RELATIONSHIP BETWEEN FDI AND ECONOMIC GROWTH: A COMPARATIVE PANEL STUDY BETWEEN ASIAN AND AFRICAN LDCS

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A thesis submitted to the Department of Economics and Social Sciences in partial fulfillment of the requirements for the degree of Master of Science in Applied Economics

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Declaration

It is hereby declared that,

1. The thesis submitted is my own original work while completing degree at Brac University.

2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.

3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.

4. I have acknowledged all main sources of help.

Approval

The thesis/project titled "Relationship between FDI and Economic Growth: A Comparative Panel Study Between Asian and African LDCs"

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Ethics Statement

Hereby, I, Taasin Abedin, consciously assure that for the paper "Relationship between FDI and Economic Growth: A Comparative Panel Study Between Asian and African LDCs" following is fulfilled:

1) This material is my own original work, which has not been previously published elsewhere.
2) The paper is not currently being considered for publication.
3) The paper reflects my own research and analysis in a truthful and complete manner.
4) The results are appropriately placed in the context of prior and existing research.
5) All sources used are properly disclosed (correct citation). Literal copying of text must be indicated as such by using quotation marks and giving proper reference.
6) I have been personally and actively involved in substantial work leading to the paper and will take public responsibility for its content.

The violation of the Ethical Statement rules may result in severe consequences.

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Date: 09 February 2023

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Abstract

This paper investigates the relationship between foreign direct investment (FDI) and economic growth in selected least developed countries of Asia (Bangladesh, Bhutan, Cambodia, and Nepal) and Africa (Comoros, Mali, Senegal, and Uganda). The study aims to provide a comprehensive comparison of the impact of FDI on economic growth in these regions and to examine whether initial conditions and country-specific features can explain differences in the growth benefits of FDI. Using panel data regression techniques and twenty years (2002-2021) data from World Development Indicators and UNCTAD, the study finds that FDI is an important contributor to economic growth in the selected Asian and African countries. The dependent variable for the study is economic growth and the independent variables are FDI inflow, capital investment, inflation, external trade, and external debt shocks. The results of foreign direct investment in various countries have been beneficial for economic growth. Additionally, the analysis shows that on average, African countries experience a greater impact of FDI on economic growth compared to the selected Asian countries, despite the higher GDP growth in the Asian region. The study also found that economic growth is negatively affected by debt shock and inflation, while exports expansion and capital investment have a positive impact on economic growth. Overall, the study adds to the existing empirical literature by exploring an under-researched area and providing valuable insights into the role of FDI in promoting economic growth in least developed countries.

1. Introduction

Foreign direct investment (FDI) has long been regarded as an important contributor to economic growth and development in developing economies such as India. It contributes to the globalisation of economies and the internationalization of resources through financial flows, trade technology, and resources. Foreign direct investment (FDI) is sensitive to an economy's economic variables and policies on a global scale. It has a positive impact on an economy and is often cited as one of the primary factors contributing to economic growth and development. Over the years, countries have actively sought FDI due to the expected positive effect on income generation from capital inflows, advanced technology, source of employment generation, and management skills.

The World Trade Organization (WTO) defines foreign direct investment (FDI) as the act of an investor headquartered in one nation (the home country) purchasing an asset in another nation (the host country) with the intention of managing that asset. FDI can be distinguished from portfolio investments in overseas stocks, bonds, and other financial instruments by the management component.

According to one of the major conferences on less developed countries (LDC) held by the United Nations over the past three decades, the "Brussels Declaration and Program of Action for the LDCs" (BPoA), FDI inflows are one of the fundamental policies for promoting development and economic growth in LDCs. According to the BPoA, export demand from outside is more important for economic growth than domestic demand (Mahmoodi, & Mahmoodi, 2016).

The constant ratio of physical capital to output over time, the constant rate of return on capital, the constant share of labor and physical capital in national income, and the significant difference in the growth rate of output per worker across countries are examples of these mechanisms which underpin economic growth (Kaldor, 1963).

Commercial transactions and foreign direct investments are the most important factors in any country's economic growth process (FDI). The accumulation of natural capital and the transfer of technology are primarily responsible for the market opening in economic growth. Exporters would compete to enter foreign markets by utilizing innovation and production technology. FDI

has taken a prominent place in economic growth strategies because it is useful in closing the technological and resource gap in developing countries.

Three main categories of factors, in general, have an impact on foreign investors (Christiansen and Ogutcu, 2002):

- The project's profitability.
- The simplicity with which operations of subsidiaries can be incorporated into investors' global strategies.
- How conducive the environment is overall in the host nation.

Given that most developing countries' governments do not appear to be able to generate enough revenue to meet their expenditure needs, FDI helps fill the domestic revenue-generation gap. FDI is said to be a vehicle for technology transfer. In-depth research has also been done on how FDI affects the target country, but the empirical findings are conflicting. The effect of FDI on the economic growth of the recipient country is one of several welfare implications of FDI as transmitted by multinational corporations. The effects of foreign direct investment on target growth have significant policy implications.

Economists, researchers, and policy analysts have paid close attention to the relationship between economic growth and foreign direct investment (FDI), particularly in developing countries. It is a widely accepted argument that an economy's openness promotes economic growth regardless of whether the economy is developed or developing. Free trade in goods and services and free international capital flow are the two dimensions of openness, with the former further subdivided into exports and imports.

According to this theoretical paradigm, investment, including FDI, influences the rate of growth either through its effects on human capital or through research and development (R&D). FDI may have an impact on growth even if the return on investment is dropping because of externalities. These include effects from the subsidiary's varied interactions with local businesses as well as information "oozing" into the local economy through the subsidiary (organisational forms, improvements to human capital, and improvements to fixed assets, for example) (Kok et. al, 2009).

Neuhause (2006) identifies three major channels through which FDI can influence technological change, improve capital stocks, and generate economic growth: Direct transmission (via "Greenfield Investments"), indirect transmission (via "ownership Participation"), and second-round transmission (via "Technology Spillover").

Through the utilization of significant FDI, China and Southeast Asian nations' economic growth significantly improved. South Asian nations adopted a restrictive policy regime in the early years of their independence but changed it in the last two to three decades to make room for foreign investment. South Asian nations have the potential to draw FDI because they have a variety of benefits to offer to international investors, including a sizable domestic market, low inflation, an expanding share of skilled workers, an expanding entrepreneurial class, and continually improving banking systems (Sahoo, 2006).

2. Rationale of the Study

The proposed paper serves two functions. First, this paper adds to the empirical literature by investigating one of the most recent and unexplored areas- FDI and Economic Growth Evidence from selected Least Developed Countries of Asia and Africa. Everyone understands the significance of FDI. As already described, FDI has become a very important part of the economy, and it has received a lot of attention in recent years. There is a significant gap in current literature because very few studies have been conducted in this area. Though there exists many previous studies that found a positive relationship between economic growth and FDI, no research has been conducted on the impact of FDI on economic growth in LDCs of the two continents.

FDI inflows have a variety of characteristics that make them preferable to other sources of capital. These characteristics include closing savings-investment gaps, easing foreign exchange constraints, and incorporating not only capital but also technology, knowledge, marketing, and managerial skills (Grossman and Helpman, 1992; Walz, 1997; Pradham, 2003). Until now, empirical evidence on the effect of FDI on economic growth has been inconclusive.

With more and more technology being invented almost every day to make our lives easier, whether and how FDI impacts economic growth in a country have been among the many interests of economists, policy makers, and social planners over the last few decades. Economic growth can raise the living standards of the people in the country and increase the national income by increasing aggregate output. Plethora of research is available on this interesting topic, obviously the data and research methods vary among researchers, and so do their conclusions.

One of the reasons behind their interest is that economic growth directly brings about a better quality of life and improves the living standards of the people in that country. it is associated with higher national income levels, higher consumption, higher production, lower unemployment, higher tax revenues for the government, among many other benefits. Over time, they have discovered up to five factors which can influence economic growth: capital goods, labor force, human capital, and Technology advances.

Private capital has become an increasingly important source of funding for developing countries in recent years. Since the early 1990s, private funding has accounted for more than 75% of their external capital flows. Global FDI flows have increased dramatically over the last three

decades. World FDI flows increased from $54 billion in 1980 to $208 billion in 1990, $1,401 billion in 2000, $1,114 billion in 2009 (El-Wassal, 2012) to $1,582 billion in 2020 (UNCTAD, 2022).

Many countries around the world began to liberalize their FDI policies in the mid-1980s, and from 1993 to 2003, 94% of the 1,718 regulatory changes made by countries around the world were favorable to FDI (UNCTAD, 2006). Developing countries in particular have created an environment that is becoming increasingly welcoming to foreign investors (UNCTAD, 1999). Government policy changes have made it easier for foreign investors to enter and operate in more economic sectors. There are fewer restrictions on foreign equity participation and ownership. In some sectors, screening and authorization for the establishment of foreign-owned enterprises have been replaced by simple registration, and many performance requirements have been eliminated.

FDI is expected to assist a developing country in accessing a portion of the developed world's savings, thereby compensating for the country's lack of savings (Noorzoy, 1979). FDI is said to be a vehicle for the transfer of technology, including technology embodied in goods, services, people, and organisational arrangements, as well as technology embodied in blueprints, designs, technical documents, and the content of numerous types of training.

However, Carkovic and Levine (2002) concluded that the exogenous component of FDI has no significant positive impact on economic growth and that there is no reliable cross-country empirical evidence to support the claim that FDI in general accelerates economic growth. Using data from 1970 to 2001, Akinlo (2004) investigates the impact of FDI on economic growth in Nigeria. His ECM results show that both private capital and lag foreign capital have a small and insignificant impact on economic growth.According to Aitken, Hansen and Harrison (1997) and Aitken, Hansen and Lipsey (1999), all productivity increases typically attributed to FDI in a country may be untrue.

Furthermore, the increased competition for FDI in most developing and developed countries over the last two decades has fueled an extended and contentious debate about the cost and/or benefits of FDI (Agrawal and Khan, 2011; Wijeweera, Villano, & Dollery, 2010). While many scholars agree that FDI has a positive impact on economic growth when appropriate incentives and policies are in place, others point out potential drawbacks such as the host country's balance of payments and competition (Johnson, 2006; Ozturk, 2007). It has also been pointed out

by many researchers that the host country may be adversely affected by the flow of such foreign money.

The effect of FDI on economic growth is a contentious issue. There are two opposing perspectives on how FDI affects growth. The modernization theory is the first, and it contends that FDI has a favorable effect by transferring knowledge and giving funds for investment. According to the dependency theory, which is the second point of view, FDI has a detrimental effect on economic growth. Its foundation is the idea that foreign direct investment (FDI) leads to monopolies, which impede the full utilization of domestic resources and reduce the potential multiplier effect (Tiwari, 2011).

In fact, there is no clear uniformity in opinions or consensus owing to the differences in research methods employed for studying the effects of FDI on economic growth. As such, the topic is still highly debatable, meaning that further research can be performed, and different results can be derived from them. Until now, empirical evidence on the effect of FDI on economic growth has been inconclusive.

This paper adds to the existing literature in two ways. To begin, unlike most existing studies, which focus on either developing or developed economies, or a group of both developing and developed economies, this paper focuses exclusively on Asian LDCs and their African counterparts. The reasons for picking LDCs are detailed in the following paragraphs. Second, the paper contributes to the growing literature by investigating a variety of enabling conditions and structural policy-related factors that appear to play an important role in shaping the relationship between FDI and economic growth.

The list of LDCs now includes 46 nations, which account for 12% of the world's population. Their low income levels, susceptibility to economic and environmental shocks, low levels of human development, acute poverty, and high death rates are characteristics. The research claims that the weak production capacities brought on by a lack of human capabilities, poor infrastructure, and a restricted ability to access and use technologies are the main causes of LDCs' vulnerability. Additionally, they are the outcome of weak institutions, such as the labor institutions and social security systems (International Labor Organization, 2022).

Particularly in Least Developed Countries (LDCs), the COVID-19 pandemic's social and economic effects are being felt acutely. Their structural weaknesses, inadequate social safety systems, and constrained fiscal capacity to support a human-centered recovery are largely to blame for this. These worldwide disparities run the risk of becoming more entrenched due to the uneven COVID-19 recovery (United Nations (UN), 2022).

Exports and tourism have collapsed, causing huge unemployment in LDCs. To make matters worse, migrant workers from LDCs are also losing their jobs, which has a significant negative impact on remittances, thereby raising debt levels. The potential to use digital technology is still great in LDCs because the population is young and access to education and skill development is increasing. If sufficient investments are made in human capital and capital to guarantee that technologies assist drive inclusive and productive growth and support outcomes for decent work, then digital technologies have the potential to give enormous benefits to LDCs (United Nations (UN), 2022).

Moreover, our motherland, Bangladesh, will be turning to a developing country after leaving the least developed country (LDC) status within the next few years. Bangladesh will need to take specific actions in order to lower these cost components in order to make up for the increased costs brought on by the imposition of taxes. It would be necessary to create a favorable climate where foreign investors feel inspired, motivated, and encouraged to invest. Diversifying products and markets will depend on attracting FDI through the three-pronged strategy of investment, logistics for transportation, and trade linkage.

To assure market and export diversification, processes and goods must be upgraded, and labor and capital productivity must be increased. Labor and capital productivity will significantly rise when productive FDI flows into the country. Therefore, it is of paramount importance to the Government of Bangladesh to take various steps to encourage more FDI inflow to ensure greater market access and export diversification and higher economic growth of the nation (Dr, Mustafizur Rahman, Distinguished Fellow, CPD, 2021).

3. Research Objectives

The primary goal of this research is to determine the role of FDI on economic growth in 8 LDCs of Asia and Africa continents (see Appendix). However, we have also made an effort to examine how exports have helped these nations' economies thrive. The importance of this study rests in its attempt to address the question of whether export-led development or FDI-led growth is superior.

The specific goals are as follows:

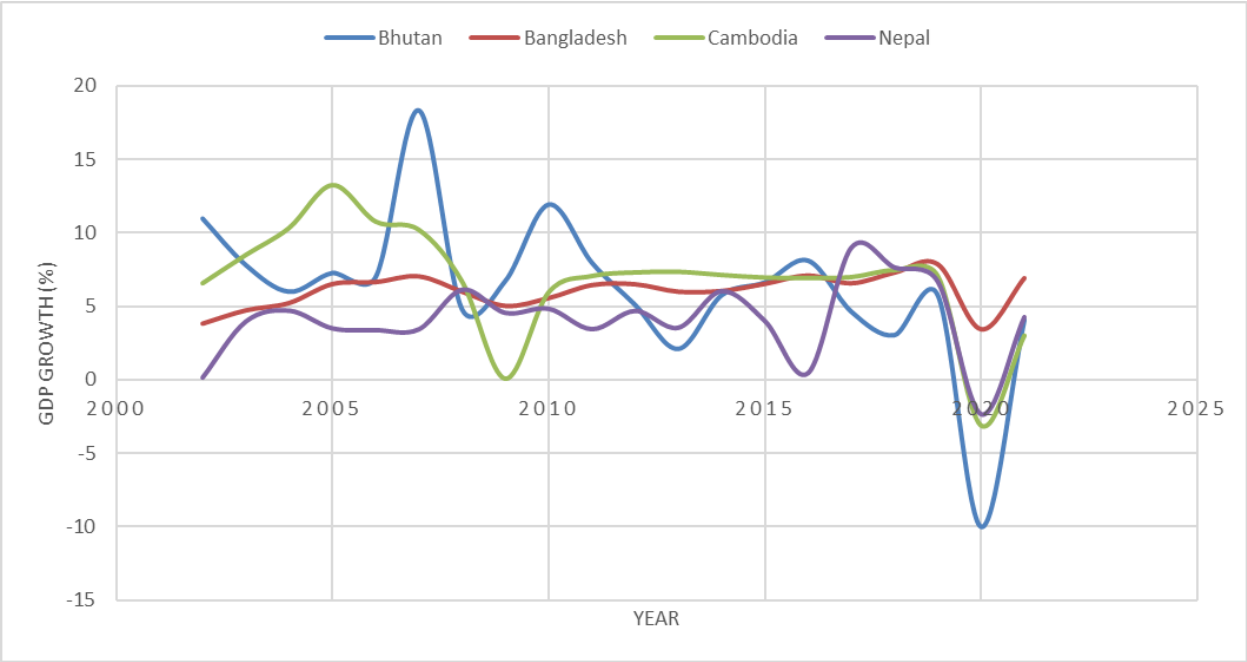
- To investigate previous studies and identify gaps in the literature concerning the impact of FDI on economic growth.
- To provide a comprehensive comparison of the impact of FDI on the economic growth of the least developed countries in Asia versus Africa.
- If the initial conditions and features that vary from country to country can explain the differences in growth benefits of FDI.

3.1 The FDI and GDP Growth Trend in the Countries Being Studied

From the figure 3.1 it is clear that the GDP growth trend in Bhutan has had the highest fluctuated growth trend among all. Even during the economic slowdown of the post-pandemic period in 2020, it has the lowest percentage of GDP growth rate. Growth rate in Nepal remained lower than Bangladesh, however Cambodia has remained the second consistent country in the GDP growth rate after Bangladesh. Moreover, the growth rate in GDP for the last twenty years was most flattered for Bangladesh among the other LDCs. It may have been made possible by a structural change in the trade and financial markets, which has been made possible by combining the effects of cross-sectoral labor reallocation and capital deepening (Asaf, 2022).

It's worth noting that the countries mentioned previously have undergone liberalization at different times, which may explain variations in their growth patterns. Additionally, the investment climate in each country varies, resulting in differing growth patterns. (Sengupta & Puri, 2020).

Figure 3-1 Percentage Growth in GDP in Selected Asian LDCs



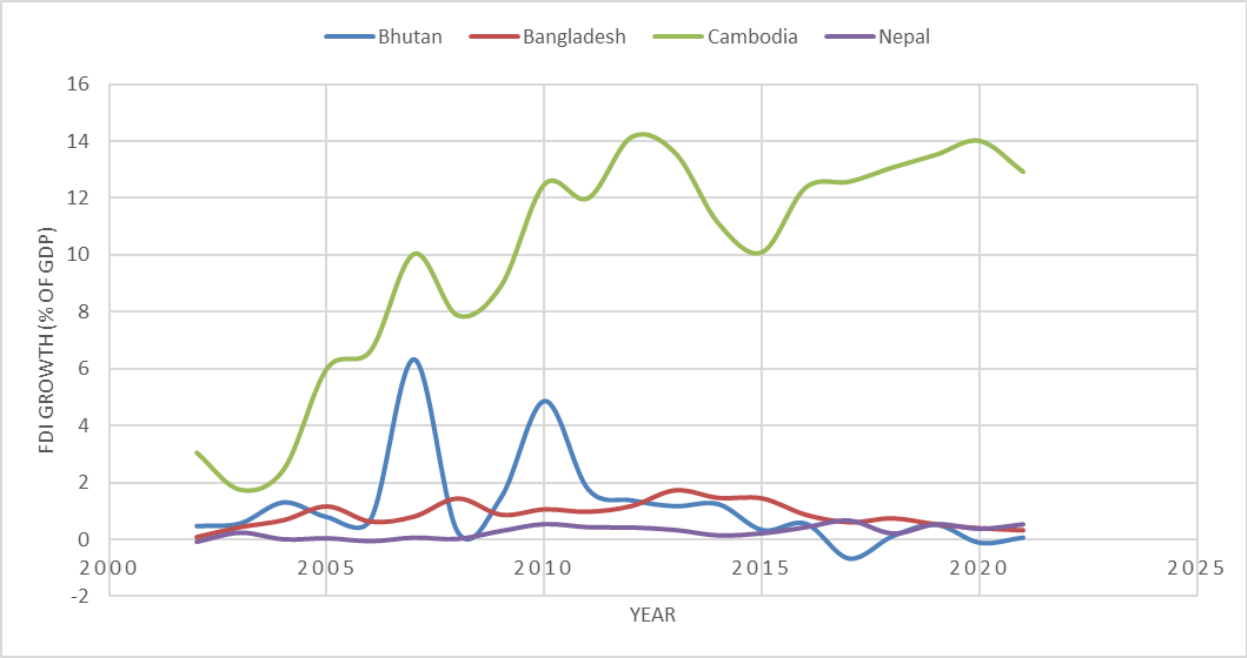
Source: Authors' own creation based on data received from the World Bank.

In figure 3.2 the FDI growth rate is highest and noticeably above all in Cambodia among the selected LDCs of the Asian region. It shows a steady upward trend, indicating a strong and consistent increase in foreign investment in the country. The FDI growth rate in Bhutan is fluctuating. It shows a pattern of ups and downs, indicating a volatile foreign investment climate in the country. On the other hand FDI growth rate in Nepal and Bangladesh are relatively flat. However the growth rate is greater in Bangladesh than Nepal. It indicates a steady but slow increase in foreign investment in the country.

The reason behind this gap between Cambodia and other countries is that before the outbreak of COVID-19, Cambodia had made significant strides in both economic development and reducing poverty levels (World Bank Group, 2022). Cambodia has implemented new laws and regulations to attract diversified foreign direct investment (FDI) by offering support and incentives for investments in emerging industries, such as assembly of machinery, electronics, and transportation, processing of natural resources, and agro-industrial production. They are also

supporting industries related to agriculture, tourism, and textiles, as well as industries that serve regional production lines and those that are deemed strategically important for the future. Additionally, they are promoting targeted investments and providing extra incentives for specific priority industries (RGC 2015).

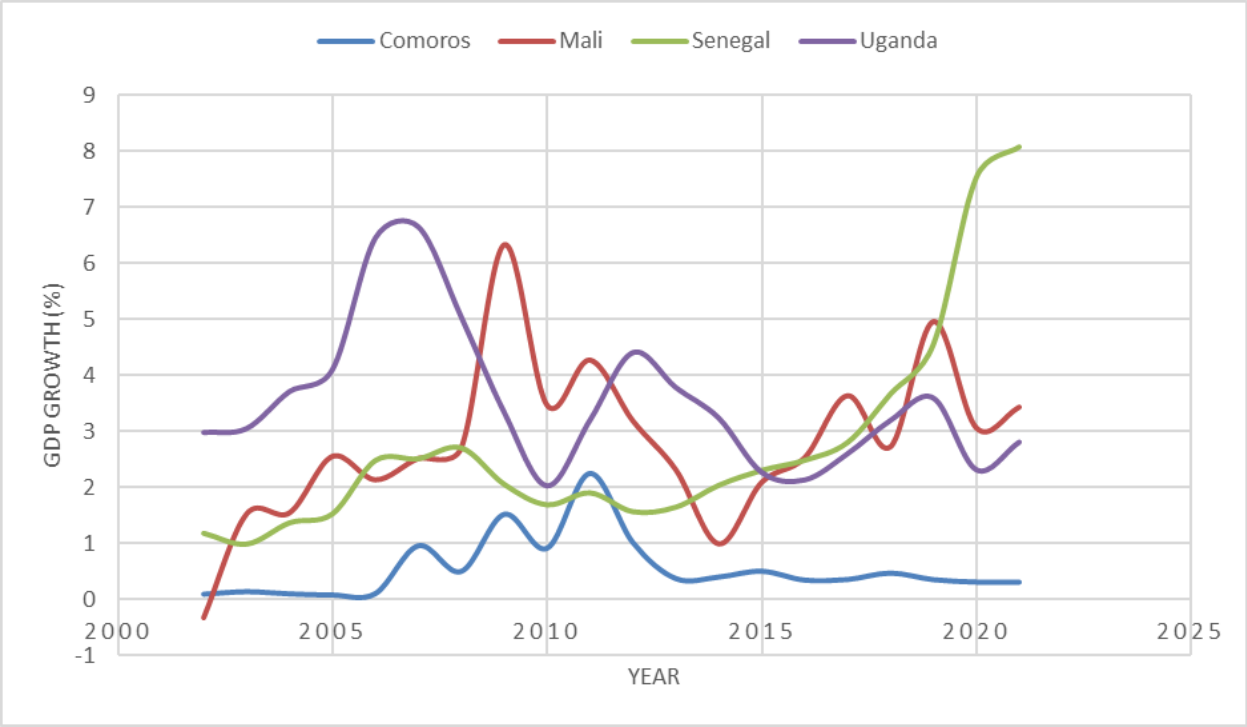
Figure 3-2 Percentage Growth in FDI in Selected Asian LDCs



Source: Authors' own creation based on data received from the World Bank.

As we can see in the figure 3.3 GDP growth rate in Senegal has gradually increased over the past twenty years, reaching its highest point at the end of the pandemic. Uganda's GDP growth rate is higher than Mali's and has also fluctuated over the past twenty years. Comoros has the lowest growth rate among the three countries, with steady declination observed over the past ten years. Comoros has several challenges that hinder its economic growth, such as inadequate education infrastructure, scarce opportunities for private businesses, inadequate healthcare facilities, a lack of diverse export options, and a rapidly growing population. Comoros' geological position plays a significant role in the country's low GDP growth. Due to its remote location and lack of natural resources, Comoros has been historically isolated from global trade and investment. This isolation has limited the country's economic development, making it difficult to attract foreign investment and businesses.

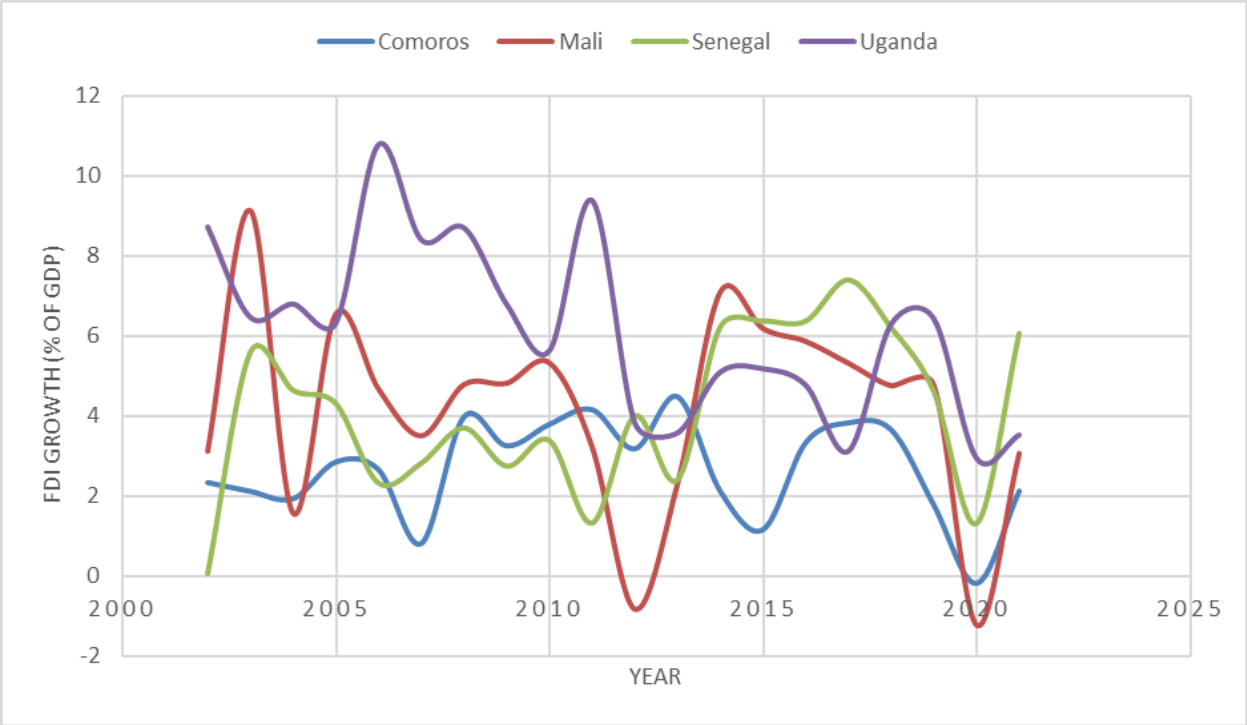
Figure 3-3 Percentage Growth in GDP in Selected African LDCs



Source: Authors' own creation based on data received from the World Bank.

In figure 3.4 the FDI growth rate is much more fluctuated than that of the Asian region. Although during the post pandemic every country faced a great decline in the FDI, over the past twenty years all the selected countries of the African region have seen a very unbalanced growth in the FDI. There are several reasons why FDI growth in Africa has fluctuated. One major factor is corruption, which can create a perceived lack of transparency and trust in the investment environment. Additionally, poor infrastructure and onerous business conditions can make it difficult and costly for potential investors to operate in Africa. The resources cycle, specifically the downturn in the oil market, has also had a significant impact on FDI inflows into Africa. Furthermore, a dependence on a single industry such as oil, as in the case of Uganda can also negatively affect FDI growth (KPMG Africa, 2016).

Figure 3-4 Percentage Growth in FDI in Selected African LDCs



Source: Authors' own creation based on data received from the World Bank.

Historically, the majority of FDI in Africa has been directed towards the extractive sector. However, in recent years, there has been a shift towards diversification in the manufacturing and services sectors. From 2006 to 2010, a large proportion of FDI in Africa was focused on resource extraction, petroleum, and coal processing projects, accounting for over half of the $236 billion in greenfield FDI projects announced. But, in the period of 2016-2020, projects in these sectors only accounted for less than 25% of total FDI. Other sectors that are still attracting significant investment in Africa include logistics, communications and IT services, and renewable energy. Therefore, it is crucial for Africa to capitalize on these trends and continue to diversify its FDI (Gwengwe & Adhikari, 2021).

Given that developing nations experience more economic hardship, revealing this relationship is more crucial for them. In 1990, FDI was the main source of funding for developing nations. FDI inflows are one of the fundamental strategies for promoting development and economic growth in LDCs, according to the BPoA conference, one of the key UN gatherings.

According to the BPoA, export demand from outside is more important for economic growth than domestic demand. Additionally, FDI is a significant source of funding and can facilitate the transfer of technology from developed to the host developing country, giving the latter an advantage in the global marketplace (Tekin, 2012).

Bangladesh

In 2002, the annual GDP growth rate of Bangladesh was 4.42%, and in 2021, it was 5.46% (Trading Economics, 2022c). There were lots of fluctuations in between, with the highest growth rate of 8.15% observed in 2019. FDI inflow was USD 335 million in 2002, which gradually rose to USD 2,896 million in 2021. The highest FDI inflow was seen in the year 2018, when USD 3,613 million flew to Bangladesh (UNCTADstat, 2022). Inflation rate was to around 2.5% in 2002 and 8.5% in 2022, with the highest inflation rate of around 12.5% recorded in 2011 (Trading Economics, 2022a). Like some of the other countries in our sample, the balance of trade for Bangladesh has been negative throughout the 20 years. In 2002, it was around -BDT 10 billion, which rose to a mammoth -BDT 225 billion in 2021. The highest trade deficit of around BDT 325 billion was observed in 2021 (Trading Economics, 2022b).

When investors are considering investing in a country, the ease of doing business in that country plays a crucial role in their decision-making process. They evaluate factors such as the clarity of existing policies, the reliability of government officials, and the adherence to rules and regulations. They also consider the potential rate of return on their investment and whether they will be able to repatriate their profits or funds. Additionally, they take into account the level of security for their investments. Therefore, in order to attract more foreign direct investment and become a major destination for FDI, Bangladesh needs to take action to address the deterrents that make investment costly. By doing so, the country will become a more attractive investment destination and also improve its ease of doing business ranking, which is an important factor for foreign investors when making investment decisions (Haider & Mortoza, 2021).

Bhutan

Bhutan almost always had a positive annual GDP growth rate, save for in 2021, when it recorded -10.10% growth. It recorded a peak of 17.9% GDP growth in the year 2008 (Trading Economics, 2022e). Interestingly, it recorded USD 2 million of FDI inflow in both 2002 and 2022. However,

in between, there were lots of ups and downs, and even negative FDI inflow in 2016 and 2017, while the highest FDI inflow of approximately USD 72 million was recorded in 2006 (UNCTADstat, 2022). Bhutan's never had a negative inflation rate. In 2002, the inflation rate was 2.5% and in 2022 it was 4.5%. A record high 13.5% inflation rate was observed in 2013 (Trading Economics, 2022f). Balance of trade for Bhutan has been a mix of both positive and negative in these 20 years. In 2002, the trade deficit stood at -BTN 5 Million; while in 2022, it was about -BTN 12,000 Million. Balance of trade reached its highest BTN 7,121 million in 2021 and hit the bottom at -BTN 11,049 Million in 2020 (Trading Economics, 2022d).

The majority of Bhutan's FDI is based on hydropower development. The sector of natural resources offers the biggest potential for FDI in Bhutan, followed by tourism (Dorji, 2015). The majority of FDI projects are, however, in Thimphu, the country's capital. Bhutan continues to be the Asian nation drawing the least FDI (also due to its small size). Contrasting sharply with this is East Asia, where there have been large flows. China, Vietnam, and Cambodia are just a few of the nations that have profited from the FDI inflow in terms of capital, technology, expertise, and ideas. At the moment, East Asia is the region that receives the most FDI worldwide. In order to lure foreign investors to Bhutan, a rise in FDI can be achieved through developing the infrastructure, which will lower costs and boost the projected rate of return (World Bank, 2019).

Cambodia

In 2002, Cambodia GDP growth rate was 6.2%, while in 2022 it was 5.4%. Cambodia’s growth rate was highest in 2005 at 13.3%. Negative economic growth was reported only once in these 20 years in the year 2020, due to the COVID-19 pandemic (Trading Economics, 2022g). FDI inflow was USD 145 million in 2002 and gradually increased to USD 3,484 million in 2022. However, the highest FDI inflow was recorded in 2020, when USD 3,625 million flew to the country (UNCTADstat, 2022). Cambodia's inflation rate has always stayed either slightly above or below 5% level. Inflation rate was highest at 35% in 2009 and hit the bottom at -5%. In 2010, Inflation was highest at 35% (Trading Economics, 2022h). As for balance of trade, in 2002, the trade deficit was approximately KHR 1,000 billion, while in 2021 it stood at approximately KHR 2,200 billion. The highest trade surplus was KHR 3,288 billion in 2021, while the lowest was KHR 6,434 billion in 2022 (Trading Economics, 2022i).

Cambodia has a market economy and is still under development. The economy has expanded quickly in Cambodia since a constitutional monarchy was restored in 1993 (Senghor, 2015). The key forces for growth are paddy, clothes, paddy fields, and tourism. These industries are quite susceptible to the state of the economy and the weather outside. Only low-end products are exported, even for textiles and apparel, a standout performance in the industrial sector (Hill & Menon, 2013).

Nepal

In 2002, Nepal's GDP growth rate was 3.9%, while in 2022 it was 5.8%. Negative economic growth was reported only in 2019 at -2.4%. Highest economic growth was recorded at 9% in 2016 (Trading Economics, 2022j). FDI inflow to the country was USD 6 million in 2002 and USD 195 million in 2022. There were some movements in either direction in between this 20-year time period. The highest FDI inflow was in 2017 when USD 198 million flew into the country (UNCTADstat, 2022). Nepal's inflation rate was around 3% in 2002 and 7.5% in 2022. The highest inflation was 4.5% in 2009, while the lowest was 1.5% in 2005. There was no negative inflation over the time frame (Trading Economics, 2022). Nepal never witnessed trade surplus over the time period, rather it witnessed a declining trend. The highest surplus was -NPR 3,913 million in 2002 while the lowest was recorded at -NPR 167,37 million in 2021.

Since Nepal's manufacturing costs are among the highest in South Asia, the government must act quickly to reduce business expenses in order to increase foreign direct investment and boost production. The investors anticipate prospects for profit. The government of Nepal needs to put a lot of effort into building an atmosphere that is much more welcoming to investments in order to improve the climate for foreign investment. This will enable faster and more sustained GDP growth (Kharel & Kharel 2019).

Comoros

Comoros had fluctuations in GDP growth rate between 2002 and 2022. In 2002, its GDP growth rate was about 2.3%. In 2022, it was 2.2%. It recorded the highest GDP growth rate of 3.8% in 2016 and 2017 (Trading Economics, 2022l). It recorded FDI of USD 0.43 million in 2002, which gradually rose till it reached the peak of USD 23 million in 2011 before dropping to USD 4.08

million in 2021 (UNCTADstat, 2022). As for inflation, it remained between 0% and 5% till 2020, after which it dropped to as low as -5%, before steadily rising to as high as 15.4% in September 2022 (Trading Economics, 2022m). Its balance of trade always had a negative balance between 2002 and 2022, starting with about -KMF 20,000 million in 2002 to ending at almost -KMF 120,000 million in 2022 (Trading Economics, 2022n).

Comoros's economic growth has slowed during the past five years, going negative in 2020 before returning in 2021. Recent years have seen a stagnation in economic freedom, which has now started to deteriorate. World Trade Organization membership is not available for Comoros. Overall, market openness policies have not evolved. Political instability exacerbates long-standing investment barriers. Because of the underdeveloped financial sector, there is still very little finance available to firms (The Heritage Foundation, 2022).

Mali

In 2002, Mali's annual GDP growth rate was around 4%, which is the same in 2022. However, there were lots of small and large variations and fluctuations in between these 20 years. GDP growth rate was highest at almost 12% in 2014, before dropping to minus 2% after a while. GDP growth rate again became negative for the second time in 2021, due to the coronavirus pandemic (Trading Economics, 2022o). FDI inflow in 2002 was USD 244 million, which mostly followed an upward trend, before rising to USD 660 Million in 2021, with the highest level of USD 721 million reached in 2019. The inflation rate was around 6% in 2002 and about 7% in 2022 (UNCTADstat, 2022). Deflation was noted multiple times within these 20 years, while the highest inflation was about 15% in 2022, probably due to the Russia-Ukraine war and its effects on global supply chain, energy prices, and the appreciation of the US dollar (Trading Economics, 2022p). Mali only observed a positive balance of Payments on only three occasions within these 20 years. The highest deficit in balance of trade was observed in 2022 at XOF 360 million (Trading Economics, 2022q).

Investment in Mali is hindered by a number of factors, including weak infrastructure, corruption, and ongoing instability in certain areas. Terrorism, drug trafficking, and smuggling also pose significant challenges, particularly in the northern and central regions of the country that have been affected by conflict. Businesses report that corruption is also an issue when it comes to

land administration, taxes, customs, and procurement for both foreign and domestic companies. The World Bank's 2020 Doing Business Report ranks Mali poorly, indicating the difficulties that foreign businesses may face. Despite these challenges, Mali continues to rely on funding from international organizations such as the World Bank, African Development Bank, and IMF to finance development projects in areas such as agriculture, infrastructure, education, and health. Efforts to increase transparency and combat corruption can also improve the investment climate (United States Department of State, n.d.).

Senegal

GDP growth rate was around 1% in 2002 and about 3.5% in 2021 in Senegal. GDP growth rate was negative in 2012, recording a highest -2%. Also, in 2020, due to the coronavirus pandemic, annual GDP growth rate was negative for the second time at around -0.5% (Trading Economics, 2022r). Her FDI inflow was USD 78 million in 2002, which mostly followed an upward trend, before reaching USD 2,232 million in 2021 (UNCTADstat, 2022). In 2002, the inflation rate was about 2%, which then varied and fluctuated in between, before reaching a maximum of 13% in 2022. Between these 20 years, trade deficit widened from around XOF 100 billion to as high as XOF 368 billion in 2021. In this time frame, there was no surplus in trade balance (Trading Economics, 2022s).

Senegal has made great strides toward achieving macroeconomic stability (Lagarde, 2015). Senegal offers a range of benefits for foreign investment, including a stable democratic system, strong economic growth, and an open economy. Despite the challenges posed by the COVID-19 pandemic and rising commodity costs, which have led to an increase in public debt, the overall macroeconomic environment in Senegal remains stable. The CFA franc, which is used in eight West African countries, is pegged to the Euro and has remained stable. The government is actively encouraging foreign investment and has put in place measures to improve the business climate. Many companies have established operations in Senegal, particularly in the Francophone Africa region. Since 2012, Senegal has been implementing an ambitious development plan, the Plan Senegal Emergent, with the goal of upgrading infrastructure, implementing economic reforms, increasing investment in key sectors, and enhancing the competitiveness of the private sector (United States Department of State, n.d.).

Uganda

Annual GDP growth rate of Uganda was around 8% in 2002 and 7.5% in 2022. There were lots of fluctuations in between. GDP growth rate was negative in 2014 and 2020. GDP growth rate was at its peak at approx. 13% in 2022. Inward FDI flow was USD 185 million in 2002, which gradually rose to USD 1,142 million in 2021 (UNCTADstat, 2022). Inflation rate was almost -2.5% (deflation) in 2002, and gradually rose to as high as 15% in 2021. That being said, the highest inflation was observed in 2012 at almost 25%. She never had a positive trade surplus. In 2002, balance of trade had a deficit of about USD 50 million, which gradually widened with time before reaching nearly -USD 450 million in 2022. However, the highest trade deficit was observed in 2021 at almost USD 621 million (Trading Economics, 2022).

The Bank of Uganda's State of Economy Report for December 2022 stated that Uganda experienced a growth in Foreign Direct Investment, reaching $474.8 million, thanks to the strong performance of its oil industry. However, the country's exports decreased significantly, totaling around $4.1 billion, while imports increased to $7.8 billion (Okafor, 2023).

4. Theoretical Review

Foreign Direct Investment (FDI) refers to the movement of tangible or intangible assets from one country to another for the purpose of generating wealth, under the control of the asset owner. It is distinct from portfolio investment, which involves the movement of money for the purchase of shares in a company located in another country. One of the key tools for a host country's industrialization is foreign direct investment. The economy of a host nation benefits greatly from FDI. Through both direct and indirect means, foreign direct investment can promote economic growth (Blomstrom et al, 2000).

In contrast to portfolio investment, FDI is generally made by multinational corporations and the investor assumes the risks involved and is protected by the domestic laws and diplomatic protection of both the host and home countries. This section will examine three theories of FDI and their importance in understanding the economic motivations behind it.

i) The Classical Theory of Foreign Investment

This theory argues that foreign investment is advantageous for the host country. It is supported by several reasons such as the introduction of new technology by the foreign investor, creation of new job opportunities, and development of infrastructure facilities such as healthcare, transportation and education by the foreign investor or the host state which ultimately benefits the society as a whole.

ii) The Dependency Theory

The dependency theory contradicts the classical theory and is favored by economists in Latin America. It focuses on the fact that most investments come from multinational corporations based in developed countries. According to this theory, the home states of these corporations become the central economies of the world while developing states become dependent or peripheral economies that serve the interests of the central economies of the home states of the multinationals. This theory claims that the resources that flow into developing states as a result of foreign investment primarily benefit the elite classes in those states, who form alliances with foreign capital. One of

the major criticisms of this theory is that foreign investment does not promote economic development, but instead leaves countries underdeveloped and dependent on the central economies of developed states. This theory reflects the long-standing negative view of foreign investment in Latin American states.

iii) The Middle Path

The middle path theory of foreign investment recognizes both the benefits and negative impacts of foreign investment. For the first time, efforts were made to identify the types of activities of multinational corporations that could harm the host economy. The idea behind this theory is that MNCs should avoid certain conduct that is seen as harmful to the economic development of poor states. These studies pointed out that MNCs circumvented the tax laws of host states through transfer pricing. According to this theory, the technology transfer, often touted as one of the benefits of foreign investment, did not occur to the extent expected.

This theory suggests that the impact of foreign investment on host countries can be mixed, with both positive and negative effects. The classical theory posits that foreign investment is generally beneficial for host countries, and cites examples of successful countries like Hong Kong, Singapore, Taiwan, and South Korea as evidence of this. On the other hand, the dependency theory argues that foreign investment by multinational corporations (MNCs) primarily benefits the home countries of the MNCs, and leaves host countries dependent and underdeveloped. The middle path theory acknowledges that foreign investment can be beneficial, but also highlights the potential harms, such as the use of harmful technology and the negative impact on the environment and local communities.

5. Literature review

Researchers have done a number of studies over the past ten years to better understand the important link between FDI and economic growth. These researches used cross-sectional and panel data from different developed and developing nations throughout the world to estimate variables using contemporary econometric techniques as GMM, Random Effect, and Fixed Effect models. The data on the connection between FDI and economic growth from a survey of these studies is contradictory (Wijaweera, 2007; Zhang, 2001; Johnson, 2006).

There are two main lines of inquiry that empirical studies on the factors influencing economic growth have taken. The majority of the time, they use time-series data on the per-capita GNP, capital accumulation, FDI inflows, trade openness, human capital, etc. to analyze the factors that influence growth over an extended period of time. The inability to pinpoint the direction of causation, however, presents a challenge in interpreting the findings of these studies. For instance, a common query is whether a country's economy expands more quickly than another because capital formation levels are higher or because capital formation rates are higher.

Even though there have been many studies on the connection between FDI, exports, and economic growth, no one study has come to a consensus on the matter, necessitating further research. The various time periods, nations, and econometric methods used in these studies may be the cause of the lack of a universally accepted conclusion (Mahmoodi & Mahmoodi, 2016).

5.1: Relationship between FDI and Economic Growth

Obwana (2001) demonstrates that macroeconomic, political, and policy consistency are far more crucial for attracting FDI than programs for privatization and opulent incentive structures like tax breaks and exemptions. The study analyzes institutional and infrastructure barriers that prevent FDI and examines the relationship between FDI and growth using time series data. The empirical findings show that FDI has a favorable effect on Uganda's GDP growth.

Nunnenkamp (2002) studied Both the Recent Drivers of FDI pertaining to globalization as well as the traditional determinants.Of FDI, using extensive survey data on investment conditions from 28 developing nations during the late 1980s from the European Round Table of Industrialists, supplemented by more traditional sources.

Mottaleb (2007) analyzes the important elements that affect FDI inflow in developing nations and then empirically proves the relationship between FDI and economic growth using panel data from 60 low-income and lower-middle income countries. It has been discovered that nations with larger GDPs, high GDP growth rates, and business-friendly environments can successfully attract FDI. On the other hand, FDI has a substantial impact on a country's ability to grow economically.

Azam & Lukman (2010) investigates the impact of several economic conditions on FDI (foreign direct investment) inflows into Pakistan, India, and Indonesia between the years of 1971 and 2005. The approach of least squares has been used to quantify the impact of numerous economic factors on FDI inflows using a log linear regression model for each country. According to empirical findings, the key economic factors of FDI include market size, external debt, domestic investment, trade openness, and physical infrastructure. The management authorities of these countries must maintain a stable economy and political environment, provide for infrastructure, peace and security, a situation of law and order, promote domestic investment, reduce external debt, and give proper monetary and fiscal policy equal weight.

Iamsiraroj, S. (2016) analyzes the relationships between FDI and growth using 124 cross-country data sets for the years 1971 to 2010. The estimation's findings show that FDI's overall effects are positively correlated with growth and vice versa, and that the labor force, trade openness, and economic freedom are other important factors influencing FDI.

Mahmoodi & Mahmoodi (2016) examine the causal links between exports, foreign direct investment (FDI), and economic growth in two panels of emerging nations: eight European and eight Asian. For the purpose of analyzing a tri-variate model of FDI, exports, and GDP, Panel VECM causality is used. The European Developing Panel's findings on causation show that there is short-term unidirectional causality from GDP and FDI to exports as well as bidirectional causality between GDP and FDI. In the near run, exports and economic growth are causally related in both directions, according to the empirical findings of the Asian emerging panel. Additionally,

for both of the aforementioned panels, there is evidence of long-run causation from export and FDI to economic growth as well as long-run causality from export and economic growth to FDI.

5.2: FDI-Economic growth nexus in Asia and Africa

Hsiao and Hsiao (2006) used time series and panel data from 1986 to 2004 to investigate Granger causality relationships between GDP, exports, and FDI in East and Southeast Asia. Empirical time-series analysis revealed that each country has a unique causality relationship, and panel-VAR causality results revealed that FDI has unidirectional effects on GDP, both directly and indirectly through exports, and that there is also bidirectional causality between exports and GDP. Finally, in terms of panel data causality analysis, Hsiao proposed that export, through its relationships with FDI and GDP, could be a good substitute for, if not complementary to, human capital or financial development.

Won et al. (2008) used panel-vector autoregressive models to examine the case of newly industrialized Asian economies and found that economic openness, as manifested by exports and inward FDI, is the most important economic factor attributed to these economies' rapid growth.

Adegbite, E. O., & Ayadi, F. S. (2010) examine the connection between foreign direct investment and Nigeria's economic expansion. To find the best linear unbiased estimators, the study used simple OLS regression analysis and several econometrics tests on our model. The analysis supported the positive impact of FDI on growth. The impact of FDI on growth, however, might be constrained by human capital. According to the study's findings, FDI does definitely support economic growth, necessitating more infrastructure investment, a stable macroeconomic environment, and the development of human capital in order to increase FDI productivity and flow into the nation.

Tiwari & Mutascu (2011) investigates how foreign direct investment affects Asian countries' economic expansion. They conducted our analysis for the years 1986 to 2008 using a panel methodology and looked at the nonlinearities related to exports and foreign direct investment in the economic development of the Asian nations under examination. They discovered that exports and foreign direct investment both promote economic growth. Additionally, labor and money are crucial for the development of Asian nations.

Asghar *et. al* (2011) uses a heterogeneous panel of 14 Asian countries to experimentally investigate the link between FDI and economic development from 1983 to 2008. FDI and economic growth are cointegrated, according to empirical results of the Larsson panel cointegration. According to the FMOLS findings, FDI and economic growth are closely related. The results of the panel homogeneous non-causality hypothesis demonstrate the existence of a unidirectional causal relationship between FDI and economic growth in the chosen panel, whereas the results of the panel homogeneous causality hypothesis demonstrate the existence of a bidirectional causal relationship between FDI and economic growth.

Tiwari & Mutascu (2011) investigate how foreign direct investment affects Asian countries' economic expansion. They conducted our analysis for the years 1986 to 2008 using a panel methodology and looked at the nonlinearities related to exports and foreign direct investment in the economic development of the Asian nations under examination. They discover that exports and foreign direct investment both promote economic growth. Additionally, labor and money are crucial for the development of Asian nations. An export-led growth route, especially in the early stages of expansion is recommended; relying on FDI may be an alternative in the later stages.

Zekarias (2016) made use of 34 years (1980–2013) of panel data and dynamic GMM estimators to examine the effect of Foreign Direct Investment (FDI) on Economic Growth in 14 Eastern African nations. He concludes that FDI is an important source of economic growth and a driving force behind economic conditional convergence in Eastern Africa; as a result, the subregion needs to draw in more FDI by enhancing the investment climate, enhancing regional integration, building up human capital and the essential infrastructure, and encouraging investment that is export-oriented.

Chaudhury *et al.* (2020) explored the nature and behavior of recent sectoral and overall FDI inflow in South Asian nations, using a holistic approach to research and analyze the FDI-growth dynamics. The study discovered that the sectoral makeup of FDI does, in fact, influence its effects in South Asia. Other factors (such as infrastructure, inflation, local investment, and international commerce) may amplify or mitigate the potential influence of FDI on economic growth. Additionally, because sectoral FDI is not homogeneous, the sectoral composition may have a distinct impact on economic growth. Therefore, it is important to recognize and quantify the varied effects of sector-specific (primary, secondary, and tertiary sector) FDI inflow.

5.3: FDI-Economic growth nexus in developed and developing nations

Nunnenkamp, P., & Spatz, J. (2003) use Base-line Regression to demonstrate that the favorable growth impacts of FDI are far from certain by analyzing US FDI stocks in significant sectors and individual manufacturing industries in a large number of developing nations. Instead, the characteristics of the host country and the industry, as well as how these two sets of characteristics interact, have a significant impact on the growth impact of FDI in developing countries.

Moudatsou, A. (2003) empirically evaluated the impacts of foreign direct investment (FDI) on growth in European Union (EU) nations, accounting for other economic variables. He calculated estimates of the growth effects of FDI for each country separately and by combining the data for the entire Union using data collected between 1980 and 1996. According to country-specific estimations, only historical FDI inflows have a major impact on growth, which varies between EU countries. Surprisingly, when data are combined, the empirical findings reveal that FDI influences EU economies' growth rates favorably, both directly and indirectly (through trade reinforcement). Furthermore, evidence was found that the growth effect of FDI is not dependent on the degree of human capital in rich host nations, contrary to earlier empirical findings about emerging economies.

Kok & Ersoy (2009), based on a panel of data (FMOLS-fully modified OLS) and cross-section SUR (apparently unrelated regression) for 24 developing countries spanning the time periods 1983–2005 for FMOLS and 1976–2005 for cross-section SUR, examined whether FDI determinants have an impact on FDI. The interaction of FDI with some FDI variables has a significant positive influence on economic development in developing nations, whereas the interaction of FDI with the total debt service as a percentage of GDP and inflation has a negative effect. The communication variable is the most significant factor in FDI.

Nath (2009) examined the effects of trade and FDI on per capita real GDP growth in 13 transition economies in Central and Eastern Europe and the Baltic region from 1991 to 2005 using a fixed effect panel data approach. He discovered that trade has a significant positive effect on growth, but that FDI has had no significant impact on growth in these transition economies. When

controlling for the effects of domestic investment and trade on FDI, Nath concluded that it appears to be a significant determinant of growth after 1995.

Mehic *et al.* (2013) examine how foreign direct investment (FDI) affects economic expansion in southeast European countries that are in transition. The empirical investigation spans the years 1998 to 2007 and includes seven nations in southeast Europe. The preferred estimation model used by the authors is Prais-Winsten regression with panel-corrected standard errors. The primary finding of the study is that FDI has a positive and statistically significant impact on economic growth. When data on domestic investments are taken into account, the impact of FDI is statistically significant and strong.

Makiela, K., & Ouattara, B. (2018) investigates the pathways that FDI uses to reach growth with the help of a GMM-System estimator. The findings, which are based on data from a sample of rich and developing nations from 1970 to 2007, convincingly show that FDI promotes growth via input accumulation but not the rise of total factor productivity. In other words, their findings imply that FDI may not have been solely responsible for the rise in productivity that developing nations have experienced in recent decades.

6. Data and Methodology

This section presents the methodology, the data and sources of the study. This study will use the time series data from selected African and Asian countries from 2002 to 2022 from World Bank Development Indicator data and United Nations Conference on Trade and Development (UNCTAD). To ensure representativeness and ease of generalization (Singh, 2003), the following 4 countries were chosen to maintain a balanced panel modelling from **Africa**: Comoros, Mali, Senegal, and Uganda; from **Asia,** the following 4 countries were picked: Bangladesh, Bhutan, Cambodia and Nepal.

Based on the findings of Dielman (1989), we chose the panel-data analysis technique for this work because it has the advantage of holding the data needed to address both the intertemporal dynamics and the individuality of the entities under consideration. The three main forms of panel-data models are :-

- A panel model with random effects,
- A panel model with fixed effects, and
- A pooled Ordinary Least Square (OLS) regression

Additionally, there are many advantages to utilizing a panel-data model that includes individual effects, including the ability to take into account individual variability. No matter how big the sample is, if this heterogeneity is ignored, it will unavoidably skew the results.

Economic growth occurs when the production of economic goods and services in a country increases from one period to another. There are several ways to measure it; it can be measured either in nominal terms or in real terms, which is after adjusting for inflation. According to the findings of Blömstrom et al. (2000), the evidence from numerous nations suggests that even a sizable amount of FDI is insufficient to spur economic growth and provide prosperity to a host country.

To measure the nature and degree of FDI impact on economic growth, the following empirical model has been selected:

$$Y_{gt} = b_0 + b_f * FDI_{t-m} + b_k * K_{t-m} + bp * P_t + b_e * ET_t + b_c * D_t + \mathcal{E}$$

where br (r=0/f/k/p/e/c) represents the coefficients that measure the degree of impact of each independent factor on a dependent variable and its sign represents the nature of impact.

t represents time period and m represents time lag (m=1,2,3,…).

Yg represents economic growth measured in terms of growth of GDP.

FDI represents total FDI inflow which can be measured by net FDI inflow.

K represents capital investment which can be measured by gross capital formation.

P represents inflation which can be measured by GDP deflator.

ET represents the external trade which can be measured by total export/total import/net export.

D represents the total external debt shocks,

Ɛ represents the error term, which is the residual impact not being captured by any of the explanatory variables.

The unobservable individual effects of countries and factors influencing growth, however, might be related. The analysis should be conducted using a panel model of random effects if there is no correlation between countries' unobservable individual effects and growth determinants. On the other hand, using a panel model with fixed effects is the most appropriate method of conducting the analysis if there is a correlation between countries' individual effects and growth determinants.

The Hausman test is used to determine whether a correlation might exist. This test compares the alternative hypothesis that there is a correlation between unobservable individual effects and the growth determinants to the null hypothesis, which holds that there is none. A panel model with random effects is the most accurate method for conducting the analysis of the relationship between economic growth and its determinants if the null hypothesis is not proved incorrect. On the other hand, if the null hypothesis is not accepted, we can infer that correlation is significant and that the analysis of the relationship between economic growth and its determinants is best done using a panel model with fixed effects.

Additionally, there are many advantages to utilizing a panel-data model that includes individual effects, including the ability to take into account individual variability. In fact,

Serrasqueiro and Nunes (2008) and Tiwari and Kalita (2011) noted that developing countries differ in terms of their colonial histories, political systems, ideologies, and religious affiliations, as well as in terms of their geographic locations and climatic conditions, in addition to a wide range of other country-specific factors. And regardless of how big the sample is, if this heterogeneity is not taken into account, it will unavoidably skew the results.

7. Result and Analysis

This section presents the layout of the determinants from the samples and the econometric analysis (panel data estimations, robustness check). Finally, the section concludes with a discussion of the results.

7.1 Descriptive statistics

Summary statistics of the data (mean and standard deviation) are presented in Table 6.1. The average GDP is highest in Cambodia with 6.83 millions of USD, whereas the lowest is in Comoros with 2.66 million USD. Overall, the average GDP scenario of Asia is better than Africa. Consistently, the highest FDI is in Cambodia, however, lowest is in Nepal. In the case of Bangladesh, even if the average GDP is higher than the selected African LDCs, the average FDI is significantly lower than those countries.

Table 7-1 Descriptive statistics by country

Country	Average values and standard deviation values	
	LGDP	**LFDI**
Bangladesh	6.08	0.88
	(1.14)	(0.43)
Bhutan	6.21	1.15
	(5.21)	(1.65)
Cambodia	6.83	9.93
	(3.58)	(4.01)
Nepal	4.08	0.27
	(2.56)	(0.23)
Comoros	2.66	0.56
	(1.22)	(0.55)
Mali	4.18	2.80
	(2.49)	(1.43)
Senegal	4.10	2.75
	(2.03)	(1.92)
Uganda	6.15	3.55
	(2.22)	(1.28)

Note: standard errors are in parenthesis. The amounts are in logarithms of millions of USD

7.2 Panel Cointegration Test

7.2.1 The pooled OLS regression model

The pooled OLS regression model is a common panel data model that is used when there is no cross-sectional or time series effect present in the data (Hun, 2011). This model does not take into account individual effects and assumes that the data is homoscedastic and free from disturbance (Greene, 2008).

The following table 7.2 shows the pooled OLS regression analysis for both Asia and Africa. From the table, it implies that FDI inflow and investment are positively correlated with GDP growth in four Asian countries and these relationships are statistically insignificant at 10% level of significance, possibly owing to small sample size. It can also be due to the existence of multicollinearity in our model (Daoud, 2017). This is because, when FDI flows to a country, the export-oriented industries in the host country may use those investments to increase their production and boost exports, which happened in the case of Vietnam. According to the empirical findings, FDI significantly increased Vietnam's exports to its source countries. It is reasonable to anticipate that a 1% increase in FDI will result in a 0.13 % increase in exports to the FDI source countries (Xuan & Xing, 2008). Thus increase in foreign direct investments increased the GDP growth rate in those countries. However, inflation is negatively correlated with GDP growth. That means an increase in inflation decreased the GDP over the last twenty years. Exports are positively and debt is negatively correlated with the GDP growth of the selected Asian countries. Thus there is no doubt that increase of debt shock decreased the growth of the GDP of these countries. However only the relationships of economic growth with the economy's exports and debt shock are significant at 10% level of significance.

Table 7-2 Pooled OLS Regression Analysis (Dependent Variable GDP Growth) - **Asia- Africa**

Impact on Economic growth		
	Asia	**Africa**
FDI inflow	0.089	0.883**
	0.365	0.414
Investment	0.492	1.593
	0.764	1.098
Inflation	-0.014	0.005
	0.085	0.269
export	1.949*	-1.892**
	1.074	0.816
debt	-3.248**	-0.319
	1.383	0.534
Prob > F	0.0168	0.0015
Adj R-squared	0.1185	0.1782

Std. err. are shown below the coefficients. *, **, *** denote significance at 10, 5 and 1 percent, respectively.

The above table 7.2 also shows that FDI inflow, inflation, and investment are positively correlated with GDP growth in four African countries. Only the relationship of FDI with economic growth is statistically significant at 5% level of significance. Thus increase in foreign direct investments increased the GDP growth rate by 88% in those countries. However, export is negatively correlated with GDP growth, and the relationship is significant at the 5% level of significance. Debt shock is also negatively related with GDP growth, but the relationship is statistically insignificant. The increase in debt lowers economic growth. However, the other relationships are not statistically significant for these selected African countries.

7.2.2 Fixed effect and random effect models

We have also used fixed effect and random effect models to examine the stability of the outcomes from the estimation process. The Hausman test is used to contrast the fixed effect model (FEM) and random effect model (REM). The Hausman test's significant value ($p< 0.05$) in table 7.4 suggests that the fixed effect model (FEM) is preferable to the random effect model (REM) for

this investigation Asian countries. The outcomes of the fixed effect model and random effect model in table 7.3 agrees with the outcomes from table 7.2 for the Asian and African countries. Only the significance level has changed. In the fixed effect model, the effect of exports on the country's growth is significant at 5% level of significance. On the other hand, in the random effect model, the relationship between the debt shock of a country and GDP growth is significant at a 5% level of significance. All other relationships are statistically insignificant according to the P values of the statistical tables.

Table 7-3 Fixed Effect and Random Model- **Asia- Africa**

Impact on Economic growth				
	Asia		**Africa**	
	FE	**RE**	**FE**	**RE**
FDI inflow	0.329	0.089	0.476	0.883**
	0.395	0.365	0.416	0.414
Investment	0.141	0.492	1.348	1.593
	1.293	0.764	1.475	1.098
Inflation	-0.019	-0.014	-0.005	0.005
	0.083	0.085	0.026	0.027
export	1.832	1.949*	-2.289*	-1.892**
	1.406	1.074	1.291	0.816
debt	-3.689***	-3.248**	-0.523	-0.319
	1.332	1.383	0.533	0.534
Prob > F	0.017		0.279	
Prob > Chi2		0.0106		0.0005

Std. err. are shown below the coefficients. *, **, *** denote significance at 10, 5 and 1 percent, respectively.

More specifically, the results from fixed and random effects tests imply that the stock of FDI positively affects economic growth in this panel of Asian countries. At the period 2002–2021 an increase at 1% in FDI stock increases economic growth for 33% approximately according to the fixed effect model. Besides, an increase in debt highly affects the growth of the economy. Only 1% increase in debt shock in these countries, decreases the economic growth by 3.69% for the period 2002-2021.

The Hausman test's significant value ($p < 0.05$) suggests that the fixed effect model (FEM) is preferable to the random effect model (REM) for this investigation. The outcomes of the fixed effect model and random effect model in table 7.3 agrees with the outcomes from table 7.2 for the African countries also. However, in the fixed effect model it represents how inflation has an average negative impact to hold down the economic growth by the negative relationship.

More specifically, the results from fixed and random effects tests imply that the stock of FDI positively affects economic growth in this panel of African countries. At the period 2002–2021 an increase at 1% in FDI stock increases economic growth on an average for 48% approximately according to the fixed effect model. Besides, an increase in debt highly affects the growth of the economy. Only 1% increase in debt shock in these countries, decreases the economic growth by 52% for the period 2002-2021.

Table 7-4 Hausman Test Statistics- **Asia- Africa**

Hausman Test		
	Asia	**Africa**
FDI inflow	0.24	-0.406
	0.196	0.04
Investment	-0.351	-0.245
	1.121	0.984
Inflation	-0.006	-0.01
	0.018	.
export	-0.116	-0.396
	1.011	1.00
debt	-0.441	-0.204
	0.206	.
chi2	9.06	15.99
Prob>chi2	0.0285	0.0069

7.3 Other Diagnostic Tests

7.3.1 Testing for robustness

We have also done the robustness check for the robustness of the models (see Appendix). Almost all the relationships are insignificant. However, for Asian countries, in the fixed effect model, the effect of exports in economic growth is significant and in the random effect model, the relationship between the countries debt and the economic growth is statistically significant.

On the other hand, for African countries, there is no significant relationship except the relationship between exports and countries economic growth in the random effect model.

7.3.2 Testing for time-fixed effects

The time-fixed effect helps to remove any bias from variables that change over time but stay the same across different entities, and it also takes into account any factors that vary among entities but remain constant over time.

The Prob>F is > 0.05 for both Asian and African regions. So we failed to reject the null that the coefficients for all years are jointly equal to zero, therefore no time fixed effects are needed in this case (see Appendix).

8. Summary and Conclusion

Thus, it is clear for the estimated result that FDI has been a sizable factor contributing to the GDP or the economic growth for all eight countries, as we have seen in the analysis of the link between FDI and GDP in two regions. By functioning as a source of capital and boosting the competitiveness of the domestic economy, FDI plays a crucial role. However, the degree of their significance varies across the countries. The outcomes of FDI in the case of all the countries have been highly positive for economic growth of the selected countries. Besides, the coefficients from the regression model results demonstrate that on an average, African countries have more effect of FDI on economic growth than that of the selected Asian countries. However, the GDP growth is far higher than the African region. The results also represent how debt shock and inflation lowers the economic growth for all these countries and exports expansion and capital investment reflect in the economic growth.

FDI affects economic growth positively and sometimes significantly, as predicted by economic theory, according to the paper's major finding. Therefore, FDI has a big impact on the selected countries' economic expansion. For this reason, it is appropriate for all countries to work on increasing the FDI to continue the macroeconomic stability and the reduction of market distortions, both of which are necessary for the formation of a proper environment to attract FDI. Africa never has enough capital to meet demand for investments. Economic growth is influenced by investment and saving levels, and the subregion saves very little (NJoupouognigni and Ndambendia, 2010; Alfaro, et.al, 2003). On the other hand, because of the sub-poor region's level of productivity, the ever-growing population has greater needs than it can meet (Kabundi & Loots, 2012; Kinyondo, 2012, Adb,2013).

African countries should follow the policies taken by the selected Asian countries especially by Cambodia to improvise their FDI. They should primarily attract foreign companies that are willing to use locally sourced materials for production. This will create demand for domestically produced inputs and also save the economy from excessive spending on imported inputs. Furthermore, favorable investment conditions, such as tax breaks, should be offered to foreign investors who are willing to establish industries that substitute imports and those who are

implementing strategies to promote industrialization through exports, as these strategies promote economic growth.

In terms of all the selected eight countries from two regions, initially, these nations should enhance their public expenditure, specifically the management of public investment. This facilitates the release of private sector investment, including foreign investment. Without these elements in place, increased spending, including funds from donors, often results in increased debt with inadequate economic results. International examples show that neglecting this crucial aspect can have dire consequences. A lack of job opportunities and inadequate investment in human capital can create increasing disparities in income between rural and urban regions, as well as between men and women and different age groups. These imbalances can ultimately cause social tension and weaken reform efforts.

Appendix

Table A1: List of the countries

Region	Country
Asia	Bangladesh
	Bhutan
	Cambodia
	Nepal
Africa	Comoros
	Mali
	Senegal
	Uganda

Table A2: Robustness Check for the Fixed Effect Model- Asia

```
. xtreg gdp_growth ln_FDI ln_inv gdp_deflator ln_exports ln_debt, fe vce(robust)

Fixed-effects (within) regression               Number of obs      =        75
Group variable: country1                        Number of groups   =         4

R-sq:                                           Obs per group:
     within  = 0.1849                                         min =        17
     between = 0.3263                                         avg =      18.8
     overall = 0.1591                                         max =        20

                                                F(3,3)             =         .
corr(u_i, Xb)  = -0.6189                        Prob > F           =         .

                                (Std. Err. adjusted for 4 clusters in country1)
------------------------------------------------------------------------------
             |               Robust
 gdp_growth |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      ln_FDI |   .3296412   .7569155     0.44   0.693    -2.079202    2.738484
      ln_inv |   .1405781   1.991899     0.07   0.948    -6.198534    6.479691
gdp_deflator |  -.0191444   .0633942    -0.30   0.782     -.220893    .1826042
  ln_exports |   1.832136   .3383816     5.41   0.012     .7552552    2.909018
     ln_debt |  -3.689404   1.187344    -3.11   0.053    -7.468062    .0892548
       _cons |   39.43984   13.33591     2.96   0.060    -3.000962    81.88064
-------------+----------------------------------------------------------------
     sigma_u |  1.5600537
     sigma_e |  2.7410879
         rho |   .2446654   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table A3: Robustness Check for the Random Effect Model- Asia

```
. xtreg gdp_growth ln_FDI ln_inv gdp_deflator ln_exports ln_debt, re vce(robust)

Random-effects GLS regression                   Number of obs      =        75
Group variable: country1                        Number of groups   =         4

R-sq:                                           Obs per group:
     within  = 0.1730                                         min =        17
     between = 0.3378                                         avg =      18.8
     overall = 0.1781                                         max =        20

                                                Wald chi2(3)       =         .
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =         .

                                (Std. Err. adjusted for 4 clusters in country1)
------------------------------------------------------------------------------
             |               Robust
 gdp_growth |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      ln_FDI |    .089386   .6156445     0.15   0.885    -1.117255    1.296027
      ln_inv |   .4915743   .2954592     1.66   0.096     -.087515    1.070664
gdp_deflator |  -.0135492   .0693019    -0.20   0.845    -.1493785      .12228
  ln_exports |   1.948507   1.517594     1.28   0.199    -1.025923    4.922937
     ln_debt |  -3.248222   .4868391    -6.67   0.000    -4.202409   -2.294035
       _cons |   23.64908   12.30153     1.92   0.055    -.4614722    47.75963
-------------+----------------------------------------------------------------
     sigma_u |           0
     sigma_e |  2.7410879
         rho |           0   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table A4: Robustness Check for the Fixed Effect Model- Africa

```
. xtreg gdp_growth ln_FDI ln_inv gdp_deflator ln_exports ln_debt, fe vce(robust)

Fixed-effects (within) regression               Number of obs      =        79
Group variable: country1                        Number of groups   =         4

R-sq:                                           Obs per group:
     within  = 0.0843                                         min =        19
     between = 0.3274                                         avg =      19.8
     overall = 0.0346                                         max =        20

                                                F(3,3)             =         .
corr(u_i, Xb)  = -0.8311                        Prob > F           =         .

                              (Std. Err. adjusted for 4 clusters in country1)
------------------------------------------------------------------------------
             |               Robust
  gdp_growth |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      ln_FDI |    .476388   .4751863     1.00   0.390    -1.035867    1.988643
      ln_inv |    1.34807   2.357454     0.57   0.607    -6.154401     8.85054
gdp_deflator |   -.0048049   .0181688    -0.26   0.809    -.0626263    .0530165
  ln_exports |   -2.288513   1.949487    -1.17   0.325    -8.492652    3.915625
     ln_debt |   -.5228665   .9231858    -0.57   0.611    -3.460856    2.415123
       _cons |    26.04276   25.86514     1.01   0.388    -56.27165    108.3572
-------------+----------------------------------------------------------------
     sigma_u |  2.6973765
     sigma_e |  2.0365558
         rho |  .63692423   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table A5: Robustness Check for the Random Effect Model- Africa

```
. xtreg gdp_growth ln_FDI ln_inv gdp_deflator ln_exports ln_debt, re vce(robust)

Random-effects GLS regression                   Number of obs      =        79
Group variable: country1                        Number of groups   =         4

R-sq:                                           Obs per group:
     within  = 0.0137                                         min =        19
     between = 0.9489                                         avg =      19.8
     overall = 0.2309                                         max =        20

                                                Wald chi2(3)       =         .
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =         .

                              (Std. Err. adjusted for 4 clusters in country1)
------------------------------------------------------------------------------
             |               Robust
  gdp_growth |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      ln_FDI |   .8825519   .9690676     0.91   0.362    -1.016786    2.781889
      ln_inv |   1.593312   .9817882     1.62   0.105    -.3309578    3.517581
gdp_deflator |   .0053949   .0147439     0.37   0.714    -.0235025    .0342923
  ln_exports |  -1.892421   .7118803    -2.66   0.008    -3.287681   -.4971614
     ln_debt |  -.3190794   .2902501    -1.10   0.272    -.8879592    .2498004
       _cons |    .535679    13.2483     0.04   0.968    -25.43052    26.50188
-------------+----------------------------------------------------------------
     sigma_u |          0
     sigma_e |  2.0365558
         rho |          0   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table A6: Time-fixed effect test- Asia

```
. testparm i.year

 ( 1)  2003.year = 0
 ( 2)  2004.year = 0
 ( 3)  2005.year = 0
 ( 4)  2006.year = 0
 ( 5)  2007.year = 0
 ( 6)  2008.year = 0
 ( 7)  2009.year = 0
 ( 8)  2010.year = 0
 ( 9)  2011.year = 0
 (10)  2012.year = 0
 (11)  2013.year = 0
 (12)  2014.year = 0
 (13)  2015.year = 0
 (14)  2016.year = 0
 (15)  2017.year = 0
 (16)  2018.year = 0
 (17)  2019.year = 0
 (18)  2020.year = 0
 (19)  2021.year = 0

       F( 19,    47) =    1.68
            Prob > F =    0.0745
```

Table A7: Time-fixed effect test- Africa

```
. testparm i.year

 ( 1)  2003.year = 0
 ( 2)  2004.year = 0
 ( 3)  2005.year = 0
 ( 4)  2006.year = 0
 ( 5)  2007.year = 0
 ( 6)  2008.year = 0
 ( 7)  2009.year = 0
 ( 8)  2010.year = 0
 ( 9)  2011.year = 0
 (10)  2012.year = 0
 (11)  2013.year = 0
 (12)  2014.year = 0
 (13)  2015.year = 0
 (14)  2016.year = 0
 (15)  2017.year = 0
 (16)  2018.year = 0
 (17)  2019.year = 0
 (18)  2020.year = 0
 (19)  2021.year = 0

       F( 19,    51) =    1.61
            Prob > F =    0.0902
```

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