 2003, which surpassed America for the first time (Figure 1.2).

In the 2010s, Asia continued to remain an attractive region for FDI, Asia became the most popular destination for FDI in 2014 with a share of 36.73% of the total world FDI inflows (Figure 1.2). The such record continued in 2017 with 35.67% of the total world FDI inflows and an even higher record in 2018 with 42.62% of the total world FDI inflows. While Asia was experiencing an increasing trend of global FDI stocks from the year 1990 to 2018, the reverse trends were observed in Europe especially after the Global Financial Crisis 2008-2009 and in America since the beginning of the 2000s (Figure 1.3). In short, Asia has emerged as an important FDI location in the process of intensifying globalisation in the past few decades.



Source: UNCTAD

Figure 1.2: Regional Distribution of FDI Inflows as the Percentage of Total World (1990-2019)



Source: UNCTAD

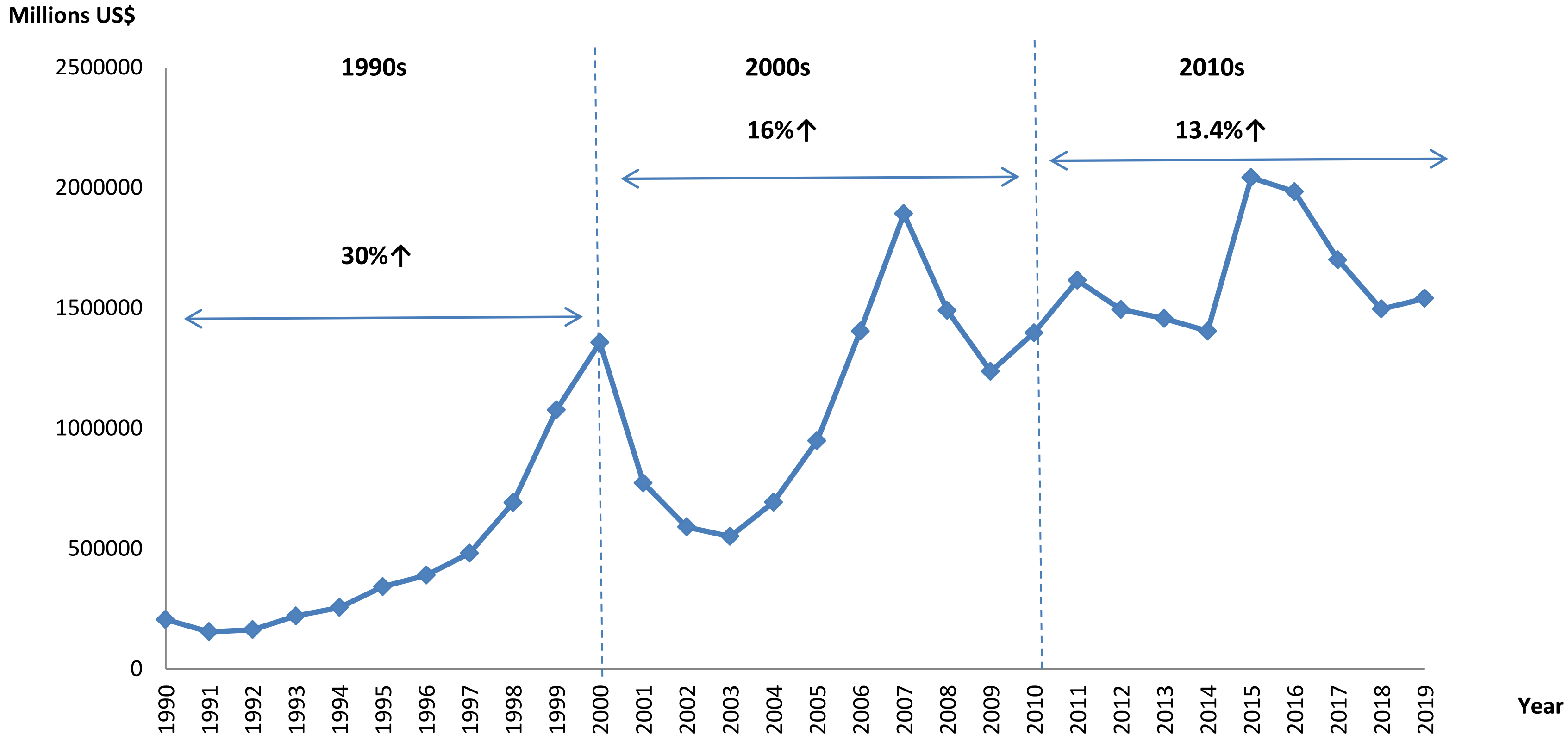
Figure 1.3: Regional Distribution of FDI Stocks as the Percentage of Total World (1990-2019)

1.2.2 FDI Trends: Global, Regional, and Country Levels

This section discusses the FDI trends over the past three decades at global, regional and country levels, that is the global FDI flows, regional FDI flows, FDI flows in ASEAN, FDI flows in ASEAN Countries, and FDI flows in Malaysia.

1.2.2.1 Global Flows of FDI (1990-2019)

In the 1990s, the momentum for global FDI expansion continued; FDI inflows grew steadily in absolute terms with an annual average amount of US$397.5 billion (Figure 1.4). Although the global economy was affected by the Asian Financial Crisis in 1997, the decline was mainly in a few developing countries in 1998. The global FDI flows experienced greater volatility for the period between 2000 and 2017, before the Global Financial Crisis in 2007, where a U-shape curve in the global FDI flows was observed (Figure 1.4). Global FDI inflows have been severely affected by the global financial crisis in 2007; where FDI inflows fell from US$1891.7 billion in 2007 to US$1236.1 billion in 2009.



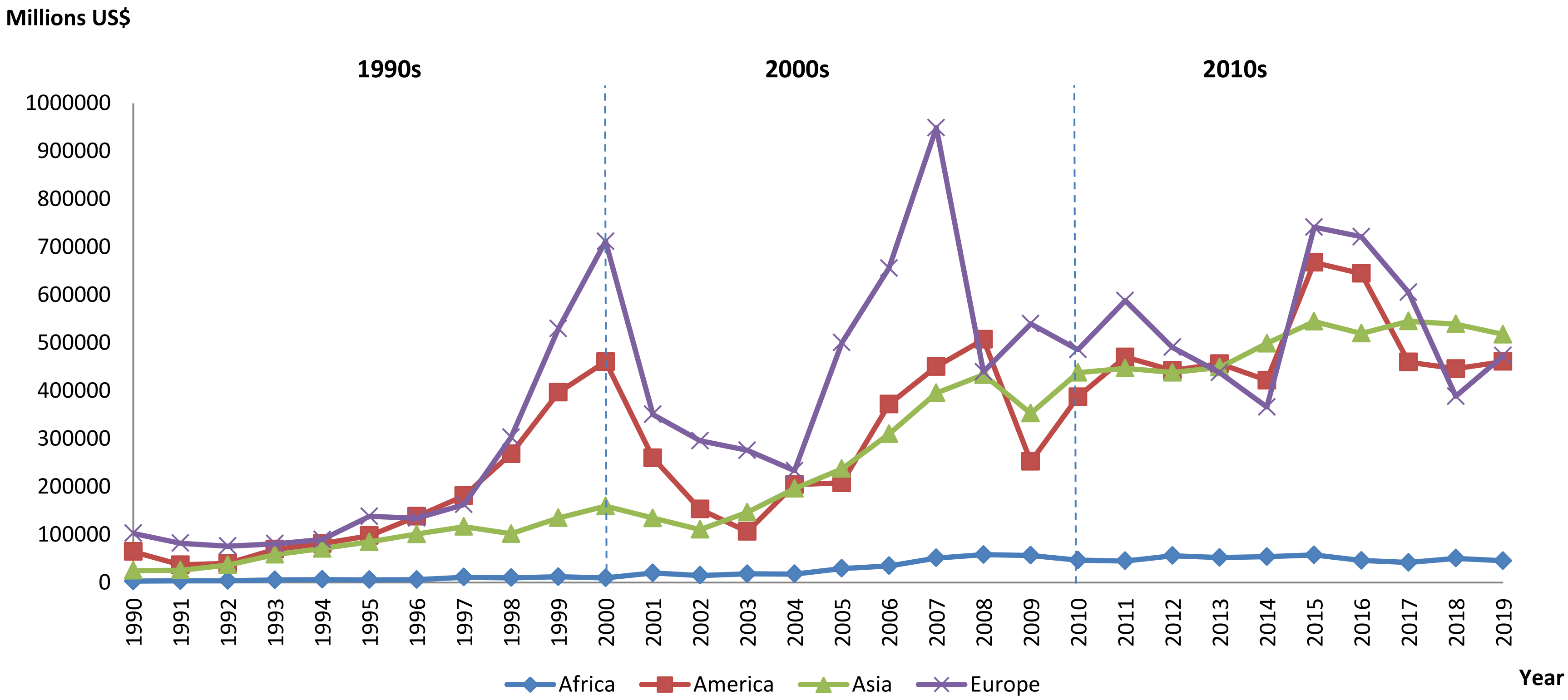
Source: UNCTAD

Figure 1.4: Global FDI Inflows, 1990-2019 (Millions US$)

In the 2010s, global FDI inflows witnessed a slow recovery with a record of US$1396.2 billion in 2010 and gained momentum in 2011 to reach a peak of US$2041.9 billion in 2015. However, global FDI inflows fall after reaching their peak in 2015 (Figure 1.4) and is expected to fall further due to the COVID-19 pandemic in 2021. The average annual growth of global FDI inflows was above 30% in the 1990s. However, it dropped to 16% in the 2000s and further decreased to 13.4% in the 2010s.

1.2.2.2 Regional Flows of FDI (1990-2019)

The regional FDI flows followed a similar pattern as the global FDI flows. Although the global FDI inflows fell after the peak in 2015, Asia was less affected than other regions (Figure 1.5). An improvement in the economic outlook in major Asian economies, such as China, Indonesia and India, boosts investor confidence (UNCTAD, 2017), and China, Hong Kong and Singapore were recorded as the largest three FDI recipients in 2016 (UNCTAD, 2018). On average, Asia has recorded a reduction of 1.2% global FDI inflows from 2016 to 2019, while Africa dropped by 4.6%, America by 7.9% and Europe by 8.2%, respectively after the peak in 2015.

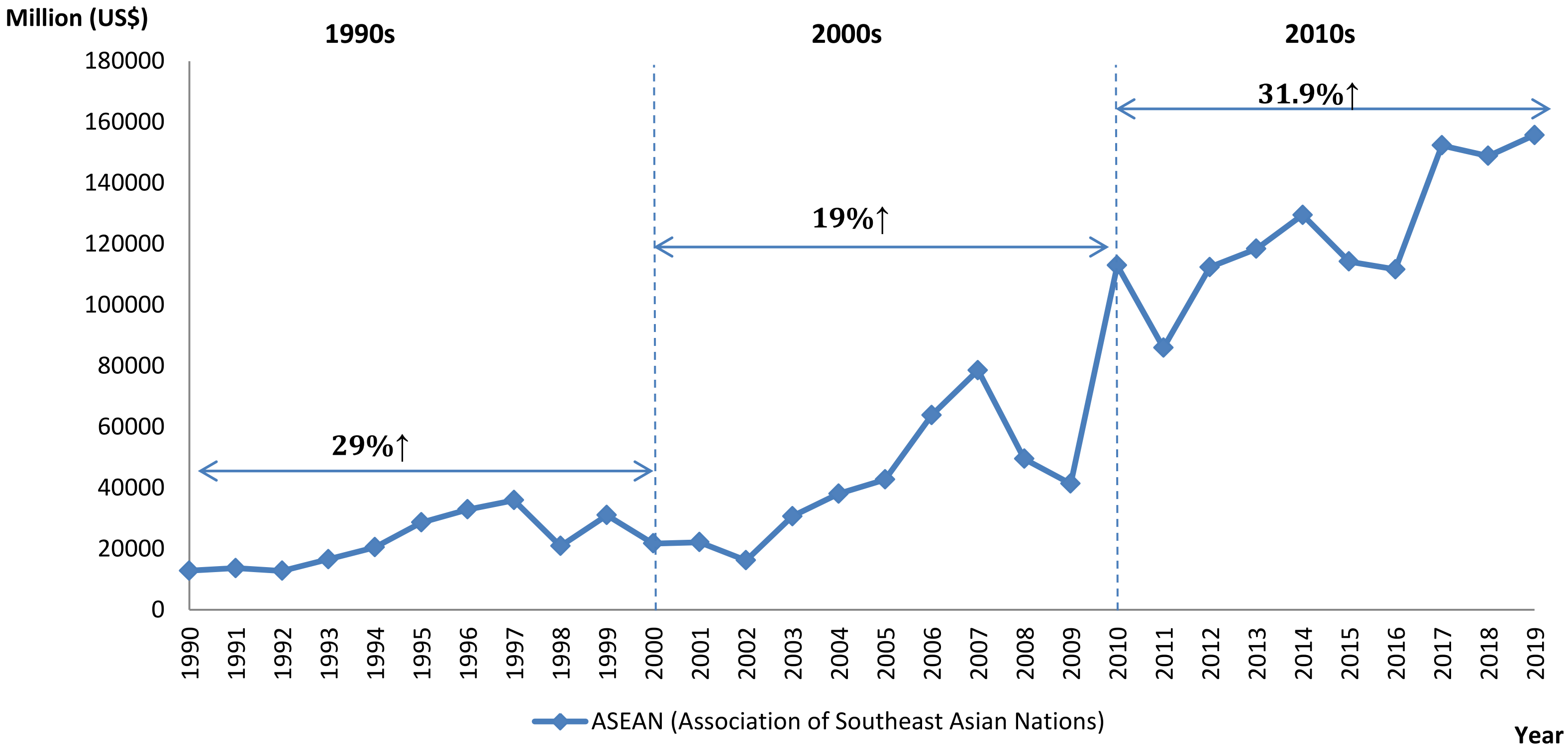


Source: UNCTAD

Figure 1.5: Regional FDI Inflows, 1990-2019 (Millions US$)

1.2.2.3 The FDI flows in ASEAN (1990-2019)

Globalisation increases the interdependence of economies through economic integration. ASEAN as a bloc is an important economic integration in Asia that attracts FDI while Malaysia has been one of the favourite destinations for FDI in the region. Although the global FDI inflows fell after the peak in 2015, the momentum for FDI inflows in ASEAN has remained positive. The FDI inflows to ASEAN reached the highest record of US$1557.3 billion in 2019 (Figure 1.6). In the 1990s, ASEAN gained an average annual growth of 29% of FDI inflows. Despite the slide in average annual growth of FDI inflows to 19% in the 2000s due to the global financial crisis, the average annual growth of FDI inflows in ASEAN has rebounded to 31.9% in the 2010s.

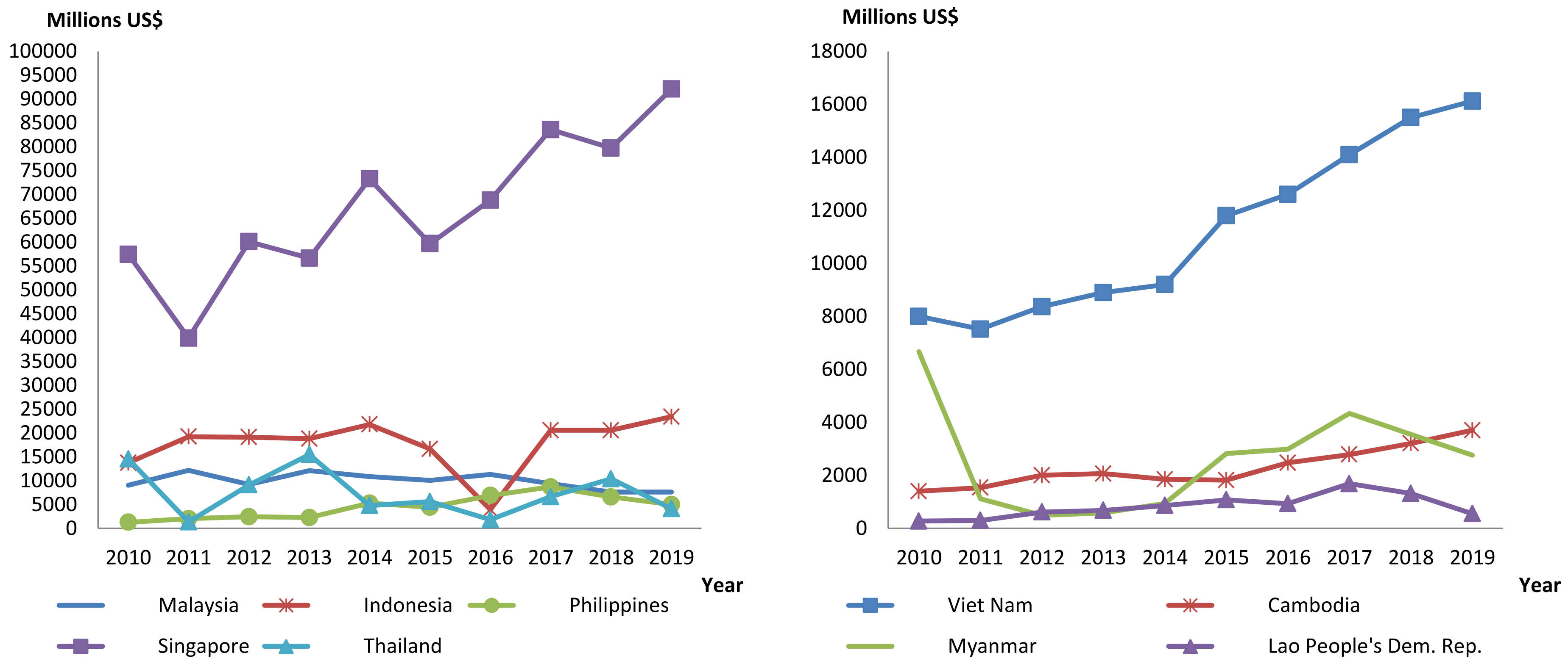


Source: UNCTAD

Figure 1.6: Total FDI Inflows in ASEAN, 1990-2019 (Millions US$)

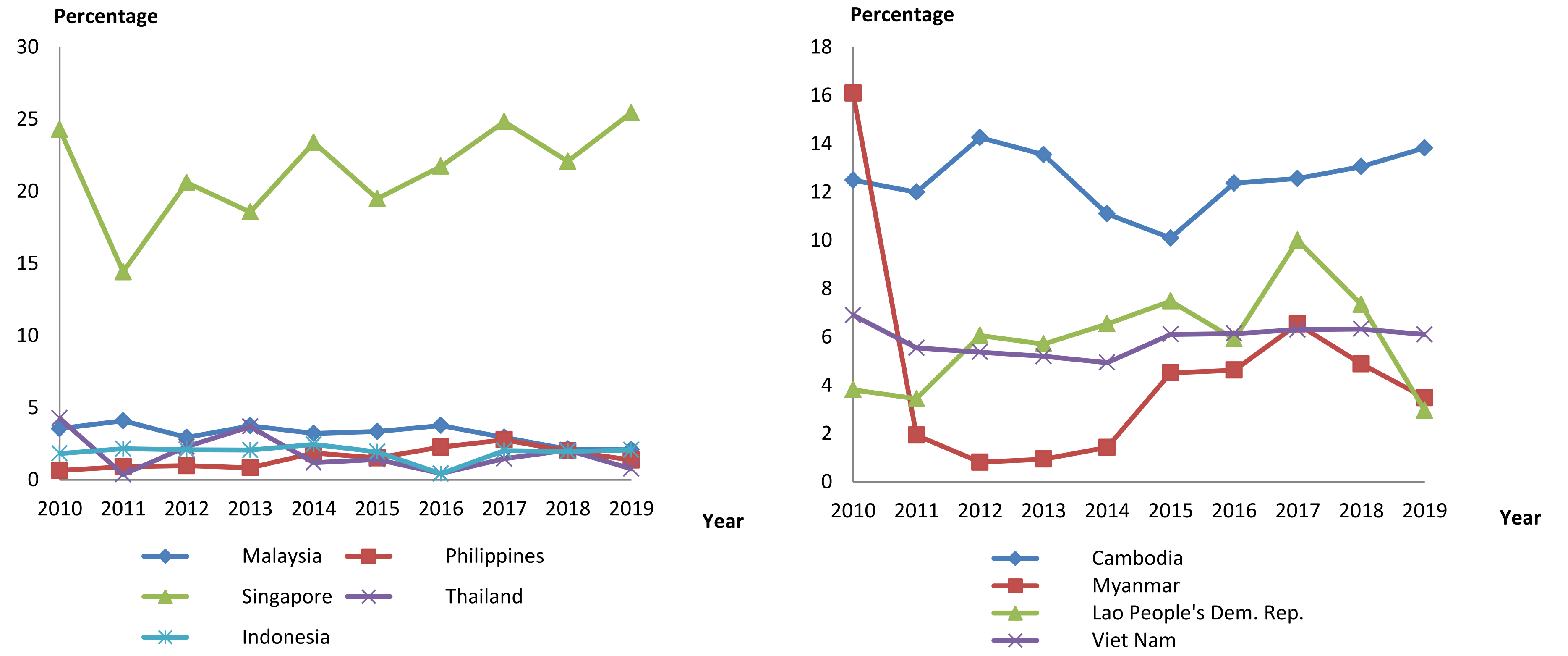
1.2.2.4 The FDI Flows in ASEAN Countries (2010-2019)

The momentum for FDI inflows in ASEAN has remained positive in the past decade. Singapore recorded the highest amount of FDI inflows (Figure 1.7) during the 2010s. The average annual growth of total FDI inflows is computed based on the total FDI inflows, it shows that the average annual growth of total FDI inflows in Indonesia and Thailand was higher than in Malaysia. Additionally, the total FDI inflows as a percentage of GDP in Singapore, Cambodia, Myanmar, Laos and Vietnam were also higher than in Malaysia (Figure 1.8). These key figures implied a catching up of ASEAN member countries in attracting FDI for development, especially in the case of Cambodia, Myanmar, Laos and Vietnam. Therefore, there is a need to understand the FDI trends in Malaysia.



Source: UNCTAD

Figure 1.7: Total FDI Inflows in ASEAN Countries, 2010-2019 (Millions US$)

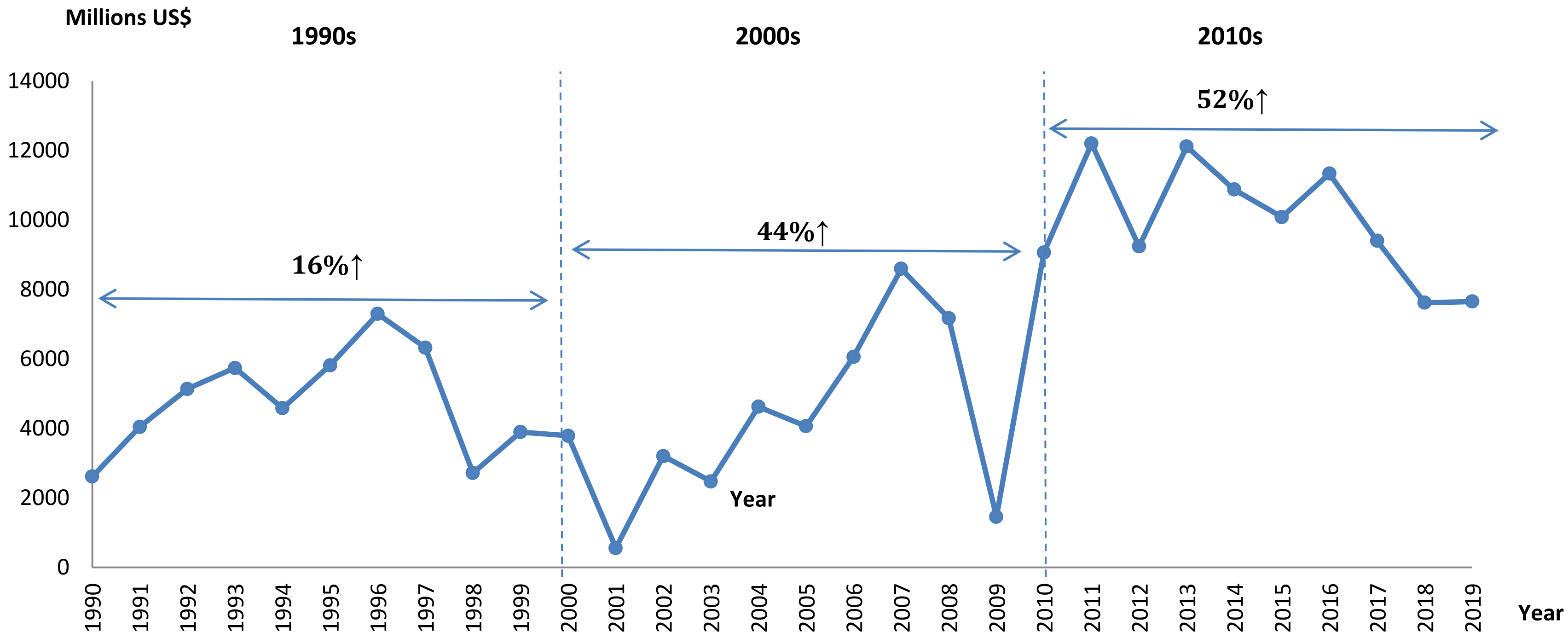


Source: UNCTAD

Figure 1.8: Total FDI Inflows as Per Gross Domestic Product in ASEAN Countries, 2010-2019

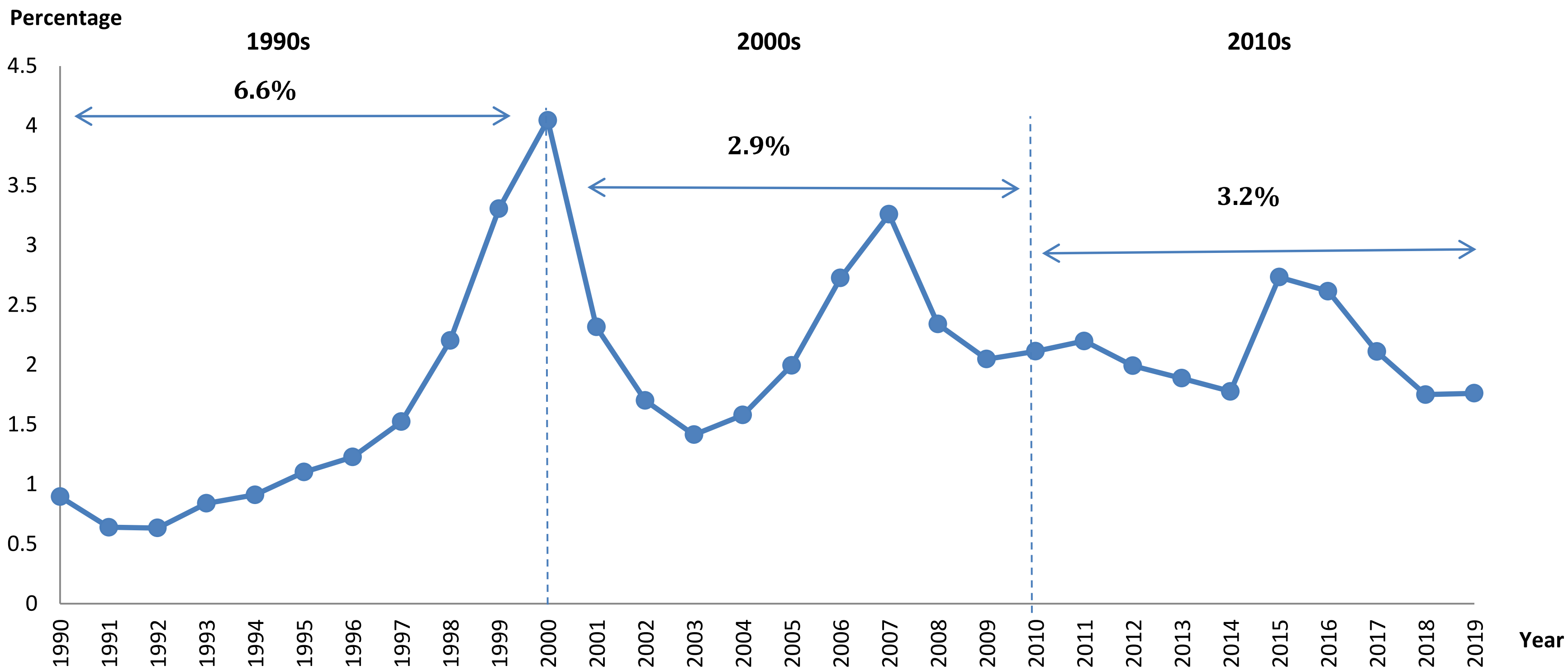
1.2.2.5 The FDI flows in Malaysia (1990-2019)

In Malaysia, a closer look at the three phases of FDI trends (Figure 1.9) indicated an increasing trend of average annual growth of FDI inflows, from 16% in the 1990s to 52% in the 2010s (Figure 1.9). Although in absolute terms, the FDI inflows showed an increasing trend, however, if compared to Malaysia's economic size, the relative FDI inflows had decreased. The total FDI inflows as a percentage of GDP had declined from 6.6% in the 1990s to 3.2% in the 2010s (Figure 1.10).



Source: UNCTAD

Figure 1.9: Total FDI Inflows to Malaysia, 1990-2019 (Millions US$)



Source: UNCTAD

Figure 1.10: Total FDI Inflows as a Percentage of Gross Domestic Production in Malaysia, 1990-2019

The review of the FDI trends indicates that a declining trend of global FDI flows in the recent decade has been observed, especially after reaching the peak in 2015 and even before the COVID-19 pandemic. However, as compared to other regions, Asia was less affected. For instance, the momentum for FDI inflows in ASEAN has remained positive in the recent decade. Despite the positive momentum for FDI inflows in the ASEAN, the performance of Malaysia in attracting FDI has slowed in recent decades. Therefore, understanding the FDI factors in Malaysia would be able to provide better insights for policy recommendations to enhance the location attractiveness of Malaysia for FDI.

1.3 The Case of Malaysia

Foreign Direct Investment plays an important role in Malaysia's economic development. Malaysia has been quite successful in attracting FDI in the past. FDI has been one of the important drivers in facilitating the transformation of the Malaysian economy from an agricultural-based to an industrial-based economy.

1.3.1 Industrialisation and FDI in Malaysia

Guided by different long-term plans, five-year development plans, and industrial plans, Malaysia has experienced a gradual transformation over the past few decades. Table 1.1 summarises Malaysia's development plans and investment promotion measures. Since independence in 1957, different industrialisation strategies have been implemented. In the 1960s, the import-substitution, while in the 1970s, export-oriented, and the 1980s, resource-based economy. As a result, the Malaysian economy has achieved rapid growth from the 1970s to the 1990s.

Table 1.1: Summary of Malaysia's Development Plans and Investment Promotion Measures

<table>
<tr><th></th><th>1960s
Import-Substitution Industrialisation</th><th>1970s
Export-Oriented Industrialisation (EOI)</th><th>1980s
Resource-Based Industrialisation</th><th>1990s</th><th>2000s
Knowledge-based economy</th><th>2010s</th><th>2020s
Digital-based economy</th></tr>
<tr><td>Long-Term Plan</td><td></td><td>New Economic Policy (NEP) (1971-1990)</td><td></td><td>National Development Policy (NDP) (1991-2000)</td><td>National Vision Policy (NVP) (2001-2010)</td><td></td><td>Shared Prosperity Vision 2030 (SPV2030)</td></tr>
<tr><td colspan="4"></td><td colspan="3">Vision 2020 (1990-2020)</td><td></td></tr>
<tr><td>Malaysia Plan</td><td>First Malaysia Plan
(1MP, 1966-1970)</td><td>Second Malaysia Plan (2MP, 1971-1975)

Third Malaysia Plan
(3MP, 1976-1980)</td><td>Fourth Malaysia Plan
(4MP, 1981-1985)

Fifth Malaysia Plan
(5MP, 1986-1990)</td><td>Sixth Malaysia Plan
(6MP, 1991-1995)

Seventh Malaysia Plan
(7MP, 1996-2000)</td><td>Eight Malaysia Plan
(8MP, 2001-2005)

Ninth Malaysia Plan
(9MP, 2006-2010)</td><td>Tenth Malaysia Plan
(10MP, 2011-2015)

Eleventh Malaysia Plan
(11MP, 2016-2020)</td><td>Twelfth Malaysia Plan
(12MP, 2021-2025)</td></tr>
<tr><td>Industrial Plan</td><td colspan="2"></td><td colspan="2">First Industrial Master Plan
(IMP 1) 1986-1995
Industrial-based approach</td><td colspan="3"></td></tr>
<tr><td colspan="4"></td><td colspan="2">Second Industrial Master Plan
(IMP 2, 1996-2005)
Manufacturing plus-plus
Cluster-based approach</td><td colspan="2"></td></tr>
<tr><td colspan="5"></td><td colspan="2">Third Industrial Master Plan
(IMP3, 2006-2020)</td><td></td></tr>
</table>

Table 1.1: (Continued)

	1960s Import-Substitution Industrialisation ⇨	**1970s** Export-Oriented Industrialisation (EOI) ⇨	**1980s** Resource-Based Industrialisation ⇨	**1990s** ⇨	**2000s** Knowledge-based economy ⇨	**2010s** ⇨	**2020s** Digital-based economy
Investment Promotion measures	Investment Incentives Act of 1968	Free Trade Zone Act 1971 Industrial Co-ordination Act (ICA), 1975	Promotion of Investment Act (PIA), 1886	Aggressive promotion of FDI in the manufacturing sector. Liberal investment policy- 100% foreign equity in export-oriented projects, capital and technology-intensive. Liberal employment of key expatriates.		Liberal investment policy- no foreign equity restriction on the capital market, except for investment banks with a 70% cap (WTO, 2018). Liberalisation of 18 services in 2012 - 100% foreign equity participation for courier, education subsectors, environmental services, healthcare, professional services, wholesale and retail trade (WTO, 2018).	Liberalisation of investment policy- relaxation of foreign equity ownership of up to 100% for business services, insurance, wholesale and retail (MEA, 2019).

Since its independence, Malaysia has undergone three main phases of development, i.e., (I) The 1960s- 1970s: Import-Substitution Industrialisation (ISI), (II) The 1970s-1990s: Export-Oriented Industrialisation (EOI) and (III) The 1990s- 2020s: Vision 2020 era. The year 2020 marked the end of Vision 2020 and a new decade of the digital-based economy ahead with significant challenges awaiting.

(I) The 1960s- 1970s: Import-Substitution Industrialisation

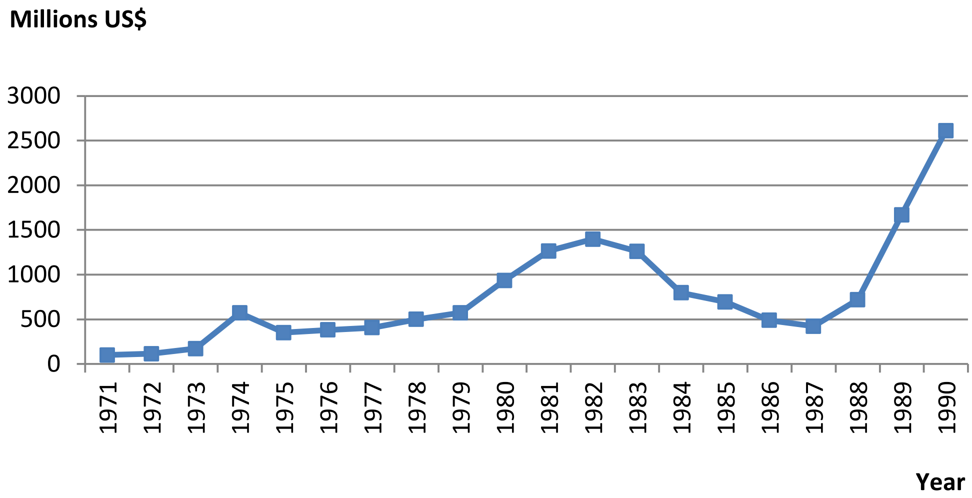
In the 1960s, FDI policy focused mainly on the development of import-substitution industrialisation (ISI). Before independence in 1957, Malaysia's FDI activities were primarily concentrated in mining, plantation agriculture, utilities, and commercial enterprises. However, in the post-independence era, the Malaysian economy has expanded FDI activities into other crops and the manufacturing sector.

The Pioneer Industries Ordinance 1958 was introduced to provide incentives and tariff protection for manufacturing industries. Foreign firms with “pioneer status” were entitled to enjoy tariff protection and tax relief for two or five years, depending on their investment level (Rao, 1980). It was then later replaced by the Investment Incentives Act 1968 as a strategy for export-oriented industrialisation (EOI). The Investment Incentive Act (IIA) is the first act to provide pioneer status and incentives for export-oriented industries.

Furthermore, to promote the investment climate in Malaysia, the Federal Industrial Development Authority (FIDA) was established in 1965. FIDA is served as the principal government agency to coordinate and promote industrial development activities. The establishment of FIDA has signified the beginning of the proactive industrial policy. In 1979, FIDA has renamed the Malaysian Industrial Development Authority (MIDA). Since then, MIDA is playing an esteemed role as Malaysia leading investment promotion agency till today.

(II) The 1970s-1990s: Export-Oriented Industrialisation (EOI)

From 1970 to 1990, Malaysian FDI policy shifted from import-substitution to export-oriented industrialisation (EOI). This policy switch has enabled Malaysia to become one of the early movers to attract export-oriented FDI compared to other developing countries. The export-oriented policy has made Malaysia the leading destination for FDI in the subsequent decades, especially for MNEs from Japan and Taiwan to establish export platforms for the region (OECD, 2013). As a result, there was a significant increase in the total FDI inflows from US$100 million in 1971 to US$2611 million in 1990, corresponding to almost twenty-five-fold over the 20 years (Figure 1.11), and the average FDI inflows as a share of GDP was around 3.4 percent from 1971 to 1990.



Source: UNCTAD

Figure 1.11: Total FDI Inflows to Malaysia, 1971-1990 (Millions US$)

Several policies were introduced to promote investment. Notably, the Free Trade Zone Act 1971 was implemented to attract export-oriented MNEs. Ten free trade zones have been established to offer free import and export duties, expedited customs clearance, and subsidised infrastructure to export-oriented MNEs. The Licensed Manufacturing Warehouse (LMW) was also introduced in 1975 to offer extended treatment for factories set up outside the free trade zones (UNCTAD, 2003). As a result, Penang started to attract multinational semiconductor firms, while Klang Valley attracted electrical and electronics firms from Japan (Vietnam Development Forum, 2010). The Industrial Co-ordination Act 1975 (ICA) was introduced to maintain an orderly development and growth of the manufacturing sector (MIDA, 2008).

In the 1980s, Malaysia promoted a heavy industrialisation strategy where several industrial policies were introduced. For instance, the Look East Policy. The Look East Policy was initiated in 1981. The outcome of this policy was the establishment of the Heavy Industries Corporation of Malaysia (HICOM). HICOM is a state-owned conglomerate that formed the first national automotive company, Proton Holdings Berhad, as a joint venture with the Mitsubishi group, Japan in 1983 (Vietnam Development Forum, 2010). Along with the development, the First Industrial Master Plan (IMP1) 1986-1995 was adopted. The IMP1 underlined framework to further develop the manufacturing sector, export-oriented strategy, and promotion of resource-based industries.

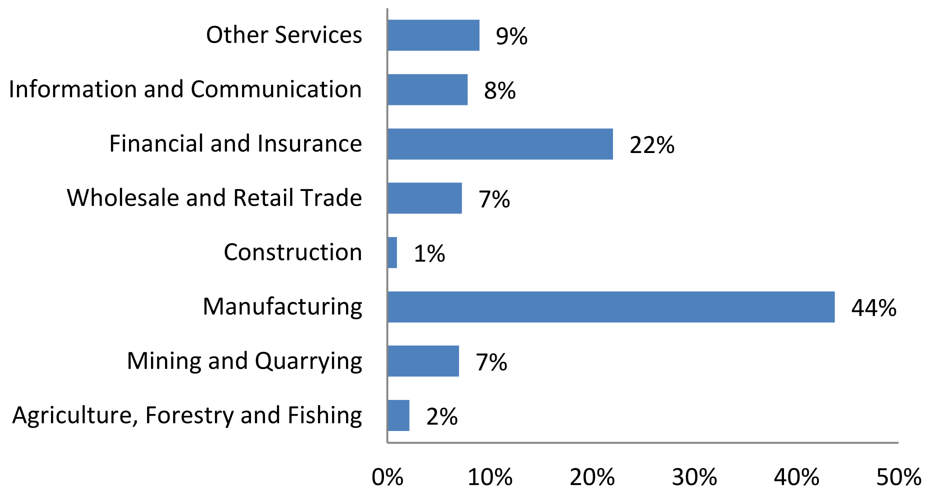
(III) The 1990s- 2020s: VISION 2020 Era

Although there were up and down movements of FDI in Malaysia from 1990 to 2020, the declining trends were mainly affected by the economic crisis, such as the Asian Financial Crisis 1997, the Dot-Com Bubble 2000, and the Global Financial Crisis 2007. For instance, in the 1990s, in response to the Asian Financial Crisis 1997, the National Economic Recovery Plan (NERP) was implemented to promote and attract a higher investment level in the manufacturing sector. Foreign equity holdings in manufacturing projects were fully liberalised on 31 July 1998. This relaxation was applied to investment in all new manufacturing projects and expansion or diversification of existing manufacturing projects regardless of the export level from 31 July 1998 to 31 December 2000.

One further step towards full liberalisation was initiated on 17 June 2003 to further enhance Malaysia's investment climate. Effective from 17 June 2003, foreign investors were free to hold 100% of the equity for investment in new projects, and expansion or diversification of manufacturing projects by existing companies, irrespective of the level of exports and applied for all products and activities. This was also followed by more liberal employment policies for key expatriates (MIDA, 2008).

Besides, different industrial policies were implemented in the Vision 2020 era. The Second Industrial Master Plan (IMP2) 1996-2005 focused on cluster-based industrial development and manufacturing plus. The cluster-based industrial development ensures that the industry is playing the role of supporting industries and other supporting roles, such as services, research and development, infrastructure, human skills, institution, and others. Simultaneously, the manufacturing plus is to enhance industries' capability to integrate horizontally and vertically by moving along the value chain. Moreover, the Third Industrial Master Plan (IMP3) 2006-2020 aims to move the economy toward a more holistic development. A further step of liberalisation is initiated to involve the manufacturing sector and the services sector, especially for high-value services and industry-supporting services.

The manufacturing sector has played a crucial role in the economic development in Malaysia (Lee, 2019), and the manufacturing sector is considered one of the most dynamic sectors and the centre of economic development (Karim, Winters, Coelli and Fleming, 2003), which continued to be an important sector for economic development in Malaysia (OECD, 2014). The FDI inflows in the manufacturing sector were mainly concentrated in the electrical and electronics industry, especially from home economies like Japan, the United States, Europe, Taiwan, and South Korea. While a large number of the electrical and electronics industry in Malaysia has been dominated by the MNE, Malaysia has recorded the largest exports of audio-visual equipment and semi-conductor devices (MIDA, 2006). The manufacturing sector has contributed to the major FDI inflows recorded with an average of 44 percent of the total FDI inflows, followed by financial and insurance, other services and information and communication (Figure 1.12).



Source: Bank Negara Malaysia Statistics

Figure 1.12: Average Percentage of Total FDI Inflows in Malaysia by Sector, 2010-2019

In 2019, China has emerged as the leading FDI investor in Malaysia for the approved manufacturing projects, followed by the United States and Singapore (Table 1.2). An increasing number of manufacturing projects from China were recorded for the period between 2010 and 2019, reaching a total of 79 approved manufacturing projects with a total value of US$3,740.90 million in 2019. For FDI from the United States, a total of 37 manufacturing projects were approved with a total value of US$3,478.30 million. While Singapore also recorded an increasing number of approved manufacturing projects in Malaysia, reaching a total of 118 approved manufacturing projects with a total value of US$1,372.70 million in 2019 (Table 1.2).

Table 1.2: FDI Flows in Approved Manufacturing Projects by Major Countries and Total Number of Approved Manufacturing Projects in Malaysia

	2010		2015		2019	
Countries	**Number of Approved Manufacturing Projects**	**US$ million**	**Number of Approved Manufacturing Projects**	**US$ million**	**Number of Approved Manufacturing Projects**	**US$ million**
China	20	94.46	17	300.61	79	3,740.90
USA	47	11,738.59	19	4,150.21	37	3,478.30
Singapore	81	1,581.75	87	1,014.50	118	1,372.70
Japan	61	45.90	60	33.12	53	927.2
Netherlands	13	166.18	9	145.14	11	243.9
Switzerland	5	550.53	5	194.18	2	30.9
Thailand	5	5.03	-	-	3	23

Source: MIDA

1.3.2 Globalisation and Institutions: Malaysia's Experience

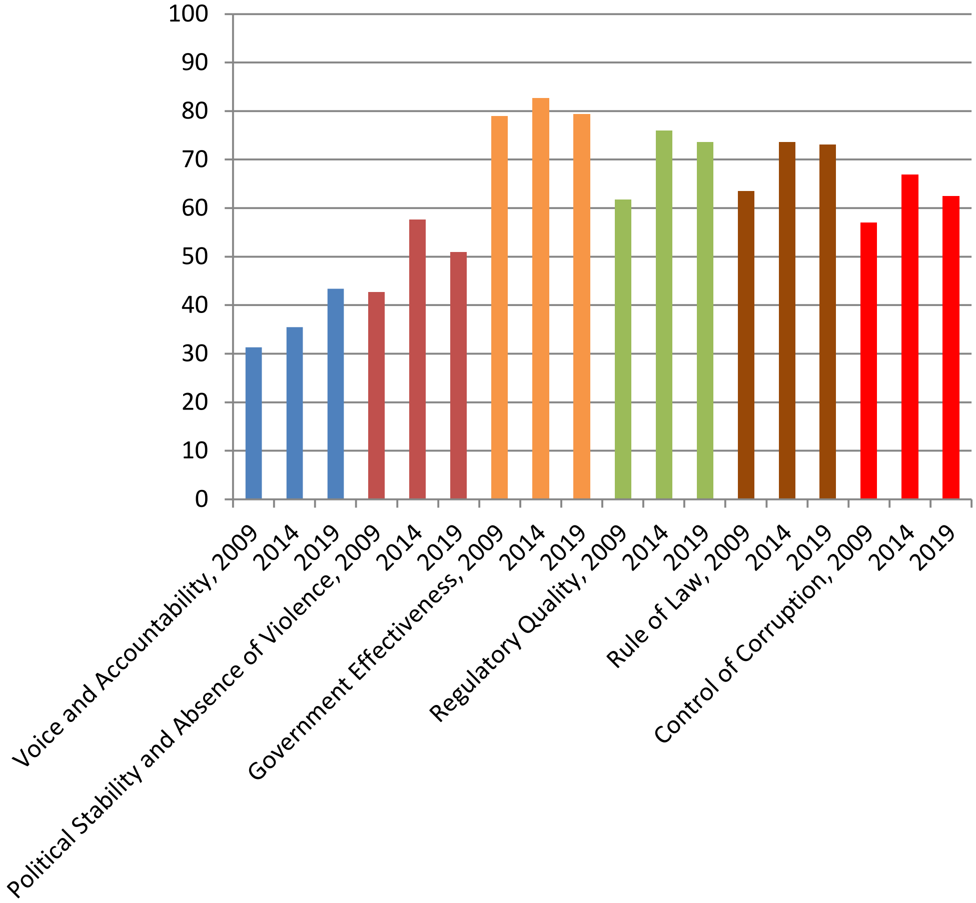
There are three interrelated dimensions of globalisation, namely economic, political and social, which may affect the attractiveness of FDI to a specific location. Since FDI is one of the major drivers of economic globalisation (OECD, 2008b; Pekarskiene and Susniene, 2015) which has been discussed in Section 1.2, this section reviews the importance of political and social institutions in Malaysia.

1.3.2.1 Political Institutions

The political institution considers government policies in regulating the economy and promoting trade and investment through establishing, enforcing and monitoring the rules and regulations of economic governance. The effects of the political institutions on FDI can be monitored through the World Governance Indicators, the Economic Freedom Index, the participation in global and regional integration and the number of free trade agreements.

Governance consists of the institutions and traditions by which a country's authority is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them. The World Bank's World Governance Indicators (WGI) are widely used to measure governance. The WGI comprises six dimensions of governance, namely voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption for over 200 economies (Kaufmann et al., 2007). These indicators are graded in percentile ranks ranging from 0 (lowest) to 100 (highest), with a higher score corresponding to a better outcome.

Referring to Figure 1.13, Malaysia's performance in WGI in terms of political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption has dropped from 2014 to 2019, except for voice and accountability. A reduction of 6.67 points in political stability and absence of violence, 3.37 points in government effectiveness, 2.40 points in regulatory quality, 0.48 points in rule of law, and 4.43 points in control of corruption were observed between 2014 and 2019. The possible reason for a weak performance in WGI was the political instability, especially after the 2018 election in Malaysia. To improve Malaysia's performance in governance and reduce corruption, the National Anti-Corruption Plan 2019-2023 was introduced in 2019. On the other hand, for voice and accountability, an increase of 7.88 points was recorded. Yet it is still below the middle rank (50).

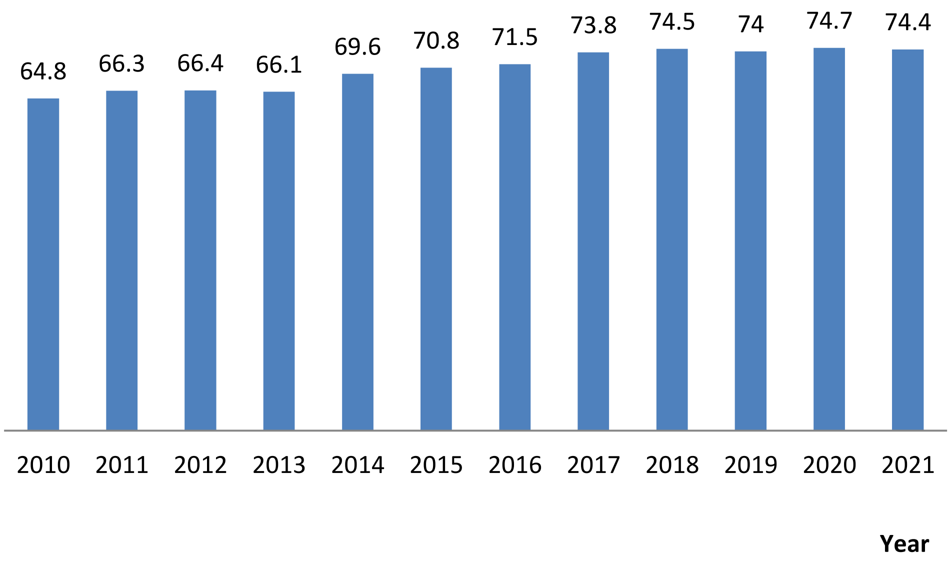


Source: World Governance Indicators, World Bank

Figure 1.13: Malaysia: World Governance Indicators Scores

Greater economic freedom increases market efficiency and thus promotes FDI inflows. Based on the Heritage Foundation, the Economic Freedom Index covers 12 factors in four pillars, such as rule of law (government integrity, judicial effectiveness, and property rights), government size (tax burden, fiscal health, and government spending), regulatory efficiency (labour freedom, business freedom, and monetary freedom) and open markets (financial freedom, investment freedom, and trade freedom) for 184 economies. Each of the factors is graded on a scale of 0 to 100. By achieving an overall Economic Freedom score of 80-100, the economy is categorised as a “free” economy, 70-79.9 as “mostly free”, 60-69.9 as “moderately free”, 50-59.9 as “mostly unfree”, and 0-49.9 as “repressed” economy.

Over the past decade, the degree of economic freedom in Malaysia has increased by 9.6 points from 2010 to 2021 (Figure 1.14). However, its overall score has decreased by 0.3 points in 2021. In 2021, the world rankings of the degree of economic freedom Malaysia ranked 22nd, which achieved a score of 74.4 points and the designation as the “mostly free” economy. This was primarily due to a decline in judicial effectiveness.



Source: The Heritage Foundation

Figure 1.14: Malaysia: Overall Economic Freedom Score, 2010-2021

For regional rankings, Malaysia ranked 5th among 40 economies in the Asia-Pacific region. Malaysia's overall score (74.4 points) was above the world (61.6 points) and regional (60.2 points) averages. Within the Asian-pacific region, however, Malaysia's overall economic freedom score was below Singapore, New Zealand, Australia and Taiwan. Singapore ranked first in the world rankings with the highest score of 89.7 points and achieved the designation as a “free” economy, followed by New Zealand and Australia. Moreover, Taiwan also achieved the designation as a “mostly free” economy with an economic freedom score of 78.6 points, making its economy ranked 6th in the world rankings.

In addition, globalisation has given rise to greater participation of political institutions in facilitating trade and investment. Malaysia has participated in several global and regional economic integrations. At the global level, Malaysia is a member of the WTO. Besides, at a regional level, Malaysia is one of the founders of the ASEAN and a member of the APEC. While moving forwards, ASEAN has transformed into the ASEAN Economic Community (AEC) in 2015 as an initiative to facilitate trade within a single ASEAN market and to deepen regional integration (ASEAN, 2015). Whereas the primary concern of the APEC is the Bogor Goals, which is a long-term plan to promote free and liberal trade and investment in Asia and the Pacific region by 2020.

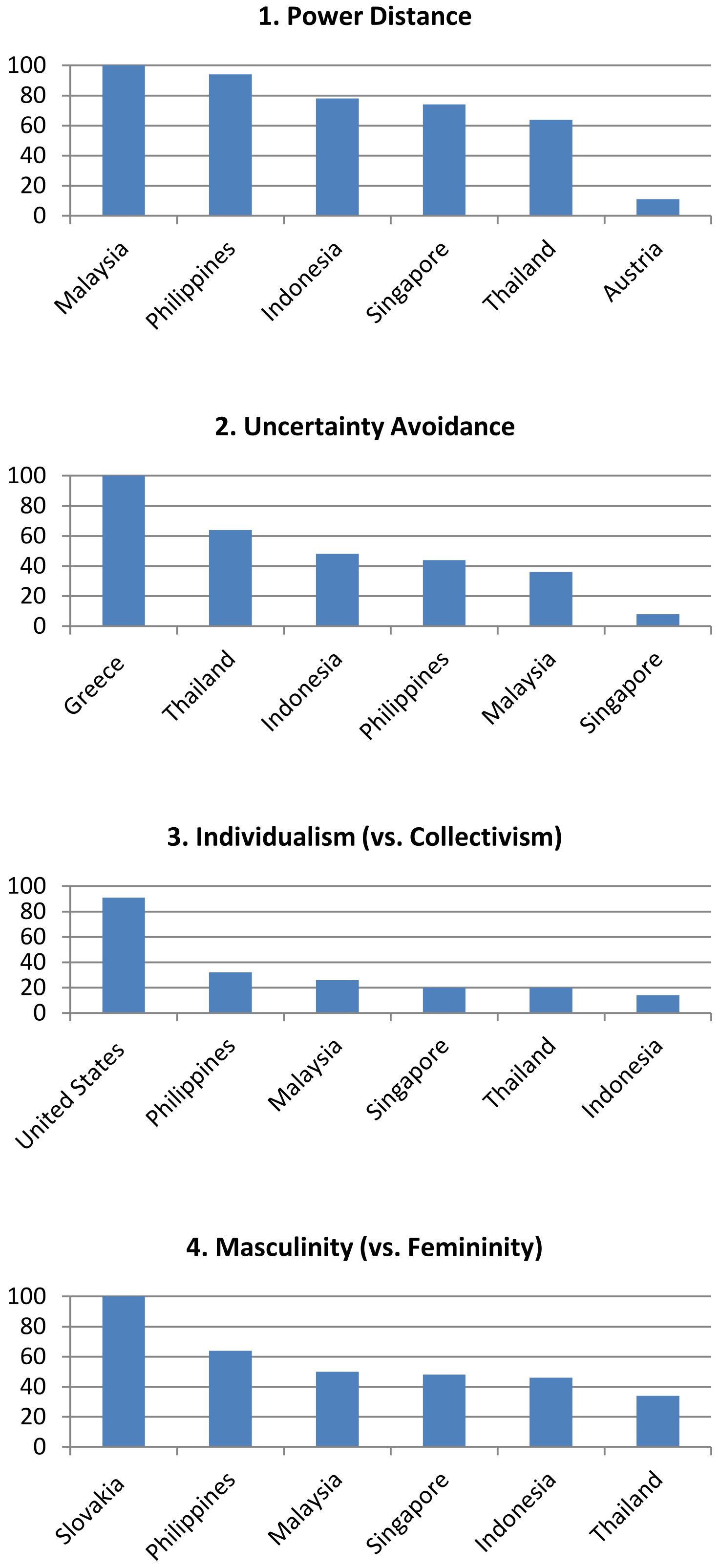
Besides, Malaysia has actively participated in several free trade agreements (FTAs) and economic partnerships through ASEAN to improve regional connectivity for better trade and investment. For instance, the ASEAN Free Trade Area (AFTA) was signed in 1993, serving as a trade bloc to uphold ASEAN's regional manufacturing (Plummer and Cheong, 2009). Besides AFTA, Malaysia has signed several ASEAN+1 free trade agreements through ASEAN in recent years. These are the ASEAN-People's Republic of China Free Trade Agreement (ACFTA), 2005; ASEAN-Republic of Korea Free Trade Agreement (AKFTA), 2007; ASEAN-Japan Comprehensive Economic Partnership (AJFTA), 2008; ASEAN-India Free Trade Agreement (AIFTA), 2010; ASEAN-Australia and New Zealand Free Trade Agreement (AANZFTA), 2010; and ASEAN-Hong Kong, China Free Trade Agreement (AHKFTA), 2019.

As a step further to enhance regional connectivity, Malaysia signed the Regional Comprehensive Economic Partnership (RCEP) in 2020. The RCEP is an agreement to deepen ASEAN’s engagement with its FTAs partners, China, Japan, South Korea, Australia, and New Zealand in promoting trade and investment. With the increasing digitalisation and globalisation, Malaysia should continuously play its active role in ASEAN economic integration, particularly in rules-making. This is to ensure that Malaysia's policy commitments at the ASEAN level are parallel with its national policy regime (Maria, 2018).

1.3.2.2 Social Institutions

There is a considerable cultural difference between economies, especially between Eastern and Western cultures. The increasing intensity of globalisation resulted in a changing FDI landscape from Europe and America to Asia. The cultural difference between Western countries and Asia is becoming a concern of MNEs in deciding where to invest. The original cultural dimensions of the Hofstede study describe the four dimensions of national culture, namely power distance, uncertainty avoidance, individualism and masculinity. Each of the Hofstede dimensions is measured with a scores scale from 0 to 100, from low to high. A high score indicates that the society tends to be high power distance, high uncertainty avoidance, individualistic and masculine.

Scores of the original cultural dimensions of the Hofstede study for ASEAN-5, namely Indonesia, Malaysia, the Philippines, Singapore, and Thailand, and countries with the highest score or the lowest score are presented in Figure 1.15 and discussed as follows.



Source: Hofstede Study, 1980

Figure 1.15: Scores of the Original Cultural Dimensions of Hofstede Study

Firstly, all the ASEAN-5 countries' scores are on the high side for power distance, from the score of 64 (Thailand) to the score of 100 (Malaysia). Malaysia scores very high (100) on power distance. This indicates that people accept a hierarchical order in Malaysian society. In addition, Austria scores the lowest (11) for this dimension. This indicates power is decentralized, communication is direct, and employee is expected to be consulted in the Austrian society.

Secondly, Malaysia scores low (36) on uncertainty avoidance. This indicates that Malaysian society is comfortable with uncertainty, people are tending to act first and gather information later. However, Thailand scores an intermediate (64). Besides, Singapore scores the lowest (8) on this dimension, whereas Greece scores the highest (100). A high score of uncertainty avoidance indicates that strict rules, regulations, laws and policies are implemented to minimise the level of uncertainty in Greece society.

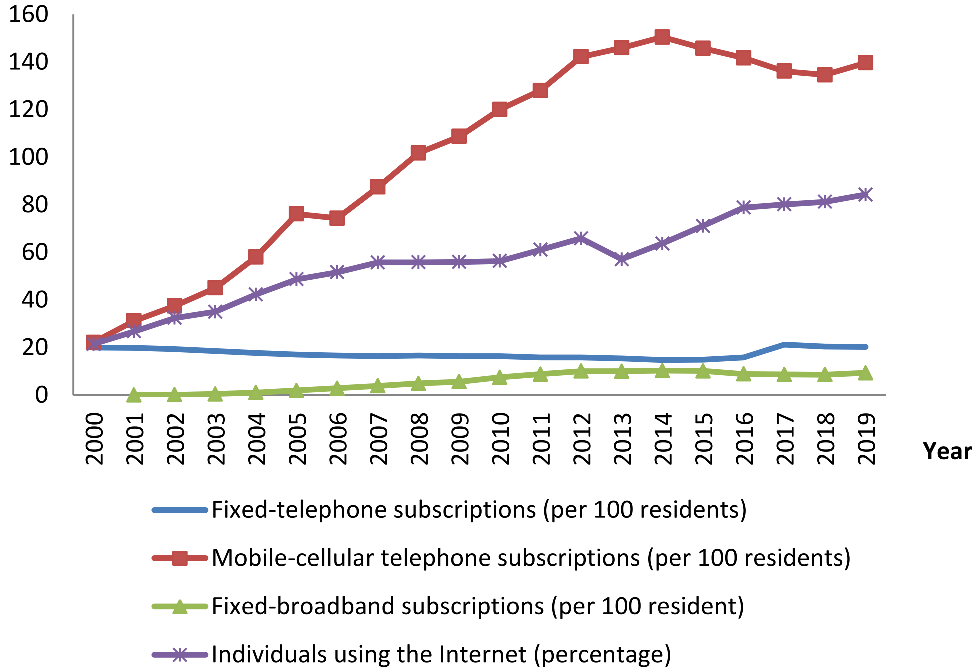
Thirdly, all ASEAN-5 countries are considered collectivistic societies, Malaysia scores low (26) on this dimension. Loyalty is the key feature of the collectivist society. Everyone in society takes responsibility for taking care of the members of the group. Contrary, the United States scores the highest (91). As one of the most individualist societies, the United States emphasises liberty and equal rights in all aspects.

Lastly, Malaysia scores intermediate (50) on masculinity. This indicates a preference for a masculine society. Sacrificing family and leisure time by putting priorities to work is a common practice. On the other hand, Thailand scores low (34) in this dimension, which indicates a preference for a feminine society. Besides, Slovakia scores the highest (100) in this dimension. A high score indicates Slovakia is a strongly masculine society, which is a highly success-driven and success-oriented society.

1.3.3 Digitalisation and ICT Development in Malaysia

The development of ICT has led to growing digital globalisation. There is a growing consensus that to improve investment climates; countries must improve ICT access and quality (World Bank, 2006). In Malaysia, the government is committed to developing ICT infrastructure and a digital economy. The major development was the launching of the Multimedia Super Corridor (MSC) in 1996. The MSC is one of the key initiatives undertaken by the Malaysian government to transform Malaysia into a knowledge-based economy, lead Malaysia into the information age and attract investment in high-tech industries. As a result of a continuous government effort to develop and promote ICT development in Malaysia, Malaysia has moved up one spot to the 31st position in the overall Networked Readiness Index (NRI) in 2016. Malaysia recorded approximately two-thirds of the population online, individual usage increased further to 47th, and business usage ranked 26th in 2016 (WEF, 2016).

In Malaysia, Telekom Malaysia is the main fixed telephone service provider. However, the fixed telephone is facing considerable challenges with the increasing popularity of mobile telephones. There has been a declining trend in the number of fixed telephone subscriptions. The decline in the number of fixed telephone subscriptions has been partly offset by offering voice and fixed broadband bundle services where increasing demand for fixed broadband subscriptions was observed from the year 2001 (Figure 1.16).



Source: ITU World Telecommunication

Figure 1.16: Malaysia ICT Telecommunication Infrastructure Development, 2000-2019

On the other hand, there was a significant increase in the demand for mobile telephones since the 2000s. Mobile users increased from 21.87 per 100 people in 2000 to a record of exceeding 100 per 100 people in 2008. The highest of 150.43 per 100 people was recorded in 2014 (Figure 1.16). There are currently four major mobile operators (Maxis, Celcom, Digi, and U Mobile) and a few mobile virtual network operators in Malaysia (ITU, 2017).

Besides, there is also a growing trend of Internet users from 21.38 per 100 people in 2000 to 84.2 per 100 people in 2019 (Figure 1.16). The possible reason to explain such a trend is the increasing popularity of Internet usage through smartphones. Smartphone has become a popular device for most Malaysian to connect. Smartphone users continue to increase. The driving forces were attractive promotions by service providers, increasing dependence on mobile applications, affordable packages and devices, subsidies, and others (MCMC, 2017).

According to the International Telecommunication Union (ITU, 2012), a 10% increase in broadband penetration would contribute to a 0.7% point increase in Malaysia's GDP. It is no doubt that ICT telecommunication infrastructure is essential for economic development. Strengthening infrastructure to support economic expansion remains one of the crucial thrusts in the Eleventh Malaysia Plan 2016-2020. The main focus aims to improve the coverage, quality and affordability of digital infrastructures, and expand and upgrade broadband infrastructure. The call for collaboration among various parties involved local authorities, state governments, the

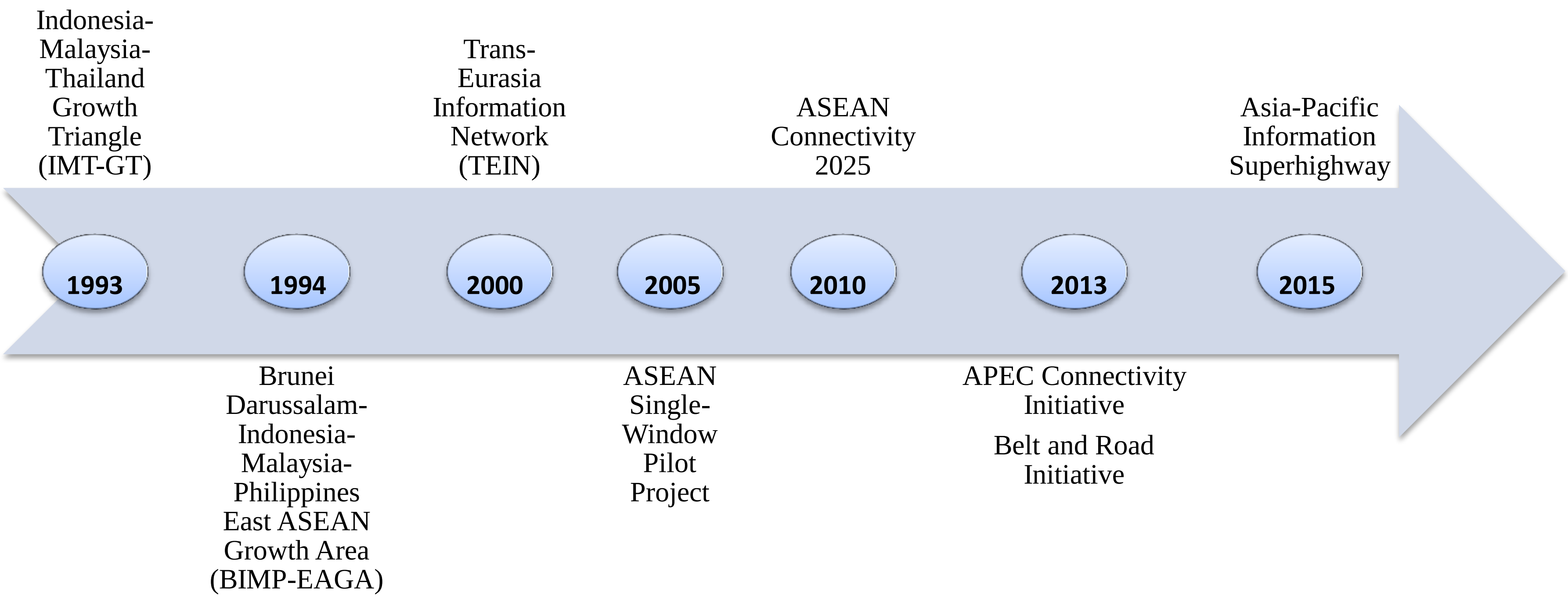
Malaysian Communications and Multimedia Commission (MCMC) and the Ministry of Communications and Multimedia to strengthen the planning and deployment of digital infrastructure (EPU, 2015a).

In line with the Twelfth Malaysia Plan (2021-2025), the Shared Prosperity Vision 2030, and the 2030 Agenda for Sustainable Development, the launch of the Malaysia Digital Economy Blueprint in 2020 is expected to bring benefits to Malaysia in the development of the digital economy. This can be achieved through the optimisation of the digital possibilities across businesses, government and society. The Malaysia Digital Economy Blueprint provides a roadmap to lead Malaysia to become the regional digital leader and achieve responsible, inclusive, and sustainable socio-economic development (EPU, 2021).

The digital economy is expanding gradually in Malaysia. Statistically, the contribution of the ICT sector to the country's GDP was 19.1% in 2019. There are two main components of the ICT sector to monitor. These are the gross value added of the ICT industry and e-commerce. The major contributors to the ICT industry were ICT services, ICT manufacturing, ICT trade and content and media, which contributed to 43.5%, 33.7%, 15.4%, and 7.4% of GDP, respectively (DOSM, 2020). In terms of e-commerce readiness, according to the Business to Consumer (B2C) e-commerce index, Malaysia was ranked fifth among the top 10 developing economies in Asia for readiness to support online shopping (UNCTAD, 2018). Also, Malaysia was one of the top 10 exporters of ICT goods in 2017 (UNCTAD, 2019).

Besides, “connectivity” has become an important issue for many international organisations (APEC, 2013; World Bank, 2019b), and has become one of the significant trends of the twenty-first century and a modern economy feature (World Bank, 2019b). Global connectivity whether through ICT connectivity, institutions or socio-cultural is necessary to preserve the benefits of digitalisation and globalisation. Malaysia has actively participated in various ‘connectivity’ incentives within ASEAN and outside ASEAN (Figure 1.17), which benefits ICT development and facilitates investment.

Within ASEAN, In the 1990s, as an early attempt for liberalisation and economic integration in ASEAN, the Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT) was endorsed in 1993 to stimulate the economic development of Indonesia, Malaysia and Thailand. While ICT connectivity is one of the pillars of Vision 2036. Moreover, the Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area (BIMP-EAGA) was adopted in 1994 as a cooperation initiative among Brunei Darussalam, Indonesia, Malaysia, and the Philippines East ASEAN Growth Area. The BIMP-EAGA aims to accelerate social and economic development in remote and less developed areas. Connectivity within and outside BIMP-EAGA is one of the five long-term strategic thrusts of Vision 2025, including ICT connectivity.



Source: Global Infrastructure Connectivity Alliance (GICA)

Figure 1.17: Malaysia's Participation in 'Connectivity" Initiatives

The 2000s saw a greater emphasis on using the ‘internet’ to connect the Asia Pacific Region and the ASEAN countries. For instance, the Trans-Eurasia Information Network (TEIN) was proposed in 2000. The TEIN provides high-capacity internet connectivity for research and education communities in the Asia Pacific region and Europe. Further to this, the ASEAN Single-Window Pilot Project was endorsed in 2005 to facilitate trade and investment. The ASEAN Single Window (ASW) serves as a National Single Windows (NSWs) to expedite the cargo clearance process, reduce the time and cost of doing business, and provide a more transparent platform for doing business through internet connectivity.

Moving into the 2010s, the ASEAN Connectivity 2025 was endorsed 2010. The ASEAN Connectivity 2025 aims to achieve an integrated and connected ASEAN by 2025. Outside ASEAN, the APEC Connectivity Initiative (2015-2025), which was initiated in 2013 aimed to strengthen institutional, people-to-people, and physical connectivity including ICT infrastructure by 2025. In the year 2013, another major initiative that may bring significant impact to globalisation was introduced, namely the Belt and Road Initiative (BRI). The BRI aims to connect Asia, Africa and Europe through land and maritime networks along six economic corridors. Besides, within the BRI framework, BRI also helps to strengthen cooperation in the ICT sector (Gong, Gu and Teng, 2019). It is no doubt that digital globalisation has given rise to the importance of ICT in connectivity. A greater emphasis on the ‘Internet’ was witnessed by the launch of the Asia-Pacific Information

Superhighway in 2015, which increases the availability and affordability of broadband Internet across Asia and the Pacific.

1.3.4 Investment Climate and Business Obstacles in Malaysia

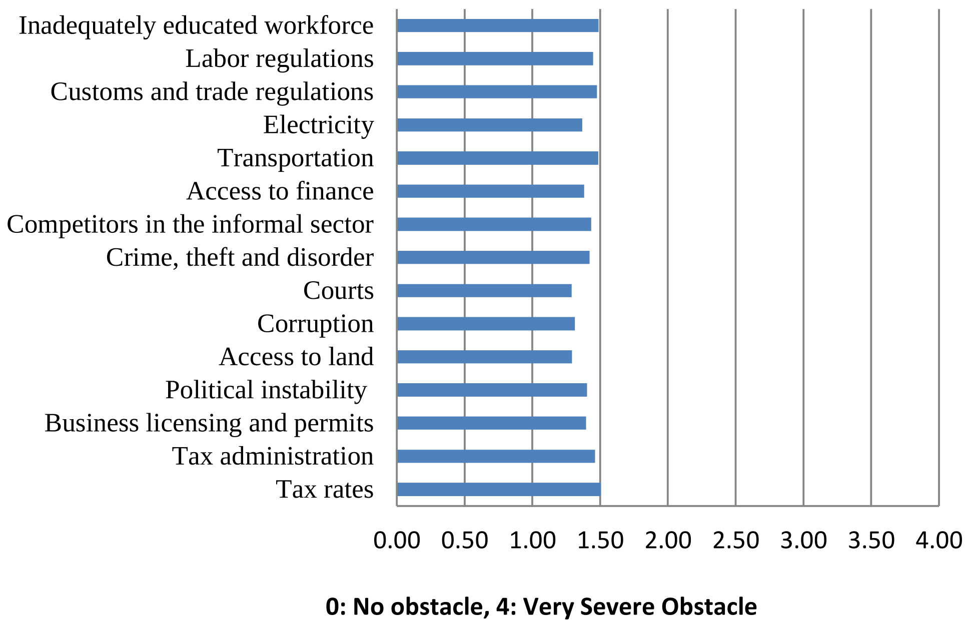
Improving the investment climate remains an important issue for Malaysia to progress in development, especially in attracting FDI. A good investment climate is characterised by standard good governance requirements and an adequate infrastructure supply (Khan, 2005). And more broadly, it is a business environment where businesses could operate with governance and institutional support and a well-functioning market to facilitate and generate growth and development (Hallward-Driemeier, Wallsten and Xu, 2006). The conducive investment climate is also characterised by transparent, open, and non-discriminatory investment policies (UNCTAD, 2018), which also rely on effective institutions.

Similarly, the World Bank's overall development strategy is also emphasising the significance of an improved investment climate for development purposes. For instance, the first pillar of the World Bank's overall development strategy is to improve the investment climate (Stern, 2002). Many international organisations (UNDP, 1996; IMF, 2001; UNCTAD, 2003; World Bank, 2005; OECD, 2013) and studies had recognised the importance of investment climate to the economy, particularly in the areas of economic growth (OECD, 2013); employment growth (Aterido et al., 2007); tourism growth (Cárdenas-García and Pulido-Fernández, 2014), factor returns (Dollar, Hallward-Driemeier and Mengistae, 2003); firm performance (Batra and Stone, 2004); productivity (Lall and Mengistae, 2005), as well as on foreign direct investment (Kinda, 2010; Mukim and Nunnenkamp, 2010; Ershova, 2017).

The investment climate is central to growth (World Bank, 2005). To gauge a better understanding of the investment climate, World Bank has conducted a firm-level survey since 1998, namely the Enterprise Surveys (ES). The ES team has been working together with 146 countries for data collection of over 125,000 establishments. In Malaysia, the ES or the Productivity and Investment Climate Survey (PICS) is jointly conducted by the Ministry of Economic Affairs and the World Bank. While in Eastern Europe and Central Asian countries, the ES or Business Environment and Enterprise Performance Surveys (BEEPS) are jointly conducted by the European Bank for Reconstruction and Development and World Bank.

The purpose of the Enterprise Surveys is to identify the key constraints to competitiveness as perceived by firms in the manufacturing and services sectors, covering information on firms' characteristics, production variables, and perception-based indicators related to the investment climate in both developing and emerging countries. The topics include regulations and taxes, corruption, crime, informality, finance, infrastructure, innovation and technology, trade, workforce, gender, firm characteristics, firm performance, and perceptions about the biggest obstacles to doing business.

In Malaysia, the latest Enterprise Survey available was conducted in 2015. The survey which was stratified by size, sector and location, covered 1,000 firms comprised of local and foreign firms (World Bank, 2015). The survey asked firm managers to rate the degree of the obstacle to the current operations measured on a scale of 0 (no obstacle) to 4 (very severe obstacle). Taking into consideration of the missing values, eventually, data from 692 firms were presented. In Figure 1.18, business owners and top managers from the 692 firms, including both local and foreign firms, perceived that the macroeconomic factors, for instance, tax rates, inadequately educated workforce, and transportation were the top three obstacles in Malaysia.



Source: Enterprise Surveys, World Bank (2015)

Figure 1.18: Average Score of the Obstacles in Malaysia, 2015

In addition, Table 1.3 displays the rank and average score of the perceived obstacles for local and foreign firms. Tax rates (1.51) are the most critical obstacle for local firms. However, an inadequately educated workforce (1.64) is the most critical obstacle for foreign firms. On the other hand, for local firms, the minor obstacle is access to land (1.25), while courts (1.31) are for foreign firms. The basic information is presented in Figure 1.18 and Table 1.3. However, to understand better the investment climate in Malaysia, there is a need go for further analysis and to take into consideration other factors that might affect the level of FDI in Malaysia, such as firm size, firm age, regional and sector effects on FDI.

Table 1.3: Rank and Average Score of the Perceived Obstacles: Local and Foreign Firms

Local Firms	Rank	Average Score	Foreign Firms	Rank	Average Score
Tax rates	1	1.51	Inadequately educated workforce	1	1.64
Tax administration	2	1.47	Transportation	2	1.63
Transportation	3	1.45	Labour regulations	3	1.63
Inadequately educated workforce	4	1.45	Customs and trade regulations	4	1.61
Customs and trade regulations	5	1.44	Electricity	5	1.49
Crime, theft and disorder	6	1.44	Tax rates	6	1.48
Practices of competitors in the informal sector	7	1.42	Practices of competitors in the informal sector	7	1.47
Political instability	8	1.41	Access to land	8	1.45
Labour regulations	9	1.40	Tax administration	9	1.42
Business licensing and permits	10	1.40	Access to finance	10	1.41
Access to finance	11	1.37	Political instability	11	1.39
Electricity	12	1.34	Business licensing and permits	12	1.38
Corruption	13	1.30	Crime, theft and disorder	13	1.37
Courts	14	1.29	Corruption	14	1.35
Access to land	15	1.25	Courts	15	1.31

Source: Enterprise Surveys, World Bank (2015)

1.4 Research Problems

By examining the underlying FDI trends over the past three decades as discussed in the earlier section, it is worth highlighting that Malaysia‘s performance in attracting FDI has slowed in recent years. Hence, there is a need to understand the relevant pull factors affecting FDI in Malaysia. First, many of the FDI studies on pull factors are based on the Ownership-Location-Internalisation paradigm (OLI) (Dunning, 1980). In particular, the second pillar of the OLI refers to location-specific advantages which evaluate the macroeconomic determinants (Yusop and Ghaffar, 1994; Janicki and Wunnava, 2004; Wong, 2005; Ang, 2008; Aw and Tang; 2010; Karim and Fleming, 2012; Masron and Yusop, 2012; Sharma et al., 2012; Tang et al., 2014) or is generally regarded as the traditional economic factors (Kang and Jiang, 2012). Other than the macroeconomic factors, globalisation has given rise to the importance of the political and social institutions and digitalisation has given rise to the importance of ICT in facilitating FDI, hence, there is a need to consider ICT and institutional factors besides economic factors to gain a better understanding of factors attracting FDI in Malaysia.

Second, although it is important to understand the bilateral FDI determinants at the country-level, to improve the investment climate, there is a need to consider the firm's concerns as well. This is because upon entering Malaysia, foreign firms have to compete with local firms. However, these foreign firms are less familiar with the institutional environment in terms of language, culture, and the legal system. A good investment climate may reduce the investment barriers thus promoting FDI. Hence, in addition to country-level investigation, this is also a crucial need to conduct firm-level analysis.

Third, numerous studies focusing on identifying the FDI factors are based on the ordinary least squares (OLS) (Cuyvers et al., 2011; Buckley et al., 2012), fixed-effects (FE) (Bhasin and Garg, 2019) and random-effects (RE) (Cuyvers et al., 2011; Kang and Jiang, 2012) models. However, relatively few studies have provided the relative importance of the factors influencing FDI. Understanding these would provide better insights for policy recommendations, particularly to reflect whether there is a shift in the importance of economic factors influencing FDI to ICT or institutional factors. Thus, there is a need to analyse the relative importance of FDI factors.

1.5 Research Questions and Objectives

The current trend of development requires digitalisation and globalisation as part of the investment decision in MNEs. In reflecting the rapidly changing environment in the global economy, this study takes into consideration factors related to digitalisation and globalisation to examine their impacts on the FDI development in Malaysia. The host country characteristics for FDI are examined from country- and firm-level perspectives. The former evaluates a country’s attractiveness for FDI while the latter evaluates firms’ obstacles. Consequently, the following research questions are formulated:

(1) How would ICT, institutional and economic factors affect FDI in Malaysia?

(2) What are the impacts of ICT, institutional and economic obstacles on FDI in Malaysia at firm-level analysis?

(3) What are the roles of attraction and obstacle factors in determining FDI in Malaysia?

Derived from the research questions, the specific objectives are:

(1) To examine the effects of ICT, institutional and economic factors on the bilateral FDI in Malaysia.

(2) To investigate the effects of firms' perception of ICT, institutional and economic obstacles on FDI in Malaysia.

(3) To assess the importance of attraction and obstacle factors influencing FDI in Malaysia.

This research generally aims to understand the factors affecting FDI in Malaysia. It begins with a country-level analysis examining the effects of ICT, institutional, and economic factors on bilateral FDI in Malaysia to provide a general understanding of the investment climate in Malaysia. Second, this study includes a firm-level analysis to fill the existing gap in the literature and understand the effects of perceived ICT, institutional, and economic obstacles on FDI in Malaysia. More specifically, as many studies focus on identifying the factors, however, relatively few provide the relative importance of the factors influencing FDI. This study assesses the relative importance of attraction and the obstacle factors. Lastly, achieving the aforementioned objectives may provide better insights for policy recommendations to boost the investment climate in Malaysia.

1.6 Research Contributions

This study identifies the key attraction and obstacle factors of FDI to understand why Malaysia’s performance in attracting FDI has slowed in recent years. As such, this study contributes to the existing literature in two ways. First, a new model is developed to reflect the importance of ICT and institutional factors on FDI in which the determinants from previous literature were based on the OLI paradigm's L-advantages (Dunning 1980). These are generally known as macroeconomic elements. Hence, at country-level analysis, the Information and Communication Technology-Economic-Institutional, ICT-E-I model is developed to include ICT and institutional factors besides economic factors in explaining FDI.

For this purpose, this study extends the L-advantages to incorporate the institutional elements based on a few theories, i.e., the three Pillars of Institutions (Scott, 1995), the gravity model (Tinbergen, 1962), the Transaction Cost Theory (Williamson, 1985), and the CAGE model (Ghamawat, 2001). Building on these theories, this study defines globalisation more specifically to focus on the effects of institutional elements on FDI. Which considers the political and social dimensions of globalisation in four pillars, i.e., regulative, normative, cognitive and geographic. The ICT-E-I model is, therefore, developed based on the selected theories and definitions in which the ICT-dimension captures the ICT factors, the E-dimension captures the economic factors, and the I-dimension captures the institutional factors in explaining FDI. In addition to country-level investigation, this study also uses firm-level data to analyse firms' concerns. Both country- and firm-level findings provide insights into the importance of institutional elements in explaining FDI to complement the OLI paradigm.

Second, rather than using a single model approach, to overcome uncertainty in variable selection, Bayesian Model Averaging (BMA) is adopted for the analysis. In the past, many FDI studies were conducted based on a single model approach, such as ordinary least squares (OLS), fixed-effects (FE), and random-effects (RE). However, model uncertainty is often a problem when regression is performed using a single model, thus leading to overfitting results. The BMA approach is firmly grounded in statistical theory and allows a large number of potential factors to be considered (Hasan et al., 2018). The BMA approach is adopted particularly to address two common problems in variable selection, namely factors to be considered and the relative importance of the factors in a model. Since many potential attraction and obstacle factors are considered in this study, therefore, BMA is appropriate for this study.

Besides, the findings could provide better insights for researchers, investors, managers, and policymakers to better understand FDI factors. Although the global FDI inflows fall after the peak of 2015, Asia was less affected than other regions. The momentum for FDI inflows in the ASEAN has remained positive in the recent decade. However, Malaysia has a relatively weak performance in attracting FDI compared to the earlier decades and other ASEAN countries (OECD, 2013). One of the reasons could be due to Malaysia's experience in pre-mature deindustrialisation since the early 2000s, this is mainly due to the increasing global competitiveness and the slow progress in moving up the value chain (BNM, 2019b).

Although in absolute terms, the FDI inflows in Malaysia remain at a high level, however, the ratio of FDI as a percentage of GDP is on a declining trend. As the year 2020 marked the ending of Vision 2020 and the Eleventh Malaysia Plan (2016-2020), 2021 marks the beginning of a new era of economic development for Malaysia. This study gives insights for Malaysia to overcome the challenges and ensure it remains one of the most preferred FDI locations. The country-level and firm-level evidence highlight the importance of institutional elements in explaining FDI. The key findings largely help policymakers, researchers, investors, and managers to have a deeper understanding of the underlying FDI trends as well as the attraction and obstacle factors of FDI in Malaysia.

1.7 Definitions of the Terms

This section defines the key terms for this study. These are foreign direct investment, good investment climate, digital economy or new economy, and globalisation.

1.7.1 Foreign Direct Investment

Foreign Direct Investment (FDI) is defined as an investment that "reflects the objective of establishing a lasting interest by a resident enterprise in one economy (direct investor) in an enterprise (direct investment enterprise) that is resident in an economy other than that of the direct investor. The lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise and a significant degree of influence on the management of the enterprise. The direct or indirect ownership of 10% or more of the voting power of an enterprise resident in one economy by an investor resident in another economy is evidence of such a relationship" (OECD, 2008b, pp. 48-49).

FDI have three components, namely equity capital, reinvested earnings and intra-company loans.

(a) Equity capital is the purchase of shares of an enterprise in a foreign country by a foreign direct investor.

(b) Reinvested earnings are the share of earnings not distributed as dividends to the foreign direct investor, and such retained profits are reinvested.

(c) Intra-company loans refer to short-term or long-term lending and borrowing of funds between parent enterprises and affiliate enterprises.

In general, the definition of FDI explained above applies to both FDI flows and FDI stocks. The only difference is that FDI flows record the value of cross-border transactions related to direct investment during a given period, while FDI stock is the total level of direct investment at the end of the year or the cumulation of the past flows (OECD, 2008b; Wacker, 2016).

1.7.2 Good Investment Climate

There is no consensus on the definition of a good investment climate or business environment. A good investment climate is characterised by standard good governance requirements and an adequate infrastructure supply (Khan, 2005), whereby governance is defined as "the manner in which power is exercised in the management of a country's economic and social resources for developnmet" and good governance is "epitomised by predictable; open, and enlightened policymaking (that is, transparent processes); a bureaucracy imbued with a professional ethos; an executive arm of government accountable for its actions, and a strong civil society participating in public affairs; and all behaving under the rule of law" (World Bank, 1994, p. vii).

More broadly, it is a business environment where governance and institutions support and well-functioning market to facilitate and generate growth and development (Hallward-Driemeier et al., 2006), and a conducive investment climate is characterised by transparent, open, and non-discriminatory investment policies (UNCTAD, 2018).

1.7.3 Digital Economy or New Economy

Various definitions of the digital economy or new economy evolved to capture the dynamic development of new technologies. The early definitions of the digital economy emerged in the 1990s to focus specifically on the Internet (Tapscott, 1996; Lane, 1999). It then later includes new technologies, such as mobile and sensor networks (DBCDE, 2009). The digital economy is also an umbrella term used to describe the markets' focus on digital technologies (OECD, 2012b). Or it is “the application of internet-based digital technologies to the production and trade of goods and services” (UNCTAD, 2017, p.156), which focuses primarily on the Internet and related ICT (Barefoot, Curtis, Jolliff, Nicholson and Omohundro, 2018). Recently, a broad range of new technologies has emerged and are considered when defining the digital economy. The digital economy is a broad range of economic activities that include digitised information and knowledge, such as AI, the Internet, big data, cloud computing, fintech, IoT, and others (G20 Research Group, 2016).

Moreover, according to the International Monetary Fund, the digital economy "is sometimes defined narrowly as online platforms, and activities that owe their existence to such platforms, yet, in a broad sense, all activities that use digitised data are part of the digital economy: in modern economies, the entire economy" (IMF, 2018, p.7).

According to the Malaysia Digital Economy Blueprint, the digital economy is defined "as economic and social activities that involve the production and use of digital technology by individuals, businesses, and government" (EPU, 2021, p.10). This study defines the digital economy or the new economy as the entire economy that involves the production and the use of digital technologies in terms of the Internet and the fixed telephone, fixed broadband and mobile telephone.

1.7.4 Globalisation

There is no consensus on the definition of globalisation. There are three interrelated dimensions of globalisation, namely economic, political, and social (Dreher, 2006). According to the International Monetary Fund (IMF), globalisation is defined in an economic term as "the process through which an increasingly free flow of ideas, people, goods, services, and capital leads to the integration of economies and societies" (Köhler, 2002, p. 1) or "the process of creating networks of connections among actors at multicontinental distances, mediated through a variety of flows including people, information and ideas, capital, and goods" (Clark, 2000, p. 86).

"Economic" globalisation is defined as the "global interconnectedness of economic activities through international trade, capital flows, dissemination of technology, activities of multinational enterprises and migration of people" (Pekarskiene and Susniene, 2015, p. 205). The FDI is considered to be one of the most important driving forces of economic globalisation (Pekarskiene and Susniene, 2015). On the "political" and "social" front, globalisation is defined as "a process that erodes national boundaries, integrates national economies, technologies, governance, cultures and produces complex relations of mutual interdependence. Besides, globalisation also leads to an increase in global economic integration, global governance, and global-linked social and environmental developments (Dreher, Gaston and Martens, 2008).

Building on the Three Pillars of Institutions (North, 1990; Scott, 1995), this study defines globalisation to focus on the effects of institutional elements on FDI, which considers the political and social dimensions of globalisation in three pillars, namely, regulative, normative and cognitive. Additionally, the Gravity Model (Tinbergen, 1962), Transaction Cost Theory (Williamson, 1985) and CAGE Model (Ghamawat, 2001) are included to supplement the explanation of the Three Pillars of Institutions, which considers the geographic pillar. Hence, there are four main pillars, (1) regulative, (2) normative, (3) cognitive and (4) geographic in explaining the political and social dimensions of globalisation.

1.8 Organisation of the Chapters

This study consists of five (5) chapters as follows. Chapter 1.0 provides the research background on how globalisation and digitalisation influenced FDI, explains FDI patterns, and the case of Malaysia. This chapter identifies the research background, research problems, research questions, research objective and specific objectives, research contributions, provides definitions of the terms, organisation of the chapters, and conclusion.

Chapter 2.0 begins with a summary of the development of the leading FDI theories and explains the development of the theoretical framework for this study. This chapter revisits the OLI paradigm and explains how an institutional dimension can be incorporated to link the ICT and institutional factors besides economic factors to FDI. The Extended Location framework is built based on the OLI paradigm's location-specific advantages (Dunning, 1977, 1980; Narula and Dunning, 2010), Three Pillars of Institutions (Scott, 1995), Gravity Model (Tinbergen, 1962), Transaction Cost Theory (Williamson, 1985) and CAGE Model (Ghamawat, 2001). This section is followed by the review of macroeconomic determinants of FDI, institutional determinants of FDI and methodology.

Chapter 3.0 explains the research framework, methods, and data challenges and solutions. The ICT-E-I framework is developed to incorporate digitalisation and institutional factors besides economic factors in explaining FDI. The ICT-E-I model examines the effects of ICT, institutional and economic factors on bilateral FDI in Malaysia using BMA for linear regression. In addition to the country-level evidence, this study also considered firms' concerns using firm-level data. Hence, at firm-level analysis, this study investigates the effects of perceived obstacles on FDI in Malaysia using the BMA for logistic regression.

Chapter 4.0 explains and discusses the results of the country- and firm-level analysis. The ICT-E-I model provides the key findings of the attraction factors affecting FDI in Malaysia at country-level analysis. Besides, the firm-level analysis provides the key obstacle factors affecting FDI in Malaysia. More specifically, the relative importance of each factor is assessed.

Chapter 5.0 summarises and concludes the overall research findings, explains the implications of the study, its limitations and recommendations, and concludes the study. Rather than looking at the attraction factors at country-level analysis, this study also includes the obstacle factors at firm-level analysis to provide a better understanding of FDI factors in Malaysia. The country- and firm-level evidence would provide better implications for policy formulations.

1.9 Conclusion

A good investment climate boosts attractiveness for FDI, whereas investment climate barriers jeopardise attractiveness for FDI. Although the global FDI inflows fall after the peak of 2015, Asia was less affected than other regions. The momentum for FDI inflows in the ASEAN has remained positive in the recent decade. However, Malaysia’s performance in attracting FDI has slowed in the recent decade. In the past, FDI studies were developed mainly based on Dunning’s Ownership-Location-Internalisation paradigm. In particular, the second pillar of Dunning’s paradigm, the location-specific advantages has been widely used to examine the host nation's characteristics in attracting FDI. However, digitalisation brought the importance of ICT, while globalisation brought the importance of the political and social institutions in facilitating investment. In addition to location-specific advantages which focus on macroeconomic determinants in the host country, other factors to reflect the digitalisation and globalisation aspects of the global economy should be considered to explain FDI. This study aims to identify key factors affecting FDI in Malaysia. A more comprehensive framework is developed in the next chapter.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The deceleration of Malaysia as a preferred destination for FDI has encouraged this study to assess this matter from the host country's perspective. The OLI paradigm has been a popular and dominant framework for FDI studies which is focused mainly on the host country's characteristics or the pull factors that attract FDI and serves as an important paradigm in international business studies applied in MNE-FDI research (Eden and Dai, 2010; Paul and Feliciano-Cestero, 2021). The OLI paradigm is thus appropriate for FDI study in this manner. For instance, many previous FDI studies in Malaysia were based on the OLI paradigm. The second pillar, the location-specific advantages, has been a popular framework for macroeconomic determinants of FDI. However, there is a change in the traditional macroeconomic determinants of FDI due to globalisation and digitalisation. Indeed, Dunning and Lundan (2008a) suggested that the institutional dimension can be incorporated into the OLI paradigm, including formal and informal institutions, in the attempt to bridge the macro-level and micro-level analysis and to offer promising ways to advance the understanding of various forms of the MNEs. Hence, a more comprehensive framework is developed in this chapter to link ICT and institutional factors besides economic factors to FDI.

The remaining chapter is structured as follows. Section 2.2 begins with a summary of the development of the leading FDI theories and Section 2.3 explains the development of the theoretical framework for this study. Section 2.4 reviews macroeconomic determinants of FDI while Section 2.5 reviews the institutional determinants of FDI. Section 2.6 reviews the methodology and Section 2.7 concludes this chapter.

2.2 An Overview of FDI Theories and Models

The past few decades have witnessed a growth of international production activities in parallel with globalisation and ICT development. As a result, there are various theories emerged to explain trade and FDI activities. It began with the Wealth of Nations by Adam Smith in 1776 which explains trade gains (Held, McGrew, Goldblatt and Perraton, 1999). Next, the evolution of MNEs between 1945 and the late 1960s has resulted in an increasingly significant FDI modality. Initially, the source countries were the United States and the United Kingdom, while the latter also involved European countries and Japan (Dunning and Lundan, 2008b). Afterwards, the 1980s witnessed two important developments, first, the United States has become an important location for FDI and second, Japan emerged as a major source country for FDI in the United States and European countries (Nayak and Choudhury, 2014). However, the rising of MNEs in developing countries dated from the mid-1980s onwards (Dunning and Lundan, 2008b).

Moving on, the 1990s witnessed a decline in the importance of Japan as a major source country for FDI. Since the 2000s, there has been a change in FDI from Europe and America to Asia. Asia has emerged as the second preferred location for FDI in 2003 after Europe. There has been an increasing FDI from emerging countries, e.g., Brazil, Russia, India, and China, to developing and developed countries. Emerging countries have also become important locations for FDI.

Various theories have emerged to explain the phenomenon of FDI; however, there is no consensus on a generally accepted theory. Each theory has its strengths and weaknesses by adding new elements and debating over the other theories. Table 2.1 presents a summary of the main FDI theories. The relevant theories such as FDI theory based on the imperfect market, FDI theory based on institutional approach, FDI theory based on emerging economies, FDI theory based on Regional Integration Agreements, Gravity model and CAGE model will be discussed in greater detail in this chapter.

Table 2.1 Summary of the FDI Theories

Theories	Authors
FDI theory based on the perfect competitive market	MacDougall (1958)
FDI theory based on the imperfect market	
International Production Life Cycle (IPLC) Theory	Vernon (1966)
FDI theory based on monopolistic power	Kindleberger (1969)
FDI theory based on strength of the currency	Aliber (1970)
Oligopolistic theory	Knickerbocker (1973)
Industrial organisation approach	Hymer (1976)
Internalisation Theory	Buckley and Casson (1976)
OLI paradigm/ Eclectic Paradigm	Dunning (1980)
Transaction cost theory	Williamson (1985)
FDI theory based on institutional approach	
Three Pillars of Institutions	North (1990), Scott (1995)
FDI theory based on emerging economies	
Linkage, Leverage and Learning (LLL) Theory	Mathews (2002)
Imbalance and Springboard Approach	Luo and Tung (2007)
FDI theory based on Regional Integration Agreements (RIAs)	Salike (2010)
FDI models	
Gravity Model	Tinbergen (1962)
CAGE Model	Ghamawat (2001)

2.2.1 FDI Theories Based on the Imperfect Market

The early works of FDI theory were based on the assumptions of a perfectly competitive market developed by MacDougall (1958) and subsequently elaborated by Kemp (1964). The assumption is a two-country model in which the price of capital is equal to marginal productivity. When there is a free movement of capital from home to the host country, the marginal productivity of capital tends to equalise between the two countries. The output of the home country falls with no decrease in its national income because the home country gets higher income from investment abroad in the long term. Similar theories on a perfectly competitive market can be found in the study of Simpson (1962), Frankel (1965), Pearce and Rowan (1966) and Caves (1971). However, Kindleberger, (1969) criticised that there must be some forms of market distortion to enable the realisation of FDI.

The result of the criticism was the emergence of FDI theories based on the imperfect market, i.e., international production life cycle theory (Vernon,1966), FDI theory based on monopolistic power (Kindleberger, 1969), FDI theory based on the strength of currency (Aliber, 1970), oligopolistic theory (Knickerbocker, 1973), industrial organisation approach (Hymer, 1976), internalisation theory (Buckley and Casson, 1976), OLI paradigm (Dunning, 1977, 1980) and transaction cost theory (Williamson, 1985).

The international product life cycle (IPLC) Theory (Vernon, 1966) emerged from industrial organisational theory (Bain, 1956) and recognises four stages of a product life cycle, i.e., introduction, growth, maturity, and decline. The firm satisfies foreign demand through exports during the early stages of product life. However, when the product is entering the maturity stage, foreign production begins with cheaper substitutes. The firm perceives this as a threat and hence transfers its production facility to a foreign market through FDI to strengthen the market position. Toyne and Walters (1993) criticised that four stages in the IPLC are unnecessary and proposed to reduce the number of stages to three by collapsing the first two stages. Further, this theory does not explain why firms choose FDI rather than using export or licensing to a foreign firm (Nayak and Choudhury, 2014).

Next, FDI is also explained by the monopolistic advantage theory (Kindleberger, 1969) that encourages firms to invest abroad to exploit, among others, other countries' managerial expertise, cheap labour, patent and technology. The weakness of this theory, however, is that it fails to describe which advantages a firm should focus on. Besides, whether a monopolistic firm could exploit its monopolistic advantages abroad depends on the host government policy (Kidron, 1965).

Apart from IPLC and monopolistic advantage theories, Aliber (1970) attempted to explain FDI based on one macroeconomic determinant which is the currency's strength. Through the theory, FDI is explained based on the relative currency's strength or the differences in currency's strength between home and host countries. He postulated that a weaker currency of the host country than a stronger home country's currency increases FDI because investing in the home country means taking advantage of the differences in the market capitalisation rate. This hypothesis was tested and the results were supported by the number of FDI in the United States, United Kingdom and Canada. The exchange rate theory is also supported by Bloningen (1997) who argued that exchange rate movement may affect acquisition as this could generate returns in currencies.

Other than monopolistic advantage theory, Knickerbocker (1973) identified three motivations for the oligopolistic MNEs to go overseas. The MNEs invest abroad to access the host country's market, utilise the relative abundant factors of the host country and match the rival's move. However, the proposition of oligopolistic behaviour holds only when uncertainties exist concerning the costs that occurred in the host country (Head, Ries and Mayer, 2002). Moreover, this theory does not explain why the first oligopolistic firm undertook FDI and why other firms follow (Nayak and Choudhury, 2014).

Subsequently, Hymer (1960) developed the industrial organization approach; firm-specific advantage. Hymer is one of the pioneers who developed a systematic approach to FDI theory in his doctoral dissertation. The industrial organization approach explains that firms must possess firm-specific advantages to reap profits by investing abroad as a market power source. The main concern is that foreign firms need to compete with domestic firms upon entering the foreign market. There must be some forms of market power, and firm-specific or monopolistic advantages to make the international investment profitable, e.g., brand name, economies of scale, marketing and management skills and superior technology. Specifically, technological superiority is the most important firm-specific advantage to facilitate the introduction of new products in the foreign market (Lemafalussy, 1961; Kindleberger, 1969; Knickerbocker, 1973; Caves, 1974; Dunning, 1974; Cohen, 1975; Vaitsos, 1976). However, Hymer's approach was criticized for being first, firms that possess firm-specific advantages may unnecessarily choose to invest abroad for they could choose to exploit their advantages through exporting or licensing (Robock and Simmonds, 1983), and second, Hymer's approach does not explain where and when FDI occurs (Nayak and Choudhury, 2014).

On the other hand, Buckley and Casson (1976) provided another explanation of FDI focusing on intermediate inputs and technology. Their focus shifted from country-specific factors toward industry-level and firm-level factors (Henisz, 2003). Working within a broad-based framework developed by Coase (1937), Buckley and Casson (1976) developed internalisation theory which explains that firms engaging in research and development may create new technology, process or inputs. It may be difficult for firms to transfer technology or sell their inputs to other unrelated firms because of the high transaction costs. In this case, firms may internalise using backwards or forward integrations so that one subsidiary's outputs can be used as inputs to another production, while at the same time others can utilise technology developed by one subsidiary. Hence, it is necessary to undertake FDI in the event of such operations involving different countries.

In addition to the firm-specific advantages, Dunning (1977, 1980) developed a unifying framework to determine foreign activities' patterns and extent. The OLI paradigm, dated from Dunning's seminal contribution in 1977, posited that MNEs are driven by three advantages, i.e., ownership-specific advantages (O), location-specific advantages (L), and internalisation advantages (I). O-advantages explain the 'why' of MNE activity which is also related to firm-specific advantages. L-advantages explain the 'where' of production and the I-advantages explain the 'how' of internalisation activities. All three advantages must be satisfied before FDI occurs. In the presence of ownership advantages (O) which are specific to a firm and location advantages (L) which are specific to the host country, it is beneficial to internalise these advantages (I).

The L-advantages identify four motives for attracting FDI, i.e., (1) Resource-seeking refers to the availability of natural resources, transport and communication infrastructure and other incentives, (2) Market-seeking refers to market size and market potential, access to regional and global markets, government policy concerning regulations, investment incentives and others, (3) Efficiency-seeking refers to the advantages of economies of scale and scope, favourable business environment, incentives to local production by the host government, lower labour costs and others and (4) Strategic asset-seeking refers to any of the first three i.e., resource-seeking, market-seeking and efficiency-seeking that offer organisational, technology and other assets.

However, one of the main criticisms of the OLI paradigm was there were too many variables included in it, therefore losing its validity. Dunning (1980) accepted the criticism and justified it as an inevitable consequence of incorporating different FDI motivations into one general theory. As a result, the theory of investment development path (IDP) was developed which proposes the link between a country's economic development level (measured in GDP per capita) and international investment position (measured in net outward FDI stock per capita). The IDP theory states that Stage I started with pre-industrialisation without any FDI. As a result of government intervention, some location-specific advantages are created and inward FDI begins to rise in Stage II. In Stage III, domestic firms gain ownership advantages, and with higher wages, inward FDI falls while at the same time outward FDI starts to rise. Inward and outward FDI is equal to each other, or outward FDI is relatively greater than inward stock in Stage IV. In 1986, Stage V was added which explains the convergence and balancing of FDI stocks as occurred in most developed countries (Dunning, 1981; Nayak and Choudhury, 2014).

A decade later, the OLI paradigm has remained a robust framework to examine international production activities' determinants. The neoclassical theories of endowment factors and market failure were further explained. Furthermore, developing the OLI paradigm, according to Dunning (1998) requires six possible directions, i.e., to work on more formal modelling, to incorporate dynamic and development aspects of international production and transaction cost theory, to explain various forms of international economic involvement such as trade, joint venture and non-equity modes activities, to provide the locus of decision-making, to explain the divestment of MNEs and to face the consequences of MNE activity. Two decades later, technological advancement and the increasing cross-border value-added activity led to market capitalism which has been described as an alliance, associate, collective, relational and the new capitalism emphasises relationship and cooperation (Dunning, 1995).

The second pillar of the OLI Paradigm which is the location-specific advantages has been applied in different studies to identify a country's attraction as an FDI's destination choice or the pull factors (Kang and Jiang, 2012; Xaypanya, Rangkakulnuwat and Paweenawat, 2015; Bhasin and Garg, 2019; Camarero, Montolio and Tamarit, 2021b). Table 2.2 summarises the selected FDI studies based on the location-specific advantages examined at the country, industry and sector levels.

The last three decades of development have significantly encouraged and motivated MNEs to invest abroad. In the early 1970s, motivations for MNEs were about the resource- or market-seeking, while a minority of MNEs participated in efficiency- or strategic asset-seeking activities. However, in the early 2000s, MNEs were becoming increasingly sophisticated in managing and integrating activities across borders. MNEs operations tend to involve multiple motivations simultaneously (Criscuolo, Narula and Verspagen, 2005). Hence, this should be no surprise that multiple location-specific advantages attract MNEs (Narula and Dunning, 2010). In the late 2000s, Dunning and Lundan (2008a) proposed incorporating institutional elements into the OLI paradigm.

Table 2.2: Summary of the Applications of the OLI Paradigm (Selected Studies)

Scopes	Authors *(* indicates study in Malaysia)*	Main Findings
By country/ countries **Foreign Direct Investment**	Camarero, Moliner and Tamarit (2021b)	Japanese outward FDI can be explained by various factors, that is not only the typical gravity factors but also macroeconomic and institutional factors.
	Bhasin and Garg (2019)	The main motivation for foreign investors to invest in emerging economies was to take advantage of the weak laws, values and norms in the emerging economies.
	Uddin, Chowdhury, Zafar, Shafique and Liu (2019)	The regulation was the most important factor influencing FDI inflows to Pakistan.
	Saini and Singhania (2018)	Policy-related factors were associated with FDI inflows in developed economies, while economic factors were associated with FDI inflows in developing economies.
	Shan, Lin, Li and Zeng (2018)	Market size, political stability, regulatory and voice and accountability were associated with FDI inflows in Africa.
	Amal and Tomio (2015)	Institutional difference and geographical proximity were associated with Brazilian outward FDI.
	Mugableh (2015)*	Gross domestic product, trade, exchange rate and broadest money supply were associated with FDI inflows in Malaysia.
	Xaypanya, Rangkakulnuwat and Paweenawat (2015)	Market size and infrastructure were associated with FDI inflows in the ASEAN.
	Williams (2015)	Infrastructure was associated with the FDI inflows in Latin America and the Caribbean (LAC), while high debt and constraints on the executive discouraged FDI to non-Latin America and the Caribbean (LAC).

Table 2.2: (Continued)

Scopes	Authors *(* indicates study in Malaysia)*	Main Findings
By country/ countries **Foreign Direct Investment**	Sánchez-Martín, de Arce and Escribano (2014)	Trade openness, the balance of payment deficit, low short-term debt levels, low expropriation risk and government stability were associated with FDI flows in Latin America.
	Kang and Jiang (2012)	Institutional factors were highly associated with the FDI location choice of Chinese MNEs in East and Southeast Asia, as compared to economic factors.
	Cuyvers, Soeng, Plasmans and Van Den Bulcke (2011)	Gross domestic product of the home country, exchange rate, bilateral trade, and geographic distance were associated with FDI inflows in Cambodia.
	Aw and Tang (2010)*	Trade openness, inflation rate, interest rate, corruption and China's accession to the WTO were associated with inward FDI in Malaysia, in both the short-run and long-run.
	Choong and Lam (2010)*	Gross domestic product, trade openness, and human capital development were associated with FDI inflows in Malaysia.
	Shahrudin, Yusof, and Satar (2010)*	Economic growth and financial development were associated with FDI inflows in Malaysia.
	Duanmu and Guney (2009)	Market size, gross domestic product growth, imports from China or India, and corporate tax rates were associated with Chinese and Indian outward FDI.
	Ang (2008)*	Market size, corporate tax rate and exchange rate were associated with FDI inflows in Malaysia.
	Demirhan and Masca (2008)	Gross domestic product per capita growth, trade openness, telephony, inflation rate and tax rate were associated with FDI inflows in developing countries.
	Stoian and Filippaios (2008)	Market size, openness, rule of law, bureaucratic quality and corruption were associated with the outward FDI of Greece.

Table 2.2: (Continued)

Scopes	Authors *(* indicates study in Malaysia)*	Main Findings
By country/ countries	Busse and Hefeker (2007)	Government stability, the absence of ethnic tensions and internal conflict, law and order and basic democratic rights were associated with FDI inflows in developing countries.
Foreign Direct Investment	Naude and Krugell (2007)	Government consumption, inflation rate, initial literacy, investment and governance were associated with the FDI inflows in Africa.
	Bevan and Estrin (2004)	Gravity factors, labour costs, market size, and market proximity were associated with FDI inflows in European transition economies.
	Janicki and Wunnava (2004)	Market size, trade openness, market risk and labour costs were associated with the FDI inflows in European Union accession countries.
	Tuman and Emmert (2004)	Market size, the skill level of labour, political instability, human rights and military coups were associated with FDI inflows in Latin America.
	Ismail and Yussof (2003)*	Labour market competitiveness was associated with FDI inflows in ASEAN. However, it differed from countries (Malaysia, Thailand and the Philippines) depending on its role in FDI inflows.
	Tatoglu and Glaister (1998)	Market size, repatriation of profit, growth rate, and government policy were associated with Western MNEs' investment in Turkey.
Foreign acquisition	Buckley, Forsans and Munjal (2012)	Home-host Linkages were found to be an adjunct to the Eclectic Paradigm, which is not an alternative to it.
Foreign affiliates	Outreville (2008)	Market size, human capital, cultural distance, governance, regulations and competitiveness were associated with the investment of the world's largest insurance groups in transition and developing economies.

Table 2.2 (Continued)

Scopes	Authors (*** indicates study in Malaysia)**	Main Findings
By Industry/ Sector **Electrical and Electronic**	Tang, Yip and Ozturk (2014)*	Investors were more concerned about the level of social security and safety in the host economies when deciding on a location to invest in the electrical and electronic industry.
Forestry	Nielsen, Asmussenc and Weatherälld (2017)	The ambiguity of legal systems, difficulty in negotiating with local authorities, unfair tax enforcement and political instability were the main barriers to FDI in the forestry sector in Russia.
Health care	Outreville (2007)	Location-specific advantages and good governance were associated with the FDI inflows in the health care sector in developing economies.
Manufacturing	Wong (2005)*	Education, market size, infrastructure, inflation and exchange were associated with FDI inflows in the manufacturing industry in Malaysia.
	Karim, Winters, Coelli and Fleming (2003)*	Gross domestic product, labour productivity, lending interest rate, exports and imports were associated with the FDI inflows in the manufacturing sector in Malaysia.
	Yusop and Ghaffar (1994)*	Economic health, currency stability, investment incentive, access to finance, availability of adequate human capital and physical infrastructures were associated with the FDI inflows in the manufacturing sector in Malaysia.
Power	Mahbub and Jongwanich (2019)	Regulatory was the most important factor influencing FDI in the power sector in Bangladesh.
Real estates	Salem and Baum (2016)	Political stability is associated with FDI inflows in real estate in MENA countries.
Service industry	Cole, Lee, and McCullough. (2007)	Traditional factors, such as market size, loss experience, competitiveness, and reinsurers' ability to expand based on available capacity were associated with FDI in the United States reinsurance industry.
Universities	Guimon (2016)	The findings indicated that the OLI paradigm can still serve the purpose of understanding why universities locate campuses or research departments in foreign countries.

Apart from the OLI paradigm, the transaction cost theory was introduced by Ronald Coase (1937). According to Coase (1937), there are three types of transaction costs, i.e., searching, bargaining and enforcement. Searching costs arise from the search for required goods, bargaining costs incur from negotiating and reaching an agreement, and enforcement costs are incurred while executing and supervising a contract. Williamson (1985) expanded Coase's views on transaction cost theory in 1975. Rooted in Coase's theory (1937), it evaluates the governance structure that will incur the least transaction costs based on the assumptions of bounded rationality and opportunism. Bounded rationality refers to the law in terms of fairness and equitability which include non-discrimination in applying the law and the rule of law. Opportunism refers to an unambiguous and stable commercial code to enforce intellectual property rights and protect against dishonest local agents.

In comparison to other economic organisation study approaches, transaction cost economics is more micro-analytic because it focuses on asset specificity, relies more on comparative institutional analysis, regards firms as a governance structure rather than a production function and places greater emphasis on the ex-post institution's contract (Williamson, 1985). Furthermore, using the Internet in the digital era, Benkler (2002, 2017) linked Coase's theory with the emergence of common-based peer-production communities and considered it as a new third mode of production for economic transactions in the digitally networked environment besides firms and markets. The purpose is to distinguish it from the existing contract- and property-based models for firms and markets. The central characteristic is that groups of individuals follow the social signals and diverse motivational drive clusters to successfully collaborate on large-scale projects rather than following the managerial command and market price.

Transaction cost theory has been applied in various fields. According to the transaction cost theory, firms choose the organisational form and location to minimise the overall transaction costs (Coviello and Martin, 1999). High transaction cost is often associated with a preference to internalise the transaction (Johanson and Mattsson, 1987; Madhok, 1997); hence the reason why firms decide to go abroad. Otherwise, firms choose to export, license or other forms of international entry modes. Buckley, Forsans and Munjal (2012) applied the theory to study foreign acquisitions by Indian firms. The rationale is that physical and cultural distances are important factors to consider when undertaking FDI because they impact transport and transaction costs. However, they found that geographic and cultural distance variables are insignificant in explaining Indian MNEs' decisions in undertaking a foreign acquisition.

Besides, Steenkamp and Geyskens (2012) applied the same theory to examine the roles of national culture. The results of the meta-analysis provide insights into the importance of integrating transaction cost and cultural theories. Rindfleisch (2020) also discussed the past, present and future of the transaction theory and highlighted how ideas form, develop and change over time, suggesting how the theory can be applied to a new set of marketing topics.

2.2.2 FDI Theories Based on Institutional Approach

Over the past decades, the global economy has experienced an unprecedented rise in globalisation through trade and FDI. The pace of globalisation has accelerated in parallel with the different industrial revolution waves. The First Industrial Revolution witnessed increasing trade activities (Held, McGrew, Goldblatt and Perraton, 1999) while the Second Industrial Revolution resulted in the increase of outward FDI from the United States and the United Kingdom (Dunning and Lundan, 2008b). Next, the rapid growth of ICT in the Third Industrial Revolution has increased outward FDI from emerging markets, such as China, India, Brazil, Russia and Malaysia.

Since there is a growing number of countries with different economic, social, and political backgrounds participating in FDI, institutional factors are becoming more important factors to consider when MNEs decide to invest abroad. This is because upon entering the host country, MNEs have to compete with local firms. However, these local firms are more familiar with the institutional environment in terms of language, culture, and legal systems. In light of institutional elements' growing importance, another stream of FDI theories emerged based on the institutional approach.

North (1990) defined an institution as having its own formal rules and informal constraints that organisations must follow. The institutional environment is a coordinated set of informal and formal institutions that influence internalisation activities (Dallago, 2002). Scott (1995) introduced three pillars of the institutional environment i.e., regulative, normative and cognitive. First, regulative refers to the explicit regulative processes in rule setting, monitoring and sanctioning activities (North, 1990). Second, normative refers to the cultural distance between home and host countries. Third, cognitive is most closely associated with culture (Jepperson, 1991). As a social environment element, the cognitive element is culturally and conceptually supported in most cases (Berger and Luckmann, 1967; Scott, 1995), for instance, the high frequency of similar destination choices for trade over time is institutionalised in the manager's mind (Buckley, Forsans and Munjal, 2012).

The three institutional pillars have been applied in the study of factors determining the FDI location choice of Chinese multinationals across East and Southeast Asia. Using the panel data of Chinese outward FDI to eight economies in East and Southeast Asia from 1995 until 2007, the findings suggested that institutional factors have demonstrated a higher level of significance than economic factors (Kang and Jiang, 2012).

2.2.3 FDI Theories Based on Emerging Economies

There has been a gradual shift in the global FDI landscape since the beginning of the 2000s. Rather than Europe and America, emerging economies have been gaining prominence as a destination for FDI and a source of FDI (EBC, 2018). Firms from emerging economies, such as Brazil, Russia, India, and China (BRICs) that extended overseas are often known as emerging multinational enterprises (EMNEs). The FDI theories for EMNEs have emerged, particularly the linkage, leverage and learning (LLL) theory (Mathews, 2002) and the imbalance and springboard approach (Luo and Tung, 2007).

The LLL Theory (Mathews, 2002, 2006, 2017) extends the OLI framework to explain how EMNEs from peripheral countries in the Asia-Pacific region have established themselves successfully in more developed countries. The term “dragon multinationals” described latecomers from emerging countries, such as Brazil, China, India or the “periphery” of the global economy. The theory is explained as follows. First, linkage refers to the connectivity with technology-rich companies that are already active in the targeted markets through multiple channels, e.g. joint ventures, licensing, partnerships and supply chain contracts. In high technology industries, EMNEs provide the opportunities to be involved in the global value chains through outsourcing as the original equipment manufacturing (OEM) for contracting, local sourcing, second sourcing, and technology licensing. Second, leverage refers to gaining access to technologies and market position as resources that lie outside the dragon multinationals, which can be incorporated through smart strategies, the “resource leverage” strategies. The linkages between EMNEs and mature market MNEs can, thus, able to leverage knowledge and technology. Third, learning refers to repeating the application of linkage and leverage to build dynamic capabilities, ultimately resulting in a learning process that EMNEs can acquire for further growth.

The LLL theory has been used to explain the internationalisation of Asian firms, especially from China. Ge and Ding (2009) applied the LLL theory to demonstrate how Galanz Group, a Chinese firm developed unique competitive strategies to succeed in foreign markets. However, Narula (2006) argued that the LLL theory is less convincing than the OLI paradigm. The theory has also been applied in the study of factors determining foreign acquisitions by Indian firms, particularly to examine the home–host country linkages in determining foreign acquisitions by Indian firms. Trade linkages and non-trade linkages between Indian and host nations, i.e., Commonwealth, G-20 and G-15 members were examined. It was found that home-host country linkages improve the OLI paradigm's explanatory power (Buckley et al., 2012).

Followed by the LLL Theory is the imbalance and springboard approach (Luo and Tung, 2007). EMNEs from emerging economies like China tend to treat FDI as a springboard to acquire strategic resources, technologies, brands, managerial skills, and access to new markets to overcome their latecomer disadvantages in developed countries (Luo and Tung, 2007). Through participation in international alliances, EMNEs can upgrade their technological and managerial skills, develop learning experiences, and integrate into foreign firms' internal networks. A general theory of springboard MNEs was created a decade later to differentiate springboard MNEs from more established developed MNEs and highlight both macro and micro-management issues (Luo and Tung, 2018).

2.2.4 FDI Theory Based on Regional Integration Agreements (RIAs)

The past three decades have witnessed an increase in the number and depth of RIAs worldwide to accelerate the movement of production factors across international boundaries (OECD, 2001). Salike (2010) looked into the theoretical perspective of inter-relationships between the RIAs and FDI. The theoretical framework was developed based on the cross-section tabulation of motives and modes of FDI. There are two primary motives for MNEs to invest abroad. The first is tariff-jumping, while the second is internalisation. However, the decision on FDI depends on economic, social and political factors.

2.2.5 Gravity Model

Tinbergen's gravity model is one of the most popular empirical models in international economics (Folfas, 2011) which is an adaptation of the law of universal gravitation. It measures the gravitational force between two bodies as constant; multiplied by the product of their masses and divided by the square root of the distance between them (Newton, 1687). The law of universal gravitation was first applied to social science studies (Carey, 1858). In the 1960s, Tinbergen (1962) applied the gravity model to study the bilateral trade flows between two countries. According to the model, the bilateral trade flowed between home and host economies is subjected to the economic size and distance between the two countries. In the most basic form, taking the natural logarithm transformation, the gravity equation is written as:

$$lnY_{ij} = \beta_0 + \beta_1 \ln(GDP_i \, . \, GDP_j) + \beta_3 lnDIST_{ij} + e_{ij} \tag{2.1}$$

Where Y_{ij} indicates bilateral trade from country i to country j, GDP represents each country's gross domestic product, $DIST_{ij}$ represents the geographical distance between the two countries and is a random error term. The gravity equation implies that larger country pairs trade more, while more distant country pairs trade less.

The gravity equations can be used for either cross-sections or panels of countries. In the first case, the unit of observation is a pair of countries while in the second case, the unit of observation is a pair of countries in a year. Therefore, the sample size in a gravity equation can be very large (UNCTAD, 2012). In addition to applying gravity equations to examine trade movement, the gravity equation was also developed and used to investigate the movement of information, people, goods, and investment between cities, countries, and continents (Kahouli and Maktouf, 2015). For instance, the gravity equation for bilateral FDI studies (Petri, 2012; Chen, Liu and Liu, 2020) and bilateral firm-level greenfield investments study (Paniagua et al., 2015).

The gravity model is one of the models that has demonstrated the most robust international economics findings (Leamer and Levinsohn, 1995; Disdier and Head, 2008; Anderson, 2011; Chaney, 2011). It is well established in the international business, economics, and finance literature (Aggarwal et al., 2012). There are a few advantages to the gravity model, for example, it has been claimed that the gravity model is an “intuitive” model, which resembles Newton’s law of universal gravitation, particularly in the study of trade (Ramos, 2016; Yotov et al., 2016), migration, and capital (Ramos, 2016). It is also a “flexible” model in which different additional control and policy variables can be easily augmented into the model (Ramos, 2016).

The gravity model is widely recognised but has been criticised for having no theoretical basis, hence prompting the search for its theoretical explanations. Subsequently, several trade theories were developed (Feenstra et al., 2001; Evenett and Keller, 2002). It has also been claimed that the distance variable in the gravity model, which proxies for a range of transactions, information and other trading costs, does not fully capture the costs in explaining trade (Trefler, 1995). In seeking to identify other factors, researchers have extended the basic gravity model to include variables such as regional trade and investment agreement, political risk, corruption and culture (Aggarwal et al., 2012). Besides, the gravity model's application requires country-pair data which is not always easy to obtain (Ramos, 2016). For instance, bilateral FDI data is difficult to obtain, thus hindering the application of the gravity model.

2.2.6 CAGE Distance Model

Ghemawat (2007) developed a CAGE distance model to explain the country's differences, i.e., cultural distance (C), administration distance (A), geographic distance (G) and economic distance (E). The model goes beyond physical distance, taking a broader view of distance to also consider the cultural, administrative and economic distances between two economies.

The CAGE framework has been applied to compare Croatia and European Union candidate countries (Albania, Bosnia and Herzegovina, Montenegro, Macedonia, Kosovo, Serbia and Turkey) in terms of cultural, administrative, geographic ad economic distance. With an exception of Turkey, the results suggested cultural and geographical proximity are particularly noticeable among Croatia and all other European Union candidate countries. There are also no significant differences in the administrative and the economic. In general, similarities between the two countries can significantly influence trade (Miloloža, 2015).

2.3 The Development of the Theoretical Framework: Extended Location Framework

This study attempts to understand the pull factors behind the weak performance of Malaysia in attracting FDI in recent decades. OLI paradigm is one of the most popular and dominant frameworks for FDI studies and thus was selected for this study. It explains that all three advantages i.e., O, I and L must be satisfied before a firm engages in FDI. First, the firm must possess O-advantages over foreign firms e.g., firm size, affordable finance, property rights and access to raw materials (Moosa, 2002). Second, the firm must exploit O-advantages internally rather than exporting or licensing. Third, I-advantages e.g., minimising the cost of broken contracts and reducing the effects of government interventions like a tariff, quota or price control (Dunning and Lundan, 2008b). Hence, the L-advantages are regarded as the pull factors in the host country for a firm to consider when deciding on FDI location.

L-advantages or the original dimension of the OLI paradigm explain the macroeconomic determinants of FDI. In an attempt to consider the effects of globalisation and digitalisation on FDI, as shown in Figure 2.1, the Three Pillars of Institutions (Scott, 1995), the Gravity model (Tinbergen, 1962), Transaction Cost Theory (Williamson, 1985) and CAGE model (Ghamawat, 2001) are incorporated to link the institutional elements to FDI. The following sections explain why these theories are selected and built into the extended location framework which looks at two main characteristics to explain FDI i.e., macroeconomic and institutional.

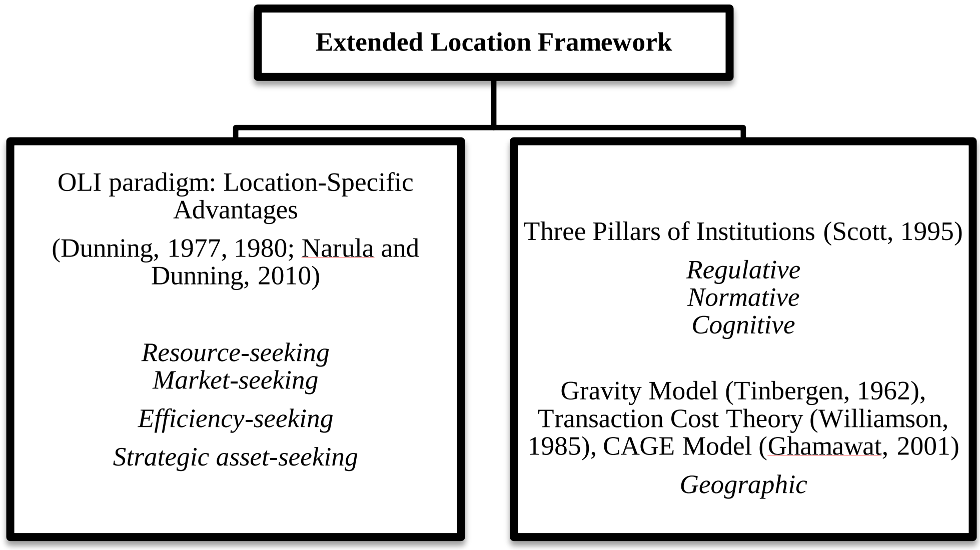


Figure 2.1: Selected FDI Theories: Extended Location Framework

2.3.1 The OLI Paradigm

As the OLI paradigm remains a holistic and dominant framework for FDI study, and OLI factors remain relevant in the era of globalisation and digitalisation (Luo, 2021), drawing on the OLI paradigm's location-specific advantages, this study re-examines the macroeconomic factors in explaining FDI. Hence, the original dimension, which is the macroeconomic determinants, is built based on the OLI paradigm. The past decades have witnessed rapid globalisation of international production activities which has gradually shifted the global FDI landscape from Europe and America to Asia. In particular, Dunning (2006) acknowledged the importance of globalisation and called to incorporate institutional elements into the OLI paradigm. Considering

Dunning and Lundan's (2008a) call to include institutional elements into the OLI paradigm and the increasing intensity of globalisation and digitalisation, the macroeconomic factors alone may not be sufficient in explaining FDI. To provide a deeper understanding of FDI factors, a more comprehensive framework must also look at the institutional other than macroeconomic determinants. This means there is a need to look for relevant institutional theories.

2.3.2 The Three Pillars of the Institutions

The institutional framework has received considerable attention in recent years in terms of attracting FDI (Daude and Stein, 2007; Kinda, 2010; Peres et al., 2018). Good governance attracts more FDI while weak governance attracts less FDI (Globerman and Shapiro, 2002). A well-function institution reduces production and transaction costs, resulting in increased efficiency, profitability and economic growth (North, 1990), while a poor and weak institution increases uncertainty and production costs (Cuervo-Cazurra, 2006, 2008).

Besides, it is well known that investors pay great attention to the host countries' institutional framework when deciding where to invest (OECD, 2012a). Developing countries should establish a strong and high quality institutional environment to attract more FDI (Daude and Stein, 2007). Institutional perspectives have become the primary basis of emerging economies' studies (Yamakawa, Peng and Deeds, 2008). For the case of

Malaysia, the location factors mainly focus on time series analysis using traditional economic factors (Yusop and Ghaffar, 1994; Karim, Winters, Coelli and Fleming, 2003; Wong, 2005; Ang, 2008; Shahrudin, Yusof and Satar, 2010; Mugableh, 2015). FDI studies have also been examining the industry level, for instance, in the manufacturing sector (Yusop and Ghaffar, 1994; Karim, Winters, Coelli and Fleming, 2003; Wong, 2005; Tang, Yip and Ozturk, 2014).

In addition to the location factors, institutional factors, such as institutional distance, cultural distance, trade linkages and non-trade linkages have also been incorporated into the FDI studies. Such studies can be found in Cambodia (Cuyvers et al., 2011), East and Southeast Asia (Kang and Jiang, 2012), OECD member countries (Alam and Shah, 2013), Central Asian countries, South Asian Association for Regional Cooperation (SAARC) and ASEAN (Ullah and Khan, 2017) and developed and developing countries (Saini and Singhania, 2018). However, in the case of Malaysia, there is a lack of comprehensive FDI studies that include both institutional and macroeconomic factors.

Studies on location obstacles have also shown that institutional barriers may discourage FDI inflows in addition to economic barriers. Nilsson and Söderholm (2002) found that economic factors are not the main obstacles to FDI. Instead, several institutional factors like political instability, unfair tax enforcement, ambiguous legal systems and difficulties in negotiating with local authorities are the main obstacles to FDI in Russia (Nilsson and

Söderholm, 2002). Institutional problems have also been found to discourage FDI in developing countries (Kinda, 2010). An excessively complex administrative procedure required to establish and operate a business has discouraged FDI in developing countries. For instance, the delays associated with securing land access and obtaining building permits are among the most common barriers in developing countries (Morisset and Lumenga Neso, 2002).

In search of the relevant theories to extend the location factors, given the importance of the institutional elements in explaining the FDI attraction and obstacle factors, this study incorporates the three pillars of institutions into the OLI paradigm. Scott (1995) stated three pillars of the institutional environment, i.e., rules and regulations, the cultural distance between two economies, and trade linkages between the two countries. These institutional elements are important assets of the host economies (Buckley, Forsans and Munjal, 2012) in addition to the existing OLI paradigm, especially in the case of dragon MNEs, or the third wave of emerging MNEs.

Further, the business environment is broadly defined as policy, institutional and behavioural environments influencing the risks and returns of investment (Stern, 2002). First, the "policy" environment is regarded as macroeconomic policies e.g., fiscal, monetary, tax and exchange rates. This macroeconomic dimension is similar to the OLI paradigm. Second, the "institutional" environment is captured in the three pillars of institutions i.e. regulative, normative and cognitive (Scott, 1995). Third, the "behavioural" environment includes physical infrastructures necessary for productive investment e.g., electricity, transportation and communications which are similar to the OLI paradigm. Hence, the OLI paradigm and three pillars of institutions are appropriate theories to assess investment climate and understand the factors attracting and hindering FDI.

2.3.3 Gravity Model, Transaction Cost Theory and CAGE Model

Next, to supplement the explanation of three pillars of institutions, the gravity model, transaction cost theory and CAGE model were selected by this study. Reflecting on the gravity model's contribution to explaining the bilateral trade flows between two economies, countries that are further apart trade less due to higher costs. Hence, MNEs often decide the modes of entry to foreign markets based on transaction costs (Coviello and Martin, 1999). For a physically closer market, MNEs choose to enter a foreign market through exports while for a physically distant market, MNEs choose to enter a foreign market through investment (Buckley and Casson, 1981). This is because the farther the physical distance between the two countries, the more likely the coordination and monitoring costs to increase. As geographic distance is one of the elements influencing transaction costs, geographic distance has gained momentum in FDI studies and geographic distance still matters in determining FDI (Bi et al., 2020).

Similarly, the idea of geographic distance is reflected in the G-dimension of the CAGE model. However, similar elements were also found in various theories, e.g., according to the CAGE framework, geographical attributes like the country’s transport and communication infrastructure may also be considered (Ghamawat, 2001). However, similar components are also considered in the OLI paradigm’s location-specific advantages or macroeconomic determinants. Moreover, the E-dimension (economic) of the CAGE model is already captured in the OLI paradigm while C-dimension (cultural) and A-dimension (administration) are captured in the three pillars of institutions, hence, the G-dimension (geographical) of the CAGE model is incorporated to consider physical distance on FDI.

In short, Table 2.3 summarises the main theories and models to highlight the advantages, limitations and solutions. In searching for the relevant theories that can link the impact of globalisation and digitalisation to the FDI, the limitation of the OLI paradigm is the missing institutional elements. In comparison, the limitation of the Three Pillars of Institutions is the missing macroeconomic elements. Hence, the Three Pillars of Institutions are incorporated. The Transaction Cost Theory, Gravity model and CAGE model are also included to supplement the explanation of the institutional elements by looking at the ‘geographic’ elements. The advantage of the Extended Location framework (Figure 2.1) is that in addition to the original macroeconomic determinants in explaining FDI, the institutional determinants are incorporated to provide a deeper understanding of FDI factors in Malaysia.

Table 2.3: Summary of the Main Theories, and Models for Framework Development

Aspects		Advantages	Limitations	Solutions
Theories	OLI paradigm: Location-Specific Advantages (Dunning, 1977, 1980; Narula and Dunning, 2010)	• The OLI paradigm is still the holistic framework for FDI studies (Eden and Dai, 2010; Paul and Feliciano-Cestero, 2021). • The second pillar of the OLI Paradigm-location-specific advantages (L-advantages) has been the holistic framework to identify the locational attractions of a country as the destination choice for FDI (Kang and Jiang, 2012; Xaypanya, Rangkakulnuwat and Paweenawat, 2015; Kumari and Sharma, 2017; Bhasin and Garg, 2019; Camarero, Montolio and Tamarit, 2019). • Dunning's OLI factors remain relevant in the era of digital globalisation (Luo, 2021).	• Missing institutional elements. • Dunning and Lundan (2008a) believed that an institutional approach that includes formal and informal institutions and tries to bridge both the macro-level and micro-level analysis offers a promising way to advance understanding of the different forms of the MNEs.	• To incorporate institutional elements into the OLI paradigm (Dunning and Lundan, 2008a).
	Three Pillars of Institutions (Scott, 1995)	• Consider multiple dimensions of institutional elements- regulatory, cultural, and cognitive.	• Missing economic elements.	
	Transaction Cost Theory	• Applied in different fields to explain entry mode choice. Firms choose the organisational form and location to minimise the overall transaction costs (Coviello and Martin, 1999). • A high level of transaction costs is often associated with a preference for internalising the transaction (Johanson and Mattsson, 1987; Madhok, 1997).	• Missing economic and institutional elements.	

Table 2.3: (Continued)

Aspects		Advantages	Limitations	Solutions
Model	Gravity Model	• One of the models demonstrated the most robust international economics findings (Leamer and Levinsohn, 1995; Disdier and Head, 2008; Anderson, 2011; Chaney, 2011). • Well established in international business, economics, and finance literature (Aggarwal et al., 2012). • An "intuitive" model - which resembles Newton's law of universal gravitation, in particular, for the study of trade (Ramos, 2016; Yotov et al., 2016), migration, and capital (Ramos, 2016). • A "flexible" model- different additional control, and policy variables can be easily augmented into the gravity model (Ramos, 2016).	• Without a "theoretical" basis (Feenstra et al., 2001; Evenett and Keller, 2002). • The distance variable in the gravity model, which proxies for a range of transactions, information, and other trading costs, does not fully capture the costs in explaining trade (Trefler, 1995). • Applicable to country-pair data, which is always not easy to obtain (Ramos, 2016).	• In the search for theoretical explanations, several "theoretical" gravity models have been developed based on a range of trade theories (Feenstra et al., 2001; Evenett and Keller, 2002). • To extend the basic gravity model, variables such as regional trade and investment agreements, political risk, corruption, culture, and other factors were included (Aggarwal et al., 2012).
	CAGE Model	• Multiple dimensions of distances – cultural (C), administrative (A), geographic (G), economic (E).	• Applicable to country-pair characteristics. • Adopted by relatively fewer studies as compared to the gravity model (Kuo and Fang, 2009; Campbell, Eden and Miller, 2012; Miloloža, 2015; Antunes, Barandas and Martins, 2019; Tokas and Deb, 2020).	

2.4 Review of the Macroeconomic Determinants of FDI

Building on the OLI paradigm's location-specific advantages, this section reviews the relevant macroeconomic determinants of FDI which are the pull factors of the host country characteristics that can be examined using either country- or firm-level data. Table 2.4 summarises the evolution of MNE motives, i.e., location-specific advantages of the OLI paradigm. Unlike in the 1970s, a more important locational determinant has relied on transport, large and growing domestic and regional markets, human capital and knowledge-based assets in the 2000s. Hence, this section reviews the relevant macroeconomic characteristics related to the four pillars of the OLI paradigm's location-specific advantages. The macroeconomic characteristics e.g., infrastructure, market characteristics, macroeconomic stability, human capital, investment incentive, finance and technology are discussed as follows.

Table 2.4: Evolution of the MNE Motives: Location-Specific Advantages of the OLI Paradigm

Motives	Focus (In the 1970s)	Focus (In the 2000s)
Resource-seeking	• Availability of natural resources. • Infrastructure.	• A more important locational incentive on local opportunities to upgrade the quality of resources and the process and transportation of products.
Market-seeking	• Domestic market and occasionally adjacent regional markets.	• Large and growing domestic and adjacent regional markets.
Efficiency-seeking	• Production cost-related • Investment incentives-tax breaks.	• The increasing role of governments in removing obstacles to facilitate and upgrade human capital. • Investment incentives for investing firms.
Strategic asset-seeking	• Availability of knowledge-related assets and markets.	• A more important motive for FDI due to the growing geographical dispersion of knowledge-based assets, and there is a need for firms to harness such assets from foreign locations.

Source: Narula and Dunning (2010)

2.4.1 Resource-Seeking

One of the FDI motives is to acquire and secure a continual supply of natural resources like raw materials and physical infrastructure (Dunning, 1993; Narula and Duning, 2010). Historically, the most important host country's FDI determinant is the availability of natural resources e.g., agricultural products, raw materials and minerals especially in Africa, resorting to many studies being conducted to investigate the impacts of natural resources on FDI in Africa (Asiedu, 2006).

Although natural resources are an important FDI determinant, the presence of natural resources by itself is not sufficient for FDI to occur. When a country has a comparative advantage in natural resources, this usually promotes trade rather than FDI, however, investment occurs when resource-abundant countries are lacking in a large number of capital required for resource extraction or technical skills needed for raw materials extraction or export. Infrastructure may also facilitate the export of raw materials to their final destination; which is necessary to be created (UNCTAD, 1998). Hence, rather than looking at natural resources, there is a need to look at other resources like infrastructure.

2.4.1.1 Infrastructure

Good infrastructure, especially in the forms of transportation (Loree and Guisinger, 1995; Wong, 2005) and telecommunication (Lydon and Williams, 2005; Naudé and Krugell, 2007; Shah, 2014; Williams, 2015), is fundamental to fuel economic growth and expansion (EPU, 2015b). Furthermore, Salem and Baum (2016) measured the overall quality of infrastructure in terms of both transport and telecommunication.

Different indicators have been used to measure the impacts of transportation, e.g., the number of total roads (Loree and Guisinger, 1995; Wong, 2005; Sahoo and Dash, 2009), rail lines (Sahoo and Dash, 2009; Camarero, Montolio and Tamarit, 2019) airports (Sahoo and Dash, 2009; Petri, 2012), and government expenditure on infrastructure (Kinuthia and Murshed, 2015). Other than that, the overall quality of infrastructure based on the composite index of the qualities of road, railroad, port, air transport, airline seat, electricity supply and telephone line have also been studied and thoroughly assessed (Salem and Baum, 2016).

In Malaysia, government expenditure on infrastructure is commonly used to measure infrastructure development, e.g. expenditure on transport and communication (Ang, 2008), the ratio of government expenditure on infrastructure to GDP (Aw and Tang, 2010), and government development expenditure (Shahrudin, Yusof, and Satar, 2010). In a study conducted by Bakar, Mat and Harun (2012), it was found that the ordinary least squares

(OLS) results show that transportation is positively related to FDI in Malaysia, thus infrastructure in the forms of transport, and electricity are considered in this study.

Besides, the global economy is gradually shifted from resource- to knowledge-based in the past two decades. The increasing pace of ICT development gives rise to the digital economy. Transport infrastructure is vital in facilitating the flow of tangible goods. However, the digital economy involves the flow of tangible goods and the increasing flow of intangible data and information. ICT telecommunication infrastructure plays an essential role in this context, for example, the Internet, mobile application and broadband networks. All these are the parts and foundations of the digital economy, other than additional potential factors to be considered.

Rather than taking into consideration of both transportation and telecommunication facilities, many studies have used only telecommunication, commonly in terms of the fixed telephone subscription (Asiedu, 2002; Ancharaz, 2003; Nasser, 2007; Naudé and Krugell, 2007; Anwar and Nguyen, 2010; Amighini, Rabellotti and Sanfilippo, 2013; Williams, 2015; Masron, 2017). Table 2.5 summarises the selected studies on infrastructure. Given the importance of digitalisation, the fixed telephone does not adequately address the impact of various telecommunication tools on FDI. Hence, other than fixed telephone, this study considers fixed broadband, mobile telephone and the Internet.

Table 2.5: Selected Studies on Infrastructure

Infrastructure	Proxy	Authors
Telecommunication	Fixed Telephone Subscriptions	Camarero, Moliner and Tamarit (2021b) Camarero, Montolio and Tamarit (2019) Latif et al. (2018) Masron (2017) Pradhan et al. (2017) Williams (2015) Xaypanya, Rangkakulnuwat and Paweenawat (2015) Shah (2014) Lederman, Mengistae and Xu (2013) Suh and Boggs (2011) Kok and Ersoy (2009) Sahoo and Dash (2009) Demirhan and Masca (2008) Naudé and Krugell (2007) Lydon and Williams (2005)
	Mobile Telephone Subsctiptions	Camarero, Moliner and Tamarit (2021b) Camarero, Montolio and Tamarit (2019) Latif et al. (2018) Pradhan et al. (2017) Sánchez-Martín, de Arce and Escribano (2014) Shah (2014) Suh and Boggs (2011) Sahoo and Dash (2009) Lydon and Williams (2005)
	Internet Users	Camarero, Moliner and Tamarit (2021b) Camarero, Montolio and Tamarit (2019) Latif et al. (2018) Pradhan et al. (2017) Blonigen and Piger (2011)

2.4.2 Market-Seeking

Dunning (1993) asserted that one of the motives for firms to invest abroad is to get market access in the host country and nearby countries. Market-seeking motive identifies the characteristics of market size, market potential and access to regional and global markets. Various proxies have been used to examine these “market” characteristics, such as the GDP, GDP per capita and trade openness to measure market size, and GDP growth to measure market potential.

2.4.2.1 Market Characteristics

Empirical studies found a significant positive relationship between market size and FDI (Kravis and Lipsey, 1982; Wheeler and Mody, 1992; Dees, 1998; Bevan and Estrin, 2004; Ang, 2008; Anwar and Nguyen, 2010, Mugableh, 2015; Xaypanya, Rangkakulnuwat, and Paweenawat, 2015). The larger the market size of a host country, in terms of GDP, the higher the FDI inflow into a country. Cleeve (2008) posited a positive relationship between GDP per capita and FDI inflows which means that a country with higher GDP per capita attracts higher FDI. MNEs tend to invest in an export-oriented, rather than a closed economy country (Choong and Lam, 2010). The higher the country’s level of openness, the higher the probability of a country being chosen as an FDI destination (Stoian and Filippaios, 2008). FDI and trade openness are positively related (Bevan and Estrin, 2004; Camarero, Moliner and Tamarit, 2021b). In emerging MNEs, recent studies suggested that market-seeking is one of the major driving forces for Chinese firms (Deng, 2004; Buckley, Clegg, Cross, Liu, Voss and Zheng, 2007).

Furthermore, a fast-growing economy provides more opportunities than a slow-growing economy. In terms of GDP growth in the host economy, rapid economic growth stimulates FDI inflows. The higher the economic growth rates, the higher the FDI inflows. A strong positive relationship was also found between market potential and FDI (Ang, 2008; Williams, 2015), for instance, ASEAN is one of the fastest-growing consumer markets in the world and a major global hub of manufacturing and trade. Additionally, ASEAN Economic Community (AEC) establishment in 2015 aims to serve as a single market and production base through the free flow of goods and services, investment, skilled labour and more open capital flow in a combined population of 649.1 million people with a GDP US$3.0 trillion; the fifth-largest economy in the world (ASEAN, 2019). Located in the heart of the ASEAN, Malaysia is one of the gateways for home economies to enjoy market benefits. Market-seeking FDI is, therefore, an important motivation to consider in this study.

2.4.3 Efficiency-Seeking

Efficiency-seeking motive is often measured in terms of macroeconomic stability and lower production cost in the host country. However, the government's role is increasing in importance particularly to remove trade barriers and obstacles to facilitate and upgrade human capital and provide investment incentives (Narula and Dunning, 2010). Hence, other than macroeconomic stability, there is also a need to look at human capital and financial incentives.

2.4.3.1 Macroeconomic Stability

The inflation rate and exchange rate have commonly been used as indicators in past studies to examine macroeconomic stability. However, there were inconclusive results on the impacts of inflation rate on FDI (Naudé and Krugell, 2007; Demirhan and Masca, 2008; Aw and Tang, 2010; Kang and Jiang, 2012; Mugableh, 2015; Xaypanya, Rangkakulnuwat and Paweenawat, 2015; Williams, 2015). Through the OLS approach, it was found that the impact of the inflation rate on FDI was significant (Demirhan and Masca, 2008). Similarly, using the one-step generalised method of moments (GMM) approach, a significant negative result was found between the inflation rate and FDI (Naudé and Krugell, 2007), indicating higher inflation rate results to lower FDI inflows. However, using inflation rate as a control variable to measure location determinants of Chinese MNEs in East and Southeast Asia, the results of the random effects (RE) approach showed an insignificant relationship between inflation rate and FDI.

Similarly, inconclusive results were found on the impacts of exchange rate on FDI (Barrell and Pain, 1996; Ang, 2008; Anwar and Nguyen, 2010; Aw and Tang, 2010; Cuyvers et al., 2011; Lederman, Mengistae and Xu, 2013; Mugableh 2015). A real deprecation of the host's currency is expected to affect FDI inflows in the host country. Several studies found a negative relationship between exchange rates and FDI inflows (Dewenter, 1995; Grosse and Trevino, 1996; Wei and Liu, 2001).

2.4.3.2 Human Capital

An educated workforce is important in efficiency-seeking FDI (Okafor, Piesse and Webster, 2017), and the availability of a skilled workforce in developing countries is a great advantage for firms to invest (Kinda, 2013). Although human capital is among the key factors to attract FDI (Dunning, 1988), only a few cross-country analyses have been conducted to identify the role of human capital on FDI in developing countries due to the difficulty of collecting a sufficiently large sample of developing countries and over a sufficiently long period, particularly for non-traditional determinants e.g., cost and complementary factors of production (Nunnenkamp and Spatz, 2002), and difficulty in constructing quality explanatory variables, especially for the indicator of human capital (Miyamoto, 2003).

Hence, various proxies were utilised to measure human capital in the past e.g., literacy rate, school enrolment, number of years of tertiary education, average years of education, the availability of technical and professional workers and government expenditure on education (Root and Ahmed, 1979; Narula, 1996; Nunnenkamp and Spatz, 2000; Asiedu, 2002; Wong, 2005; Kinda, 2013; Okafor, Piesse and Webster, 2017). However, there were inconsistent results on the role of human capital on FDI. For instance, literacy rate, school enrolment, and the availability of technical and professional workers have been used to measure the impacts of human capital on FDI in 58 developing countries in the manufacturing sector. All variables were insignificant in determining FDI (Root and Ahmed, 1979). Narula (1996) demonstrated that tertiary education is insignificant in determining FDI in 22 developing countries while Nunnenkamp and Spatz (2000) examined the average years of schooling (total population aged 15 and above) on FDI in 28 developing countries in which the results suggested that education is important in determining FDI. Meanwhile, in the case of Malaysia, using government expenditure on education per GDP as a proxy for human capital indicated that good education attracts FDI (Wong, 2005).

2.4.3.3 Investment Incentive

The tax rate is playing an important in attracting FDI as it is efficient in lowering the overall costs of investment (Tung and Cho, 2001; Devereux et al., 2002; Becker, Fuest and Riedel, 2012; Andersen, Kett and von Uexkull, 2017). Developing countries usually attract FDI through tax incentives, e.g., reducing corporate tax, granting tax holidays and rewarding temporary rebates for specific investment types or firms. (Tung and Cho, 2001; Morisset, 2003; Deng, Falvey and Blake, 2012; Azémar and Dharmapala, 2019). In addition, corporate tax or tax differentials were found to affect the location decision of FDI (Billington, 1999; Andersson and Forslid, 2003; Choi, 2003; Duanmu and Guney, 2009), and corporate tax rate to be negatively related to FDI (Dunning, 2006), hence, lower tax rates attract FDI.

2.4.3.4 Finance

Access to finance is one of the key FDI determinants examined in past studies (García-Herrero and Navia, 2003). Firms engaging in FDI involve substantial upfront fixed costs. Hence, firms with high external capital requirements will struggle without access to solid and strong finance (Buch et al., 2009). Existing studies have stressed the importance of financial development to increase FDI by improving access to finance (Desbordes and Wei, 2017). Local firms must benefit from FDI technology spill-overs (Hermes and Lensink, 2003; Alfaro et al., 2010). Access to finance has a strong impact on investment decisions for foreign firms (Keeley and Ikeda, 2017). Likewise, credit constraints and barriers influence FDI especially when external finance is relatively expensive and limited in the host countries (Klein et al., 2002; Feinberg and Phillips, 2004; Desai et al., 2006). However, these obstacles may vary according to the firm's size. Barthel, Busse and Osei (2008) argued that access to finance is vital in influencing smaller firms' investment decisions compared to larger firms.

2.4.4 Strategic Asset-Seeking

All activities and strategies related to the resources-, market- and efficiency-seeking, offer organisational, technology and strategic assets for firms to acquire in the foreign markets which are essential drivers for FDI. The main motivation for firms to engage in FDI is to acquire foreign firms' assets, promote their long-term business objectives and sustain their global competitiveness (Dunning and Lundan, 2008b; Verbeke et al., 2019).

2.4.4.1 Technology

Technological differences between the two countries have long been regarded as factors affecting FDI (Ly, Esperança and Davcik, 2018). Often firms from developing countries are short of such strategic assets. Hence, FDI is adopted to overcome the existing disadvantages by acquiring the much-needed advantages overseas (Andreosso-O'Callaghan, 1999; Deng, 2004). According to OECD (1996), the proxy that is generally used to measure the production of new ideas and innovation is the number of patents and the research and development expenditure. Kang and Jiang (2012) used patent application in the host economy as a proxy to measure the development level of technology and management know-how for strategic asset-seeking FDI.

2.5 Review of the Institutional Determinants of FDI

This section reviews the relevant institutional factors building on the three pillars of institutions i.e., regulative, normative and cognitive, as well as the gravity model, transaction cost theory and CAGE model. The institutional characteristics e.g., regulation and administration, cultural distance, trade and non-trade linkages and physical distance are discussed as follows.

2.5.1 Regulative

A strong and good institution underpins a good investment climate and good governance; these are critical to increasing investment activities which require a well-functioning institutional framework that supports the economy. The regulative pillar of the institutional environment is, therefore, an important pillar to consider. It resembles the “rules of the game” that restructures the interactions and ensures stability in the society (North, 1990), including the laws, rules, regulations and policies that govern the economy.

2.5.1.1 Regulation and Administration

A good investment climate is characterised by transparent, open and non-discriminatory investment policies (UNCTAD, 2018) as it allows for higher factor returns (Dollar, Hallward-Driemeier and Mengistae, 2003). It is also playing an important role in employment growth. In contrast, a weak investment climate reduces overall employment in the business sector (Aterido, Hallward-Driemeier and Pagés, 2007). A good investment climate also allows local firms to benefit from the FDI spill-over effects through technology transfer (Blalock and Gertler, 2008). Moreover, good governance ensures adherence to laws and quality of contract enforcement. It depends on transparency, clear communication and responsiveness to the market (APEC, 2019). In general, good governance attracts more FDI whereas weak governance attracts less FDI (Globerman and Shapiro, 2002).

Moreover, a good institution plays a crucial role in attracting FDI (Daude and Stein, 2007; Kinda, 2010; Peres, Waqar Ameer and Xu, 2018). The host country's institutional environment influences the probability of whether foreign investors will eventually get a return on their investments in a host country, which may affect foreign investors' decisions on whether to invest or not (Kinda, 2010).

The World Bank's Worldwide Governance Indicators (WGI) comprises six dimensions, namely control corruption, government effectiveness, regulatory quality, political stability, voice and accountability and rule of law. Using the WGI, different results were found in Wei (2000), Mengistu and Adhikary (2011), Masron and Naseem (2017), and Camarero, Moliner and Tamarit (2021b). In general, corruption harms FDI due to the unexpected or unnecessary burden of humungous costs and uncertainties (Wei, 2000). Corruption, poor enforcement of the rule of law and political instability also deter FDI (Asiedu, 2006). Efficient institutions with better control of corruption, regulatory quality, political stability and government effectiveness have positive effects on FDI (Gani, 2007). Nevertheless, Camarero, Moliner and Tamarit (2021b) found that the higher the control of corruption, the lower the FDI in East Asian and emerging countries. Masron and Naseem (2017) applied WGI to measure the role of institutional quality on FDI in ASEAN and the two-stage least squares (2SLS) results indicated that institutional quality has a significant impact on FDI.

Besides, Kang and Jiang (2012) measured regulative-institutional using the economic freedom index. Economic factors such as business freedom, financial freedom, freedom from corruption, monetary freedom and property rights that could facilitate market efficiency were selected for the composite economic freedom index. The results showed that economic freedom is related to the location decision of Chinese MNEs. Economic freedom was also found to have positive impacts on FDI inflows in the four South European economies i.e., Greece, Italy, Portugal and Spain (Economou, 2019).

Although FDI studies using macro-level data are important, based on the firm-level analysis, Kinda (2010) found that institutional and social problems discourage FDI in developing countries, such as crime, theft and disorder. In economically free societies, governments allow capital, goods and labour to move freely. Labour market institutions (LMIs) refer to the rules and regulations that govern the functioning of the labour market. Labour market institutions are considered flexible when the labour market is free from government regulations or trade unions (Whyman and Baimbridge, 2006). Malaysia, through Employment Act 1955 as the main legislation on labour matters has implemented a minimum wage policy in line with government policy to achieve the status of a "high-income nation" reaching the year 2020. However, it is difficult for firms to fully comply with labour market regulations, thus the effects of labour market regulation on FDI are among the important barriers to consider.

2.5.2 Normative

Normative pillars capture the cultural distance between two different economies. Ghemawat's (2001) model shows that cultural distance is measured in terms of religion, language and culture.

2.5.2.1 Cultural Distance

National culture is a distinctive set of norms, beliefs, values and a country's rules. The most common and well-known measure for cultural distance on FDI is the original Hofstede's four dimensions of culture i.e., power distance, individualism, uncertainty avoidance and masculinity (Johanson and Vahlne, 1977; Kogut and Singh, 1988; Shane, 1994; Tihanyi, Griffith and Russell, 2005; Buckley, Clegg, Cross, Liu, Voss and Zheng, 2007; Buckley, Forsans and Munjal, 2012; Kang and Jiang, 2012). The wider the cultural distance between the host and home countries, the more challenging it is for MNEs to gain normative legitimacy in the host country.

Cultural differences between the host and home countries have always been the main barriers for MNEs from developing countries (Kandogan, 2016). However, inconclusive results were found in terms of the influence of cultural distance on FDI. Some studies found a positive relationship between cultural distance and FDI (Thomas and Grosse, 2001), and vice versa. There was also no significant relationship between cultural distance and FDI (Buckley, Clegg, Cross, Liu, Voss and Zheng, 2007; Fung, Garcia-Herrera and Siu, 2009; Amal and Tomio, 2015).

Next, language distance is also another issue to look at when determining FDI location (Konara and Wei, 2014). Buckley, Forsans and Munjal (2012) studied the determinants of FDI of Indian MNEs using OLS and it was found that the common use of language is a significant determinant for firms to make FDI location decisions. Similarly, Camarero, Montolio and Tamarit (2019) examined the determinants of German outward FDI in developed and developing countries using BMA and it was shown that the use of common language between the two economies is significant. Meanwhile, Hejazi and Ma (2011) used an augmented gravity model framework and also found a significant result.

2.5.3 Cognitive

The interdependence among countries, international integration and cooperation have gained strong momentum and attention along with the increasing globalisation (Suthiphand, Chumporn and Patcharawalai, 1999). Dunning (2006) argued that economic, social and political ties between home and host countries are the sources of competitive advantage for MNEs to base in countries that have such links. Home-host linkages are measured in terms of trade and non-trade linkages between the two economies (Buckley, Forsans and Munjal, 2012).

2.5.3.1 Trade Linkages

Trade linkage, a repetitive trade pattern between two economies, i.e., the home and host countries can be habitualised and institutionalised in managers' mindsets. Eventually, expanding trade locations to FDI locations has become an effective way to gain legitimacy (Kang and Jiang, 2012). The intensity of economic relations between two economies is measured using the bilateral trade (BT) value between the two economies (Buckley, Forsans and Munjal, 2012; Kang and Jiang, 2012).

2.5.3.2 Non-Trade Linkages

Similarly, non-trade or socio-political-economic linkages are growing in importance which may facilitate trade and FDI. Buckley, Forsans and Munjal (2012) used India's membership of the G15, G20 and Commonwealth countries to measure the impact of non-trade linkages on the foreign acquisition by Indian firms. In this sense, the use of OLS has generated a result that shows G20 and Commonwealth memberships are significant. For Malaysia, as one of the ASEAN members, to deepen economic linkage and facilitate trade and investment among member countries, several free trade agreements have been signed through ASEAN with different economies i.e., ASEAN Free Trade Area (AFTA, 1993), ASEAN-People's Republic of China Free Trade Agreement (ACFTA), ASEAN-Republic of Korea Free Trade Agreement (AKFTA), ASEAN-Japan Comprehensive Economic Partnership (AJCEP), ASEAN-India Free Trade Agreement (AIFTA), ASEAN-Australia and New Zealand Free Trade Agreement (AANZFTA), and ASEAN-Hong Kong, China Free Trade Agreement (AHKCFTA). These free trade agreements are important socio-political-economic ties to be considered in this study.

2.5.4 Geographic

A farther distance between the two countries increases the costs of coordinating, monitoring and controlling operations (Lerner, 1995). According to Johanson and Wiedersheim-Paul (1975), geographical distance is a component of the psychic distance between countries. For physically closer markets, MNEs choose to serve by exports, while for physically distant markets, MNEs choose to invest abroad (Buckley and Casson, 1981).

2.5.4.1 Physical Distance

In the past literature, the impacts of geographical distance on FDI are inconclusive (Beven and Estrin, 2004; Cuyvers et al., 2011; Buckley, Forsans and Munjal, 2012; Camarero Montolio and Tamarit, 2019; Chen, Liu and Liu, 2020; Nguyen, Haug, Owen and Genc, 2020) which were found to be insignificant in explaining the foreign acquisition of Indian MNEs based on the OLS approach (Buckley, Forsans and Munjal, 2012). However, based on both OLS and RE methods, geographic distance was significant and negatively related to FDI in Cambodia (Cuyvers et al, 2011). The impacts of the contiguous border on FDI are also inconclusive (Blonigen and Piger, 2011; Camarero, Montolio and Tamarit, 2019).

2.6 Review of Methodology

Among other methods, a single model approach has been generally applied in past FDI studies (Table 2.6). The common methods were the ordinary least squares (OLS) (Ismail and Yussof, 2003; Demirhan and Masca, 2008; Aw and Tang, 2010; Cuyvers et al., 2011; Bakar, Mat and Harun, 2012; Buckley, Forsans and Munjal, 2012; Lederman, Mengistae and Xu, 2013), fixed-effects (FE) (Mengistu and Adhikary, 2011; Alam and Shah, 2013; Sánchez-Martín, de Arce and Escribano, 2014; Bhasin and Garg, 2019), and random-effects (RE) (Bevan and Estrin, 2004; Cuyvers et al., 2011; Kang and Jiang, 2012; Asongu, Akpan and Isihak, 2018; Economou, 2019). However, model uncertainty is often a problem when regression is performed using a single model that includes all variables for measurement can be inefficient. In the presence of uncertainty in variable selection, it can lead to overfitting results.

Table 2.6: Summary of the Variables, Methodology and Findings of Selected Studies

Macroeconomic Determinants						
OLI paradigm (Location-Specific Advantages): Resource-seeking						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Infrastructure (Transport)	Rails	Camarero, Montolio and Tamarit (2019)	BMA 1996-2012 German outward FDI to 38 developed and 21 developing	NA (variables not included Due to data availability)		
	Road	Khadaroo and Seetanah (2009)	GMM 1984-2002 33 African countries	✓		
	Government expenditure per GDP	Bakar, Mat and Harun (2012)	OLS 1970-2010 Malaysia	✓		

Table 2.6: (Continued)

OLI paradigm (Location-Specific Advantages): Resource-seeking						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Infrastructure (Telecommunication)	Fixed Telephone Subscriptions	Naudé and Krugell (2007)	GMM (one-step) 1970–1990 Africa			✓
		Demirhan and Masca (2008)	OLS 2000-2004 Developing Countries	✓		
		Blonigen and Piger (2011)	BMA 2000 OECD member countries	✓		
		Alam and Shah (2013)	FE 1985-2009 OECD Countries	✓		
		Lederman, Mengistae and Xu (2013)	OLS 2001-2006 Southern African Development Community (SADC)	✓		
		Xaypanya, Rangkakulnuwat and Paweenawat (2015)	First Differencing Panel Data Analysis 2000-2011 ASEAN	✓		
		Camarero, Moliner and Tamarit (2021b)	BMA 1996-2017 27 Developed and Emerging economies		✓	

Table 2.6: (Continued)

OLI paradigm (Location-Specific Advantages): Resource-seeking						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Infrastructure (Telecommunication)	Mobile telephone subscriptions	Sánchez-Martín, de Arce and Escribano (2014)	FE 1990-2010 Latin America	✓		
		Asongu, Akpan and Isihak (2018)	FE 2001-2011 BRICS (Brazil, Russia, India, China, and South Africa) and MINT (Mexico, Indonesia, Nigeria, and Turkey) countries	✓		
		Camarero, Montolio and Tamarit (2019)	BMA 1996-2012 German outward FDI to 38 developed and 21 developing			✓
		Camarero, Moliner and Tamarit (2021b)	BMA 1996-2017 27 Developed and Emerging economies			✓
	Internet users	Blonigen and Piger (2011)	BMA 2000 OECD member countries			✓
		Camarero, Montolio and Tamarit (2019)	BMA 1996-2012 German outward FDI to 38 developed and 21 developing			✓ (Developing economies)
		Camarero, Moliner and Tamarit (2021b)	BMA 1996-2017 27 Developed and Emerging economies	✓		

Table 2.6: (Continued)

OLI paradigm (Location-Specific Advantages): Market-seeking						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Market Characteristics (Market size)	Gross Domestic Product	Ismail and Yussof (2003)	OLS 1985-1999 Malaysia, Thailand and the Philippines	✓		
		Bevan and Estrin (2004)	RE 1994- 2000 European Transition Economies	✓		
		Janicki and Wunnava (2004)	WLS 1997 European candidate Economies (CEEC)	✓		
		Flores and Aguilera (2007)	Probit 1980-2000 147 countries	✓		
		Ang (2008)	2SLS 1960-2005 Malaysia	✓		
		Shahrudin, Yusof and Satar (2010)	ARDL 1970-2008 Malaysia			✓
		Athukorala and Waglé (2011)	2SLS 1995-2009 ASEAN-5			✓
		Blonigen and Piger (2011)	BMA 2000 OECD member countries	✓		
		Cuyvers, Soeng, Plasmans, and Van Den Bulcke (2011)	RE, OLS 1995-2005 Cambodia		✓	

Table 2.6: (Continued)

OLI paradigm (Location-Specific Advantages): Market-seeking						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Market Characteristics (Market size)	Gross Domestic Product	Lederman, Mengistae and Xu (2013)	OLS 2001-2006 Southern African Development Community (SADC)			✓
		Tang, Yip and Ozturk (2014)	ARDL 1980–2008 Malaysia	✓		
		Mugableh (2015)	ARDL 1977‒2012 Malaysia	✓		
		Xaypanya, Rangkakulnuwat and Paweenawat (2015)	First Differencing Panel Data Analysis 2000-2011 ASEAN			✓
	Gross Domestic Product Per capita	Cleeve (2008)	OLS, RE 1990-200 16 Sub-Saharan African Countries	✓		
		Alam and Shah (2013)	FE 1985-2009 OECD Countries	✓		
		Sánchez-Martín, de Arce and Escribano (2014)	FE 1990-2010 Latin America			✓

Table 2.6: (Continued)

OLI paradigm (Location-Specific Advantages): Market-seeking						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Market Characteristics (Market size)	Trade Openness	Bevan and Estrin (2004)	RE 1994- 2000 European Transition Economies	✓		✓
		Ang (2008)	2SLS 1960-2005 Malaysia	✓		
		Demirhan and Masca (2008)	OLS 2000-2004 Developing Countries	✓		
		Kok and Ersoy (2009)	FMOLS-fully modified OLS 1983-2005 Developing Countries	✓		
		Aw and Tang (2010)	OLS 1970- 2005 Malaysia	✓		
		Shahrudin, Yusof and Satar (2010)	ARDL 1970-2008 Malaysia			✓
		Blonigen and Piger (2011)	BMA 2000 OECD member countries		✓	
		Buckley, Forsans and Munjal (2012)	OLS 2000 -2007 Foreign acquisitions by Indian firms		✓	

Table 2.6: (Continued)

OLI paradigm (Location-Specific Advantages): Market-seeking						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Market Characteristics (Market size)	Trade Openness	Mugableh (2015)	ARDL 1977‒2012 Malaysia	✓		
		Williams (2015)	OLS, FE, RE, GMM(preferred model) 1975-2005 Developing Countries	✓		
		Xaypanya, Rangkakulnuwat and Paweenawat (2015)	First Differencing Panel Data Analysis 2000-2011 ASEAN	✓		
		Camarero, Moliner and Tamarit (2021b)	BMA 1996-2017 27 Developed and Emerging economies	✓		
Market Characteristics (Market potential)	Gross Domestic Product Growth	Ang (2008)	2SLS 1960-2005 Malaysia	✓		
		Shahrudin, Yusof and Satar (2010)	ARDL 1970-2008 Malaysia			✓
		Cuyvers, Soeng, Plasmans, and Van Den Bulcke (2011)	RE, OLS 1995-2005 Cambodia			✓
		Kang and Jiang (2012)	RE 1995-2007 8 Asian economies			✓
		Williams (2015)	OLS, FE, RE, GMM (preferred model) 1975-2005 Developing Countries	✓		

Table 2.6: (Continued)

OLI paradigm (Location-Specific Advantages): Efficiency-seeking						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Macroeconomic Stability	Exchange rate	Ang (2008)	2SLS 1960-2005 Malaysia		✓	
		Aw and Tang (2010)	OLS 1970-2005 Malaysia		✓	
		Shahrudin, Yusof and Satar (2010)	ARDL 1970-2008 Malaysia			✓
		Cuyvers, Soeng, Plasmans, and Van Den Bulcke (2011)	RE, OLS 1995-2005 Cambodia	✓		
		Lederman, Mengistae and Xu (2013)	OLS 2001-2006 Southern African Development Community (SADC)		✓	
		Tang, Yip and Ozturk (2014)	ARDL 1980–2008 Malaysia	✓		
		Mugableh (2015)	ARDL 1977−2012 Malaysia	✓		
		Xaypanya, Rangkakulnuwat and Paweenawat (2015)	First Differencing Panel Data Analysis 2000-2011 ASEAN			✓

Table 2.6: (Continued)

OLI paradigm (Location-Specific Advantages): Efficiency-seeking						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Macroeconomic Stability	Inflation rate	Naudé and Krugell (2007)	GMM (one-step) 1970–1990 Africa		✓	
		Demirhan and Masca (2008)	OLS 2000-2004 Developing Countries		✓	
		Aw and Tang (2010)	OLS 1970-2005 Malaysia	✓		
		Shahrudin, Yusof and Satar (2010)	ARDL 1970-2008 Malaysia			✓
		Cuyvers, Soeng, Plasmans and Van Den Bulcke (2011)	RE, OLS 1995-2005 Cambodia			✓
		Kang and Jiang (2012)	RE 1995-2007 8 Asian economies			✓
		Alam and Shah (2013)	FE 1985-2009 OECD Countries			✓
		Sánchez-Martín, de Arce and Escribano (2014)	FE 1990-2010 Latin America			✓
		Mugableh (2015)	ARDL 1977−2012 Malaysia		✓	

Table 2.6: (Continued)

OLI paradigm (Location-Specific Advantages): Efficiency-seeking						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Macroeconomic Stability	Inflation rate	Xaypanya, Rangkakulnuwat and Paweenawat (2015)	First Differencing Panel Data Analysis 2000-2011 ASEAN	✓		
		Williams (2015)	OLS, FE, RE, GMM(preferred model) 1975-2005 Developing Countries		✓	
		Asongu, Akpan and Isihak (2018)	FE 2001-2011 BRICS (Brazil, Russia, India, China, and South Africa) and MINT (Mexico, Indonesia, Nigeria, and Turkey) countries			✓
Human Capital	Labour productivity	Cuyvers, Soeng, Plasmans, and Van Den Bulcke (2011)	RE, OLS 1995-2005 Cambodia	Removed due to multicollinearity		
		Alam and Shah (2013)	FE 1985-2009 OECD Countries			✓
Investment Incentive	Corporate tax rates	Duanmu and Guney (2009)	FE Top 30 destinations for Chinese (1999-2002) and Indian (2001-2004) outward FDI		✓	

Table 2.6: (Continued)

OLI paradigm (Location-Specific Advantages): Strategic asset-seeking						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Technology	Patent (PT)	Athukorala and Waglé (2011)	2SLS 1995-2009 ASEAN-5	✓		
		Buckley, Forsans and Munjal (2012)	OLS 2000 -2007 Foreign acquisitions by Indian firms	✓		
		Kang and Jiang (2012)	RE 1995-2007 8 Asian economies	Removed due to multicollinearity		

Table 2.6: (Continued)

Institutional Determinants						
Three Pillars of Institutions: Regulative						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Regulation and Administration (Institutional distance)	Economic Freedom Index	Kang and Jiang (2012)	RE 1995-2007 8 Asian economies	✓		
	Economic Freedom Indicators	Economou (2019)	RE 1996-2017 4 South European economies	✓ (property right, government integrity, monetary freedom, Investment freedom, financial freedom)		
	World Governance Indicators	Mengistu and Adhikary (2011)	FE 1996–2007 15 Asian economies	✓ (political stability, government effectiveness, rule of law, control of corruption)		

Table 2.6: (Continued)

Three Pillars of Institutions: Regulative						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Regulation and Administration (Institutional distance)	World Governance Indicators	Masron and Naseem (2017)	2SLS 1996 –2014 8 Asian economies	✓ (control of corruption, political stability, rule of law, voice and accountability		
		Camarero, Moliner and Tamarit (2021b)	BMA 1996-2017 27 Developed and Emerging economies	✓ (regulatory quality, rule of law)	✓ (control of corruption)	
Three Pillars of Institutions: Normative						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Cultural distance	Cultural Distance (CD)	Flores and Aguilera (2007)	Probit 1980-2000 147 countries		✓	
		Blonigen and Piger (2011)	BMA 2000 OECD member countries			✓
		Buckley, Forsans and Munjal (2012)	OLS 2000 -2007			✓
		Kang and Jiang (2012)	RE 1995-2007 8 Asian economies			✓

Table 2.6: (Continued)

Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Three Pillars of Institutions: Normative						
Cultural distance	Language	Buckley, Forsans and Munjal (2012)	OLS 2000 -2007 Foreign acquisitions by Indian firms	✓		
		Camarero, Montolio and Tamarit (2019)	BMA 1996-2012 German outward FDI to 38 developed and 21 developing	✓		
Three Pillars of Institutions: Cognitive						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Trade linkages	Bilateral Trade	Cuyvers, Soeng, Plasmans and Van Den Bulcke (2011)	RE, OLS 1995-2005 Cambodia	✓		
		Kang and Jiang (2012)	RE 1995-2007 8 Asian economies	✓		
		Camarero, Montolio and Tamarit (2019)	BMA 1996-2012 German outward FDI to 38 developed and 21 developing			✓

Table 2.6: (Continued)

Three Pillars of Institutions: Cognitive						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Non-trade linkages	ASEAN Membership	Cuyvers, Soeng, Plasmans and Van Den Bulcke (2011)	RE, OLS 1995-2005 Cambodia			✓
	Membership of G-15, G20, Commonwealth	Buckley, Forsans and Munjal (2012)	OLS 2000 -2007 Foreign acquisitions by Indian firms	✓ (G20, Commonwealth membership)		
Gravity Model, Transaction Cost Theory and CAGE Model: Geographic						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Physical Distance	Geographic Distance	Bevan and Estrin (2004)	RE 1994- 2000 European Transition Economies		✓	
		Flores and Aguilera (2007)	Probit 1980-2000 147 countries			✓
		Athukorala and Waglé (2011)	2SLS 1995-2009 ASEAN-5		✓	
		Blonigen and Piger (2011)	BMA 2000 OECD member countries	✓		
		Cuyvers, Soeng, Plasmans and Van Den Bulcke (2011)	RE, OLS 1995-2005 Cambodia		✓	

Table 2.6: (Continued)

Gravity Model, Transaction Cost Theory and CAGE Model: Geographic						
Characteristics	Proxies	Empirical Studies	Methodology/ Period/ Sample	Significant (+)	Significant (-)	Insignificant
Physical Distance	Geographical Distance	Buckley, Forsans and Munjal (2012)	OLS 2000 -2007 Foreign acquisitions by Indian firms			✓
		Camarero, Montolio and Tamarit (2019)	BMA 1996-2012 German outward FDI to 38 developed and 21 developing			✓
	Contiguous Border	Blonigen and Piger (2011)	BMA 2000 OECD member countries		✓	
		Camarero, Montolio and Tamarit (2019)	BMA 1996-2012 German outward FDI to 38 developed and 21 developing			✓

Unlike the single model approach, the BMA approach tackles the uncertainty problem in variable selection by averaging quantities of interest, such as a model parameter over different models. The BMA approach can be applied either when there is a lack of theory or when there are a vast number of theories applicable to explain the same phenomenon. Raftery (1995) first proposed the use of the BMA approach to deal with model uncertainty when there is a lack of theory to support variable selection. However, even the BMA approach should be used only to address issues left unresolved by theory, a strong theory, clear conceptualisation and careful measurement remain vital for social research.

In economics, often there is a vast number of theories attempt to explain the same phenomenon (Beck, 2017). Some of the theories can complement each other, while other theories can substitute each other or even be mutually exclusive (Brock and Durlauf, 2001; Beck, 2017). Brock and Durlauf (2001) drew attention to the 'theory open-endedness' problem. This can be explained when two or more competing models propose different variables of the same phenomenon and each of the potential variables using different measurements. In such a situation, a single model approach can lead to false conclusions. Therefore, the BMA approach is more appropriate.

The BMA approach was first applied in statistical studies and then expanded to biological and life sciences, such as medicine, epidemiology, ecology, and other related studies. Later on, BMA was also found in economics, political and social sciences studies, engineering and physical sciences studies (Fragoso et al., 2018), and FDI studies (Blonigen and Piger, 2011; Eicher et al., 2012; Antonakakis and Tondl, 2015; Narteh and Acheampong, 2018; Wang and Zhuang, 2019; Camarero, Montolio and Tamarit, 2019, 2021; Camarero, Moliner and Tamarit, 2021a, 2021b).

Additionally, the implementation of BMA has been found in the linear regression model (Raftery et al., 1997; Clyde et al., 2011), generalised linear models (Vakhitova and Alston-Knox, 2018), Heckit model (Eicher et al., 2012), forecasting in time series model (Vosseler and Weber, 2018), structural equation modelling (Kaplan and Lee, 2016), and other models. BMA has been applied for both the macro-data (Antonakakis and Tondl, 2011; Blonigen and Piger, 2014) and ordinal survey data (Agresti, 2010; Muthukumarana and Swartz, 2014).

As compared to a single model, the BMA approach offers several advantages. First, BMA reduces the chances of overconfidence, that is, underestimated uncertainty, when regression is analysed using a single model approach (Raftery, 1995; Hoeting et al., 1999; Hinne et al., 2020). Second, BMA facilitates inference using a regression model without accounting for variable selection before estimation and provides a better predictive ability than using a single model. Third, BMA is relatively robust to model misspecification. This is because BMA tackles uncertainty over multiple models. Rather than using a single model, multiple models are contributed to the estimation in the BMA analysis. Hence, this improved the chances of at least one of the estimated models being approximately correct (Hinne et al., 2020).

The disadvantage of BMA is that first, some argued that BMA is more about model selection, and model averaging is not necessarily about identifying the true model. Rather it is about the model that is conditioned on the data and the collection of the models (Hinne et al., 2020). Second, the implementation of BMA on model selection can be sensitive to the prior specification. This is because a prior is the component of the posterior model weights that may affect the integrated likelihood and results (Eicher et al., 2007), and it is not always straightforward to identify an appropriate prior for estimation (Hinne et al., 2020).

Besides, the results of BMA for each explanatory variable are reported in terms of posterior inclusion probability (PIP), which represents the key statistic in BMA. PIP summarises the likelihood of all models given a set of explanatory variable is included in the models, and it is an indicator to show whether a specific explanatory variable is likely to be included in the true model (Arin and Baunfels, 2018). In other words, PIP indicates the importance of the independent variable in explaining the dependent variable. The relative importance of each explanatory variable, therefore, can rank according to their PIP (Raftery, 1995; Raftery et al., 1997; Hoeting et al., 1999; Sala-i-Martin et al., 2004; Culka, 2014; Hasan et al., 2018; Borozan and Borozan, 2019).

Given many potential attraction factors or obstacle factors that may FDI and the purpose to rank each factor; facing such a situation of having many possible factors explaining FDI, it can be challenging for this study to find the “correct” model. The BMA approach, therefore, is adopted for analysis to meet the research objectives. In short, BMA is adopted to address two common problems in variable selection, namely, factors that should be considered and included in the model and the relative importance of the factors in a model.

2.7 Conclusion

This chapter reviews and explains how the relevant theories are incorporated to develop the Extended Location framework to provide a deeper understanding of FDI factors in Malaysia. Building on the extended location framework, rather than using a single model, BMA is adopted for analysis. This is because as compared to a single model, BMA reduces the chances of underestimated uncertainty, facilitates inference using a regression model without accounting for variable selection before estimation, provides a better predictive ability and is relatively robust to model misspecification. The conceptualisation of the research framework, data, and model is explained in the next chapter.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter explains the research framework, models, data and analytical approach to identify the key factors affecting FDI in Malaysia. Malaysia needs to boost the country's attractiveness for FDI and reduce firm-level obstacles to improve the investment climate. Hence, the first part looks at country-level evidence to examine the effects of ICT, institutional and economic factors on bilateral FDI in Malaysia. The second part focuses on the firm-level evidence to investigate the effects of firms' perception of ICT, institutional and economic obstacles on FDI in Malaysia. More specifically, this study assesses the importance of attraction and obstacle factors influencing FDI in Malaysia. Doing so provides better insights for policy recommendations to boost Malaysia's investment climate. Figure 3.1 displays an overview of the research framework.

There are a few reasons to justify the importance of country- and firm-level studies. First, most FDI studies on location factors in Malaysia were based on country-level data for analysis (Janicki and Wunnava, 2004; Ang, 2008; Aw and Tang; 2010; Alam and Shah, 2013). Second, although it is important to understand FDI determinants at the country-level study, to improve the investment climate, there is a need to consider firms' concerns too.

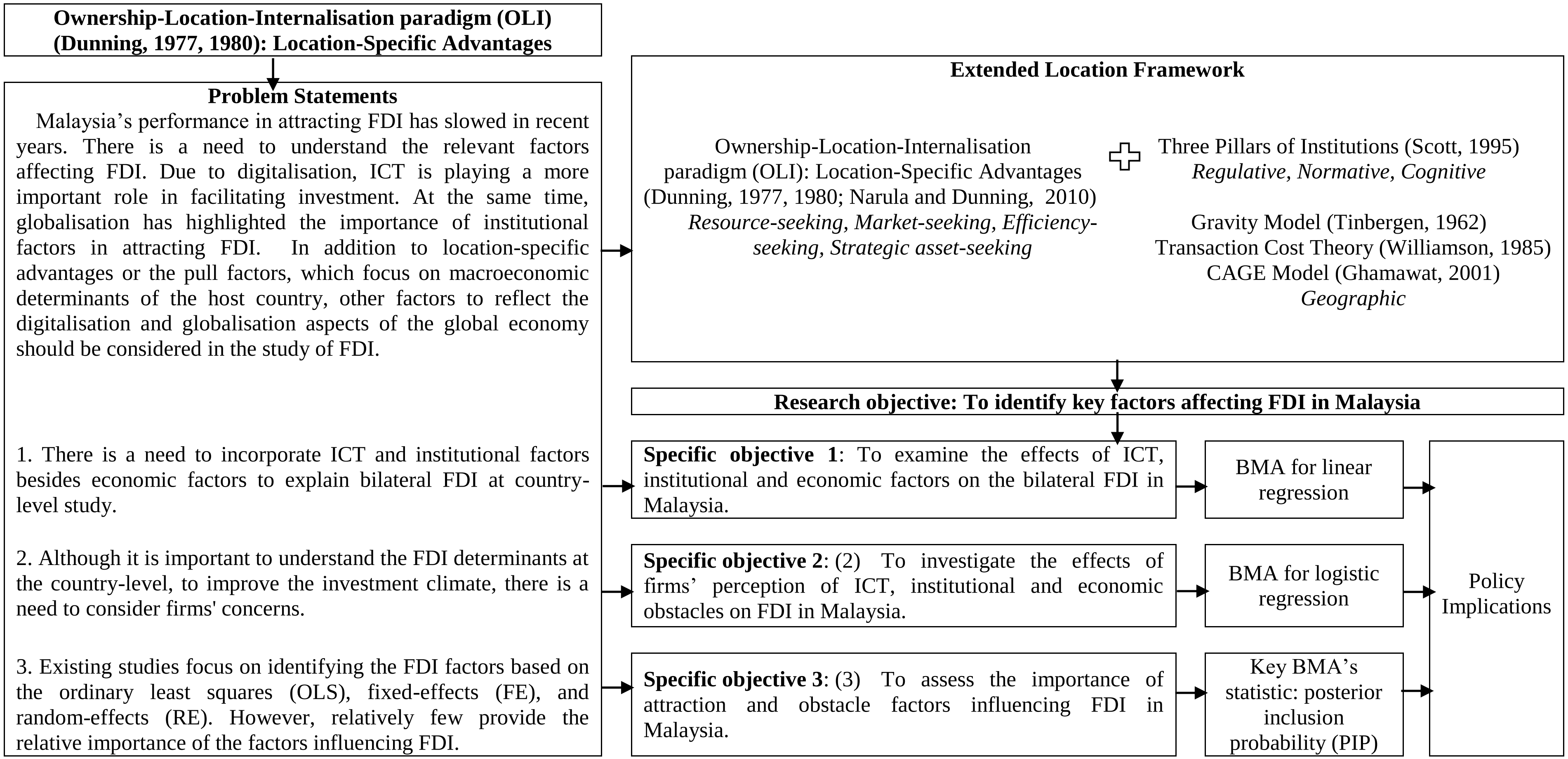


Figure 3.1: An Overview of the Research Framework

This is because when entering the Malaysian market, foreign firms may encounter various institutional barriers to starting a business in a new institutional environment. Understanding the obstacles experienced by foreign firms in doing business in Malaysia will provide insights for policy formulation to reduce potential barriers to help foreign companies to adapt to the local business environment. Hence, in addition to country-level evidence, firm-level evidence gives additional insights into policy implications.

The remaining organisation of this chapter is as follows. Section 3.2 provides an overview of the conceptual framework, Section 3.3 explains the model, sample and variables, analytical approach and model specification for country-level analysis, while Section 3.4 explains the model, sample and variables, analytical approach and model specification for firm-level analysis, Section 3.5 addresses the methodological challenges and solutions, and Section 3.6 concludes this chapter.

3.2 An Overview of the Conceptual Framework

This section conceptualises the extended location framework as shown in Figure 3.1 for the country- and firm-level studies. In the past, FDI studies were developed mainly based on Dunning's OLI paradigm. In particular, the second pillar of Dunning's paradigm, the location-specific advantage has been widely used to examine the host nation's characteristics in attracting FDI or the pull factors. The era of digitalisation has shed light on the importance of ICT, while globalisation highlights the importance of economic, political and social institutions in facilitating investment.

At the country-level study, this study identifies three main dimensions to incorporate the effects of ICT, institutional and economic factors on FDI, namely, Information and Communication Technology-Economic-Institutional (ICT-E-I), while at the firm-level study, this study investigates the effects of perceived ICT, institutional and economic obstacles on FDI as displayed in Figure 3.2.

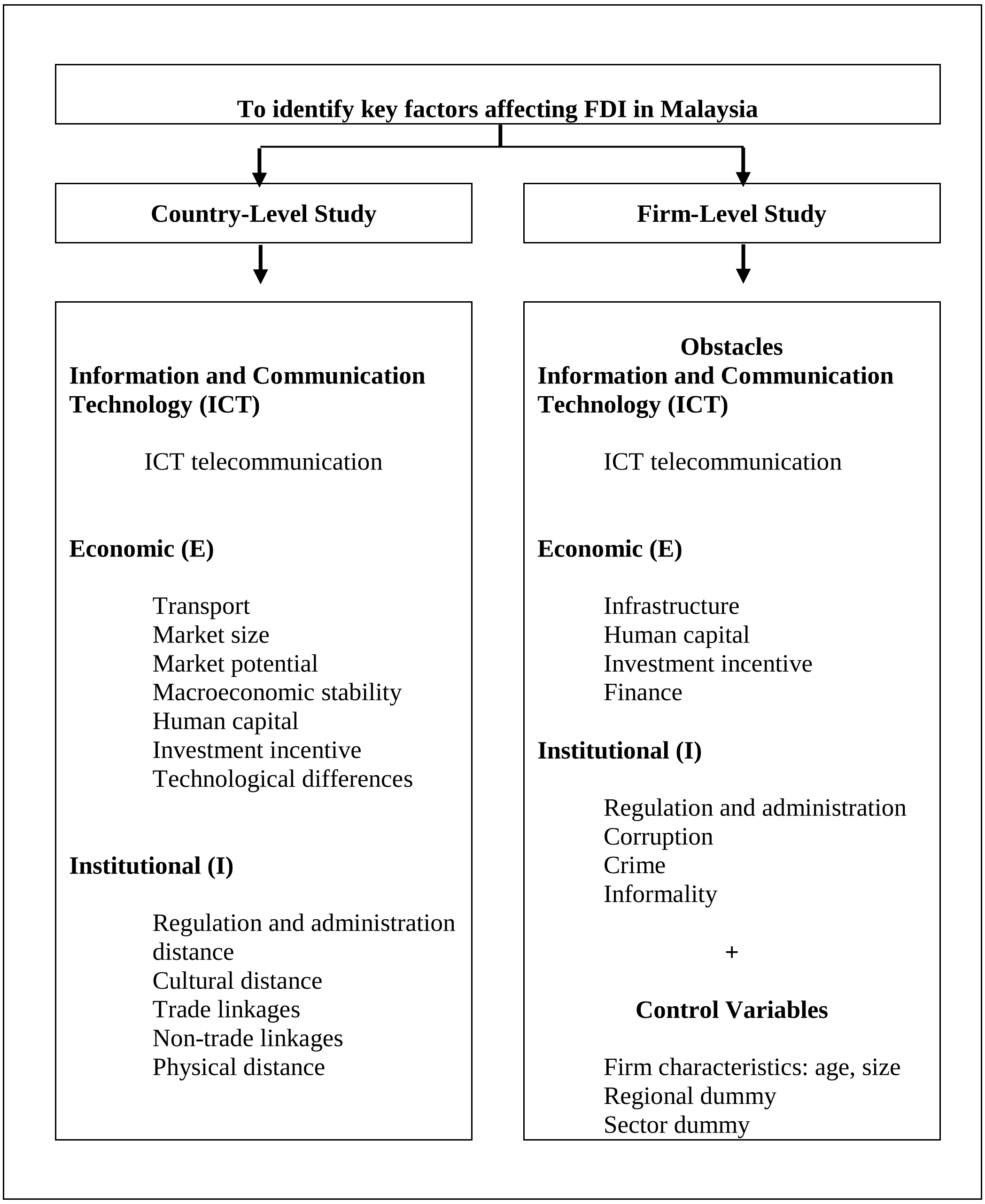


Figure 3.2: An Overview of the Conceptual Framework

In general, this study has developed three main dimensions, namely, Information and Communication Technology (ICT), Economic (E), and Institutional (I) to identify the key factors affecting FDI in Malaysia as described as follows.

Country-Level Study

Information and Communication Technology (ICT). Rapid information and communications technology (ICT) development has transformed the world into a digital economy. This new paradigm represents a major change in daily lives, the way of doing business and communication. The key phenomenon of a digital economy is the increasing use of ICT tools to facilitate communications. Hence, this study looks into the effects of ICT tools on FDI. This dimension is coined as information and communication technology (ICT). The ICT-dimension reflects the importance of ICT factors in attracting FDI, particularly to capture the effects of various ICT telecommunication factors on FDI.

Economic (E). This study relooks into the macroeconomic determinants, the economic (E) dimension which is the host country's characteristics in terms of transport, market size, market potential, macroeconomic stability, human capital, investment incentive and technological differences. It reflects the economic factors in attracting FDI, particularly to capture the effects of various economic factors on FDI.

Institutional (I). There is no consensus on the definition of globalisation. Building on three pillars of institutions, the gravity model, transaction cost theory and CAGE model, this study looks at the globalisation effects of FDI that focus on the institutional elements of FDI by considering the political and social dimensions of globalisation according to four pillars i.e., regulative, normative, cognitive and geographic. This dimension is coined as institutional (I), consisting of various political and social institutional characteristics in terms of regulation and administration distance, cultural distance, trade and non-trade linkages and physical distance between home and host economies. This dimension reflects the institutional factors in attracting FDI, particularly to capture the effects of various institutional factors on FDI.

Firm-Level Study

At the firm-level study, this study investigates obstacles for foreign firms to doing business in Malaysia. Upon entering the country, foreign firms face various degrees of business barriers in a new institutional environment. Hence, to improve the investment climate, there is a need to consider foreign firms' perceptions of the business environment in Malaysia.

Obstacles. Based on the World Bank's Enterprise Surveys 2015, the host country's characteristics in terms of ICT telecommunication, infrastructure, human capital, investment incentive, finance, regulation and administration, corruption, crime and informality are considered for firm-level analysis, in particular, to capture the effects of various perceived ICT (telecommunication), economic (infrastructure, human capital, sources of finance and investment incentives) and institutional (regulation and administration, corruption, crime and informality) obstacles on FDI in Malaysia.

Control Variables. In addition, as there are concerns regarding firms' heterogeneity issues, for instance, efficient firms by nature are more adaptable to the business environment in overcoming obstacles (Aterido, Hallward-Driemeier and Pagés, 2007; Kinda, 2010). A firm's perceptions of a business environment may vary according to the firm's size. Different sectors and development levels in different regions may have different impacts on FDI to capture such effects. Past studies included the country-industry, industry and state dummies (Aterido et al., 2007; Honorati and Mengistae, 2007). Besides, this study includes the firm's characteristics as well as regional and sector dummies to control the firm's heterogeneity issues.

3.3 Country-Level Study

The country-level study provides a general understanding of the investment climate in Malaysia. Using the BMA for the linear regression, the country-level study examines the effects of ICT, institutional, and economic factors on bilateral FDI in Malaysia.

3.3.1 Country-Level Analysis: ICT-E-I Model

Recall the ICT-E-I framework (Figure 3.2), the ICT-E-I model is expressed as:

$$FDI = f\,(ICT, E, I) \tag{3.1}$$

Information and communication technology (ICT) captures the ICT factors (ICT telecommunication). The economic (E) dimension captures the economic factors (transport, market size, market potential, macroeconomic stability, human capital, investment incentive, and technological differences). The institutional (I) dimension captures the institutional factors (regulation and administration distance, cultural distance, trade linkages, non-trade linkages, and physical distance).

3.3.1.1 Sample

This study utilised the bilateral FDI statistics from the ASEAN Statistics Division for the period 2010 to 2017 for analysis. FDI flows or stock data are commonly available at the aggregate level. Most of the earlier studies either use FDI flows (Asiedu, 2006; Harding and Javorcik, 2011; Asongu et al., 2018; Economou, 2019) or stock data (Blonigen and Piger, 2011; Kang and Jiang, 2012; Antonakakis and Tondl, 2015; Camarero et al., 2019) or other operational data such as sales or employment (Wacker, 2016), approved FDI (Cuyvers et al., 2011) to measure foreign direct investment. For Malaysia, the FDI statistics are available in the form of aggregate FDI statistics from the World Bank. However, the bilateral FDI statistics are limited.

The present study requires bilateral FDI statistics (by partner country) for country-level analysis, in particular, to examine the effects of institutional factors on FDI, such as institutional differences and cultural distance. Although UNCTAD published the bilateral FDI statistics in 2014, only a few years of data are available. FDI flows data are available from 2001 to 2006 and the period 2008 to 2012, while FDI stock data are available from the period 2008 to 2012. On the other hand, the availability of bilateral FDI statistics by the ASEAN Statistics Division is from the year 2010 onwards. However, the bilateral FDI statistics are limited to 8 years period. Since these 8 years captured the period where there is the intensification of globalisation and digitalisation, and Malaysia was experiencing a downturn in FDI inflows, therefore, this study opts to use the bilateral FDI statistics that were collected from the ASEAN Statistics Division for the period 2010 to 2017 for analysis.

Based on the available bilateral FDI statistics for the period 2010 to 2017, a panel of 32 active FDI partners for Malaysia was selected for analysis (Table 3.1). These 32 active FDI partners for Malaysia comprise developed and developing economies (UNCTAD country classification), where the top 10 most active FDI partners for Malaysia for the period 2010 to 2017 were Japan, Singapore, Netherlands, Hong Kong, the United States, China, United Kingdom, Germany, Korea South and Thailand.

Table 3.1 Aggregate Bilateral FDI net Inflows to Malaysia for the Period 2010 to 2017 (By Selected Economies)

Economies	Developed/ Developing Economy	Rank	Total (US$ million)
Japan	Developed	1	13731.48
Singapore	Developing	2	13498.17
Netherlands	Developed	3	8573.12
Hong Kong	Developing	4	8130.13
United States	Developed	5	4224.11
China	Developing	6	3740.13
United Kingdom	Developed	7	2534.79
Germany	Developed	8	2292.26
Korea South	Developing	9	1857.01
Thailand	Developing	10	1474.31
Indonesia	Developing	11	1238.76
France	Developed	12	1180.28
Spain	Developed	13	1086.51
Philippines	Developing	14	790.33
New Zealand	Developed	15	615.83
Vietnam	Developing	16	493.35
Denmark	Developed	17	310.83
Sweden	Developed	18	255.58
Taiwan	Developing	19	229.71
Belgium	Developed	20	214.31
Australia	Developed	21	206.56
Canada	Developed	22	195.52
Luxembourg	Developed	23	96.51
Italy	Developed	24	77.05
Finance	Developed	25	3.37
Pakistan	Developing	26	2.78
Portugal	Developed	27	1.87
Greece	Developed	28	1.24
Russian Federation	Developing	29	-9.62
Austria	Developed	30	-108.93
India	Developing	31	-185.25
Ireland	Developed	32	-545.54

Source: ASEAN Statistics Division

3.3.1.2 Variables Description

In this study, the country-pair characteristics are defined as country pairs between Malaysia and home. Home is referred to the individual economies of the selected 32 active FDI partners for Malaysia from developed and developing economies as described above. Variables are selected based on the ICT-E-I framework and literature.

Dependent Variable

Foreign direct investment (FDI). At country-level study, foreign direct investment (FDI) is measured using the real bilateral FDI net inflows from home to Malaysia. The "net" value implies that reverse investment, loans, and repayments of the intra-company loan of a foreign affiliate to its parent company are deducted from the FDI gross inflows. The data were obtained from ASEAN Statistics. Bilateral FDI net inflows were converted into real value using the GDP deflator (2010= 100).

Independent Variables: ICT-Dimension

The ICT-dimension considered the country-pair characteristics such as the ICT telecommunication. Where ICT telecommunication is measured using mobile-cellular telephone subscriptions (MCS) and ICT telecommunication infrastructure(ITI) as described below.

ICT telecommunication. As a result of the increasing pace of digitalisation, it only happened in recent years that studies started to examine the relationship between ICT and FDI (OECD, 2008a). In the study of Gani and Sharma (2003), ICT and the diffusion of new ICT tools such as mobile phones, and Internet hosts have significantly attracted FDI inflows. Furthermore, Choi (2003) showed a positive relationship between the growth of Internet users and FDI inflows, and the growth of Internet hosts and FDI inflows. The use of the Internet could reduce the searching cost for business to business (B2B), business to consumer (B2C) as well as business to government (B2G). Lower cost is, therefore, leading to higher productivity and thus promoting FDI inflows. In developed countries, ICTs were found positively related to FDI inflows, while in developing countries, no significant results were found between ICT and FDI inflows (Gholami, Lee and Heshmati, 2005). Hence, to address the growing importance of various forms of digital infrastructure, this research looks at various forms of ICT telecommunication.

Different indicators have been used to measure ICT. For instance, fixed telephone, mobile telephone, internet users, fixed broadband and internet servers have been used to measure the telecommunication infrastructure for Asian (Pradhan et al., 2017; Latif et al., 2018; Arvin et al., 2021). While, mobile telephone, fixed broadband and internet users have been used to measure ICT for rich and poor countries (Appiah-Otoo and Song, 2021). Due to the limited availability of data for internet servers, this study considers fixed telephone subscriptions (FTS), fixed broadband subscriptions (FBS), mobile-cellular telephone subscriptions (MCS), and internet usage (IU) as a measure of ICT based on the data published by the International Telecommunication Union (ITU).

However, the simultaneous introduction of these variables might lead to a multicollinearity problem. A solution is to generate aggregated indices using the Principal Component Analysis (PCA) (Kinda, 2009) for data reduction (Johnson and Wichern, 2007). This study uses both the PCA and biplot to facilitate the data reduction and meaningful interpretation of the four ICT telecommunication indicators. The PCA explains the variance-covariance structure of a set of variables using a few linear combinations of these variables (Gabriel, 1971). The biplot displays a visual appraisal of large data matrices' structure to guide the interpretation of PCA (Kohler and Luniak, 2005).

Table 3.2 shows the eigenvalue, and factor loadings of the principal component, and correlation matrix. To determine which principal components should be extracted, one of the most commonly used criteria for principal component selection is the Kaiser-Meyer-Olkin (KMO) criterion, also known as the eigenvalue-one criterion. Using the KMO criterion, the principal components with eigenvalues greater than 1 will be retained. In this case, principal component 1 (PC1) is retained, including FBS, FTS, IU, and MCS. Next, it is to determine the correlation between the variable and principal component based on the selected PC1. A correlation value above 0.5 is considered important. Among the four ICT infrastructure indicators, MCS has the lowest factor loading in PC1 and the correlation coefficients with other indicators are less than 0.5. Based on the principal component and correlation analysis, this study uses three variables (FBS, FTS and IU) to develop the composite index for ICT telecommunication infrastructure (ITI).

Table 3.2: Eigenvalues, Difference, Cumulative Proportion of Variation, Factor Loadings and Correlation Matrix

Principal Component (PC)	Eigenvalue	Difference	Cumulative Proportion
1	2.678	1.749	0.670
2	0.929	0.619	0.902
3	0.310	0.227	0.979
4	0.083	---	1.000

Factor Loadings				
Variable	PC1	PC2	PC3	PC4
FBS	0.582	-0.173	-0.247	0.755
FTS	0.536	-0.164	0.807	-0.187
IU	0.573	-0.033	-0.532	-0.623
MCS	0.214	0.971	0.074	0.082

Correlation Matrix				
	FBS	**FTS**	**IU**	**MCS**
FBS	1.00			
FTS	0.79	1.00		
IU	0.90	0.70	1.00	
MCS	0.18	0.18	0.28	1.00

Besides, Figure 3.3 displays the PCA-biplot of the first two principal components. All variables (FTS, FBS, MCS, IU) have positive values on the PC1 axis, while MCS has a positive value and FTS, FBS and IU have negative values in PC2. The first principal component has a large positive associated with FBS (0.582), IU (0.573), and FTS (0.536), while the second principal component has a large positive associated with MCS (0.971). Kaiser's rule and the biplot inspection have suggested that MCS is to be constructed as a separate variable while the other three variables (FBS, FTS and IU) are to be grouped to form the ITI. Thus, ICT telecommunication is measured using two variables. The first variable is the mobile-cellular telephone subscriptions (MCS), and the second variable is the ICT telecommunication infrastructure (ITI).

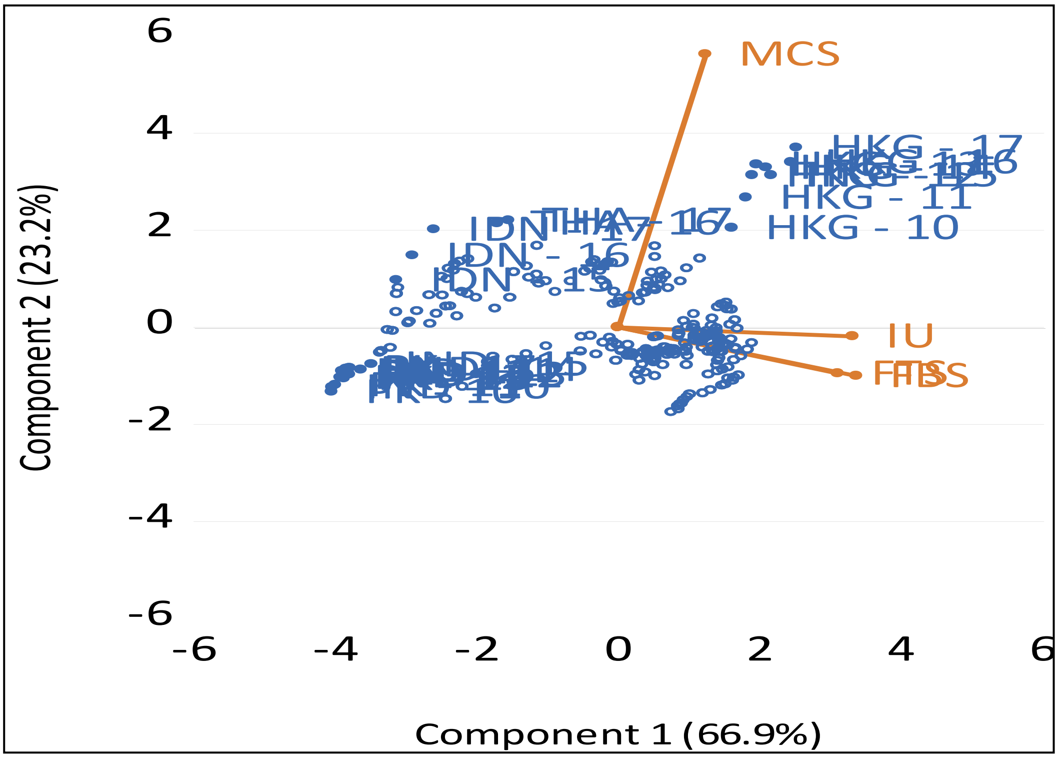


Figure 3.3: Principal Components and Loadings Biplot

MCS is the ratio of mobile-cellular telephone subscriptions of Malaysia to home, while ITI is the ratio of ICT telecommunication infrastructure of Malaysia to home, whereby the ITI is represented by a composite variable of fixed broadband subscriptions (FBS), internet users (IU), and fixed telephone subscriptions (FTS) based on the Principal Component Analysis (PCA). Data were collected from the International Telegraph Union (ITU).

Independent Variables: E-Dimension

The E-dimension considered transport, market size, market potential, macroeconomic stability, human capital, investment incentive and technological differences. Where transport is measured using the logistics index (LOGIS), market size is measured using the gross domestic product (GDP) and trade openness (OPEN), the market potential is measured using gross domestic product growth (GDPG), macroeconomic stability is measured by inflation rate (INF) and exchange rate (ER), human capital is measured using Human Development Index (HDI), investment incentive is measured using corporate tax rate (TAX), and technological differences are measured using patent (PT) as described below.

Transport. Different indicators have been used to measure transportation, such as total roads (Wong, 2005; Sahoo and Dash, 2009), rail lines (Sahoo and Dash, 2009; Camarero, Montolio and Tamarit, 2019), and airports (Sahoo and Dash, 2009; Petri, 2012), or government expenditure on infrastructure (Kinuthia and Murshed, 2015). Since limited data is available for transport such as rails and roads, this study uses the logistics performance index (LPI) to measure the transport infrastructure available for ease of connectivity. The data were collected from the World Development Indicators (WDI), World Bank. The LPI overall score reflects the perceptions of an economy's logistics. Since the availability of the LPI data is for 2007, 2010, 2012, 2014, 2016 and 2019, the logistics index (LOGIS) is computed as a simple average score of LPI for the years 2010, 2012, 2014 and 2016.

Transport is a variable measured using the logistics index (LOGIS), representing a difference in logistics index between Malaysia and home that is expressed as an absolute value.

Market size. Empirical studies in Malaysia found a significant positive relationship between market size and FDI (Ang, 2008; Mugableh, 2015). Also, MNEs tend to invest in an export-oriented country rather than invest in a country with a closed economy (Choong and Lam, 2010). The larger the country's market size, in terms of the gross domestic product, is associated with higher the FDI inflow. Similarly, the higher the degree of openness, in terms of trade openness, is associated with higher FDI inflow. Hence, the domestic market size is measured using the two common proxies, gross domestic product (GDP) and trade openness (OPEN). The data were collected from the World Development Indicators (WDI), World Bank, and Taiwan Statistical Data Book 2017.

Gross domestic product (GDP) is the real gross domestic product (Millions of constant 2010 US$). GDP is the ratio of the real GDP of Malaysia to home (Millions of constant 2010 US$). In addition, trade openness (OPEN) is the sum of exports and imports per gross domestic product. OPEN measures the ratio of the real trade openness of Malaysia to home (constant 2010 US$).

Market potential. A fast-growing economy provides more opportunities than a slow-growing economy. Rapid economic growth in a country, in terms of gross domestic product growth, stimulates FDI inflows. Thus, the market potential is considered besides market size. The study conducted by Ang (2008) showed a significant positive relationship between market potential and FDI. The market potential is measured using real gross domestic product growth (GDPG) (constant 2010 US$). The data were collected from the World Development Indicators (WDI), World Bank, and Taiwan Statistical Data Book 2017. GDPG measures the difference in the real gross domestic product growth between Malaysia and home.

Macroeconomic stability. Macroeconomic stability is essential for economic development and growth to attract investment. Followed the past studies in Malaysia, macroeconomic stability is measured using the two common proxies, inflation rate (INF) and exchange rate (ER) (Ang, 2008; Aw and Tang, 2010; Shahrudin, Yusof and Satar, 2010; Tang, Yip and Ozturk, 2014; Mugableh, 2015). Generally, a high inflation rate is expected to discourage FDI inflows into Malaysia. A real deprecation of the host's currency is expected to have a positive effect on FDI inflows. The inflation and exchange rate data were collected from World Development Indicators (WDI), World Bank, and Taiwan Statistical Data Book 2017.

The inflation rate (INF) is measured by the annual growth rate of the GDP deflator, which shows the rate of price change in the economy. The GDP deflator is the ratio of nominal GDP to constant GDP. INF measures the difference in the real inflation rate between Malaysia and home. In addition, the exchange rate (ER) is measured by the real exchange rate, representing the ratio of the real exchange rate of Malaysia to home (per US$). Since there are two common indicators, namely inflation rate and exchange rate to examine macroeconomic stability, the exchange rate is used for robustness checks.

Human capital. Human capital is critical to improving the investment climate and attracting FDI. However, measuring human capital can be challenging because human capital is not directly observable and intangible (Arbak, 2012). Different conventional approaches have been used in the literature to measure human capital: cost-based, output-based, and income-based. The cost-based approach is based on the direct expenditures on schools, including the opportunity cost. The output-based approach is based on school enrollment rates (Barro, 1991; Barro and Lee, 1993). However, the drawback of the output-based approach is that a student's effectiveness can be recognised after participating in production activities. The income-based approach is based on the income received by individuals. The conventional measurement of human capital slightly considers the qualitative benefits of human capital, for instance, fertility and child mortality, and health (Lewin et al., 1983; Woodhall, 2001). Hence, a new measurement for human capital is required. In particular, the Human Development Index (HDI) has been used in various studies (Globerman and Shapiro 2003; Seyoum, 2011; Karimi, Law, Lee and Yusop, 2013) to reflect the level of human capital at the national level.

This study followed Karimi, Law, Lee and Yusop (2013) in which human capital is measured using the Human Development Index (HDI). HDI is a composite index of 'life expectancy', 'education' and 'standard of living. Where the life expectancy index is based on life expectancy at birth, the education index is based on the expected years of schooling and average years of schooling. The standard of living index is based on the adjusted gross national income per capita (PPP$). HDI values fall between 0 (lowest) to 1 (highest). The data were obtained from the United Nations Development Program (UNDP). HDI measures the difference in the HDI between Malaysia and home expressed as an absolute value.

Investment incentive. In Malaysia, tax incentives are mainly applied in corporate tax exemptions and tax allowances such as financial assistance for training and research and development (R&D) grants. An empirical study in Malaysia found that FDI inflows were negatively related to the corporate tax rate. The findings results are in line with the argument that lowering the corporate tax rate is an effective policy instrument to boost inward FDI (Ang, 2008). In this study, investment incentive is measured using the statutory corporate tax rate (TAX) that is expressed in percentage. The data were obtained from KPMG International Limited. Since similar corporate tax rates between home and Malaysia were found in certain years, measurement in terms of a difference in the corporate tax rate between Malaysia and home will result in a zero value. Hence, in this study, TAX is measured as the ratio of corporate tax rate between Malaysia and home.

Technological differences. Technological differences between the home and host countries have long been regarded as one of the factors affecting the FDI flows (Ly, Esperança and Davcik, 2018). The patent can be used as an indicator for measuring technological progress. Hence, in this study, technological differences are measured in terms of the number of patent applications by residents (PT). The data were collected from World Development Indicators (WDI) published by the World Bank and Taiwan Statistical Data Book 2017, and the Taiwan Intellectual Property Office (TIPO). PT measures the difference in the number of patent applications (residents) between Malaysia and home expressed as an absolute value.

Independent Variables: I-Dimension

The I-dimension considered regulation and administration distance, cultural distance, trade linkages, non-trade linkages, and physical distance. Where regulation and administration distance is measured using the economic freedom Index (EFI) and governance index (GI), cultural distance is measured using cultural distance (CD) and language (LANG), trade linkages are measured using bilateral trade (BT), non-trade linkages are measured using geographic distance (GDIST) and contiguous border (CONTI) as described below.

Regulation and administration distance. Regulation and administration distance captures two institutional characteristics, namely market liberalisation and institutional distance. This study followed Kang and Jiang (2012), the degree of market liberalisation is measured using the composite economic freedom index (EFI). The EFI is computed using the average scores of the five indices: 1) business freedom; 2) financial freedom; 3) freedom from corruption; 4) monetary freedom, and 5) property rights. The economic freedom index is graded on a scale from 0 (lowest) to 100 (highest). The data were collected from the Economic Freedom Index, Heritage Foundation. EFI measures the difference in the degree of economic freedom between Malaysia and home expressed as an absolute value.

This study adopts the measurement developed by Kaufman, Kraay and Mastruzzi (2007) where institutional distance is measured using the composite governance index (GI). The GI is computed using the average scores of the six indices: (1) control of corruption; (2) government effectiveness; (3) political stability and absence of violence; (4) regulatory quality; (5) rule of law; and (6) voice and accountability. The Worldwide Governance Indicators (WGI) has graded all economies worldwide, in percentile rank ranging from 0 (lowest) to 100 (highest). The data were collected from the World Governance Indicators (WGI) published by the World Bank. GI measures the difference in institution governance between Malaysia and home (percentile rank) expressed as an absolute value.

Cultural Distance. Cultural distance between the home and host economies is measured in terms of culture and language. Culture captures the cultural distance between home economies and Malaysia. Cultural distance (CD) is the composite cultural distance index (CD). This study uses the method developed by Kogut and Singh (1988), the CD is computed using the four original cultural dimensions of Hofstede's study (1980): (1) power distance; (2) uncertainty avoidance; (3) individualism, and (4) masculinity. The score of each dimension is measured on a scale of 0 (low) to 100 (high), for instance, power distance (high versus low), uncertainty avoidance (high versus low), individualism versus collectivism, and masculinity versus Femininity. The data were obtained from Hofstede's study (1980).

The Kogut and Singh (1988) formula is a simple standardised quantitative measure of cultural distance:

$$CD_{ij} = \frac{1}{n}\sum_{d=1}^{n}\left(\frac{\left(I_j^d - I_i^d\right)^2}{v^d}\right) \tag{3.2}$$

Where, CD_{ij} is the cultural distance between home, i and Malaysia, j. I^d is the index of a country in the dimension d; v^d is the variance of the index for dimension d, and n is the number of cultural dimensions. This measure of cultural distance is a particular case of the Mahalanobis distance. The covariances across all dimensions are assumed to be zero. The cultural distance is then calculated as the deviation along every four cultural dimensions of Hofstede (power distance, uncertainty avoidance, individualism, and masculinity) between the home and Malaysia. CD measures the cultural distance between Malaysia and home. Language (LANG), is the common language spoken by at least 20% of the population of the country. The data were collected from the CEPII. LANG is represented by a dummy variable with a value of 1 for the presence of common languages spoken by at least 20% of the population between home and Malaysia, 0 otherwise.

Trade Linkages. Trade linkages, which refer to the intensity of economic relations between the two economies are measured using the bilateral trade (BT) value between the two economies (Buckley et al., 2012; Kang and Jiang, 2012). The data were obtained from the Organisation for Economic Co-operation and Development (OECD). BT measures the bilateral trade value as a sum of export and imports (Thousands of US$) between home and Malaysia.

Non-Trade Linkages. Non-trade linkages refer to the socio-political-economic linkages. According to Dunning (2006), the economic, social, or political ties between home and host economies can be a source of competitive advantage for MNEs to base in countries that have such links. For instance, membership in international organisations and free trade agreements (FTAs) may benefit trade and investment among member countries (Medvedev, 2006; Buckley, Forsans and Munjal, 2012). Malaysia has adopted liberalisation policies in facilitating trade and investment. As one of the members of the ASEAN, Malaysia has participated in several FTAs through ASEAN to enhance its competitiveness and strengthen investors' confidence to invest in Malaysia. For instance, the ASEAN Free Trade Area (AFTA); ASEAN-China

Free Trade Agreement (ACFTA); ASEAN-Korea Free Trade Agreement (AKFTA); ASEAN-Japan Comprehensive Economic Partnership (AJCEP); ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA), and ASEAN-India Free Trade Agreement (AIFTA). Therefore, non-trade linkages capture the socio-political-economic ties between Malaysia and home. These linkages are measured using free trade agreement (FTA). FTA is represented by a dummy variable with a value of 1 if the home has a free trade agreement with the ASEAN, and 0 otherwise.

Physical Distance. Geographic distance (GDIST) and contiguous border (CONTI) measure the physical distance between home and Malaysia. The data were obtained from the CEPII. GDIST measures the physical distance between home and Malaysia (Capital city). In addition, CONTI is represented by a dummy variable to indicate whether home economies and Malaysia are geographically contiguous. CONTI has a value of 1 if Malaysia and home are geographically contiguous, and 0 otherwise. Since there are two indicators for physical distance, the contiguous border is used for robustness checks.

Table 3.3: Summary of the Descriptions of Dependent and Independent Variables: Country-Level Evidence

Characteristics	Variable	Measurement	Theoretical Justification	Expected sign	Data Source
	Foreign Direct Investment (FDI)	Real bilateral FDI net inflows (Millions of constant 2010 US$).	OLI paradigm		ASEAN Statistics
Information Communication and Technology (ICT)					
ICT Factors					
ICT Telecommunication	Mobile-Cellular Telephone Subscriptions (MCS)	Relative mobile-cellular telephone subscriptions (per 100 populations), the ratio of the mobile-cellular telephone subscriptions of Malaysia to home in natural logarithms. $$ln\left(\frac{MCS_j}{MCS_i}\right) = lnMCS_j - lnMCS_i$$	Resource-seeking (OLI paradigm)	+	ITU, International Telegraph Union
	ICT Telecommunication Infrastructure(ITI)	Relative ICT telecommunication infrastructure, the ratio of ICT telecommunication infrastructure of Malaysia to home (per 100 population) in natural logarithms. $$ln\left(\frac{ITI_j}{ITI_i}\right) = lnITI_j - lnITI_i$$ Where, ICT telecommunication infrastructure is a composite variable of the average value of fixed broadband subscriptions (FBS), internet users (IU), and fixed telephone subscriptions (FTS) based on the Principal Component Analysis (PCA).	Resource-seeking (OLI paradigm)	+	ITU, International Telegraph Union

Table 3.3 (Continued)

Characteristics	Variable	Measurement	Theoretical Justification	Expected sign	Data Source
Economic (E)					
Economic factors					
Transport	Logistics Index (LOGIS)	Difference in the logistics index between Malaysia and Home is expressed as an absolute value. $$\left\| LOGIS_j - LOGIS_i \right\|$$ Where, The logistics index (LOGIS) is computed using the average score of the overall logistics performance index for the years 2010, 2012, 2014, and 2016.	Resource-seeking (OLI paradigm)	-	WDI, World Bank
Market size	Gross Domestic Product (GDP)	Relative real GDP (Millions of constant 2010 US$), the ratio of the Real GDP of Malaysia to home in natural logarithms. $$ln\left(\frac{GDP_j}{GDP_i}\right) = lnGDP_j - lnGDP_i$$	Market-seeking (OLI paradigm)	+	WDI, World Bank
	Trade Openness (OPEN)	Relative real trade openness (constant 2010 US$), the ratio of the real trade openness of Malaysia to home in natural logarithms. $$ln\left(\frac{OPEN_j}{OPEN_i}\right) = lnOPEN_j - lnOPEN_i$$ Where, Trade openness = (Exports + Imports)/ GDP	Market-seeking (OLI paradigm)	+	UNCTAD

Table 3.3 (Continued)

Characteristics	Variable	Measurement	Theoretical Justification	Expected sign	Data Source
Market potential	Gross Domestic Product Growth (GDPG)	Difference in the real GDP growth rate (constant 2010 US$) between Malaysia and home. $$GDPG_j - GDPG_i$$	Market-seeking (OLI paradigm)	+	WDI, World Bank
Macroeconomic stability	Inflation Rate (INF)	Difference in the real inflation rate (GDP deflator) between Malaysia and home. $$INF_j - INF_i$$	Efficiency-seeking (OLI paradigm)	-	WDI, World Bank
	Exchange Rate (ER)	Relative real exchange rate, the ratio of the real exchange rate of Malaysia to home (per US$) in natural logarithms. $$ln\left(\frac{ER_j}{ER_i}\right) = lnER_j - lnER_i$$	Efficiency-seeking (OLI paradigm)	-	WDI, World Bank
Human capital	Human Development Index (HDI)	Difference in the HDI between Malaysia and home is expressed as an absolute value in natural logarithms. $$ln\left\lvert HDI_j - HDI_i\right\rvert$$ Where, HDI is a composite index of life expectancy, educational attainment, and standard of living.	Efficiency-seeking (OLI paradigm)	-	UNDP

Table 3.3 (Continued)

Characteristics	Variable	Measurement	Theoretical Justification	Expected sign	Data Source
Investment incentive	Corporate Tax Rate (TAX)	Relative corporate tax rate, the ratio of corporate tax rate between Malaysia and home. $$\frac{TAX_j}{TAX_i}$$	Efficiency-seeking (OLI paradigm)	-	KPMG
Technological differences	Patent (PT)	Difference in the number of patent applications (residents) between Malaysia and home is expressed as an absolute value in natural logarithms. $$ln\lvert PT_j - PT_i \rvert$$	Strategic asset-seeking (OLI paradigm)	-	WDI, World Bank
Institutional (I)					
Institutional Factors					
Regulation and administration distance	Economic Freedom Index (EFI)	Difference in the degree of economic freedom between Malaysia and home is expressed as an absolute value in natural logarithms. $$ln\lvert EFI_j - EFI_i \rvert$$	Regulative (Three Pillars of Institutions)	-	Heritage Foundation

Table 3.3 (Continued)

Characteristics	Variable	Measurement	Theoretical Justification	Expected sign	Data Source
Regulation and administration distance	Governance Index (GI)	Difference in the degree of institution governance between Malaysia and home (percentile rank) is expressed as an absolute value in natural logarithms. $$ln\left\|GI_j - GI_i\right\|$$ Where, GI is computed using the average scores of the six indices: 1) control of corruption; 2) government effectiveness; 3) political stability and absence of violence; 4) regulatory quality; 5) rule of law; and 6) voice and accountability.	Regulative (Three Pillars of Institutions)	-	WGI, World Bank
Cultural distance	Cultural Distance (CD)	Cultural distance between Malaysia and home. Where, The cultural distance index is computed using the original four cultural dimensions of Hofstede's study based on the Kogut and Singh (1988) method.	Normative (Three Pillars of Institutions)	-	Hofstede Values Survey
	Language (LANG)	Dummy 1 for the presence of a common language spoken by at least 20% of the population between home and Malaysia, 0 otherwise.	Normative (Three Pillars of Institutions)	+	CEPII
Trade linkages	Bilateral Trade (BT)	Bilateral trade value as a sum of export and imports (Thousands of US$) between home and Malaysia in natural logarithms.	Cognitive (Three Pillars of Institutions)	+	WITS

Table 3.3 (Continued)

Characteristics	Variable	Measurement	Theoretical Justification	Expected sign	Data Source
Non-trade linkages	Free Trade Agreement (FTA)	Dummy 1 if Malaysia and home have a free trade agreement, 0 otherwise.	Cognitive (Three Pillars of Institutions)	+	
Physical distance	Geographic Distance (GDIST)	Physical distance between the capital city of home and Malaysia (in kilometres) in natural logarithms.	Transaction Cost Theory Gravity Model CAGE Model	-	CEPII
	Contiguous Border (CONTI)	Dummy 1 for home economies and Malaysia that are geographically contiguous, 0 otherwise.	Transaction Cost Theory Gravity Model CAGE Model	+	CEPII

**Home is referred to the individual economies of the selected 32 active FDI partners from developed and developing economies.*
** Taiwan statistics are obtained from Taiwan Statistical Data Book (2017).*

3.3.2 Analytical Approach: BMA for Linear Regression

This section explains the analytical approach selected to study the effects of ICT, institutional and economic factors on bilateral FDI in Malaysia. In a basic framework of a single linear model:

$$y_{it} = x_{it}'\beta + z_i'\alpha + \varepsilon_{it} \tag{3.3}$$

The x_{it} represents a set of explanatory variables, K. The individual effect or the heterogeneity is $z_i'\alpha$ where z_i contains a constant term and a set of individual-specific variables, which may be the observed or unobserved individual heterogeneity. The stochastic error term is ε_{it} . If z_i is observed for all individuals and z_i contains only a constant term, the linear regression model can be written as:

$$y_{it} = x_{it}'\beta + c_i + \varepsilon_{it} \tag{3.4}$$

Rather than using a single model, the BMA for linear regression tackles the uncertainty problem in variable selection by averaging quantities of interest, such as a model parameter over different possible models. Let M = (M_1……M_J for j = 1, …, J) be the set of models under consideration. Each model contains a different set of explanatory variables, K^j. Where J = 2^K, the number of possible models is 2^K. This study considers 17 explanatory variables for FDI, that is, K = 17, therefore resulting in 131, 072 possible models.

According to the Bayesian framework, the posterior distribution of any quantity of interest, $\theta^j(=\beta^j, \sigma, \alpha_i)$ is a weighted average of the posterior distributions under each of the models. The full probability of the posterior distribution of given data, D is:

$$P(\theta^j|D) = \sum_{j=1}^{J} P\left(\theta^j|M^j, D\right) P\left(M^j|D\right)$$

(3.5)

Where $P\left(\theta^j|M^j, D\right)$ is the posterior distribution of θ^jgiven the model M^j, and $P\left(M^j|D\right)$ is the probability if M^j is a true model. The posterior distribution of θ^j is the average of posterior distributions of each model under consideration. It is weighted by the posterior model probability (PMP):

$$P\left(M^j|D\right) = \frac{P(\left(D|M^j\right) P(M^j)}{\sum_{l=1}^{J} P(D|\, M_l) P(M_l)}$$

(3.6)

Where $P\left(M^j\right)$ is the prior probability that M^j is the true model, $P\left(D|M^j\right)$ is the marginal likelihood of the model, M^j:

$$P\left(D|M^j\right) = \int P\left(D|\beta^j, M^j\right) P\left(\beta^j|, M^j\right) d\beta^j$$

(3.7)

Where $\beta^j$is the vector of parameters of the model M^j, $P\left(\beta^j|M^j\right)$is the prior density $of\ \beta^j$ under model M^j, $P\left(D|\beta^j, M^j\right)$ is the likelihood of a given data.

The weight of each explanatory variable is given by the posterior inclusion probability (PIP):

$$P(\beta^j|D) = \sum_{j=1}^{J} P\left(\beta^j|M^j\right)P(M^j|D) \quad (3.8)$$

3.3.3 Model Specification

The ICT-E-I model is used to measure the bilateral FDI inflows in Malaysia, the country-pair characteristics are specified as:

$$\begin{aligned} FDI_{ijt} = \beta_0 + \beta_1 MCS_{ijt} + \beta_2 ITI_{ijt} + \beta_3 LOGIS_{ij} + \beta_4 GDP_{ijt} + \beta_5 OPEN_{ijt} \\ + \beta_6 GDPG_{ijt} + \beta_7 \mathrm{INF}_{ijt} + \beta_8 HDI_{ijt} + \beta_9 TAX_{ijt} \\ + \beta_{10} PT_{ijt} + \beta_{11} EFI_{ijt} + \beta_{12} GI_{ijt} + \beta_{13} CD_{ij} + \beta_{14} LANG_{ij} \\ + \beta_{15} BT_{ijt} + \beta_{16} FTA_{ij} + \beta_{17} GDIST_{ij} + \varepsilon_{ijt} \end{aligned} \quad (3.9)$$

Where the subscript *i* represents home economies. Script *j* represents the host economy, Malaysia, *t* represents the period of the year from 2010 to 2017, and ε is a stochastic error term. The dependent variable FDI_{ijt} represents the real bilateral FDI net inflows from home to Malaysia. The independent variables, MCS_{ijt} is the ratio of mobile-cellular telephone subscriptions of Malaysia to home; ITI_{ijt} is the ratio of ICT telecommunication infrastructure of Malaysia to home; $LOGIS_{ij}$ is the difference in logistics index between Malaysia and home; GDP_{ijt} is the ratio of the real gross domestic product of Malaysia to home; $OPEN_{ijt}$ is the ratio of real trade openness of Malaysia to home; $GDPG_{ijt}$ is the difference in the real GDP growth rate between Malaysia and home; INF_{ijt} is the difference in the real inflation rate between Malaysia and home; HDI_{ijt} is the difference in human development index between Malaysia and home; TAX_{ijt} is the ratio of the corporate tax rate of Malaysia to home; PT_{ijt} is the difference in the number of patent applications between Malaysia and home; EFI_{ijt} is the difference in the degree of economic freedom between Malaysia and home; GI_{ijt} is the difference in the degree of institution governance between Malaysia and home; CD_{ij} is the cultural distance between Malaysia and home; $LANG_{ij}$ is a dummy variable expressed in 1 for common languages between home and Malaysia, 0 otherwise; BT_{ijt} is the bilateral trade between home and Malaysia; FTA_{ij} is a dummy variable expressed in 1 if the home has signed a free trade agreement with the ASEAN, 0 otherwise, and $GDIST_{ij}$ is the physical distance between home and Malaysia.

Data transformation is required before the estimation. The logarithmic transformation is widely used for data transformations in past studies. There are a few reasons for logarithmic transformation. First, it is common to improve the linearity between the dependent and independent variables. Second, it is a convenient way to normalise data. In other words, it is using logarithmic to transform a skewed variable into one that is more approximately normal (Benoit, 2011).

The logarithm transformation is applicable when all series are positive (Gujarati, 2003). Otherwise, a transformation of log(X+k) is performed to ensure positive values, where *K* is a positive constant value to be added. In this study, as bilateral net FDI inflows are used to measure FDI activities in Malaysia, the net concept implies that FDI net inflows can be either positive or negative. Based on the data selected for this study, 32% of the bilateral FDI is recorded as a negative value. As the negative value indicates disinvestment, transforming the non-positive values of FDI might lose its meaning. There is no consensus on how to specify the bilateral FDI patterns, especially on whether to normalise variables using the natural logarithm transformation (Blonigen and Piger, 2011). So, in this study, the dependent variable remains in an unlogged form.

For independent variables, generally, variables measured in percentage change required no transformation, whereas the other variables required log transformation (Archedeacon, 1994). Since the independent variables are measured in relative form or absolute difference form, to interpret the change over time, all independent variables are transformed into the natural logarithm form, except for variables expressed in percentage (GDPG, TAX, INF), and time-invariant indices (LOGIS, CD), and dummy variables (LANG, FTA, CONTI). While for the time-invariant geographic distance (GDIST), to reduce the skewness, GDIST is transformed into the natural logarithm form. This is also consistent with the empirical studies (Cuyvers et al., 2011; Buckley, Forsans and Munjal, 2012).

3.4 Firm-Level Study

In addition to the county-level study, firm-level evidence complements the country-level evidence to provide a deeper understanding of FDI factors in Malaysia. Using the BMA for the logistic regression approach, the firm-level study investigates the effects of perceived obstacles on FDI in Malaysia.

3.4.1 Firm-level Analysis

Recall the framework (Figure 3.2), the model is expressed as:

$$FDI = f\,(OBSTACLES,\ CHARAC,\ DUM\ ) \tag{3.10}$$

The obstacles included in this study are ICT telecommunication, infrastructure, human capital, finance, tax incentive, regulation and administration, corruption, crime, and informality. While CHARAC represents firm characteristics and DUM represents dummy variables.

3.4.2 Sample and Variables

This study utilised the Enterprise Surveys (ES) 2015 datasets. Generally, there are few datasets available to measure investment climate, for instance, World Bank Group's Doing Business (DB), Enterprise Surveys (ES), and World Governance Indicators (WGI). Also, the World Economic Forum's Global Competitiveness Index (GCI).

(a) Doing Business (DB) - The Doing Business project provides business regulations measures for firms in 190 economies, covering 12 areas of business regulation.
(b) The Enterprise Surveys (ES) - The Enterprise Surveys provide firm-level data in emerging markets and developing economies covering a broad range of business environment topics.
(c) World Governance Indicators (WGI) – The World Governance Indicators provide governance measures for over 200 economies covering six areas of governance.
(d) Global Competitiveness Index (GCI) – The Global Competitiveness Index provides competitiveness measures for countries in 12 pillars.

Since most FDI studies that used country-level data for analysis are based on DB (Blonigen and Piger, 2011; Jayasuriya; 2011; Corcoran et al., 2014; Contractor et al., 2020), WGI (Asiedu and Villamil, 2000; Wei, 2000; Drabek and Payne, 2002; Kaufmann et al., 2007), and GCI (Curtis et al., 2013; Popovic and Calin, 2015), the ES 2015 dataset which provides firm-level data in emerging markets and developing economies covering a broad range of business environment topics are more appropriate to meet the specific objective of this study. The ES has been applied in various studies (Escribano, Guasch, De Orte and Pena, 2009; Kinda, 2010; Narteh and Acheampong, 2018; Wang and Zhuang, 2019). Hence, the Enterprise Surveys (ES) 2015 dataset was selected to investigate the effects of perceived obstacles on FDI in Malaysia.

3.4.2.1 Sample

Based on the Enterprise Surveys 2015, a total of 692 firms are selected for analysis after taking into consideration the number of missing values. The dataset included 142 foreign-owned firms in Malaysia. The World Bank's Enterprise Surveys (ES) 2015 covered eight aspects of the business environment. These are regulation and tax; corruption; crime; informality; finance; infrastructure; trade; and workforce. The survey also asked firms to rank the biggest obstacles they experienced in Malaysia. These 15 obstacles are (1) access to finance; (2) access to land; (3) business licensing and permits; (4) corruption; (5) courts; (6) crime, theft and disorder; (7) customs and trade regulations; (8) electricity; (9) inadequately educated workforce; (10) labour regulations; (11) political instability; (12) practices of competitors in the informal sector; (13) tax administration; (14) tax rates, and (15) transport. Since these 15 elements are relevant to the business environment and appropriate for this study, hence, these 15 elements are selected for analysis. However, telecommunication was not included in the original fifteen items listed as the biggest obstacles in the business environment. Given the importance of digitalisation, this study has added telecommunication as one of the variables in the analysis.

3.4.2.2 Variable Descriptions

Dependent Variable

Foreign direct investment. At firm-level analysis, foreign direct investment (FDI) is represented by a binary variable. According to the OECD Benchmark Definition of Foreign Direct Investment, "The direct or indirect ownership of 10% or more of the voting power of an enterprise resident in one economy by an investor resident in another economy is evidence of such a relationship" (OECD, 2008b, pp. 48-49). Therefore, FDI takes the value of one if at least 10% of the firm *i* capital is foreign and zero otherwise.

Independent Variables

Based on the World Bank's Enterprise Surveys 2015, each questionnaire item is measured on a Likert scale of 0 to 4, ranging from no obstacle to a very severe obstacle.

ICT-Dimension

ICT telecommunication. ICT telecommunication is represented by telecommunication.

Telecommunication. The questionnaire asks firms to rate telecommunication, whether it is an obstacle to current operations.

E-Dimension

Infrastructure. Infrastructure is represented by electricity and transport.

Electricity. The questionnaire asks firms to rate the electricity, whether it is an obstacle to the current operations.

Transport. The questionnaire asks firms to rate the transport, whether it is an obstacle to the current operations.

Human Capital. Human capital is represented by an inadequately educated workforce.

Inadequately educated workforce. The questionnaire asks firms to rate the inadequately educated workforce, whether it is an obstacle to the current operations.

Investment Incentive. Investment Incentive is represented by tax rates.

Tax rates. The questionnaire asks firms to rate the tax rates, whether it is an obstacle to the current operations.

Finance. Finance is represented by access to finance.

Access to finance. The questionnaire asks firms to rate the access to finance, whether it is an obstacle to the current operations.

I-Dimension

Regulation and administration. Regulation and administration are represented by labour regulations, custom and trade regulations, tax administration, business licensing and permits, access to land, and political instability.

*Labour regulation*s. The questionnaire asks firms to rate the labour regulations, whether it is an obstacle to the current operations.

Customs and trade regulations. The questionnaire asks firms to rate the degree of customs and trade regulations, whether it is an obstacle to the current operations.

Tax administration. The questionnaire asks firms to rate the tax administration, whether it is an obstacle to the current operations.

Business licensing and permits. The questionnaire asks firms to rate the business licensing and permits, whether it is an obstacle to the current operations.

Access to land. The questionnaire asks firms to rate the access to land, whether it is an obstacle to the current operations.

Political instability. The questionnaire asks firms to rate the political instability, whether it is an obstacle to current operations.

Corruption. The degree of corruption is represented by corruption.

Corruption. The questionnaire asks firms to rate corruption, whether it is an obstacle to current operations.

Crime. Crime is represented by courts, and crime, theft, and disorder.

Courts. The questionnaire asks firms to rate the courts, whether it is an obstacle to the current operations.

Crime, theft and disorder. The questionnaire asks firms to rate crime, theft and disorder, whether it is an obstacle to the current operations.

Informality. Informality is represented by competitors in the informal sector.

Competitors in the informal sector. The questionnaire asks firms to rate the competitors in the informal sector, whether it is an obstacle to the current operations.

Control Variables

Firm Characteristics (CHARAC). Firm characteristics are measured in terms of firm size and age.

Firm size. The size of the firm is measured according to the number of permanent employees, for instance, small enterprise (5 to 19), medium enterprise (20 to 99), and large enterprise (100 or more).

Firm Age. The age of a firm is measured according to the years in which the firm began operations.

Dummy Variables (DUM). Dummy variables in terms of regional dummies and sector dummies are included.

Regional dummies. Regional dummies are coded based on the five regions (Central; North; South; East Coast, and East Malaysia).

Sector dummies. Sector dummies are coded based on the seven sectors (food, chemical, apparel, electronic, other manufacturing, retail trade, and other services).

Table 3.4: Summary of the Descriptions of Dependent and Independent Variables: Firm-Level Evidence

Characteristics	Variable	Measurement	Data Source
	Foreign Direct Investment (FDI)	FDI takes the value one if at least 10% of the firm *i* capital is foreign and zero otherwise.	Enterprise Surveys (ES) 2015
ICT telecommunication	Telecommunication	Likert scale (0-4)	
Infrastructure	Electricity Transport	Likert scale (0-4)	
Human capital	Inadequately educated workforce	Likert scale (0-4)	
Investment incentive	Tax rates	Likert scale (0-4)	
Finance	Access to finance	Likert scale (0-4)	
Regulation and administration	Labour regulations Customs and trade regulations Tax administration Business licensing and permits Access to land Political instability	Likert scale (0-4)	
Corruption	Corruption	Likert scale (0-4)	
Crime	Crime, theft and disorder	Likert scale (0-4)	
Informality	Competitors in informal sector	Likert scale (0-4)	
Firms characteristics	Firm size Firm age	The size of the firm is measured according to the number of permanent employees: Small enterprise (5 to 19), medium enterprise (20 to 99), and large enterprise (100 or more). The age of a firm is measured according to the years in which the firm began operations.	
Dummy variables	Regional dummies Sector dummies	Regional dummies are coded based on the five regions: *Central* *North* *South* *East Coast* *East Malaysia* Sector dummies are coded based on the seven sectors: *Food* *Chemical* *Apparel* *Electronic* *Other manufacturing* *Retail trade* *Other services*	

3.4.3 Analytical Approach: BMA for Logistic Regression

In the process of investment, there are two different forms of investment, namely foreign direct investment and domestic investment, which is coded as a binary variable. In equation (1), when Y equals 1, it represents the foreign direct investment, when Y equals 0 it represents a domestic investment. The logistic regression model is expressed as:

$$P(Y=1) = \frac{\exp(\beta_0 + \sum_{i=1}^{n} \beta_i x_i)}{1 + \exp(\beta_0 + \sum_{i=1}^{n} \beta_i x_i)} \tag{3.11}$$

Where $P(Y=1)$ represents the probability of foreign direct investment, Where β is the vector of estimated regression coefficients.

Although logistic regression is the standard method for the binary dependent variable, however, this method does not take into account the uncertainty in variable selection. This is especially in the situation when many possible obstacles are to be examined as in the present study. To overcome the problem of uncertainty in variable selection, BMA for the logistic regression approach is adopted in this study.

3.4.4 Model Specification

At firm-level analysis, to investigate the effects of firms' perception of ICT, institutional and economic obstacles on FDI in Malaysia, the model is specified as:

$$FDI_i = \beta_0 + \beta_1 OBST_i + \beta_2 CHRAC_i + \beta_3 DUM_i + \varepsilon_i \tag{3.12}$$

Where FDI_i represents a binary variable indicating the state of a firm *i* whether it is a foreign investment or domestic investment. $OBST_i$ represents a set of obstacles (telecommunication; transportation; electricity; inadequately educated workforce; access to finance; tax rate; labour regulations; custom and trade regulations; tax administration; business licensing and permits; access to land; political instability; corruption; courts; crime, theft and disorder and competitors in the informal sector). $CHARAC_i$ represents the firm characteristics (age and size), DUM_i represents a set of regional, and sector dummies, and ε_{ij} denotes the error term.

3.5 Methodological Challenges and Solutions

The implementation of BMA is, however, subject to a major challenge. Before implementing any of the BMA approaches, the prior probability of each model must be assigned. When it is uncertain about which model to be considered, each model's prior probability is usually taken as a uniform distribution, in other words, assuming that all models are equally likely to be considered. Followed the standard procedures for BMA of the existing literature (Hoeting et al., 1999; Eicher et al., 2007; Masanjala and Papageorgiou, 2008; Antonakakis and Tondl, 2011; Vakhitova and Alston-Knox, 2018), a simple and popular choice the uniform prior is assigned for each model. Therefore, the prior probability of each model (over the possible 2^K models) is:

$$P(M^j) = \frac{1}{2^K} \tag{3.13}$$

For instance, the unit information prior (UIP), UIP contains information approximately equal to that contained in a single observation. The resulting posterior model probabilities (PMP) are closely approximated by the Bayesian Information Criterion (BIC) (Schwarz, 1978; Kass and Wasserman, 1995; Raftery, 1995).

However, the implementation of BMA on model selection can be sensitive to the prior specification. Since prior is a component of the posterior model weights, priors on parameters may affect the results, influencing the integrated likelihood (Eicher et al., 2007). There are some criticisms of the uniform prior. Brock and Durlauf (2001), among others, are opposed to uniform model priors. They suggested a hierarchical structure for the model prior. However, this required agreement on which variables proxy the same theories (Antonakakis and Tondl, 2015). Besides, using content analysis of 820 BMA-related articles published between 1996 and 2016, Fragoso, Bertoli and Francisco (2018) found that around 25 percent of the articles did not specify any model priors. The possible reason is that estimation was done by simply adopting the default priors in the software for BMA.

Since the unit information prior (UIP) with the uniform model prior generally outperformed other priors (Eicher et al., 2011) and is the most common prior choice in more than 50 percent out of the 820 BMA-related published articles (Fragoso et al., 2018), the UIP with the uniform model prior was employed for the BMA analysis in this study.

3.6 Conclusion

This chapter conceptualised the Extended Location framework that was developed to identify key factors affecting FDI in Malaysia. At country-level analysis, using the ICT-E-I framework, this study incorporated the ICT and institutional factors to FDI besides economic factors. The ICT-E-I model was designed to examine the effects of ICT, institutional and economic factors on bilateral FDI in Malaysia. A panel of 32 active FDI partners from developed and developing economies for the period 2010 to 2017 were selected for analysis. In addition, at firm-level evidence, this study linked the perceived ICT, institutional and economic obstacles to FDI. Based on the World Bank's Enterprise Surveys 2015, a total of 692 firms were selected for analysis. Using the uniform model prior for estimation, the BMA findings are discussed in the next chapter.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This study has identified the key attraction and obstacle factors affecting FDI in Malaysia using two-level i.e., country- and firm-level analysis. First, at the country-level analysis, the ICT-E-I model was employed to examine the effects of ICT, institutional and economic factors on bilateral FDI in Malaysia using BMA for linear regression. Second, at the firm-level analysis, this study investigated the effects of perceived obstacles on FDI in Malaysia using BMA for logistic regression. Third, the relative importance of the factors influencing FDI in Malaysia was assessed based on posterior inclusion probability (PIP).

The remaining structure of this chapter is as follows. Section 4.2 discusses the results of country-level analysis, Section 4.3 discusses the results of firm-level analysis, Section 4.4 assesses the relative importance of each factor influencing FDI in Malaysia and Section 4.5 concludes this chapter.

4.2 Examining the Effects of ICT, Institutional and Economic Factors on Bilateral Foreign Direct Investment in Malaysia: Country-Level Evidence

At country-level evidence, using the BMA for linear regression, the ICT-E-I model was employed to examine the effects of ICT, institutional and economic factors on bilateral FDI in Malaysia. The results are discussed as follows.

4.2.1 Preliminary Analysis

Table 4.1 provides descriptive statistics of the variables for the period 2010 to 2017. The mean value of the real bilateral FDI (FDI) is about US$239.57 million. For independent variables measured in relative form, the mean logarithm value of relative mobile-cellular telephone subscriptions (LMCS), and relative ICT telecommunication infrastructure (LITI) is 0.15 and -0.22 respectively. This suggests that on average Malaysia's mobile-cellular telephone subscriptions are 0.15 more than that of the home economies. Malaysia's ICT telecommunication infrastructure is 0.22 less than that of the home economies.

Table 4.1: Summary of Descriptive Statistics for the period 2010 to 2017: Country-Level Evidence

	Mean	Maximum	Minimum	Observations
FDI	$239.565	3216.968	-955.420	254
LMCS	0.153	0.770	-0.624	254
LITI	-0.218	1.964	-0.807	254
LOGIS	0.113	0.288	0.010	254
LGDP	-0.929	10.010	-4.072	254
LOPEN	0.533	1.731	-1.140	254
GDPG	2.621	14.426	-20.466	254
INF	0.425	10.488	-18.229	254
LER	-0.594	1.777	-8.670	254
LHDI	-2.273	-1.382	-4.962	254
TAX	1.004	2.000	0.600	254
LPT	7.897	14.034	2.079	254
LEFI	1.882	3.215	-1.609	254
LGI	2.799	3.851	-1.610	254
CD	2.427	5.219	0.188	254
LANG	0.126	1.000	0.000	254
LBT	15.126	18.480	10.258	254
FTA	0.343	1.000	0.000	254
LGDIST	8.680	9.639	5.754	254
CONTI	0.063	1.000	0.000	254

Note: "L" indicates in the natural logarithm form.

Similar interpretations can be given for the relative gross domestic product (LGDP), relative trade openness (LOPEN), and the relative exchange rate (LER), on average Malaysia's gross domestic product, is 0.93 less than that of the home economies. Malaysia's trade openness is 0.53 higher than that of the home. Malaysia's exchange rate is 0.59 lower than that of home economies.

While for variables measured in percentage, the gross domestic product growth (GDPG) and inflation rate (INF), on average, the difference between the real GDP growth, and the real inflation rate of Malaysia and home economies is 2.62% and 0.43%. Besides, on average the relative corporate tax (TAX) is 1.004; this indicates that the corporate tax rate between home and Malaysia is more or less the same. For instance, on average corporate tax rate in Malaysia is 24.63%, while in China (25%); Indonesia (25%); South Korea (23.65%); Vietnam (23.65%); Thailand (22.88%) and others.

Additionally, for variables measured in absolute difference form, the human development index (LHDI), the mean logarithm absolute difference value of HDI between Malaysia and home implies that the HDI difference between Home and Malaysia is -2.27. This indicates a decrease in the HDI difference between Malaysia and home. In contrast, the mean logarithm absolute value of technological differences, patents (LPT), market liberalisation, economic freedom index (LEFI), institutional distance, and governance index (LGI), between Malaysia and home economies is around 7.90, 1.88, and 2.80, respectively. This indicates an increase in the technological differences, the degree of economic freedom differences, and institutional distance between Malaysia and home.

For time-invariant variables (LOGIS, CD and GDIST), on average, infrastructure differences, logistics index (LOGIS) are approximately 0.11, and the cultural distance (CD) between Malaysia and home economies is 2.43. A positive value of the logistics index indicates that there is an infrastructural distance between Malaysia and home, and a positive value of cultural distance indicates Malaysia and home are culturally distant. The physical distance, the mean logarithm value of geographic distance (GDIST) between Malaysia and home economies is 8.68, while the mean value of the geographic distance between the capital city of home and Malaysia is 7495.77 kilometres, ranging from the nearest Singapore (315.54) to the farthest the United States (15357.34). For bilateral trade, the mean logarithm value of bilateral trade (LBT) between home and Malaysia is 15.13, while the average value of bilateral trade between home and Malaysia is about US$13659.77 million.

In addition, Table 4.2 displays the correlation matrix of the explanatory variables. It can see that the highest value is 0.69, which is below 0.7. Since all correlation coefficients are below 0.7, hence, all variables are not highly correlated.

Table 4.2: Correlation Matrix of Explanatory Variables: Country-Level Evidence

	LMCS	LITI	LOGIS	LGDP	LOPEN	GDPG	INF	LER	LHDI	TAX	LPT	LEFI	LGI	CD	LANG	LBT	FTA	LGDIST	CONTI
LMCS	1.00																		
LITI	0.41	1.00																	
LOGIS	-0.10	0.25	1.00																
LGDP	-0.22	0.11	0.07	1.00															
LOPEN	0.51	0.31	0.00	-0.47	1.00														
GDPG	-0.18	-0.38	0.00	-0.01	0.12	1.00													
INF	-0.15	-0.43	-0.34	-0.04	-0.08	0.26	1.00												
LER	-0.03	-0.55	-0.23	-0.02	-0.10	0.35	0.38	1.00											
LHDI	0.26	0.09	-0.06	0.10	-0.11	-0.12	0.17	0.06	1.00										
TAX	-0.37	-0.20	-0.03	0.24	-0.59	-0.17	0.02	-0.01	-0.16	1.00									
LPT	0.23	-0.13	-0.06	-0.69	0.42	-0.06	0.00	-0.13	-0.16	-0.22	1.00								
LEFI	0.03	0.24	0.21	0.03	0.03	-0.21	-0.18	-0.15	-0.01	0.12	-0.05	1.00							
LGI	-0.02	0.16	0.41	0.24	-0.18	-0.22	-0.18	-0.10	0.23	0.16	-0.17	0.23	1.00						
CD	-0.06	-0.56	-0.15	-0.04	0.13	0.42	0.29	0.54	0.21	-0.11	-0.08	-0.33	0.06	1.00					
LANG	-0.25	-0.10	-0.14	-0.09	-0.40	-0.26	0.06	-0.02	-0.02	0.46	0.16	0.27	0.07	-0.45	1.00				
LBT	0.07	0.17	0.01	-0.51	0.14	-0.34	-0.07	-0.37	0.10	-0.03	0.46	0.19	0.06	-0.39	0.46	1.00			
FTA	0.15	0.40	-0.19	-0.03	0.15	-0.43	-0.13	-0.57	0.03	-0.11	0.05	0.22	0.02	-0.45	0.13	0.57	1.00		
LGDIST	0.10	-0.47	-0.09	-0.15	0.30	0.44	0.16	0.47	-0.08	-0.24	0.16	-0.29	-0.19	0.68	-0.52	-0.54	-0.65	1.00	
CONTI	-0.15	0.22	0.23	0.07	-0.14	-0.21	-0.07	-0.28	0.07	0.20	-0.27	0.22	0.10	-0.35	0.29	0.32	0.36	-0.52	1.00

Note: "L" indicates in the natural logarithm form.

4.2.2 BMA for Linear Regression: A Comparison with Ordinary Least Squares and Stepwise Regression

For data analysis, the dataset is split into two sample sets to minimise the omission bias and to conduct robustness checks; one with a full-sample, and another with the exclusion of four home economies (Austria, India, Ireland, and Russia). These four economies were excluded because Malaysia recorded negative average net FDI inflows with Malaysia. The FDI inflows from these four economies occupied less than 0.01 percent of aggregate net FDI inflows in Malaysia. For consistency, robustness checks are conducted in the later section using the filtered-sample without the four economies (Austria, India, Ireland, and Russia).

Model uncertainty is often a problem when regression is performed using a single model. However, BMA tackles the problem of uncertainty in variable selection by averaging the quantities of interest over all possible models. Hence, to address the issue of uncertainty in variable selection using a single model, a few analyses were performed, namely, Ordinary Least Squares (OLS), and Stepwise regression. Table 4.3 shows the results of BMA, Stepwise regression and OLS in Model 1(a), Model 1(b) and Model 1(c), respectively.

Table 4.3: BMA for Linear Regression, Stepwise Regression, and Ordinary Least Squares Results

	Model 1(a) BMA for Linear Regression			Model 1(b) Stepwise Regression			Model 1(c) Ordinary Least Squares		
	PIP	Post Mean	Post SD	Coefficient	P-value	Standard Error	Coefficient	Robust Standard Error	VIF
ICT-dimension									
Mobile-Cellular Telephone Subscriptions (MCS)	0.01	-0.19	15.34				15.80	(202.58)	2.04
ICT Telecommunication Infrastructure (ITI)	**0.76**	**-203.07**	**132.04**	-96.64	0.29	(91.34)	-73.31	(88.76)	5.70
E-dimension									
Logistics Index (LOGIS)	**1.00**	**2752.94**	**864.82**	3334.61***	0.00	(732.93)	3402.99***	(807.69)	2.28
Gross Domestic Product (GDP)	0.07	3.06	13.56	35.26	0.27	(32.05)	38.29	(43.88)	3.00
Trade Openness (OPEN)	0.24	-39.30	76.99	-128.82	0.13	(85.38)	-149.23	(91.39)	5.24
Gross Domestic Product Growth (GDPG)	0.24	5.84	12.07	20.47*	0.09	(12.07)	21.77*	(11.74)	1.82
Inflation Rate (INF)	0.09	1.35	5.11	10.66	0.26	(9.34)	11.70	(9.85)	1.53
Human Development Index (HDI)	0.13	16.61	50.19	54.84	0.48	(77.06)	41.79	(73.20)	2.08
Corporate Tax Rate (TAX)	0.05	-8.12	47.56	-171.47	0.25	(147.55)	-164.66	(93.17)	2.06
Patents (PT)	0.01	0.01	1.74	24.26	0.22	(19.79)	23.07	(20.44)	2.86
I-dimension									
Economic Freedom Index (EFI)	0.12	7.47	23.46	60.28	0.10	(36.95)	60.92	(29.80)	1.43
Governance Index (GI)	**0.93**	**-153.59**	**66.25**	-201.73***	0.00	(49.74)	-201.85***	(61.27)	1.85
Cultural Distance (CD)	**0.85**	**103.28**	**59.94**	152.88***	0.00	(44.53)	155.72***	(49.09)	5.09
Language (LANG)	0.42	185.87	255.89	405.62**	0.02	(168.05)	426.18**	(177.61)	3.91
Bilateral Trade (BT)	**1.00**	**102.42**	**23.03**	90.20***	0.00	(26.56)	99.29***	(36.92)	4.50
Free Trade Agreements (FTA)	0.25	85.63	161.82	214.01*	0.09	(126.89)	236.85*	(162.95)	4.90

Geographic Distance (GDIST)	**0.78**	**-203.87**	**124.17**	-163.53***	0.00	(46.53)	-126.94	(87.32)	7.28
Intercept	1.00	269.54	1237.19				-495.95	(1007.57)	
R-Squared		0.3372			0.3882		0.3888		-
Bayesian Info Criterion (BIC)		-71.2225			-		-		-
Posterior Model Probability (PMP)		0.1588			-		-		-
Mean VIF		-			-		-		3.38
Durbin-Watson (DW) statistic		-			-		1.3093		-

Notes: PIP denotes the posterior inclusion probability, variables with a PIP of 50% or higher are in bold.
****, **, and * denote at the 1%, 5%, and 10% significance levels, respectively.*

4.2.2.1 Ordinary Least Squares (OLS)

Referring to Table 4.3, the OLS results are shown in Model 1(c). The coefficient and residual diagnostics were checked when performing the OLS. A multicollinearity test was conducted because multicollinearity is a problem that could undermine the statistical significance of an independent variable (Allen, 1997). The variance inflation factors (VIFs) measure how much the variance of an estimator is inflated in the presence of multicollinearity (Gujarati, 2003), and are one of the commonly used tools to diagnose whether multicollinearity is present in a regression model. As such, a rule of thumb to interpret VIFs is that there is no multicollinearity if all VIFs are equal to 1. In general, multicollinearity is a problem if any of the VIFs is greater than 10, (Gunst and Mason, 1980; Kleinbaum, Kupper and Keith, 1998; Gujarati, 2003). However, some others suggest a more conservative value of 2.5 (Farrar and Glauber, 1967) or 5 above (Montgomery and Peck, 1982). Referring to Table 4.3, since the VIF of all variables in Model 1(c) are below 10, and the mean VIF is 3.35, hence, there is no serious multicollinearity detected.

While for residual diagnostic, autocorrelation and heteroskedasticity were conducted. Although autocorrelation or serial correlation may not affect the consistency of OLS coefficient estimates; however, it does affect the efficiency of the OLS (Drukker, 2003). The Durbin-Watson (DW) statistic is a test statistic used to detect first-order autocorrelation in residuals, AR(1). The value of the DW statistic ranges between 0 and 4. If there is no autocorrelation, the DW statistic is around 2. However, if there is a positive autocorrelation, the DW statistic is below 2, and if there is a negative autocorrelation, the DW statistic lies between 2 and 4 (Durbin and Watson, 1951). Referring to Table 4.3, Model 1(c) shows that the DW statistic (1.3093) of the OLS results is below 2, which may indicate a positive autocorrelation. Hence, there is a need to test for the presence of autocorrelation in the model for significance.

The DW statistic can be tested for significance by comparing the DW statistic with the lower (d_L) and upper (d_U) critical value, which can be obtained from the DW Significance Table. The decision rule is that reject the null hypothesis of no autocorrelation if the DW statistic < d_L, do not reject the null hypothesis if the DW statistic > d_U, and the test is inconclusive if d_L < DW statistic < d_U (Durbin and Watson, 1951; Savin and White, 1977). According to the DW Significance Table, at the 5% significance level of 250 observations (n= 250) and 17 regressors (K =17), the d_L is 1.650, while the d_U is 1.939. Since the DW statistic of Model 1(c) is less than d_L (1.3093 < 1.650), the null hypothesis is rejected. This indicates a positive first-order autocorrelation, that is, a positive error associated with a current period carries over into a positive error in future periods. In the presence of positive first-order autocorrelation, the standard errors turned out to be smaller than the true standard errors. This could lead to less efficient OLS results.

Besides, the Breusch-Pagan Lagrange Multiplier (LM) test was conducted to check for heteroskedasticity to see if the error variances are all equal. Since the p-value of the Breusch-Pagan Lagrange Multiplier (LM) test is 0.00 (p-value < 0.05), the null hypothesis of error variances are all equal is rejected. This indicates the presence of heteroskedasticity. However, in the presence of autocorrelation and heteroskedasticity, robust standard errors can be used to fix the problem (White, 1980; Hoechle, 2007; Wooldridge, 2009). Hence, robust standard errors were used for estimation.

4.2.2.2 Stepwise Regression

Although there are some limitations to Stepwise regression, it remains one of the popular variable selection techniques (Hoeting, Madigan, Raftery and Volinsky, 1999). These shortcomings of stepwise regression are, first, the stepwise regression depends on the procedure used for variable selection, however, different variable selection procedures could lead to different sets of variables selected and results obtained could vary widely. Second, the estimations are performed based on the selected variables, in this case, the uncertainty in variable selection is generally ignored in stepwise regression, and third stepwise regression could lead to a biased result due to the omission of some important variables in a stepwise regression model (Miller, 2002; Prost, Makowski and Jeuffroy, 2008).

Despite the limitations of the Stepwise regression, it has been applied in various studies to compare with the BMA results (Hoeting, Madigan, Raftery and Volinsky, 1999; Viallefont, Raftery and Richardson, 2001; Wang, Zhang and Bakhai, 2004; Prost, Makowski and Jeuffroy, 2008; Genell, Nemes, Steineck and Dickman 2010; Łukaszyk, Bień-Barkowska and Bień, 2021). Hence, Stepwise regression was selected to benchmark the BMA results. This study employed the forward selection method in Stepwise regression. This method begins with no explanatory variable in the model, and the explanatory variable with the lowest p-value is added to the model. Subsequently, the explanatory variable with the next lowest p-value is added and checked for its significance at the 5% significance level. The insignificant explanatory variable is then removed, and the next explanatory variable is added and checked.

4.2.2.3 BMA for Linear Regression

Unlike the single model, OLS or Stepwise regression, the BMA for linear regression tackles the uncertainty problem in variable selection by averaging quantities of interest, such as a model parameter over different possible models. However, the implementation of BMA is subject to the challenge of prior selection. According to Raftery, Madigan, and Hoeting (1997), the most common model prior is the uniform prior. In other words, in the situation when there is no prior knowledge of each model, the analysis assigns a uniform prior probability for each model.

In Table 4.3, the BMA results for each explanatory variable are reported in posterior inclusion probability (PIP), posterior means, and posterior standard deviations. The PIP represents the key statistic in BMA. PIP indicates the robustness of a specific explanatory variable. Given a set of explanatory variables is included in different models; PIP summarises the likelihood of all models and indicates whether a specific explanatory variable is likely to be included in the true model (Arin and Baunfels, 2018). More importantly, PIP indicates how important the explanatory variables are in explaining the FDI. The posterior means is a weighted average of the estimated parameters. It indicates the sign and the size of the estimated coefficient. And, the posterior standard deviations indicate the accuracy of the estimated coefficient (Feldkircher et al., 2014).

According to Raftery (1995), PIP is the rule of thumb to interpret Bayes factors. Where, PIP ≥ 99% is considered very strong evidence of the effect on FDI; 95% ≤ PIP < 99% is considered strong evidence of the effect; 75% ≤ PIP < 95% is considered moderate evidence of the effect; 50%≤ PIP < 75% is considered weak evidence of the effect, PIP < 50% is considered evidence against the effect. Therefore, a threshold of above 50% is recommended (Antanakakis and Tandl, 2015).

Referring to Table 4.3, Model 1(a) displays the PIP of each explanatory variable, the PIP of above 50% is indicated in bold. It can see that the BMA findings show that ICT Telecommunication Infrastructure (ITI), Logistics Index (LOGIS), Governance Index (GI), Cultural Distance (CD), Bilateral Trade (BT), and Geographic Distance (GDIST) are key attraction factors.

4.2.2.4 Accounting for Model Uncertainty: BMA

BMA overcomes the uncertainty of variable selection through multiple models. To compare the results obtained from different methods of analysis, Table 4.3 is referred. First, by comparing the PIP of BMA for linear regression in Model 1(a) with the OLS results in Model 1(c), the analysis shows quite similar results for most of the variables. Similar results are reported for Logistics Index (LOGIS), Governance Index (GI), Cultural Distance (CD) and Bilateral Trade (BT). However, in the presence of model uncertainty, the OLS results may be overfitting, this can be seen in the Gross Domestic Product Growth (GDPG), Language (LANG) and Free Trade Agreement (FTA). However, the BMA results for all these variables in Model 1(a) show a PIP of below the threshold of 50%, which has no significant effect on FDI.

Second, by comparing the PIP of BMA for linear regression in Model 1(a) with the p-value of the Stepwise regression in Model 1(b), it shows quite similar results for most of the variables. Similar results are reported for Logistics Index (LOGIS), Governance Index (GI), Cultural Distance (CD), Bilateral Trade (BT), and Geographic Distance (GDIST). However, in the presence of model uncertainty, the p-value of Stepwise regression may overstate the evidence for an effect on FDI. This can be found in the results of Gross Domestic Product Growth (GDPG), Language (LANG) and Free Trade

Agreement (FTA). However, the BMA results for all these variables in Model 1(a) show a PIP of below the threshold of 50%, which has no significant effect on FDI.

As compared to the single model, the advantage of using BMA is that BMA tackles the problem of uncertainty in variable selection through multiple models. Whereby each model contains a different set of explanatory variables, K^j; J = 2^K, the number of possible models is 2^K for BMA. This study considers 17 explanatory variables for bilateral FDI, that is, K = 17, therefore resulting in 131, 072 possible models in Occam's window. The top 10 models of BMA for linear regression are extracted in Table 4.4. The variable that is selected and included in the model is indicated by "●".

By looking at the different models in Table 4.4, it can see that BMA considered different variables in different models. Model A records the highest posterior model probability (PMP), which accounted for only 15.88% of the PMP. However, the top 10 models accounted for 57.61% of the PMP. As compared to a single model, which does not take into account the problem of underestimated uncertainty; however, BMA overcomes the uncertainty in variable selections over different models. Since BMA offers several advantages, such as it reduces the chances of underestimated uncertainty, facilitates inference using a regression model without accounting for variable selection before estimation, provides a better predictive ability, and is relatively robust to model misspecification. Hence, the BMA was adopted for robustness checks.

Table 4.4: Top 10 BMA for Linear Regression Models Extracted

Variable	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I	Model J
Mobile-Cellular Telephone Subscriptions (MCS)	-	-	-	-	-	-	-	-	-	-
ICT Telecommunication Infrastructure (ITI)	●	-	●	●	-	●	●	●	●	-
Logistics Index (LOGIS)	●	●	●	●	●	●	●	●	●	●
Gross Domestic Product (GDP)	-	-	-	-	-	-	●	-	-	-
Trade Openness (OPEN)	-	●	-	-	●	-	-	-	-	●
Gross Domestic Product Growth (GDPG)	-	●	-	-	-	-	-	-	-	-
Inflation Rate (INF)	-	-	-	-	-	-	-	-	-	●
Human Development Index (HDI)	-	-	-	-	-	●	-	●	-	-
Corporate Tax Rate (TAX)	-	-	-	-	-	-	-	-	-	-
Patents (PT)	-	-	-	-	-	-	-	-	-	-
Economic Freedom Index (EFI)	-	-	-	●	-	-	-	-	-	-
Governance Index (GI)	●	●	●	●	●	●	●	●	●	●
Cultural Distance (CD)	●	●	●	●	●	-	●	●	-	●
Language (LANG)	-	●	●	-	●	-	-	-	-	●
Bilateral Trade (BT)	●	●	●	●	●	●	●	●	●	●
Free Trade Agreements (FTA)	-	●	-	-	●	-	-	-	-	●
Geographic Distance (GDIST)	●	-	●	●	-	●	●	●	●	-
Intercept	●	●	●	●	●	●	●	●	●	●
Number of Variables	7	9	8	8	8	7	8	8	6	9
Bayesian Info Criterion (BIC)	-71.2225	-69.8174	-69.6942	-69.0915	-68.8741	-68.4594	-68.1301	-68.0064	-67.7257	-67.7203
Posterior Model Probability (PMP)	0.1588	0.0787	0.0740	0.0547	0.0491	0.0399	0.0338	0.0318	0.0276	0.0276

Note: "●" indicates the variable that is selected and included in the model for estimation.

4.2.3 Robustness Checks: BMA

This study used a few methods for robustness checks, such as the exclusion of sample and inclusion of additional variables, to benchmark the BMA for linear regression results, baseline Model 1(a). Referring to Table 4.5, first, using the sample to exclude the four home economies (Austria, India, Ireland, and Russia) with aggregate negative FDI net inflows from 2010 to 2017, the results displayed in Model 1(d) are consistent with the baseline Model 1(a).

Second, an additional explanatory variable is added to the baseline Model 1(a) to check the robustness of the ICT-E-I model. Since there are two common indicators, namely inflation rate and exchange rate to examine macroeconomic stability, the exchange rate is used for robustness checks. While for physical distance, the contiguous border is used for robustness checks. The exchange rate (ER) and contiguous border (CONTI) are added in a separate model, which is Model 1(e) and Model 1(f), respectively.

Table 4.5: Robustness Checks: BMA for Linear Regression Results

	Model 1(d) Exclusion of Countries with Aggregate Negative FDI Flows			Model 1(e) Inclusion of Exchange Rate			Model 1(f) Inclusion of Contiguous Border		
	PIP	Post Mean	Post SD	PIP	Post Mean	Post SD	PIP	Post Mean	Post SD
ICT-dimension									
Mobile-Cellular Telephone Subscriptions (MCS)	0.05	-13.68	73.98	0.01	-0.17	14.63	0.01	-0.18	15.08
ICT Telecommunication Infrastructure (ITI)	**0.78**	**-222.55**	**143.29**	**0.73**	**-195.27**	**135.13**	**0.77**	**-204.60**	**130.68**
E-dimension									
Logistics Index (LOGIS)	**1.00**	**3702.14**	**1250.17**	**1.00**	**2806.94**	**891.44**	**1.00**	**2740.43**	**860.43**
Gross Domestic Product (GDP)	0.04	1.43	9.68	0.06	2.78	12.95	0.07	2.96	13.34
Trade Openness (OPEN)	0.14	-15.73	57.66	0.27	-44.49	80.29	0.23	-37.98	76.01
Gross Domestic Product Growth (GDPG)	0.43	16.24	21.90	0.25	6.10	12.31	0.23	5.65	11.91
Inflation Rate (INF)	0.02	0.21	2.22	0.08	1.23	4.89	0.09	1.31	5.03
Human Development Index (HDI)	0.07	-15.86	73.70	0.13	16.15	49.64	0.13	16.05	49.43
Corporate Tax Rate (TAX)	0.05	-14.84	84.44	0.05	-7.38	45.40	0.05	-7.84	46.78
Patents (PT)	0.03	0.48	4.36	0.01	0.01	1.66	0.01	0.01	1.71
I-dimension									
Economic Freedom Index (EFI)	0.11	7.32	24.86	0.11	6.79	22.47	0.12	7.22	23.10
Governance Index (GI)	**0.79**	**-122.50**	**81.71**	**0.94**	**-155.10**	**65.59**	**0.93**	**-153.44**	**65.69**
Cultural Distance (CD)	**0.62**	**81.01**	**75.86**	**0.85**	**103.23**	**60.05**	**0.85**	**103.32**	**59.31**
Language (LANG)	0.44	259.80	334.28	0.43	195.66	259.90	0.41	182.07	253.62
Bilateral Trade (BT)	**0.98**	**92.59**	**30.00**	**1.00**	**102.68**	**22.99**	**1.00**	**102.34**	**22.92**
Free Trade Agreements (FTA)	0.36	138.40	204.20	0.28	100.39	175.58	0.24	82.76	159.83

Geographic Distance (GDIST)	**0.68**	**-164.77**	**128.93**	**0.75**	**-195.81**	**128.08**	**0.78**	**-205.71**	**122.99**
Exchange Rate (ER)				0.09	2.40	8.95			
Contiguous Border (CONTI)							0.03	43.64	0.03
Intercept	1.00	-181.11	1298.97	1.00	192.13	1275.43	1.00	286.99	1226.27
R-Squared		0.3401			0.3372			0.3372	
Bayesian Info Criterion (BIC)		-59.8586			-71.2225			-71.2225	
Posterior Model Probability (PMP)		0.0851			0.1444			0.1535	

Notes: PIP denotes the posterior inclusion probability, variables with a PIP of 50% or higher are in bold.

By comparing the results of these two models with the baseline Model 1(a), it can see that the results of Model 1(e) and Model 1(f) are consistent with the baseline Model 1(a). Both models show quite similar PIP results for the ICT Telecommunication Infrastructure (ITI), Logistics Index (LOGIS), Governance Index (GI), Cultural Distance (CD), Bilateral Trade (BT), and Geographic Distance (GDIST). There is no significant difference detected. Hence, ICT telecommunication infrastructure, Logistics Index, Governance Index, cultural distance, bilateral trade, and geographic distance are the key attraction factors for FDI in Malaysia.

4.2.4 Linear Regression Coefficients for the Key Attraction Factors Obtained from BMA

Since BMA shows the average coefficient (posterior mean), the key attraction factors obtained from the baseline Model 1(a) were examined using linear regression for their coefficients. These key attraction factors are Telecommunication Infrastructure (ITI), Logistics Index (LOGIS), Governance Index (GI), Cultural Distance (CD), Bilateral Trade (BT), and Geographic Distance (GDIST). Referring to Table 4.6, it can see that the coefficient of each attraction factor is quite similar to the average coefficient (post mean) in the baseline Model 1(a). Hence, this shows consistency in estimated results.

Table 4.6: Ordinary Least Squares Based on the Key Attraction Factors Obtained from the Baseline Model 1(a)

	Coefficient	Standard Error	VIF
ICT Telecommunication Infrastructure (ITI)	-273.65***	(57.51)	1.61
Logistics Index (LOGIS)	2514.62***	(583.75)	1.31
Governance Index (GI)	-148.10***	(44.72)	1.42
Cultural Distance (CD)	97.84***	(32.60)	2.53
Bilateral Trade (BT)	105.07***	(18.75)	1.43
Geographic Distance (GDIST)	-294.37***	(55.70)	2.55
Intercept	1038.52	(652.05)	
R-Squared		0.3383	
Durbin-Watson (DW) statistic		1.1940	

*Notes: ***, **, and * denote at the 1%, 5%, and 10% significance levels, respectively.*

4.2.5 Results and Discussions: BMA

Using the BMA for linear regression, this section discusses the findings based on the baseline Model 1(a). The results indicate that ICT telecommunication infrastructure, logistics index, governance index, cultural distance, bilateral trade, and geographic distance are key attraction factors for FDI in Malaysia.

4.2.5.1 ICT Factors

ICT telecommunication infrastructure, *ITI* (PIP = 0.75) shows a moderate effect on bilateral FDI. However, the coefficient of the relative ICT telecommunication infrastructure is negatively related to FDI. The estimated coefficient of -273.65 indicates that a one percent increase in the relative ICT telecommunication infrastructure of Malaysia to home leads to a 273.64 unit decrease in bilateral FDI to Malaysia. There are a few possible explanations for the negative relationship between ICT telecommunication infrastructure and bilateral FDI in Malaysia.

First, different results were found between ICT telecommunication infrastructure and FDI. As positive results were found in the developed economies (Gholami, Lee and Heshmati, 2005); negative results were found in developed and emerging economies (Camarero, Moliner and Tamarit, 2021b), and no significant results were found in developing economies (Gholami, Lee and Heshmati, 2005; Camarero, Montolio and Tamarit, 2019). While a negative relationship between ICT telecommunication infrastructure and bilateral FDI in Malaysia was found in this study. This can be explained by the ICT development in the selected sample in this study; majorities of the active FDI partners for Malaysia are from developed economies, such as European countries, and the United States. The ICT development for developed economies is more advanced than in Malaysia (PI, 2020; UNCTAD, 2021a).

Second, it may take some time for ICT telecommunication infrastructure to have a positive effect on FDI. This study suggests a U-shaped relationship between ICT development and FDI in Malaysia. This is supported by the study of Sinha and Sengupta (2019). Using a panel of 30 selected Asia-Pacific developing economies for the period 2001 to 2017, their results have shown a positive relationship between ICT and FDI in the long-run. In addition, using a global panel of 63 countries, Samir and Mefteh (2020) showed that ICT infrastructures significantly contributed to improving FDI attractiveness in the long-run.

Third, there may be a crowding-out effect. An improvement in ICT development may crowd out FDI investment, this is due to investment may go through other platforms such as the electronic multinational enterprises (e-MNEs) or shifting to an asset-light international footprint (Casella and Formenti, 2018; UNCTAD, 2020). It is no doubt that the advancement of ICT has given rise to a new international business model that allowed MNEs to build a global presence without a significant amount of FDI. However, FDI continues to be one of the internationalisation strategies of traditional MNEs that required physical presence in the host economies (UNCTAD, 2017). The decline in the use of FDI to enter a foreign market, have yet to be observed (Gestrin and Julia, 2018).

4.2.5.2 Economic factors

Logistics Index, LOGIS (PIP = 1.00) shows a very strong effect on FDI. The estimated coefficient has a positive sign, implying that a one-point increase in the logistics difference between home and Malaysia leads to a 2514.62 unit increase in bilateral FDI. The BMA findings of this study imply that infrastructure distance attracts FDI in Malaysia. This is especially true for the case of Malaysia, as compared to the selected 32 active bilateral FDI partners, Malaysia ranked 24th with an average logistics score of 3.49, which is behind most of the developed economies, for instance, Denmark (4.12), the Netherlands (4.08), Sweden (4.02), Belgium (4.02), Luxembourg (3.99), United Kingdom (3.98), Japan (3.95), the United States (3.92), Canada (3.88) and others. While for developing economies, the infrastructure development in Malaysia is also behind some of the developing economies, such as Singapore (4.09), Hong Kong (3.97), Korea South (3.68), Taiwan (3.71), and China (3.55). Although the infrastructure development in Malaysia is behind most of the developed economies, Bakar, Mat and Harun (2012) found a positive relationship between transportation and FDI in Malaysia. This is especially for large infrastructure projects, such as airports, highways, Mass Rapid Transit (MRT), and railways in Malaysia, which require public and private investment (Masrom et al., 2015).

Taking China's Belt and Road Initiative (BRI) as an example, the BRI was initiated in 2013, which has created an important platform to connect countries through infrastructure development and investment. The BRI has established 6 economic corridors, namely New Eurasia Land Bridge Economic Corridor; China-Central Asia-West Asia Corridor; China-Pakistan Corridor; Bangladesh-China-Myanmar Corridor; China-Mongolia-Russia Corridor, and China-Indochina Peninsula Corridor. While Malaysia and other ASEAN member states such as Cambodia, Laos, Vietnam, and Thailand are located along the China-Indochina Peninsula Corridor. This corridor has opened new opportunities for the collaborative construction of multiple road and rail transportation across countries (Le et al., 2019). There are a few BRI investments in Malaysia, such as the East Coast Rail Link, Gemas-Johor Rail Upgrade, Bangkok-Kuala Lumpur High, and Kuala Lumpur-Singapore High-Speed Rail. Currently, the East Coast Rail Link and Gemas-Johor Rail Upgrade are under construction, while the Kuala Lumpur-Singapore High-Speed Rail is cancelled due to governments failing to reach a consensus agreement, and the Bangkok-Kuala Lumpur High is still under a proposed plan. Besides, the "Road" investments include the Melaka Gateway, Kuala Linggi Port, Penang Port, and Kuantan Port. Hence, Malaysia could take the dual benefits of the BRI to attract more Chinese firms to invest and improve the infrastructure in Malaysia. A good infrastructure could facilitate and attract a higher level of public and private investment in Malaysia.

4.2.5.3 Institutional Factors

Governance Index, GI (PIP = 0.93) shows a moderate effect on FDI. The estimated coefficient has a negative sign, implying that a one-point increase in the difference in the governance index leads to a 148.10 unit reduction in bilateral FDI. There are a few possible explanations for the negative relationship.

The theoretical model predicts different MNEs' behaviour. Some MNEs prefer to invest in host countries that have a similar institutional environment to the home. In contrast, others prefer to invest in a host country with a different institutional environment from home. While inconclusive results have been found in past studies (Masron and Nor, 2013; Camarero, Moliner and Tamarit, 2021b). Although a positive result was found for regulatory quality, and rule of law, a negative result was found for control of corruption in the developed and emerging economies (Camarero, Moliner and Tamarit, 2021b). This is due to MNEs may be more willing to pay bribes to speed up the bureaucratic processes in setting MNEs in the host economies (Egger and Winner, 2005), and is probably more common in transition and developing economies, where institutional quality is lower than in developed economies (Camarero, Moliner and Tamarit, 2021b).

Cultural distance, CD (PIP = 0.89) shows moderate effect on FDI. The estimated coefficient has a positive sign, implying that a one-point increase in the cultural distance leads to a 97.84 unit increase in bilateral FDI in Malaysia. This is because the majority of the active bilateral FDI partners of Malaysia were mainly from developed economies, such as European countries, the United States and others with a Western culture, which is different from the Asian culture. The finding is consistent with the study of Thomas and Grosse (2001). Their study indicated that MNEs are more likely to invest in culturally distant economies. However, inconclusive results have been found on the relationship between cultural distance and FDI in past studies. Some studies indicated that MNEs are more likely to invest in culturally close economies (Flores and Aguilera, 2007). While others found no significant relationship between cultural distance and FDI (Blonigen and Piger, 2011; Buckley, Forsans and Munjal, 2012; Kang and Jiang, 2012).

Culturally, Malaysia's unique cultural heritage with a mix of three main ethnic groups such as Malay, Chinese and India and its British colonial heritage, creates a harmonious leadership environment (Lo et al., 2010), and business environment that closely reflects its unique cultural values of harmony, courtesy, tolerance, and saving face (Tajaddini and Mujtaba, 2009). Moreover, from the management perspective, the multicultural environment of a country is not a constraint for management, but it can be a potential managerial resource (Bhopal and Rowley, 2005). Hence, the cultural distance between Western MNEs and Malaysia may facilitate investment through its unique multicultural and multilingual society.

Bilateral trade, BT (PIP = 1.00) shows a very strong effect on FDI. The positive sign indicates that the high intensity of bilateral trade between home and Malaysia positively impacts the bilateral FDI. The estimated coefficient shows that a one percent increase in the intensity of bilateral trade leads to a 105.07 unit increase in bilateral FDI. Similar positive results were found in past studies (Cuyvers et al., 2011; Kang and Jiang, 2012).

The finding is supported by the evidence that a complementary relationship between inward FDI and bilateral trade has been found in Malaysia (Goh, Wong and Tham, 2013). Moreover, a repetitive trade pattern between the two economies can be habitualised and institutionalised in managers' mindsets. And eventually, expanding trade locations to FDI locations will become a way to gain legitimacy (Kang and Jiang, 2012). Therefore, Malaysia would benefit from the complementary relationship between bilateral trade and bilateral FDI.

Geographic distance, GDIST (PIP = 0.77) shows a moderate effect on FDI. The result obtained is consistent with the theoretical prediction of a negative relationship between geographical distance and FDI. The estimated coefficient shows that a one-unit increase in the geographic distance leads to a 294.37 unit reduction in the bilateral FDI. The finding is supported by the evidence that investors from developing economies are relatively more willing to target smaller and geographic closer economies (Arita, 2013). Similar results were found in the study of FDI inflows in Cambodia, geographic distance is significant and negatively related to FDI inflows (Cuyvers et al., 2011), in ASEAN-5 (Athukorala and Waglé, 2011) and European economies (Bevan and Estrin, 2004).

Since ASEAN is moving as one of the fastest-growing consumer markets globally and attracted a high level of FDI inflow in 2018, particularly in Singapore, Indonesia, Cambodia, and Vietnam (UNCTAD, 2019), new opportunities and challenges emerged with the establishment of the ASEAN Economic Community (AEC) in 2015. Facing the intra-regional competition for FDI, Malaysia could attract more intra-ASEAN investment. Moreover, the implementation of China's Belt and Road Initiative would strengthen the location attraction of Malaysia as a destination for investment.

4.3 Investigating the Effects of Perceived ICT, Institutional and Economic Obstacles on Foreign Direct Investment in Malaysia: Firm-Level Evidence

This section discusses the results of the firm-level analysis. Linear regression was used to examine the continuous dependent variable given a set of independent variables at country-level analysis. Since the dependent variable is binary, rather than using linear regression, logistic regression was adopted for firm-level analysis. Hence, this study used the BMA for logistic regression to investigate the effects of perceived obstacles on FDI in Malaysia. The results are discussed as follows.

4.3.1 Preliminary Analysis

Table 4.7 provides a summary of the descriptive statistics of the 692 firms selected for analysis. The mean scores of the firms' perceptions of obstacles in the business environment range from 1.28 to 1.5, which lie in between the range of minor and moderate obstacles. The tax rate (1.5) has the highest mean, while access to land (1.28) and courts (1.28) rank bottom. Other than the tax rate, overall all obstacles are minor obstacles in the business environment with an average score below 1.5.

Table 4.7: Summary of Descriptive Statistics: Firm-Level Evidence

Elements	Variables	Range	Mean	Minimum	Maximum
Obstacles					
ICT telecommunication	Telecommunication	0 – 4	1.33	0	4
Infrastructure	Transportation	0 – 4	1.48	0	4
	Electricity	0 – 4	1.36	0	4
Human capital	Inadequately educated workforce	0 – 4	1.48	0	4
Investment Incentive	Tax rates	0 – 4	1.50	0	4
Finance	Access to finance	0 – 4	1.38	0	4
Regulation and administration	Labour regulations	0 – 4	1.44	0	4
	Customs and trade regulations	0 – 4	1.46	0	4
	Tax administration	0 – 4	1.46	0	4
	Business licensing and permits	0 – 4	1.39	0	4
	Access to land	0 – 4	1.28	0	4
	Political instability	0 – 4	1.40	0	4
Corruption	Corruption	0 – 4	1.30	0	4
Crime	Courts	0 – 4	1.28	0	4
	Crime, theft and disorder	0 – 4	1.41	0	4
Informality	Competitors in the informal sector	0 – 4	1.42	0	4
Firm characteristics	Firm size	2-5000	166.66	2	5000
	Firm age	1-103	19	1	103

4.3.2 BMA for Logistic Regression

For the data analysis, the dataset is split into two sample sets: manufacturing-sample, and full-sample. First, the analysis filters out the services industry firms to focus only on the manufacturing industry, because 76 per cent of the dataset belongs to the manufacturing industry. The manufacturing-sample (n=527) is used as the baseline model to examine the factors affecting FDI. Later, the full-sample (n= 692) is used for the robustness checks to see if the results differ significantly.

Although logistic regression is the standard method for the binary dependent variable, however, this method does not take into account the uncertainty in variable selection. This is especially in the situation when many possible potential explanatory variables are to be considered. To benchmark the results, this study examined the effects of perceived obstacles on FDI in Malaysia using both BMA for logistic regression and logistic regression (Table 4.8). Since the implementation of BMA is always subject to the prior selection, the most common model prior, a uniform prior is assigned for each model.

Table 4.8: BMA for Logistic Regression and Logistic Regression Results

	Manufacturing-sample					
	Model 2(a) BMA			Model 2(b) Logistic Regression		
	PIP	Post Mean	Post SD	Odds Ratio	P-Value	Standard Error
Obstacles						
ICT-dimension						
Telecommunications	0.038	0.007	0.045	1.362	0.126	0.275
E-dimension						
Transportation	0.016	0.002	0.027	1.101	0.641	0.228
Electricity	0.000	-	-	0.738	0.154	0.157
Inadequately educated workforce	0.057	0.013	0.062	1.079	0.702	0.214
Access to finance	0.083	0.026	0.103	1.470*	0.069	0.312
Tax rates	0.093	-0.031	0.114	0.616**	0.026	0.134
I-dimension						
Labour regulations	0.123	0.038	0.116	1.128	0.582	0.247
Customs and trade regulations	0.030	0.005	0.039	1.161	0.423	0.216
Tax administration	0.000	-	-	0.907	0.590	0.164
Business licensing and permits	0.000	-	-	0.948	0.778	0.179
Access to land	**1.000**	0.683	0.182	1.998***	0.002	0.446
Political instability	0.000	-	-	1.005	0.974	0.172
Corruption	0.000	-	-	0.972	0.871	0.170
Courts	0.000	-	-	1.040	0.829	0.189
Crime, theft, and disorder	**1.000**	-0.657	0.192	0.469***	0.000	0.101
Competitors in the informal sector	0.000	-	-	1.082	0.681	0.207
Firm characteristics						
Firm size	**1.000**	0.003	0.000	1.003***	0.000	0.000
Firm age	**0.932**	0.041	0.017	1.050	0.001	0.015
Regional dummy						
Region Central	0.013	-0.003	0.046	1.585	0.460	0.988
Region South	**1.000**	1.263	0.281	8.008***	0.001	4.796
Region North	0.054	0.025	0.129	2.713	0.108	1.685
East Coast	0.000	-	-	2.572	0.139	1.642
Sector dummy						
Apparel	0.018	-0.007	0.078	0.994	0.991	0.512
Chemical	**0.953**	1.055	0.427	3.793***	0.002	1.665
Electronic	**1.000**	1.330	0.359	6.070***	0.000	2.624
Other Manufacturing	0.374	0.342	0.500	3.146**	0.016	1.501
Intercept	**1.000**	-3.729	0.579	0.005***	0.000	0.005
Bayesian Info Criterion (BIC)	-2816.62			-		
Posterior Model Probability (PMP)	0.2453			-		

Log likelihood	-205.68
Pseudo R^2	0.2904
LR x^2	168.36

*Notes: ***, **, and * denote at the 1%, 5%, and 10% significance levels, respectively. Regional dummy, East Malaysia = reference dummy. Sector dummy, Food= reference dummy*

In Table 4.8, the first column Posterior Inclusion Probability (PIP) indicates the importance of each variable in explaining FDI. PIP represents the key statistic in BMA (Arin and Baunfels, 2018). In other words, it shows the probability of each variable being selected in the 'true' model. The second column, Post Mean, displays the estimated coefficients averaged over all models. It indicates the sign and the size of the estimated coefficients. The third column, Post Standard Deviation, shows the accuracy of the estimated coefficient (Feldkircher et al., 2014). Since the PIP is used as a rule of thumb to interpret the significance of the Bayesian factors (Raftery, 1995), based on the recommended threshold of 50 percent (Antanakakis and Tandl, 2015), the PIP above 50 percent is in bold (Table 4.8).

The baseline Model 2(a) in Table 4.8 suggests that obstacles such as access to land (PIP = 1.00), and crime, theft, and disorder (PIP = 1.00) show very strong evidence of the effect on FDI. As regards firm characteristics, size (PIP = 1.00), and age (PIP = 0.93) show very strong and positive evidence of the effect on FDI. Also, the regional dummy, Region South (PIP = 1.00) shows very strong evidence of the effect on FDI. As regards, sector dummies, electronic (PIP = 1.00) and chemical (PIP = 0.95) show very strong and strong evidence of the effect on FDI. This result suggests that the South region is an important location for electronic and chemical investments.

4.3.3 Accounting for Model Uncertainty: BMA

By comparing the PIP of the BMA for logistic regression, Model 2(a) with the p-value of the logistic regression, Model 2(b), it can see that the results are quite similar. In the presence of uncertainty, logistic regression may be overfitting. However, BMA systematically responds to pervasive uncertainty over different models. Referring to Table 4.9, the top 10 models of BMA for logistic regression models are extracted. The variable that is selected and included in the model is indicated by "●". It can see that Model I records the highest posterior model probability (PMP), which accounted for only 24.5% of the PMP. However, the top 10 models accounted for 70.8% of the PMP. This indicates the advantage of using BMA for model selection as BMA systematically responds to pervasive uncertainty over multiple models. Hence, the BMA was adopted for robustness checks.

Table 4.9: Top 10 BMA for Logistic Regression Models Extracted

	Model									
Variable	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**
Telecommunication	-	-	-	-	-	-	-	-	-	-
Transportation	-	-	-	-	-	-	-	-	-	-
Electricity	-	-	-	-	-	-	-	-	-	-
Inadequately educated workforce	-	-	-	-	-	●	-	-	-	-
Tax rates	-	-	-	-	-	-	●	-	-	-
Access to finance	-	-	-	-	-	-	-	-	-	●
Labour regulations	-	-	●	-	●	-	-	-	-	-
Customs and trade regulations	-	-	-	-	-	-	-	-	-	-
Tax administration	-	-	-	-	-	-	-	-	-	-
Business licensing and permits	-	-	-	-	-	-	-	-	-	-
Access to land	●	●	●	●	●	●	●	●	●	●
Political instability	-	-	-	-	-	-	-	-	-	-
Corruption	-	-	-	-	-	-	-	-	-	-
Courts	-	-	-	-	-	-	-	-	-	-
Crime, theft and disorder	●	●	●	●	●	●	●	●	●	●
Competitors in the informal sector	-	-	-	-	-	-	-	-	-	-
Firm size	●	●	●	●	●	●	●	●	●	●
Firm age	●	●	●	●	●	●	●	●	●	●
Region Central	-	-	-	-	-	-	-	-	-	-
Region South	●	●	●	●	●	●	●	●	●	●
Region North	-	-	-	-	-	-	-	-	●	-

East Coast	-	-	-	-	-	-	-	-	-	-
Apparel	-	-	-	-	-	-	-	-	-	-
Chemical	●	●	●	●	●	●	●	-	●	●
Electronic	●	●	●	●	●	●	●	●	●	●
Other Manufacturing	-	●	-	-	●	-	-	-	-	-
No of Variables	8	9	9	7	10	9	9	7	9	9
Bayesian Info Criterion	-2816.62	-2815.97	-2813.64	-2812.83	-2812.81	-2812.67	-2812.56	-2812.50	-2812.42	-2812.39
Posterior Probability	0.2453	0.1770	0.0554	0.0368	0.0365	0.0341	0.0323	0.0312	0.0300	0.0296

Note: "●" indicates the variable that is selected and included in the model for estimation.

4.3.4 Robustness Checks: BMA

To benchmark the results, this study uses a few methods for robustness checks. First, an explanatory variable is excluded from the baseline model, since the original biggest obstacles of Enterprise Survey (ES) 2015 did not include telecommunications; telecommunications is excluded for the robustness checks. In Table 4.10, Model 2(c) suggests that the seven variables are consistent with the baseline Model 2(a) results. Next, the services-sample is included. Based on the full sample, Model 2(d) also suggests the same results as the baseline Model 2(a).

Furthermore, given a large number of potential explanatory variables for estimation, there resulted in 2^k of possible models. Given a set of these competing models, the model with the highest Posterior Model Probabilities (PMP) and the lowest or highest absolute Bayesian Information Criterion (BIC) is the most probable. However, a simple Bayesian formula for “the posterior probability of one of several regression models is shown to be systematically misleading unless all models have the same number of parameters” (Atkinson, 1978, p. 39). Hence, as compared baseline Model 2(a) with model 2(d), which has the same parameters as the baseline Model 2(a), the baseline Model 2(a) has the highest PMP (24.53%) and the lowest BIC (-2816.62) thus the most probable model.

Table 4.10: Robustness Checks: BMA for Logistic Regression Results

	Model 2(c) **Manufacturing-sample** ***Exclusion of Telecommunications***			**Model 2(d)** **Full-sample**		
	PIP	Post Mean	Post SD	PIP	Post Mean	Post SD
Obstacles						
ICT-dimension						
Telecommunications	-	-	-	0.120	0.032	0.098
E-dimension						
Transportation	0.017	0.002	0.028	0.025	0.004	0.035
Electricity	0.000	-	-	0.000	-	-
Inadequately educated workforce	0.059	0.013	0.064	0.042	0.009	0.050
Access to finance	0.086	0.027	0.105	0.035	0.007	0.049
Tax rates	0.096	-0.032	0.116	0.050	-0.012	0.067
I-dimension						
Labour regulations	0.128	0.039	0.118	0.153	0.051	0.134
Customs and trade regulations	0.032	0.005	0.040	0.000	-	-
Tax administration	0.000	-	-	0.000	-	-
Business licensing and permits	0.000	-	-	0.000	-	-
Access to land	**1.000**	0.685	0.182	**0.881**	0.494	0.242
Political instability	0.000	-	-	0.000	-	-
Corruption	0.000	-	-	0.000	-	-
Courts	0.000	-	-	0.000	-	-
Crime, theft, and disorder	**1.000**	-0.655	0.192	**0.830**	-0.442	0.256
Competitors in the informal sector	0.000	-	-	0.000	-	-
Firm characteristics						
Firm size	**1.000**	0.003	0.000	**1.000**	0.003	0.000
Firm age	**0.929**	0.041	0.017	**1.000**	0.048	0.013
Regional Dummy						
Region Central	0.013	-0.003	0.047	0.022	-0.006	0.063
Region South	**1.000**	1.261	0.281	**1.000**	1.367	0.259
Region North	0.057	0.026	0.131	0.036	0.015	0.095
East Coast	0.000	-	-	0.010	0.003	0.044
Sector Dummy						
Apparel	0.019	-0.008	0.079	0.000	-	-
Chemical	**0.951**	1.051	0.428	**0.989**	1.108	0.345
Electronic	**1.000**	1.328	0.358	**1.000**	1.394	0.308
Food				0.013	-0.005	0.063
Other Manufacturing	0.370	0.337	0.497	0.465	0.416	0.505
Retail				0.037	0.023	0.144
Intercept	1.000	-3.721	0.580	1.000	-4.046	0.456
Bayesian Info Criterion (BIC)		-2816.62			-3953.39	
Posterior Model Probability (PMP)		0.2551			0.1953	

Notes: Full sample: Sector dummy: other services= reference dummy

4.3.5 Logistic Regression Coefficients for the Key Obstacle Factors Obtained from BMA

Since BMA shows the average coefficient (posterior mean), the key obstacle factors obtained from the baseline Model 2(a) were examined using logistic regression for their coefficients. In the case of logistic regression, the coefficients are presented as odds ratios. An odds ratio of greater than 1 indicates a positive relationship, while an odds ratio of less than 1 indicates a negative relationship. Table 4.11 shows that the odds ratio of each obstacle factor is similar to the sign of the average coefficient (post mean) in the baseline Model 2(a). Hence, this shows consistency in the estimated results.

Table 4.11: Logistic Regression Based on the Key Obstacle Factors Obtained from the Baseline Model 2(a)

	Odds Ratio	P-Value	Standard Error
Obstacles			
Access to land	2.062***	0.000	0.347
Crime, theft, and disorder	0.530***	0.001	0.098
Firm characteristics			
Firm size	1.003***	0.000	0.000
Firm age	1.051***	0.000	0.015
Regional dummy			
Region Central	1.831	0.325	1.125
Region South	8.207***	0.000	4.791
Region North	3.112*	0.057	1.856
East Coast	2.683	0.112	1.667
Sector dummy			
Apparel	1.022	0.964	0.499
Chemical	3.850***	0.001	1.622
Electronic	4.735***	0.000	1.938
Other Manufacturing	2.592**	0.036	1.177
Intercept	0.007***	0.000	0.006
Log likelihood		-212.66	
Pseudo R^2		0.2663	
LR x^2		154.40	

*Notes: ***, **, and * denote at the 1%, 5%, and 10% significance levels, respectively. Regional dummy, East Malaysia = reference dummy. Sector dummy, Food= reference dummy*

4.3.6 Results and Discussions: BMA

Using the Bayesian logistic regression, this section discusses the robust findings of the baseline Model 2(a) in Table 4.8. Based on the recommended threshold of a PIP above 50 per cent, the results suggest that access to land and crime, theft, and disorder are key obstacles to FDI in Malaysia.

Institutional Obstacles

Access to land (PIP = 1.00) shows very strong positive evidence of the effect on FDI. The odds ratio implies that for every 1-point increase in the obstacle level, the likelihood that FDI is present increases by 2 times. The finding is consistent with the results of Zhang, Song and Peng (2020). In their study of Chinese investment in infrastructure in Malaysia, they found that there is a land acquisition risk during infrastructure construction projects because Chinese enterprises face difficulties in the preliminary stage of infrastructure construction projects when dealing with land disputes, such as land acquisition, compensation, and resident resettlement.

Although access to land is an important obstacle to FDI, acquiring land tenure rights is often a complex and slow process for large investors. Secure and well-defined land rights not only encourage new investments but also maintain existing investments. Investors feel secure if their land rights are properly recognised and protected (OECD, 2015). However, Malaysia lacks a standard model for land administration. Land administration in Malaysia is governed by the National Land Code (NLC) 1965 which provides consolidated legislation in land tenure, land title, land transfer, lease, and other relevant rights (Zulkifli et al., 2015). Simple land use rights, such as lease rights, can provide tenure security if they are clear. Therefore, land administration should be reliable, transparent, and accessible (OECD, 2015). There may be a need for new legislation on the sharing of information between the public and private sectors; in particular, to improve the land administration system towards e-Government services (Zulkifli et al., 2015).

Crime, theft, and disorder (PIP = 1.00) also show very strong negative evidence of the effect on FDI. The odds ratio implies that for every 1-point increase in the obstacle level, the likelihood that FDI is present decreases by 0.5 times. This may be because crimes are perceived as a signal of adverse socio-institutional environmental conditions (Daniele and Marani, 2011). Crime also increases the cost of doing business (Anderson and Marcoullier, 2002; Kotabe, 2005; North et al., 2009). In light of the importance of crime prevention for safer communities, the Eleventh Malaysia Plan (2016-2020) highlighted crime prevention measures: (i) to provide special police operations, (ii) to involve greater community participation, and (iii) to tighten and enforce laws and regulations. In response, the Reducing Crime National Key Result Area (NKRA) was also implemented to enhance the effectiveness of crime reduction. As a result of the continuous efforts in crime prevention, a decline in crime rates has been reflected in the crime index (EPU, 2015a).

The key findings imply that obstacles to FDI are heterogeneous and may depend on firm size, age, location, and sector. Firm size (PIP = 1.00) shows very strong evidence of the impact on FDI, while firm age (PIP = 0.93) shows positive evidence of the effect on FDI. Thus, larger and older firms are more likely to attract FDI. Also, Region South (PIP = 1.00) shows very strong evidence of the effect on FDI, which suggests Region South is an important location for FDI. To bridge the imbalance in regional development in Malaysia, economic corridors have been launched in different regions. Five economic corridors, the Iskandar Malaysia in Southern Johor (IRDA), the East Coast Economic Region (ECER), the Northern Corridor Economic Region (NCER), the Sabah Development Corridor (SDC), and the Sarawak Corridor of Renewable Energy (Score) have been established (Athukorala and Narayanan, 2017). Electronics (PIP = 1.00) and Chemical (PIP = 0.95) also show very strong and strong evidence of effect on FDI, respectively. The electronics industry is the main engine for growth in Malaysia (Ismail, 2001). In particular, the manufacturing industry remains an important contributor to its export-oriented industrialisation (Hooi, 2016).

4.4 Assessing the Relative Importance of Factors Influencing Foreign Direct Investment in Malaysia

The section assesses the relative importance of factors influencing FDI in Malaysia using the key BMA statistic, the posterior inclusion probability (PIP). It summarises the value of all regression models' likelihood given a set of explanatory variables is included in the models, rather than a single model, and indicates whether a specific explanatory variable is likely to be in the true model (Arin and Baunfels, 2018). Recall the evidence corresponding to the values of BMA's posterior inclusion probability is summarized in Table 4.12, for PIP below 50%, which indicates evidence against the effect on FDI, therefore, this study followed the recommended threshold of PIP above 50% (Antanakakis and Tandl, 2015).

Table 4.12 Evidence Corresponding to the Values of the Posterior Inclusion Probability

Posterior Inclusion Probability (PIP)	Interpretation
PIP ≥ 99%	Very strong evidence of the effect on FDI
95% ≤ PIP < 99%	Strong evidence of the effect on FDI
75% ≤ PIP < 95%	Moderate evidence of the effect on FDI
50%≤PIP<75%	Weak evidence of the effect on FDI
PIP<50%	Evidence against the effect on FDI

Source: Raftery, 1995

4.4.1 Relative Importance of the Attraction Factors

Referring to Figure 4.1, the most important factors are bilateral trade (PIP = 1.00) and logistics index (PIP = 1.00). While the least important factors are patents (PIP = 0.01) and mobile-cellular telephone subscriptions (PIP = 0.01). These two factors are least likely to be considered in the "true" model. The findings are consistent with the various studies (Masron, Zulkafli and Ibrahim, 2012; Yunus et al., 2015; PI, 2020; UNCTAD, 2021a).

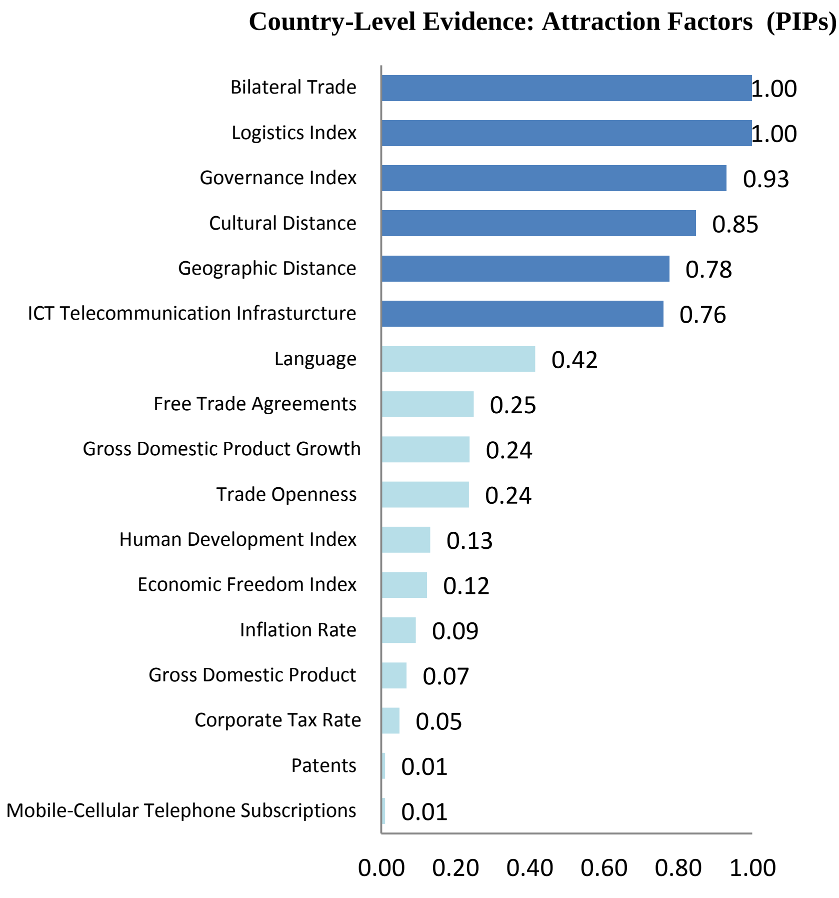


Figure 4.1: Summary of the Relative Importance of Attraction Factors Influencing Foreign Direct Investment in Malaysia: PIPs

First for technology, patents (PIP = 0.01). In past studies, FDI was found to have positive technology spillover effects in Malaysia (Masron, Zulkafli and Ibrahim, 2012; Yunus et al., 2015), rather than technology attracting FDI in Malaysia. This is especially for the case of developed countries; their technological development is ahead of Malaysia. According to the Technology and Innovation Report (UNCTAD, 2021a), the technological development in Western Europe, the United States, Canada, Australia, New Zealand, and Japan are ahead of most other countries including Malaysia, except for a few countries in East Asia. However, Malaysia ranked 31st in the Readiness for Frontier Technology Index among the 158 countries and was classified as a "high" score group (UNCTAD, 2021a). In the classification of four 25th percentile score groups, ranging from low, lower-middle, upper-middle to high, the performance of Malaysia in the Readiness for Frontier Technology Index 2021 in the top quartile from a high score group is better than countries from upper-middle, lower-middle and low score groups. For instance, for ASEAN countries, the Philippines (upper-middle), Thailand (upper-middle), Vietnam (upper-middle), Brunei Darussalam (upper-middle), Indonesia (lower-middle), Cambodia (lower-middle), Myanmar (low), Laos (low), except for Singapore, which ranked 5th in the Readiness for Frontier Technology Index 2021.

For ICT development in Malaysia, according to the Network Readiness Index 2020, the top 10 performers are from developed economies such as Europe, and the United States, and one of the developing economies in Asia, Singapore have achieved the ranking of the most network-ready economies among 134 economies (PI, 2020). Malaysia ranked 34th in the Network Readiness Index 2020, which is better than other ASEAN countries, for instance, Thailand (51), Vietnam (62), Indonesia (73), the Philippines (74), Laos (97) and Cambodia (104), except for Singapore, which ranked 3rd in the Network Readiness Index 2020. Two proxies were used to measure the ICT factors in this study, although mobile-cellular telephone subscriptions are the least important factor, the ICT telecommunication infrastructure (PIP = 0.75) is an important factor in attracting FDI.

Besides, based on the recommended threshold of above 50% (Antanakakis and Tandl, 2015), language (PIP = 0.42), free trade agreements (PIP = 0.25), gross domestic product growth (PIP = 0.24), trade openness (PIP = 0.24), Human Development Index (PIP = 0.13), Economic Freedom Index (PIP = 0.12), inflation rate (PIP = 0.09), gross domestic product (PIP = 0.07), corporate tax rate (PIP = 0.05), patents (PIP = 0.01), mobile-cellular telephone subscriptions (PIP = 0.01) are not the significant factors in attracting FDI in Malaysia.

Overall, it can see that most of the economic factors, for instance, gross domestic product growth, trade openness, Human Development Index, inflation rate, gross domestic product, corporate tax rate and patents are against the effect on FDI. However, institutional factors, such as bilateral trade, governance index, cultural distance and geographic distance are relatively more important in influencing FDI in Malaysia. This signifies the relative importance of institutional factors in affecting FDI.

4.4.2 Relative Importance of the Obstacle Factors

Figure 4.2 displays the relative importance of each obstacle factor. Assess to land (PIP = 1.00) and crime, theft and disorder (PIP = 1.00) are the most important obstacles. Whereas, electricity, competitors in the informal sectors, courts, corruption, political instability, business licensing and permits and tax administration with zero posterior inclusion probability (PIP = 0.00), which means that these factors are not considered in the model. These factors have not been considered major obstacles by foreign investors in Malaysia. The findings are supported by various studies (Escribano, Guasch, De Orte and Pena; 2009; World Bank, 2020).

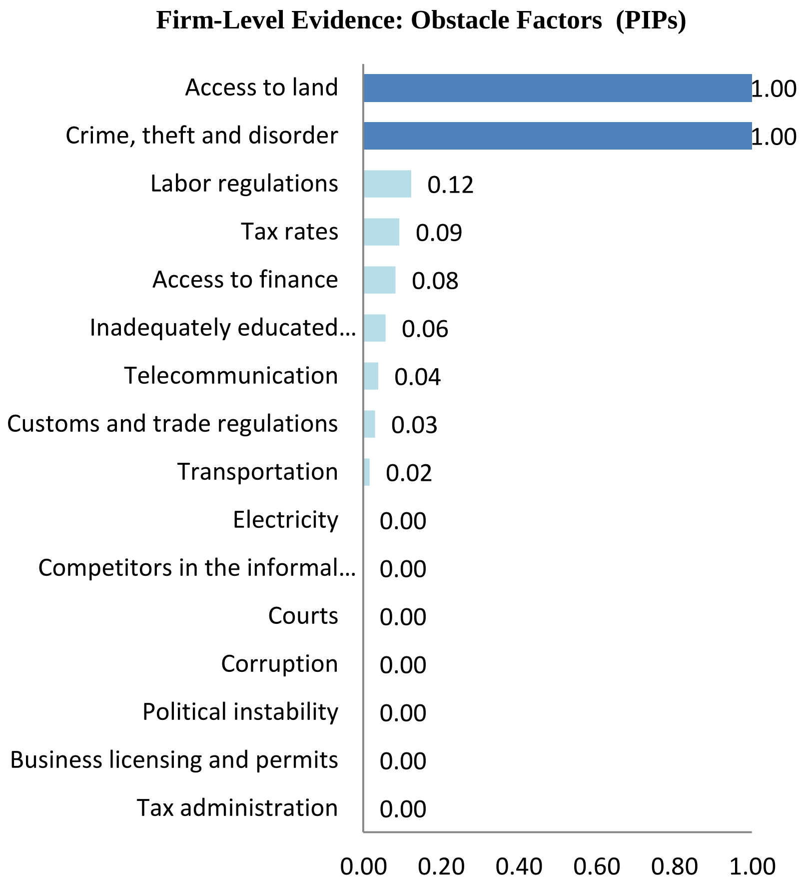


Figure 4.2: Summary of the Relative Importance of Obstacle Factors Influencing Foreign Direct Investment in Malaysia: PIPs

According to World Bank (2020), Malaysia ranked 12th in the ease of doing business among the 190 economies and achieved an improvement of 0.2 points in the overall ease of doing business score from 81.3 to 81.5 in 2020. The ease of doing business score captures 10 dimensions, while Malaysia is listed on the top 10 for dealing with construction permits (2nd rank), getting electricity (4th rank), and protecting minority investors (2nd rank) among the 190 economies. This achievement supports the BMA findings that electricity and business licensing and permits are not key obstacles in Malaysia. However, Malaysia scored lowest in enforcing contracts (68.2 points), reflecting the validity of BMA's finding on access to land is the most important obstacle factor in Malaysia. In addition, crime, theft and disorder is also one of the most important obstacle factors in Malaysia. This is supported by the study of Escribano, Guasch, De Orte and Pena (2009). In their study, red tape, corruption, and crime were found to be one of the major obstacles in terms of productivity. Thus, special attention is required to abate the crime, theft and disorder rates in Malaysia.

For the obstacle factors that are below the threshold of 50%, such as labor regulations (PIP = 0.12), tax rates (PIP = 0.09), access to finance (PIP = 0.08), inadequately educated workforce (PIP = 0.06), telecommunication (PIP = 0.04), customs and trade regulations (PIP = 0.03), and transportation (PIP = 0.02), which has no significant effect on FDI. Although telecommunication, labour regulations and an inadequately educated workforce are not the key obstacles, with the increasing intensification of digitalisation, ICT is redefining globalisation through the connectedness created by digital technologies. The adoption of digital technologies is thus important for businesses. Taking the adoption of electronic commerce (E-commerce) as an example, based on the data collected from 222 Malaysian firms, the results indicated that security and privacy, uncertainty in rules and regulations, and lack of skilled workers were barriers to the adoption of E-commerce in Malaysia (Khatibi, Thyagarajan and Seetharaman, 2003). Overall, the BMA finding signifies the importance of an efficient institution in facilitating investment in Malaysia.

4.5 Conclusion

This study identified the key factors affecting FDI in Malaysia, including attraction factors and obstacle factors. First, this study examined the effects of ICT, institutional and economic factors on bilateral FDI in Malaysia. The findings show that the Logistics Index (PIP= 1.00), Bilateral Trade (PIP = 1.00), Governance Index (PIP = 0.93), Cultural Distance (PIP = 0.85), Geographic Distance (PIP= 0.78), and ICT Telecommunication Infrastructure (PIP = 0.76) are important attraction factors. Second, this study investigated the effects of perceived obstacles on FDI in Malaysia. The findings show that access to land (PIP = 1.00), and crime, theft, and disorders (PIP = 1.00) are important obstacle factors. Third, this study assessed the relative importance of the factors influencing FDI in Malaysia. Overall, most of the economic factors, such as, gross domestic product growth (PIP= 0.24), trade openness (PIP = 0.24), Human Development Index (PIP = 0.13), inflation rate (PIP = 0.09), gross domestic product (PIP = 0.13), corporate tax rate (PIP = 0.05) and patents (PIP= 0.01) have no significant effect on FDI. However, institutional factors, such as Bilateral Trade (PIP = 1.00), access to land (PIP = 1.00), crime, theft, and disorders (PIP = 1.00), Governance Index (PIP = 0.93), Cultural Distance (PIP = 0.85) and Geographic Distance (PIP = 0.78) are relatively more important in influencing FDI in Malaysia. This signifies the relative importance of institutional factors in affecting FDI. The implications, policy recommendations and limitations of these findings are discussed further in the next chapter.

CHAPTER FIVE

CONCLUSIONS

5.1 Overview of the Study

Malaysia’s performance in attracting FDI has weakened in recent years. To understand, address and overcome the issue, this study identified key factors affecting FDI in Malaysia, which include attraction and obstacle factors. In the literature, the OLI paradigm's L-advantages have been the holistic and dominant framework that is commonly used to explain factors attracting FDI or the pull factors. These factors are generally known as macroeconomic factors. Following the rapid pace of digitalisation and globalisation, the macroeconomic factors alone however are insufficient to explain the FDI flows. In addition to macroeconomic factors, other factors to reflect the digitalisation and globalisation aspects of the global economy should be considered to explain FDI. Hence, first, at the country-level evidence, this study examined the effects of ICT, institutional and economic factors on bilateral FDI in Malaysia. Second, at the firm-level evidence, this study investigated the effects of perceived obstacles on FDI in Malaysia. Third, this study assessed the relative importance of the factors influencing FDI in Malaysia. In short, this chapter summarises the findings, discusses the implications of the study and policy recommendations, addresses the limitations of the research and provides recommendations for future study.

5.2 Research Summary

Building on the OLI paradigm's L-advantages, this study developed the Extended Location framework to reflect the importance of digitalisation and globalisation on FDI. Additionally, the institutional framework is incorporated based on the Three Pillars of Institutions (Scott 1995), the Gravity Model (Tinbergen, 1962), Transaction Cost Theory (Williamson, 1985), and the CAGE Model (Ghamawat, 2001).

The BMA approach was selected to address two common problems in variable selection, namely factors to be considered and included in the model and the relative importance of the factors in a model. The inclusion of the relevant factors for FDI in Malaysia increases the number of possible factors in explaining FDI. Facing such a situation of having several potential factors explaining FDI, it can be challenging to find the “correct” model. As compared to a single model, the BMA approach offers several advantages, such as it reduces the chances of underestimated uncertainty, facilitates inference using a regression model without accounting for variable selection before estimation, provides a better predictive ability, and is relatively robust to model misspecification. Hence, rather than using a single model for estimation, BMA was selected for analysis.

Firstly, at the country-level analysis, the ICT-E-I model is developed to examine the effects of ICT, institutional and economic factors on bilateral FDI in Malaysia. A total of 32 active partners from developed and developing economies from 2010 to 2017 were selected for analysis using the BMA for the linear regression approach. Few robustness checks confirm the results of the baseline Model 1(a), for instance, the exclusion of economies, and the inclusion of additional explanatory variables. The robust findings of the baseline Model 1(a) show that Logistics Index (PIP = 1.00), Bilateral Trade (PIP = 1.00), Governance Index (PIP = 0.93), Cultural Distance (PIP = 0.85), Geographic Distance (PIP = 0.78), and ICT Telecommunication Infrastructure (PIP = 0.76) are important attraction factors for bilateral FDI in Malaysia.

Secondly, in addition to the country-level analysis, the study investigated the effects of perceived obstacles on FDI in Malaysia. At firm-level analysis, based on the Enterprise Surveys (ES) 2015 dataset, a total of 692 firms from the manufacturing and services industry were selected for analysis using the BMA for logistic regression. The dataset is split into two sample sets: manufacturing-sample and full-sample. The manufacturing-sample (n = 527) is used as a baseline Model 2(a). And later, the full sample (n = 692) is used for robustness checks. In addition, to control the issues of firm heterogeneity, control variables, such as firm size, firm age, region dummy, and sector dummy were incorporated. The robust findings of the baseline Model 2(a) show that access to land (PIP = 1.00), and crime, theft, and disorders (PIP = 1.00) are key obstacle factors in Malaysia.

Thirdly, the most important attraction factors are bilateral trade (PIP = 1.00) and logistics index (PIP = 1.00). While the least important attraction factors are patents (PIP = 0.01) and mobile-cellular telephone subscriptions (PIP = 0.01). These two factors are least likely to be considered in the “true” model. The findings are consistent with the various studies (Masron, Zulkafli and Ibrahim, 2012; Yunus et al., 2015; PI, 2020; UNCTAD, 2021a). In addition, the most important obstacle factors are assess to land (PIP = 1.00) and crime, theft and disorder (PIP = 1.00). Whereas, electricity, competitors in the informal sectors, courts, corruption, political instability, business licensing and permits and tax administration with zero posterior inclusion probability (PIP = 0.00), which means that these factors are not considered in the model. As such, these factors are not likely to be important obstacles influencing FDI in Malaysia. These findings are supported by various studies (Escribano, Guasch, De Orte and Pena; 2009; World Bank, 2020). In short, the BMA finding signifies the relative importance of institutional factors in affecting FDI in Malaysia.

5.3 Implications of the Study and Policy Recommendations

The BMA findings indicate the relative importance of institutional factors in affecting FDI in Malaysia (Table 5.1). This signifies a shift in the importance of FDI factors from an economic to an institutional lens. Unlike in the past, macroeconomic factors determining FDI in Malaysia, for instance, gross domestic product (Ang, 2008; Tang, Yip and Ozturk, 2014; Mugableh, 2015), trade openness (Ang, 2008; Aw and Tang, 2010; Mugableh, 2015), inflation rate (Aw and Tang, 2010), the exchange rate (Ang, 2009; Aw and Tang, 2010), the political and social institutions are playing a pivotal role in facilitating investment in Malaysia. A vibrant business environment is building on an efficient institution in facilitating and promoting both domestic and foreign investment. Hence, improving the investment climate relies on stable macroeconomic conditions that are complemented by an efficient institution in promoting investment and growth.

Table 5.1: Summary of the Recommended Policies Based on the Relative Importance of the Factors

Characteristics	Factors	Policies Recommended
Regulation and administration distance Regulation and tax Crime	Governance index (PIP = 0.93) Access to land (PIP = 1.00) Crime, theft, and disorders (PIP = 1.00)	➢ To establish, maintain and enforce rules and regulations. ➢ To provide a transparent rule and regulation. ➢ To provide adequate legal protection for intellectual property.
Cultural distance	Cultural distance (PIP = 0.85)	➢ To facilitate cross-cultural understanding and communication.
Trade linkages	Bilateral trade (PIP = 1.00)	➢ To actively participate in the process of regional integration and engage in the rule-making process.
Physical distance	Geographic distance (PIP = 0.78)	➢ To actively participate in the process of regional integration for investment facilitation.
Transport	Logistics index (PIP = 1.00)	➢ To expand and upgrade the transport network. ➢ To create an integrated logistics network.
ICT telecommunication	ICT telecommunication infrastructure (PIP = 0.76)	➢ To expand and upgrade ICT telecommunication infrastructure for quality data connections. ➢ To encourage greater use of ICT for businesses and productions. ➢ To ensure and upkeep the regulations in data protection, security and privacy protection, and consumer protection. ➢ To ensure the use of ICT for education, and enable students at all levels to learn digital technology.

5.3.1 Institutional Factors: The Importance of Political and Social Institutions in Facilitating Investment

Recall the definition of globalisation, there are four main pillars, i.e., (1) regulative, (2) normative, (3) cognitive and (4) geographic in explaining the political and social dimensions of globalisation. The BMA findings reflect the pivotal role of political and social institutions in promoting FDI in Malaysia. First, the political institution, an effective government is playing an important role in establishing, maintaining and enforcing rules and regulations, providing transparent rules and regulations and adequate legal protection for intellectual property to attract investment. This is because well-established rule and regulation in host economies attract FDI (Lu et al., 2014; Peres et al., 2018), and the transparency of the rules and regulations are important for a vibrant business environment, particularly host countries with stronger contract enforcement attract more FDI (Contractor et al., 2020). In addition, strengthening intellectual property rights (IPRs) protection promotes innovation and FDI (Tanaka and Iwaisako, 2014).

A vibrant business environment requires public trust in an effective government. This is because trust in government is important for the success of government policies and important in improving consumers' and investors' confidence in the economy. Improving investment climate embedded in rebuilding trust in government. A greater degree of government openness would serve as a positive signal showing the government's commitment to invest in public trust, which helps in rebuilding trust in government (Matasick, 2017). Hence, adopting the concept of open government is important in reshaping public trust. This can be done by inviting and strengthening dialogue with the public in improving the transparency of policies, allowing a higher degree of media freedom in disseminating information, fighting corruption improving government integrity, and improving the quality of the policy decisions in the areas of budgeting, law-making and service delivery (Matasick, 2017).

Besides, within the ASEAN, taking Singapore as one example, Singapore is one of the countries that has successfully attracted investment and achieved the position of the top fourth host economy for global FDI (UNCTAD, 2021b). For instance, Singapore scored very high on World Governance Index, ranked first in the world rankings of the Economic Freedom Index, and second in the world rankings for Ease of Doing Business (World Bank, 2020), indicating that an effective Singapore government is important in creating a vibrant business environment. Hence Malaysia could learn from Singapore's governance in the area of government effectiveness, political stability, regulatory quality, control of corruption and rule of law.

Second, the social institution is also playing an important role in facilitating cross-cultural understanding and communication in facilitating investment. The cultural heritage of Malaysia is always its unique asset. In particular, the cultural diversity of three ethnically distinct groups, such as Malays, Chinese, and Indians would provide a cushion for FDI and a harmonious environment for expatriates to adapt. Moreover, the Sino-

Malaysian Diplomatic relations, the diplomatic link between China and Malaysia, is further strengthened by implementing the Belt and Road Initiative (BRI) (Kong, 2017).

Moreover, trade linkages have a very strong effect on FDI in Malaysia, implying the importance of the socio-political-economic ties between Malaysia and home in attracting FDI in Malaysia. As one of the founders of the ASEAN, Malaysia has participated in several Free Trade Agreements (FTAs) and economic partnerships through ASEAN. In 1992, followed by ASEAN's decision to liberalise trade to a more privileged stage, the ASEAN Free Trade Area (AFTA) was established. The AFTA serves as a trade bloc to uphold regional manufacturing in ASEAN by eliminating tariffs and non-tariff trade barriers within the ASEAN region and attracting more foreign direct investments to the ASEAN member countries (Plummer and Cheong, 2009).

Moving from AFTA, there emerged the ASEAN+1 free trade agreement (FTA) in recent years. These are the ASEAN-People's Republic of China Free Trade Agreement (ACFTA); ASEAN-Republic of Korea Free Trade Agreement (AKFTA); ASEAN-Japan Comprehensive Economic Partnership (AJFTA); ASEAN-India Free Trade Agreement (AIFTA), ASEAN-Australia and New Zealand Free Trade Agreement (AANZFTA), and ASEAN-Hong Kong, China Free Trade Agreement (AHKFTA). Taking AFTA together with ASEAN+5 FTAs, the Regional Comprehensive Economic Partnership (RCEP) was launched during the 21st ASEAN Summit in Cambodia in 2012. The RCEP is a proposed agreement between ASEAN member states and ASEAN FTAs partners to move to a more comprehensive economic integration in the region. These ASEAN FTAs partners are China, Japan, India, South Korea, Australia, and New Zealand. However, in fear of RCEP making India's exports less competitive, India opted to withdraw from the RCEP in November 2019.

In November 2020, the 15 RCEP participating countries, the Member States of the ASEAN, and the ASEAN+5 FTAs partner, China, Japan, South Korea, Australia and New Zealand, signed the RCEP agreement. RCEP is working as a region-wide free trade area to provide a more stable and predictable economic environment to support trade and investment in the region, particularly adversely affected by the COVID-19 pandemic. Also, the 15 RCEP participating countries will continue to work with India and welcome India's return to the RCEP (ASEAN, 2020).

In addition, Malaysia also signed seven bilateral FTAs. For instance, Malaysia-Japan Economic Partnership Agreement (MJEPA), Malaysia-Pakistan Closer Economic Partnership Agreement (MPCEPA), Malaysia-New Zealand Free Trade Agreement (MNZFTA), Malaysia-India Comprehensive Economic Cooperation Agreement (MICECA), Malaysia-Chile Free Trade Agreement (MCFTA), Malaysia-Australia Free Trade Agreement (MAFTA) and Malaysia-Turkey Free Trade Agreement (MTFTA). It is no doubt that Malaysia benefits from its regional and bilateral Free Trade Agreements (FTAs). For instance, Malaysia's trade with both bilateral and regional FTA partners accounted for 66.7% of total trade in 2019, while reaching 66.5% of total trade in the first 9 months of 2020 (MITI, 2020). Since there is a complementary relationship between trade and FDI (Goh, Wong and Tham, 2013), the bilateral trade performance would enhance the investment climate in Malaysia. Hence, the Malaysian government should actively participate in the process of regional integration and engage in the rule-making process in discussing and formulating policies that would benefit trade and investment.

Lastly, geographic proximity provides a significant implication for the policies to attract investment from the Asia-Pacific region. In the presence of the ASEAN Economic Community (AEC) 2025 to deepen regional integration that promotes further intraregional investment, Malaysia could take opportunities to attract intra-ASEAN investment and promote intra-ASEAN trade. Besides, the emergence of the Belt and Road Initiative (BRI) in 2013 provides opportunities for Malaysia through investment in infrastructure projects. According to the World Bank (2019a) report, the implementation of BRI is expected to attract very large investments for some countries. Countries like Malaysia, Indonesia, Pakistan, and the Russian Federation are expected to account for 50% of the total BRI investment. Since the introduction of BRI in 2013, Malaysia received a total of $31,410 million of China BRI-related investments from 2013 to 2019. A total of 56 investments were received from 2013 to 2019. The distribution of China BRI-related investments in Malaysia accumulated from 2013 to 2019 is mainly in real estate, which accounted for 26.79% of the total number of investments, followed by transport (19.64%); energy (17.86%); chemicals (7.14%); tourism (7.14%), and metals (5.36%) and other (5.36%). The technology and utilities sectors are responsible for only 3.57%. The agriculture and finance sectors are responsible for only 1.78%[1]. Overall, the transport sector is receiving more attention after the introduction of BRI. Therefore, continuous efforts are to be placed by the government to actively engage in regional integration for investment facilitation.

5.3.2 Economic factors: The Importance of Physical Infrastructure in Facilitating Investment

The macroeconomic factors have been emphasised in past studies as the primary factors in attracting FDI, however, this study indicates that most of the economic factors did not show significant impacts in affecting FDI in Malaysia, except for the logistics index. This signifies a shift in the importance of FDI factors from an economic to an institutional lens. Hence, there is a complementary relationship between economic and institutional factors, and economic factors alone may not be adequate in explaining FDI. This is supported by the study of Soh, Wong and Tang (2021). For instance, the logistics performance of attracting FDI in Asia is depending on institutions (Soh, Wong and Tang, 2021), implying the importance of institutions in facilitating infrastructure development. Therefore, the government is playing an important role in the development of an integrated logistics network whether the local or international network in Malaysia.

[1] Source: China Global Investment Tracker

Furthermore, the importance of the logistics index on FDI highlights the importance of “infrastructure” in the digital economy. In addition to the ICT telecommunication infrastructure, roads, rails, airports, and ports remain vital for FDI. Hence, there is a need to promote new investments in road, rail, and air services to boost development and create an integrated logistics network. Expansion of the transport networks will create new corridors for economic activities, which may facilitate investment and trade and e-commerce activities. For instance, there are approximately 16.6 million e-Commerce consumers in 2018 (MCMC, 2019), which has resulted in the growth of the logistics industry in Malaysia.

Looking at the Logistics and Trade Facilitation Master Plan (2015-2020) in Malaysia aims to provide strategic directions for the logistics industry by improving the efficiency of transport and trade facilitation, and ultimately Malaysia could function as the “Preferred Logistics Gateway to Asia” (EPU, 2015b). Moreover, according to Zhang, Zhang and Liang’s study (2021), Malaysia was among the top 10 countries that played a significant influence on the international logistics network in facilitating the development of the Belt and Road. Hence, Malaysia could maintain its active and significant role in the development of local and international logistics networks to promote trade and investment.

5.3.3 ICT Factors: The Importance of ICT in Facilitating Investment

The significant role of ICT telecommunication infrastructure (ITI) reflects the importance of digital infrastructure on FDI. Since ICT plays a role in investment promotion worldwide, especially for Asian countries, special attention is to be paid to the development of telecommunication infrastructure and the promotion of greater ICT adoption to sustain long-run growth (Pradhan et al., 2017; Appiah-Otoo and Song, 2021). Hence, in line with market needs, the Malaysian government plays an active role in building the digital government. For instance, the MyGovernment portal is a digital gateway for all government online services. Online services are provided for license approval to facilitate FDI.

Moreover, the government is committed to further expanding and enhancing the digital infrastructure addressed in the Eleventh Malaysia Plan (2016-2020) and the National Fiberisation and Connectivity Plan (NFCP) (2019-2023). A greater concern is placed on the affordability and efficiency of digital services, and more excellent coverage and connectivity are promoted by providing broadband infrastructure services including in rural areas (EPU, 2015a). While entering the 2020s, some countries still deployed the fourth-generation (4G) mobile technology. However, the world is at the dawn of the fifth-generation (5G) mobile technology, which promised to provide a faster speed, very low delays, and very pervasive connectivity through mobile devices (Sicari, Rizzardi and Coen-Porisini, 2020). In Malaysia, the preparation for the implementation of 5G began in November 2018. The commercialisation of the 5G technology by the third quarter of 2020 would elevate Malaysia as one of the ASEAN member countries' pioneers to implement the 5G (MCMC, 2020).

According to the Malaysian Institute of Economic Research (MIER) report, the implementation of 5G mobile technology is predicted to contribute up to RM12.7 billion between 2021 and 2025 to the Malaysian economy. This would also create more than 39,000 new job opportunities (MCMC, 2020). However, the 5G network system has raised important concerns regarding its security and privacy issues. Several security challenges remain, such as transparency, network privacy and vulnerabilities, and others (Nguyen, Pathirana, Ding and Seneviratne, 2020; Sicari, Rizzardi, and Coen-Porisini, 2020). Therefore, there is a need to improve the regulatory framework on data protection, security, privacy and consumer protections to protect individual users from cybercrime, which also relies on an effective institution.

Besides, firms are encouraged to be early adopters of ICT for businesses. This is because digitalisation, industrial automation, and advanced robotics have transformed the production process in both the manufacturing and services sectors (BNM, 2019a). As early adopters, firms could play a significant role in the digital economy and therefore receive the benefit (World Bank, 2006). The Malaysia Digital Economy Corporation (MDEC) Sdn. Bhd. has implemented various first-movers digital programmes and initiatives to reshape early adopters. Continuous efforts have been made to promote the growth of local technology firms and attract local and foreign investment, in particular, the launch of the Digital Investment Office (DIO) and the Heart of Digital ASEAN (MHODA) portal that serves as a single-window to facilitate applications for all digital investors (MDEC, 2021).

5.4 Limitations and Recommendations for Future Study

At the country-level analysis, of data limitation, first, the ICT telecommunication infrastructure is limited to the use of fixed-broadband subscriptions, internet users, and fixed telephone subscriptions. What is relevant today may not be sufficient when new digital technologies emerged. A comprehensive future study of using other ICT tools can further be examined to address the importance of ICT on FDI. Second, the data is limited to eight years period; a longer period could be incorporated for future study with the availability of data.

Next, at the firm-level analysis, this study considered limited ICT factors; in particular, the questionnaire considered only telecommunications. Hence, telecommunications was the only variable used to measure the ICT telecommunication infrastructure. As the economy is shifting to a more globalised and digitalised market, telecommunications, in general, may undermine the role of ICT telecommunication infrastructure in the digital economy. Different forms of ICT telecommunications infrastructure, such as fixed telephony, mobile telephony, fixed broadband, and mobile broadband, can be incorporated and recommended for future study. Second, the firm-level analysis was conducted based on the manufacturing-sample; this is because 76%

of the dataset belongs to the manufacturing industry. Although robustness checks have been conducted based on the full-sample, which shows no significant difference in results, a future study can be conducted based on the services-sample with the availability of data to generalise results and policy implications for services firms.

Besides, in light of the recent pandemic of coronavirus (COVID-19), global FDI flows are expected to decrease by 40% in 2020, bringing global FDI below $1 trillion for the first time in 2005 (UNCTAD, 2020). The emergence of a "new normal" in the business environment may change the way of doing business; entering new markets may go through digital platforms. Therefore, a future study is recommended to examine the "crowding-out" effect on whether ICT crowds out investment, especially to understand whether COVID-19 changes investment behaviour in the years ahead.

The methodological limitation is that the implementation of BMA on model selection can be sensitive to the prior specification. This is because before implementing any of the BMA approaches, the prior probability of each model must be assigned. This study is limited to the use of a uniform prior by assuming that all models are equally likely to be considered. However, BMA can be computationally challenging, in particular, when the explanatory variable, $K > 25$. Hence, the Markov chain Monte Carlo (MCMC) is recommended (Antonakakis and Tondl, 2015; Korner-Nievergelt et al., 2015; Hinne et al., 2020). Where the MCMC algorithm is based on the Metropolis-Hastings (MH) algorithm which draws samples from the model space focusing on models with high posterior model probability and is used to fit a model (Antonakakis and Tondl, 2015; Korner-Nievergelt et al., 2015). Future study is recommended to use the MCMC simulation for estimation.

5.5 Conclusion

In short, by looking at the country- and firm-level evidence, the BMA approach highlights the relative importance of institutional factors in explaining FDI. Hence, to improve the investment climate, more attention should be paid to improving the soft and hard “infrastructure”. Soft infrastructure refers to a conducive institutional environment for investment, while hard infrastructure refers to the ICT telecommunication and transport infrastructure. The finding signifies a shift in the importance of FDI factors from an economic to an institutional lens.

While moving forward, in light of the pandemic COVID-19, to ensure that Malaysia remains a preferred investment destination and becomes a regional investment hub, the National Investment Aspiration (NIA) is approved in April 2021. The NIA is serving as a basis for a more comprehensive reform of investment policies in Malaysia and is guided by the Shared Prosperity Vision (SPV) 2030, which focuses on the coherence and cohesiveness in all national investment-related policies (MIDA, 2021; MITI, 2021). What is important is the need for Malaysia to adopt a comprehensive approach to respond to the evolving investors’ needs. In presenting the National Investment Aspiration, Malaysia’s Ministry of International Trade and Industry (MITI) also stressed the importance of continuous efforts to be placed in the area such as incentive, infrastructure, regulatory, legal, institutional mechanisms and others (MIDA, 2021; MITI, 2021). Thus, investors could anticipate seeing more stable economic conditions that are complemented by a more effective institution in continuously creating a pro-business environment.

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