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**Foreign direct investment, the development of financial systems
and economic performance: An empirical study of Asian developing
countries**

A thesis
submitted in partial fulfilment
of the requirements for the Degree of
Doctor of Philosophy

at
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by
Pham Tiet Huy

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Abstract of a thesis submitted in partial fulfilment of the requirements for the Degree of Doctor of Philosophy.

Abstract

Foreign direct investment, the development of financial systems and economic performance: An empirical study of Asian developing countries

by

Pham Tiet Huy

Following the 2008 global financial crisis, most Asian developing countries (ADC) exhibited a good record of economic performance in 2015 with a 4% GDP growth rate. Foreign direct investment (FDI) and financial development are considered notable determinants of the ADC' economic development. The presence of higher inward FDI enables host economies to improve their capital accumulation, ameliorate technological knowledge and shorten the burden of external debt. Improvements in financial development could help investors minimize investment risks, hasten transactions and increase the flows of funds to the most productive projects.

Ample empirical studies explore the linkages between FDI-Growth and Finance-Growth in a single country or different groups of countries. However, there is a dearth of studies investigating how local financial markets' development (measured particularly by the banks and stock markets) affects the FDI-Growth nexus in ADC's economies. The relationship between inward FDI and the development of finance is under researched in this region. Hence, ADCs might not fully exploit the advantages of inward FDI and the development of finance to speed up their economic progress.

This study uses the dynamic panel method to investigate the mediating effect of local financial markets' development on the FDI-growth nexus, and the relationship between inward FDI and finance in 33 ADC from 1986 to 2015. There are several interesting findings. First, based on the system GMM estimator, the results confirm that greater inward FDI and improvements in finance (measured by the banks and stock markets) significantly accelerates ADC economic progress. Secondly, there is a complementary effect between FDI and finance on ADC economic outcomes. This implies that higher levels of finance can help ADC economies strengthen their absorptive capacity to exploit more benefits from inward FDI. Thirdly, based on the dynamic threshold effects model, we document that ADC economies should attain a potential threshold level of finance to improve their absorptive capacity to maximize the technological benefits from inward FDI. Higher levels of finance (represented by the higher financial threshold group) enable local and foreign enterprises to mitigate transaction costs,

alleviate investment risks and access low-cost external finance to produce more productive investments. Fourthly, for the FDI-finance linkage, local financial markets also benefit from inward FDI by attracting more overseas ventures and improving their capital resources to allocate to potentially profitable projects.

This study's results suggest that ADC policymakers attracting FDI should formulate their policies and strategies to enhance the development of local financial markets. Greater improvements in the financial markets would help ADC economies provide investors with a more favourable investment environment. This would encourage higher productive entrepreneurial ventures and strengthen ADC absorptive capacity to exploit more technological spill-over transferred by inward FDI to intensify economic prosperity.

Keywords: ADC, economic development, FDI, financial development, threshold level.

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Chapter 1

Introduction

1.1 Background of the study

Most Asian developing countries (ADC) exhibited a good record of economic performance after the global financial crisis of 2008 and have had remarkable GDP growth recently. The World Bank (2016) shows that India had the highest GDP growth of about 8.0%, followed by Lao PDR (7.3%), Cambodia (7.0%), Myanmar (7.0%) and China (6.9%). In general, the average GDP growth rate of the ADC economies was around 4%, higher than the rest of the world (2.8%), Sub-Saharan Africa (3.0%), the Arab World (3.4%), the Euro Zone area (2.1%), and OECD members (2.4%) (World Bank, 2016). The literature suggests that countries with more conducive economic conditions, such as infrastructure promotion, human augmentation, more open economy, availability of capital resources, high quality institutions and better macroeconomic management, can enhance their output growth and economic progress (e.g., Lee and Hong, 2012; Muzaffar and Junankar, 2014; Siddiqui and Rehman, 2016; Huang and Ho, 2017). Among the economic factors to augment the ADC economic performance, FDI and financial development have received considerable interest in research (e.g., Asghar et al., 2011; Kotrajaras et al., 2011; Hsueh et al., 2013; Azam et al., 2016). Asghar et al. (2011) and Kotrajaras et al. (2011) argue that low productivity and scarce local capital restrict many developing economies, including Asian countries, from enhancing their economic growth. Through labour training and skill acquisition, FDI augments capital accumulation and transfers new technological knowledge to the recipient economies. In addition, financial development improvements enable investors to reduce risks, lower the cost of capital, and raise their desire to invest (Hsueh et al., 2013). The stock market encourages liquidity, mobilizes and assembles savings, and engenders information for productive projects and capital allocation, which intensifies productivity improvements and economic development (Azam et al., 2016).

Recently, foreign capital inflows (such as foreign portfolios, external debt and FDI) have been studied widely because of the benefits received by the host economies such as additional financial resources, technical knowledge and business knowhow, for productive investments, improvements in international production networks, export promotion, more job opportunities, and augmentation of products and services (Reisen and Soto, 2001; Baharumshah et al., 2017). Among the different types of capital inflow, inward FDI has been considered by many developing countries as one important component contributing to their economic performance (Alguacil et al., 2011; Baharumshah et al., 2017). This is because other short-term foreign capital tends to be more volatile than inward FDI, which might lead to uncertainties in exchange rates, stock prices, and inflationary pressures in the host

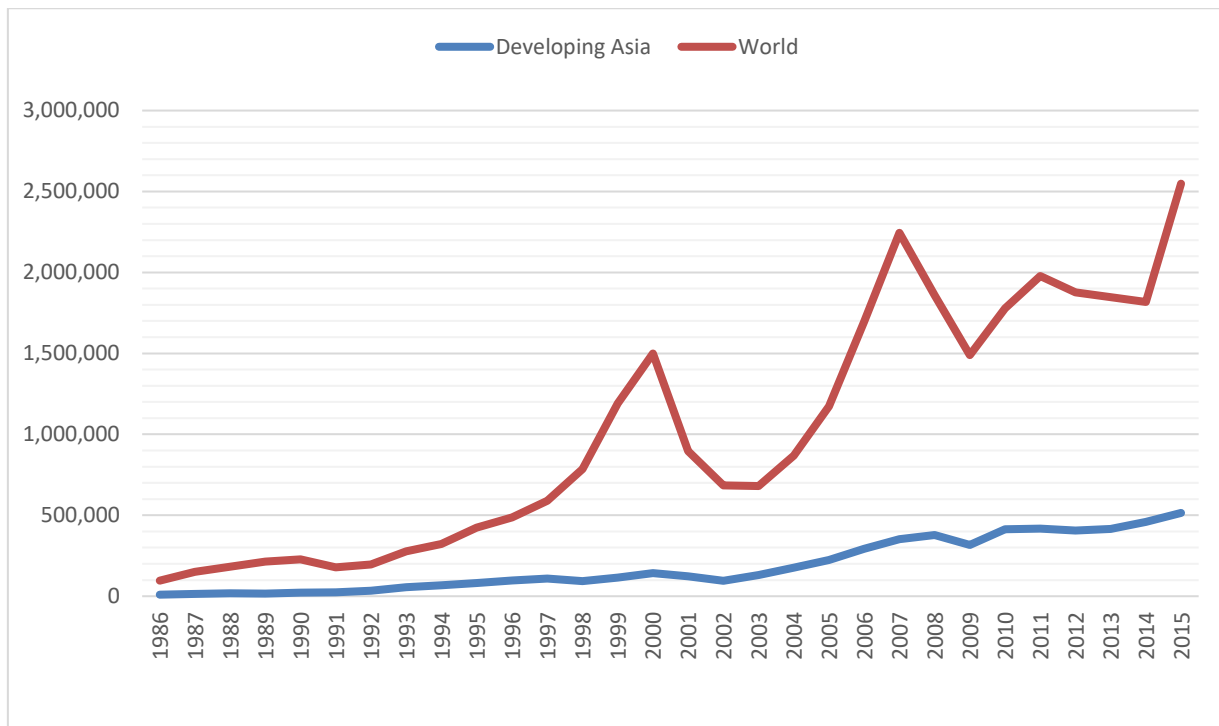


Figure 1-1 FDI Inflows in Developing Asian and Global Economies (1986 to 2015) (in millions USD)

Source: Author's calculations based on the UNCTAD database

countries¹ (Jongwanich and Kohpaiboon, 2019). Similarly, in the ADC region, the attraction of inward FDI enhances economic performance. From 1986 to 2015, inward FDI saw a significant increase from \$9.50 billion to \$514.42 billion (see Figure 1.1). Compared with other areas, the ADC region in 2015 had the second largest inward FDI with over 25% of the global FDI (see Figure 1.2). ADC governments have been pursuing an array of policies to attract more inward FDI, e.g., tax incentives, infrastructure subsidies, and investment climate reforms (transparent legal systems and a sound regulatory environment to safeguard foreign investors). As a result, many foreign enterprises have brought their capital to the ADC region as one of the most attractive destinations for their investments, especially in the manufacturing and services sectors (UNCTAD, 2016).

FDI can act as a stimulus for economic performance since it reflects a rise in the number of firms participating in the global market, competitiveness of international enterprises and liberalization of the world economy (UNCTAD, 1996). FDI also results in mergers and acquisitions of multinational enterprises that widen and consolidate their global market, introduce new products and upgrade competition. Inward FDI can redistribute required capital from the capital-intensive nations (FDI donors) to labour-intensive nations (FDI recipients) (Nwaogu and Ryan, 2015). Different industries may

¹ The 1997/1998 Asian financial crisis showed that a large abrupt withdrawal of short-term capital exacerbated panic in Asian financial markets causing volatile exchange rates, bankruptcies and output losses (Reisen and Soto, 2001).

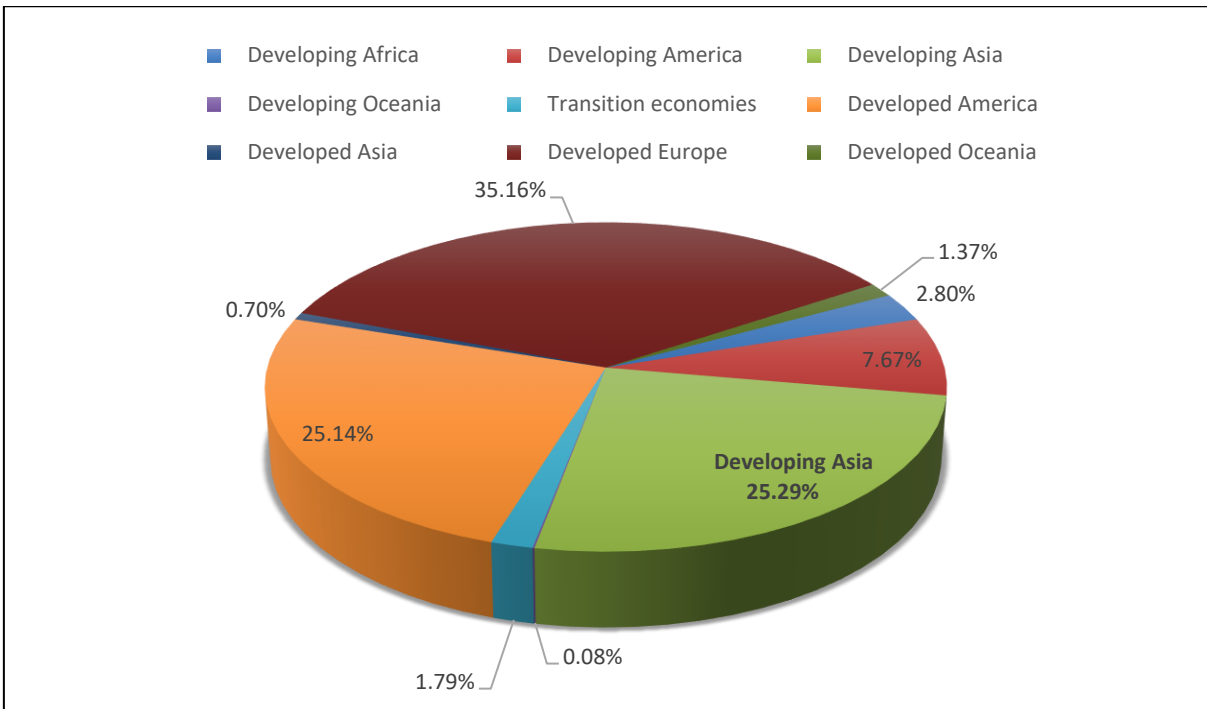


Figure 1-2 FDI Inflows by Economies in 2015

Source: Author's calculations based on the UNCTAD database

use diversification of inward FDI differently (Soumare, 2015). The manufacturing sector may opt for numerous highly skilled workers, whereas the primary sector, agriculture and fisheries, tend to be more labour-intensive. García et al. (2013) point out that recipient countries can benefit from inward FDI such as cost reduction for upstream suppliers by economies of scale, transfer of technological innovation and knowledge via learning from the foreign enterprises, and training activities. The presence of inward FDI stimulates competitiveness of both local and foreign enterprises to advance production quality and quantity, diminish controlling and dominating products, and allocate available resources more proficiently. Inward FDI helps promote advanced technical applications, international management skills and production procedures transferred to the recipient countries. As a result, inward FDI enhances productivity, management and distribution effectiveness, which can raise welfare and economic growth of recipient countries (Bhattarai, 2016). Wang and Guo (2017) claim that the foreign enterprises may benefit from the recipient market, such as the domestic culture, region, institutions, and economic environment, which can advance their investment strategies and increase productivity.

Despite the benefits of inward FDI received by the recipient countries, inward FDI may produce some adverse effects on economic development. For instance, the entry of the foreign enterprises escalates competitive pressure on recipient markets such as resource exploitation and market share deterioration for local enterprises in the same industries (Görg and Greenaway, 2004; Spencer, 2008; Sahu, 2010; García et al., 2013). Subsequently, the local enterprises may reduce the number of

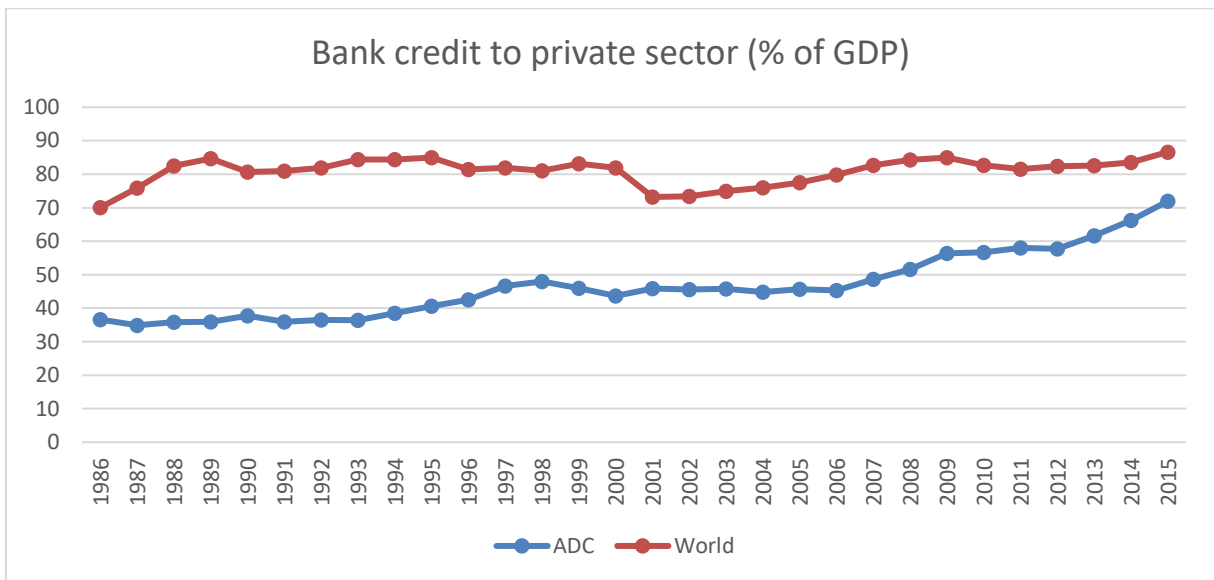


Figure 1-3 Bank credit to private sector over GDP in Asian Developing Countries and the Global Economy (1986-2015) (in percentage)

Source: Author's calculations based on World Bank database

products produced, increase costs, and confront a lack of capital to employ highly skilled workers, improve technologies, and finance productive projects. In addition, the number of new indigenous companies may decline because of high competition and low expected returns in domestic markets.

In terms of economic development, financial systems have also received considerable attention (e.g., Beck and Levine, 2004; Pradhan et al., 2014; Rioja and Valev, 2014). The development of the financial systems is regarded as a major driver in economic performance success. In either the stock market or banking channel, a country with a fragile financial system might attenuate the speed of economic progress (Beck and Levine, 2004; Rabiul, 2010; Pradhan et al., 2014). Pradhan et al. (2014) argue that multiple channels through which financial systems stimulate economic development consist of publishing transparent information for investment purposes, diversifying risks; mobilizing and allocating financial resources to potential productive projects; monitoring companies and promoting corporate governance; hastening technological progress; and providing channels in exchange for goods and services. The banking system reallocates resources between the surplus and deficit units (Tripathy and Pradhan, 2014), screens and supervises resource use of the latter to the most productive ventures to meet their debt repayments (Rioja and Valev, 2014). An improved banking system helps investors reduce the transaction costs, mitigate investment risk, and access external finance at lower costs to enhance their entrepreneurial activities (Rabiul, 2010; Tongurai and Vithessonthi, 2018). Similarly, with well-functioning services, the stock market enables investors to diversify risk, mobilize and allocate funds to the most profitable investments (Athanasios and Antonios, 2012). The stock market channel's improvements stimulate economic development by gathering and disseminating

information about the market, industries, listed enterprises, advancing corporate governance, risk sharing and market liquidity (Nguyen and Pham, 2014).

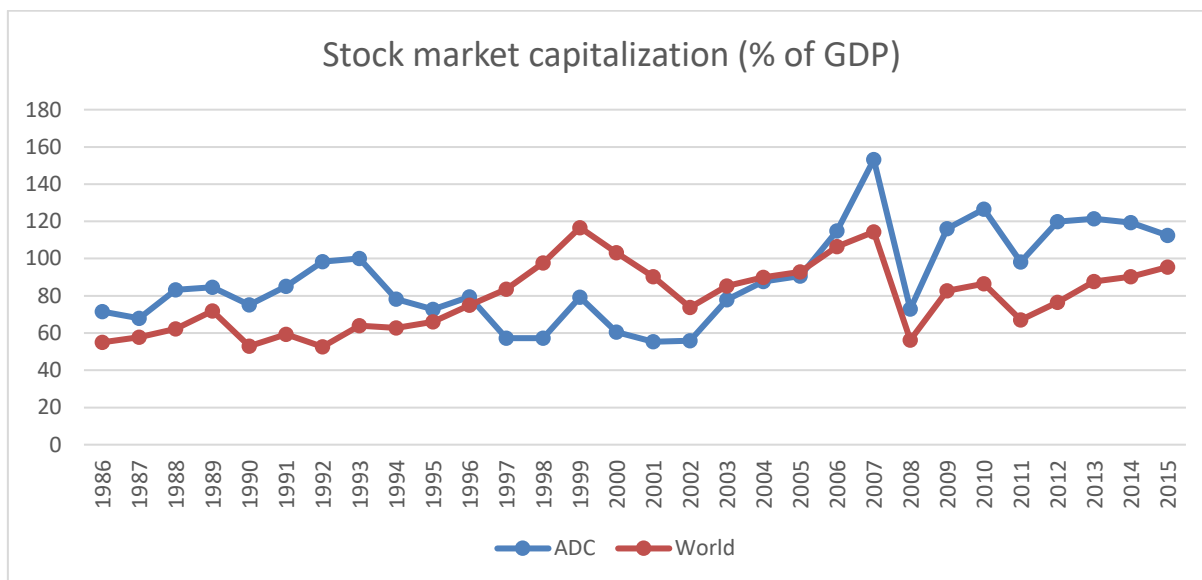


Figure 1-4 Stock market capitalization over GDP in Asian Developing Countries and the Global Economy (1986-2015) (in percentage)

Source: Author's calculations based on World Bank database

ADC financial markets comprise mainly banks and stock markets (Estrada et al., 2010; Sharma and Kautish, 2020). The banking system, measured by bank credit to the private sector over GDP, witnessed considerable growth of nearly 35% (from 36.59% to 71.9%) (see Figure 1.3), and the stock market, proxied by stock capitalization over GDP, increased by 41% (from 71.56% to 112.5%) between 1986 and 2015 (see Figure 1.4). Such improvements in ADC financial markets outperformed the rest of the world, in which private credit and stock market capitalization over GDP increased by 17% and 40%, respectively. Greater financial development enables large corporations and small firms to widely access their required long-term capital and financial services to intensify high-return investment ventures and industry growth (Tongurai and Vithessonthi 2018; Sharma and Kautish, 2020).

Figure 1.5 shows banking development, measured by the average annual value of bank credit to private sector over GDP, across 33 ADC economies between 1986 and 2015. The bank credit score had an overall mean of 46.83%, from a minimum of 4.40% for Iraq to a maximum of 161.34% for Hong Kong. The figure also shows 11 of the 33 ADC economies surpassed the overall mean bank credit score, including Bahrain (49.37%), China (105.15%), Hong Kong (161.34%), Jordan (70.67%), Korea Rep. (90.13%), Kuwait (56.62%), Lebanon (71.48%), Macao (64.77%), Malaysia (112.36%), Singapore (96.22%), and Thailand (102.05%). The low bank credit score group consists of Afghanistan, Bhutan, Cambodia, Iraq, Lao PDR, Myanmar, and Yemen Rep, none of which exceeded 20%. Better access to banks helps investors reduce capital costs and hasten financial transactions to stimulate their investment activities.

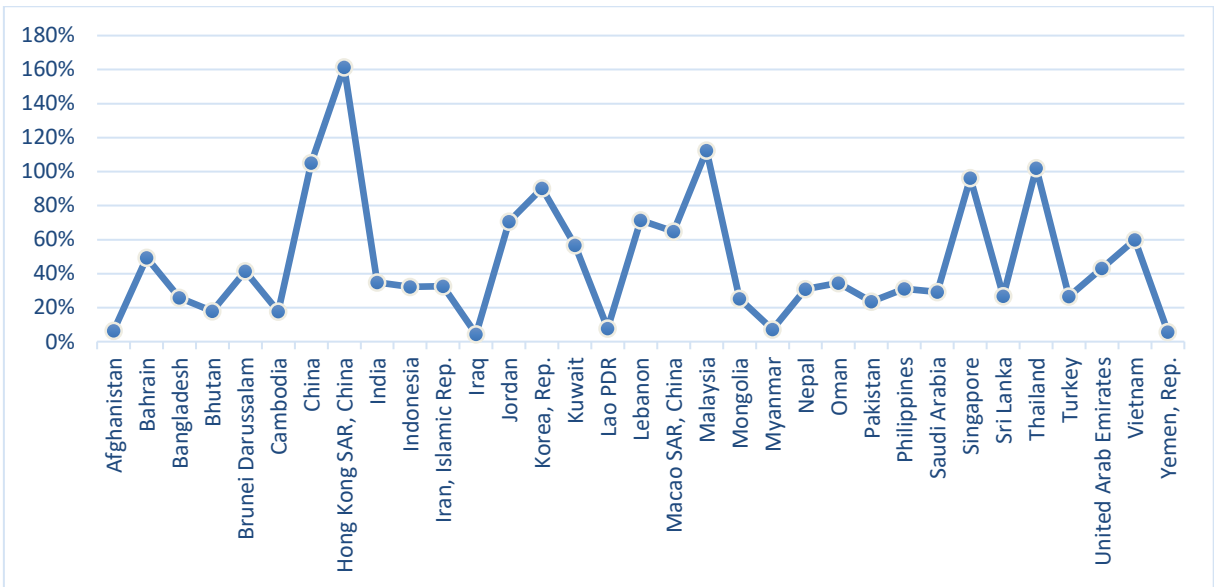


Figure 1-5 Mean bank credit to private sector over GDP by 33 Asian developing countries (1986-2015)

Source: Author's calculations based on Word Bank database

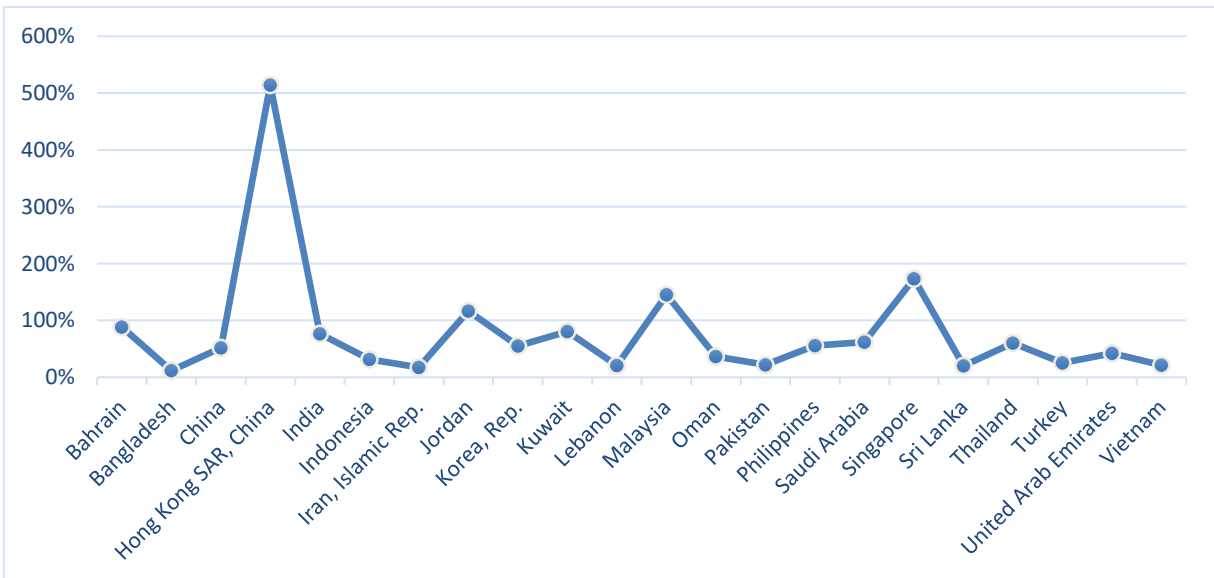


Figure 1-6 Mean stock capitalization over GDP by 22 Asian developing countries (1986-2015)

Source: Author's calculations based on Word Bank database

Figure 1.6 illustrates the average annual value of stock market capitalization over GDP across 22 ADC between 1986 and 2015. The range of the stock capitalization was fairly wide, from a low of 11.69% for Bangladesh to a high of 514.39% for Hong Kong. There were six ADC economies (Bahrain, Hong Kong, Jordan, Kuwait, Malaysia, and Singapore) with stock capitalization above the overall mean of 78.60%. The figure also shows seven countries, including Bangladesh, Iran, Lebanon, Pakistan, Sri Lanka, Turkey, and Vietnam, exhibited a mean stock capitalization score below 30%. Stronger stock development can help investors raise their required capital and diversify risks to produce more productive projects (Sharma and Kautish, 2020).

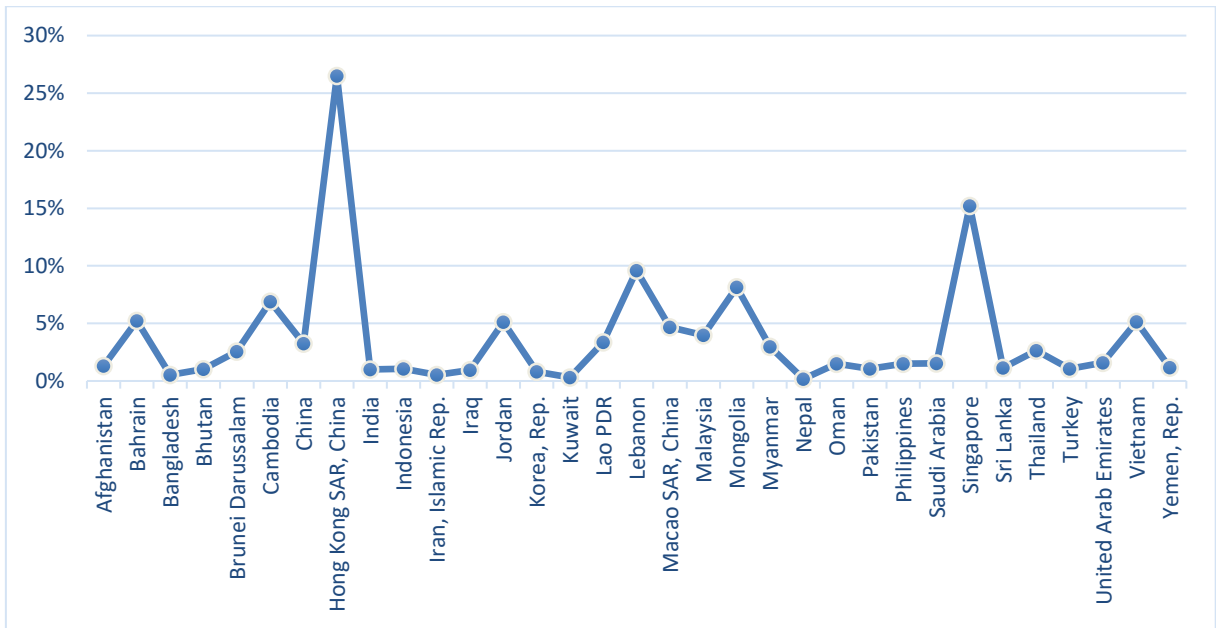


Figure 1-7 Mean FDI over GDP by 33 Asian developing countries (1986-2015)

Source: Author's calculations based on World Bank database

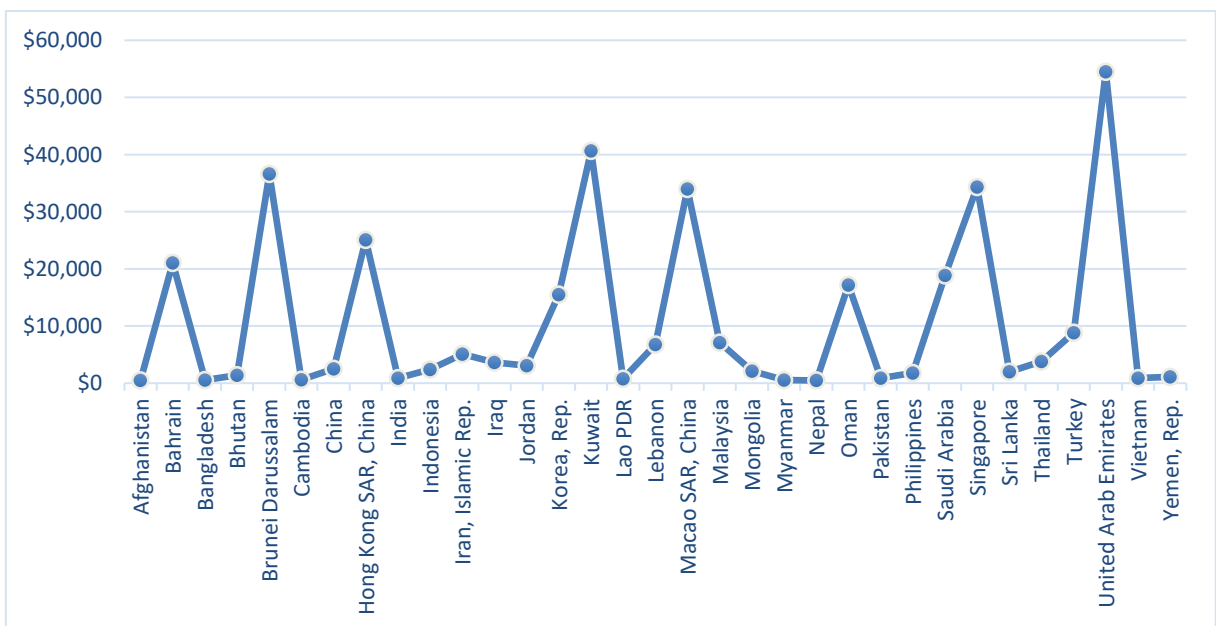


Figure 1-8 Mean GDP per capita by 33 Asian developing countries (1986-2015) (in USD)

Source: Author's calculations based on World Bank database

Inward FDI, as a percentage of GDP, showed an average annual value of 3.75%, with an upper bound of 26.51% for Hong Kong and a lower bound of 0.18% for Nepal (see Figure 1.7). Only ten ADC economies (Bahrain, Cambodia, Hong Kong, Jordan, Lebanon, Macao, Malaysia, Mongolia, Singapore, and Vietnam) attained a mean FDI score over 3.75%. However, six countries (Bangladesh, Iran, Iraq, Korea Rep., Kuwait, and Nepal) recorded mean FDI score below 1%. For real GDP per capita, Figure 1.8 shows an overall mean of USD 10,773.62, with a maximum of USD 54,479.48 for United Arab Emirates (UAE) and a minimum of USD 473.55 for Nepal. Ten ADC economies (Bahrain, Brunei Darussalam, Hong

Kong, Korea Rep., Kuwait, Macao, Oman, Saudi Arab, Singapore, and UAE) reached a mean of real GDP per capita over USD 10,773.62. Similarly, Figure 1.8 shows the lowest income group comprises Afghanistan, Bangladesh, Cambodia, India, Lao PDR, Myanmar, Nepal, Pakistan, and Vietnam, with average incomes below USD 1,000 between 1986 and 2015.

The literature on the FDI-growth linkage reports mixed results since some prior studies report advantages and some report disadvantages of FDI's effects on economic performance. Some studies show that FDI stimulates domestic capital investment and technology transfer and accelerates economic development in Asian countries (e.g., Asghar et al., 2011; Kotrajaras et al., 2011; Bayar, 2014). For example, Asghar et al. (2011) find that the presence of inward FDI enhanced the growth rates of 14 Asian economies. The authors suggest that FDI contributes to capital formation, human resources, technological changes, enhanced organization, and managerial skills. Bayar et al. (2014) highlight that FDI crowded domestic entrepreneurial activities and promoted long-term growth in seven Asian countries. Inward FDI led to more productive investments in the seven Asian countries to be executed and, therefore, stimulated their economic progress. In Pacific economies, Feeny et al. (2014) reveal a positive result for the FDI-growth nexus where FDI flowed into agriculture, extractive industries, tourism, fishing, banking and finance. As a result, inward FDI enhanced employment, advanced technology, and increased R&D in Pacific countries. However, in African countries, the presence of foreign enterprises increased competition among companies in local markets, impeded domestic incentives and crowded out local counterparts (Adams, 2009).

Though the FDI-growth linkage seems to differ among regions, studies continue to expand the endogenous growth framework to include both financial development and FDI (Hermes and Lensink, 2003; Alfaro, 2009; Azam-Saini et al., 2010; Choong, 2012; Adeniyi et al., 2015). These authors also provide evidence that FDI-led growth is contingent on financial markets' development of the host economies. Improvements in financial development help investors mitigate transaction costs, increase the flow of funds to the most productive projects, and thereby propel higher output growth of the host economies (Hermes and Lensink, 2003; Alfaro et al., 2009; Choong, 2012). According to Alfaro et al. (2009), local entrepreneurs should adopt and implement the best technological practices introduced by the foreign enterprises to accelerate productivity in production processes. For this purpose, a well-developed financial sector is required to facilitate financial services and to provide credit to local entrepreneurs. The local entrepreneurs can then enhance their absorptive capacities², such as employing highly skilled workers and good managers, buying new technologies and improving their

² Ability to learn new knowledge introduced by other companies and apply it into their production process (Azman-Saini et al, 2010).

corporate governance³, to exploit the potential benefits from inward FDI (Alfaro et al., 2009). Furthermore, foreign enterprises investing in recipient countries need funding for further expansion. Then, a well-developed financial system helps to identify the amount of money required by the foreign enterprises for their expansion. As a result, new technical knowledge and production methods can be transferred from the foreign enterprises to local enterprises, which enhances the productivity levels of the latter (Hermes and Lensink, 2003).

In terms of the finance-FDI nexus, upgrading the financial system is one factor in attracting inward FDI since foreign enterprises can improve their opportunities to access well-functioning financial services, and reduce their costs of capital (more competitive interest rates of credit, availability of financial services and lower transaction costs) to stimulate entrepreneurial investments (Ezeoha and Cattaneo, 2011; Agbloyor et al., 2013; Suliman and Elian, 2014). Foreign enterprises not only increase their capital through local financial markets (both the stock market and banking sector) but also access diversified financial products to support their business activities (Otchere et al., 2016). In addition, improvements in financial development also help foreign enterprises eliminate asymmetric information by providing transparent information about the local market. Thus, foreign enterprises know their opportunities and potential local market risks to make informed investment decisions in the recipient countries (Kinda, 2010).

The financial sector also benefits from inward FDI (Agbloyor et al., 2013; Hajilee and Naseer, 2015; Pradhan et al., 2019). For example, deposits by foreign enterprises result in increased funds in domestic banks. The domestic banks can then allocate some of these funds to their lending activities (Agbloyor et al., 2013). Higher inward FDI also helps stock markets augment stock capitalization and stock market liquidity because the presence of more listed foreign enterprises can motivate other investors to engage in the markets (Pradhan et al., 2019). Furthermore, higher entry of local and foreign investors encourages domestic stock markets and banks to upgrade their international financial products and services to meet more flexible market demands (Agbloyor et al., 2013; Hajilee and Naseer, 2015; Pradhan et al., 2019).

³ Managers of enterprises consider the best interests of their owners, such as an expanding market, making more profit, and promoting productivity.

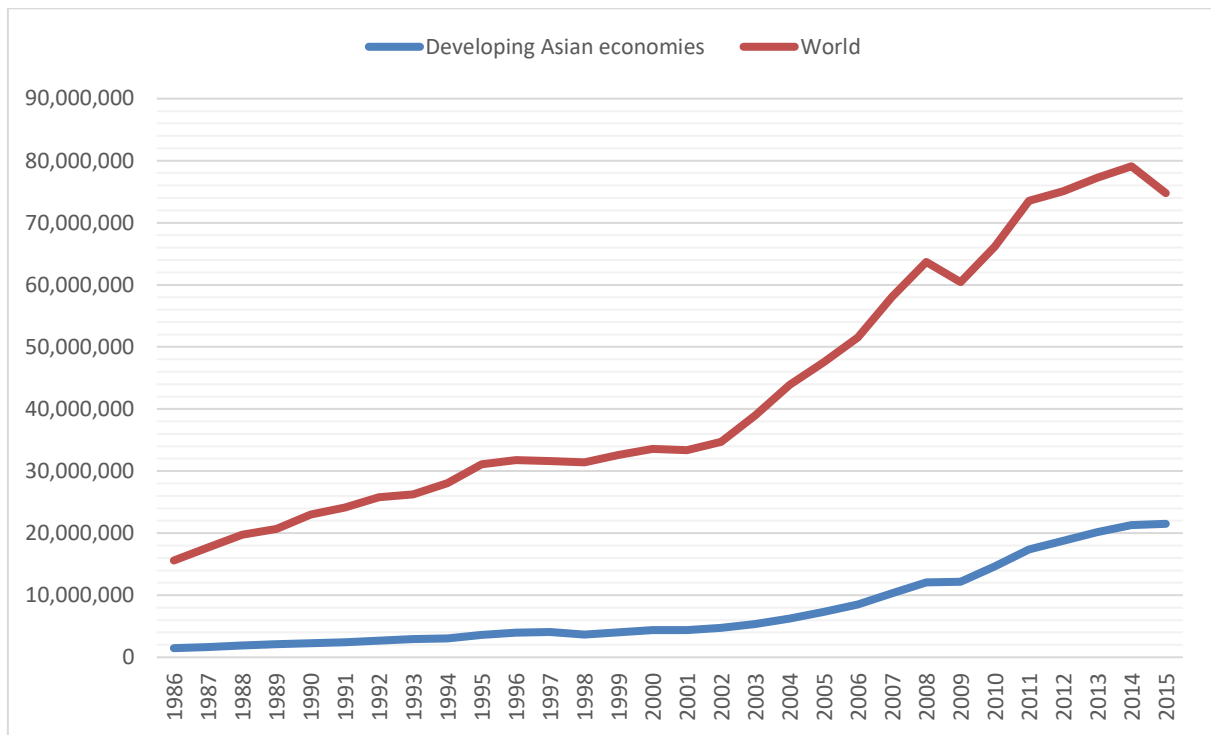


Figure 1-9 GDP in Developing Asia and Global Economy (1986 to 2015) (in millions USD)

Source: Author's calculations based on the UNCTAD database

1.2 Research Problem

Global growth of FDI witnessed a sharp increase from USD 86.69 billion in 1986 to a record of USD 2.03 trillion in 2015, the highest growth rate since the global financial distress in 2008 (Figure 1.1). During this period, FDI inflows into ADC experienced a dramatic increase from USD 9.50 billion to over half a trillion dollars. Figure 1.2 shows the ADC region's rank among the largest global recipients of FDI inflow (over 25% in 2015) and became an attractive destination for foreign investors (UNCTAD, 2016). Similarly, the growth of the global economy and of ADC's, measured by GDP, also witnessed an upward trend from 1986 to 2015 (Figure 1.9). The upward trend of economic growth reflects the global increasing movement of FDI inflows. As a result, FDI not only increases capital resources for productive projects, but also accelerates international business knowledge and technological changes in indigenous enterprises in ADC. However, this raises the question whether ADC can maximize the advantages of FDI. The controversial issue whether FDI enhances economic development has attracted both theorists and empiricists over many decades. Though numerous prior studies established that FDI positively impacts the recipient economies (Soumare, 2015; Sunny, 2015; Bhattarai, 2016), other studies argue that FDI might induce deleterious influences (Görg and Greenaway, 2004; Adams, 2009; Sahu, 2010). Though many countries have attempted to improve their policies and have used scarce resources to attract more FDI, they might face the challenge that the cost of attracting inward FDI increased without many benefits attained from this cross-border capital investment (e.g., import duty exemption, infrastructure subsidies, tax incentives, and reduction in local investment) (Apergis et al.,

2008; Choong and Lam, 2011). For instance, in Sub-Saharan African (SSA) countries, despite seeing an increase in FDI inflows, high unemployment still prevails with a low GDP per capita (Raheem and Oyinlola, 2013). Similarly, Adams (2009) shows that inward FDI impedes the incentives for local investment in SSA countries. This is because foreign enterprises have more advantages from economies of scale and lower marginal costs to produce products than their local competitors. In addition, because of the low level of human capital, poor institutional quality and less financial support, local enterprises are slow to adopt new technical processes with higher productivity.

To exploit the benefits from inward FDI, recent research has shifted focus to augmenting the investment climate of the host countries⁴, especially improving financial development. Higher levels of financial development might speed up economic progress and exert an important economic condition to absorb more benefits from inward FDI (Alfaro et al., 2009; Choong, 2012; Adeniyi et al., 2015). These authors suggest that more developed financial systems attract more savings, enable investors to diversify risk, and allow recipient countries to allocate inward FDI to productive investments. Improvements in financial development present a signal of a more conducive investment climate with low capital costs and information gaps to draw more investors into local markets. The foreign enterprises and their local partners can have better access to financial services to finance their daily entrepreneurial activity, reduce investment risk, and speed up business contracts. Hence, the development of finance helps the recipient countries to attain positive spillovers from the foreign enterprises such as new production methods, skill acquisition, and management practices, which therefore lead to higher productivity growth.

With regard to the relationships among Finance-FDI-Growth, the primary focus of previous studies was on the linkages between Finance-Growth (e.g., Beck and Levine, 2004; Athanasios and Antonios, 2012; Nguyen and Pham, 2014; Rioja and Valev, 2014) and FDI-Growth (e.g., Görg and Greenaway, 2004; Adams, 2009; Sahu, 2010; Feeny et al., 2014) in a single country or different groups of countries. Other researchers (e.g., Alfaro et al., 2009; Choong, 2012; Adeniyi et al., 2015) shifted their attention to the tripartite relationships among Finance-FDI-Growth. In terms of ADC, there is limited evidence (e.g., Chee and Nair, 2010; Shahbaz and Rahman, 2010; Anwar and Nguyen, 2011) considering the endogenous growth framework that includes FDI and the financial systems as its components. For

⁴ In an empirical study by Alguacil et al. (2011), the FDI-growth nexus considered the integration of the investment environment in host countries, including macroeconomic stability and institutional quality. The authors suggest that developing economies with a more conducive investment environment can exploit the potential benefits embodied in inward FDI.

The study by Farkas et al. (2012) investigated other local economic conditions, such as financial development, human capital, openness to trade, and natural resources abundance, to enhance host countries' absorptive capacity. They find that improvements in finance and human capital helped 69 economies draw more benefits from FDI.

example, Chee and Nair (2010) use fixed/random effects estimators and indicate that financial development (represented by the banking sector) enables Asian-Oceanic economies to achieve benefits from inward FDI. Anwar and Nguyen (2011) show that both inward FDI and the development of finance stimulate economic performance in Vietnam. Anwar and Nguyen (2011) also note that improvements in financial development helped the Vietnam economy take additional advantage of knowledge spill-overs from foreign enterprises. Shahbaz and Rahman (2010) suggest that the financial system affected the Pakistan economy through enhancing the efficiency of resource allocation and augmenting the transfer of technological knowledge from inward FDI. However, in most research (e.g., Anwar and Nguyen, 2010; Chee and Nair, 2010; Shahbaz and Rahman, 2010), financial development accounted for only the banking sector and excluded the stock market. It is therefore questionable whether ADC should need a threshold finance level (assessed particularly by the stock market and banking sector) as a precondition to benefit from such capital inflows.

For the linkage Finance-FDI, previous researchers (e.g., Ezeoha and Cattaneo, 2011; Agbloyor et al., 2013; Suliman and Elian, 2014) argue that developed financial systems enable foreign enterprises to access diversified financial products and cheap funds to support their business activities. However, less developed financial systems (characterised by shortages of financial products, less promotion, less attractive loans and regulation constraints) may dampen foreign investment (Ezeoha and Cattaneo, 2012). Financial markets can increase the funds available from inward FDI and may allocate them to their lending activities (Agbloyor et al., 2013). In ADC, however, the existing evidence on the association between FDI and finance (measured by the stock market and banking channels) is still rudimentary. Despite the recent sizeable increase in inward FDI, there is a lack of studies that examine whether higher inward FDI leads to additional improvements in financial development in ADC. In addition, there is a shortage of empirical studies exploring whether the financial markets' development can help the ADC region to accelerate inward FDI. Therefore, this study aims to contribute to the literature regarding FDI and finance by adding empirical results for ADC economies. This will help ADC policy makers to review and formulate future FDI and financial policies and strategies to create an attractive business climate for the foreign investors to intensify productive investment expansions and economic progress in this region.

1.3 Research Questions

This study addresses the following research questions:

1. Are there interactive relationships between FDI and financial development in 33 Asian developing countries?
2. How does the expansion of FDI foster economic performance in 33 Asian developing countries?

3. How does the development of the financial systems (measured by the banking sector and stock market) affect economic performance in 33 Asian developing countries?

4. Is the development of the financial systems a precondition for 33 Asian developing countries to benefit from FDI inflow?

1.4 Research Objectives

1. To investigate if there is a causality between FDI and financial development in 33 ADC.

2. To investigate how the expansion of FDI fosters economic performance in 33 ADC.

3. To determine how the development of the financial systems (measured by the banking sector and stock market) impacts the economic performance of 33 ADC. To answer this objective, two sub-objectives will be examined:

3.1. To investigate how the expansion of the banking sector affects growth in 33 ADC.

3.2. To investigate how the expansion of the stock market affects growth in 33 ADC.

4. To identify the threshold level of financial development as a precondition so the 33 ADC benefit from FDI inflow.

1.5 Significance of the study

Recently, ADC have paid more attention to attracting inward FDI through which they can enhance their domestic investment and foster the development of their economy (UNCTAD 2016, 2017). However, the region may face a challenge of low benefit from inward FDI and high costs of providing incentives (i.e., tax incentives, subsidies and reduction in local enterprises). Another determinant of economic development, the financial sector, is expected to enhance the potential benefits from inward FDI. According to Levine (2005), the financial system is a driver in the success of economic performance. The financial system mobilizes and allocates capital resources to profitable investments, reduces risk, and monitors investments, which helps the host economies augment their productivity growth.

Few empirical studies in ADC (e.g., as Chee and Nair, 2010; Shahbaz and Rahman, 2010; Anwar and Nguyen, 2011) have included FDI and financial institutions to investigate the empirical relationship in the context of economic development. For example, Chee and Nair (2010) argue that the financial sector (measured by banking sector indicators) helps exploit the benefits from the foreign enterprises. However, Chee and Nair (2010) used only fixed and random effects methods that could not address the potential endogeneity arising from the FDI-finance-growth nexus. Anwar and Nguyen (2011) suggest the financial sector helps the Vietnam economy to attain the benefits from inward FDI.

Shahbaz and Rahman (2010) find that the financial sector stimulates the benefits from foreign enterprises and economic growth in Pakistan. However, Shahbaz and Rahman (2010) use only one banking indicator, private credit to GDP, to measure the financial sector. In general, studies related to the financial sector mainly focus on the banking sector and ignore the stock market channel.

Omitting the stock market channel can raise the problem of insufficient financial development measures since both channels independently impact economic development (Beck and Levine, 2004). The banking system reallocates resources between surplus and deficit units, screens and supervises resource use of the latter to the most productive investments to meet their repayments (Rioja and Valev, 2014; Tripathy and Pradhan, 2014). The stock market exerts a prominent trigger in the mobilisation of savings, risk diversification, and fuelling productive activities (Levine, 2005). The stock market can reduce the costs of government intervention faced by the banking sector and provides enterprises with an alternative means of financing investments (Levine, 2005; Rabiul, 2010). To measure the economic performance of ADC, this study considers the two sectors of the financial system, namely, the stock market and banking sectors.

Second, this study attempts to address the threshold level of financial development (assessed particularly by the stock market and banking sectors), which has received limited attention in the literature. Though the ADC region has become one of the most attractive destinations for foreign investors, reaching nearly 31% of global FDI inflows in 2019 (UNCTAD, 2020), there is still a literature gap in terms of the mediating effect of financial development on the FDI-growth nexus in the region. According to Alfaro et al. (2009), Choong (2012) and Adeniyi et al. (2015), the influence of FDI on economic growth may depend on the development of the financial systems. Additional improvements in financial development can help the host economies enhance their absorptive capacity to draw more benefits from inward FDI. For instance, developed financial systems provide domestic enterprises with greater access to capital resources and financial services at a lower cost to employ highly skilled workers, buy new technologies, improve corporate governance and finance their productive ventures. Hence, developed financial systems enable domestic enterprises to hasten the process of adapting to technological progress and business knowhow introduced by the foreign enterprises, resulting in higher productivity gains (Choong, 2012).

In addition, for empirical techniques, most studies, such as Hermes and Lensink (2003), Alfaro et al. (2009) and Choong (2012), have considered the existence of a threshold level of finance by using an interactive term in a linear model. These authors use the interactive term between finance and FDI to explain the marginal effect of FDI on economic development. The significance of the interactive term means that such an effect is contingent on the finance level. Choong (2012), for example, finds that the interactive term significantly, positively affects economic growth. As a result, Choong (2012)

indicates that a higher level of finance helps the recipient economies augment their absorptive capacity to exploit more benefits from inward FDI. However, as noted by Azman-Saini et al. (2010), the linear model with an interactive term between FDI and finance explains that there may have a threshold level of finance required by the host economies to benefit from inward FDI, and they further suggest using a threshold effects model to examine a threshold level of finance. Azman-Saini et al. (2010) argue that recipient countries will not receive benefits from inward FDI until they reach a threshold level of finance. For instance, Azman-Saini et al. (2010) apply the threshold effects model to a sample of 91 countries from 1975-2005. The authors report that FDI significantly enhances economic development when the recipient economies attain a minimum threshold finance level (i.e., private credit to GDP, bank credit to GDP, and liquid liabilities to GDP are 0.497, 0.431, and 0.688, respectively). Before the recipient economies attain such a threshold finance level, the impact of FDI on economic development is insignificant.

In ADC, to the best of our knowledge, no studies have used the threshold effects model to identify a threshold finance level. This study interacts FDI with proxies for the development of financial systems, through which we can disentangle the question of whether there is a need for a precondition of a threshold finance level for ADC economies to benefit from FDI. As well as using the interactive term in a linear model, this study also adopts the threshold effects model to explore the potential threshold level of finance required by ADC. Hence, the study's results will contribute to the literature in terms of the threshold finance level that ADC should attain to exploit the benefits of inward FDI.

Third, according to UNCTAD (2020), recipient countries should provide an attractive institutional environment (such as developed financial systems and investor-friendly legislation) to encourage the inflow of foreign investors. Foreign enterprises with well-functioning financial systems can be assisted with international services and capital resources to stimulate their entrepreneurial activities. However, there is a shortage of empirical studies investigating the linkage between FDI and the development of finance in ADC. It is unclear whether more improvements in financial development in ADC motivate greater entry of FDI and whether the presence of such capital inflow fosters the finance development. Thus, ADC may improve their opportunities to encourage more capital inflow from foreign investors and speed up the development of finance. Our study considers the rigorous relationship between finance and FDI via a bivariate model with a Granger causality test and a multivariate model with system Generalized Method of Moments (GMM). We can then identify if there is causality between the two factors and how one influences the other. Hence, we can address the lack of literature on the finance-FDI nexus in ADC.

1.6 Structure of the thesis

The thesis is organised into five chapters. Chapter 1 introduces the study, the problem statement, research questions and objectives, and the study's significance. Chapter 2 presents the relevant literature on the impacts of FDI and the development of the financial systems (including the stock market and banking channels) on economic performance followed by the impact of financial development on the FDI-growth nexus. The chapter also discusses the linkages between the development of the financial systems and FDI. Chapter 3 provides the methodology used in the study. Chapter 4 discusses the study's empirical findings based on the dynamic panel data estimation technique. Chapter 5 summarises the study's key findings, the policy implications, limitations, and recommendations for future research.

Chapter 2

Literature review

This chapter reviews how the expansion of FDI and financial development affect economic performance. The chapter also reviews the relationship between financial development and FDI. Section 2.1 presents the role of FDI in economic performance. Section 2.2 discusses the role of financial systems (including the stock market and banking sectors) in economic performance, followed by the functions of the financial systems, the impacts of the stock market and banking sectors on economic performance, and the banking sector [(bank-based) versus the stock market (market-based)]. Section 2.3 discusses the influence of finance on the FDI-economic growth nexus. Section 2.4 presents the relationship between financial development and FDI.

2.1 The impact of FDI on economic growth

Developing countries typically may not maximize their rewards from inherent natural resources because of the lack of physical capital, skilled workers and technological know-how (Iamsiraroj and Ulubaşoğlu, 2015). Additionally, a range of drawbacks still exists in developing countries, such as high corruption, less protection of property rights, unstable politics and lack of regulations to accelerate capital accumulation to exploit existing resources. As a result, these countries, including ADC, continue to pursue policy reforms towards better investment environments and economic prosperity. The attractiveness of FDI is a leading way to tackle their capital constraints, advance technological progress, and, subsequently, economic development (Reisen and Soto, 2001; Alguacil et al., 2011; Iamsiraroj and Ulubaşoğlu, 2015). Alguacil et al. (2011), for example, find that inward FDI enhances economic development in 26 developing countries from 1976 to 2005. Alguacil et al. (2011) argue that foreign enterprises provide the recipient countries with physical capital, technical innovation, labour skills and management practices. Similarly, Iamsiraroj and Ulubaşoğlu (2015), using a sample of both developed and developing countries from 1970 to 2009, suggest that inward FDI helps the recipient countries promote employment, trade, technological knowledge and organisational know-how, and thereby upgrades their productivity growth.

The neoclassical view highlights that FDI promotes economic growth through financing capital formation, whereas technology is incorporated into the FDI-growth nexus as an exogenous factor (see Brems, 1970). A scarcity of domestic savings restrains the investment level in a country. Therefore, the presence of FDI improves its investment rate and subsequent per capita income growth. However, with diminishing returns to capital, such an effect of FDI on growth has only a transitional increase during the short run since growth moves to a new steady state in the long run, wherein the effect of

FDI on growth is identical to that of local investment (Herzer et al., 2008; Kotrajaras et al., 2011). The endogenous growth view shows that technology should be incorporated into the FDI-growth nexus as an endogenous factor. It is suggested that the benefit of technological spill-overs generated by FDI will offset diminishing returns to capital and keep the economy on the momentum of long-run growth (De Mello, 1997; Herzer et al, 2008; Kotrajaras et al, 2011). This is because a range of positive externalities are created by inward FDI, such as technological advances, augmentation of labour-skills, expansion of employment opportunities, competition improvements, and export promotion. Such positive externalities enable the recipient countries to improve their productivity gains and long run output growth.

FDI has two types of structure: horizontal (market-seeking) and vertical (efficiency-seeking) FDI (Aizenman and Marion, 2004; Ismail et al., 2009; Tülüce and Doğan, 2014). The former reflects that foreign affiliates of multinational enterprises (MNE⁵) establish the same products and services as in their home countries (Ismail et al., 2009; Tülüce and Doğan, 2014). Those authors acknowledge that MNE, through horizontal FDI, may produce products at lower prices to the recipient markets. MNE can use horizontal FDI to substitute the export of products from their home countries and avoid trade costs, such as tariffs and transport costs. Demonstration and/or imitation is a vital channel of the technological spill-overs effects from the foreign enterprises to recipient countries (Behera, 2015). Potential risks and high costs may accompany new technologies and production processes. The indigenous enterprises may thus have reduced incentives to apply new technologies and production processes because of increasing costs and uncertainty of future returns. However, if the use of a new technological process is successful for the foreign enterprises, it may inspire greater confidence in the indigenous enterprises to imitate the successful procedure in their production systems. Likewise, foreign enterprises may possess knowledge-based intangible assets that upgrade production processes. Some of the technological superiority, therefore, can be transferred to indigenous enterprises via the purchase of patents and licences, to stimulate their productivity investment (Behera, 2015).

With regard to vertical FDI, to accomplish the value chain of a production process, multiple stages may be desirable. MNE can locate each production stage (including their linkages with local suppliers and buyers) in different countries where they benefit from the low costs of production and high demand for their products (Crespo and Fontoura, 2007; Amendolagine et al., 2013). MNE can assist their local linkages in recipient countries with required human capital and infrastructure facilities that enable MNE to take advantage of international prices for their production activity (Ismail et al., 2009). MNE's final products may serve both domestic and international markets (Ismail et al., 2009). MNE, in general,

⁵ This thesis uses the terms foreign enterprises and MNE interchangeably.

tend to invest their capital in manufacturing and services sectors of labour-intensive countries where there are low labour costs and, therefore, can improve their profitability. The presence of MNE enables local linkages to benefit from higher demand for local production and improve their opportunities to intensify technological innovation, business knowledge acquisition, and employment expansion (Amendolagine et al., 2013).

FDI transfers knowledge and technologies to recipient economies through workforce training and introducing new management practices and organizational arrangements (Miyamoto, 2003; Fu, 2012; Liu and Qiu, 2014). An intensively skilled and educated local workforce enables MNE to increase production efficiency that induces higher productivity levels in the recipient economies. Miyamoto (2003) argues that MNE might have more training courses than domestic enterprises since MNE require strong finance knowledge to operate enterprises with international exposure. In addition, MNE also have an advantage over the opportunity cost between the cost of training one employee and the higher productivity generated by that employee since they benefit from economies of scale. Fosfuri et al. (2001) suggest that MNE can exploit their technological superiority, marketing and managerial techniques to advance business activities only if their local managers and workers have attended progressive technological and management training courses. Similarly, Liu and Qiu (2014) highlight that MNE tend to provide more personnel training activities for local workers than domestic firms. As a result, the well-trained local workers can upgrade their technological knowledge and skills to implement the new production procedures of MNE with higher productivity.

Fu (2012) uses data from 1998 to 2004 and finds that local enterprises in the UK can absorb the industry spill-overs of managerial knowledge from foreign enterprises. There is a transfer of management practices within subsidiaries of MNE, the recruitment of human resource management and organization practices. For instance, managerial techniques in some UK enterprises are shaped by US direct investment. Similarly, Japan was the second-largest investor in China with \$25.47 billion from 1979 to 2000. There are similar employment regimes in these two nations, such as privileges, welfare benefits, and lifetime employment in large companies (Gamble, 2010). Soltanpanah and Karimi (2013) show that FDI recently caused a shift towards high value-added production to more technology and knowledge-intensive as well as human practices. Knowledge-intensive enterprises require more research and development activities (R&D) to upgrade skilled labour, which in turn can apply new technologies. MNE subsidiaries may spend more on R&D than local companies because the MNE's subsidiaries can access sources of capital from the parent company or from other subsidiaries in other countries (Un and Cuervo-Cazurra, 2008). As a result, MNE's workforce can use advanced technologies to produce new products and meet clients' needs in the recipient markets with the obtainable knowledge stocks.

Through increasing investment, MNE lead to additional output growth of their local buyers (forward linkage) and suppliers (backward linkage). In terms of the local buyers, Javorcik (2004), and Win and Kakinaka (2019) indicate that the presence of MNE helps their local buyers gain more access to advanced technologies and new intermediate inputs in production and enhance international business knowledge, marketing techniques and managerial skills through training and learning programmes. The upgrading production methods and highly quality intermediate inputs at competitive prices are provided to local buyers. Therefore, local buyers can promote their production quality to increase their market share and productivity growth. De Mello (1999) highlights that FDI is a catalyst for domestic investment by the recipient countries in marketing, start-up, and contracts, as they follow the process of MNE. Meanwhile, for the local suppliers, Hobday (1995) (cited in García et al. (2013)) observed that foreign enterprises in a range of Taiwan industries upgraded the needs of intermediate inputs produced by local suppliers. Accordingly, the local suppliers benefit from economies of scale in increasing productivity and an upgrade in production quality to meet the higher requirements imposed by the foreign enterprises. In an attempt to guarantee the quality of inputs for production processes, MNE tend to encourage their upstream suppliers to enhance productivity through the provision of training courses, introduction of modern technologies, control of quality, and management of inventory (Blalock and Gertler, 2008). Blalock and Gertler (2008) indicate that Indonesian manufacturing establishments during the 1990s were introduced to additional advanced technologies by the MNE buyers. This resulted in greater production and profitability gains.

Employment opportunities and other services in the recipient countries also enlarged with inward FDI. Sunny (2015) indicates that over one million job seekers enter the labour market in South Asia every month. However, there is not enough capacity in the government sector to accommodate the demand for jobs, partly because of financial constraints. Therefore, the private sector, especially foreign private capital flows (including portfolios, bank loans and direct investments), exerts a vital role in dealing with the job shortage problem and the productive use of the available labour in economic growth. UNCTAD (2017) reports that FDI, through foreign affiliates, generated around 50 million labourers in host countries between 2005 and 2007. In 2014, employment by foreign affiliates of MNE saw a new high of 75 million, a growth of 50% over seven years (UNCTAD, 2017). As MNE expand their operations in host countries, their foreign affiliates are estimated to own over 80 million labourers since 2016 (UNCTAD, 2016, 2017). In addition to the creation of direct employment, Vacaflares (2017) argues that MNE create indirect employment through their linkages with local suppliers and buyers. For instance, when MNE increase the demand for local inputs and services, the local suppliers need an increased workforce for their production expansion. Sunny (2015) shows that India ranked eighth in inward FDI for developing countries in 2010 and was considered a preferred outsourcing location for FDI to establish service centres, such as technical and analysis services, research and development centres,

and financial and non-financial services. Subsequently, there was a rise in the number of labourers associated with these service sectors in India. Wong and Tang (2011) document that MNE have dominated the majority of manufacturing and services sectors in Singapore. They note that MNE have considered Singapore a hub for their international business and global operations. As a result, the manufacturing and services sectors generated 73.7% and 13.3%, respectively, of employment in the country in 2017⁶.

Apart from employment augmentation, FDI exerts a vital role in improving exports of developing economies. Domestic enterprises may follow the export procedures of foreign enterprises to become competitive exporters (such as establishing distribution networks, reducing the entry costs into the global market, and adopting global consumer tastes (Azman-Saini et al., 2010)). In addition, the recipient countries might have an advantage in economic production costs (such as low cost of labour and available inputs). Hence, when exporting products to international market, they have competitive prices compared with other suppliers and attain productivity growth. For instance, based on the manufacturing, mining, and primary sector data for Mongolia from 1995 – 2012, Davaakhuu et al. (2015) conclude that Mongolia experienced good export performance because of a drastic rise in FDI inflow (from USD 2 million to USD 4452 million). Rahmaddi and Ichihashi (2013) show that inward FDI to Indonesia promoted manufacturing exports from 1990 to 2008. Importantly, inward FDI is associated with the export performance of industries requiring skilled workers, advanced technologies, and physical capital (such as metal goods, machinery and electronics, road vehicles and transport equipment, and medical and optical instruments).

Inward FDI also accelerates competitiveness among companies in the recipient countries. Moudatsou and Kyrkilis (2011) use ASEAN and EU data from 1970 to 2003 to find that FDI enhances enterprises' competitiveness in their industries, which results not only in diversifying their products but also qualifying to meet the demands of both domestic and global markets – an important step in economic growth. Chung (2001) reveals that monopolistic production of local enterprises is broken by competition which stimulates defensive actions to improve their productivity and hold their market share. In 2007, Crespo and Fontoura argue that domestic enterprises promote their competitiveness in terms of foreign entries. First, the domestic enterprises need to promote absorptive capacities in the use of technology knowledge by investing more in human training development, upgrading technologies and reorganizing their corporate structure. Second, domestic enterprises need to source quality inputs and consider global market changes for their production. Hence, they can advance their products to meet consumer tastes. Third, domestic enterprises should use their existing resources more efficiently. Fourth, domestic enterprises may exploit beneficial relationships (forward and

⁶ Ministry of Manpower, Republic of Singapore (2018). [Http://stats.mom.gov.sg/Pages/Employment-Summary-Table.aspx](http://stats.mom.gov.sg/Pages/Employment-Summary-Table.aspx)

backward linkages) between domestic enterprises and MNE (both can become suppliers or buyers of intermediate inputs) to optimize profitability, such as purchasing inputs at lower prices and higher quality in their production processes, or by reducing the entry costs into the global market of local enterprises by following the export procedures of foreign enterprises.

There is consensus on the positive impacts of FDI in the literature, but negative results are also documented in some studies. For instance, when a country has a poor business environment and a low level of human capital, FDI might adversely affect economic performance (Ayanwale, 2007). Because of the low human capital level, less financial support and poor institutional quality, local enterprises are slow to adopt new technical processes with higher productivity, and the presence of foreign enterprises can hinder the investment incentives of their local counter-partners (Malikane and Chitambara, 2017).

Görg and Greenaway (2004) suggest that multinational enterprises can inhibit the growth of local enterprises since the former benefit from economies of scale and lower marginal costs. Under competitive pressure, local enterprises might reduce their prices to retain their existing market share and output, which could result in lower returns. Labour costs are another concern for local enterprises since highly qualified workers might be attracted by the lucrative salary from foreign enterprises, possibly leading to poorer performance of domestic investment (Spencer, 2008). Additionally, to accelerate the incentive of foreign enterprises, recipient countries should pay their costs such as tax incentives, infrastructure subsidies, and other preferential concessions. However, ineffective and costly intervention by recipient governments favouring inward FDI may lead to high foreign debts and tax burdens, and discouragement of new local investment, and subsequent distortion of economic performance (Iamsiraroj and Ulubaşoğlu, 2015). Multinational enterprises' profits may be remitted back to their home country rather than being reinvested in the recipient country (Malikane and Chitambara, 2017).

2.2 The impact of financial development on economic performance

Though FDI is considered a prominent factor in enhancing economic performance, the role of the financial systems cannot be ignored. Bagehot (1873) and Schumpeter (1912) claim financial systems speed up technical progress and the growth rate of the economy. Greenwood and Jovanovic (1990) state that, in the absence of the financial systems, individual investors might invest in unproductive liquid projects because of their risk-averse nature. Financial systems have greater ability to manage investment risk and allocate capital resources to high return projects than individual investors. Therefore, undertakings that are more productive will occur in the presence of the financial systems. This point is supported by Bencivenga and Smith (1991) who concede that financial markets can select and provide funds to illiquid but profitable ventures and reduce misallocation of capital in

unproductive liquid investments. As the financial markets develop, investors can access complex financial instruments (such as derivative securities, i.e., swaps, options, futures, and other contractual agreements) to reduce risk and increase future returns on investments (Ncube, 2007). Ang (2008) argues that financial systems collect savings from different individuals to invest in a diversified portfolio of innovative projects with high returns. Attracting savings from different individuals enables financial systems to increase funding resources. This leads to more innovative investments. In general, Shah and Shah (2011) review the role of finance on economic growth and highlight that the financial markets encourage the public to increase savings that will be allocated to profitable projects. Financial markets can ably tackle risk and return by pooling savings, seeking innovative products, and developing markets for those products. Rabiul (2010) and Pradhan et al. (2014) categorise financial markets into two subgroups: the banking sector (bank-based) and stock market (market-based). Those authors suggest that the two sectors can facilitate enterprises with available funds and financial services, thereby stimulating economic growth.

2.2.1 The emergence and functions of financial markets

Several studies (e.g., Levine, 1997; Beck, 2002; Khan and Senhadji, 2003; Ang, 2008) argue that the existence of asymmetric information and transaction costs leads to the emergence of financial markets. Financial markets help evaluate prospective entrepreneurs, mobilize savings and allocate funds to the most promising investments, as well as monitor these investments after providing funds (Levine, 1997). As a result, the financial markets reduce the effects of market frictions, including asymmetric information and transaction costs, that accelerate productive investments and the long run economic growth.

According to Ang (2008), individual savers may have surplus capital while many enterprises need to raise funds for their investments. To raise adequate capital without the presence of financial markets, enterprises have to borrow from different individual savers (see Ang, 2008). Ang specifies that asymmetric information and transaction costs can occur since the savers have a shortage of information on potential borrowers, and the borrowers (enterprises) may not access the needed capital for their investments from one saver.

Before funds are granted (ex-ante stage), the lenders (savers) may have insufficient information to select their borrowers. For credit rationing, Stiglitz and Weiss (1981) note that lenders may eliminate good borrowers of less risky projects with low returns but finance risky borrowers who accept paying higher interest rates since their projects have higher potential to collapse (lemon problem). Each lender is assumed to pay a fixed cost to verify the information of each potential borrower and decide which projects should be funded (see Bernanke and Gertler, 1989; Levine, 1997). After funds are granted (ex-post stage), the possibility of moral hazard may occur as the lenders are uncertain whether

their funds will be allocated for the agreed purpose(s), or whether borrowers will take more risks in their investment to generate more profits. This may lead lenders to increase their information costs in monitoring investment projects (Ang, 2008).

The process of matching borrowers and lenders, in general, is costly and time-consuming; it can lead to high transaction costs and discouragement of both borrowers and savers to engage in a financial contract. Such a process, thus, requires the presence of a financial intermediary that can moderate market frictions (such as asymmetric information and transaction costs), and allocate savings to the most promising investment, accelerating long-run growth (Levine 1997; Ang, 2008). Levine (1997) and Ang (2008) identify five financial functions: saving mobilization, resource allocation, transaction facilitation, risk diversification and corporate control, through which the financial system helps promote economic activity.

The following paragraphs will succinctly discuss the functions of financial markets:

Savings mobilization – Financial markets mobilize savings from diverse savers and make the aggregate capital available for lending (Ang, 2008). Deidda and Fattouh (2008) note that savers are willing to supply their funds to intermediaries if they know that the financing sources are monitored and allocated to the most promising investments. Intermediaries, as “mobilizers”, have to convince the savers that the use of funds is effective (Levine 2005). Financial markets are efficient in pooling savings to the most productive investment, investing in a portfolio of projects (risk diversification), and monitoring the use of funds. Individual savers, therefore, can increase their confidence to entrust their savings to financial markets and contribute to capital agglomeration in channelling economic activity (Ang, 2008; Rabiul, 2010).

Resource allocation – As a role of financial intermediation, developed financial markets gather information and evaluate different investments’ prospects and potential risks (Levine, 2005). Funds can then be channelled to the most productive enterprises and industries. Financial markets are more efficient in resource allocation than individual savers since they channel funds towards the most promising investment and away from the less productive investment (Estrada et al., 2010). Financial markets allow innovative activities to be executed since they select the most innovative entrepreneurs who are more likely to succeed with new inputs and production processes (King and Levine, 1993; Levine, 2005). This can accelerate the quality of investment and productivity growth.

Transaction facilitation – Ang (2008) argues that business transactions are facilitated with the availability of credit from financial markets. Well-functioning financial markets can ease the tight budget constraints faced by entrepreneurs and guarantee to meet the payment to their savers. By exploiting economies of scale, funds can be invested in different projects and managed at a low cost.

Each entrepreneur can save time in searching for funds for their investment, while individual savers, via the financial intermediary, can select the most productive projects. This leads to minimizing the cost of information and facilitates business transactions (Ang, 2008).

Risk diversification – With the advantage of diversified savers and borrowers, a developed banking sector allows different maturity periods of loans to be properly matched with pools of savings and therefore ameliorates the liquidity risks faced by savers (Ang, 2008). In a developed stock market, investors can diversify their portfolio and gain more access to relevant information on all listed companies. Investors can minimize risks associated with their investments and transfer their securities into cash when required (Ang, 2008).

Corporate control – Creditors and shareholders monitor and influence the financial decisions of their managers, who should allocate funds to the most profitable investment and increase the firm's value (Estrada et al., 2010). Major banks (holding the largest amount of loans) can effectively monitor the management of borrowing enterprises, particularly those with a long-run relationship with banks. Specific information accumulated by banks allows them to prevent opportunistic actions of firm managers and reduces the possibility of insolvency (Horiuchi and Okazaki, 1994). A well-functioning stock market eases corporate takeover and stimulates effective corporate governance such as changes in business, liquidations and mergers, or electing boards of directors and other managerial decisions (Levine, 2005). A developed stock market allows information on managed enterprises to be linked with stock performance, which enables shareholders to align their corporate control. Hence, enterprises can reward managers with better salaries and other benefits (such as cash and stockholdings) if they maximize profits and firm value. The enterprises replace ineffective managers who are not profitable with better ones (Jensen and Murphy, 1990). In terms of takeovers, the executive managers of poorly performing enterprises can be removed. Therefore, the threat of takeovers precipitates incentives for managers to promote their firm performance (Jensen and Murphy, 1990; Levine, 2005).

2.2.2 *The impact of the stock market*

Several authors (e.g., Rajan and Zingales, 1998; Levine, 2002; Cooray, 2010; Erken et al., 2012) have argued that the stock market is an important channel of economic activity. By decreasing the uncertainty of asymmetric information, a well-functioning stock market increases investors' incentives to expand their investments and stimulate capital accumulation and economic performance. Erken et al. (2012), for example, show that developed stock markets allow relevant information of listed companies to be disseminated to investors, e.g., the disclosure of equity market information and financial statement data of listed companies. This helps investors evaluate firm values and prospects. Fama (1990) and Schwert (1990) discuss changes in stock performance that may reflect changes in the well-being of the economy; this can influence the investment in and consumption of products. The

stock market can transmit price signals of all companies, which enables investors to select the most promising investments (Rajan and Zingales, 1998). It is documented that the stock market allows all investment opportunities and potential risks to be impounded into stock prices thus eliminating the likelihood of passing up valuable investments (Cull et al., 2013). Zafar et al. (2013) argue that the development of the stock market not only enables listed companies to raise their capital but also partly explains the existence of macroeconomic stability (such as political, social and other economic upheavals), which the investors consider when making their investment decisions.

Authors such as Demirgüç-Kunt and Levine (1996), Levine and Zervos (1996) and Cooray (2010) stress the role of market liquidity in minimizing risk and increasing the availability of firm capital. According to Demirgüç-Kunt and Levine (1996), liquidity reflects that securities can be traded easily, and the time costs of trading can be reduced, including settling orders and matching traders. If investors alter their portfolios to make a profit or to prevent a loss and acquire equity, they might sell and buy securities at affordable prices. A developed stock market will enhance capital resources for the listed enterprises and boost their business activity. Cooray (2010) asserts that a developed stock market enables investors to diversify risk and access low-cost capital flows for their productivity investments. An investor can hedge against unsystematic risk by holding stocks in a number of companies and making more profitable investments. In addition, a project with a high return needs long-term capital to operate, but the financial constraints impede the productive investment from being executed. A liquid market may stimulate investors' incentives to invest in the long-term project since they can sell their stocks when needed. Therefore, a liquid stock market seems to be a good resource in providing funds to long-term investments, leading to higher productivity and profitability for enterprises. A liquid stock market channel enables enterprises to attain needed capital promptly to stimulate their capital allocation, investments and development (Boubakari and Jin, 2010).

Most the empirical studies report that the stock market stimulates growth (i.e., Caporale et al., 2004; Ngare et al., 2014; Azam et al., 2016; Devshappriya, 2016). For instance, using data from 1980-2010 for 36 African nations, Ngare et al. (2014) find that countries with a stock market are likely to have better economic performance than those without a stock market. After controlling both the banking and other factors, including inflation, investment, initial income, government spending, human capital, trade openness, and corruption, Ngare et al. (2014) reveal that stock markets promote economic performance in 36 African countries. The authors argue that developed stock markets can accelerate savings rate, therefore the investment rate. Investors tend to invest their capital in companies indirectly through developed stock markets because they can reduce risk due to high liquidity of trade securities when needed. Similarly, Deyshappriya (2016) finds that the stock market enhances growth in both emerging and developed countries during 1990-2014. Capital markets enable enterprises to meet long-term capital to run their business and, therefore, boost growth. Using a sample of seven

countries during 1977:1-1998:4, Caporale et al. (2004) maintain that securities markets are the engine of growth through enhancing capital accumulation and efficiently allocating financial resources. Similarly, investigating securities markets in Sub-Saharan African countries from 1980 to 2004, Enisan and Olysiayo (2009) claim that securities markets can stimulate domestic savings, reduce investors' risk by portfolio diversification and ease of trading, and allocate financial resources to productive projects, therefore accelerate economic growth.

Opposing views argue that the stock market might decelerate economic performance, such as by distorting the financial system because of weak regulations and speculative activities (Singh and Weiss, 1998). Using data from 1995 to 2008 for five European countries, Boubakari and Jin (2010) document that stock market development promotes growth only in countries with liquid stock markets; there is no linear nexus for less liquid stock markets. Singh (1997) argues that the stock market might not foster growth for several reasons: (1) unpredictable volatility and random movement of stock market prices cause mistaken decisions by investors; (2) the interaction between foreign exchange and stock markets relating to economic distress could lead to macroeconomic instability and reduction in long-run growth rate; and (3) better off stock markets may damage existing group-banking systems in developing nations.

Only a few researchers (e.g., Tang et al., 2007; Azam et al., 2016) have concentrated on the stock-growth nexus in Asian economies. Tang et al. (2007) report conflicting results for the stock-growth nexus across different countries from 1980 to 2004. The authors report that in China, Thailand, Malaysia, Hong Kong and Indonesia, there is a bi-direction between securities markets and growth. In Japan and Korea, only a unidirectional short run from securities markets to growth was found. However, growth led to the development of stock markets in India and Singapore. In contrast, no evidence of stock-led growth was found in Sri Lanka. Recently, Azam et al.'s (2016) investigation of stock markets in four countries, Bangladesh, China, India and Singapore, from 1991 and 2012 found that the stock markets stimulate long run growth. Azam et al. (2016) argue that the stock markets are an essential funding channel for Asian economies. Following the 2008 global financial crisis, foreign listings in the Asian stock markets increase three times higher than in the previous 10 years. In 2012, about 20,000 companies are listed on Asian stock markets; the number in the US was around 10,000, and 13,000 in Europe (Azam et al., 2016). Azam et al. (2016) suggest that Asian economies should formulate effective policies and regulations to develop stock markets that attract more foreign investors, capital accumulation and investment activities and thereby promote economic performance.

2.2.3 The impact of the banking sector

There are two important channels through which banks can stimulate economic performance, including capital accumulation and credit allocation driven by innovations (Lucchetti et al., 2001). First, banks can reduce transaction costs, mobilize, and pool savings from heterogeneous savers to reallocate them to a portfolio of different investments, which is necessary for economic growth. Secondly, the most innovative entrepreneurs will be selected by banks and credit will be granted on demand to boost purchasing power in their production process. This point was quantified by Boyd and Prescott (1986), that as “an incentive-compatible mechanism”, banks allocate funding to the most potential productivity projects.

The banking sector plays a vital role in channelling funds to private investments. Norden and Kampen (2013) argue that limited credit and the high cost of credit are among the main determinants of enterprises' financial constraints since they have insufficient funding for their investments. Companies, especially small ones, upgrade their resources by looking for bank credit and trade credit other than public debt and use their assets as collateral for their loans. Raz (2013) shows that capital-scarcity impedes incentives for enterprises in the private sector to expand their business activities. This increases the demand for borrowing from banks. Banks mobilize and allocate domestic savings to productive enterprises, which contributes to the success of economic performance. Rioja and Valev (2014) state that banks, after granting loans, also put pressure on enterprises to ensure their responsibility is not only to meet the repayments but also to access necessary resources in their capital investments, especially in developing countries with small and less developed stock markets. This, in turn, leads to diligent working by enterprises to optimize the returns from bank funding.

High productivity projects necessitate a well-functioning banking system to support their activities. Karim (2000) argues that, as a financial intermediary, banks have better ability to select investment projects that are less liquid investments but highly productive; reduce liquid projects with low returns; increase technological spill-overs; and reduce risk-taking. These activities induce better economic performance. Karim (2000) suggests that the banking sector's effects on growth improve if the capital allocation by banks is more effective and a large proportion of savings can be delivered to productive investments. They therefore can offer attractive payment on deposits and charge low prices on loans. In other words, the premium of banks can cover the expenses for payment on deposits and monitor investment projects and offset the potential costs from adverse selection and moral hazard; enterprises thus will pay lower costs of credit allocation in investment activities to enhance their output growth.

On the other hand, the banking sector can impede economic performance. De Gregorio and Guidotti (1995), using data from 1970 to 1980 in Latin American countries, conclude there is a negative

relationship between bank credit and growth because of a weak regulatory environment and less supervision, resulting in unwarranted over-lending. Similarly, Loayza and Ranciere (2006) note that a massive increase in domestic credit might result in a banking crisis and negatively affect the economy. For financial liberalization, fast growth of credit in the economy may induce an increase in bank credit to risky projects, the inadequate capacity of regulatory agencies, and weak protection against bank failure. Cernohorska and Kula (2016) report that the banking sector could not induce long run economic performance in European countries from 2000 to 2013. The reason is that the global financial crisis during this period distorted the use of bank loans for unproductive investments, which therefore could not lead to economic growth.

The study by Seven and Yetkiner (2016) yielded mixed results on banking's effects on growth in different stages of economic development. Investigating financial systems in high, middle and low-income countries from 1991 to 2011, they find that the banking sector stimulates growth in middle and low-income countries but hinders growth in high-income countries. The authors argue that, in the high-income group, there are at least three reasons that banks impede growth. First, banks during the period concentrated on household credit rather than enterprise credit, thereby not accelerating investment and growth. Secondly, to increase competitive power, banks invest more in new technologies, expand their activities towards non-intermediation financial services other than their traditional tasks including savings and capital allocation. However, it is noted that there is no satisfactory measurement of banking development, therefore the nexus bank-growth might not be explained properly. Thirdly, stock development may reduce the role of banking sector in the high-income region. Stock development may encourage companies to mobilize capital by issuing equity and reducing their bank loans.

2.2.4 Market based or bank based systems?

Financial systems typically have also been classified into market-based and bank-based regimes. The question "Which financial regime is more germane for the financial structure of a country?" remains an ongoing debate (Levine, 2005; Chakraborty and Ray, 2006; Rabiul, 2010). Chakraborty and Ray (2006) claim that both regimes can create similar rates of economic growth in different countries and that one regime can complement the other. Levine (2005) shows that both regimes have their advantages and drawbacks, and the author supports the view that the two regimes can provide "*complementary growth-enhancing financial services to the economy*".

The proponents of the market-based regime show that a market-based system can overcome the disadvantages of the bank-based system. For example, since banks are close to enterprises and acquire inside information, they may extract rents from enterprises that increase banks' profits (Levine, 2005). In renewing loans or financing new investments, banks, with their power, may require entrepreneurs

to pay more from the expected returns of their projects. This, therefore, may reduce the incentives for enterprises to undertake innovation and profitable ventures. Levine (2005) also documents that banks can grant loans for mature and less risky projects that repay debt on the due date. Hence, banks may eliminate new, risky investments related to innovative products and processes. However, such restrictions on banks may be reduced in the presence of stock markets. Levine (2005) asserts that a stock market can spur competition and lower bank power by providing alternative financing investments. Enterprises have more choices in accessing funds and financial services to stimulate their innovative investments. Similarly, Caporale et al. (2004) claim that a developed stock market, characterized by the availability of financial instruments, liquid trading and a price-determining mechanism, allows investors to diversify their portfolio of risky projects. This, in turn, encourages productive, innovative investments by enterprises, contributing to long term growth. A developed stock market enables investors to quickly alter their savings from less to more productive projects, which then improves the capital accumulation of long-term projects and shifts the country towards industrialization and higher economic development (Karim, 2017).

In terms of corporate governance, banks can address the agency problem better. Holmstrom and Tirole (1997) and Jensen and Meckling (1976) state that bank managers should acquire more inside information from enterprises than their owners since they act as the decision makers on entrepreneurial activities. Agency problems occur when firm managers extract informational rent to maximize their private gains rather than the owners' gains. Firm managers tend to lower the profitability of investment to maximize their own benefits (Holmstrom and Tirole, 1997). Chakraborty and Ray (2006) document that agency problems are better addressed by a bank-based system because of banks close ties to the enterprises, which enables banks to collect information and monitor investment of the enterprises more efficiently. Banks exert pressure on enterprises in the use of funds towards the most productive investments to repay their debts (Levine, 2005). However, it is noted that bank-finance could be more expensive (charge high interest rates) than stock finance since banks need more incentives to compensate for the risks and costs of monitoring investment projects (Holmstrom and Tirole, 1997). Chakraborty and Ray (2006) suggest enterprises raising their external finance from banks or stock markets may rely on their ability and corporate governance. The enterprises with potential high agency problems (moral hazard) and low marketable collateral may resolve their capital constraints by borrowing from banks, whereas wealthier enterprises with higher observable qualities (easy access to inside information) are likely to easily access funds from market-finance (Boot and Thakor, 1997; Chakraborty and Ray, 2006).

According to Levine (2002), the bank-based system is superior in promoting growth in countries with weak legal systems and contract enforcement because banks can effectively monitor post-lending moral hazard behaviour and force entrepreneurs to repay their debts, whereas the stock market

encourages the adoption of new processes and creates innovative products. Rioja and Valev (2014) document that, in low income countries, banks are important in financing investments even under a weak institutional environment. Banks contribute to resource allocation towards the most productive investments and exercise pressure on enterprises to pay back their debts. In high income countries, where innovations are a crucial source of growth, the stock market is an engine of technical progress. Stock markets exert a prominent trigger to mobilize savings, diversify risk, and fuel innovative activities that use modern technology and intensively skilled labour. Rabiul (2010) points out that both banks and stock markets not only have a joint effect but also separate effects on economic development. Both sectors complement each other in providing different types of financial services to economic activities, enhancing innovation and productivity growth. It is suggested that developing countries should strengthen the environment of overall financial systems (banks and stock markets) with sound legal systems and contract enforcement to stimulate productive investments (Rabiul, 2010).

2.3 The impact of financial development on the FDI-growth nexus

It is argued that the promotion of economic development does not only rely on the volume of FDI inflows, but also on efficient financial markets (De Gregorio and Guidotti, 1995). Previous studies have looked at the link between FDI and growth in terms of integration in recipient countries' financial sector (Alfaro et al., 2004; Choong, 2012). Well-functioning financial institutions play a vital role in the transfer of resources from surplus to deficit units, exchange of goods and services, and in speeding up technology and knowledge spill-overs (Al Nasser and Gomez, 2009). Financial integration enables higher banking performance and stock market liquidity thus advances the benefits of FDI inflows and stimulates economic development (Soto, 2003). It is argued that the advantages of FDI to recipient countries might be lessened if their domestic financial system does not reach a threshold level (Suliman and Elian, 2014). Azman-Saini et al. (2010) point out that recipient countries should reach a threshold level of the financial system or a precondition level of financial development in which they gain advantages from FDI. Azman-Saini et al. (2010) explain that local enterprises with well-developed financial systems can enhance their absorptive capacities to adopt the technological innovation embodied in FDI and minimize the risks in their investments, thereby increasing productivity and economic development. Hence, the promotion of financial institutions has an important role in achieving benefits from FDI.

With regard to the FDI-growth nexus and the integration of financial systems, Hermes and Lensink (2003) find that a developed financial system is a precondition for recipient countries in Latin America and Asia to benefit from FDI. The authors highlight possible reasons through which a developed financial system can promote the FDI-growth nexus. First, a developed financial system strengthens the efficient use of financial resources in projects (including funding allocation, screening and

monitoring of projects). Secondly, projects that adopt technological innovations may be riskier than other investments, inducing the need for specific financial institutions to finance those projects and reduce the risks. Therefore, advanced financial institutions will boost the number of investments using modern technologies introduced by foreign companies. Thirdly, well-developed financial systems select and provide funds to high-quality foreign enterprises with innovative activities. This improves the likelihood of foreign enterprises transferring new technology knowledge to the recipient countries. Foreign enterprises' financial flows may include not only FDI, but also equity and debt financed by local banks and stock markets, which affect foreign enterprises' investment decisions.

Adding to the tripartite relationships among FDI-growth-finance, Alfaro et al. (2004) argue that domestic enterprises that need to take advantage of new technology knowledge introduced by FDI, should strengthen their absorptive capacity (including improving their management skills, enhancing their corporate governance and employing skilled workers). However, a restriction on financial resources prevents domestic enterprises from accessing the new technology-knowledge effects embodied in FDI. Therefore, a better-developed financial system will facilitate funding for domestic investments and enhance local productivity. Alfaro et al. (2009) also assert that a well-functioning financial market reduces transaction costs and increases the flows of funds to the most productive projects, thereby improving the growth rate in the recipient countries.

For mergers and acquisitions, Alfaro et al. (2004) also opine that foreign enterprises may require a well-functioning stock market to expand their new markets in other countries. The availability of the stock markets creates the links between foreign and local investors, giving foreign enterprises more options in financing their business activities in the recipients' markets. Foreign enterprises in the recipient countries can employ local labour, apply their new production processes, and thereby contribute to productivity growth in the recipient countries.

Choong et al. (2010) confirm advanced FDI inflows will add more benefits, such as global trading, human capital, enterprise restructuring, innovation and performance, to the recipient countries. However, recipient countries can benefit from knowledge spill-over effects embodied in FDI if they can reach a threshold level of the stock market as a precondition. A well-developed stock market can diversify risk and attract savings into productive investments. Hence, foreign enterprises listed on the domestic stock market can raise capital from local investors who then finance their business activities and enhance their likelihood of transferring technical knowledge to the recipient countries. Domestic enterprises also improve their capital through the stock market channel to buy new technologies, employ experienced and skilled labour, and restructure the enterprise. Therefore, domestic enterprises can improve their capacity to adopt new production processes introduced by foreign enterprises and promote productivity. In addition, macroeconomic instability results in a negative

interaction between the foreign exchange market and the financial market, which involves unpredictable economic distress thereby calling for a necessary development of financial performance in terms of market liberalization to gain more advantages from the capital inflows.

Studies have shown that recipient countries can exploit the advantages of FDI in the presence of well-developed financial systems (e.g., Choong et al., 2010; Agbloyor et al., 2014; Iamsiraroj and Ulubaşoğlu, 2015). Agbloyor et al. (2014) focused on the nexus of growth and foreign capital flows (including foreign portfolio equity, external debts and FDI) in Africa from 1990 to 2007. The authors report that foreign capital inflows can hinder African economies because the foreign enterprises tend to exploit the recipient's scarce natural resources. However, Agbloyor et al. (2014) suggest that countries with well-functioning securities markets and banks may promote their investment environment and allocate foreign capital flows to necessary, productivity ventures, reducing the possibility of financial and exchange crises. Hence, the two financial sectors enable African countries to achieve the potential benefits from foreign capital inflows.

Iamsiraroj and Ulubaşoğlu (2015) investigated 140 countries over four decades from 1970 to 2009 and conclude that FDI is more beneficial to recipient countries that rely on the development of financial systems and trade openness. Higher levels of trade openness and financial development reflect more open-trade and an attractive investment climate that can enhance the recipient countries' ability to gain more advantages from inward FDI. Among a dearth of research in the Asian-Oceanic region, Chee and Nair (2010) use data from 44 countries from 1996 to 2005, maintain that the development of the financial system is crucial for the FDI-growth nexus. However, in their study, Chee and Nair (2010) used only banking sector indicators as proxies of the financial system, and they ignored securities market indicators. Their result, therefore, might inadequately assess the influence of finance on the FDI-growth nexus since securities markets recently have exerted a crucial role in providing financial services and capital to the entrepreneurs in Asia (Azam et al., 2016). In addition, Chee and Nair (2010) used only fixed and random effects estimators that could not address the potential endogeneity problem arising from the Finance-FDI-growth nexus.

Most of the aforementioned studies use a linear interaction model to identify the requirement of financial development to achieve the potential advantages of FDI (e.g., Alfaro et al., 2004, 2009; Choong et al., 2010; Agboloyor et al., 2014). The interaction linear model explains that more developed financial systems help investors diversify risk, attract more savings, and allow recipient countries to allocate inward FDI to productive investments (Choong et al., 2010). This enables recipient countries to attain positive spill-overs from foreign enterprises, such as new management practices, skill acquisition, and organization arrangements. Choong et al. (2010) find that the interactive term between FDI and finance significantly, positively affects economic growth. As a result, the authors

argue that recipient countries need a threshold level of finance as a precondition to achieve the positive externalities from the foreign entries. Alfaro et al. (2004, 2009) consider the FDI-growth nexus and find that the interactive term between FDI and finance significantly contributes to the output growth. Alfaro et al. (2004, 2009) argue that the development of finance enhances recipient countries' ability to exploit potential benefits from inward FDI. Agbloyor et al. (2014) include the interactive term between the financial markets' variables and FDI to capture the effect of financial markets on the FDI-growth nexus. The authors report that there is a positive impact of the interactive term on economic growth. This means that well-developed financial markets enable recipient countries to allocate inward FDI to productive ventures that contributes to economic growth.

Azman-Saini et al. (2010) assert that recipient countries will not attain their benefits from FDI until they reach a minimum threshold of financial development. Azman-Saini et al. (2010) propose the use of the threshold effects model to identify a potential financial threshold level required by the recipient countries to exploit the benefits from inward FDI. In this approach, the financial indicator exerts as "a regime-switching trigger" (or threshold variable) which conditions the effect of inward FDI on the economy. The threshold variable will classify the sample into high finance-regime and low finance-regime groups. The effects of FDI on economic development will differ based on these two financial threshold regime groups. Azam-Saini et al. (2010) use cross-sectional data on 91 countries from 1975-2005 and report that FDI enhances growth after the recipient countries attain a threshold level of finance (i.e., private credit to GDP (CP), bank credit to GDP (CB), and Liquid liabilities to GDP (LL) are 0.497, 0.431 and 0.688, respectively). Before such a threshold finance level is reached, benefit from FDI does not exist. Raheem and Oyinlola (2013) use time-series data of 15 Sub-Saharan countries from 1970-2010, and find a threshold level of finance for each country to benefit from inward FDI (e.g., Algeria (CP: 0.40, CB: 0.45, and LL: 0.60); Kenya (0.35, 0.25, 0.45); and Ethiopia (0.20, 0.45, 0.14)). Notwithstanding the benefits from inward FDI when the SSA countries attain a threshold finance level, Raheem and Oyinlola (2013) suggest that the SSA countries need to strengthen the efficiency of their financial systems to make an attractive business environment for the foreign enterprises and facilitate local private investment, which then promotes productivity growth.

Baharumshah et al. (2017) use cross-sectional data on 80 countries from 1975-2007 and show that inward FDI significantly stimulates output growth after the host economies attain a threshold finance level (i.e., private credit to GDP (30.37%), where private credit is used as the main proxy for financial development). Before such threshold finance is attained, the authors find that inward FDI reduces the speed of economic development. This is because low levels of finance (below the financial threshold) are characterized by a shortage of financial products, expensive credit, regulatory constraints and high information costs to support domestic entrepreneurial activities. Foreign enterprises with their advantages, such as economies of scale, international products and capital resources, might crowd out

their local counterparts in the same industry. However, in terms of higher levels of finance, both local and foreign enterprises can gain more access to financial services and credit at lower cost to stimulate their productive ventures with new technologies and production processes. Higher levels of finance help investors mitigate information gaps and transaction costs to intensify long-term investments with higher returns and productivity growth (Baharumshah et al., 2017).

2.4 The relationship between financial development and FDI

This section explains whether financial development boosts FDI inflows and vice-versa. There are several ways financial systems affect FDI: allocating resources, mitigating transaction costs, upgrading liquidity, and enforcing financial contracts (Ezeoha and Cattaneo, 2012). Effective financial intermediaries will reduce a needless costly process and channel resources directly to investment activities with high profitability and provide mechanisms to diversify risk. In such a financial system, both domestic and foreign enterprises can gain more access to external funds at lower prices. Kinda (2010) argues that foreign investors may not have sufficient information about their opportunities and potential risks in the local market compared with local investors. Developed financial markets, therefore, are required to provide foreign investors with the needed information and financial support, which enhances their incentives to make investment decisions. Similarly, Bartels et al. (2009) point out that developed financial institutions help investors reduce transaction and information costs on markets, industries and services. Hence, reduction in asymmetric information allows international capital mobility, inducing a higher return on investment.

In terms of well-developed stock markets, Otchere et al. (2016) affirm that corporations related to FDI tend to list on the stock exchange since they may not only increase capital but also introduce and enhance their brand name in the domestic market. Foreign investors also run their business in those countries with a developed financial system since it signals a good business environment and friendly market where they can find diversified financial products to finance and support their activities. However, an inefficient stock market may exist because of weak regulations, high volatility, asymmetric information and speculative activity. As a result, foreign enterprises do not want to list their equity on such stock markets since they may get less value in their share price and cannot raise the needed capital or recover their investment. An inefficient stock market, therefore, could not act as a credible channel to encourage foreign companies to invest in the recipient countries (Agbloyor et al., 2013).

On the other hand, for an efficient banking system, Agbloyor et al. (2013) reveal that foreign enterprises have greater access to well-functioning financial services (such as available funding to finance working capital and advanced payments systems) and reduce their cost of capital. Similarly, developed banking systems attract inflows of FDI in terms of faster transactions, low costs, funding

availability and competitive foreign exchange services (Kaur et al., 2013). However, an underdeveloped banking sector (characterised by shortages of financial products, less promotion, less attractive loans and regulation constraints) may discourage foreign investment (Ezeoha and Cattaneo, 2012). Ezeoha and Cattaneo (2012) argue that multinational enterprises look for resources to finance operations only from their parent company rather than bank debts because of credit constraints. In addition, business activities may be distressed because of unsmooth financial intermediation for domestic and international trading, which therefore will restrict FDI inflows.

Agbloyor et al. (2013) looked at the benefits of the banking sector from the FDI perspective. The authors assert that foreign companies entering a country should open a bank account and keep an amount of funds for their business. Hence, the banks partially use those funds to grant loans to other investors. Banks' resources will be greater if plenty of funds from diversified companies are deposited into the banks' accounts. This source of funds is necessary to finance timely productivity investments with high future returns. In addition, foreign enterprises also need the banking sector with well-functioning products and competitive services to facilitate their business, thus inducing advanced banking systems. Otchere et al. (2016) discuss that the presence of foreign enterprises may stimulate economic activity in recipient countries. This increases the demand for financial services by both domestic and international customers. To serve customers, the banking system improves its financial products and applies modern technologies such as an electronic payments system and international trading services.

The stock market sector might benefit from FDI. When foreign enterprises list on the stock market, this improves the market capitalization since the listed foreign enterprises are usually large enterprises (Agbloyor et al, 2013). By selling and purchasing equity, listed foreign enterprises improve the liquidity of the stock market. Hajilee and Naseer (2015) suggest that the presence of listed foreign enterprises may attract other foreign and local investors to the local stock market, which promotes market capitalization and liquidity. In addition to increasing the funds available in the local financial markets, Varnamkhasti and Mehregan (2015) note that the entry of foreign enterprises might reduce the power of the local elite and force them to follow the friendly market regulations that foster the development of the financial markets.

However, Al Nasser and Gomez (2009) show that FDI could negatively affect local financial systems. In such a case, the local financial systems will be substituted by FDI since nascent domestic institutions do not have enough capital to invest in productivity projects that contribute to growth. Risky and undeveloped local financial institutions will be replaced by large FDI with a greater capacity to meet market requirements. Zakaria (2007) believes that credit constraints hamper domestic enterprises from investing in potentially high-profit projects. Hence, FDI inflows reduce the credit constraints in

the local financial markets, allowing them to finance domestic enterprises to undertake such projects and boost growth. On the other hand, for short term savings, Reisen and Soto (2001) assert that a banking sector that depends on capital inflows will be prone to the risk of bankruptcy and output losses when foreign savings abruptly withdraw.

Recent studies have attempted to address the finance - FDI relationship with different results (e.g., Agbloyor et al., 2013; Kaur et al., 2013; Hajilee and Naseer, 2015; Sahin and Ege, 2015; Gebrehiwot, 2016; Otchere et al., 2016). Most studies report that there is a bidirectional relationship between the two sectors (i.e., Agbloyor et al., 2013; Hajilee and Naseer, 2015; Otchere et al., 2016). The authors suggest that developed financial systems can attract inward FDI and the increase in inward FDI leads to a more developed financial system. For example, Otchere et al. (2016) consider the relationship between finance and inward FDI for African countries from 1996 to 2009 and conclude that inward FDI promotes the liquidity, transparency and depth of African financial markets. On the other hand, more developed financial systems improve the allocation of inward FDI to more productive sectors, which results in more profits for foreign investors. This further attracts more inward FDI. For Latin American countries, Hajilee and Naseer (2015) find that financial systems and inward FDI positively affect each other. Hajilee and Naseer (2015) suggest that inward FDI is an incentive for financial reforms towards strong, deep financial markets. Well-developed financial markets facilitate foreign investors with available financial services and reduce the cost of capital, and thereby encourages inward FDI.

In contrast, Gebrehiwot (2016) fails to find a linkage between FDI and finance in eight SSA countries from 1991 to 2013. The author uses both two stage least squares (2SLS) and Granger causality tests and suggests that the nexus between FDI and finance is inconclusive. Although Geberehiwot (2016) finds a significant impact of FDI on credit to the private sector, there is an insignificant influence of FDI on liquid liabilities (another indicator of the financial sector). The author could not find any evidence of financial indicators affecting FDI in eight SSA countries.

The study by Sahin and Ege (2015) shows mixed results in the relationship between the two sectors across countries. Focussed on Greece and its neighbours (Turkey, Bulgaria, and Macedonia), the authors find that FDI can predict financial development in three countries (Greece, Turkey and Bulgaria). They also find that only Turkey has bidirectional causality between finance and FDI. In a study of BRIC countries (Brazil, Russia, India and China), Kaur et al. (2013) applied the fixed and random effects methods and report that stock market capitalization and size of the banking sector (measured by liquid liabilities) are positively associated with inward FDI. Nonetheless, bank credit hampered FDI in BRIC countries from 1991 to 2010. This is because, if there is more bank credit available, inflows of FDI tend to be less attractive financial resources for domestic investments. BRIC countries can carry out their domestic investments with funds from bank credit rather than inward FDI.

For ADC, there is a dearth of empirical evidence on the relationships between the two sectors. The study by Varnamkhasti and Mehregan (2015) is among the few studies to include ADC in their sample. Investigating the impact of finance on FDI in 33 developing countries (including ADC and other developing economies), the authors show that financial indicators, divided into the banks and securities market, are positively correlated with inward FDI. They suggest that the development of finance can facilitate financial services to encourage higher inward FDI. Soumare and Tchana (2015) used panel data of 29 emerging economies (ADC, Eastern Europe and Africa) from 1994 to 2015 to examine the relationship between FDI and finance (measured by both banks and stock markets). The authors used Granger causality tests and find causality between FDI and finance. They also used the 2SLS method and show that stock market development enables host economies to attract more FDI. Additionally, the greater presence of this cross-border capital stimulates higher development of the stock markets. However, the association between banking development and FDI in their study is still inconclusive. Aibai et al. (2019) investigated the FDI-finance nexus in 50 Belt and Road Initiative economies (including Europe and ADC) between 1989 and 2011 and find that the presence of inward FDI significantly accelerates the development of finance (measured by the sum of private credit and stock market value traded to GDP). More importantly, such an effect of FDI is stronger in a country with a better institutional environment. Improved institutional quality, such as higher property protection, better contract enforcement, less ethnic conflict, and lower corruption, helps foreign investors to mitigate investment risks and to allocate their capital resources to the most productive ventures. As a result, this draws more inward FDI into the host economies and encourages financial markets to upgrade their financial products and services to satisfy the greater demands of the foreign customers.

Chapter 3

Research methodology

This chapter discusses the research methodology. Section 3.1 presents the Fisher-type test to detect unit roots in FDI and finance data and the Granger causality tests to test the bidirectional relationship between FDI and the development of finance. Section 3.2 presents three multivariate models for the relationships between FDI, finance and economic development, followed by their determinants. Section 3.3 discusses three estimation approaches - fixed effects, random effects and system GMM - to estimate unobserved effects panel models and to address potential endogenous bias in the macro-data. Section 3.4 provides two approaches to identify the threshold level of financial development, the linear interaction regression and the threshold effects models.

3.1 Bidirectional relationships between FDI and finance

This study uses the Granger causality tests for times series cross-sections data (TSCS) to investigate if there are bidirectional relationships between FDI and finance. The TSCS framework allows the Granger causality tests to be more efficient than the time-series approach (especially with small time-series dimensions). This is because TSCS provides more observations and information from cross-sectional countries. This helps improve the degrees of freedom and reduces collinearity of the regressors (Hood et al., 2008; Law et al., 2013).

Before applying the Granger causality tests to the TSCS framework, since the panel variables contain the time-series component, it is important to detect which levels of the time-series component are stationary. Otherwise, the Granger causality test is nullified because the presence of a nonstationary variable could lead to a spurious regression and unreliable results from common test statistics (such as the F-test) (Zakaria, 2007). A panel variable is stationary if its mean and variance are independent of time. Macro-variables such as FDI and financial indicators with large time dimensions can be affected by their time-series and season shocks (Nadeem, 2016). In other words, the mean and variance of such variables can change over time. This leads to inconsistent, unreliable results in the regression model, i.e., FDI may Granger-cause financial development although there is none. Based on the structure of unbalanced data, this study uses the panel unit root test, i.e., Fisher-type test based on Augmented Dickey-Fuller's regressions (ADF), to examine which levels of FDI and financial indicators are stationary. Among the unit root tests, such as Levine et al. (2002) and Im et al. (2003) (LLC and IPS) tests, the Fisher-type test can detect unit roots in unbalanced panel data (Maddala and Wu, 1999). The Fisher-type test also allows possible different lag lengths across the individual ADF regressions. Additionally, Maddala and Wu (1999) indicate that when there are cross-sectional correlations in the

disturbance terms, the Fisher-type test based on Monte Carlo simulations is likely to outperform other unit root tests (i.e., LLC and IPS) in terms of power and low size distortion. Maddala and Wu (1999) also suggest that when both stationary and nonstationary series are included in the alternative hypothesis, the Fisher-type test is more effective than the LLC and IPS tests in distinguishing between the null and alternative hypotheses (has the highest power to reject the null) (Anyanwu, 2016).

Ramírez (2000) and Wooldridge (2015) suggest that panel macro-data are rarely stationary at levels and usually follow a random walk (with or without deterministic features, including intercept and time trend). We can transfer the non-stationary macro-data to be stationary by first differencing. In other words, by first differencing, non-stationary macro-data can eliminate deterministic and stochastic trends (Jaunky, 2011; Wooldridge, 2015). Since our data with different countries may follow mixed processes, we use the Fisher-type test to test which levels of FDI and financial development variables are stationary with intercept, and with both intercept and time trend based on the ADF regression (following the studies of Ramírez (2000), Soumare (2015) and Otchere et al. (2016)). As a result, we can use the variables at such levels to run the Granger causality tests.

3.1.1 Unit root test

LLC tests:

To restrict inaccurate limitation of the normal distribution from large panel data based on Monte Carlo simulations, the LLC tests have a limiting normal distribution, especially for cross-country data. LLC tests improve the power of unit root tests in panels compared with each individual time series data (Levine et al., 2002). LLC uses unit root tests based on the assumption of homogenous autoregressive coefficients across all individual-country series. However, LLC allows the intercept to be different across the individual-country series. The regression has a time trend and an intercept based on the ADF as follows:

$$\Delta Y_{i,t} = \beta_i + \eta_i Y_{i,t-1} + \sum_{k=1}^{s_i} \pi_{i,k} \Delta Y_{i,t-k} + \gamma_i t + \varepsilon_{i,t} \quad (3.1)$$

where: Y will be tested for unit root; i is country, t is time, s is the number of lags varying across countries, β_i is the intercept of country i , $\gamma_i t$ is time trend, and $\varepsilon_{i,t} \in N(0, \sigma_{\varepsilon_i}^2)$. The null hypothesis is $H_0: \eta_i = \eta = 0, \forall i$ (unit root), alternative is $H_A: \eta_i = \eta < 0, \forall i$ (stationary); using the statistic test $t_\eta = \hat{\eta}/s.e.(\hat{\eta})$.

Fisher-type test:

Maddala and Wu (1999) proposed the ADF-Fisher test for unit roots based on the assumption of heterogeneous autoregressive coefficients across the individual-country series. The Fisher-type test addresses the restriction of the LLC assumption of identical autoregressive coefficients for all

individual-country series, i.e., $\eta_i = \eta$. The Fisher test assumes the null of a unit root in the panel; the alternative is that some individual-country series are stationary. Maddala and Wu (1999) formulated the panel Fisher statistic test with small n and large T as follows:

$$W = -2 \sum_{i=1}^n \ln p_i \rightarrow \chi^2(2n) \quad (3.2)$$

where: $i = 1, 2, \dots, n$ represents the country, n is the number of countries, p is the p-value calculated from an individual unit root test statistic (ADF in this study) for each country series. Subsequently, W combines all the p-value results from each country series by the sum of logarithms ($-2 \sum_{i=1}^n \ln p_i$) to test the non-stationarity in the panel; W has a χ^2 distribution with $2n$ degrees of freedom.

Expanding from Maddala and Wu (1999), Choi (2001) developed a new version of the Fisher method (the modified Fisher test) to use large n and T with an asymptotic normality distribution as follows:

$$W_m = \frac{1}{2\sqrt{n}} \sum_{i=1}^n (-2 \ln p_i - 2) = \frac{-1}{\sqrt{n}} \sum_{i=1}^n (\ln p_i + 1) \rightarrow N(0,1) \quad (3.3)$$

The null of the Fisher and modified Fisher tests methods assumes the existence of unit roots for all individual-country series; the alternative is that some individual-country series (at least one) are stationary. The Fisher-type tests have several advantages compared with other tests (i.e., LLC and IPS). For example, the Fisher-type tests allow the presence of heterogeneous stochastic and non-stochastic components across countries. Each individual-country series may have different time-series dimensions (Choi, 2001). The Fisher-type tests also assume that some individual series have unit roots and others are stationary. Further, when there is the presence of cross-sectional dependence or a mixture of stationary and non-stationary series in the panel, the Fisher tests based on the Monte Carlo simulations tend to outperform other tests (such as LLC and IPS) in terms of high power performance and low size distortions (Maddala and Wu, 1999). In practice, such advantages enable the Fisher-type tests to detect a unit root in either balanced or unbalanced panel data with heterogeneous structures among countries (Habimana, 2016). Based on the structure of unbalanced data in this study, we use both the Fisher and modified Fisher tests methods to detect unit roots in the financial development and FDI indicators.

3.1.2 Granger Causality tests

After considering which levels of FDI and finance variables are stationary, we next test whether there is causality between FDI and finance based on the Granger causality tests developed by Hood et al. (2008). If there is a bidirectional relationship between them, FDI and finance have a potential endogeneity issue. The equation is as follows:

$$y_{i,t} = \alpha_i + \sum_{k=1}^p \phi^k y_{i,t-k} + \sum_{k=0}^p \lambda_i^k x_{i,t-k} + \varepsilon_{i,t} \quad (3.4)$$

Specifically, the equation examines the Granger causality running from finance to FDI as:

$$FDI_{i,t} = \beta_i + \sum_{k=1}^p \omega^k FDI_{i,t-k} + \sum_{k=0}^p \pi_i^k FINA_{i,t-k} + \varepsilon_{1i,t} \quad (3.5)$$

where: FINA is financial development, i is country, t is time, and p is the number of lag lengths. To examine Granger causality running from finance to FDI, two hypotheses may emerge from the TSCS framework:

Hypothesis 1 (H1): For all countries, finance does not cause FDI (test of homogenous noncausality);
and

Hypothesis 2 (H2): For all countries, finance causes FDI (test of homogenous causality).

We test the null hypothesis with all coefficients π_i^k equal to zero ($\pi_i^1 = \dots = \pi_i^k = 0$). This implies that finance does not cause FDI for all countries. Hood et al. (2008) propose using the F-test to check H1 and if the F-test is insignificant, then H1 cannot be rejected. As a result, we can conclude that finance does not cause FDI for all countries. The process ends here. In contrast, if the F-test is significant, then H1 is rejected. This implies that finance Granger-causes FDI in at least one country (or possibly all) (Hood et al, 2008). The process will continue with H2.

Having determined that finance Granger-causes FDI in at least one (or more) country(ies), the process continues with the null hypothesis as $\pi_i^1 = \dots = \pi_i^k \neq 0$. This means that finance causes FDI for all countries. Again, we use the F-test to check H2. If the F-test is insignificant, then H2 cannot be rejected and we can conclude that finance causes FDI for all countries. In contrast, if the F-test is significant, then H2 is rejected. This implies that finance does not cause FDI in at least one country (or more).

Equation (3.6) examines Granger causality running from FDI to finance as follows:

$$FINA_{i,t} = \delta_i + \sum_{k=1}^p \theta^k FINA_{i,t-k} + \sum_{k=0}^p \phi_i^k FDI_{i,t-k} + \varepsilon_{2i,t} \quad (3.6)$$

where: i is country, t is time, and p is number of lag lengths. There are two hypotheses to examine the Granger causality running from finance to FDI:

Hypothesis 1 (H1): For all countries, FDI does not cause finance (test of homogenous noncausality),
and

Hypothesis 2 (H2): For all countries, FDI causes finance (test of homogenous causality).

We test the null hypothesis with all coefficients ϕ_i^k equal to zero ($\phi_i^1 = \dots = \phi_i^k = 0$). This implies that FDI does not cause finance for all countries. The F-test is used to test H1, and if the F-test is insignificant, then H1 cannot be rejected. We can conclude that FDI does not cause finance for all countries. In contrast, if the F-test is significant, then H1 is rejected. This implies that FDI Granger-causes finance in at least one country (or possibly all) (Hood et al., 2008).

Having determined that FDI Granger-causes finance in at least one (or more) country(ies), the process continues with the null hypothesis as $\varphi_i^1 = \dots = \varphi_i^k \neq 0$. This implies that finance causes FDI for all countries. Again, we use the F-test to test H2. If the F-test is insignificant, then H2 cannot be rejected, and we can conclude that finance causes FDI for all countries. On the contrary, if the F-test is significant, then H2 is rejected. This means that finance does not cause FDI in at least one country (or more).

Given the results from Granger causality tests in equations (3.5) and (3.6), we can determine the nature of the causality between FDI and finance. A bidirectional relationship implies that there might be an endogeneity issue between FDI and finance (Hood et al., 2008). This means that we should use an appropriate technique (such as system GMM) that can tackle endogeneity problems. The bilateral causality tests are used in many studies, but they could lead to spurious findings because of the omission of other relevant variables (Lütkepohl, 1982). Based on these views, the link between FDI and finance will be investigated within the multivariate models using the GMM technique described in next section.

3.2 Multivariate model

The link between FDI and finance will be considered under the presence of other factors that can affect finance and FDI (i.e., economic development, trading openness, inflation, government spending, population growth, financial openness, domestic investment and governance institutional quality). According to Wooldridge (2012), more regressors included in the model are helpful to explain the dependent variables such as FDI and finance. This provides a model with a flexible functional form to explain the variation in the dependent variables. Two models explain the bidirectional nexus between FDI and finance as follows:

$$FDI_{it} = f(FINA_{it}, CONTROLS_{1,it})^7 \quad (3.7);$$

$$FINA_{it} = f(FDI_{it}, CONTROLS_{2,it}) \quad (3.8);$$

In terms of the economic development regression model, this study includes the roles of FDI, finance, and their interactive term in economic development (denoted by ECON). The reduced form model is as follows:

$$ECON_{it} = f(FINA_{it}, FDI_{it}, FINA_{it} * FDI_{it}, CONTROLS_{3,it}) \quad (3.9)$$

⁷ *CONTROLS* is a vector of control variables (see Table 3.1).

Table 3.1 defines the model variables, their measurement, and source.

Table 3-1: The names of variable, their measurement, and source

Variable name	Measurement	Source
ECON	Economic development (measured by real GDP per capita)	World Bank Development Indicators (WDI)
FINA	Financial development	WDI
BANK	<i>Banking sector</i>	WDI
BACRED	Credit by banks to private sector divide GDP	WDI
TOCRED	Credit by both banks and nonbanks divide GDP	WDI
LIQUID	Liquid liabilities divide GDP	WDI
STOCK	<i>Stock market</i>	
STCAP	Stock market capitalization over GDP (on listed companies)	WDI
STVAL	Stock market value traded over GDP	WDI
STTUR	Stock market turnover	WDI
FDI	Inflows of foreign direct investment over GDP	WDI
FINA*FDI	Interactive term between FINA and FDI	WDI
BANK *FDI	<i>Interactive term between the banking sector and FDI</i>	WDI
STOCK*FDI	<i>Interactive term between the stock market and FDI</i>	WDI
GROW	<i>Growth rate of real GDP per capita</i>	WDI
GOVE (Government spending)	Government expenditure over GDP	WDI
TRADE (Trade openness)	Imports plus exports over GDP	WDI
INFL (Inflation)	Annual percentage change of the consumer prices index (%)	WDI
POPU (Population growth)	Log of population	WDI
DOME (Domestic investment)	Fixed capital formation over GDP	WDI
CRIS (Crisis)	Including the 1997-1998 Asian financial crisis and the 2008-2009 global financial crisis. Crisis = 1 if year is 1997, 1998, 2008, and 2009, otherwise = 0	
INST (Institutional quality)	Average governance institutional quality indicators, including: <ul style="list-style-type: none"> - voice and accountability index - corruption control index - rule of laws index - effectiveness of government index - quality of regulation index - political stability index These indicators range from 0% to 100%; a higher score means better results relative to governance.	World Governance Indicators (WGI)
MANU (Manufacturing)	Manufacturing over GDP	WDI
FINO (Financial openness)	Capital account openness index (KAOPEN) proposed by Chinn-Ito (2008). This indicator ranges from 0 to 1 where a higher score means a higher financial openness.	Chinn-Ito Indexes

In terms of the multivariate model, the relationships between FDI, finance and economic development are also affected by other factors such as domestic investment, inflation, population growth, trading openness, government spending. Thus, models (3.7), (3.8) and (3.9) with other potential regressors can be rewritten as follows:

The general functional form of ECON model is given as:

$$ECON_{it} = \alpha_0 + \alpha_1 FINA_{it} + \alpha_2 FDI_{it} + \alpha_3 FINA_{it} * FDI_{it} + \alpha_4 DOME_{it} + \alpha_5 GOVE_{it} + \alpha_6 INFL_{it} + \alpha_7 TRADE_{it} + \alpha_8 POPU_{it} + \alpha_9 CRIS_{it} + \varepsilon_{it} \quad (3.10);$$

where: *ECON* is real GDP per capita in constant 2010 USD; *FINA* is financial development; *DOME* is domestic investment; *GOVE* is government spending; *INFL* is inflation rates; *TRADE* is trade openness; *POPU* is population growth; and *CRIS* is crisis dummy.

The general functional form of FDI model is given as:

$$FDI_{it} = \beta_0 + \beta_1 FINA_{it} + \beta_2 GROW_{it} + \beta_3 FINO_{it} + \beta_4 GOVE_{it} + \beta_5 INFL_{it} + \beta_6 TRADE_{it} + \beta_7 DOME_{it} + \beta_8 POPU_{it} + \zeta_{it} \quad (3.11)$$

where: *FINA* is financial development; *GROW* is economic growth rate per capita; *FINO* is financial openness; *GOVE* is government spending; *INFL* is inflation rates; *TRADE* is trade openness; *DOME* is domestic investment; and *POPU* is population growth.

The general functional form of FINA model is given as:

$$FINA_{it} = \delta_0 + \delta_1 FDI_{it} + \delta_2 GOVE_{it} + \delta_3 DOME_{it} + \delta_4 ECON_{it} + \delta_5 TRADE_{it} + \delta_6 MANU_{it} + \delta_7 INST_{it} + \xi_{it} \quad (3.12)$$

where: *FINA* is financial development; *GOVE* is government spending; *DOME* is domestic investment; *ECON* is real GDP per capita; *TRADE* is trade openness; *MANU* is manufacturing; and *INST* is institutional quality.

Several authors, such as Tiwari (2011) and Rabiul (2010), argue that OLS seems to be a weak technique since some regressors in the regression model might be endogenous. The OLS method is useful when all regressors in the panel model are treated as exogenous and different countries have homogenous specific effects. Otherwise, the OLS results are biased and inconsistent. Two other methods, FE and RE, can deal with unobservable individual effects panel models. However, such methods cannot handle the potential endogeneity of the regressors in static or dynamic models. For example, according to equation (3.10), some regressors (such as FDI or finance) can be correlated with the disturbance terms in the economic development regression model. This is because the dependent variable (economic development) can determine the function of FDI or finance and, thus, the disturbance terms may contain factors (i.e., measurement errors or omitted variables) that are correlated with FDI or finance (Tiwari, 2011). This leads the estimated parameters in the economic development regression model to

be biased and inconsistent. Hence, the system GMM technique developed by Arellano and Bover (1995) and Blundell and Bond (1998) is applied in the dynamic model to address heterogeneity and endogeneity (Toh et al., 2018). By constructing internal instruments within the panel itself, the GMM estimator tackles the need for external instruments and handles the endogeneity issue existing in the panel data model⁸.

This study uses data from 33 countries (22 countries with stock markets⁹) from 1986 to 2015¹⁰. The data are derived from the WDI database, except for institutional quality from WGI, and financial openness from Chinn-Ito (2008). The macro-panel data in this study are unbalanced since information on the indicators of the 33 countries are missing for some years. In the dynamic model, previous studies, such as Hassan et al. (2011), Feeny et al. (2014) and Muhammad et al. (2016) suggest using non-overlapping five-year average data to eliminate short-run business-cycle fluctuations and to tackle the missing data problem. Averaging five-year data can mitigate high degrees of persistence and potential bias from the use of long-time observations with the GMM estimator (Anyanwu, 2016). Additionally, the use of the GMM technique with “small T and large N” becomes feasible. We use a time span of 30 years between 1986 and 2015 when FDI and financial indicators are available for most ADC. There are six five-year periods for each country: [1986-1990], [1991-1995], [1996-2000], [2001-2005], [2006-2010] and [2011-2015].

As suggested by Beck and Levine (2004), all variables will be taken with the natural logarithm¹¹ to tackle potential non-linear linkages between the dependent variable and the independent variables (e.g., economic development and financial development). Using logarithmic transformation also helps reduce the effect of outliers in the dataset (Cull and Efron, 2008; Desbordes and Wei, 2017). In practice, macroeconomic panel data are commonly dynamic. Hence, the GMM technique is an appropriate estimator in the presence of dynamic settings. The GMM uses lags of the dependent variables to capture dynamic adjustment over time. The lagged dependent variables account for potentially important information of the regressors in past periods and, therefore, reduce the misspecification bias in the regression models (Anyanwu, 2016). Some previous studies such as Blundell and Bond (1998), Habibullah and Eng (2006) and Seven and Yetkiner (2016), suggest that the two-steps system GMM with a small sample can result in a downward bias and inaccuracy of the estimates of model coefficients. Such a problem can be addressed by using one-step system GMM,

⁸ Section (3.3) provides details of the three estimation approaches, FE, RE and system GMM, that are applied to the dynamic panels.

⁹ This study investigates 22 countries with stock markets based on the stock markets' data available in the WDI database. The rest of the countries are excluded because of data unavailability. Some economies' stock markets, e.g., Cambodia, Lao DPR, Macao China, and Myanmar, are still in the infant stage, with only a few listed companies since 2010.

¹⁰ See Appendix C for list of 33 countries with banks and Appendix D for list of 22 countries with stock markets.

¹¹The inflation variable is taken with $\ln(1+\text{inflation})$ to avoid losing observations (Beck and Levine, 2004).

which is a more appropriate technique for a finite-sample inference by mitigating heteroskedasticity with a robust variance-covariance matrix. This corrects for empirical size distributions to make the estimated coefficients more efficient (Narayan and Narayan, 2013). Apart from the GMM estimator, we also include the FE and RE estimators in our dynamic models for completeness and comparison purposes. We note that the latter two estimators can address an unobserved heterogeneity issue, but they can be invalidated because of the failure of the assumption that all regressors are strictly exogenous since the lagged value of the dependent variable or independent variables can be correlated with the disturbance terms. This might lead the dynamic panel estimates to be biased and inefficient (Seven and Yetkiner, 2015).

3.2.1 The determinants of economic development

Foreign direct investment

Following previous studies (Alguacil et al., 2011; Iamsiraroj, 2016), we use FDI inflows divided by GDP as a measure of FDI. The literature shows that cross-border capital may accelerate or hinder the growth rate of the recipient economies. Inward FDI enables recipient economies to stimulate their productivity through different channels such as funding financial resources for domestic investment, transferring technological innovations, enhancing labour skills and introducing advanced management practices (Alguacil et al., 2011; Iamsiraroj, 2016). However, under competitive pressures, local enterprises might lose their market share to multinational enterprises with high-quality and low-cost products. Local enterprises can also experience a poorer performance because of a reduction in highly qualified workers attracted by a higher salary in foreign enterprises (Spencer, 2008; Sahu, 2010). This study hypothesises that inward FDI stimulates the growth of recipient economies.

Stock market

Stock market development involves the enhancement of quality, size and effectiveness of the stock market's services (Pradhan et al., 2014). The stock market contributes to the success of the domestic economy through the improved provision of potential project information, enhanced risk diversification and management, and enriched capital flows to productive investments (Beck and Levine, 2004; Cooray, 2010). Thus, this stimulates incentives for investors to expand their investment activity. However, stock market development may not result in successful economic activity in some cases. For example, a trade-off to develop the stock market may hinder existing group-banking systems in developing nations, or unpredictable high volatility of stock prices might cause investors to make wrong decisions (Singh, 1997). Since there is no perfect proxy for the stock market, we need different proxies to capture different aspects of the stock market (Adefeso et al., 2013). Three indicators are widely used to measure stock market development: stock market capitalization over GDP (on listed companies); stock market value traded over GDP; and stock market turnover (Nasser and Gomez,

2009). **The first** is defined as a measure of the stock market size since it shows the value of all listed enterprises' shares. A larger stock market enhances opportunities for risk diversification and capital mobilization for entrepreneurial activity. This is because holding stocks in different enterprises allows investors to diversify their portfolios to hedge against unsystematic risk. Investors can shift towards innovative projects in their portfolios with higher expected returns. As a result, a larger stock market further attracts higher market participants and enhances its capitalization. By raising capital mobilization through equity issues, listed entrepreneurs can channel their capital resources to productive investments (Naceur and Ghazouani, 2007; Seven and Yetkiner, 2016). However, this indicator alone cannot capture liquidity because a stock market may have large capitalization but little trading (Demirgüç-Kunt and Levine, 1996; Choong et al., 2010). **The second indicator**, the stock market value traded over GDP, shows share values traded on the domestic stock market and is frequently considered a measure of liquidity. This indicator gauges trading volume as a share of national output, or the stock market trading relative to economic activity (Beck and Levine, 2004). Higher levels of stock trading enable investors to prevent a loss or make new investments promptly. Beck and Levine (2004) expect that increases in trading volume encourage more investors to the stock market. Hence, this enhances domestic investment and economic activity. Similarly, Rioja and Valev (2014) suggest that this indicator implies the listed shares can be easily traded and converted to cash. Since investors can purchase new shares and sell their existing shares when required, a higher indicator tends to reflect a greater confidence of investors to engage in the stock channel and make their profits. **The third indicator**, stock market turnover, combines the first and second indicators, reflecting the total stock transactions on the domestic market size, and captures the effectiveness of the stock market (Levine, 2002; Naceur and Ghazouani, 2007). The third indicator, turnover, gauges trading relative to the stock market size, whereas the second indicator, value traded, gauges trading relative to the size of the economy (Levine and Zervos, 1998). A high turnover ratio may respond to a small liquid stock market (value traded/capitalization). Such a stock market, however, can have a low value traded ratio (value traded/GDP) since GDP is large. These three measures together provide more information on stock market services than a single indicator (Demirgüç-Kunt and Levine, 1996).

Banking sector

The banking sector provides enterprises with an external resource channel for their investments (Vaithilingam et al., 2003). Banks can screen good borrowers, select productive investments, monitor loans, reduce risk-taking, and therefore stimulate economic development (Levine, 2005). Whereas, a lack of a bank legal system and bank supervision gives rise to risky projects and unwarranted over-lending, which induces adverse effects in economic development (De Gregorio and Guidotti, 1995; Loayza and Ranciere, 2006). We measure banking development in this study by bank credit to GDP, total domestic credit to GDP and liquid liabilities to GDP. The first reflects the probability of privately-

owned enterprises access to bank credit. With credit available, enterprises can expand their innovative activities. For example, entrepreneurs can buy new technology, attract highly skilled workers, or apply new production processes with higher productivity. This indicator has been widely used in previous studies (e.g., Beck and Levine, 2004; Anyanwu et al., 2018) to measure the role of the banking sector in channelling funding resources directly to the private sector. This is because the private sector tends to undertake more profitable investments than the public sector (state-owned enterprises, central and local governments) (Beck and Levine, 2004; Anyanwu et al., 2018). The second indicator, total domestic credit, consists of all credit provided by banks and other financial institutions. The second indicator reflects the importance of financial intermediaries in allocating financial resources to both privately-owned and state-owned enterprises. Hence, more credit tends to speed up economic progress. The last indicator, liquid liabilities, is “the sum of currency and demand and interest-bearing liabilities of banks and nonbank financial intermediaries as a share of GDP” (Kim et al., 2010, page 498). Nasser and Gomez (2009) suggest that an increase in this indicator reflects a larger size of the financial sector relative to the economy. This improves the quality and quantity of the financial services to the domestic economy and leads to higher growth (Cheng et al., 2014). Different banking sector indicators are used to check for the robustness of the empirical results in this study.

Government spending

Previous studies show mixed results of government spending on the economy. Some authors find that government spending positively affects economic development (Alexiou, 2009; Anwar and Nguyen, 2011). For example, Alexiou (2009) finds that the government that uses its budget for private investment, development assistance, trade openness and capital formation can stimulate the economy. Similarly, Anwar and Nguyen (2011) reveal that with the allocation of capital towards infrastructure development and human capital, the government can help the private sector reduce its time costs and speed up its production processes. However, Connolly and Li (2016) argue that if the government increases its budget by raising taxes in the private sector, this may distort private investment with higher input costs and lower output growth. In addition, if the government spends on unproductive activities such as the military, defence and police, government expenditure may result in negative effects on growth. In general, Christie (2014) suggests that the government can generate positive functions relative to growth by providing public goods, supplying required infrastructure, protecting property and enhancing the rule of law. However, expansion of government size may lead to inefficiency in capital allocation, distortive supervision, lax regulations, and a rise in bureaucracy, thereby decelerating growth. When the government can enact effective policies (such as effective capital reserves for the financial intermediaries, subsidies to private investment and allocating money supply to the most productive projects), economic growth can accelerate.

Trade openness

Shahbaz (2012) assumes that trade openness enables recipient countries to import advanced technologies, new inputs and materials at lower cost and stimulate specialization in industries with the advantage of economy of scale, thereby promoting productivity. However, a more open economy increases competition between local and foreign enterprises. This may crowd out production by local enterprises and reduce the economic growth rate (Muzaffar and Junankar, 2014). Trade openness is measured by imports plus exports over GDP. Following previous studies (e.g., Shahbaz, 2012; Muzaffar and Junankar, 2014), we hypothesise a positive relationship between trade openness and growth.

Inflation

De Gregorio (1992) argues that inflation may impede economic performance. Inflation may affect resource reallocation by companies from high productivity activities to lower productivity investments to lessen inflation tax burdens. Companies may face a high risk of loss in their business activities because of unstable prices related to high inflation. Uncertain financial markets may impede investments of capital because of the fear of risk-taking (Iqbal and Nawaz, 2009). However, it is suggested that the cost of diminishing the inflation rate to zero may be much higher than the benefits created by the economy (Cooley and Hansen, 1991). In several recent studies, inflation either has no impact or a positive impact on the economy if inflation does not surpass a threshold point. Otherwise, inflation will impair growth significantly beyond such a threshold point (Anwar and Islam, 2011; Vinayagathan, 2013; Muzaffar and Junankar, 2014). For example, Vinayagathan (2013) argues that if the inflation rate is higher than 5.43%, it hinders the economy's growth rate. Below such a level, the inflation rate does not affect economic growth. Inflation is measured by the annual percentage change of the consumer price index (CPI) and we hypothesise it to be negative.

Domestic investment

Domestic investment measured by gross fixed capital formation can both directly and indirectly enhance economic performance. Domestic investment provides the physical capital stock and fosters technological improvement, thus promoting production and output (Yusoff and Febrina, 2014). Based on the Harrod-Domar model of growth function, Yusoff and Febrina (2014) highlight that if a country needs better economic performance, it should sacrifice partial resources to invest in capital formation rather using all resources for consumption. Several authors, such as Anwar and Nguyen (2010), Abu et al. (2016) and Muhammad et al. (2016), include domestic investment as a determinant of growth in their regression models. Along with inward FDI, an increase in domestic investment enhances the competitiveness environment. This stimulates innovative activities, physical capital, job opportunities, and higher outputs in the host economies (Abu et al., 2016). Fixed capital formation over GDP is used to calculate domestic investment and is expected to be positive.

Interactive term between FDI and FINA

The interactive term between FDI and FINA is used to provide the evidence that recipient countries should reach a threshold level of finance as a prerequisite, where they can maximize the benefits of FDI (Hermes and Lensink, 2003; Choong et al., 2010). In other words, improvements in finance play a vital role in enhancing recipient countries' ability to absorb potential FDI spill-overs (such as adopting new technology, management skills, and production procedures introduced by FDI). For example, in terms of firm level, local enterprises relative to FDI (e.g., local suppliers and buyers' linkages) can access external resources and financial services provided by the financial system. Hence, local enterprises can expand their business activities, buy new technology and employ highly skilled workers to adopt new production processes introduced by the foreign enterprises (Hermes and Lensink, 2003). For country level, financial development provides both local and foreign investors with necessary financial services and information (such as companies, industries, and potential risks and returns on investment). Thus, improvements in financial development draw more inward FDI into host economies and enable foreign investors to channel their capital to the most profitable ventures (Alfaro et al., 2004; Agbloyor et al., 2014). As a result, higher financial development enhances the FDI spill-over effects in recipient economies. The interactive term between FDI and FINA is positive in most previous studies (e.g., Alfaro et al., 2004; Choong et al., 2010; Agbloyor et al., 2014). This study hypothesises this interactive term is positive.

Crisis dummy

This study includes the 1997-1998 Asian financial crisis and the 2008-2009 global financial crisis as dummy variables. The financial crisis years 1997, 1998, 2008 and 2009 equal one, zero otherwise (Kotrajaras et al., 2011; Blundell-Wignal and Roulet, 2014). A crisis impedes economic performance; therefore the crisis dummy coefficient is hypothesised to reduce the speed of growth.

Population growth

Population growth has mixed impacts on economic development. According to the neoclassical view, a country with a higher population growth rate tends to decrease the speed of economic growth (Mankiw et al., 1992). This is because the higher population may exploit natural resources and reduce the opportunities to improve human capital. As a result, a low level of human capital may diminish the marginal return on investments and reduce the real GDP per capita (Mankiw et al., 1992). However, Agbloyor et al. (2014) argue that a higher population growth rate can drive economic activity and contribute to the labour force as well as increasing market demand. We use log of the population size to gauge the population growth rate. We hypothesise that a higher population growth rate hinders the growth of the domestic economy.

3.2.2 *The determinants of FDI*

Financial development

The literature shows that improvements in stock markets and banking development play a vital role in providing the external resources and financial services that allow recipient countries to attract and exploit benefits from inward FDI (Agbloyor et al., 2013; Suliman and Elian, 2014). For example, the stock market development provides foreign enterprises with a liquid channel to raise needed capital for investment projects. Banking development can facilitate foreign enterprises with available financial services (i.e., credit, transaction services, or competitive exchange rates) to support their business activities. Several studies reveal that stock markets stimulate FDI (e.g., Kaur et al., 2013; Suliman and Elian, 2014; Otchere et al., 2016) and the banking sector promotes FDI (e.g., Ezeoha and Cattaneo, 2012; Agbloyor et al., 2013; Otchere et al., 2016). In contrast, higher development of financial markets might impede inward FDI. For example, in terms of well-developed financial markets, a country may raise sufficient funds for its investment activities at a low cost of capital. Hence, inward FDI could be a less attractive financial resource in such a recipient country (Sahin and Ege, 2015). We hypothesise higher development of finance stimulates greater inward FDI.

Economic growth rate

A country with a competitive economic growth rate can encourage the greater entry of foreign enterprises since that would be a potential market in which they can produce higher sales and return on capital (Anwar and Nguyen, 2010; Varnamkhasti and Mehregan, 2015; Iamsiraroj, 2016). Recipient economies with a higher degree of development can enhance their living standards to purchase more high-quality goods and services provided by the foreign enterprises (Govil, 2013; Kumari and Sharma, 2017). We hypothesise a positive relationship between economic growth and FDI.

Financial openness

A country with a more open capital account encourages higher inward FDI. This is because foreign enterprises have fewer restrictions to access external resources, transfer capital within MNE subsidiaries or repatriate profits to their home (Agbloyor et al., 2013). We use the capital account openness index (KAOPEN) proposed by Chinn-Ito (2008) to gauge financial openness. A higher KAOPEN index reflects a higher level of financial openness. We hypothesise that recipient countries with more financial openness attract greater inward FDI.

Government spending

Government expenditure reflects a government's capacity to control the use of financial resources in the country (Omri and Kahouli, 2014). Omri and Kahouli (2014) argue that developing countries may suffer from corruption and misallocation of financial resources to unproductive sectors. Hence, more government expenditure may lead to a distortion of funds' use and discouragement of inward FDI.

However, effective government policies for a better investment environment (such as tax incentives, subsidies and investment in infrastructure) encourage inward FDI (Asiedu, 2006). We hypothesise that government spending hinders inward FDI.

Inflation rate

Inflation can impede the motivation of the foreign enterprises to make investments in a country. This is because an increasing inflation rate may reflect an unstable economic environment and weak monetary management. This would adversely affect the future profitability of foreign enterprises in such a recipient country (Ezeoha and Cattaneo, 2012; Agbloyor et al., 2013). Hence, we hypothesise that inflation is negatively associated with inward FDI.

Trade openness

Countries with more trade openness enable foreign enterprises to import advanced intermediate inputs at a competitive price from the global market and, therefore, can promote their production and entrepreneurial activity (Nasser and Gomez, 2012). With an open economy, Ezeoha and Cattaneo (2012) suggest that foreign enterprises may also find a competitive market with low power of political and economic elite. Hence, high trade openness results in increased inward FDI.

Domestic investment

An increase in domestic investment can enhance FDI, which signals that enterprises can succeed with their investment activities in the host countries (Lautier and Moreaub, 2012). Increases in domestic investment reflect promotion of the business environment. This encourages foreign investors to achieve higher future returns on their investments (Lautier and Moreaub, 2012; Varnamkhasti and Mehregan, 2015). We hypothesise that domestic investment accelerates inward FDI.

Population growth

Population growth is an indicator of the market size (Ezeoha and Cattaneo, 2012; Epaphra, 2018). A country with a high population growth rate has high market demands for products and services. In addition, a higher population growth rate provides foreign entrepreneurs with a larger domestic workforce. Hence, an increase in population helps recipient countries attract more inward FDI. However, Aziz and Makkawi (2012) indicate that a labour-rich country may not enhance inward FDI, especially FDI industries with highly qualified human resources. This is because the cost of training new professionals in the recipient countries is much higher than employing highly skilled workers from their home. We hypothesise population growth attracts inward FDI.

3.2.3 The determinants of financial development

Inward FDI

Previous studies claim that inward FDI can enhance expansion of financial markets (Agbloyor et al., 2013; Hajilee and Naseer, 2015; Otchere et al., 2016). The banking sector can improve its funds with capital inflow from foreign investors and reallocate resources to the productive sectors to generate profits (Agbloyor et al., 2013). For the local stock market, listed foreign enterprises are usually large corporations, which improves stock capitalization. Listed foreign enterprises also inspire other foreign and local investors to engage in the local stock market. As a result, this enhances not only capitalization but also liquidity with higher levels of purchasing of existing stocks. Local stock markets will develop their financial products to meet the higher requirements of both local and foreign customers (Agbloyor et al., 2013; Hajilee and Naseer, 2015).

Trade openness

Greater openness to trade can lead to additional improvements in financial development, since a rise in trading volume would be a stimulus for the promotion of international financial services that will attract external resources to domestic financial markets (Voghouei et al., 2011). An open economy speeds up business activities in the host country leading to greater demand for financial services and products (Adusei and Frimpong, 2014).

Economic development

Higher economic development may intensify the expansion of financial markets, since higher economic activity is a catalyst to boost financial services, competition and the proficiency of the financial markets to meet customers' higher demands (Dutta and Mukherjee, 2011; Kim and Lin, 2013). Individuals with higher income may increase use of financial markets, which enhances the development of financial products and services (Allen et al., 2014). Previous studies' findings show a positive sign for the effect of economic development on expansion of financial markets (Dutta and Mukherjee, 2011; Allen et al., 2014).

Government spending

Government spending has a key position in providing financial services, especially in developing economies where the ownership of banks by the government is higher than in developed economies. If governments spend on productive goods and services, this leads to higher economic performance and therefore higher demands for financial services (Adusei and Frimpong, 2014). In contrast, ineffective government expenditure relative to disincentive taxes, rent-seeking, and corruption, may result in financial distress (Cooray, 2011). We hypothesise government spending hinders the speed of financial development.

Domestic investment

Higher investment speeds up the competition among enterprises and reduces the monopolistic environment in the host countries (Lautier and Mareaub, 2012). Hence, enterprises need more external finance to upgrade their competitiveness and production quality to expand their market share. This encourages financial systems to enhance their financial products and services to support the higher requirements of entrepreneurial activities (Win et al., 2017). Naceur et al. (2014) suggest that increases in domestic investments stimulate economic activity and require financial systems to strengthen their financial services and funding resources to serve higher market demands. As a result, domestic investments lead to additional improvements in financial development. Previous studies' results show that higher domestic investment enhances the greater development of financial markets (Naceur et al., 2014; Win et al., 2017).

Manufacturing

The manufacturing sector comprises a variety of activities, such as textiles, machinery and electronics, chemicals, motor vehicles, and transport equipment, that heavily rely on financial resources to invest in physical and human capital for productive ventures (Svaleryd and Vlachos, 2005). Hence, an increase in manufacturing activity increases the need for external finance and financial services (Rajan and Zingales, 1998; Allen et al., 2014). Higher demands motivate local financial markets to augment their financial products and services to satisfy large-scale investments with higher returns and industrial growth. We hypothesize that the expansion of manufacturing activity stimulates improvements in financial development.

Institutional quality

Institutional quality enhances financial development (e.g., Voghouei et al., 2011; Law and Azman-Saini, 2012; Le et al., 2016). Le et al. (2016) show that improvements in the institutional environment lead to more savings, entrepreneurial activity, and greater access to external finance and financial services. Voghouei et al. (2011) suggest that the financial systems with an efficient institutional background (such as efficient legal system, prudent regulations and supervision) can reduce imperfection and the possibility of crisis, encourage investments and monitor financial activities effectively. To capture institution quality, we use the six indicators introduced by Kaufmann et al. (2011): (1) corruption control index; (2) voice and accountability index, which captures freedom to express, associate and select government by citizens; (3) the rule of law index, which captures the confidence of agents protected by social rules, contractual safeguards and property rights; (4) the effectiveness of government index, which captures the quality of civil and police services, and the quality of policy applied by government; (5) the quality of regulation index, which measures the government's ability to augment private sector development with sound regulations and policies; and (6) political stability index, which captures the political stability of the government (website: www.govindicators.org).

Kaufmann et al. (2011) construct six distinct governance dimensions that cover over 200 countries. Each indicator for each country is ranked on a scale between 0% and 100%; higher scores mean better results relative to a better institutional environment (Kaufmann et al., 2011). The existence and comprehensiveness of these indicators allow us to look at different features of institutional quality. Such indicators are widely used to capture the institutional environment of a country (e.g., Law and Azman-Saini, 2012; Le et al., 2016; Otchere et al., 2016). Since the six indicators of governance institutional quality highly correlate with each other, it is suggested using the governance institutional quality index measured by the average of the six indexes (Law and Azman-Saini, 2012; Le et al., 2016; Otchere et al., 2016). Following previous studies (i.e., Law and Azman-Saini, 2012; Le et al., 2016; Otchere et al., 2016), we hypothesise the average index to be positive.

3.3 Estimation approaches for the multivariate model

3.3.1 Fixed effects estimator

The FE approach allows the slope coefficients to be constant for all countries. However, the intercept (reflects individual effects) varies across countries and does not change over time. The initial equation for the FE approach is:

$$y_{i,t} = a_1 x_{i,t} + \omega_i + u_{i,t} \quad (3.13)$$

The slope coefficients, a_1 , are constant for all countries. The individual effect, ω_i , differs across countries; $x_{i,t}$ are independent variables; $u_{i,t}$ follows the assumptions that $u_{i,t} \sim N(0, \sigma_u^2)$.

Taking an average $\bar{y} = (\sum_t y_{i,t})/T$ of equation (3.13) for each country yields the following equation:

$$\bar{y}_i = a_1 \bar{x}_i + \omega_i + \bar{u}_i \quad (3.14)$$

After subtracting equation (3.14) from (3.13), we can eliminate the individual specific effects, ω_i , and constant. Hence, we attain the transformation equation for fixed effects:

$$\dot{y}_{i,t} = a_1 \dot{x}_{i,t} + \ddot{u}_{i,t} \quad (3.15)$$

where: $\dot{y}_{i,t} = y_{i,t} - \bar{y}_i$; $\dot{x}_{i,t} = x_{i,t} - \bar{x}_i$ and $\ddot{u}_{i,t} = u_{i,t} - \bar{u}_i$.

However, equation (3.15) does not account for dynamics that may exist in the regression. Ignoring the dynamics will lead to missing potential past period information on the dependent variable. This also includes potential information of omitted variables in the regression (Weihold, 1999). In addition, equation (3.15) cannot deal with potential endogenous bias since (1) $\dot{x}_{i,t}$ affects $\dot{y}_{i,t}$ and vice versa $\dot{y}_{i,t}$ affects $\dot{x}_{i,t}$ (simultaneity), or (2) the past value of a dependent variable ($\dot{y}_{i,t}$) may affect $\dot{x}_{i,t}$ (reverse causality).

To tackle the possible dynamics and omitted variables, we apply the FE estimator for a dynamic panel setting (adding a lagged dependent variable to the regressors). However, the endogeneity problem cannot be addressed since the lagged dependent variable, or even other regressors, are still correlated

with the error term. For example, the dynamic model $\dot{y}_{i,t} = \phi y_{i,t-1} + a_1 \dot{x}_{i,t} + \dot{u}_{i,t}$ has $E(y_{i,t-1}, \dot{u}_{i,t}) \neq 0$ (3) or even $E(\dot{x}_{i,t}, \dot{u}_{i,t}) \neq 0$ (4). This violates the assumption of strict exogeneity of all independent variables. Hence, the FE estimator may lead to endogenous bias and inconsistent results in dynamic panel data (Wintoki et al., 2012). Arellano and Bond (1991) reveal that the FE estimator may lead the lagged values of the dependent variable to be downward biased¹².

3.3.2 Random effects estimator

Like the FE estimator, the RE estimator also assumed the slope coefficient to be constant for all countries. However, the individual specific effect is a random variable, defined as $\omega_i = \bar{a}_2 + \mu_i$; \bar{a}_2 is the mean of the intercept of all countries; μ_i is defined as the differences in the intercept value for each country, which follows the assumption that $\mu_i \sim N(0, \sigma_\mu^2)$. Substituting the individual effect, ω_i , into equation (3.13) we have:

$$y_{i,t} = a_1 x_{i,t} + \bar{a}_2 + \mu_i + u_{i,t} \quad (3.16)$$

Equation (3.16) can be rewritten as follows:

$$y_{i,t} = a_1 x_{i,t} + \bar{a}_2 + v_{i,t} \quad (3.17)$$

where: $v_{i,t} = \mu_i + u_{i,t}$; $v_{i,t}$ random effects error which is combined from two error terms: one for the regression, and one for each country.

Equation (3.17) cannot address the possible dynamics in macro-data. Like the FE estimator, if the RE estimator is applied to a dynamic panel setting (include a lagged dependent variable for the regressors), it could not tackle the endogeneity bias. This is because the lagged dependent variable is correlated with the random effect error [$E(y_{i,t-1}, v_{i,t}) \neq 0$] (3) or other regressors are correlated with the random effects error [$E(x_{i,t}, v_{i,t}) \neq 0$] (4).

First, to explain in detail the violation of assumption (3) for both FE and RE estimators, we consider the dynamic model expanded from equation (3.13) for these two techniques (including a lagged dependent variable) as follows:

$$y_{i,t} = \delta y_{i,t-1} + a_1 x_{i,t} + \omega_i + u_{i,t} \quad (3.18)$$

Connolly and Li (2016, page 389) show that $E(y_{i,t-1}, \omega_i) = E[(\delta y_{i,t-2} + a_1 x_{i,t-1} + \omega_i + u_{i,t-1})\omega_i] \neq 0$ since $E(\omega_i)^2 \neq 0$. Therefore, this violates the assumption of all strictly exogenous regressors in equation (3.18).

¹² In the presence of country specific effects, the OLS estimator leads the lagged dependent variable to be biased upward since the lagged value is correlated with country specific effects (Blundell and Bond, 1998), whereas the lagged dependent variable is biased downward with the FE estimator.

Second, the FE and RE estimators could not address assumption (4) since some regressors are endogenous; e.g., FDI is caused by economic development and vice versa. This may create endogenous bias and, therefore, findings from the regressors are not consistent (Wintoki et al., 2012).

In practice, the FE estimator is more commonly used than the RE estimator in macro-economic data for two reasons (Judson and Owen, 1999). If the individual characteristic effects include omitted variables, this is likely correlated with other variables. Second, the econometrics may select macro-data for their interests. Therefore, this is less likely to be a random sample. To decide whether RE or FE suit our models, we use the Hausman (1978) test with the null hypothesis that individual fixed effects are not correlated with the disturbance terms. Rejecting the null means that the FE is appropriate for our model.

3.3.3 System GMM estimator

The FE estimator addresses only endogeneity arising from heterogeneity; other possible endogeneity issues, i.e., simultaneity and strictly exogenous, could not be addressed by such an estimator. Hence, system GMM is introduced to deal with such issues arising from panel data.

The general form of the dynamic model is given as:

$$F_{i,t} = \delta F_{i,t-1} + a_1 x_{i,t} + \omega_i + u_{i,t} \quad (3.19)$$

The slope coefficients, a_1 , are constant for all countries. The individual effect, ω_i , differs across countries; $x_{i,t}$ are independent variables; and $u_{i,t}$ follows the assumption that $u_{i,t} \sim N(0, \sigma_u^2)$. Equation (3.19) still contains the individual effect ω_i , thus Arellano and Bond (1991) propose to take the first difference transformation of equation (3.19) to remove ω_i as follows:

$$\Delta F_{i,t} = \delta \Delta F_{i,t-1} + a_1 \Delta x_{i,t} + \Delta u_{i,t} \quad (3.20)$$

Equation (3.20) is the equation for the difference GMM. To limit the potential problem of endogeneity since a likelihood of $E(\Delta F_{i,t-1}, \Delta u_{i,t}) \neq 0$ or even $E(\Delta x_{i,t}, \Delta u_{i,t}) \neq 0$, Arellano and Bond (1991) suggest that lagged regressors at levels should be included in the equation as instruments. By providing instrument variables that are not correlated with the disturbance terms, the difference GMM will correct the potential endogenous bias of regressors that are not strictly exogenous. However, with a finite sample, the difference GMM is a poor estimator since it provides weak instruments if the time dimension is small and time series are relatively persistent (Blundell and Bond, 1998). This is because the instruments at levels are less likely to be correlated with the first difference equation. Hence, such weak instruments may lead to a biased estimation in a finite sample (Wintoki et al., 2012). Additionally, the differenced equation eliminates individual effects and removes the cross-country variations at the levels (i.e., lending rates) and exacerbates measurement error bias (Cojocaru et al., 2016). In our study, the five-year average sample is relatively persistent. Hence, as suggested by Cojocaru et al. (2016), the difference GMM may lead to bias and inaccurate findings.

To overcome the restrictions of the difference GMM, Blundell and Bond (1998) introduce the system GMM, which is combined from equations (3.19) and (3.20). This includes one equation at levels and one equation at first difference. Adding the equation at levels will permit the presence of cross-country variation in regression and reduces measurement error bias derived from the differenced equation (Fukase, 2010; Cojocaru et al., 2016). System GMM uses two sets of internal instruments: one comprises a set of lagged levels to be instrumented (from lagged two or more) for the first difference equation, and the other consists of a set of the most recent first difference to be instruments for the level equation (Habibullah and Eng, 2006). These two sets of internal instruments of system GMM reduce the endogeneity bias of regressors, which stems from heterogeneity, simultaneity and dynamic relationships in the regression (Wintoki et al., 2012). Robust to heteroskedasticity of the disturbance terms is used for system GMM.

The lagged levels and lagged first difference can be valid instruments for system GMM when it satisfies two assumptions of the moment conditions:

Assumption (1): Error term is not correlated with instruments of the regressors:

$$E(F_{i,t-k}, \Delta u_{i,t}) = 0; E(x_{i,t-k}, \Delta u_{i,t}) = 0 \text{ where } k \geq 2, t = 3, \dots T \quad (3.21)$$

$$E(\Delta F_{i,t-k}, u_{i,t}) = 0; E(\Delta x_{i,t-k}, u_{i,t}) = 0 \text{ where } k \geq 1, t = 3, \dots T \quad (3.22)$$

Assumption (2): Country-specific effects are not correlated with the lagged first differences of regressors:

$$E(\Delta F_{i,t-k}, \omega_i) = 0; E(\Delta x_{i,t-k}, \omega_i) = 0 \text{ where } k \geq 1, t = 3, \dots T \quad (3.23)$$

3.4 The threshold level of financial development

3.4.1 Threshold level of financial development based on a linear interaction regression

Durham (2004) and Choong et al. (2010) suggest that the appropriate threshold level of finance in equation (3.24) could be the value of finance (value of FINA) causing total effects of FDI on economic development to be positive.

$$ECON_{it} = \alpha_0 + \alpha_1 FINA_{it} + \alpha_2 FDI_{it} + \alpha_3 FINA_{it} * FDI_{it} + \alpha_4 DOME_{it} + \alpha_5 GOVE_{it} + \alpha_6 INFL_{it} + \alpha_7 TRADE_{it} + \alpha_8 POPU_{it} + \varepsilon_{it} \quad (3.24)$$

We estimate equation (3.24) with the system GMM estimator. If the estimated coefficient, α_2 , of FDI is negative and α_3 of the interactive term (FINA*FDI) is positive, then the threshold level FINA is estimated by an accurate break-even point that makes the impact of FDI to be positive as follows:

$$FINA \geq -\alpha_2 / \alpha_3 \quad (3.25)$$

In contrast, if both coefficients α_2 of FDI and α_3 of the interactive term are positive (or negative), then the impact of FDI is positive (or negative) on economic development (Durham, 2004; Choong et al., 2010). Using panel data from 1988 to 2002, the result in Choong et al. (2010) show that the coefficient α_2 of FDI in developing economies is negative, but the interactive term is positive. The reason for this would be lax financial regulations and nascent financial structures restricting capital flows to productive projects. Once countries have a well-developed and efficient stock market, they benefit more from FDI and other private capital inflows.

3.4.2 Threshold level of financial development based on the threshold effects model

The model with the interactive term indirectly expresses a threshold condition of finance for a country to exploit the benefits of inward FDI (Azman-Saini et al., 2010). Such an interactive term shows that increases in finance enhance the externality effects of inward FDI on the recipient economies. Azman-Saini et al. (2010, page 211) propose the threshold effects model is “a more flexible specification” to examine the threshold finance level. In such a threshold framework, the financial indicator exerts as “a regime-switching trigger” (or threshold variable) that conditions the effect of inward FDI on the economy. The threshold variable will classify the sample to high-finance and low-finance groups. Such two groups result in different impacts of inward FDI on economic development.

Following Azman-Saini et al.’s (2010) study, we apply the threshold effect model to examine the minimum threshold finance level where recipient countries benefit from potential FDI spill-overs. The model is:

$$ECON_{it} = \alpha CONTROL_{it} + \begin{cases} \beta_1 FDI_{it} + u_{it}, & FINA \leq \gamma \\ \beta_2 FDI_{it} + u_{it}, & FINA > \gamma \end{cases} \quad (3.26)$$

To take into account of the dynamic environment of economic development, this study uses the dynamic threshold model proposed by Kremer et al. (2013). Equation (3.26) can be written as:

$$ECON_{it} = \mu_i + \delta_1 I(FINA_{it} \leq \gamma) + \beta_1 FDI_{it} I(FINA_{it} \leq \gamma) + \beta_2 FDI_{it} I(FINA_{it} > \gamma) + \alpha_1 ECON_{i,t-1} + \alpha_2 CONTROLS_{it} + u_{it} \quad (3.27)$$

where: *CONTROLS* include government spending (*GOVE*), trade openness (*TRADE*), inflation (*INFL*), population growth (*POPU*) and domestic investment (*DOME*); γ is the threshold value of finance (*FINA*); $I(.)$ is a function that equals 1 if the condition inside the parenthesis is satisfied, and 0 otherwise; μ_i denotes the country-specific fixed effect; δ_1 is the regime intercept that is identical for all countries; and finance (*FINA*) is a threshold (sample-splitting) variable. The effect of inward FDI on economic development will be β_1 or β_2 based on whether the finance level is smaller or larger than γ .

Initially, we follow Kremer et al. (2013) to tackle a possible correlation between $ECON_{i,t-1}$ or other regressors with the disturbance terms (which contain μ_i) by using the forward orthogonal deviations

transformation method proposed by Arellano and Bover (1995). The transformed disturbance terms are:

$$u_{it}^* = \sqrt{\frac{T-t}{T-t+1}} \left[u_{it} - \frac{1}{T-t} (u_{i(t+1)} + \dots + u_{iT}) \right] \quad (3.28);$$

where $t = 1, \dots, T-1$; and * represent the transformed data.

As suggested by Kremer et al. (2013), we assume only $ECON_{i,t-1}$ as an endogenous variable; it is instrumented by its lagged values. We follow Caner and Hansen (2004) to estimate the fitted value $\widehat{ECON}_{i,t-1}$ as a function of its lagged values by the OLS approach. Next, we replace the estimated value $\widehat{ECON}_{i,t-1}$ in equation (3.27).

There are two other issues requiring some explanation. First, to estimate γ and coefficient α and β 's, we need to examine $\hat{\gamma}$ which is the minimiser of sum of squared residuals (denoted by $SSR(\gamma)$). Next, the slope coefficients of all the regressors will be determined by the GMM estimator (Kremer et al., 2013).

The first step considers sequentially $SSR(\gamma)$ with all possible values of threshold $FINA$ that satisfy $\min FINA \text{ value} \leq \text{threshold } FINA \text{ value} \leq \max FINA \text{ value}$, or $\hat{\gamma} \in \{\min FINA_{it}, \dots, \max FINA_{it}\}$ (Hansen, 2000; Girma, 2005). One possible threshold $FINA$ value (γ) will create one $SSR(\gamma)$. Then, the value of threshold $FINA$ ($\hat{\gamma}$) resulting in the smallest value SSR will be chosen.

$$\hat{\gamma} = \arg \min SSR(\gamma), \quad (3.29)$$

Following Caner and Hansen (2004), the threshold value $FINA$ ($\hat{\gamma}$) has a 95% confidence interval given as:

$$A = \{\gamma: LR(\gamma) \leq C(\omega)\}^{13} \quad (3.30)$$

where: $C(\omega)$ represents the 95th percentile of the likelihood $LR(\gamma)$ asymptotically distributed (Caner and Hansen, 2004). Subsequently, the result from γ will be used to estimate the slope coefficients of all the regressors in equation (3.27) by the GMM estimator.

¹³ The formula provided by Hansen (2000) is given by: $LR_n(\gamma) = n \frac{SSR_n(\gamma) - SSR_n(\hat{\gamma})}{SSR_n(\hat{\gamma})}$ (3.31); and $C(\omega) = -2 \ln(1 - \sqrt{1 - \omega})$ (3.32).

Chapter 4

Empirical results and discussion

This chapter discusses the empirical results for the effects of financial development and FDI on economic development, followed by the linkage between financial development and FDI in the ADC region. Section 4.1 describes the data variables used in the study. Section 4.2 uses FE, RE and system GMM to address the impacts of finance and FDI on economic development. Section 4.3 uses the threshold effects model to identify the potential threshold level of finance to maximize the beneficial effects of inward FDI. Section 4.4 presents the relationship between financial development and inward FDI. This includes the Granger-causality tests developed by Hood et al. (2008) to examine the bivariate linkage between the two sectors and multivariate models to capture other relevant determinants while exploring the relationship between FDI and finance.

4.1 Data description

Table 4.1 reports the descriptive statistics of five-year average variables with the pooled sample of 33 countries from 1986 to 2015. These variables were used to explore the effects of financial development and FDI on the ADC economic development. Economic development is measured by real GDP per capita. The mean of GDP per capita is USD 10828.75. The range between the lowest and highest income country was quite wide, with a maximum of USD 64848.35 observed for Macao in 2011 to 2015 and a minimum of USD 616.74 for Afghanistan. For the economic growth rate per capita, the highest value was 13.7% per year observed for Iraq [1996-2000], and the lowest value of -9.1% was recorded for Yemen in its internal strife period [2011-2015]. The growth rate of the ADC economies exhibited an upward trend from a minimum of 2.5% to a peak of 3.6% between 1986 and 2005. However, the 2008-2009 global financial crisis caused significant declines in global demand, trade finance and employment (see Naude, 2011). Following the global financial crisis, the ADC economies reduced to mean growth of 2.5% per year from 2011 to 2015, with the upper bound of 8.2% for Mongolia and the lower bound of -9.1% for Yemen. Only 23 of the 33 countries had a mean growth greater than 2%. This low economic growth rate 2011-2015 implies that the ADC region needed to augment its business climate to encourage more productive investment opportunities and productivity growth.

In terms of banking activity, Table (4.1) shows that the average values of BACRED (banking credit to private sector scaled by GDP) and TOCRED (total credit to GDP) were 48.77% and 58.22%, respectively. Hong Kong has the largest BACRED with 212.02% (from 2011-2015), the lowest value was for Laos (0.5% from 1986-1990). The availability of credit resources is an important channel for business activities in host countries, especially developing countries without stock markets. Likewise, the third

Table 4-1: The Descriptive Statistics with Five-year Average Unbalanced Panel Data of 33 Countries from 1986 to 2015

Variable	Abbreviation	Obs	Mean	SD	Min	Max
Real GDP per capita	ECON	193	10828.75	14839.83	206.9412	64848.35
Economic growth rate	GROW	192	0.030005	0.035898	-0.091758	0.136677
Bank credit/GDP	BACRED	185	0.487681	0.398652	0.005083	2.120163
Total credit/GDP	TOCRED	185	0.582235	0.453495	-0.106877	2.157379
Liquid liabilities/GDP	LIQUID	184	0.714166	0.540033	0.063177	3.478134
Stock capitalization/GDP	STCAP	95	0.878646	1.543426	0.031655	10.50048
Stock value traded/GDP	STVAL	106	0.467005	0.882542	0.001539	6.738239
Stock turnover	STTUR	95	0.581777	0.597917	0.00829	2.897802
FDI/GDP	FDI	183	0.034140	0.053921	-0.023179	0.396283
Domestic investment/GDP	DOME	182	0.246445	0.082288	0.029180	0.590636
Government spending/GDP	GOVE	185	0.137468	0.064079	0.041433	0.467500
Trade openness/GDP	TRADE	188	0.961990	0.749740	0.001982	4.220799
Annual inflation rate	INFL	178	0.106880	0.235840	-0.013526	2.616143
Population	POPU	198	1.04e+08	2.74e+08	244670.2	1.36e+09

dimension of banks, LIQUID (liquid liabilities to GDP), shows a mean value of 71.42%. Since there are no perfect measurements for banking services, it is assumed that a banking sector with a higher value of LIQUID has a better ability to mobilize and provide financial services (Ang and McKibbin, 2007; Hassan et al., 2011; Falahaty and Hook, 2013). For the stock market, the average STCAP (stock capitalization to GDP) is 87.86%. Such a mean value of STCAP is much larger than BACRED (48.77%). This implies that the stock market has become an imperative funding channel for entrepreneurial activities in the ADC region. Two other indicators, STVAL (stock value traded to GDP) and STTUR (stock turnover), have high mean values of 46.70% and 58.18%, respectively. High trading activities help investors reduce liquid risks of the stock exchange, where they can buy and sell their securities to make profits. In addition, these two ratios indicate that investors easily access information on listed entrepreneurs. This improves corporate control and long-term investments of the host economies (Sharma and Bardhan, 2018).

Inward FDI, as a ratio of GDP, has a mean value of 3.41%, with a wide range of 41.94% between the upper and the lower bounds (-2.31% in Yemen [1986-1990] and 39.63% in Hong Kong [2011-2015], respectively). In May 1990, South Yemen was united with North Yemen, which affected economic development and inward FDI. With a friendly economic environment, Hong Kong has become the leading inward FDI destination in the ADC region with the lowest value of 13.94% (FDI/GDP) in 2001-2005 to a record high of nearly 40% in 2011-2015. The presence of inward FDI has intensified investment activities, advanced technologies and the transfer of production processes to the host countries. Domestic investment (divided by GDP) has an average value of 24.64%, with a minimum of 2.92% per year observed for Iraq [1996-2000] and a maximum of 59.06% for Bhutan [2006-2010]. Table 4.1 also shows 26 of the 33 countries from 2011-2015 exhibited a domestic investment value greater than 20%. In addition, the average value of the domestic investment in 2011-2015 was nearly 29%. Such a ratio of domestic investment is much higher than inward FDI (only 5%), which implies that domestic investment has a significant role in the economic development of the ADC region.

For other variables, government spending (divided by GDP) has a mean value of 13.75%, and ranges from 4.14% for Bangladesh [1986-1990] to a maximum of 46.75% for Kuwait [1991-1995]. Government spending ranged from a maximum of 23.59% for Saudi Arab to a minimum of 5.19% for Bangladesh. For trade openness (divided by GDP), the overall average was 96.20%, ranging from a low of 0.19% for Myanmar [2006-2010] to a high of 422% for Hong Kong [2011-2015]. Trade openness helps developing economies import advanced technologies and inputs for lower costs and more exports of their local products to make profits. However, Muzaffar and Junankar (2014) note that increasing imported products may also crowd out local production and reduce incentives for domestic entrepreneurs. Hence, the effect of trade openness on economic development is inconclusive. Annual inflation had a mean of 10.69%, with a maximum of 261% for Iraq [1991-1995] and a minimum of -1.35% for Hong Kong [2001-2005]. From 2011-2015, the inflation indicator had a mean value of 5.37%, ranging from 0.45% for Brunei Darussalam to 23.64% for Iran. With a mean value higher than 5.43%, the inflation indicator may adversely affect economic development in the ADC region as suggested by Vinayagathan (2013). Populations range from 0.24 million in Brunei Darussalam [1986-1990] to 1.36 billion in China [2011-2015]. A country with a large population gets an advantage of cheap labour, which mitigates the input costs of enterprises. However, a large population may reduce the income level of the labour-force and exploit natural resources in host countries, which results in reduced economic growth.

4.2 Empirical model for the impact of FDI and finance on economic development

Following the framework proposed by Hermes and Lensink (2003) and Anyanwu et al. (2018), we derive an empirical model to estimate the impact of finance and FDI on economic growth as follows:

$$ECON_{it} = \beta_1 ECON_{it-1} + \beta_2 FDI_{it} + \beta_3 FINA_{it} + \beta_4 FDI_{it} \times FINA_{it} + \sum_{j=1}^n \varphi_j X_{jit} + \eta_i + \zeta_{it} \quad (4.1)$$

Equation (4.1) can be rewritten as:

$$ECON_{it} = \beta_1 ECON_{it-1} + \beta_2 FDI_{it} + \beta_3 FINA_{it} + \beta_4 FDI_{it} \times FINA_{it} + \rho_1 DOME_{it} + \rho_2 GOVE_{it} + \rho_3 INFL_{it} + \rho_4 TRADE_{it} + \rho_5 POPU_{it} + \eta_i + \zeta_{it} \quad (4.2)$$

where: *ECON* is real GDP per capita in constant 2010 USD, *FINA* is financial development; *X* includes indicators for domestic investment (*DOME*), government spending (*GOVE*), inflation rates (*INFL*), trade openness (*TRADE*) and population (*POPU*), and η_i is country-specific effects.

4.2.1 Empirical results from the FE and RE estimators

Tables (4.2) and (4.3) report the results of equation (4.2) based on the FE and RE estimators. In all cases, the p-values of the Hausman (1978) test are higher than 5%, meaning that the independent variables are not correlated with unobservable individual effects. Hence, the RE estimator is preferable to the FE estimator in our models. The dynamic models from (1) to (6) in Table (4.2) are estimated with three alternative dimensions of the banking sector: BACRED, LIQUID and TOCRED. All model specifications from (1) to (6) show that FDI significantly, positively affects ECON at the 1% level. The FDI coefficient is 0.04, which means that a 1% increase in inward FDI enables the ADC region to improve its output growth by 0.04%. Our finding shows that the presence of inward FDI directly stimulates ADC economies. Increasing inward FDI provides the ADC market with higher capital resources, job opportunities, advanced technologies and new production processes. This augments the productivity growth and economic development of the ADC region. Our result supports Alguacil et al. (2011), Feeny et al. (2014), and Iamsiraroj and Ulubasoglu (2015), whose findings indicate that an increase in inward FDI significantly leads higher output growth of the host countries. The authors suggest that higher levels of inward FDI provide the host countries with additional capital resources to develop more productive ventures. The presence of foreign enterprises also leads to more job opportunities, international production networks, export promotion, and augmentation of domestic products and services. In addition, local enterprises can increase their output growth by applying advanced technologies, production processes and business knowledge introduced by the foreign enterprises. This results in a higher productivity growth and economic development of the host countries. More importantly, Alguacil et al. (2011) and Iamsiraroj and Ulubasoglu (2015) highlight that host countries can exploit more benefits from inward FDI by augmenting their investment climate such as improving financial development, institutional quality and macroeconomic policies. For example, improvements in financial development provide local enterprises with greater access to funding to upgrade their technologies and managerial and organizational knowledge introduced by the foreign enterprises and to stimulate their output growth. Improvements in institutional quality, such as better property rights protection, contract enforcement and low levels of corruption, help foreign and domestic investors

reduce investment risks and costs of capital to conduct more productive investments in the host countries.

Table 4-2: The effects of FDI and banking development on economic growth

Variable	BACRED		LIQUID		TOCRED	
	FE	RE	FE	RE	FE	RE
Model	(1)	(2)	(3)	(4)	(5)	(6)
<i>ECON(t-1)</i>	0.949*** (0.039)	0.959*** (0.020)	0.954*** (0.047)	0.961*** (0.020)	0.960*** (0.037)	0.962*** (0.015)
<i>FDI</i>	0.044*** (0.011)	0.044*** (0.009)	0.038*** (0.010)	0.037*** (0.008)	0.044*** (0.008)	0.040*** (0.007)
<i>BACRED</i>	0.101*** (0.036)	0.073** (0.029)				
<i>BACRED*FDI</i>	0.015*** (0.005)	0.014*** (0.004)				
<i>LIQUID</i>			0.112* (0.056)	0.079** (0.036)		
<i>LIQUID*FDI</i>			0.019** (0.008)	0.017** (0.007)		
<i>TOCRED</i>					0.060** (0.027)	0.041 (0.026)
<i>TOCRED*FDI</i>					0.014** (0.006)	0.011** (0.005)
<i>DOME</i>	0.105** (0.047)	0.121*** (0.044)	0.119** (0.047)	0.129*** (0.042)	0.112** (0.048)	0.130*** (0.040)
<i>GOVE</i>	-0.093 (0.075)	-0.045 (0.058)	-0.110 (0.079)	-0.051 (0.058)	-0.079 (0.072)	-0.024 (0.046)
<i>INFL</i>	-0.269** (0.121)	-0.243* (0.133)	-0.298** (0.125)	-0.264* (0.136)	-0.296** (0.126)	-0.252* (0.135)
<i>TRADE</i>	-0.041*** (0.013)	-0.052*** (0.011)	-0.038*** (0.012)	-0.048*** (0.011)	-0.031* (0.015)	-0.044*** (0.013)
<i>POPU</i>	-0.063 (0.085)	-0.003 (0.009)	-0.058 (0.082)	-0.002 (0.009)	-0.055 (0.085)	0.004 (0.007)
<i>Constant</i>	1.814 (1.329)	0.824*** (0.278)	1.628 (1.290)	0.747*** (0.265)	1.583 (1.274)	0.673*** (0.208)
<i>Observations</i>	134	134	134	134	130	130
<i>R²</i>	0.9890	0.9952	0.9896	0.9952	0.9892	0.9959
<i>F/Wald tests (Prob > F)</i>	0.000	0.000	0.000	0.000	0.000	0.000
<i>Hausman test (p-value)</i>	0.871 => accept RE		0.949 => accept RE		0.544 => accept RE	

Notes: * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$. Figures in brackets are robust-standard errors.

Agbloyor et al.'s (2014) study could not find a direct positive effect of FDI on economic development in 14 African countries from 1990 to 2007. The authors show that African countries with higher levels of financial development can improve their ability to absorb benefits such as technological and knowledge transmissions from foreign enterprises. This is because improvements in financial development help foreign investors exploit more information about local industry sectors, companies, and market demand to allocate their capital towards the most productive investments. Higher financial

development enables domestic enterprises to improve their financial resources and lower investment risks to speed up the technology transfer, advanced production processes and business knowhow introduced by foreign enterprises. As a result, host countries can achieve higher productivity growth.

In the banking sector, BACRED, LIQUID and TOCRED display a statistically significant impact on economic development. Models (1) and (2) show a consistent result of BACRED on ECON using the FE and RE estimators. The estimated coefficients of BACRED are all positive and significant at the conventional levels with magnitudes of 0.101 in model (1) and 0.073 in model (2). This means that a 1% increase in BACRED enhances the income level of the ADC region by around 0.073% to 0.101%. Such results imply that the more bank credit to the private sector, the higher the level of income attained by the host country. As suggested by Beck and Levine (2004) and Anyanwu et al. (2018), the availability of bank credit removes the barrier of financial constraints faced by entrepreneurs; with the presence of a banking sector, domestic savings are allocated to the most productive entrepreneurs. Banks then prudently monitor the use of loans to make profits and to meet repayments on due date. The second indicator, LIQUID, exhibits a significant, positive correlation with ECON in models (3) and (4). LIQUID refers to the ability to mobilize and provide transaction services by the banking sector (Falahaty and Hook, 2013). Model (4), using the RE estimator, shows that countries with a 1% increase in LIQUID can increase their income by 0.079%. Our results suggest that the expansion and diversification of banking services have sped up daily entrepreneurial activities among enterprises, suppliers (backward linkages) and buyers (forward linkages) as well as other financial transactions of households. Bank customers can access financial products (such as the exchange of goods and services, credit and exchange rates) at lower costs and in a timely manner. This helps the ADC region to promote investment activities to yield higher output growth. The expected sign of LIQUID in all the regression models is similar to Agbloyor et al.'s (2014) and Cheng et al.'s (2014) studies that reveal that the promotion of banking services (such as deposit and lending services, time of trading, and foreign exchange services) enhances business investment and economic progress.

The third indicator, TOCRED, in models (5) and (6) shows a positive correlation with ECON. TOCRED is the credit provided by financial intermediaries to privately-owned and state-owned entrepreneurs. Such expected results suggest that total credit has become the engine of domestic investment, irrespective of public or private enterprise. Financial intermediaries help entrepreneurs alleviate financial scarcity with credit to expand their business activities and innovative projects. As a result, the ADC region achieved productivity gains and economic enhancement. The growth enhancement of total credit in all our results contrasts with Cojocaru et al.'s (2016) results that found a distorted impact of total credit on the transition economies of Central and Eastern Europe (CEE) and the Commonwealth of Independent States (CIS) because of misallocation of financial resources to unproductive sectors.

Our results support Fink et al. (2009) who emphasize the importance of domestic credit in spurring the investment activities of the public and private sectors in nine European accession countries.

For the domestic investment variable (DOME), models (1) to (6) report this indicator as positively associated with ECON at highly significant levels, irrespective of using FE or RE estimates. The magnitude of the domestic investment coefficient for all models is around 0.12, which is three times higher than the FDI coefficient (0.04). A 1% increase in domestic investment leads to a 0.12% rise in the income level. This suggests that domestic investment is a trigger factor for the success of the ADC economies. Increases in domestic investment produce an intensively competitive climate and reduce the monopolistic tendencies of local entrepreneurs (Abu et al., 2016). Under higher competitive pressures, entrepreneurs make use of new technologies, trained workers, and advanced production procedures to increase the quality and quantity of products for their diversified market demands. This results in higher levels of output growth in the ADC region. Our finding is consistent with Abu et al. (2016) and Muhammad et al. (2016), who affirm that domestic investment encourages a competitive business environment, technology improvement and productivity growth in the host country. Our result supports Almasaied et al.'s (2008) study that suggests that domestic investment is more effective at stimulating economic development in ASEAN countries than inward FDI.

For the interactive term between FDI and banking development, models (1) to (6) in Table (4.2) display a positive, significant association between it and ECON at conventional levels. This result indicates that higher levels of banking development help the ADC economies to exploit more benefits from inward FDI. Expansion of the banking system facilitates foreign firms and local business partners (the suppliers and buyers) with credit to serve profitable investment projects. Higher budget capital availability enables local partners to employ highly skilled workers and managers, upgrade technologies and implement advanced production processes to acquire higher productivity. Banking service expansion provides entrepreneurs with diversified means for the exchange of goods and services. Suppliers and buyers can receive or transfer their money promptly with advanced payment systems (such as mobile and internet banking). The bankers guarantee the accuracy and efficiency of financial transactions that force business contracts between foreign entrepreneurs and their local partners. As a result, with banking expansion, ADC economies have augmented the absorptive capacity to accelerate potential beneficial effects from inward FDI. This result supports Agbloyor et al. (2014), who highlight that banking development facilitates recipient economies with higher capital accumulation and financial services to exploit the beneficial externalities from foreign entrepreneurs. Our estimates overcome the restriction in Muhammad et al.'s (2016) study that could not find a significantly beneficial influence of finance on the link between FDI and economic development with limited data from six GCC countries (UAE, Saudi Arabia, Qatar, Oman, Kuwait, and Bahrain).

Table 4-3: The effects of FDI and stock development on economic growth

Variable	STCAP		STVAL		STTUR	
	FE	RE	FE	RE	FE	RE
Model	(7)	(8)	(9)	(10)	(11)	(12)
<i>ECON</i> (<i>t</i> -1)	0.811*** (0.063)	0.932*** (0.025)	0.925*** (0.052)	0.945*** (0.027)	0.899*** (0.057)	0.946*** (0.027)
<i>FDI</i>	0.035** (0.016)	0.022 (0.014)	0.048** (0.010)	0.042*** (0.009)	0.033* (0.018)	0.022 (0.015)
<i>STCAP</i>	0.128*** (0.027)	0.079*** (0.020)				
<i>STCAP*FDI</i>	0.010** (0.004)	0.007** (0.003)				
<i>STVAL</i>			0.034** (0.016)	0.036*** (0.011)		
<i>STVAL*FDI</i>			0.005** (0.002)	0.005*** (0.001)		
<i>STTUR</i>					-0.007 (0.036)	0.019 (0.025)
<i>STTUR*FDI</i>					0.001 (0.007)	0.002 (0.006)
<i>DOME</i>	0.077 (0.081)	0.185*** (0.069)	0.154** (0.064)	0.188*** (0.066)	0.107 (0.087)	0.207*** (0.077)
<i>GOVE</i>	-0.011 (0.055)	0.019 (0.054)	0.010 (0.071)	0.033 (0.060)	-0.045 (0.063)	0.026 (0.057)
<i>INFL</i>	-0.129* (0.062)	-0.052 (0.040)	-0.055 (0.058)	-0.005 (0.051)	-0.076 (0.076)	-0.025 (0.062)
<i>TRADE</i>	-0.052 (0.051)	-0.042 (0.036)	-0.008 (0.063)	-0.030 (0.034)	-0.030 (0.066)	0.001 (0.034)
<i>POPU</i>	0.065 (0.076)	0.003 (0.013)	-0.018 (0.094)	0.004 (0.014)	0.015 (0.085)	0.007 (0.011)
<i>Constant</i>	0.884 (1.051)	1.068*** (0.375)	1.543 (1.567)	1.035** (.492)	0.905 (1.256)	0.919** (0.424)
<i>Observations</i>	81	81	90	90	81	81
<i>R</i> ²	0.9896	0.9960	0.9938	0.9958	0.9948	0.9962
<i>F/Wald tests</i> (<i>Prob > F</i>)	0.000	0.000	0.000	0.000	0.000	0.000
<i>Hausman test</i> (<i>p-value</i>)	0.1162 => accept RE		0.8475 => accept RE		0.3985 => accept RE	

Notes: * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$. Figures in brackets are robust-standard errors.

For the stock channel, all model specifications, except for model (11) in Table (4.3), report beneficial effects of the three stock variables, STCAP, STVAL and STTUR, on economic development. The first stock market indicator, STCAP, positively affects ECON at the highest level in models (7) and (8). Our results in models (7) and (8) indicate that a 1% increase in stock capitalization improves the income of the ADC region between 0.079% to 0.128%. Stock capitalization helps listed entrepreneurs enrich financial resources to undertake their promising investment projects. A higher level of the stock capitalization means that investors have more opportunities to diversify their risk by holding shares in different listed enterprises. This further motivates market participants to accelerate the capital

resources of listed entrepreneurial activities. As a result, increases in stock capitalization lead to higher accumulation and productivity growth in the ADC region. Our findings support Beck and Levine (2004) and Naceur and Ghazouani (2007), who reveal that a stock market with higher stock capitalization improves economic development. An increase in STCAP is an outcome of selected profitable entrepreneurs who have adopted technological innovations for productivity improvement.

The stock liquidity measured by the STVAL and STTUR ratios in most model specifications [models (9), (10) and (12) in Table (4.3)] show a positive relationship with ECON. The STVAL coefficient is significant at conventional levels with the magnitudes of around 0.035 in models (9) and (10), which means that countries with a 1% increase in STVAL can improve their income level by 0.035%. This result indicates the stock market beneficially affects economic development via stock liquidity. A more liquid stock market helps participants improve their stock trading to make profits or cut losses. Potential investors can access productive ventures with lower transaction and information costs. As a result, listed enterprises can raise needed capital for further investment. With data available for the ADC region, we improve the limited work of Singh (1997), who could not find a positive link between the stock market expansion and welfare gains in most developing countries. Our results support Beck and Levine (2004), who detect a beneficial association between stock liquidity and economic growth in 40 countries.

In most of our model specifications for the stock market [models (7) to (10) in Table (4.3)], we find that the interactive term between FDI and stock development has a significant, positive association with ECON at conventional levels. This corroborates the empirical evidence that FDI indirectly speeds up economic growth in the ADC region via stock market expansion. The ADC region can exploit the beneficial externalities from foreign enterprises by improving the stock market's liquidity and capitalization. This is because foreign enterprises and their local partners can introduce their brand names and promote capital via listing on the local stock market. As a result, both the foreign enterprises and their local partners improve their ability to invest in technological changes and management improvement for higher output growth. By holding foreign enterprises' shares, local investors also enlarge their knowledge in terms of business know-how, management practices and international corporate structures for further investment expansion. Our estimates are consistent with Agbloyor et al. (2014) who reveal that the stock market helps African countries to improve the beneficial effects from foreign entrepreneurs.

4.2.2 Empirical results from the GMM estimator

As discussed in the methodology, FE and RE estimators can capture unobserved heterogeneity effectively in equation (4.2). However, we face potential endogeneity in the macro-panel data, which emerges from simultaneous bias, reverse causality and missing variables or a correlation between the

Table 4-4: The regression results of economic development using the GMM estimator

Variable	Banking dimension			Stock dimension		
	BACRED	LIQUID	TOCRED	STCAP	STVAL	STTUR
	(1)	(2)	(3)	(4)	(5)	(6)
<i>ECON(t-1)</i>	0.901*** (0.071)	0.915*** (0.066)	0.877*** (0.053)	0.960*** (0.066)	0.964*** (0.038)	0.929*** (0.043)
<i>FDI</i>	0.145*** (0.052)	0.137*** (0.047)	0.120*** (0.031)	0.121*** (0.020)	0.083*** (0.027)	0.112** (0.052)
<i>FINA</i>	0.265* (0.152)	0.305* (0.172)	0.256** (0.108)	0.117** (0.050)	0.067** (0.029)	0.186** (0.077)
<i>FINA*FDI</i>	0.064** (0.027)	0.093** (0.038)	0.058** (0.025)	0.036*** (0.009)	0.014** (0.006)	0.038** (0.016)
<i>DOME</i>	0.338** (0.149)	0.405*** (0.123)	0.101* (0.056)	0.203** (0.098)	0.210*** (0.073)	0.170* (0.098)
<i>GOVE</i>	0.057 (0.113)	0.075 (0.110)	0.110* (0.063)	0.264** (0.123)	0.122 (0.106)	0.079 (0.121)
<i>INFL</i>	-0.134 (0.231)	-0.181 (0.220)	-0.219 (0.220)	0.077 (0.163)	0.058 (0.097)	0.171 (0.105)
<i>TRADE</i>	-0.074*** (0.026)	-0.061** (0.029)	-0.034 (0.033)	-0.062 (0.057)	-0.051 (0.051)	-0.051 (0.085)
<i>POPU</i>	-0.010 (0.022)	-0.002 (0.020)	-0.001 (0.014)	0.037 (0.033)	0.019 (0.019)	-0.011 (0.020)
<i>Constant</i>	2.279* (1.168)	2.095* (1.020)	2.048 (0.755)	1.087 (1.052)	0.973 (0.684)	1.805** (0.789)
<i>Observations</i>	134	134	130	81	90	81
<i>Groups</i>	33	33	33	22	22	22
<i>Instruments</i>	22	26	22	22	22	20
<i>AR(-1)</i> (p-value)	0.025	0.144	0.053	0.024	0.104	0.162
<i>AR(-2)</i> (p-value)	0.425	0.881	0.159	0.486	0.267	0.118
<i>Hansen test</i> (p-value)	0.596	0.843	0.419	0.784	0.246	0.146
<i>Difference-in</i> <i>Hansen test</i> (p-value)	0.365	0.246	0.427	0.505	0.891	0.300

Notes: * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$. Figures in brackets are robust-standard errors.

lagged dependent variables and the disturbance term. Hence, the coefficients estimated by the FE and RE approaches in Tables (4.2) and (4.3) could be biased and inconsistent. Table (4.4) provides the system GMM estimator that constructs internal instruments itself to correct endogenous bias and address the difficulty of finding appropriate external instruments. This approach eliminates the endogenous issues stemming from possible correlations between the regressors FDI, financial development, domestic investment, the lagged dependent variables, or other regressors with the disturbance term (containing unobserved heterogeneity, factors and omitted variables) in equation (4.2). The results from the GMM estimator are efficient if the model specification can pass the tests of instrument validity (Hansen tests) and serial correlation (AR (2)). Table (4.4) shows the p-values of Hansen and AR (2) tests are higher than the 0.05 level, which satisfies the assumptions of not over-

identifying of instruments and the absence of second-order serial correlation of the differenced disturbance terms in the estimates.

Table (4.4) reports the results based on the GMM estimator. The results show the effects of FDI, the banking and stock market sectors on ECON are highly consistent with the FE and RE estimators. Table (4.4) shows a positive, highly significant correlation between FDI and ECON for all model specifications (models (1) to (6)). This affirms that FDI directly enhances economic development in the ADC region. Similarly, domestic investment, DOME, in all model specifications (1) to (6) is positively associated with ECON at conventional levels. The domestic investment coefficient is higher than FDI in all model specifications, suggesting that domestic investment is a significant driver of economic development in the ADC region. The three dimensions of the banking sector, BACRED, LIQUID and TOCRED, result in a positive, significant association with ECON. Using the GMM estimator, the effects of the banking dimensions on economic development are consistent with the FE and RE estimates. This confirms the importance of banking development in the ADC economies. Banking expansion facilitates entrepreneurial activities with the availability of credit and financial services. Banks force economic contracts to attain higher output growth. Similarly, in terms of the stock market, models (4) to (6) report the three stock indicators, namely STCAP, STVAL and STTUR, also contribute significantly to higher national income at conventional levels. This supports the evidence that stock market expansion improves economic development through higher levels of stock capitalization and stock liquidity. Stock development attracts savings from heterogeneous investors (savers) for channelling to productive entrepreneurs. With lower information and transactions costs, the stock market helps investors promptly transfer stock holdings into their portfolios and access productive projects to increase profits. The consistent results from the FE, RE and GMM estimators in Tables (4.3) and (4.4) provide evidence that the stock market is an important channel to support economic activity in the ADC region.

The interactive term between finance and FDI (FINA*FDI) in models (1) to (6) in Table (4.4) shows a positive, highly significant effect on ECON. The positive results of the interactive term indicate that expansion of financial markets helps ADC economies to enlarge the beneficial effects of inward FDI. The GMM estimator in Table (4.4) provides consistent results with the FE and RE techniques for the complementary effects of finance on the FDI-growth nexus. Our finding corroborates the results in Agbloyor et al. (2014) that the banking sector provides foreign enterprises and their local partners with credit resources and financial services to expand business activities in the host countries. The stock market enables foreign entrepreneurs and their local partners to promote funding resources and brand names with their stocks issued to the economy. Moving from manual trading systems to automatic trading systems helps both foreign and local investors access listed stocks promptly to make their profits (Ahmad et al., 2016). With financial services expansion, foreign enterprises and their local

partners can promote technologies, workforce skills and production processes to attain higher productivity.

Table 4-5: The results of economic development using the GMM estimator (expansion case)

Variable	Banking dimension			Stock dimension		
	BACRED	LIQUID	TOCRED	STCAP	STVAL	STTUR
	(1)	(2)	(3)	(4)	(5)	(6)
<i>ECON</i> (<i>t</i> -1)	0.925*** (0.050)	0.947*** (0.049)	0.926*** (0.047)	0.957*** (0.069)	0.887*** (0.040)	0.937*** (0.036)
<i>FDI</i>	0.123*** (0.027)	0.067* (0.040)	0.087** (0.038)	0.158*** (0.049)	0.084** (0.034)	0.088** (0.038)
<i>FINA</i>	0.342*** (0.115)	0.499** (0.225)	0.521*** (0.180)	0.040 (0.101)	0.188*** (0.063)	0.255*** (0.057)
<i>FINA*FDI</i>	0.057*** (0.016)	0.046* (0.028)	0.048* (0.026)	0.038** (0.015)	0.013** (0.006)	0.024* (0.012)
<i>DOME</i>	0.381*** (0.136)	0.585*** (0.129)	0.301** (0.132)	0.172* (0.100)	0.436*** (0.112)	0.291*** (0.079)
<i>FINA*DOME</i>	0.064* (0.035)	0.242* (0.140)	0.218*** (0.079)	-0.061 (0.054)	0.070* (0.039)	0.085*** (0.029)
<i>GOVE</i>	0.025 (0.089)	-0.001 (0.096)	0.049 (0.072)	0.106 (0.070)	0.069 (0.063)	0.017 (0.056)
<i>INFL</i>	-0.181 (0.182)	-0.240 (0.169)	-0.295* (0.173)	0.106 (0.117)	0.188** (0.094)	0.146* (0.086)
<i>TRADE</i>	-0.085*** (0.026)	-0.059* (0.030)	-0.050*** (0.017)	-0.126* (0.066)	-0.075 (0.048)	-0.057 (0.058)
<i>POPU</i>	-0.012 (0.017)	-0.012 (0.020)	-0.005 (0.008)	0.019 (0.033)	-0.035** (0.017)	-0.017 (0.011)
<i>Constant</i>	2.034** (0.791)	1.842** (0.808)	1.712 (0.658)	1.184 (1.178)	2.826*** (0.704)	1.781*** (0.487)
<i>Observation</i>	134	134	130	81	90	81
<i>Groups</i>	33	33	33	22	22	22
<i>Instruments</i>	31	27	26	17	20	20
<i>AR</i> (-1) (<i>p</i> -value)	0.019	0.130	0.051	0.022	0.209	0.104
<i>AR</i> (-2) (<i>p</i> -value)	0.212	0.179	0.208	0.376	0.116	0.060
<i>Hansen test</i> (<i>p</i> -value)	0.390	0.580	0.444	0.933	0.157	0.140
<i>Difference-in Hansen test</i> (<i>p</i> -value)	0.183	0.891	0.400	0.844	0.587	0.295

Notes: * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$. Figures in brackets are robust-standard errors.

In a further step, we add the interactive term between finance and domestic investment (*FINA*DOME*) into our regression models (see Table 4.5) to explore the significance of financial development in accelerating domestic entrepreneurial activities. If the added interactive term (*FINA*DOME*) exhibits a significant effect on *ECON*, this implies that financial development matters for an indirect effect of domestic investment on economic development. In other words, the expansion of financial systems encourages domestic investment and an intensively competitive environment that speeds up the

output growth of host countries. As can be seen from Table (4.5), the coefficients of domestic investment (DOME), finance (FINA), FDI and the interactive term (FINA*FDI) exhibit positive, significant effects on ECON. The added interactive term between finance and domestic investment (FINA*DOME) in most model specifications (exception model (4)) exhibits a positive, significant impact on ECON. This means that domestic investment indirectly stimulates economic development via higher levels of financial development. Under prudent supervision and monitoring of financial markets, domestic entrepreneurs tend to use their financial funds (both owned and external) more productively and efficiently in their investment plans. This result is consistent with Levine (2005) and Ang (2008) who suggest that the presence of financial markets helps domestic entrepreneurs augment capital accumulation, risk management, trade and commerce.

In terms of controlling variables, Tables (4.4) and (4.5) with the system GMM report that government spending (GOVE) in most model specifications shows a positive impact on ECON. The result supports Anwar and Nguyen (2010) who argue that increasing government spending improves human capital attainment and infrastructure changes. This facilitates the investment activities of the host countries to achieve higher income levels. More government spending may improve the unemployment rate and income level since more goods and services are consumed in the host countries (Harriss, 1956). However, as warned by Christie (2014) and Connolly and Li (2016), the ADC governments have also channelled taxes and borrowing into unproductive public sectors such as military and public health services. This is notwithstanding the possible presence of corruption and bureaucracy in the public sector. As a result, the coefficient of government spending displays an insignificant effect on ECON in Tables (4.4) and (4.5). Another economic factor, trading openness (TRADE), also displays an insignificant, negative impact on ECON, which could be explained by several factors. For example, apart from the advantage of imported advanced intermediate inputs, increases in imported products may crowd out domestic products and reduce incentives for local infant enterprises. This is because the overseas rivals have advantages of sophisticated technologies, highly skilled personnel, and competitive economics of scale in production. This is notwithstanding that the host countries' income from tariffs may decline to encourage more trade (Narayan and Narayan, 2013). A reduction in tariffs leads to a lower cost of imported products that could exert pressure on local enterprises to reduce their product prices. Furthermore, countries with more trade openness can be vulnerable to fluctuations in the global market such as a volatile exchange rate, external shocks, inflation, dumping and changes in product demand (Iyke, 2017). As a result, trade openness may exhibit an adverse effect on the host country's income. Our results support Muhammad et al. (2016) with a negative effect of trade openness on economic development in the GCC countries, and Muzzafar and Junankar (2015) with an uncertain sign of the trading coefficient, which is used to control macroeconomic environment in economic growth regression models. In terms of population growth (POPU), our estimates in Tables

(4.4) and (4.5) report an insignificant, negative link between population growth and ECON. Although population growth contributes to the host country's workforce, a higher population growth rate may result in a diminished return per worker on investment (Mankiw et al., 1992). A higher population growth rate leads to more natural resource exploitation. Our outcome for population growth aligns with the studies by Teixeira and Queiros (2012) and Malikane and Chitambara (2017) that report an inverse, insignificant effect of the population growth rate in their economic regression models.

4.2.3 Empirical results with annual data

This study further uses the annual data and controls for the 1997-1998 Asian financial crisis and the 2008-2009 global financial crisis to estimate economic growth regression models. Apart from the GMM estimator, the FE and RE estimators are used for the yearly data. When the time dimension (T) increases, Monte Carlo analysis shows that bias from the FE estimator is smaller (Judson and Owen, 1999). As can be seen from Table (4.6) with the FE and RE approaches, DOME and FDI remain positively correlated with ECON. The main proxy of the banking channel, BACRED in models (1) and (2), shows a positive, significant relationship with ECON at conventional levels. Two other banking proxies (LIQUID and TOCRED) in models (3) to (6), however, display statistically insignificant relationships with ECON. There are at least two possible reasons to explain the latter results. First, it is noted that LIQUID and TOCRED are provided for the whole economy, which includes both the public and private sectors. However, several authors such as Christie (2014) and Connolly and Li (2016), suggest that public investments may not use financial resources efficiently and productively. This is because of the presence of corruption, bureaucracy, or lax supervision in the public sector that may distort the efficiency of capital allocation (Christie, 2014). Additionally, Anyanwu (2016) noted that a highly persistent degree of these two variables based on annual data in long time periods may result in biased effects on output growth. However, when the three banking proxies interact with FDI, Table (4.6) shows the interactive terms are positively associated with ECON. This emphasizes that banking expansion enables the ADC economies to absorb more beneficial effects from inward FDI. Similarly, we find that the stock channel stimulates economic growth of the ADC region. Table (4.6) shows that all proxies (STCAP, STVAL and STTUR) in models (7) to (12) display favourable effects on ECON. Importantly, the interactive FDI terms also exhibit similar results in all the growth regression models. Such a favourable effect of stock development aligns with our earlier results obtained with five-year average data.

Table 4-6: The regression results of economic development with annual data using FE and RE

Variable	Banking dimension						Stock dimension					
	BACRED		LIQUID		TOCRED		STCAP		STVAL		STTUR	
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<i>ECON</i> (<i>t</i> -1)	0.254** (0.100)	0.371*** (0.099)	0.252** (0.101)	0.374*** (0.099)	0.269*** (0.062)	0.435*** (0.070)	0.201*** (0.055)	0.327*** (0.071)	0.229*** (0.065)	0.368*** (0.084)	0.189*** (0.058)	0.318*** (0.071)
<i>FDI</i>	0.009*** (0.002)	0.009*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	0.004 (0.002)	0.004 (0.002)	0.010 (0.007)	0.012* (0.007)	0.013* (0.006)	0.013** (0.006)	0.013 (0.008)	0.012 (0.009)
<i>FINA</i>	0.030** (0.012)	0.033*** (0.012)	-0.041* (0.021)	-0.023 (0.021)	-0.005 (0.013)	0.003 (0.009)	0.006 (0.005)	0.007 (0.005)	0.006* (0.003)	0.007** (0.003)	0.012* (0.006)	0.012* (0.006)
<i>FINA*FDI</i>	0.003*** (0.001)	0.004*** (0.001)	0.006*** (0.001)	0.007*** (0.001)	0.001 (0.002)	0.001 (0.002)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.000)	0.001 (0.001)	0.001 (0.001)
<i>DOME</i>	0.029 (0.018)	0.021 (0.018)	0.032* (0.019)	0.024 (0.019)	0.064*** (0.020)	0.053** (0.021)	0.122*** (0.038)	0.115*** (0.039)	0.103** (0.038)	0.094** (0.038)	0.126*** (0.041)	0.119*** (0.042)
<i>CRIS</i>	-0.016*** (0.005)	-0.019*** (0.005)	-0.014*** (0.004)	-0.017*** (0.005)	-0.016*** (0.005)	-0.020*** (0.005)	-0.062*** (0.020)	-0.067*** (0.020)	-0.043** (0.015)	-0.050*** (0.014)	-0.020 (0.016)	-0.026 (0.016)
<i>FINA*CRIS</i>	-0.006* (0.003)	-0.007** (0.003)	-0.008* (0.004)	-0.009** (0.004)	-0.006 (0.003)	-0.008** (0.003)	-0.008** (0.003)	-0.009*** (0.003)	-0.005* (0.002)	-0.005** (0.002)	-0.001 (0.003)	-0.001 (0.002)
<i>GOVE</i>	-0.085*** (0.026)	-0.080*** (0.024)	-0.055** (0.024)	-0.055** (0.022)	-0.056*** (0.014)	-0.055*** (0.014)	-0.092*** (0.029)	-0.088*** (0.027)	-0.097*** (0.030)	-0.094*** (0.030)	-0.086*** (0.030)	-0.081*** (0.029)
<i>INFL</i>	-0.011 (0.031)	-0.022 (0.032)	-0.020 (0.034)	-0.029 (0.035)	-0.009 (0.031)	-0.032 (0.034)	-0.083* (0.045)	-0.086** (0.041)	-0.059 (0.040)	-0.071* (0.037)	-0.068 (0.045)	-0.065* (0.039)
<i>TRADE</i>	0.004 (0.004)	0.007** (0.003)	0.005 (0.004)	0.009** (0.003)	0.007* (0.003)	0.008*** (0.003)	0.016 (0.022)	0.005 (0.020)	0.013 (0.018)	0.012 (0.017)	0.013 (0.021)	0.002 (0.019)
<i>POPU</i>	-0.563** (0.230)	-0.755*** (0.133)	-0.570** (0.216)	-0.778*** (0.133)	-0.650*** (0.226)	-0.700*** (0.115)	-1.071*** (0.249)	-0.874*** (0.117)	-0.904*** (0.206)	-0.818*** (0.114)	-1.087*** (0.229)	-0.868*** (0.114)
<i>Constant</i>	0.034*** (0.006)	0.033*** (0.005)	0.037*** (0.006)	0.036*** (0.005)	0.037*** (0.005)	0.031*** (0.004)	0.045*** (0.005)	0.037*** (0.004)	0.041*** (0.005)	0.035*** (0.004)	0.045*** (0.005)	0.037*** (0.004)
<i>Observation</i>	618	618	618	618	584	584	329	329	381	381	320	320
<i>R² total</i>	0.3454	0.3571	0.3533	0.3721	0.3955	0.4175	0.4936	0.5064	0.4820	0.4941	0.4657	0.4803
<i>F /Wald tests (Prob > F)</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Notes: * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$. Figures in brackets are robust-standard errors.

Table 4-7: The regression results of economic development with annual data using GMM

Variable	Banking dimension			Stock dimension		
	BACRED	LIQUID	TOCRED	STCAP	STVAL	STTUR
Model	(1)	(2)	(3)	(4)	(5)	(6)
<i>ECON</i> (<i>t</i> -1)	0.268* (0.157)	0.292** (0.127)	0.219** (0.084)	0.150* (0.082)	0.164** (0.080)	0.159* (0.093)
<i>FDI</i>	0.006*** (0.002)	0.028*** (0.010)	0.003 (0.002)	0.053** (0.021)	0.044** (0.017)	0.079** (0.033)
<i>FINA</i>	0.031** (0.012)	0.411* (0.226)	0.004 (0.018)	0.034** (0.014)	0.036** (0.015)	0.074** (0.031)
<i>FINA*FDI</i>	0.003*** (0.001)	0.033** (0.016)	0.001 (0.002)	0.008** (0.003)	0.006** (0.002)	0.013** (0.005)
<i>DOME</i>	0.033* (0.018)	0.017 (0.020)	0.062*** (0.021)	0.122*** (0.042)	0.090** (0.043)	0.105* (0.055)
<i>CRIS</i>	-0.050*** (0.016)	-0.014* (0.007)	-0.013** (0.006)	-0.040** (0.017)	-0.035** (0.014)	-0.024 (0.022)
<i>FINA*CRIS</i>	-0.028** (0.012)	-0.022** (0.010)	-0.003 (0.005)	-0.005* (0.002)	-0.004* (0.002)	-0.001 (0.003)
<i>GOVE</i>	-0.073*** (0.022)	-0.183** (0.090)	-0.121 (0.100)	-0.080*** (0.027)	-0.093*** (0.031)	-0.085** (0.040)
<i>INFL</i>	-0.025 (0.042)	0.024 (0.042)	-0.025 (0.037)	-0.059 (0.052)	-0.087** (0.042)	-0.138 (0.186)
<i>TRADE</i>	0.007* (0.004)	-0.002 (0.007)	0.009*** (0.003)	0.002 (0.025)	0.017 (0.023)	-0.001 (0.039)
<i>POPU</i>	-1.158*** (0.381)	-0.730*** (0.192)	-0.971*** (0.153)	-1.039*** (0.183)	-1.018*** (0.175)	-1.122*** (0.144)
<i>Constant</i>	0.045*** (0.010)	0.028*** (0.010)	0.044*** (0.005)	0.046*** (0.005)	0.045*** (0.005)	0.047*** (0.005)
<i>Observation</i>	618	618	584	329	381	320
<i>Groups</i>	33	33	33	22	22	22
<i>Instruments</i>	24	18	18	20	20	21
<i>AR</i> (-1) (<i>p</i> -value)	0.003	0.019	0.000	0.006	0.003	0.013
<i>AR</i> (-2) (<i>p</i> -value)	0.726	0.499	0.433	0.553	0.991	0.811
<i>Hansen test</i> (<i>p</i> -value)	0.456	0.848	0.247	0.474	0.504	0.495
<i>Difference-in Hansen test</i> (<i>p</i> -value)	0.992	0.411	0.135	0.339	0.482	0.647

Notes: * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$. Figures in brackets are robust-standard errors.

Given the beneficial effects of the key determinants of economic development, there is the possibility of the existence of endogeneity using the FE and RE approaches. In Table (4.7), we apply the GMM approach to address the potential endogenous issue stemming from possible omitted variables, reverse causality (between economic development and its regressors such as FDI, financial development and domestic investment) and dynamic environments with macro-panel data. Our results in Table (4.7) show that domestic investment and FDI consistently exhibit positive, significant effects on ECON in most model specifications from models (1)-(6). Hence, this supports our earlier

findings that both domestic and foreign entrepreneurs speed up economic progress with higher capital accumulation and investment activity. We also discover that all financial coefficients, except TOCRED, are significantly, positively correlated with ECON. More importantly, all interactive terms (FINA*FDI) in models (1)-(6) consistently display positive relationships with ECON at conventional levels. This is in accord with our above discussion that financial market expansion not only has a direct impact but also combines with FDI to provide an additional effect on ADC economic development. With external resources available from financial markets, more productive entrepreneurial activities meet the capital requirement for low costs to achieve desirable economic outcomes.

In terms of the crisis dummy variable, CRIS, Table (4.7) reveals an inverse relationship with ECON in all model specifications. The result supports Naude (2009), Kotrajaras et al. (2011) and Blundell-Wignall and Roulet (2014), who highlight that the Asian region, affected by both financial crises, experienced output losses and reduction in its economic growth rate. The financial crises, particularly the 2008-2009 global financial crisis, caused a sharp decline in global demand followed by a fall in output growth, dwindling trade finance and a rising unemployment rate in all regions of the world (Naude, 2011). We further use the interactive term between finance and the financial crises (FINA*CRIS) to reflect the marginal effect of finance on economic development during the crisis events. Table (4.7) reports a negative coefficient for the interactive term in all model specifications [1-6]. The result is in line with Rashti et al. (2014) and Ahmad et al. (2016), who document that the financial crises indirectly affected the domestic economy by reducing the efficiency of resource allocation by the financial markets. Uncertainty in economic prospects discouraged savers from participating in the financial markets. The threat of macroeconomic instability and potentially high risks in investments mitigated new innovative projects from being implemented. Subsequently, financial markets encountered larger hurdles such as the need to increase reserve capital, more stringent supervision regulations by governments, and less attractive investment channels for investors. More restrictive capital controls and reduction in global demand hindered the financial intermediary role in effectively redistributing mobilized savings to profitable investment projects and ultimately reduced the speed of economic development (Ahmad et al., 2016).

4.3 The threshold effects model

As suggested by Choong et al. (2010) and Ehigiamusoe et al. (2018), both the coefficients of FDI and its interactive term with finance (FINA*FDI) in Table (4.4) have positive signs in the economic growth equations, which implies that FDI combining with financial development would exhibit complementary positive effects on the ADC economies. The interactive term shows that higher levels (increment) of financial development help the ADC economies absorb more favourable externalities from the foreign entrepreneurs. Similarly, Giuliano and Ruiz-Arran (2009) and Choong et al. (2010) suggest that a

positive sign on the interaction term indicates that FDI and finance are complementary in enhancing economic development. A well-supervised and deeper financial system helps the ADC region allocate inward FDI to the most productive projects. Azman-Saini et al. (2010), Chen and Quang (2014) and Baharumshah et al. (2017), among others, suggest that there may exist a threshold level of financial development which recipient countries should attain to absorb potential beneficial effects from inward FDI. Based on the financial threshold, higher levels of financial development enable foreign enterprises and their local partners to improve production process transfers, time of trading, and contract enforcement, and thereby enhance output growth. Improvements in financial development help local and foreign enterprises lower the cost of capital, reduce information costs and risks, improve corporate governance and allocate funding efficiently.

Delving deeply into a potential financial threshold point, several studies such as Azman-Saini et al. (2010), Chen and Quang (2014) and Slesman et al. (2015) argue that a model with an interactive term ($FINA * FDI$) only expresses an indirect estimation of the financial threshold to exploit the beneficiary of inward FDI. Based on the partial derivatives of FDI, the threshold level of finance could be fixed at an arbitrary value beyond which the total FDI effects become positive (Caner and Hansen, 2004, Chen and Quang, 2014). However, such an arbitrary value is likely to be sensitive to the selected samples, which leads to uncertainty of the correct threshold point (Christie, 2014). Hence, Kremer et al. (2013), and Chen and Quang (2014) suggest using a dynamic threshold effect model that is a more flexible modelling strategy to detect a needed (certain) financial threshold that can maximize FDI benefits. This econometric approach splits the sample into two subsamples, financial-regime groups, which are the low financial-regime and the high financial-regime. The effects of FDI on ECON will differ based on these two financial threshold regimes. Following previous studies, such as Kremer et al. (2013) and Ruiz (2018), we assume only the lag of ECON as an endogenous variable and treat the other regressors as exogenous variables. The estimated dynamic threshold effect model has the following form:

$$ECON_{it} = \mu_i + \delta_1 I(FINA_{it} \leq \gamma) + \beta_1 FDI_{it} I(FINA_{it} \leq \gamma) + \beta_2 FDI_{it} I(FINA_{it} > \gamma) + \alpha_1 ECON_{i,t-1} + \alpha_2 X_{it} + \varepsilon_{it} \quad (4.3)$$

where: $ECON_{it}$ is the real GDP per capita in constant 2010 USD; FDI_{it} is the regime dependent variable; $FINA_{it}$ denotes financial development, which is the threshold variable in equation (4.3); γ is the threshold value of financial development ($FINA_{it}$); $I(.)$ is a function that equals 1 if the condition inside the parenthesis is satisfied, and 0 otherwise; δ_1 is the regime intercept, which is the same for all countries; X_{it} represents regime independent variables such as government spending, domestic investment, inflation rate, trade openness, and population; $ECON_{i,t-1}$ represents the lagged real GDP per capita which is treated as an endogenous variable; and μ_i denotes the country-specific fixed effect.

Table 4-8: Regressions results of threshold level of financial variables

	Banking dimension			Stock dimension		
Threshold estimate	BACRED	TOCRED	LIQUID	STCAP	STVAL	STTUR
Model	(1)	(2)	(3)	(4)	(5)	(6)
$\hat{\gamma}$	0.203	0.206	0.727	0.359	0.408	0.126
95% confidence interval	[0.085-0.454]	[0.107-0.664]	[0.342-0.759]	[0.260-0.470]	[0.292-0.408]	[0.099-0.607]
Impact of FDI						
β_1	-0.020 (0.014)	0.001 (0.021)	0.035*** (0.012)	0.057*** (0.012)	0.018* (0.009)	0.083*** (0.021)
β_2	0.055*** (0.005)	0.038*** (0.009)	0.046*** (0.005)	0.121*** (0.026)	0.032 (0.027)	0.115*** (0.025)
Impact of other factors						
ECON (-1)	0.954*** (0.056)	0.993*** (0.060)	0.917*** (0.062)	0.841*** (0.108)	0.980*** (0.070)	0.936*** (0.221)
DOME	0.092** (0.043)	0.110** (0.047)	0.110** (0.047)	-0.052 (0.076)	0.205*** (0.059)	-0.005 (0.124)
GOVE	-0.190*** (0.068)	-0.185** (0.072)	-0.223*** (0.071)	-0.232*** (0.089)	0.083 (0.073)	-0.171 (0.109)
INFL	-0.179 (0.120)	-0.369*** (0.124)	-0.324* (0.128)	-0.097 (0.084)	0.136 (0.105)	0.115 (0.096)
TRADE	-0.006 (0.017)	-0.024 (0.017)	-0.041** (0.019)	-0.141*** (0.048)	-0.080 (0.058)	-0.125* (0.075)
POPU	-0.083 (0.086)	-0.064 (0.093)	-0.106 (0.093)	0.059 (0.131)	-0.166 (0.103)	-0.049 (0.272)
$\hat{\delta}_1$	-0.216*** (0.030)	-0.168*** (0.042)	-0.141*** (0.028)	-0.226*** (0.049)	-0.133*** (0.040)	-0.028 (0.036)

Notes: * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$. Figures in brackets are standard errors. $\hat{\gamma}$ is estimated threshold. $\hat{\delta}_1$ is regime intercept.

Table (4.8) shows that the dynamic setting ($ECON_{t-1}$) in all model specifications (1) to (6) exhibits a significant, positive effect on ECON, meaning that the past period of economic development highly influences its current value. This dynamic setting is used to control the past value of ECON and the past information of the regressors on the right-hand side of equation (4.3). Additionally, the inclusion of the regime intercept, $\hat{\delta}_1$, enables us to handle the endogeneity problem, which may emerge from the possible omitted variables that are correlated with ECON or other regressors (see Bick et al., 2010; Lee et al., 2016). Table (4.8) shows the regime intercept has a statistically significant level in most model specifications, supposing that we can reduce the potential bias emerging from the omitted endogenous variables in the dynamic threshold-effects regression models.

Table (4.8) also shows the effects of FDI on ECON are significantly different between the two banking-regimes. According to the BACRED indicator, the estimated threshold γ is 20.3%. The parameter of FDI in the high banking-regime group is 0.055 and is significant at the 1% level, whereas FDI in the low banking-regime group is negative but insignificant. This result indicates FDI does not affect economic

development if the BACRED indicator is lower than 20.3%. However, when the ADC region attains a BACRED threshold value of 20.3%, a 1% increase in inward FDI significantly stimulates a 0.055% growth in their income level. This result confirms that for the low level BACRED group, foreign entrepreneurs and their local partners face difficulties in accessing domestic credit resources to serve their business activities. A scarcity of credit funds is unlikely to speed up local entrepreneurial activities, which therefore restricts potential productivity growth in the ADC region. In contrast, for the high BACRED group, increasing inward FDI with available banking credit encourages more productive investments in the host countries. It is worth noting that inward FDI stimulates recipient economies not only via increasing investment activity but also via potential positive externalities (spill-overs) such as transfers of advanced technologies, production processes, labour skills, and business know how. Therefore, timely availability of banking credit helps recipient economies exploit the potential positive externalities from inward FDI. For example, in terms of the backward linkage, local suppliers can raise capital through banks to buy new inputs and foreign technologies. This enables the local suppliers to improve product quality and quantity to meet the input requirement of the foreign enterprises. For the forward linkage, local buyers by raising capital at a low cost, can augment marketing and managerial skills, business knowledge and production quality introduced by the foreign firms to expand their market share. Furthermore, the entry of foreign firms can increase competitive pressure on local firms in the same industry to enhance productivity. This forces local firms to borrow from banks to upgrade technologies, labour skills, management and production processes to stimulate their productivity growth. As a result, higher levels of banking development, represented by the high BACRED group, help ADC economies to absorb the beneficial effects of inward FDI.

For the TOCRED indicator, inward FDI significantly stimulates output growth after the ADC region attains an estimated TOCRED threshold of 20.6%. The result shows the parameter of inward FDI is positive but statistically insignificant in the low TOCRED group. Such a finding agrees with Azman-Saini et al. (2010) and Baharumshah et al. (2017) who suggest that developing countries can improve the benefits from inward FDI after attaining a threshold level of financial credit. Available financial credit helps local firms upgrade technologies, labour-skills and production processes introduced by foreign firms. In addition, local and foreign firms with available financial credit can timely invest in productive projects to make more profit. Hence, improvements in banking, represented by the high TOCRED group, enhance the beneficial effects of inward FDI on recipient economies. We now consider another indicator of the banking sector, LIQUID. Interestingly, our results reveal that both the low and the high LIQUID regimes can help ADC economies to benefit from inward FDI. At an estimated LIQUID threshold of 72.7%, the parameter of FDI exhibits 0.035 units in the low LIQUID group. Meanwhile, the FDI parameter increases to 0.046 units in the high LIQUID group. This means a 1% increase in FDI leads to a 0.035% growth in the income level in the low LIQUID group and a 0.046% growth of the income level

in the high LIQUID group. The results support the hypothesis that increasing financial services enhances the linkages between foreign entrepreneurs and their local partners with higher trading, production process transfers and contract enforcement, which thereby induce higher economic progress.

According to the stock threshold regime, the results show that FDI exhibits positive effects on the output growth with all stock-regime channels. For the STCAP indicator, the estimated threshold is 35.9%. In the low STCAP group, inward FDI displays a highly significant, positive effect on ECON with a coefficient of 0.057 unit. More importantly, the FDI coefficient increases up to 0.121 units in the high STCAP group. In other words, when the STCAP threshold value is below 35.9%, a 1% increase in inward FDI will result in a 0.057% growth of the income level. However, if the ADC region reaches a STCAP threshold value of 35.9%, a 1% increase in inward FDI will accelerate the income level by 0.121%. This means that higher levels of stock capitalization enable foreign entrepreneurs to accelerate their capital resources. Increasing stock capitalization not only attracts more market participants to place their savings in stock markets, but also helps listed foreign entrepreneurs to introduce their brand names to local markets. Similarly, in terms of the STVAL-regime channel, Table (4.8) shows inward FDI is positively associated with ECON for the two groups. Although inward FDI in the high STVAL group is insignificant, its parameter is higher than the low STVAL group (0.032 and 0.018, respectively). This means that a 1% increase in inward FDI enhances the output growth by 0.018% in the low STVAL group, whereas in the high STVAL group, a 1% growth of inward FDI increases the output growth by 0.032%. For the third stock indicator, STTUR, the results reveal that inward FDI for both groups is significant at the 1% level. The FDI parameter exhibits 0.083 unit for the low STTUR group and increases to 0.115 unit for the high STTUR group. This means that, in the low STTUR group, a 1% increase in inward FDI improves the income level of the ADC region by 0.083%, whereas in the high STTUR group, a 1% growth of inward FDI leads to a 0.115% increase in the income level. Hence, STVAL and STTUR confirm that higher levels of the stock liquidity stimulate investors' incentives to purchase stocks of listed foreign entrepreneurs since they may achieve high returns with the foreign-stock holdings and convert to cash when necessary. Our result is consistent with Baharumshah et al. (2017), who used two stock indicators, STCAP and STVAL, and find that inward FDI augments economic development in both stock-regime groups. The FDI parameter in the high stock-regime group is higher than the low stock-regime group, which implies that higher levels of stock development help the recipient economy benefit more from inward FDI.

4.4 The linkage between FDI and financial development

4.4.1 Granger causality tests

Based on the unbalanced panels, we use the Fisher and modified Fisher tests to test the stationarity of the FDI and financial development variables. Table (4.9) indicates that most of variables, namely

Table 4-9: The unit root tests for FDI and the financial proxies

Variable	Fisher		Fisher modified	
	Constant	Constant and time trend	Constant	Constant and time trend
FDI	214.5771***	194.8332***	12.9320***	11.2135***
BACRED	41.5962	48.3175	-2.1241	-1.5391
D.BACRED	497.1931***	376.7853***	37.5305***	27.0504***
LIQUID	62.7806	97.6503***	-0.2802	2.7548***
D.LIQUID	731.9349***	628.8329***	57.9622***	48.9883***
TOCRED	204.1651***	142.8996***	12.3890***	6.9738***
STCAP	146.6215***	127.3379***	10.9395***	8.8838***
STVAL	93.5472***	76.8869***	5.2818***	3.5058***
STTUR	168.4750***	144.8435***	13.2691***	10.7500***

Note: * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$.

FDI, TOCRED, STCAP, STVAL, and STTUR, are stationary at the levels, whereas BACRED and LIQUID do not contain any unit-roots after first differencing. Having determined the stationarity of FDI and financial proxies, we then perform the Granger causality test developed by Hood et al. (2008). The new Granger approach modified the conventional Granger framework by adopting a panel series with possible short time spans and heterogeneous issues in practice. The approach also tackles the drawback of dynamic panel analysis, i.e., it provides the direction of the potential causal links between FDI and finance (Naik and Padhi, 2015). In other words, the bivariate approach helps us explore whether past values of FDI can predict finance and vice versa.

Table 4-10: The Granger-cause test results

Hypothesis	Homogenous no Granger-cause (First hypothesis)		Homogenous Granger-cause (Second hypothesis)	
	F-test statistic	Critical F-value	F-test statistic	Critical F-value
From finance to FDI				
From BANK to FDI				
D.BACRED to FDI	1.787581***	1.68 (at 1%)	1.721437***	1.68 (at 1%)
D.LIQUID to FDI	1.26232	1.33 (at 10%)		
TOCRED to FDI	1.679892**	1.45 (at 5%)	1.721036***	1.68 (at 1%)
From STOCK to FDI				
STCAP to FDI	5.555251***	1.86 (at 1%)	3.373329***	1.86 (at 1%)
STVAL to FDI	3.554243***	1.86 (at 1%)	2.760396***	1.86 (at 1%)
STTUR to FDI	2.096184***	1.86 (at 1%)	2.112653***	1.86 (at 1%)
From FDI to finance				
From FDI to BANK				
FDI to D.BACRED	1.806583***	1.68 (at 1%)	1.696511***	1.68 (at 1%)
FDI to D.LIQUID	1.309637	1.33 (at 10%)		
FDI to TOCRED	7.714757***	1.68 (at 1%)	7.058707***	1.68 (at 1%)
From FDI to STOCK				
FDI to STCAP	0.977064	1.41 (at 10%)		
FDI to STVAL	2.472314***	1.86 (at 1%)	2.35439***	1.86 (at 1%)
FDI to STTUR	2.39072***	1.86 (at 1%)	2.263174***	1.86 (at 1%)

Note: * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$.

First, in terms of the causal direction from finance to FDI, the F-test is used to test the first hypothesis that finance does not Granger-cause FDI in all countries (homogeneity). Rejecting this hypothesis means that finance Granger-causes FDI in at least one country (or several). Table (4.10) shows that the F- test is significant at conventional levels for most financial dimensions (exception LIQUID). This indicates the past values of finance significantly explain the current inward FDI in at least one country (or several). Hence, we sequentially consider the second hypothesis that finance homogeneously Granger-causes FDI. The second hypothesis was also rejected at conventional levels, which implies that the past values of finance may not affect the current inward FDI in all countries.

Secondly, we obtain similar results for the causal direction running from FDI to finance. The results in Table (4.10) reject the first hypothesis that FDI does not Granger-cause finance (except for LIQUID and STCAP) for all samples. In other words, past values of FDI significantly explain current finance in at least one country (or several countries). However, we reject the second hypothesis that FDI Granger-causes finance for all samples, which means that the past values of FDI may not affect the current finance in some countries (or one at least). In summary, the results from all cases suggest that the causal links between the two sectors finance and FDI are in both directions, but such causalities are heterogeneous across the panels. Our findings are supported by Soumare and Tchana (2015) who focused on emerging markets and verified that countries with higher levels of stock development attract more FDI in the following years, whereas increasing FDI also induces a higher level of stock development. However, the causal links between FDI and banking expansion are inconclusive in their study. Our results are more consistent with Otchere et al. (2016), who used the Granger causality tests of Hood et al. (2008) and discovered reverse causation between finance and FDI in the African region. Such causal links were, however, performed with differ structures (heterogeneous) across the African economies. As a result, the presence of two-way causations implies that finance and FDI may endogenously determine each other. In the next section, we conduct our benchmark results for the dynamic paths between the two sectors by using the multivariate models to control other relevant factors (such as inflation, government spending and domestic investment).

4.4.2 *The impact of financial development on FDI*

Following the framework proposed by Ezeoha and Cattaneo (2012) and Agbloyor et al. (2013), the empirical model to estimate the impact of finance on FDI is given by:

$$FDI_{it} = \beta_1 FDI_{it-1} + \beta_2 FINA_{it} + \sum_{j=1}^n \varphi_j Y_{jit} + \eta_i + \zeta_{it} \quad (4.4)$$

Equation (4.4) can be rewritten as follows:

$$FDI_{it} = \beta_1 FDI_{it-1} + \beta_2 FINA_{it} + \varphi_1 GROW_{it} + \varphi_2 FINO_{it} + \varphi_3 GOVE_{it} + \varphi_4 INFL_{it} + \varphi_5 TRADE_{it} + \varphi_6 DOME_{it} + \varphi_7 POPU_{it} + \eta_i + \zeta_{it} \quad (4.5)$$

where: *FINA* is financial development; *Y* includes indicators for economic growth rate per capita (*GROW*), financial openness (*FINO*), government spending (*GOVE*), inflation rates (*INFL*), trade openness (*TRADE*), domestic investment (*DOME*), population (*POPU*), and η_i is country-specific effects.

Table 4-11: The regression results of FDI using the GMM estimator

Variable	Banking dimension			Stock dimension		
	BACRED	TOCRED	LIQUID	STCAP	STVAL	STTUR
Model	(1)	(2)	(3)	(4)	(5)	(6)
<i>FDI (-1)</i>	0.849*** (0.219)	0.888*** (0.216)	0.806*** (0.214)	0.344** (0.170)	0.386** (0.175)	0.398** (0.189)
<i>BACRED</i>	0.010** (0.005)					
<i>TOCRED</i>		0.007*** (0.001)				
<i>LIQUID</i>			0.021* (0.010)			
<i>STCAP</i>				0.026** (0.011)		
<i>STVAL</i>					0.008** (0.004)	
<i>STTUR</i>						0.006* (0.003)
<i>GROW</i>	0.252** (0.123)	0.254** (0.119)	0.266** (0.121)	0.107 (0.105)	0.160* (0.096)	0.164 (0.107)
<i>FINO</i>	0.008 (0.005)	0.009 (0.005)	0.011** (0.005)	0.002 (0.008)	0.004 (0.008)	0.002 (0.007)
<i>GOVE</i>	-0.007 (0.005)	-0.004 (0.004)	-0.014** (0.006)	-0.039** (0.015)	-0.031* (0.016)	-0.029* (0.015)
<i>INFL</i>	0.078** (0.035)	0.072** (0.031)	0.088** (0.036)	0.048 (0.039)	0.037 (0.043)	0.033 (0.040)
<i>TRADE</i>	0.004 (0.010)	0.006 (0.010)	-0.001 (0.010)	0.018 (0.013)	0.031* (0.017)	0.043** (0.021)
<i>DOME</i>	-0.007 (0.010)	-0.002 (0.008)	-0.004 (0.009)	-0.014 (0.016)	-0.008 (0.016)	-0.009 (0.017)
<i>POPU</i>	-0.003 (0.002)	-0.002 (0.001)	-0.004* (0.002)	-0.002 (0.004)	-0.003 (0.004)	-0.002 (0.003)
<i>Constant</i>	0.046 (0.038)	0.042 (0.031)	-0.039 (0.047)	-0.015 (0.083)	0.019 (0.076)	0.006 (0.089)
<i>Observation</i>	120	120	120	79	88	79
<i>Groups</i>	28	28	28	22	22	22
<i>Instruments</i>	14	14	14	12	12	12
<i>AR (1) (p-value)</i>	0.021	0.020	0.016	0.875	0.807	0.900
<i>AR (2) (p-value)</i>	0.498	0.546	0.470	0.257	0.250	0.547
<i>Hansen test (p-value)</i>	0.472	0.439	0.508	0.687	0.783	0.799
<i>Difference-in- Hansen test (p-value)</i>	0.936	0.850	0.968	0.826	0.590	0.595

Notes: * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$. Figures in brackets are robust-standard errors.

Although the FE and RE approaches could not tackle the endogeneity, we include them in our dynamic models with the intent of comparing them with the GMM results. As expected, the results with the FE and the RE show that financial development, measured by banking and stock dimensions, significantly contributes to the increase in inward FDI (see Table A1 in Appendix). This positive finance-FDI link remains consistent with our main findings based on the GMM estimate in Table (4.11). The AR (2) test of serial correlation and the Hansen test of instrument validity across models (1) - (6) show that p-values are above the 10% level, which therefore confirms the reliability of our estimates. In terms of the banking dimensions, Table (4.11) with the GMM estimator shows that BACRED, TOCRED, and LIQUID positively and robustly affect FDI in all model specifications (models (1) to (6)). The results in Table (4.11) show that a 1% increase in banking development enhances inward FDI by 0.007% to 0.021%. Hence, our results suggest that higher levels of banking development are positively associated with more inward FDI in the ADC region. Greater access to bank credit enhances investment opportunities for both local and foreign entrepreneurs since they can channel business activities with their internal funds or borrowings from banks. The availability of banking services helps producers and customers improve their timing in seeking funds for production and the distribution of products. This results in reduced costs and enhanced productivity growth. After providing funds, banks supervise and monitor their local and foreign customers to allocate their financial resources towards the most productive ventures. This is notwithstanding that improvements in banking development enhance the local investment climate and stimulate upgrading technologies, labour-skills, industry growth, and specialized products and services. This encourages foreign enterprises to introduce their advanced technologies, superior production procedures and business know how to the host countries. Our findings confirm the studies by Ezeoha and Cattaneo (2012) and Agbloyor et al. (2013) that revealed that a well-developed financial sector attracts inward FDI in Sub-Saharan and African economies.

Financial development improves the networks between foreign entrepreneurs and their suppliers and buyers by efficiently facilitating resource allocation and trading operations (such as available external finance, low transaction costs, improved settlements timing and business related to services). Local suppliers and buyers can improve their chances to stimulate productivity growth by accessing technology transfer from foreign entrepreneurs (Agbloyor et al., 2013). However, our results differ from Soumare and Tchana's (2015) ones. They could not provide evidence of a significant effect of the banking sector on FDI in 29 emerging markets. One possible explanation is that the authors did not control for the presence of heterogeneity in the panels (such as regions and income levels) which may have distorted the banking effect on FDI.

For the stock market channel, Table (4.11) shows that stock development measured by STCAP, STVAL, and STTUR significantly stimulates inward FDI in all model specifications (models (4) to (6)). This means that the ADC region with higher levels of stock development encourages inward FDI. The magnitudes

of stock development for models (4) to (6) are between 0.006 and 0.026, which implies that countries with a 1% increase in stock development can attract inward FDI by 0.006% to 0.026%. The expansion of the stock market channel enables foreign entrepreneurs to acquire information about local industries and local markets at a lower cost. Additionally, foreign entrepreneurs can access a liquid stock channel to raise long-term external funds for their investment projects. Our results are similar to the work of Otchere et al. (2016), who finds that the stock market assessed by STCAP, STVAL and STTUR exhibits a favourable effect on inward FDI in African economies. Our findings also align with Soumare and Tchana (2015) who reveal that a well-developed stock market reflects a market-friendly environment to attract more inward FDI.

In terms of the lag of FDI, Table (4.11) shows that the lagged FDI yields a positive, significant sign in all model specifications. This means that a country with higher levels of past inward FDI tends to encourage more investment by foreign entrepreneurs. This is because the new foreign entrepreneurs may have less information about the recipient country's environment. Hence, the presence of greater inward FDI signifies a conducive, friendly business climate for their new investment decisions. Our result supports Anyanwu (2012), who focused on African countries to reveal that lagged FDI exhibits a positive effect on its current value. Similarly, Ndikumana and Verick (2008) suggest that the previously intensive inward FDI reduces the uncertain investment climate in SSA markets, which thereby draws in more inward capital from both the previous and new foreign investors.

Based on other controlling variables, Table (4.11) shows that the economic growth rate (GROW) has a positive association with inward FDI in all model specifications from models (1) to (6). The results in Table (4.11) indicate that a 1% increase in economic growth helps the ADC region to increase inward FDI by 0.107% to 0.266%. Countries with higher output growth can improve their purchasing power and provide foreign enterprises with a potential market with greater demand for goods and services (Govil, 2013). In addition, an increase in the economic growth rate is also a signal of improvement in the business environment, which makes the host countries more attractive to inward FDI. Our finding supports the earlier work by Ezeoha and Cattaneo (2012) in 30 SSA countries and Varnamkhasti and Mehregan (2015) in 33 developing countries, who reveal that higher economic growth attracts more inward FDI. They suggest that increasing economic growth helps host countries enlarge their market size and purchasing power, which stimulates investment incentives for foreign and domestic firms to attain higher growth opportunities. Our result is also consistent with Iamsiraroj (2016) who focused on the attractions of FDI in 124 countries to highlight that countries with more a competitive economic growth rate can provide foreign firms with a prospective market to generate higher sales and returns on their capital.

For financial openness (FINO), Table (4.11) displays the expected sign of financial openness on FDI in all model specifications from (1) to (6). The coefficient of financial openness is between 0.002 and 0.011, which means that countries with a 1% increase in financial openness can stimulate inward FDI by 0.002% to 0.011%. This result confirms the hypothesis that countries with higher levels of financial openness attract more inward FDI. Higher levels of financial openness indicate that the ADC region reduces its capital controls on cross-border financial transactions by reducing control over current and capital accounts, cancelling multiple exchange rates, and abolishing mandatory export proceeds (see Chinn-Ito, 2008; Tan et al., 2019). Reduced capital controls help foreign enterprises receive and transfer capital more freely from one country to another. Foreign enterprises have fewer restrictions (such as foreign ownership restriction or cross-border transaction costs) on mobilizing capital resources from their subsidiaries and parent MNE to expand business activities in host countries. Therefore, higher levels of financial openness help the ADC region to attract more inward FDI. Congruent with our result, Agbloyor et al. (2013) reveal that financial openness is a significant driver of inward FDI in African economies. Since foreign enterprises are usually large MNE, more financial openness reduces capital controls and helps foreign enterprises mobilize needed capital from other MNE subsidiaries to improve output growth in the recipient countries.

The negative sign of government spending (GOVE) suggests that increasing national public expenditure is likely to induce higher tax burdens on the private sectors (see Table 4.11). Though local and foreign entrepreneurs pay taxes for running their businesses, the ADC governments may misallocate domestic resources, including tax funds, to unproductive investments. Hence, more government spending does not encourage more capital flows from foreign investors. Such a negative sign supports Omri and Kahouli (2014) who indicate that high levels of corruption in developing economies and government misallocation of resources reduces the investment incentives for foreign investors. Table (4.11) indicates that the inflation variable, INFL, in most model specifications is insignificant but yields a beneficial effect on inward FDI. The positive sign of inflation is consistent with Xaypanda et al. (2015) who reveal that five ASEAN countries (Singapore, Thailand, Philippines, Malaysia and Indonesia) with high levels of inflation still attracted inward FDI during 2000 to 2011. The growth in product prices could be a result of increasing local market demand that stimulates further investments by foreign entrepreneurs. This finding is also consistent with Ezeoha and Cattaneo (2012) who observe that an increase in inflation is positively associated with higher growth of economic activity in SSA countries.

Table (4.11) shows that trading openness (TRADE) is statistically insignificant but exhibits a positive sign in most model specifications. This finding aligns with Anyanwu (2012) and Epaphra (2018) argument that countries with higher trade openness attract foreign enterprises since they can access the global market to purchase material inputs at low cost and sell their products to make a profit. More trade openness enables foreign enterprises to improve their networks with international customers to

undertake more productive contracts. In contrast, domestic investment (DOME) in all model specifications with a substitutional effect on FDI is insignificant at all levels. Several factors can explain the unexpected sign of domestic investment. First, increasing local investment produces more competitive pressure on foreign enterprises since they need to enhance the quality of products and services to satisfy the requirements of consumer markets. Secondly, higher levels of domestic investment reflect improvement in local physical capital that helps the recipient countries to be less reliant on inward FDI. This unexpected result agrees with Iamsiraroj (2016) who finds an adverse effect of domestic investment on FDI in 124 countries. The last indicator, population growth (POPU), adversely affects inward FDI, which contradicts our expectation. The unexpected sign for population growth supports Aziz and Makkawi (2012), who focused on the attractions of inward FDI in African and Asian countries. The authors explain that foreign entrepreneurs, especially in the intensive-knowledge industries, may prefer employing highly skilled workers from their home since the payment cost is much lower than training new professionals in the recipient countries. The negative link between POPU and FDI corroborates the hypothesis of Mankiw et al. (1992) that increasing workers may result in a diminished marginal return on investment (a reduction in the capital/labour ratio), which may not encourage foreign entrepreneurs to employ more local workers. This is because foreign enterprises need to spread their capital thinly over a larger labour force (Samargandi et al., 2015). Additionally, foreign enterprises need time to train new local workers with intensive knowledge and upgrading skills to adopt advanced technologies and new production processes.

4.4.3 The impact of FDI on financial development

Following the framework proposed by Agbloyor et al. (2013), Allen et al. (2014), and Otchere et al. (2016), the empirical model to estimate the impact of FDI on finance is:

$$FINA_{it} = \delta_1 FINA_{it-1} + \delta_2 FDI_{it} + \sum_{j=1}^n \omega_j Z_{jit} + \eta_i + \xi_{it} \quad (4.6)$$

Equation (4.6) can be re-written as follows:

$$FINA_{it} = \delta_1 FINA_{it-1} + \delta_2 FDI_{it} + \omega_1 GOVE_{it} + \omega_2 DOME_{it} + \omega_3 ECON_{it} + \omega_4 TRADE_{it} + \omega_5 MANU_{it} + \omega_6 INST_{it} + \eta_i + \xi_{it} \quad (4.7)$$

where: *FINA* is financial development; *Z* includes indicators for government spending (*GOVE*), domestic investment (*DOME*), real GDP per capita (*ECON*), trade openness (*TRADE*), manufacturing (*MANU*), and institutional quality (*INST*); η_i is country-specific effects.

FDI

All model specifications in Table (4.12) with the GMM estimator indicate that inward FDI significantly incentivizes financial development. This favourable effect of FDI is consistent with the results obtained by FE and RE estimation (see Table B1 in the Appendix). For the banking sector, models (1) to (3) in Table (4.12) reveal that FDI is a significant driving force in banking development assessed by three

Table 4-12: Regression results of financial development using the GMM estimator

Variable	Banking dimension			Stock dimension		
	BACRED	TOCRED	LIQUID	STCAP	STVAL	STTUR
Model	(1)	(2)	(3)	(4)	(5)	(6)
<i>BACRED (-1)</i>	0.497** (0.1918)					
<i>TOCRED (-1)</i>		0.705** (0.283)				
<i>LIQUID (-1)</i>			0.795*** (0.137)			
<i>STCAP (-1)</i>				0.635** (0.280)		
<i>STVAL (-1)</i>					0.375*** (0.094)	
<i>STTUR (-1)</i>						0.385* (0.198)
<i>FDI</i>	0.083** (0.038)	0.138** (0.058)	0.035* (0.019)	0.230** (0.115)	0.924** (0.372)	0.190** (0.088)
<i>GOVE</i>	-0.149 (0.256)	-0.378 (0.243)	-0.084 (0.057)	-0.466 (0.499)	0.282 (0.686)	0.441 (0.749)
<i>DOME</i>	0.994** (0.418)	0.296* (0.165)	0.318* (0.172)	0.893 (0.842)	-0.449 (1.075)	-0.330 (0.919)
<i>ECON</i>	0.006 (0.178)	-0.054 (0.069)	0.001 (0.039)	0.225 (0.387)	-0.601 (0.444)	-0.429 (0.473)
<i>TRADE</i>	0.117** (0.053)	-0.060 (0.068)	0.093*** (0.026)	-0.097 (0.234)	-0.987 (0.657)	-0.743** (0.351)
<i>MANU</i>	0.037 (0.166)	0.106 (0.144)	-0.001 (0.040)	-0.061 (0.194)	-0.010 (0.464)	-0.010 (0.288)
<i>INST</i>	0.207 (0.232)	0.332 (0.284)	-0.047 (0.062)	-0.210 (0.355)	2.472** (1.047)	1.854*** (0.714)
<i>Constant</i>	1.263 (1.995)	0.922 (0.777)	0.388 (0.307)	-1.327 (4.205)	9.528** (4.727)	5.826 (6.172)
<i>Observation</i>	104	101	104	60	68	60
<i>Groups</i>	32	30	32	21	22	21
<i>Instruments</i>	15	11	17	17	15	15
<i>AR (1) (p-value)</i>	0.214	0.533	0.039	0.139	0.100	0.794
<i>AR (2) (p-value)</i>	0.157	0.365	0.244	0.370	0.282	0.167
<i>Hansen test (p-value)</i>	0.639	0.697	0.362	0.422	0.674	0.114
<i>Difference-in- Hansen test (p-value)</i>	0.392	0.531	0.219	0.146	0.340	0.279

Notes: * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$. Figures in brackets are robust-standard errors.

dimensions: BACRED, TOCRED and LIQUID. The results indicate that a 1% increase in inward FDI accelerates banking development by 0.035% to 0.083%. Foreign enterprises enrich banking resources by depositing their partial capital in local banks. These available funds can be timely reallocated from banks to productive sectors in the domestic economy. Furthermore, the presence of foreign

enterprises encourages more business activities (such as trading frequency, the use of services) and profitable investments in the recipient countries. This motivates the diversification of financial products and services to match greater domestic and cross-border market demands (such as international providers, consumers, entrepreneurs and commercial partners).

For the stock market channel, models (4) to (6) in Table (4.12) show that a 1% increase in inward FDI enables the host countries to improve the stock market by 0.190% to 0.924%. The findings suggest that the presence of foreign enterprises significantly stimulates the development of the stock market. Foreign entrepreneurs can list on the local stock market to enhance their image to investors. The emergence of listed foreign enterprises inspires other investors' confidence to participate in the stock market, which further accelerates its trading volume and capitalization. The attraction of foreign participants encourages the stock market to enhance its institutional and regulatory reforms (such as quality trading regulations, information disclosure, operational competence, and investor protection). Under the greater competitive pressure of foreign enterprises, the local monopolistic elite reduces their power to adopt a friendly market environment that encourages trade, industrial growth, and financial development. Our results agree with Agbloyor et al. (2013) and Otchere et al. (2016) who document that increasing inward FDI stimulates expansion of banks and stock markets in African economies. Our findings are also consistent with Hajilee and Nasser (2015) who suggest that inward FDI is an incentive for financial reforms towards vibrant, deeper financial markets in Latin America.

Institutional quality

Table (4.12) shows institutional quality (INST) does not affect the banking sector in all cases (models (1) to (3)). However, models (5) and (6) indicate that the institutional environment becomes an influential contributor to the stock market development measured by STVAL and STTUR. A 1% increase in institutional quality can improve the countries' stock liquidity by 1.854% to 2.472%. The beneficial effect on stock market development agrees with Law and Azman-Saini (2012) who report a positive association between institutional background and the stock market's expansion in 55 economies. The authors suggest that institutional improvements such as better property rights, enforcement of contracts and sound accounting practices attract more participants to the stock market. Highly-quality institutions help investors reduce information asymmetries and opportunistic behaviour to stimulate productive investments. Billmeier and Massa (2009) indicate that good institutions with better shareholder protection, information transparency, and less government corruption enhance the confidence of market participants to purchase listed securities in emerging economies. Therefore, listed entrepreneurs can accelerate capital accumulation and investment processes.

Domestic investment

Along with inward FDI, domestic investment (DOME) tends to accelerate the speed of financial development. Four of six the financial dimensions, BACRED, TOCRED, LIQUID, and STCAP, show a positive association with increased domestic investment (models (1) to (4), Table 4.12). A 1% increase in domestic investment stimulates financial development by 0.296% to 0.994%. The result agrees with Yartey and Adjasi (2007) who indicate that more investment opportunities increase the need for greater financial services in SSA countries. Similarly, the recent work of Win et al. (2017) reports a significant contribution of domestic investment towards financial development in 93 economies with increased demand for financial services to support greater entrepreneurial activity.

Trading openness

Among the control variables, trading openness (TRADE) shows mixed results on financial development. For the banking sector, models (1) and (3) in Table (4.12) show that higher levels of trading openness contribute to increases in BACRED and LIQUID. A 1% increase in trading openness can help the ADC region improve banking development by 0.093% to 0.117%. Such a result provides evidence that increased trading activity leads to higher demand for financial products and services. The ADC region with higher levels of trading volume tends to have a friendly, prospectively profitable market that encourages more investment activity and bank lending. This result is in line with Baltagi et al. (2009), who reveal that more trading transactions help developing countries to enhance banking development. However, in terms of the stock market channel, models (4) to (6) report an insignificant effect of trading openness on all stock market indicators. This implies that an increase or decrease in trading volume does not affect stock market expansion. Our finding is consistent with Yartey and Adjasi (2007) who find the nexus between trading openness and stock development is inconclusive for SSA countries. Similarly, Ayadi et al.'s (2015) results did not support the hypothesis that more trading openness can improve stock market development in Mediterranean economies.

Government spending

Table (4.12) reports that government spending (GOVE) in all model specifications is insignificant but it displays a crowding-out effect on finance in most cases in models (1) to (4). There are several possible factors for the unfavourable result of government spending. First, the government budget comes from different sources such as taxation, national debt or borrowing from the local financial markets. Hence, the government needs to borrow to pay for its higher expenditure. However, this may lead to insufficient credit for private investment and an increased cost of borrowing (Naceur et al., 2014), notwithstanding that credit used by the government could be towards unproductive investments. Secondly, corruption and rent-seeking in the government sector may distort private sector activity and curtail the allocative funding efficiency of financial intermediaries. Our result agrees with the work of Naceur et al. (2014) that reveals a distortionary effect of the government on financial development in

the MENA region. Our finding supports Cooray (2011) who argue that more government intervention tends to hinder financial efficiency by increasing overhead costs and interest margins in 71 economies.

Economic growth

Economic growth measured by GDP per capita exhibits an insignificant effect on financial development across all model specifications (see Table 4.12). This increase in income could be transmitted to the non-financial sector (such as real estate or consumption) rather than stimulates capital mobilization in the financial systems. Hence, our result does not support the hypothesis that higher income levels improve financial activity. The result corroborates the earlier work of Ayadi et al. (2015) in Mediterranean economies and Aluko and Ajayi (2018) in SSA markets that did not find evidence supporting an economic growth effect on financial development.

Manufacturing sector

As suggested by Allen et al. (2014), we further use the manufacturing sector divided by GDP (MANU), to control for the industrial sector in our estimates. Table (4.12) shows that the manufacturing sector in all model specifications is insignificant. This contrasts with the hypothesis of Rajan and Zingales (1998) that expansion of manufacturing activity enhances the demand for external financing and financial services. Our finding is more consistent with Allen et al. (2014), who detect an insignificant effect of the manufacturing sector on financial improvement in the African region.

Chapter 5

Conclusions, policy implications and study limitations

This chapter summarises the study's findings on the effects of FDI and financial development on ADC economic development. Section 5.1 discusses the main research findings on the impact of FDI and finance on economic development. Section 5.2 summarises the results on the linkage between FDI and finance. Section 5.3 provides the contribution and policy implications from this study. Section 5.4 presents the limitations of this study and directions for further research.

5.1 Main findings of the effects of finance and FDI on economic development

This study focuses on two channels of the financial system, the banking sector and the stock market channel, through which the financial system stimulates ADC economic development. For the banking sector, this study uses three banking measures, bank credit to the private sector (BACRED), total credit to both the public and private enterprises (TOCRED), and liquid liabilities (LIQUID). Our results show that the banking channel, measured by the three dimensions, enhances ADC output growth. The indicator BACRED presents the probability of privately-owned enterprises access to bank credit. The availability of bank credit helps private enterprises buy new technologies, attract highly skilled workers and apply new production processes to expand their investment activities in ADC economies. Similarly, TOCRED, an alternative dimension of the banking channel measured by total credit flow to both the private and public sectors, positively correlates with the ADC economic progress. This result indicates that the banking channel screens investment applications and provides credit to the most creditworthy borrowers, irrespective of whether they are privately-or state-owned enterprises; i.e., those that have a higher probability of success with their productive projects. This improves their capital accumulation and technical innovation to speed up their production and productivity growth. The timely availability of credit enables investors to raise capital at low cost for their investment projects to make profits. In addition, this study uses LIQUID to measure banking services and revealed a positive association between LIQUID and economic development. Higher levels of banking services help producers and consumers improve their trading operations and payments, speeding up entrepreneurial activity. Greater access to banking services intensifies purchasing power among households, enterprises and commercial partners. Hence, our results support the work of Seven and Yetkiner (2015), who reveal that banking development encourages higher output growth of middle and low-income countries.

Based on the three proxies of the stock market channel, stock capitalization (STCAP), stock value traded (STVAL), and stock value turnover (STTUR), our results show that stock development encourages higher output growth in the ADC region. Improvements in the stock market channel enable

investors to gather information about local markets and industries, alleviate transaction costs, and allocate domestic savings into high-yield prospective investments. Higher levels of stock capitalization, measured by STCAP, provide investors with risk-sharing opportunities by holding shares of different listed enterprises and accessing local market information at a low cost to make their investment decisions wisely. On the other hand, higher levels of the stock market liquidity, measured by STVAL and STTUR, enable investors to purchase new shares and sell their existing shares to cut losses and make profits. As a result, improvements in the stock market channel encourage investment incentives of market participants to provide listed enterprises with their needed long-term capital for further investment projects. Hence, our findings suggest that both the banking sector and the stock market channel accelerate the output growth of the ADC region. Our results support the work of Beck and Levine (2004) and Rabiul (2010), who show that improvements in financial development, assessed by both the banking and stock market channels, can help the host countries stimulate their economic development. Improvements in financial development enable local and foreign investors to promptly assess information about local markets (such as companies, industries, and potential risks and returns on investment projects) to make prudent investment decisions (Levine, 2005). Enterprises with well-functioning financial markets can mitigate their cost of capital, transaction costs, and investment risks to execute more innovative activities with new production methods and higher productivity growth. The banking sector reallocates resources between the savings surplus and deficit units, screens and supervises resource use of the latter to the most productive investments to meet their repayments. Similarly, improvements in stock market development help investors access more accurate information on the listed companies, industries and local market. Investors in a liquid stock market can promptly purchase listed shares at low cost and convert their shares into cash when needed. This enhances the investors' confidence to participate in the stock market and improves the capital resources of listed enterprises to expand into more productive investment ventures (Beck and Levine, 2004).

In terms of inward FDI, we find a positive link between FDI and economic development. Inward FDI stimulates the recipient economies not only through investment activity but also through positive externalities such as transfer of new production processes, technological competencies, business know how, and labour skills. Such potential benefits of inward FDI can be exploited through the development of the financial systems. Specifically, we use the interactive term between financial development and FDI to explore the significance of finance in enhancing the positive externalities of inward FDI on the ADC economic progress. As suggested by Giuliano and Ruiz-Arran (2009) and Choong et al. (2010), a positive/negative sign of the interactive term implies a complementary/substitutability effect between finance and FDI in economic outcomes. In other words, a positive interactive term means that increases in finance help the host economies augment their absorptive capacity to exploit more

benefits from inward FDI. Additional improvements in finance help foreign investors and their local partners gain access to financial services at a lower cost to expand more productive ventures (Hermes and Lensink, 2003). Enterprises with available external finance can employ highly skilled workers and qualified managers to adopt advanced business knowledge and production methods to yield higher productivity (Alfaro et al., 2009).

Our findings showed a positive sign and significant impact of the interactive term between FDI and finance in the economic development regression model. This indicates a complementary effect between finance and FDI on the ADC economic progress. Hence, our results suggest that higher levels of financial development help the ADC economies improve the beneficial effects of inward FDI. For example, higher levels of financial development reduce the cost of capital and the information barriers to local markets, improve risk diversification and trading time. Local suppliers (backward linkage) can exploit the financial resources at low cost to invest in upgrades in technology, advanced inputs, and personnel training. This helps them adopt new production processes introduced by foreign entrepreneurs to enhance their productivity growth. The buyers (forward linkage) can find the financial resources needed to timely augment the management, marketing and entrepreneurial activities introduced by the foreign firms to expand their market share domestically and abroad. Foreign investors can exert pressure on indigenous firms in the same industry to increase their productivity. The timely availability of funding helps indigenous firms to employ highly skilled workers and managers, update technologies and augment products and services to speed up their business activities (Hermes and Lensink, 2003).

Our results are consistent with Agbloyor et al. (2014) who suggest that improvements in both the banking sector and the stock market channel help the African countries allocate inward FDI to more productive ventures. Greater access to financial markets enables the local and foreign enterprises to lower the cost of capital and information gaps, such as local industries, market demand, potential risks and returns, to expand their productive investment projects. This creates more beneficial effects on host countries, such as additional capital and transfer of advanced production methods, business knowledge and management practices. Choong et al. (2010) indicate that higher levels of financial development enhance the benefits from inward FDI in 65 developing countries from 1983-2006. Improvements in financial markets provide FDI investors and their local partners with greater access to financial services and the local market information at a lower cost to speed up their trading activity and business contracts. This helps developing countries exploit more beneficial effects from inward FDI, such as capital accumulation and transmission of updated technologies, international production networks, better organizational arrangements, and augmentation of human capital.

Apart from inward FDI, domestic investment was a significant driver of ADC economic development. Increases in domestic investment produce an intensively competitive climate and reduce the monopolistic tendency of local enterprises. Under intense competitive pressures, local enterprises have to make use of available technologies and financial resources to enhance their product quality and quantity to meet flexible market demands. This propels economic progress with higher productivity growth. Higher levels of domestic investment encourage more technology transformation, job opportunities, industrial specialization with highly skilled workers, skill-intensive products and services, export promotion and reduction in transactions costs in the host countries (Almasaied et al., 2008; Lautier and Mareaub, 2012; Muhammad et al., 2016). An increase in domestic investment also presents a signal of an improvement in the investment climate for the ADC region to attract more domestic and foreign investors.

Our results support the work of Almasaied et al. (2008) and Muhammad et al. (2016) who show that both FDI and domestic investment stimulate economic growth in five ASEAN countries and GCC economies, respectively. Increases in foreign and domestic investment stimulate a competitive environment in the host countries and, thereby, encourage local personnel training, employment opportunities, technological progress, international trading, and augmentation of products and services. Lautier and Mareaub (2012) suggest that countries with higher levels of domestic investment might provide potential investors with a prospective market to generate more sales and profits on their investment capital. As a result, more market participants in host countries reduce the local monopolistic environment and the cost of products and services to build greater industrial expansion and productivity improvements.

Based on the interactive term between finance and domestic investment, we provide empirical evidence that improvements in financial development enable domestic investments to stimulate economic development. This is because the expansion of the financial systems provides more financial services and investment funds to domestic entrepreneurs to intensify their competitive power and productivity gains. Higher levels of financial development improve trading activity, the cost of capital, risk diversification and produce more accurate information about the local markets and industries to help investors select the most productive domestic enterprises with high potential returns. As suggested by Levine (2005), after providing financial resources, financial markets will supervise their customers (firm managers) to make sure they use funds for the most profitable investments and maximize the firm value. Under prudent supervision by financial markets, domestic enterprises can augment their risk management and efficiently allocate their capital (their own or external funds) towards more productive ventures with higher profitability and meet their loan payments on time. Our result is similar to Ang's (2008) finding that indicates that higher levels of financial development stimulate domestic investment and economic progress. Timely and valuable information provided by

the financial markets helps both local and foreign investors select the most productive enterprises for their wise investment decisions.

An improved stock market attracts more savings since the investors can invest in high-return projects and convert their shares into cash when needed. A developed banking sector can efficiently reallocate saving resources between the surplus and deficit units and monitor loan use of the latter for productive purposes and debt repayment. As a result, domestic entrepreneurs through the banks and stock markets can have greater access to required long-term capital and financial services at a lower cost to produce more investment projects with higher output growth. Similarly, our finding supports the empirical work of Boateng et al. (2017), who show that improvements in financial development and inward FDI encourage domestic investment in SSA economies. More developed financial markets reduce the financing constraints faced by domestic enterprises to expand their investment ventures. Local and foreign investors can mitigate asymmetric information and transaction costs to participate in local markets to stimulate more prospective investment activities. Domestic suppliers can improve their access to advanced technologies, intermediate inputs and financial resources to upgrade their supply and quality of products required by foreign counterparts, hence increases the volumes of investment and productivity growth in the host countries.

In terms of the financial crises, this study controlled for the effects of two financial crises, the 1997/1998 Asian financial crisis and the 2008/2009 global financial crisis, on ADC economic development. Our results show that both financial crises reduced ADC output growth by lowering global demand, trade finance and employment rate. In addition, the financial crises indirectly and adversely affected economic development by reducing the efficient allocation of resources of the financial systems. Financial crises reduced the investment incentives of market participants in the financial systems because of the uncertainties of the macroeconomic environment and fewer chances to succeed with future investments. Subsequently, the financial systems confronted larger hurdles such as the need to increase reserved capital, more stringent supervision, and regulations by governments. More restricted capital controls and declining global demand led to a shortage of funding for the financial systems to channel profitable projects, thereby attenuating the speed of the ADC economic development.

Our result aligns with Ahmad et al. (2016) who show that both the banks and stock markets during the 2008 global financial crisis showed a negative effect on nine African emerging and frontier economies. The 2008 global financial crisis led to lower market demand and uncertainty of prospective economic outcomes, which reduced investors' confidence to participate in local financial markets. Additionally, increases in capital controls imposed by governments, such as tighter capital, liquidity requirements, and lending activity restrictions, ultimately led to a lack of funding resources for financial markets to

channel timely productivity investments in the host economies (Beck, 2014). Similarly, our finding supports the work of Rashti et al. (2014), who document that the 2008 global financial crisis reduced economic development in both developed and developing countries. The 2008 global financial crisis led to a decline in global demand, international trade and employment rate. This raised more threats of potential output losses and volatility of the economic environment, which dampened the investors' incentives to expand business activities. Lower market demand and uncertainty of the economic climate restricted financial markets from mobilizing resources to finance entrepreneurial investments and, thereby, reduced the speed of economic growth.

Based on the system GMM estimator in the baseline model specifications on the economic development, our empirical results indicate that banking development is an important determinant of the ADC economic outcomes. A 1% increase in banking development contributes from 0.26% to 0.31% to the national output growth (see Table 4.4, Chapter 4). This is nearly twice higher than the growth effect of inward FDI, which is around 0.12%. Based on stock market measures, our results also show that a 1% growth in the stock market development helps ADCs economies to augment their income by between 0.07% and 0.19%. Though both banks and stock markets enhance ADC economic development, banks tend to exert a higher impact than stock markets. This finding suggests that banks are the main channel through which the financial system accelerates the ADC economic progress. Our results agree with the studies by Ahmad et al. (2016) and Sharma and Kautish (2020) that show that banking development exhibits a higher growth effect than the stock market development in African emerging and frontier countries, and South Asian economies, respectively. These authors highlight that developing economies mainly access bank finance to stimulate their investment projects. However, they suggest that more improvements in stock markets can also provide developing economies with additional long-term capital to build more entrepreneurial activities. Improvements in both banks and stock markets enable host economies to access capital resources and financial services at a lower cost and improve the flows of funds to the most productive ventures.

On the other hand, our empirical results show that domestic investment displays a larger coefficient than inward FDI in most specifications of the economic development regression model (around 0.20% and 0.12%, respectively) (see Table 4.4, Chapter 4), implying that domestic investment is more productive than FDI. This result suggests that higher domestic investment significantly stimulates the ADC economic progress. Local enterprises with more investment expansion will build a higher competitive business climate in the host economies. They have to make use of their capital resources available to develop their workers' skills and knowledge and augment their products and services to intensify greater economic activity. In terms of inward FDI, host economies could exploit the FDI's potential technological benefits by strengthening their local financial development (Alfaro et al., 2009; Choong et al., 2010). Improvements in financial development help foreign and local investors to

mitigate asymmetric information, enhance risk management and effectively allocate resources to the most profitable projects. Higher levels of finance provide local enterprises with more funding to enhance their labour skills, managerial knowledge, technologies and intermediate inputs to implement new production procedures transferred by inward FDI (Alfaro et al., 2009). Our results are similar to the studies by Almasaied et al. (2008) in ASEAN and Adams (2009) in SSA economies. These authors find that domestic investment leads to higher economic development than inward FDI. Greater domestic and foreign investment will create a more competitive environment to speed up higher economic outputs in host economies. However, the attraction of inward FDI necessitates host economies to invest in higher industrial infrastructure and provide tax incentives, import duty exemption and other concessions. Hence, the economies should augment their financial absorptive capacity to enhance potential technological progress and knowledge spill-overs from inward FDI (Adams, 2009). Higher levels of finance help foreign enterprises and their local partners to improve their corporate governance, employ intensively skilled workers and upgrade their production methods with advanced technologies and quality inputs to accelerate their output growth.

5.2 Concluding remarks of the linkage between FDI and financial development

This study used the Granger tests to examine the causal links between FDI and finance. Our results show that the past values of FDI can explain current financial development and past values of finance can explain the current value of inward FDI. Such reverse causality between FDI and finance provides evidence that one endogenously determines the other. To control for endogeneity stemming from the link between FDI and finance in our regression models, we use the system GMM estimator and discover that increased levels of financial development help ADC economies to encourage more inward FDI. For the banking channel, greater access to credit and financial services enables foreign enterprises to improve their daily entrepreneurial activities and investment projects. Under prudent supervision and monitoring by the banking channel, foreign enterprises can reduce their investment risks and allocate their loans and funds to the most productive sectors. Hence, this stimulates their productivity gains. More improvements in banking provide local suppliers and buyers with funding resources to upgrade the production processes introduced by foreign enterprises. This local network promotion helps foreign enterprises expand their market share to achieve higher output growth (Agbloyor et al., 2013). Improvements in the stock market's development help foreign enterprises raise the long-term capital needed to carry out their investment ventures. Listing on the local stock market enables foreign enterprises to introduce their brand names and products to local markets. Foreign investors can gather information about local markets and industries through the stock market to make more informed investment decisions. This helps them alleviate investment risk and invest in a timely way in more productive projects.

Our result is similar to those of Agbloyor et al. (2013) and Otchere et al. (2016) who document that both the banks and stock markets help African economies to attract more inward FDI. Improvements in the financial channels provide local and foreign enterprises with lower costs of capital and financial services to accelerate their investment ventures. Countries with higher levels of financial development also present a signal of a more market-friendly environment for potential investors to generate more sales and profits on their capital. Ezeoha and Cattaneo (2012) produced evidence that improvements in financial development draw more local and foreign enterprises into SSA markets. A well-functioning financial market helps investors improve the timing and settlement of trading, acquire valuable information about industries and local markets, and increase their access to financial resources at a cheaper cost to stimulate more investment activities. Our results also support Suliman and Elian (2014) who studied the finance-FDI nexus in the Jordanian economy and suggest that higher levels of financial development attract inward FDI. Lower transaction and capital costs provided by financial markets encourage local and foreign investors to develop more innovative projects with new technology and higher potential productivity.

Other factors, such as trade openness, financial openness and economic growth, are also drivers of inward FDI. Countries more open to trade enable foreign investors to reduce tariff barriers to import high-quality inputs and export their products and services. This improves their international production network to expand the market shares globally (Epaphra, 2018). Our results also show that financial openness is positively associated with increasing inward FDI. Higher levels of financial openness help foreign investors transfer their capital more freely from one country to another. More financial openness reduces the restrictions faced by foreign enterprises to invest in host countries such as reducing government control on the foreign current and capital accounts, reducing multiple exchange rates and removing mandatory export proceeds (Chinn-Ito, 2008). Reduced controls in capital and current accounts help foreign enterprises mobilize capital resources more freely from their MNE subsidiaries in other countries to expand their market share. As a result, greater improvements in capital resources enable foreign investors to enhance the quality and quantity of products and services to meet further requirements of local and international markets (Agbloyor et al., 2014). An increase in economic growth is also a catalyst for inward FDI because of improved purchasing power of the local market to use more products and services provided by the foreign enterprises. Increased levels of economic growth also provide foreign enterprises with a signal of an improved business climate to achieve higher sales and returns on their investments.

Congruent with our work, Anwar and Nguyen (2010) document that economic growth is positively correlated with inward FDI in the Vietnam market. The authors suggest that countries with higher economic growth provide foreign enterprises with a prospective market that has greater demands on its goods and services. Improved economic growth encourages more economic activity and intensive

knowledge investments with new technologies and production methods. This attracts more foreign enterprises and their local partners to upgrade products and services to exploit higher market share in the host countries. Nasser and Gomez (2009) and Ezeoha and Cattaneo (2012) document that higher levels of economic growth help Latin American countries and SSA economies, respectively, to attract more inward FDI. An increase in economic growth leads to higher market demand for products and services provided by local and foreign enterprises. This also produces a conducive investment climate for local and foreign investors to intensify long-term projects with higher returns.

Based on the system GMM estimation results, this study also reveals that higher levels of inward FDI enhance improvements in financial development. There are several factors to explain this result. First, higher levels of inward FDI improve the funding resources of the local banking sector, since foreign enterprises need to open bank accounts for their business activities. Subsequently, the banking channel can partially reallocate these funding resources to other productive sectors to make profits (Agbloyor et al., 2013). Secondly, increases in foreign customers force the local banking sector to upgrade its financial services such as international payment systems, foreign exchange services, and financial products (i.e., lending and savings) with more competitive prices (Kaur et al., 2013). More upgrading of financial services will improve trading frequency and settlement timing to satisfy the flexible demands of both current and new customers (Shah et al., 2016). Thirdly, the presence of foreign enterprises encourages a more competitive business climate in host countries and reduces the powers of the monopoly elite in the same industries. This enhances industry growth, international trading and financial development (Rajan and Zingales, 2003).

Our result aligns with Agbloyor et al. (2013) and Otchere et al. (2016), who established that increases in inward FDI lead to additional improvements in financial development in African economies. The presence of more foreign enterprises and their local partners stimulates more entrepreneurial activity with higher trading transactions, savings, and borrowing from banks. This encourages the banking channel to upgrade its international trading system, savings and lending activities, and diversify other financial products, such as deposit insurance, workers' salaries payment systems and foreign exchange services, to meet higher requirements of market demand. Additionally, the entry of foreign enterprises with their local bank accounts increases funding resources available in the local banking channel. Banks can then reallocate part of this resource to productive investments to make profits. Hence, higher inward FDI intensifies economic activity and improvements in banking development. Our findings support Lee and Chang's (2009) and Asghar and Hussain's (2014) studies that document that inward FDI leads to the development of the banking channel in 33 countries and the ASEAN economies, respectively. The presence of the FDI investors and their local linkages speeds up investment activity and industrial growth with higher demand for external finance, international business services and

trading transactions. This encourages the expansion of the banking sector with diversified financial products and services to respond faster to the flexible demands of entrepreneurs and consumers.

For the stock channel, our results show that FDI is positively associated with stock market development. Since foreign enterprises are mostly large MNE with their global reputation and products, more listed foreign enterprises encourage more local and foreign investors to participate in the local stock market (Agbloyor et al., 2013). This improves the stock capitalization and value traded to help listed enterprises mobilize more capital for further investment expansion. Market participants also improve their risk-sharing by holding stocks of both local and foreign listed companies. The stock market channel needs to develop more flexible financial instruments and products such as options, futures, swaps and other contractual agreements, to serve increased market demands (Ncube, 2007). Improvements in the stock market development not only reduce transaction costs but also provide customers with access to more proper information on listed companies, industries and local markets. As a result, knowing investment opportunities and potential risks helps foreign investors make more informed investment decisions in host countries (Kinda, 2010).

Our result support the work of Soumare and Tchana (2015) who discovered that increases in inward FDI lead to higher levels of the stock market development in 29 emerging economies. The presence of listed foreign enterprises attracts more local and foreign investors to participate in local stock markets. This improves stock market capitalization and stock market liquidity since more market participants allocate their savings to the listed enterprises and purchase the listed shares to make profits. The attraction of foreign investors also encourages stock markets to augment their institutional and regulatory reforms, such as information disclosure, quality trading regulations, and investor protection (Owiredu et al., 2016). Our finding is similar Agbloyor et al.'s (2013) and Hajilee and Naseer's (2015) results that find that inward FDI enhances stock market development in African and Latin American economies, respectively. The emergence of listed foreign enterprises provides other investors with incentives to engage in local stock markets and, thereby, improve stock capitalization and stock liquidity. More market participants encourage stock markets to reduce transaction costs and establish timely information about local industries, listed enterprises and investment projects for prudent investment decisions.

Based on the determinants of financial development, we find a positive association between domestic investment and banking development. Increases in domestic investment stimulate more market demand for financial products provided by the banking channel. Additionally, more enterprises with their bank accounts increase the funding resources of the banking channel. This helps banks develop more productive investments to make profits. Increases in domestic entrepreneurial investments in various industries encourage banks to upgrade their financial products, such as financial consulting

services, payment systems, and international trading services to serve higher market demands (Win et al., 2017). In terms of trade openness, countries with greater openness to trade also enhance banking development. This is because increasing import and export activities need banks to augment their financial products such as international trading systems, credit, and foreign exchange services (Fauzel, 2016). For institutional quality, our results show a positive link between institutional improvements and stock market development. This is because more property rights protection, lower corruption, and more published transparent information motivate investor confidence to participate in the stock market. Better institutional backgrounds such as more improved market information, accounting practices, and enforcement of contracts, encourage the potential enterprises to list on the stock market to raise additional capital for their investment expansion (Billmeier and Massa, 2009; Law and Azman-Saini, 2012; Otchere et al., 2016).

Our result is consistent with Law and Azman-Saini (2012) who show that higher institutional quality improves stock market development in both developed and developing countries. Higher institutional quality, such as information disclosure, contract enforcement and property rights protection, attract more investors to participate in stock markets. Investors can mitigate information asymmetries and opportunistic behaviour to allocate their savings to more profitable listed enterprises. Billmeier and Massa (2009) and Otchere et al. (2016) provide evidence that higher institutional improvements enhance the stock market development in emerging countries and African economies. Well-established legal frameworks, such as transparent information, contract enforcement and investor protection, encourages investors to engage in stock markets. This helps listed enterprises to raise more capital at a lower cost to stimulate their investment activity.

Based on the system GMM estimator of FDI determinants, our findings indicated that a 1% increase in financial development significantly stimulates inward FDI by around 0.01% (see Table 4.11, Chapter 4). Additional improvements in finance provide foreign enterprises and their local partners with additional capital and financial services to speed up their daily entrepreneurial activities and long-term investment projects. An improved banking system helps local and foreign investors gain more access to financial services, such as credit, international trading services, and advanced payment systems, to promptly carry out their promising ventures with high returns (Agbloyor et al., 2013; Otchere et al., 2016). Stock market development provides enterprises with a liquid channel to mobilize additional external capital for long-term productive projects. Improvements in stock markets help local and foreign entrepreneurs to alleviate information asymmetry and transaction costs to enhance corporate governance and facilitate merger and acquisition activity to widen markets, products and services (Nkoa, 2018).

Our results show that countries with improved economic growth have an important engine to attract greater inward FDI. A 1% increase in the economic growth rate enables the ADC region to encourage higher inward FDI by nearly 0.2% (see Table 4.11, Chapter 4). Such an impact of economic growth is much stronger than financial development (around 0.01%). Our results suggest that countries with a more favourable economic climate could encourage the higher entry of inward FDI to establish more innovative projects with modern technologies and potential higher output. Higher levels of economic growth provide foreign investors with a prospective growing market to enlarge their market share and profit (Anwar and Nguyen, 2010). The ADC economies with better economic performance can enhance their living standard and purchasing power to use more advanced products and services introduced by foreign enterprises (Shah, 2016). This draws more inward FDI into the ADC markets to intensify their technological progress and productivity gains.

In terms of the determinants of finance, we show that inward FDI significantly stimulates the development of finance. A 1% increase in inward FDI significantly enhances the development of the local banks and stock markets by about 0.1% and 0.5%, respectively (see Table 4.12, Chapter 4). Higher levels of this cross-border capital help local banks to augment their funding resources to channel more into lending (Pradhan et al., 2019). The presence of more listed foreign enterprises inspires other investors to engage in local stock markets to accelerate the process of capital accumulation and investment project undertakings (Agbloyor et al., 2013). Greater inward FDI accelerates entrepreneurial activity and industrial growth, which entails a greater demand for additional external finance and financial products. This motivates greater development of banks and stock markets to meet the higher requirements of their local and foreign customers (Pradhan et al., 2019).

More importantly, the institutional quality exercises a crucial role in strengthening local stock market development. A 1% improvement in institutional quality enables the ADC economies to enhance their stock market development by over 1% (see Table 4.12, Chapter 4). Such an effect of local institutional quality is larger than inward FDI (about 0.5%). Our evidence suggests that ADC economies should build a sound institutional environment to intensify the development of the stock markets. Well-established institutional backgrounds provide investors with better property rights protection, broader access to financial market information, higher contract enforcement to allocate their capital resources to the most profitable ventures (Billmeier and Massa, 2009). Stock markets with improved institutional quality can reduce information asymmetry, market opportunistic behaviours, investment risk, and the cost of doing business to encourage more market participants to establish more productive investment projects and economic benefits (Law and Azman-Saini, 2012).

5.3 Contributions and implications

To the best of our knowledge, this study is the first to adopt the dynamic threshold panel model proposed by Kremer et al. (2013) to explore the moderating impact of finance on the FDI-growth nexus in the ADC region. Our study extends the work by Azman Saini et al. (2010), Raheem and Oyinlola (2013) and Baharumshah et al. (2017) that used only cross-sectional or time-series data to examine the potential threshold level of finance in the FDI-growth nexus. The dynamic threshold effects model in our study can tackle the potential endogenous issue stemming from possible omitted endogenous variables and the dynamic environment of economic development with panel data. Based on the financial threshold effects model, this study provides new empirical evidence that higher levels of financial development can enhance the benefits of inward FDI. This reaffirms our results obtained by the dynamic regression model with the interaction term between FDI and finance on the development of the economy.

Based on the financial threshold effects model, we identify a potential threshold level of financial development which ADC economies should attain to maximize their benefits from inward FDI. Our results indicate that the effect of FDI on the ADCs output growth in the high finance-regime group is higher than the low finance-regime group. In the high finance-regime group, the ADC region can improve its absorptive capacity to exploit the potential benefits from inward FDI. Greater access to credit and financial services enables foreign enterprises and their local linkages to execute innovative investments. This is because local suppliers and buyers can raise capital at a lower cost to upgrade their technologies, advance inputs, managerial training and labour skills to adopt new production methods and business know-how introduced by the foreign enterprises. After providing loans, the financial system, especially the banking channel, can supervise borrowers' allocation of funding resources towards productive uses and timely payments. The stock market channel can help shareholders to access investment information and motivate managers to maximize firm value (Baudisch, 2018). This leads to an increase in the ADC output growth. In contrast, for the low finance-regime group, a less functioning financial system, which is characterized by a shortage of financial products, expensive credit, high cost of information exchange and regulation constraints, may discourage foreign investors and their local links from stimulating more productive improvements. The presence of foreign enterprises may even crowd out local enterprises in the same industry because of a lack of funding resources to augment products and services. As a result, ADC economies in the low finance group lack the absorptive capacity to exploit the potential benefits of inward FDI.

The potential threshold level of financial development enables recipient countries to improve their absorptive capacity to enhance the benefits of inward FDI. It is worth noting that inward FDI stimulates the recipient economies not only via increasing investment activity but also via the potential positive

externalities (spill-overs), such as transfer of advanced technologies, production processes, labour-skills, and business know-how. Based on the financial threshold, higher levels of financial development help recipient economies exploit potential positive externalities from inward FDI. Higher levels of financial development enable foreign enterprises and their local partners to improve the transfer of production processes, time of trading, and contract enforcement and, thereby, enhance output growth. Improvements in financial development help local and foreign enterprises to lower the cost of capital, minimize information gaps and investment risks, improve corporate governance and allocate funding efficiently. An improved financial system enables investors to produce investment information to allocate financial resources to the most promising projects.

The ADC region has become one of the most attractive destinations for inward FDI, capturing over 30% of the global inward FDI (UNCTAD, 2020). To take advantage of inward FDI, the ADC region should improve its FDI attraction policies and improve its financial systems to attract potential FDI. Knowing the optimum level of financial development is important. ADC governments can formulate and implement policies and programmes related to the potential financial threshold to enhance their absorptive capacity. Such an improved financial absorptive capacity enables foreign investors to minimize their cost of capital, cross-border transactions, and market information exploitation to make proper investment decisions (Baharumshah et al., 2017). Local enterprises with well-functioning financial channels can raise their capital at lower cost and reduce their investment risks to assimilate new production processes and technologies transferred by the foreign enterprises (Bahri et al., 2019). This potential financial threshold ultimately helps ADC economies maximize the beneficial effects, such as knowledge accumulation and technology implementation, from inward FDI. As suggested by Raheem and Oyinlola (2013), irrespective of whether ADC countries can satisfy the potential financial conditions to maximize their FDI benefits, more improvements in financial development would help ADC economies to create an attractive business climate for foreign and domestic investors to achieve higher output growth.

The ADC governments play a key role in providing investors with a conducive business environment such as allocating more resources to infrastructure improvements, enhancing anti-corruption regulations, streamlining civil procedures, reducing the entry and exit barriers to the investors, augmenting the supervisory environment to the financial systems, removing interest rate controls, and enforcing timely and transparent investment information disclosures (Kunt and Levine, 2008; Ezeoha and Cattaneo, 2012). Additional improvements in the business climate would reduce the cost of doing business and investment risks to draw more potential investors into the local market. For example, reducing foreign entry barriers, such as lowering corporate tax and foreign ownership controls, can attract more foreign enterprises to list on the ADC stock markets or merger and acquisition activity to expand productive investments and output growth. Producing a sound supervisory environment and

a strong regulatory quality (such as better investor protection, contract enforcement and property rights) forces the financial system to improve capital allocation and monitoring of investments, and disseminate timely proper investment information such as stock prices, interest rates, financial reports and potential projects.

An improved supervisory climate helps financial systems reduce market frictions such as stock manipulation, lack of market transparency and corruption, improper corporate governance practices, and excessive speculation (Niblock et al., 2014). As a result, local and foreign investors can mitigate asymmetric information about the local market, evaluate firm value, speed up financial transactions, improve risk diversification and allocate their financial resources towards the most productive ventures (Ibrahim and Alagidede, 2018). Additionally, the financial system can ensure continual improvement of the quality and quantity of financial products provided to enterprises, households and industries (such as lending and savings, international trading systems, foreign exchange services, payment systems and financial advice). This enhances investors' opportunities to access external finance and financial services at lower cost to channel their investment projects in a timely manner (Nkoa, 2018).

5.3.1 The selection of the dynamic threshold effects model

We used the dynamic threshold effects model developed by Kremer et al. (2013) to examine the financial threshold values for the FDI-growth nexus. Some other threshold models, such as that proposed by Hansen (2000), and the static threshold model developed by Bick (2010), were not included in this study. However, the dynamic threshold effects model in this study can tackle the potential endogenous bias in the estimates of model coefficients. We included the lagged dependent variable (which is treated as an endogenous variable), and the regime intercept in the model to address the endogenous issue arising from the dynamic environment with the macro panel data and the possible omitted endogenous variables bias (Lee et al., 2016). This is because some possible omitted variables can determine both economic development and inward FDI or other regressors in the model estimates. Failure to control for such variables can result in inconsistent estimates of the model coefficients (Slesman et al., 2019). Hence, the regime intercept is included in the model to account for potential omitted endogenous variables bias and address inaccuracy in the estimated coefficients (Bick, 2010; Lee et al., 2016; Slesman et al., 2019).

In contrast, the two other threshold models do not address endogeneity bias in the estimated coefficient results. For example, in the early threshold effects model proposed by Hansen (2000), the OLS estimator could not tackle endogenous bias stemming from possible omitted endogenous variables and a dynamic environment with the panel data. Similarly, Bick (2010) estimated the threshold effects model with the OLS technique. Though the author included the regime intercept to

control for the effects of the missing variables in their model, the OLS estimator could not tackle the endogeneity issue arising from the correlation between the lagged dependent variables and the disturbance term, which may lead to a bias in the model estimates (Lee et al., 2016).

Specifically, Hansen (2000) and Bick (2010) treated all regressors in their model estimates as exogenous variables; they did not capture the endogeneity issue stemming from the dynamic environment with the panel data (i.e., the lagged dependent variable ($ECON_{i,t-1}$) is an endogenous variable). This severely violates the assumption that all regressors are strictly exogenous variables with the OLS estimator and, thereby, can induce inconsistent estimates (Kremer et al., 2013; Chen and Quang, 2014). Both Hansen (2000) and Bick (2010) eliminated the specific fixed effects in the disturbance terms by adopting the standard within transformation approach (the fixed effects transformation). However, the transformed disturbance terms are still correlated with the lagged dependent variable (Kremer et al., 2013). Additionally, in terms of the dynamic model, Kremer et al. (2013) suggest that first differencing will lead to a negative serial-correlation of the disturbance terms that also violates the distributional theory for the panel data of Hansen (1999).

We tackled endogeneity bias in our model estimates by adopting the dynamic threshold effects model proposed by Kremer et al. (2013). First, we followed Kremer et al. (2013) to remove the specific fixed effects in the disturbance terms by using the forward orthogonal deviations transformation approach proposed by Arellano and Bover (1995), which allows the transformed disturbance terms not to be correlated with the regressors in our model estimates (Matemilola et al., 2013; Tsurai and Makina, 2018). Secondly, we included both the regime intercept and the lagged dependent variable (which is treated as endogenous variables) with the GMM estimator in our model estimates to reduce the endogeneity arising from the potential omitted endogenous variables and the dynamic environment with the panel data. The regime intercept diminishes the biased effects of the omitted endogenous variables in the model estimates and the inclusion of the lagged dependent variable captures the dynamic adjustment over time. The lagged dependent variable accounts for the past information of its regressors and, thereby, reduces the bias in the estimated threshold values and the parameters of regressors in the model estimates (Lee et al., 2016).

5.4 Limitations and directions for further research

We used only financial indicators to represent the banking and stock market channels. We did not include bond market measures because of a large amount of missing data for many countries. This is because bond markets in many developing economies until 2000 were in their infancy, and bond transaction data were not publicly available or very limited (Thumrongvit et al., 2013; Aman et al., 2019, 2020). Hence, future studies with additional data on bonds can explore the role of the bond market through which the financial system affects inward FDI and economic development. Data

related to private and public bonds can be extracted from the World Bank and AsianBondOnline websites. As suggested by Thumrongvit et al. (2013), the corporate sector can access more financing options for their investment needs with the presence of the bond market. Well-established bond markets provide local and foreign enterprises with an additional channel to attract long-term savings from the economy, which are allocated to productive investment activity. Higher private bond capitalization enriches local and foreign enterprises with higher funding resources for their entrepreneurial ventures with technological innovations and productivity improvements. Market participants can hedge risks more effectively by diversifying their investment portfolios. Similarly, governments may raise more capital for public investment by issuing public bonds, such as infrastructure augmentation and human development. The expansion of the bond market helps governments less reliant on sovereign borrowings from local commercial banks and overseas. Governments can diversify the debt portfolio, and thus mitigate the effects of external shocks, e.g., rises in lending interest rates, currency depreciation risk, and exchange rate volatility, on their debt repayments. Mobilizing higher long-term capital in local currency by the bond market reduces the maturity mismatch between short-term bank loans and long-term projects, the risk of volatile exchange rates in foreign currency debts, and potential financial crises (Aman et al., 2019, 2020). Hence, understanding the role of the bond market in the FDI-growth linkage would help ADC governments design programmes to improve financial conditions for an attractive investment climate and enhance the benefits from inward FDI.

There is scope for further research to investigate if the linkages between banks, stock markets, FDI, and economic development may vary across ADC's income groups (high-, middle- and low- incomes). Rioja and Valev (2014) suggest that the growth-enhancing effects of banks and stock markets may differ across countries' income levels. In the low-income stage, banks may dominate the financial structure and enhance economic development since most economies' stock markets are still at the infant stage. They mainly access capital resources and financial services from banks (Rioja and Valev, 2014; Tongurai and Vithessonthi, 2018). Banks can provide required capital resources to investment projects, and exercise pressure on enterprises to make profits and meet their debt repayments. In the middle- and high-income stages, when the innovation activities are a primary source of economic growth, stock markets can become an engine to attract and allocate savings from the economy to the most innovative ventures with superior technologies and high productivity gains (Rioja and Valev, 2014; Seven and Yetkiner, 2016). However, banks are likely less attractive to savers since bank loans could be channelled to unproductive investments, such as real estate and consumption (Seven and Yetkiner, 2016). Therefore, future research can divide the ADC economies into sub-income groups to examine if the mediating effects of banks and stock markets on the FDI-growth nexus may differ according to developmental income levels.

In addition to limitations, we investigated a potential financial threshold using an ADC sample but did not focus on individual countries because of data unavailability. Each individual country with specific characters, such as political, socio-economic and institutional history, may alter the estimated financial threshold result (Ibhagui, 2017). Hence, future research with the increased availability of data, could investigate potential financial thresholds for each specific country to improve each's absorptive capacity to maximize the beneficial effects of inward FDI.

In terms of the link between FDI and finance, we controlled for macroeconomic factors such as domestic investment, economic growth, inflation, government spending, and trade openness. However, some other external factors, such as interest rate margin, research and development activity (R&D), taxation and labour costs, were not included in the FDI-finance linkage because of a lack of data for our ADC sample. Future research with more data available might include other additional factors in this link to mitigate biased estimates arising from the possible omitted variables. Additionally, it would be interesting to explore the FDI-finance link in other regions such as Latin American, Africa and Europe to help policymakers provide specific strategies and programmes of FDI and finance to enhance economic development for each region.

Apart from the financial system, other important concerns are how institutional quality enhances ADC economic development and how institutional background affects the FDI-growth nexus and the finance-growth nexus in the ADC region. As suggested by Iamsiraroj (2016), countries with better institutional quality will provide the investors with a favourable, business-friendly, and low-risk environment to generate more sales and profits. Improvements in institutional quality, such as higher property rights protection, contract enforcement, and anti-corruption laws, will motivate local and foreign investors to participate in the local market and stimulate economic progress. High-quality institutions with information transparency, sound accounting practices, and low government corruption, inspire more enterprises to list on the stock market to raise their capital for investment expansion (Billmeier and Massa, 2009). Hence, recognizing the moderating effect of institutional quality on the FDI-finance-growth nexus would help the ADC region allocate inward FDI and financial resources to the most productive sectors to yield a higher output growth. We leave this examination for further research when more recent data are available.

Appendix A

Table A1: Regression results of the FDI determinants using the FE and RE estimators

Variable	BACRED		TOCRED		LIQUID		STCAP		STVAL		STTUR	
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE
<i>FDI (-1)</i>	0.452** (0.167)	0.897*** (0.113)	0.519** (0.186)	0.909*** (0.109)	0.480** (0.178)	0.839*** (0.117)	0.371* (0.212)	0.855*** (0.080)	0.416** (0.151)	0.900*** (0.090)	0.409* (0.205)	0.933*** (0.084)
<i>BACRED</i>	0.027** (0.011)	0.006* (0.003)										
<i>TOCRED</i>			0.007* (0.003)	0.004*** (0.001)								
<i>LIQUID</i>					0.039** (0.018)	0.016 (0.009)						
<i>STCAP</i>							0.026** (0.013)	0.019** (0.008)				
<i>STVAL</i>									0.009* (0.005)	0.005* (0.003)		
<i>STTUR</i>											0.005 (0.003)	0.005* (0.003)
<i>GROW</i>	0.283** (0.129)	0.346*** (0.124)	0.298* (0.148)	0.347*** (0.122)	0.295** (0.136)	0.365*** (0.121)	0.041 (0.130)	0.138 (0.129)	0.114 (0.113)	0.251** (0.126)	0.100 (0.127)	0.169 (0.131)
<i>FINO</i>	0.005 (0.012)	0.007 (0.004)	0.011 (0.010)	0.007 (0.004)	0.009 (0.011)	0.010** (0.004)	0.003 (0.012)	0.005 (0.006)	0.013 (0.012)	0.003 (0.004)	-0.001 (0.009)	0.005 (0.005)
<i>GOVE</i>	-0.013 (0.027)	-0.001 (0.004)	-0.008 (0.026)	0.001 (0.004)	-0.020 (0.030)	-0.007 (0.006)	-0.031 (0.038)	-0.023** (0.010)	-0.001 (0.032)	-0.014 (0.011)	-0.016 (0.036)	-0.014 (0.009)
<i>INFL</i>	0.019 (0.032)	0.059** (0.027)	0.023 (0.033)	0.053** (0.022)	0.023 (0.030)	0.069** (0.029)	-0.001 (0.032)	0.047 (0.032)	0.054 (0.056)	0.031 (0.033)	0.014 (0.041)	0.029 (0.032)
<i>TRADE</i>	-0.001 (0.023)	0.006 (0.009)	0.009 (0.023)	0.008 (0.009)	-0.010 (0.023)	0.003 (0.009)	0.021 (0.029)	-0.002 (0.008)	0.022 (0.030)	0.006 (0.008)	0.042 (0.037)	0.013 (0.009)
<i>DOME</i>	-0.015 (0.012)	-0.014 (0.009)	-0.001 (0.012)	-0.011 (0.008)	-0.006 (0.012)	-0.012 (0.009)	-0.025 (0.022)	-0.013 (0.010)	-0.010 (0.019)	-0.016 (0.012)	-0.001 (0.021)	-0.013 (0.012)
<i>POPU</i>	-0.027 (0.032)	-0.002 (0.001)	-0.001 (0.029)	-0.001 (0.001)	-0.024 (0.030)	-0.003* (0.002)	-0.035 (0.030)	-0.001 (0.002)	-0.011 (0.029)	-0.003 (0.002)	-0.024 (0.035)	-0.001 (0.002)
<i>Constant</i>	0.454 (0.502)	0.023 (0.034)	0.042 (0.475)	0.021 (0.034)	0.395 (0.476)	0.036 (0.034)	0.564 (0.485)	-0.032 (0.056)	0.243 (0.484)	0.016 (0.042)	0.424 (0.595)	-0.024 (0.055)
<i>Observation</i>	120	120	120	120	120	120	79	79	88	88	79	79
<i>R² overall</i>	0.4669	0.7606	0.7364	0.7616	0.5387	0.7667	0.4953	0.8240	0.5942	0.8020	0.5391	0.8078

Note: * = p<0.10, ** = p<0.05, *** = p<0.01. Figures in brackets are robust-standard errors.

Appendix B

Table B1: Regression results of financial determinants using the FE and RE estimators

Variable	BACRED		TOCRED		LIQUID		STCAP		STVAL		STTUR	
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE
<i>BACRED (-1)</i>	0.572*** (0.079)	0.734*** (0.050)										
<i>TOCRED (-1)</i>			1.056 (0.624)	1.044*** (0.175)								
<i>LIQUID (-1)</i>					0.566*** (0.135)	0.858*** (0.031)						
<i>STCAP (-1)</i>							-0.335** (0.131)	0.696*** (0.059)				
<i>STVAL (-1)</i>									-0.201* (0.107)	0.609*** (0.154)		
<i>STTUR (-1)</i>											-0.126*** (0.041)	0.440* (0.241)
FDI	0.166*** (0.044)	0.086*** (0.031)	0.178 (0.131)	0.068 (0.048)	0.050** (0.021)	0.033** (0.013)	-0.014 (0.080)	-0.022 (0.065)	0.422** (0.179)	0.333 (0.231)	0.286*** (0.091)	0.262 (0.164)
<i>GOVE</i>	0.274 (0.263)	-0.054 (0.085)	0.599 (0.511)	-0.419** (0.176)	0.130 (0.164)	-0.072 (0.051)	-0.553 (0.445)	-0.247* (0.148)	-1.076 (1.241)	-0.116 (0.277)	-0.418 (0.541)	-0.122 (0.409)
<i>DOME</i>	0.312 (0.197)	0.418*** (0.121)	-0.189 (0.527)	0.325* (0.183)	0.090 (0.074)	0.145** (0.057)	0.864* (0.487)	0.479*** (0.177)	-0.243 (0.679)	-0.476 (0.703)	-0.521 (0.538)	-0.722 (0.709)
<i>ECON</i>	0.218* (0.121)	0.001 (0.040)	0.066 (0.346)	-0.090 (0.084)	0.144* (0.084)	-0.015 (0.020)	1.574*** (0.372)	-0.033 (0.060)	1.320*** (0.372)	0.091 (0.136)	-0.870 (0.508)	0.075 (0.128)
<i>TRADE</i>	0.174*** (0.046)	0.122 (0.078)	-0.089 (0.122)	-0.029 (0.058)	0.123*** (0.028)	0.079** (0.032)	1.063** (0.462)	0.203 (0.156)	0.635 (0.473)	-0.797** (0.395)	-0.616 (0.552)	-1.082*** (0.416)
<i>MANU</i>	-0.123 (0.136)	-0.017 (0.080)	-0.025 (0.263)	0.010 (0.068)	-0.057 (0.075)	0.008 (0.034)	-0.404 (0.252)	-0.191** (0.090)	0.288 (0.687)	0.107 (0.276)	-0.371 (0.458)	0.232 (0.205)
<i>INST</i>	0.234 (0.220)	0.084 (0.145)	0.219 (0.349)	0.185 (0.140)	-0.110 (0.177)	-0.025 (0.050)	-0.133 (0.301)	0.218 (0.140)	0.857 (0.994)	1.316** (0.654)	-0.267 (0.600)	1.285** (0.573)
<i>Constant</i>	-0.414 (1.134)	0.763* (0.427)	1.415 (3.272)	0.875 (0.678)	-0.899 (0.935)	0.375 (0.248)	-15.544*** (2.916)	0.092 (0.924)	-13.234*** (4.109)	0.177 (1.360)	5.038 (3.576)	-0.115 (1.771)
<i>Observation</i>	104	104	101	101	104	104	60	60	68	68	60	60
<i>R²_overall</i>	0.7587	0.9164	0.5286	0.7004	0.7886	0.9475	0.4385	0.8729	0.2271	0.6981	0.0310	0.5566

Note: * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$. Figures in brackets are robust-standard errors.

Appendix C

Table C1: A list of the 33 Asian Developing Countries

Number	Country	Number	Country
1	Afghanistan	19	Malaysia
2	Bahrain	20	Mongolia
3	Bangladesh	21	Myanmar
4	Bhutan	22	Nepal
5	Brunei Darussalam	23	Oman
6	Cambodia	24	Pakistan
7	China	25	Philippines
8	China HK	26	Saudi Arabia
9	China Macao	27	Singapore
10	India	28	Sri Lanka
11	Indonesia	29	Thailand
12	Iran	30	Turkey
13	Iraq	31	UAE
14	Jordan	32	Vietnam
15	Korea republic	33	Yemen
16	Kuwait		
17	Lao PDR		
18	Lebanon		

Appendix D

Table D1: A list of the 22 Asian Developing Countries with stock markets

Number	Country	Number	Country
1	Bahrain	12	Malaysia
2	Bangladesh	13	Oman
3	China	14	Pakistan
4	China HK	15	Philippines
5	India	16	Saudi Arabia
6	Indonesia	17	Singapore
7	Iran	18	Sri Lanka
8	Jordan	19	Thailand
9	Korea republic	20	Turkey
10	Kuwait	21	UAE
11	Lebanon	22	Vietnam

References

- Abu, N., and Karim, M. Z. A. (2016). The relationships between foreign direct investment, domestic savings, domestic investment, and economic growth: The case of Sub-Saharan Africa. *Society and Economy in Central and Eastern Europe*, 38(2), 193-217.
- Adams, S. (2009). Foreign direct investment, domestic investment, and economic growth in Sub-Saharan Africa. *Journal of Policy Modeling*, 31(6), 939-949.
- Adefeso, H. A., Egbetunde, T., and Alley, I. (2013). Stock market development and growth in Nigeria: A causal analysis. *Arabian Journal of Business and Management Review (Oman Chapter)*, 2(6), 78-95.
- Adeniyi, O., Ajide, B., and Salisu, A. (2015). Foreign capital flows, financial development and growth In Sub-Saharan Africa. *Journal of Economic Development*, 40(3), 85-104.
- Adusei, M., and Frimpong, J. M. (2014). Predictors of financial development in Ghana. *Journal of Applied Finance and Banking*, 4(2), 59-71.
- Agbloyor, E. K., Abor, J. Y., Adjasi, C. K. D., and Yawson, A. (2014). Private capital flows and economic growth in Africa: The role of domestic financial markets. *Journal of International Financial Markets, Institutions and Money*, 30, 137-152.
- Agbloyor, E. K., Abor, J., Adjasi, C. K. D., and Yawson, A. (2013). Exploring the causality links between financial markets and foreign direct investment in Africa. *Research in International Business and Finance*, 28, 118-134.
- Ahmad, R., Etudaiye-Muhtar, O. F., Matemilola, B. T., and Bany-Ariffin, A. N. (2016). Financial market development, global financial crisis and economic growth: evidence from developing nations. *Portuguese Economic Journal*, 15(3), 199-214.
- Aibai, A., Huang, X., Luo, Y., and Peng, Y. (2019). Foreign direct investment, institutional quality, and financial development along the Belt and Road: An empirical investigation. *Emerging Markets Finance and Trade*, 55(14), 3275-3294.
- Aizenman, J., and Marion, N. (2004). The merits of horizontal versus vertical FDI in the presence of uncertainty. *Journal of International Economics*, 62(1), 125-148.
- Al Nasser, O. M., and Gomez, X. G. (2009). Do well-functioning financial systems affect the FDI flows to Latin America? *International Research Journal of Finance and Economics*, 29(July), 60-75.
- Alexiou, C. (2009). Government spending and economic growth: Econometric evidence from the South Eastern Europe (SEE). *Journal of Economic and Social Research*, 11(1), 1-16.
- Alfaro, L., Chanda, A., Kalemli-Ozcan, S., and Sayek, S. (2004). FDI and economic growth: the role of local financial markets. *Journal of International Economics*, 64(1), 89-112.
- Alfaro, L., Kalemli-Ozcan, S., and Sayek, S. (2009). FDI, productivity and financial development. *The World Economy*, 32(1), 111-135.

- Alguacil, M., Cuadros, A., and Orts, V. (2011). Inward FDI and growth: The role of macroeconomic and institutional environment. *Journal of Policy Modeling*, 33(3), 481-496.
- Allen, F., Carletti, E., Cull, R., Qian, J. Q., Senbet, L., and Valenzuela, P. (2014). The African financial development and financial inclusion gaps. *Journal of African Economies*, 23(5), 614-642.
- Almasaied, S. W., Baharumshah, A. Z., and Rashid, S. (2008). The impact of domestic and foreign direct investments on economic growth: Evidence from ASEAN countries. *Pertanika Journal of Social Sciences and Humanities*, 16(2), 239-255.
- Aluko, O. A., and Ajayi, M. A. (2018). Determinants of banking sector development: Evidence from Sub-Saharan African countries. *Borsa Istanbul Review*, 18(2), 122-139.
- Aman, A., Isa, M. Y., and Naim, A. M. (2020). The role of macroeconomic and financial factors in bond market development in selected countries. *Global Business Review*, 1-16. DOI: 0972150920907206.
- Aman, A., Naim, A. M., and Isa, M. Y. (2019). What determines bond market development? New theoretical insights. *SEISENSE Journal of Management*, 2(1), 99-106.
- Amendolagine, V., Boly, A., Coniglio, N. D., Prota, F., and Seric, A. (2013). FDI and local linkages in developing countries: Evidence from Sub-Saharan Africa. *World Development*, 50, 41-56.
- Ang, J. B. (2008). A survey of recent developments in the literature of finance and growth. *Journal of Economic Surveys*, 22(3), 536-576.
- Ang, J. B., and McKibbin, W. J. (2007). Financial liberalization, financial sector development and growth: evidence from Malaysia. *Journal of Development Economics*, 84(1), 215-233.
- Anwar, S., and Islam, I. (2011). Should Developing Countries Target Low, Single Digit Inflation to Promote Growth and Employment. *Employment Working Paper No. 87*, International Labour Organization, Geneva.
- Anwar, S., and Nguyen, L. P. (2010). Foreign direct investment and economic growth in Vietnam. *Asia Pacific Business Review*, 16(1-2), 183-202.
- Anwar, S., and Nguyen, L. P. (2011). Financial development and economic growth in Vietnam. *Journal of Economics and Finance*, 35(3), 348-360.
- Anyanwu, A. A. (2016). Government domestic debt, private sector credit, and economic growth in oil-dependent countries: a dynamic panel data analysis. (Doctoral dissertation, Lincoln University Library).
- Anyanwu, A., Gan, C., and Hu, B. (2018). The differential impact of financial intermediation on economic growth in oil-dependent economies. *Review of Economic Analysis*, 10(3), 267-284.
- Anyanwu, J. C. (2012). Why does foreign direct investment go where it goes?: New evidence from African countries. *Annals of Economics and Finance*, 13(2), 425-462.

- Apergis, N., Lyroudi, K., and Vamvakidis, A. (2008). The relationship between foreign direct investment and economic growth: evidence from transition countries. *Transition Studies Review*, 15(1), 37-51.
- Arellano, M., and Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, 68(1), 29-51.
- Asghar, N., and Hussain, Z. (2014). Financial development, trade openness and economic growth in developing countries: Recent evidence from panel data. *Pakistan Economic and Social Review*, 52(2), 99-126.
- Asghar, N., Nasreen, S., and Rehman, H. (2011). Relationship between FDI and economic growth in selected Asian countries: A panel data analysis. *Review of Economics and Finance*, 2, 84-96.
- Asiedu, E. (2005). Foreign Direct Investment in Africa: The role of natural resources, market Size, Government Policy, Institutions and Political Instability. *World Economy*, 29(1), 63-77.
- Athanasios, V., and Antonios, A. (2012). Stock market development and economic growth an empirical analysis for Greece. *American Journal of Economics and Business Administration*, 4(2), 135-143.
- Ayadi, R., Arbak, E., Naceur, S. B., and De Groen, W. P. (2015). Determinants of financial development across the Mediterranean. *Economic and Social Development of the Southern and Eastern Mediterranean Countries* (pp. 159-181). Springer, Cham.
- Ayanwale, A. B. (2007). FDI and economic Growth: Evidence from Nigeria. *AERC Research Paper No. 165*, Nairobi.
- Azam, M., Haseeb, M., Samsi, A. B., and Raji, J. O. (2016). Stock market development and economic growth: Evidence from Asia-4 Countries. *International Journal of Economics and Financial Issues*, 6(3), 1200-1208.
- Aziz, A., and Makkawi, B. (2012). Relationship between foreign direct investment and country population. *International Journal of Business and Management*, 7(8), 63-70.
- Azman-Saini, W. N. W., Baharumshah, A. Z., and Law, S. H. (2010). Foreign direct investment, economic freedom and economic growth: International evidence. *Economic Modelling*, 27(5), 1079-1089.
- Azman-Saini, W. N. W., Law, S. H., and Ahmad, A. H. (2010). FDI and economic growth: New evidence on the role of financial markets. *Economics Letters*, 107(2), 211-213.
- Bagehot, W. (1873). *Lombard Street: A Description of the Money Market*. Scribner, Armstrong and Company, New York.
- Baharumshah, A. Z., Slesman, L., and Devadason, E. S. (2017). Types of foreign capital inflows and economic growth: New evidence on role of financial markets. *Journal of International Development*, 29(6), 768-789.

- Bahri, E. N. A., Nor, A. H. S. M., Nor, N. H. H. M., and Sarmidi, T. (2017). Foreign direct investment, financial development and economic growth: a panel data analysis. *Journal Pengurusan (UKM Journal of Management)*, 51, 11-24.
- Baltagi, B. H., Demetriades, P. O., and Law, S. H. (2009). Financial development and openness: Evidence from panel data. *Journal of Development Economics*, 89(2), 285-296.
- Bartels, F. L., Alladina, S. N., and Lederer, S. (2009). Foreign direct investment in Sub-Saharan Africa: Motivating factors and policy issues. *Journal of African Business*, 10(2), 141-162.
- Baudisch, C.F. (2018). *Sectoral FDI and the real exchange rate: The role of financial development*. Joint Discussion Paper Series in Economics (No. 28-2018), Philipps-University Marburg, Marburg.
- Bayar, Y. (2014). Savings, foreign direct investment inflows and economic growth in emerging Asian economies. *Asian Economic and Financial Review*, 4(8), 1106-1122.
- Beck, T. (2002). Financial development and international trade: Is there a link? *Journal of International Economics*, 57(1), 107-131.
- Beck, T. (2014). Finance, growth, and stability: Lessons from the crisis. *Journal of Financial Stability*, 10(1), 1-6.
- Beck, T., and Levine, R. (2004). Stock markets, banks, and growth: Panel evidence. *Journal of Banking and Finance*, 28(3), 423-442.
- Behera, S. R. (2015). Do domestic firms really benefit from foreign direct investment? The role of horizontal and vertical spillovers and absorptive capacity. *Journal of Economic Development*, 40(2), 57-87.
- Benanke, B. S., and Gertler, M. A. R. K. (1989). Agency costs, net worth, and business fluctuation. *American Economic Review*, 79(1), 14-31.
- Bencivenga, V. R., and Smith, B. D. (1991). Financial intermediation and endogenous growth. *The Review of Economic Studies*, 58(2), 195-209.
- Bhattarai, K. (2016). FDI and growth. *Advances in Management and Applied Economics*, 6(2), 1-23.
- Bick, A. (2010). Threshold effects of inflation on economic growth in developing countries. *Economics Letters*, 108(2), 126-129.
- Billmeier, A., and Massa, I. (2009). What drives stock market development in emerging markets— institutions, remittances, or natural resources? *Emerging Markets Review*, 10(1), 23-35.
- Blalock, G., and Gertler, P. J. (2008). Welfare gains from foreign direct investment through technology transfer to local suppliers. *Journal of International Economics*, 74(2), 402-421.
- Blundell, R., and Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115-143.
- Blundell-Wignall, A., and Roulet, C. (2014). Capital controls on inflows, the global financial crisis and economic growth: Evidence for emerging economies. *OECD Journal: Financial Market Trends*, 2013(2), 29-42.

- Boateng, E., Amponsah, M., and Annor Baah, C. (2017). Complementarity effect of financial development and FDI on investment in Sub-Saharan Africa: A panel data analysis. *African Development Review*, 29(2), 305-318.
- Boot, A. W., and Thakor, A. V. (1997). Banking scope and financial innovation. *The Review of Financial Studies*, 10(4), 1099-1131.
- Boubakari, A., and Jin, D. (2010). The role of stock market development in economic growth: Evidence from some Euronext countries. *International Journal of Financial Research*, 1(1), 14-20.
- Boyd, J. H., and Prescott, E. C. (1986). Financial intermediary-coalitions. *Journal of Economic Theory*, 38(2), 211-232.
- Brems, H. (1970). A growth model of international direct investment. *The American Economic Review*, 60(3), 320-331.
- Caner, M., and Hansen, B. E. (2004). Instrumental variable estimation of a threshold model. *Econometric Theory*, 20(5), 813-843.
- Caporale, G. M., Howells, P. G., and Soliman, A. M. (2004). Stock market development and economic growth: the causal linkage. *Journal of Economic Development*, 29(1), 33-50.
- Chakraborty, S., and Ray, T. (2006). Bank-based versus market-based financial systems: A growth-theoretic analysis. *Journal of Monetary Economics*, 53(2), 329-350.
- Chee, Y. L., and Nair, M. (2010). The impact of FDI and financial sector development on economic growth: Empirical evidence from Asia and Oceania. *International Journal of Economics and Finance*, 2(2), 107-119.
- Chen, J., and Quang, T. (2014). The impact of international financial integration on economic growth: New evidence on threshold effects. *Economic Modelling*, 42, 475-489.
- Cheng, S. Y., Ho, C. C., and Hou, H. (2014). The finance-growth relationship and the level of country development. *Journal of Financial Services Research*, 45(1), 117-140.
- Chinn, M. D., and Ito, H. (2008). A new measure of financial openness. *Journal of Comparative Policy Analysis*, 10(3), 309-322.
- Choi, I. (2001). Unit root tests for panel data. *Journal of International Money and Finance*, 20(2), 249-272.
- Choong, C. K. (2012). Does domestic financial development enhance the linkages between foreign direct investment and economic growth? *Empirical Economics*, 42(3), 819-834.
- Choong, C. K., and Lam, S. Y. (2011). Foreign direct investment, financial development and economic growth: Panel data analysis. *IUP Journal of Applied Economics*, 10(2), 57-74.
- Choong, C. K., Baharumshah, A. Z., Yusop, Z., and Habibullah, M. S. (2010). Private capital flows, stock market and economic growth in developed and developing countries: A comparative analysis. *Japan and the World Economy*, 22(2), 107-117.

- Choong, C. K., Yusop, Z., and Law, S. H. (2010). Private capital flows to developing countries: the role of the domestic financial sector. *Journal of the Asia Pacific Economy*, 15(4), 509-529.
- Christie, T. (2014). The effect of government spending on economic growth: Testing the non-linear hypothesis. *Bulletin of Economic Research*, 66(2), 183-204.
- Chung, W. (2001). Identifying technology transfer in foreign direct investment: Influence of industry conditions and investing firm motives. *Journal of International Business Studies*, 32(2), 211-229.
- Cojocaru, L., Falaris, E. M., Hoffman, S. D., and Miller, J. B. (2016). Financial system development and economic growth in transition economies: New empirical evidence from the CEE and CIS countries. *Emerging Markets Finance and Trade*, 52(1), 223-236.
- Connolly, M., and Li, C. (2016). Government spending and economic growth in the OECD countries. *Journal of Economic Policy Reform*, 19(4), 386-395.
- Cooley, T. F., and Hansen, G. D. (1991). The welfare costs of moderate inflations. *Journal of Money, Credit and Banking*, 23(3), 483-503.
- Cooray, A. (2010). Do stock markets lead to economic growth? *Journal of Policy Modeling*, 32(4), 448-460.
- Cooray, A. (2011). The role of the government in financial sector development. *Economic Modelling*, 28(3), 928-938.
- Crespo, N., and Fontoura, M. P. (2007). Determinant factors of FDI spillovers—what do we really know? *World Development*, 35(3), 410-425.
- Cull, R., and Efron, L. (2008). World Bank lending and financial sector development. *The World Bank Economic Review*, 22(2), 315-343.
- Cull, R., Demirgüç-Kunt, A., and Lin, J. Y. (2013). Financial structure and economic development: A reassessment. *The World Bank Economic Review*, 27(3), 470-475.
- Davaakhuu, O., Sharma, K., and Oczkowski, E. (2015). Has foreign investment played a role in Mongolia's export success? *Post-Communist Economies*, 27(2), 256-267.
- De Gregorio, J. (1992). The effects of inflation on economic growth: lessons from Latin America. *European Economic Review*, 36(2-3), 417-425.
- De Gregorio, J., and Guidotti, P. E. (1995). Financial development and economic growth. *World Development*, 23(3), 433-448.
- De Mello Jr, L. R. (1997). Foreign direct investment in developing countries and growth: A selective survey. *The Journal of Development Studies*, 34(1), 1-34.
- De Mello, L. R. (1999). Foreign direct investment-led growth: evidence from time series and panel data. *Oxford Economic Papers*, 51(1), 133-151.
- Deidda, L., and Fattouh, B. (2008). Banks, financial markets and growth. *Journal of Financial Intermediation*, 17(1), 6-36.

- Demirgüç-Kunt, A., and Levine, R. (1996). Stock market development and financial intermediaries: stylized facts. *The World Bank Economic Review*, 10(2), 291-321.
- Demirgüç-Kunt, A., and Levine, R. (2008). Finance, Financial Sector Policies, and Long-Run Growth. *World Bank Policy Research Working Paper No. 4469*, World Bank, Washington DC.
- Desbordes, R., and Wei, S. J. (2017). The effects of financial development on foreign direct investment. *Journal of Development Economics*, 127, 153-168.
- Deyshappriya, N. R. (2016). The causality direction of the stock market–growth nexus: Application of GMM dynamic panel data and the panel Granger non-causality tests. *Margin: The Journal of Applied Economic Research*, 10(4), 446-464.
- Durham, J. B. (2004). Absorptive capacity and the effects of foreign direct investment and equity foreign portfolio investment on economic growth. *European economic review*, 48(2), 285-306.
- Dutta, N., and Mukherjee, D. (2012). Is culture a determinant of financial development? *Applied Economics Letters*, 19(6), 585-590.
- Ehigiamusoe, K. U., Lean, H. H., and Lee, C. C. (2019). Moderating effect of inflation on the finance–growth nexus: insights from West African countries. *Empirical Economics*, 57(2), 399-422.
- Enisan, A. A., and Olufisayo, A. O. (2009). Stock market development and economic growth: Evidence from seven sub-Saharan African countries. *Journal of Economics and Business*, 61(2), 162-171.
- Epaphra, M. (2018). An econometric analysis of the determinants of foreign direct investment in Africa. *Romanian Economic Journal*, 21(67), 63-97.
- Erkens, D. H., Hung, M., and Matos, P. (2012). Corporate governance in the 2007–2008 financial crisis: Evidence from financial institutions worldwide. *Journal of Corporate Finance*, 18(2), 389-411.
- Estrada, G., Park, D., and Ramayandi, A. (2010). Financial development and economic growth in developing Asia. *Asian Development Bank Economics Working Paper No. 233*, Asian Development Bank, Manila.
- Ezeoha, A. E., and Cattaneo, N. (2012). FDI flows to sub-Saharan Africa: The impact of finance, institutions, and natural resource endowment. *Comparative Economic Studies*, 54(3), 597-632.
- Falahaty, M., and Hook, L. S. (2013). The determinants of financial development: New evidence from the Middle East and North Africa region. *Journal of Economic Cooperation and Development*, 34(3), 35-67.
- Fama, E. F. (1990). Stock returns, expected returns, and real activity. *The Journal of Finance*, 45(4), 1089-1108.
- Farkas, B. (2012). Absorptive capacities and the impact of FDI on economic growth. *Discussion Papers (1202)*, DIW Berlin, Berlin.
- Fauzel, S. (2016). Modeling the relationship between FDI and financial development in small island economies: A PVAR approach. *Theoretical Economics Letters*, 6, 367-375.

- Feeny, S., Iamsiraroj, S., and McGillivray, M. (2014). Growth and foreign direct investment in the Pacific Island countries. *Economic Modelling*, 37, 332-339.
- Fink, G., Haiss, P., and Vukšić, G. (2009). Contribution of financial market segments at different stages of development: Transition, cohesion and mature economies compared. *Journal of Financial Stability*, 5(4), 431-455.
- Fosfuri, A., Motta, M., and Rønde, T. (2001). Foreign direct investment and spillovers through workers' mobility. *Journal of International Economics*, 53(1), 205-222.
- Fu, X. (2012). Foreign direct investment and managerial knowledge spillovers through the diffusion of management practices. *Journal of Management Studies*, 49(5), 970-999.
- Fukase, E. (2010). Revisiting linkages between openness, education and economic growth: System GMM approach. *Journal of Economic Integration*, 25(1), 193-222.
- Gamble, J. (2010). Transferring organizational practices and the dynamics of hybridization: Japanese retail multinationals in China. *Journal of Management Studies*, 47(4), 705-732.
- García, F., Jin, B., and Salomon, R. (2013). Does inward foreign direct investment improve the innovative performance of local firms? *Research Policy*, 42(1), 231-244.
- Ghasemi Varnamkhasi, J., and Mehregan, N. (2015). Financial development as a key determinant of FDI inflow to developing countries. *The International Journal of Humanities*, 21(3), 17-43.
- Girma, S. (2005). Absorptive capacity and productivity spillovers from FDI: a threshold regression analysis. *Oxford Bulletin of Economics and Statistics*, 67(3), 281-306.
- Giuliano, P., and Ruiz-Arranz, M. (2009). Remittances, financial development, and growth. *Journal of Development Economics*, 90(1), 144-152.
- Görg, H., and Greenaway, D. (2004). Much ado about nothing? Do domestic firms really benefit from foreign direct investment? *The World Bank Research Observer*, 19(2), 171-197.
- Govil, M. (2013). Determinants of inward FDI in developing countries: evidence from a time series data analysis. *Anvesha*, 6(4), 22-29.
- Greenwood, J., and Jovanovic, B. (1990). Financial development, growth, and the distribution of income. *Journal of Political Economy*, 98(5, Part 1), 1076-1107.
- Habibullah, M. S., and Eng, Y. K. (2006). Does financial development cause economic growth? A panel data dynamic analysis for the Asian developing countries. *Journal of the Asia Pacific Economy*, 11(4), 377-393.
- Habimana, O. (2016). Asymmetric nonlinear mean reversion in real effective exchange rates: A Fisher-type panel unit root test applied to Sub-Saharan Africa. *The Journal of Economic Asymmetries*, 14, 189-198.
- Hajilee, M., and Al Nasser, O. M. (2015). The relationship between financial market development and foreign direct investment in Latin American countries. *The Journal of Developing Areas*, 49(2), 227-245.

- Hansen, B. E. (1999). Threshold effects in non-dynamic panels: Estimation, testing, and inference. *Journal of Econometrics*, 93(2), 345-368.
- Hansen, B. E. (2000). Sample splitting and threshold estimation. *Econometrica*, 68(3), 575-603.
- Harriss, C. L. (1956). Government spending and long-run economic growth. *The American Economic Review*, 46(2), 155-170.
- Hassan, M. K., Sanchez, B., and Yu, J. S. (2011). Financial development and economic growth: New evidence from panel data. *The Quarterly Review of Economics and Finance*, 51(1), 88-104.
- Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica: Journal of the econometric society*, 46(6), 1251-1271.
- Hermes, N., and Lensink, R. (2003). Foreign direct investment, financial development and economic growth. *The Journal of Development Studies*, 40(1), 142-163.
- Herzer, D., and Klasen, S. (2008). In search of FDI-led growth in developing countries: The way forward. *Economic Modelling*, 25(5), 793-810.
- Holmstrom, B., and Tirole, J. (1997). Financial intermediation, loanable funds, and the real sector. *The Quarterly Journal of Economics*, 112(3), 663-691.
- Hood, M. V., Kidd, Q., and Morris, I. L. (2008). Two sides of the same coin? Employing Granger causality tests in a time series cross-section framework. *Political Analysis*, 16(3), 324-344.
- Horiuchi, A., and Okazaki, R. (1994). Capital markets and the banking sector: efficiency of Japanese banks in reducing agency costs. *Japan, Europe and International Financial Markets: Analytical and Empirical Perspectives*, edited by Ryuzo Sato, Richard M. Levich, and Rama V. Ramachandran, 197-219, Cambridge University Press, Cambridge.
- Hsueh, S. J., Hu, Y. H., and Tu, C. H. (2013). Economic growth and financial development in Asian countries: a bootstrap panel Granger causality analysis. *Economic Modelling*, 32, 294-301.
- Huang, C. J., and Ho, Y. H. (2017). Governance and economic growth in Asia. *The North American Journal of Economics and Finance*, 39, 260-272.
- Iamsiraroj, S. (2016). The foreign direct investment–economic growth nexus. *International Review of Economics and Finance*, 42, 116-133.
- Iamsiraroj, S., and Ulubaşoğlu, M. A. (2015). Foreign direct investment and economic growth: A real relationship or wishful thinking? *Economic Modelling*, 51, 200-213.
- Ibhagui, O. (2017). How does foreign direct investment affect growth in Sub-Saharan Africa? New evidence from non-threshold and threshold analysis. *MPRA Paper No. 85784*, University Library of Munich, Munich.
- Ibrahim, M., and Alagidede, P. (2018). Nonlinearities in financial development–economic growth nexus: Evidence from sub-Saharan Africa. *Research in International Business and Finance*, 46, 95-104.

- Im, K. S., Pesaran, M. H., and Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, 115(1), 53-74.
- Iqbal, N., and Nawaz, S. (2009). Investment, inflation and economic growth nexus. *The Pakistan Development Review*, 48(4), 863-874.
- Ismail, N. W., Smith, P., and Kugler, M. (2009). The effect of ASEAN economic integration on foreign direct investment. *Journal of Economic Integration*, 24(3), 385-407.
- Iyke, B. N. (2017). Does trade openness matter for economic growth in the CEE Countries? *Review of Economic Perspectives*, 17(1), 3-24.
- Jaunky, V. C. (2011). Fish exports and economic growth: the case of SIDS. *Coastal Management*, 39(4), 377-395.
- Jensen, M. C., and Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.
- Jensen, M. C., and Murphy, K. J. (1990). Performance pay and top-management incentives. *Journal of Political Economy*, 98(2), 225-264.
- Jongwanich, J., and Kohpaiboon, A. (2019). Workers' remittances, capital inflows, and economic growth in developing Asia and the Pacific. *Asian Economic Journal*, 33(1), 39-65.
- Judson, R. A., and Owen, A. L. (1999). Estimating dynamic panel data models: a guide for macroeconomists. *Economics Letters*, 65(1), 9-15.
- Karim, M. Z. A. (2000). *The comparative bank efficiency across countries and its relation to economic growth: an empirical study of ASEAN countries* (Doctoral dissertation, University of Arkansas, Fayetteville).
- Karim, S., and Chaudhary, G. M. (2017). Effect of stock market development on economic growth of major South Asian and East Asian economies: A comparative analysis. *Journal of Business Studies Quarterly*, 8(3), 81.
- Kaufmann, D., Kraay, A., and Mastruzzi, M. (2011). The worldwide governance indicators: methodology and analytical issues. *Hague Journal on the Rule of Law*, 3(2), 220-246.
- Kaur, M., Yadav, S. S., and Gautam, V. (2013). Financial system development and foreign direct investment: A panel data study for BRIC countries. *Global Business Review*, 14(4), 729-742.
- Khan, M. S., and Senhadji, A. S. (2003). Financial development and economic growth: A review and new evidence. *Journal of African Economies*, 12(suppl_2), ii89-ii110.
- Kim, D. H., and Lin, S. C. (2013). Interrelationships among banks, stock markets and economic growth: an empirical investigation. *Applied Economics*, 45(31), 4385-4394.
- Kim, D. H., Huang, H. C., Lin, S. C., and Yeh, C. C. (2010). Financial development on growth convergence. *Scottish Journal of Political Economy*, 57(4), 493-514.

- Kinda, T. (2010). Increasing private capital flows to developing countries: The role of physical and financial infrastructure in 58 countries, 1970-2003. *Applied Econometrics and International Development*, 10(2), 57-72.
- Kjosevski, J. (2013). Banking sector development and economic growth in central and southeastern Europe countries. *Transition Studies Review*, 19(4), 461-473.
- Kotrajaras, P., Tubtintong, B., and Wiboonchutikula, P. (2011). Does FDI enhance economic growth? New evidence from East Asia. *ASEAN Economic Bulletin*, 183-202.
- Kremer, S., Bick, A., and Nautz, D. (2013). Inflation and growth: new evidence from a dynamic panel threshold analysis. *Empirical Economics*, 44(2), 861-878.
- Kumari, R., and Sharma, A. K. (2017). Determinants of foreign direct investment in developing countries: a panel data study. *International Journal of Emerging Markets*, 12(4), 658-682.
- Lautier, M., and Moreaub, F. (2012). Domestic investment and FDI in developing countries: the missing link. *Journal of Economic Development*, 37(3), 1-23.
- Law, S. H., and Azman-Saini, W. N. W. (2012). Institutional quality, governance, and financial development. *Economics of Governance*, 13(3), 217-236.
- Law, S. H., Azman-Saini, W. N. W., and Ibrahim, M. H. (2013). Institutional quality thresholds and the finance–growth nexus. *Journal of Banking and Finance*, 37(12), 5373-5381.
- Le, T. H., Kim, J., and Lee, M. (2016). Institutional quality, trade openness, and financial sector development in Asia: An empirical investigation. *Emerging Markets Finance and Trade*, 52(5), 1047-1059.
- Lee, C. C., and Chang, C. P. (2009). FDI, financial development, and economic growth: international evidence. *Journal of Applied Economics*, 12(2), 249-271.
- Lee, C. C., Chang, C. H., Arouri, M., and Lee, C. C. (2016). Economic growth and insurance development: The role of institutional environments. *Economic Modelling*, 59, 361-369.
- Lee, J. W., and Hong, K. (2012). Economic growth in Asia: Determinants and prospects. *Japan and the World Economy*, 24(2), 101-113.
- Levin, A., Lin, C. F., and Chu, C. S. J. (2002). Unit root tests in panel data: asymptotic and finite-sample properties. *Journal of Econometrics*, 108(1), 1-24.
- Levine, R. (1997). Financial development and economic growth: views and agenda. *Journal of Economic Literature*, 35(2), 688-726.
- Levine, R. (2002). Bank-based or market-based financial systems: which is better? *Journal of Financial Intermediation*, 11(4), 398-428.
- Levine, R. (2005). Finance and growth: theory and evidence. *Handbook of Economic Growth*, 1, 865-934.
- Levine, R., and Zervos, S. (1996). Stock market development and long-run growth. *World Bank Economic Review*, 10(2), 323-39.

- Levine, R., and Zervos, S. (1998). Stock markets, banks, and economic growth. *American Economic Review*, 88(3), 537-558.
- Loayza, N. V., and Ranciere, R. (2006). Financial development, financial fragility, and growth. *Journal of Money, Credit and Banking*, 38(4), 1051-1076.
- Lucchetti, R., Papi, L., and Zazzaro, A. (2001). Banks' inefficiency and economic growth: A micro-macro approach. *Scottish Journal of Political Economy*, 48(4), 400-424.
- Lütkepohl, H. (1982). Non-causality due to omitted variables. *Journal of Econometrics*, 19(2-3), 367-378.
- Maddala, G. S., and Wu, S. (1999). A comparative study of unit root tests with panel data and a new simple test. *Oxford Bulletin of Economics and Statistics*, 61(S1), 631-652.
- Malikane, C., and Chitambara, P. (2017). Foreign direct investment, democracy and economic growth in Southern Africa. *African Development Review*, 29(1), 92-102.
- Mankiw, N. G., Romer, D., and Weil, D. N. (1992). A contribution to the empirics of economic growth. *The Quarterly Journal of Economics*, 107(2), 407-437.
- Matemilola, B. T., Bany-Ariffin, A. N., Azman-Saini, W. N. W., and Nassir, A. M. (2016). Non-linearity in debt and return relationship: Evidence from dynamic panel threshold method. *Journal of Applied Sciences*, 16(9), 438-444.
- Miyamoto, K. (2003). Human capital formation and foreign direct investment in developing countries. *Working Paper No. 211*, OECD Development Centre.
- Moudatsou, A., and Kyrkilis, D. (2011). FDI and economic growth: Causality for the EU and ASEAN. *Journal of Economic Integration*, 26(3), 554-577.
- Muhammad, N., Islam, A. R. M., and Marshdeh, H. A. (2016). Financial development and economic growth: an empirical evidence from the GCC countries using static and dynamic panel data. *Journal of Economics and Finance*, 40(4), 773-791.
- Muzaffar, A. T., and Junankar, P. N. (2014). Inflation–growth relationship in selected Asian developing countries: evidence from panel data. *Journal of the Asia Pacific Economy*, 19(4), 604-628.
- Naceur, S. B., and Ghazouani, S. (2007). Stock markets, banks, and economic growth: Empirical evidence from the MENA region. *Research in International Business and Finance*, 21(2), 297-315.
- Naceur, S. B., Cherif, M., and Kandil, M. (2014). What drives the development of the MENA financial sector? *Borsa Istanbul Review*, 14(4), 212-223.
- Nadeem, M. (2016). *Intellectual capital and firm performance: evidence from developed, emerging and frontier markets of the world* (Doctoral dissertation, Lincoln University Library).
- Naik, P. K., and Padhi, P. (2015). On the linkage between stock market development and economic growth in emerging market economies: dynamic panel evidence. *Review of Accounting and Finance*, 14(4), 363-381.

- Narayan, P. K., and Narayan, S. (2013). The short-run relationship between the financial system and economic growth: New evidence from regional panels. *International Review of Financial Analysis*, 29, 70-78.
- Naudé, W. (2011). The Global Financial Crisis and Development: Implications for the Entrepreneurial Economy. *Working Paper No. 2011/01*. Maastricht school of Management, Maastricht.
- Ncube, M. (2007). Financial services and economic development in Africa. *Journal of African Economies*, 16(suppl_1), 13-57.
- Ndikumana, L., and Verick, S. (2008). The linkages between FDI and domestic investment: Unravelling the developmental impact of foreign investment in Sub-Saharan Africa. *Development Policy Review*, 26(6), 713-726.
- Ngare, E., Nyamongo, E. M., and Misati, R. N. (2014). Stock market development and economic growth in Africa. *Journal of Economics and Business*, 74, 24-39.
- Nguyen, H. T., and Pham, H. V. (2014). Relationship between stock market development and economic growth: Evidence from Canada and Australia. *International Journal of Economics and Finance*, 6(7), 1-10.
- Niblock, S. J., Heng, P., and Sloan, K. (2014). Regional stock markets and the economic development of S outheast Asia. *Asian-Pacific Economic Literature*, 28(1), 47-59.
- Nkoa, B. E. O. (2018). Determinants of foreign direct investment in Africa: An analysis of the impact of financial development. *Economics Bulletin*, 38(1), 221-233.
- Norden, L., and van Kampen, S. (2013). Corporate leverage and the collateral channel. *Journal of Banking and Finance*, 37(12), 5062-5072.
- Nwaogu, U. G., and Ryan, M. J. (2015). FDI, foreign aid, remittance and economic growth in developing countries. *Review of Development Economics*, 19(1), 100-115.
- Omri, A., and Kahouli, B. (2014). The nexus among foreign investment, domestic capital and economic growth: Empirical evidence from the MENA region. *Research in Economics*, 68(3), 257-263.
- Otchere, I., Soumaré, I., and Yourougou, P. (2016). FDI and financial market development in Africa. *The World Economy*, 39(5), 651-678.
- Owiredu, A., Oppong, M., and Asomaning, S. A. (2016). Macroeconomic determinants of stock market development in Ghana. *International Finance and Banking*, 3(2), 33-48.
- Pradhan, R. P., Arvin, M. B., Hall, J. H., and Bahmani, S. (2014). Causal nexus between economic growth, banking sector development, stock market development, and other macroeconomic variables: The case of ASEAN countries. *Review of Financial Economics*, 23(4), 155-173.
- Pradhan, R., Arvin, M. B., Bahmani, S., and Hall, J. H. (2019). Attaining economic growth through financial development and foreign direct investment. *Journal of Economic Studies*, 46(6), 1-23.

- Qasimi Varnamkhasti, J., Mihrgan, N., Najjarzadi, R., and Hosseini-Nasab, E. (2015). Financial development as a key determinant of FDI inflow to developing countries. *The International Journal of Humanities*, 22(3), 1-28.
- Rabiul, M. (2010). Banks, stock markets and economic growth: Evidence from selected developing countries. *Decision*, 37(3), 5-29.
- Raheem, I., and Oyinlola, M. A. (2013). Foreign direct investment-economic growth nexus: The role of the level of financial sector development in Africa. *Journal of Economics and International Finance*, 5(9), 327-337.
- Rahmaddi, R., and Ichihashi, M. (2013). The role of foreign direct investment in Indonesia's manufacturing exports. *Bulletin of Indonesian Economic Studies*, 49(3), 329-354.
- Rajan, R. G., and Zingales, L. (1998). Financial dependence and growth. *The American Economic Review*, 88(3), 559-586.
- Rajan, R. G., and Zingales, L. (2003). The great reversals: the politics of financial development in the twentieth century. *Journal of Financial Economics*, 69(1), 5-50.
- Ramírez, M. (2000). Foreign direct investment in Mexico: a cointegration analysis. *The Journal of Development Studies*, 37(1), 138-162.
- Rashti, N. A., Araghi, E. S., and Shayeste, M. (2014). Relationship between financial development and economic growth, evidence from financial crisis. *Asian Economic and Financial Review*, 4(7), 930.
- Raz, A. (2013). The nexus between bank credit development and economic growth in Indonesia. *DLSU Business & Economics Review*, 23(1), 93-104.
- Reisen, H., and Soto, M. (2001). Which types of capital inflows foster developing-country growth? *International Finance*, 4(1), 1-14.
- Rioja, F., and Valev, N. (2014). Stock markets, banks and the sources of economic growth in low and high income countries. *Journal of Economics and Finance*, 38(2), 302-320.
- Ruiz, J. L. (2018). Financial development, institutional investors, and economic growth. *International Review of Economics and Finance*, 54, 218-224.
- Sahin, S., and Ege, I. (2015). Financial development and FDI in Greece and neighbouring countries: A panel data analysis. *Procedia Economics and Finance*, 24, 583-588.
- Sahu, P. K. (2010). FDI, wage inequality and employment in emerging economies: recent evidence from Indian manufacturing. *MPRA Paper No. 35149*, University Library of Munich, Munich.
- Samargandi, N., Fidrmuc, J., and Ghosh, S. (2015). Is the relationship between financial development and economic growth monotonic? Evidence from a sample of middle-income countries. *World Development*, 68, 66-81.
- Schumpeter, J. A. (1912). *The Theory of Economic Development*. Harvard University Press, Cambridge.

- Schwert, G. W. (1990). Stock returns and real activity: A century of evidence. *The Journal of Finance*, 45(4), 1237-1257.
- Seven, Ü., and Yetkiner, H. (2016). Financial intermediation and economic growth: Does income matter? *Economic Systems*, 40(1), 39-58.
- Shah, M. H. (2016). Financial development and foreign direct investment: The case of Middle East and North African (MENA) developing nations. *MPRA Paper No. 82013*, University Library of Munich, Munich.
- Shah, S. H., and Shah, A. (2011). The association between financial development and economic development: A review. *African Journal of Business Management*, 5(35), 13428-13434.
- Shahbaz, M. (2012). Does trade openness affect long run growth? Cointegration, causality and forecast error variance decomposition tests for Pakistan. *Economic Modelling*, 29(6), 2325-2339.
- Shahbaz, M., and Rahman, M. M. (2010). Foreign capital inflows-growth nexus and role of domestic financial sector: an ARDL co-integration approach for Pakistan. *Journal of Economic Research*, 15(3), 207-231.
- Sharma, R., and Bardhan, S. (2018). Stock market development and economic growth: Evidence from bootstrap panel Granger causality test. *Journal of Economic Development*, 43(3), 57-83.
- Sharma, R., and Kautish, P. (2020). Linkages between financial development and economic growth in the middle-income countries of South Asia: A panel data investigation. *Vision*, 24(2), 140-150.
- Siddiqui, A., and Rehman, A. U. (2017). The human capital and economic growth nexus: in East and South Asia. *Applied Economics*, 49(28), 2697-2710.
- Singh, A. (1997). Financial liberalisation, stock markets and economic development. *The Economic Journal*, 107(442), 771-782.
- Singh, A., and Weisse, B. A. (1998). Emerging stock markets, portfolio capital flows and long-term economic growth: Micro and macroeconomic perspectives. *World Development*, 26(4), 607-622.
- Slaughter, M. J. (2002). Does inward foreign direct investment contribute to skill upgrading in developing countries? *CEPA Working Paper 2002-08*, New School University, Hanover.
- Slesman, L., Baharumshah, A. Z., and Azman-Saini, W. N. W. (2019). Political institutions and finance-growth nexus in emerging markets and developing countries: A tale of one threshold. *The Quarterly Review of Economics and Finance*, 72, 80-100.
- Slesman, L., Baharumshah, A. Z., and Wohar, M. E. (2015). Capital inflows and economic growth: Does the role of institutions matter? *International Journal of Finance and Economics*, 20(3), 253-275.
- Smarzynska Javorcik, B. (2004). Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages. *American Economic Review*, 94(3), 605-627.

- Soltanpanah, H., and Karimi, M. S. (2013). Accumulation of human capital and foreign direct investment (FDI) inflows in ASEAN-3 countries (Malaysia, Thailand, Indonesia). *African Journal of Business Management*, 7(17), 1599-1605.
- Soumaré, I. (2015). Does FDI improve economic development in North African countries? *Applied Economics*, 47(51), 5510-5533.
- Soumaré, I., and Tchana Tchana, F. (2015). Causality between FDI and financial market development: evidence from emerging markets. *The World Bank Economic Review*, 29(suppl_1), S205-S216.
- Spencer, J. W. (2008). The impact of multinational enterprise strategy on indigenous enterprises: Horizontal spillovers and crowding out in developing countries. *Academy of Management Review*, 33(2), 341-361.
- Suliman, A. H., and Elian, M. I. (2014). Foreign direct investment, financial development, and economic growth: a cointegration model. *The Journal of Developing Areas*, 48(3), 219-243.
- Sunny, D. (2015). Do the FDI inflows affect domestic investment?: Issues before India and South Asia. *The Journal of Developing Areas*, 49(6), 173-187.
- Svaleryd, H., and Vlachos, J. (2005). Financial markets, the pattern of industrial specialization and comparative advantage: Evidence from OECD countries. *European Economic Review*, 49(1), 113-144.
- Tan, N., Wang, W., Yang, J., and Chang, L. (2019). Financial Competitiveness, Financial Openness and Bilateral Foreign Direct Investment. *Emerging Markets Finance and Trade*, 1-21.
- Tang, H. P., Habibullah, M. S., and Pua, C. H. (2007). Stock market and economic growth in selected Asian countries. *MPRA Paper No. 37649*, University Library of Munich, Munich.
- Teixeira, A. A., and Queirós, A. S. (2016). Economic growth, human capital and structural change: A dynamic panel data analysis. *Research Policy*, 45(8), 1636-1648.
- Thumrongvit, P., Kim, Y., and Pyun, C. S. (2013). Linking the missing market: The effect of bond markets on economic growth. *International Review of Economics and Finance*, 27, 529-541.
- Tiwari, A. K. (2011). Foreign aid, FDI, economic freedom and economic growth in Asian countries. *Global Economy Journal*, 11(3), 1-26.
- Toh, M. Y., Gan, C., and Li, Z. (2018). Revisiting the Impact of Stock Market Liquidity on Bank Liquidity Creation: Evidence from Malaysia. *Emerging Markets Finance and Trade*, 1-27.
- Tongurai, J., and Vithessonthi, C. (2018). The impact of the banking sector on economic structure and growth. *International Review of Financial Analysis*, 56, 193-207.
- Tripathy, S., and Pradhan, R. P. (2014). Banking sector development and economic growth in India. *Global Business Review*, 15(4), 767-776.
- Tsaurai, K., & Makina, D. (2018). The Impact of Financial Sector Development on Foreign Direct Investment: An Empirical Study on Minimum Threshold Levels. *Journal of Economics and Behavioral Studies*, 10(5), 244-254.

- Tülüce, N. S., and Doğan, İ. (2014). The impact of foreign direct investments on SMEs' development. *Procedia-Social and Behavioral Sciences*, 150, 107-115.
- Un, C. A., and Cuervo-Cazurra, A. (2008). Do subsidiaries of foreign MNEs invest more in R&D than domestic firms? *Research Policy*, 37(10), 1812-1828.
- UNCTAD. 2020. *World Investment Report 2020*. New York: United Nations Publication, Available online: <https://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=2769> (accessed on 26 July 2020)
- United Nations Conference on Trade and Development. (1996). *World Investment Report 1996: Investment, Trade and International Policy Arrangements*. UN, Geneva.
- United Nations Conference on Trade and Development. (2016). *World Investment Report 2016: Investor Nationality: Policy Challenges*. UN, Geneva.
- United Nations Conference on Trade and Development. (2017). *World Investment Report 2017: Investment and the Digital Economy*. UN, Geneva.
- Vaithilingam, S., Guru, B. K., and Shanmugam, B. (2003). Bank lending and economic growth in Malaysia. *Journal of Asia-Pacific Business*, 5(1), 51-69.
- Vinayagathan, T. (2013). Inflation and economic growth: A dynamic panel threshold analysis for Asian economies. *Journal of Asian Economics*, 26, 31-41.
- Voghouei, H., Azali, M., and Jamali, M. A. (2011). A survey of the determinants of financial development. *Asian-Pacific Economic Literature*, 25(2), 1-20.
- Wang, C. C., and Guo, Y. (2017). Local innovativeness and knowledge spillovers of indigenous firms on foreign firms: Evidence from China's ICT Industry. *The Professional Geographer*, 69(1), 117-125.
- Win, H. H. H., Ichihashi, M., Kaneko, S., and Goto, D. (2017). Relationship between financial development and foreign direct investment. *IDEA DP2 Series*, 7(2), 1-24.
- Win, M. M. K., and Kakinaka, M. (2019). Firm performance and backward and forward linkages: the case of the garment sector in Myanmar. *Asia-Pacific Journal of Accounting and Economics*, 1-24.
- Wintoki, M. B., Linck, J. S., and Netter, J. M. (2012). Endogeneity and the dynamics of internal corporate governance. *Journal of Financial Economics*, 105(3), 581-606.
- Wong, K., and Tang, T. C. (2011). Foreign direct investment and employment in manufacturing and services sectors: Fresh empirical evidence from Singapore. *Journal of Economic Studies*, 38(3), 313-330.
- Wooldridge, J. M. (2012). *Introductory Econometrics: A Modern Approach (5th edition)*. Boston: Cengage Learning.
- Wooldridge, J. M. (2015). *Introductory Econometrics: A Modern Approach (6th edition)*. Boston: Cengage Learning.

- Yusoff, M. B., and Febrina, I. (2014). Trade openness, real exchange rate, gross domestic investment and growth in Indonesia. *Margin: The Journal of Applied Economic Research*, 8(1), 1-13.
- Zafar, H., Qureshi, T. M., an Abbas, Z. (2013). Does foreign direct investment influence development of stock market of host country? Evidence from Pakistan. *African Journal of Business Management*, 7(9), 678-687.
- Yartey, C. A., & Adjasi, C. K. (2007). Stock market development in Sub-Saharan Africa: Critical issues and challenges. *IMF. Working paper no. WP/07/209*, Washington DC.