FOREIGN CAPITAL FLOWS AND ECONOMIC GROWTH DYNAMICS – EMPIRICAL EVIDENCES FROM DEVELOPED AND DEVELOPING ECONOMIES
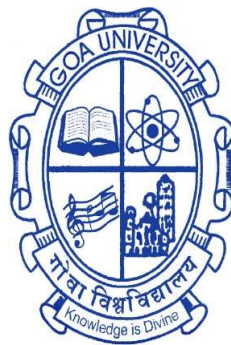
A THESIS SUBMITTED IN PARTIAL FULFILLMENT for THE DEGREE of

DOCTOR OF PHILOSOPHY

IN THE GOA BUSINESS SCHOOL
GOA UNIVERSITY

By

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DECLARATION

I, **Akshay Sakharkar**, hereby declare that this thesis represents work which has been carried out by me and that it has not been submitted, either in part or full, to any other University or Institution for the award of any research degree.

Place: Taleigao Plateau.

Date: **Akshay Sakharkar**

CERTIFICATE

I hereby certify that the above Declaration of the candidate, **Akshay Sakharkar**, is true and the work was carried out under my/our supervision.

Dr. Sri Ram Padyala

Research Guide & Assistant Professor

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Acknowledgement

During my research journey, I have been fortunate to receive the intellectual contributions and timely guidance from numerous academicians and researchers, alongside the unwavering moral support of my beloved family and friends. I extend my heartfelt gratitude to each and every one of them.

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LIST OF ABBREVIATIONS

FDI	Foreign Direct Investments
FPI	Foreign Portfolio Investments
OI	Other Investments
ODA	Official Development Assistance
GDP	Gross Domestic Product
GNI	Gross National Income
GNP	Gross National Products
R&D	Research and Development
MENA	Middle-East and North Africa
HICs	High Income Countries
UMICs	Upper Middle Income Countries
LMICs	Lower Middle Income Countries
LICs	Low Income Countries
WDI	World Development Indicators
GFC	Global Financial Crisis
IMF	International Monetary Fund
WB	World Bank
VIX	Volatility Index
GMM	Generalized Method of Moments
SDIS	Small Island Developing States
OLS	Ordinary Least Square
ARDL	Autoregressive Distributed Lag
LSDV	Least-Squares Dummy Variables
GLS	Generalized Least Square
FMOLS	Fully Modified Ordinary Least Squares
SUR	Seemingly Unrelated Regression
FEM	Fixed Effects Model
REM	Random Effects Model
BOP	Balance of Payments
IFS	International Financial Statistics

WGI	World Governance Indicators
CBOE	Chicago Board Options Exchange
WEO	World Economic Outlook
WTO	World Trade Organization
REER	Real Effective Exchange Rate
ADF	Augmented Dicky-Fuller Test
BPLM	Breusch-Pagan Lagrange Multiplier
LLC	Levin-Lin-Chu
IPS	Im, Pesaran and Shin
PCSE	Panel Corrected Standard Errors Model
US	United States
USD	United States Dollar
CPI	Consumer Price Index
OECD	Organisation for Economic Co-operation and Development
2SLS	Two-Stage Least Squares
UNCTAD	United Nations Conference on Trade and Development
VIF	Variance Inflation Factor
G7	Group of 7 Countries (Canada, France, Germany, UK, US, Japan, Italy)
G8	Group of 8 Nations (Canada, France, Germany, UK, US, Japan, Italy, Russia)
G20	Group of 20 international forum for the government and Central bank governors from 19 countries and European Countries
PCA	Principal Component Analysis
MNEs	Multinational Enterprises
MNCs	Multinational Corporations
LPG	Liberalization, Privatisation and Globalisation
BRICS	Brazil Russia India China South Africa
ASEAN	Association of South East Asian Nations
M&A	Merger and Acquisitions
FIIs	Foreign Institutional Investors

Dedicated to

My Parents

Shri. Damodar Sakharkar

Smt. Darshana Sakharkar

&

My Research Guides

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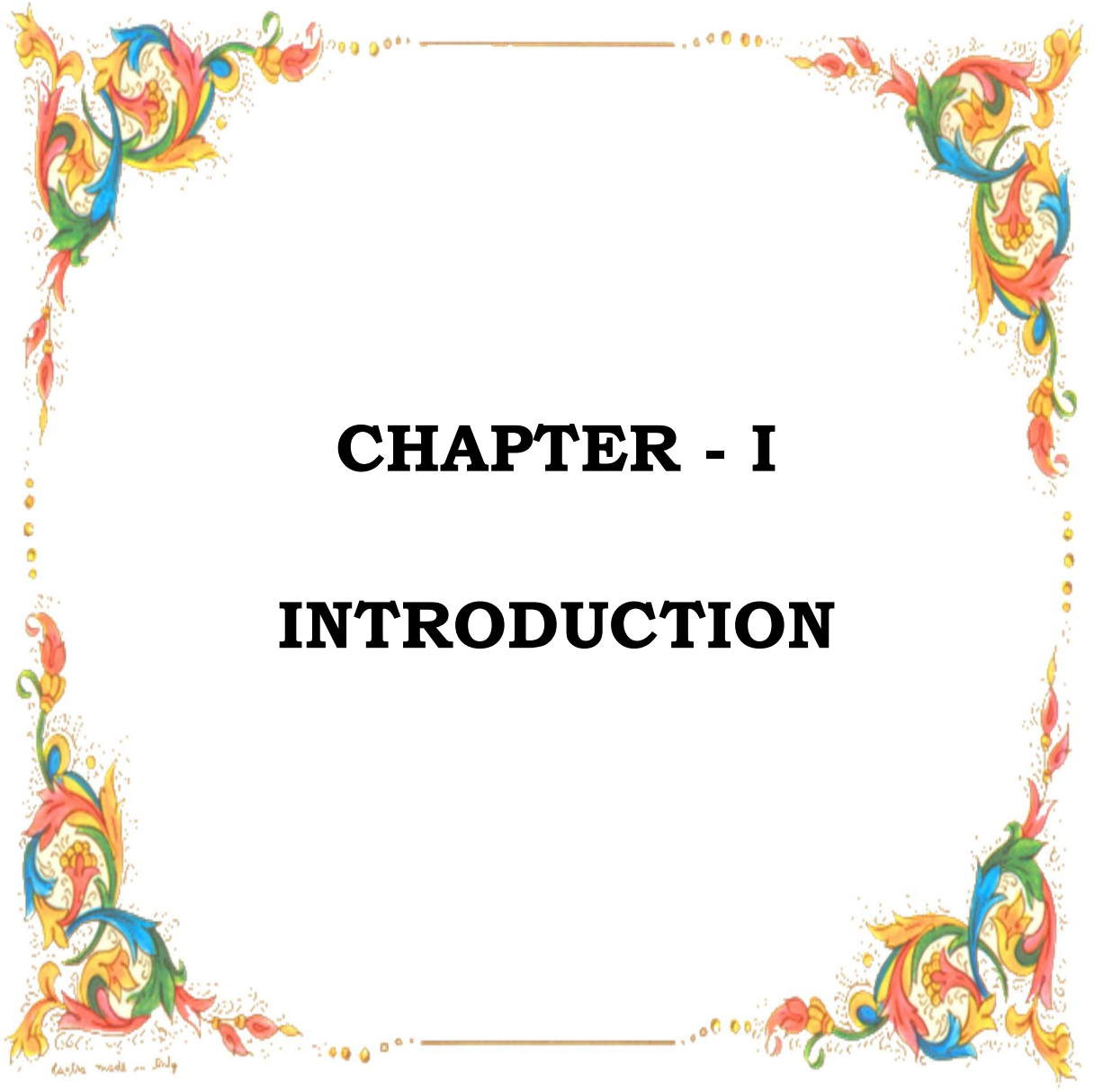
CHAPTER - I

INTRODUCTION

1.1 INTRODUCTION

The global scenarios of capital flows across the globe reveal that most of the developing nations receive a large chunks of inward foreign capital flows in the form of remittances, FDIs, ODAs and others. The influx of capital through these sources have a significant impact on the GDP growth, the influx although is expected to promote growth its dynamic impacts across economies on the economic growth, macroeconomic factors, export and imports competitiveness, local institutions etc. raises significant concerns of long term sustainability of economic growth particularly in the developing and the under developed world. The aim of this study is thus to investigate whether inward foreign capital flows in the form of FDI, Remittances, Aid and others create positive synergies and promote economic growth or not. Also the study aims to focus on the various factors that drive these capital flows and other supporting factor that result in enhancing or nullifying the growth promotional role. The study also attempts to evaluate the role of persistent volatility of capital flows and its relative impact on the economic growth instability.

A substantial boost for globalization around the world has also led to a dramatic increase in the degree of integration in global financial markets. This has steered the world economies towards a greater exposure to foreign trade and investments. The recent decades have seen a tremendous rise in net capital flows surpassing the levels during the 1980s and 1990s. The composition of international capital flows to the developing countries have also become more diverse and substantial over the past decades. A major factor that contributed to this phenomenon can be traced back to the liberalization policies adopted by developing countries to attract foreign capital. Some authors view the increase in capital mobility across borders as a mixed blessing for developing nations. Although foreign capital is found boosting economic growth initially, the prolonged capital surge

also carries inherent risk of increased exposure to external shocks. The surge and stops in capital flows can make the financial system more fragile and thus destabilize the economy. the financial crisis of 1990s and 2008 are crude examples for the developing nations. Perhaps, one of the most important lesson learned from such episodes is that volatile capital flows can exit as easily as it enters in an open economy.

Most countries, especially the developing nations have been targeting Foreign direct investments (FDI) over other capital flows particularly due to the expectations that FDI being a stable form of investment provides steady resources to fuel long term economic growth in the host country. Furthermore, there are other fundamental reasons supporting FDI attractiveness such as transfer of state of the art technology, skills, research and development (R&D) and technical know-how to the host country. FDI also provides a strong stage for developing nation in world markets as an exporter of goods and service thus provides access to world market for expansion. On the other hand, the growth of worker's remittances to the developing countries have also emerged as one of the substantial form of foreign capital. In 1980s the worker's remittances to the developing nations were only US$47 billion, however over the decades we see a substantial rise in remittances to US$431 billion in 2014. The large and constant stable flow of remittances to the developing nations has led to a vigorous debate on its growth effects in the economic literature. Foreign aid on the contrary has shown similar trend of increase from as much as US$ 127.3 billion in 2010 to 145.7 billion in 2015, the magnitude of its size is however the least amongst the other type of capital flows to developing nations.

Following the introduction, the remainder of the chapter is arranged as follows. Section, Section 1.2 contains the background and the context to the present study and provides some sterilized facts on foreign capital flows and economic fundamentals around the

world, 1.3 briefs on the problem statement, Section 1.4 contains the motivation, Section 1.5 provides the aims, Section 1.6 gives account of research questions, Section 1.7 depicts the research objectives, Section 1.8 contains the research contribution and significance and lastly Section 1.9 gives an overview of the composition of the thesis.

1.2 BACKGROUND AND CONTEXT.

The Inward foreign capital flows mainly comprising of FDI, Remittances and Aid flows have shown significant growth in terms of value and composition over the last few decades. Speaking of the recent years specifically 2019, the quantum of flows has been much higher as compared to the previous year in the recently completed decade. Table 1.1 below gives an overview of the inflows of capital flows in USD terms and the trends in GDP across regional and income groupings. In terms of FDI flows, it is evident that the East Asia and the Pacific region received the highest amount of FDI inflows amounting to USD 536 bn. followed by the Europe & Central Asia USD 461 bn. and the South Asian Region with a total FDI of USD 363 bn. The least of FDI flows were received by the Middle East & North African (MENA) Region with only USD 61 bn. The receipts from remittances show similar trends where in a total of USD 193 bn. were received by Europe & Central Asian region while USD 139 bn. and USD 112 bn. received by the South Asian and the East Asia and the Pacific region respectively. Interestingly, the least receipts were registered by the North American Region. The flow of Aid however brings further insights, with its development supporting motive the highest receipts of aid were registered in the South Asian Region with approximately USD 162 bn. while the least receipts were registered in Latin America & Caribbean region.

The per capital growth of GDP across regions also suggest interesting facts, the highest growth rate in GDP per capita was registered in the East Asia and the Pacific region with

approximate rate of 3.34% while the least in terms of negative growth was registered in the MENA region. The South Asian region in particular have reported a stable and strong growth rate of 2.66% in relative to its size and developing nature.

Table 1.1 Trend in Foreign capital flows and GDP (2019).

	Inflows of Foreign Capital (USD billions)			GDP Per Capita (USD)	GDP Per Capita Growth (%)
	FDI	Remittances	ODA		
Regional Groups					
East Asia & Pacific	536.83	112.14	14.23	11482.53	3.43
Europe & Central Asia	461.97	193.90	00.42	24870.26	1.52
Latin America & Caribbean	197.23	97.51	00.13	8707.187	-0.15
Middle East & North Africa	61.34	55.88	-	7337.350	-0.61
North America	363.69	09.91	02.29	63198.70	1.69
South Asia	56.67	139.83	162.82	1962.802	2.66
Sub-Saharan Africa	27.44	46.98	03.76	1607.921	-0.10
Income Groups					
High Income	1139.75	159.76	1.15273	44723.92	1.33
Upper Middle Income	405.38	147.31	0.94784	9534.005	3.50
Lower Middle Income	147.12	337.38	1.08804	2386.488	2.32
Low Income	15.972	16.450	0.25986	741.3524	0.51
Note: The threshold level for each group is as following: the classification low income refers to economies with GNI per capita of $995 or less; lower-middle income economies $996-$3895; upper middle-income $3896-$12055; high-income $12056 and more.					

Source: Computed by the author using data from WDI, World Bank (2019)

The trends in relative to the classification on the basis of income level also bring forward some noteworthy facts. The High Income countries have registered the highest amount of FDI inflows i.e. USD 1140 bn. while the least amount of USD 16 bn. were registered in the low income countries. The data clearly suggest the presence of Lucas Paradox (Lucas, 1990). The flows of remittances on the contrary suggest that lower middle income countries (LMICs) have receive the highest remittance inflows as compared to other

categories. The flow of Aid i.e. ODAs on the other hand remains very small in quantum as compared to other types of capital flows. The growth rate of per capital GDP across income groups also suggest how the UMICs and LMICs have grown rapidly faster as compared to the HICs while the lower growth rate of LICs is as priori expected.

A long term view over the trend in capital flows across regions and across the income classes provides much more insight over the issue of movement of capital flows and its relative trends. In the following listed figures i.e. from Fig. 1.1 to Fig. 1.6 a long run snapshot is presented for the period from 1990 to 2020. Figure 1.1 and 1.2 presents a trend analysis for FDI inflows for the regional groups and income groups respectively. It is quite evident from that Europe and Central Asian region has received the highest quantum of FDI inflows over the entire period followed by the East Asia & Pacific and the North American region. Other regions which includes the South Asia, Latin America & the Caribbean's, MENA and the Europe and Central Asia have received a minuscule portion as compared to the major recipients. A clear break in the increasing trend across regions is evident in the 2007-08 period which is a plausible shock for the capital flows on account of the occurrence of Global Financial Crisis (GFC). We also see a similar but weak break in the year 2018-19 which can be associated to the outbreak of Covid-19 Pandemic.

Trends in FDI Inflows Across Regional Groups
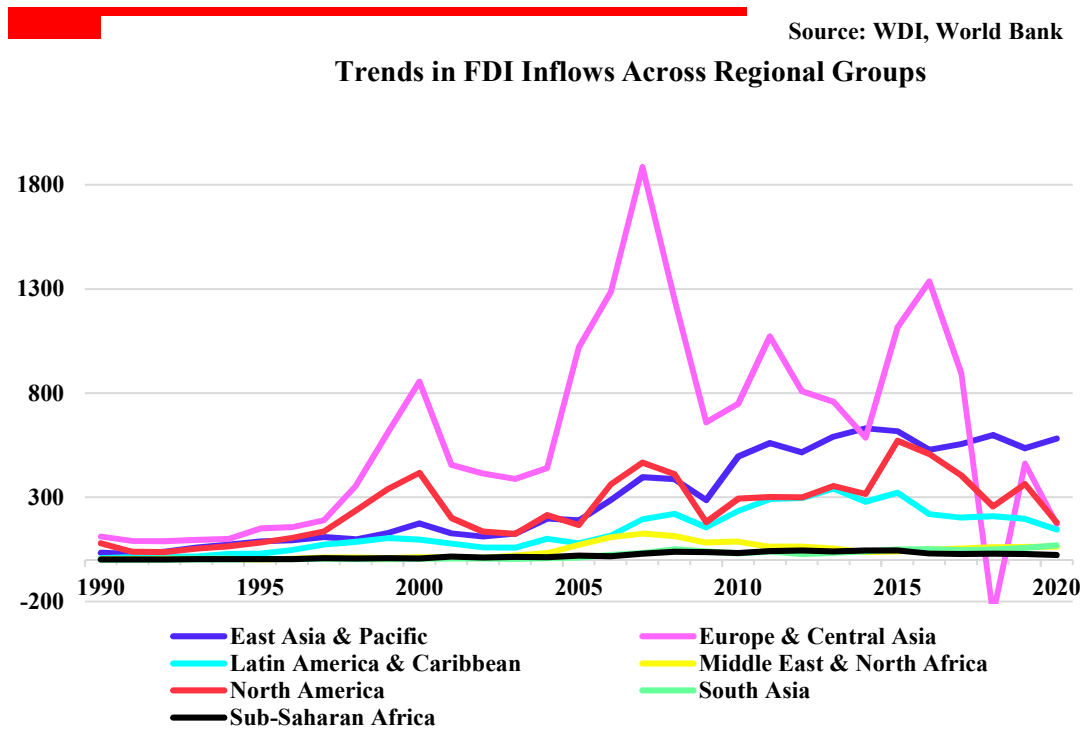
Figure 1.1 – Trends in FDI Inflows Across Regional Groups. (1990 to 2020).

Trends in FDI Inflows Across Income Groups
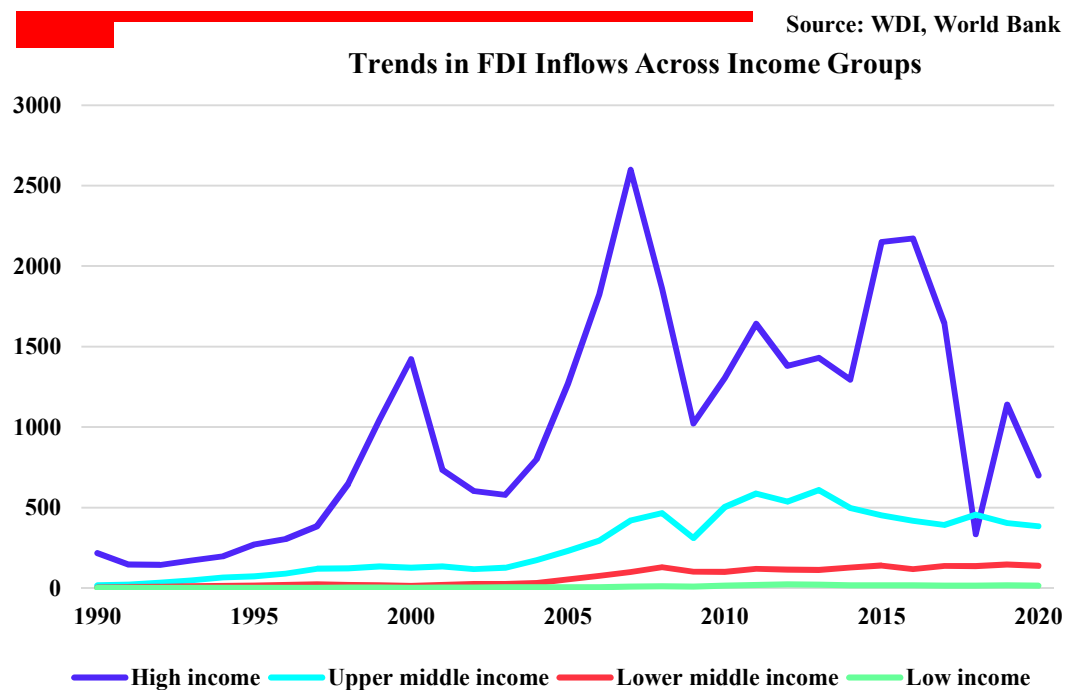
Figure 1.2 – Trends in FDI Inflows Across Income Groups. (1990 to 2020).

The figure 1.2 depicts the flows of FDI across Income groups, the preliminary analysis is suggestive of the fact that most of the FDI is flowing to the HICs while a considerable portion of the total FDI flow is actually evident flowing to the UMICs and LMICs, while the least amount FDI is actually found to be received by the LICs. This fact is in line with the proposition expressed in the Lucas Paradox (Lucas, 1990) which suggest the reverse flow of capital o the rich countries as opposed to the needy and poor once.

The depictions in figure 1.3 and figure 1.4 relates to the receipts of personal remittances in USD bn. figure 1.3 presents the trends in remittance flows across regional groups from 1990 to 2020. The Asian region in particular which comprises of Europe & Central Asia, South Asia and East Asia and Pacific receives the highest amount of remittances as compared to any other regions. Specifically, the Europe and the Central Asian Region and the South Asian Region. Interestingly as per data from the migration portal and the Wold bank Countries such as India, Russia, Mexico, China and the Syrian Arab Republic have recorded the highest emigration since the year 2019. This has resulted in a huge inflow of foreign currency receipts through remittances in most of the countries belonging to these regions.

The depiction in figure 1.4 relates to the influx of remittances across the income groups from 1990 to 2020. The results suggest that LMICs and UMICs have received the maximum amount of remittances as compared to the other income groups. An increasing trend in remittance receipts is quite evident since the 2005 period. Interestingly as opposed to the FDI, receipts from remittances have no breaks in the flow rather remained intact during the onset of GFC as well as during the Covid-19 Pandemic.

Trends in Remittance Inflows Across Regional Groups
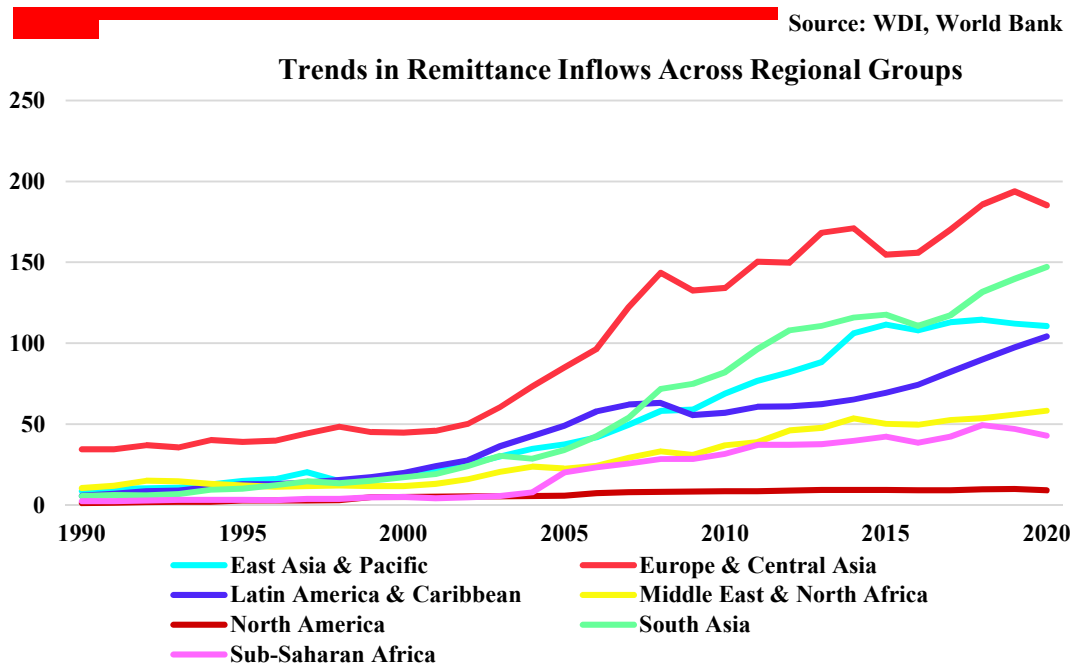
Figure 1.3 – Trends in Remittance Inflows Across Regional Groups. (1990 to 2020).

Trends Remittance Inflows Across Income Groups
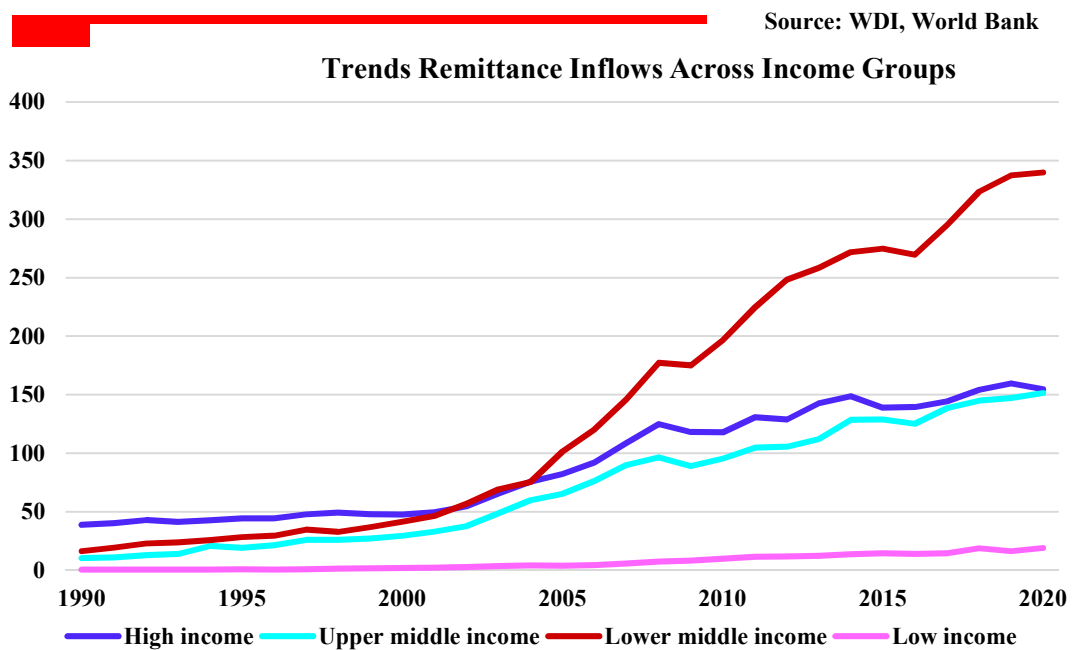
Figure 1.4 – Trends in Remittance Inflows Across Income Groups. (1990 to 2020).

The depictions in figure 1.5 and figure 1.6 relates to the flow of Official Development Aid (ODAs) across regions and income groups around the world from 1990 to 2020. The trends suggest that only two regions i.e. the South Asia and the East Asian & Pacific have

received significant amount of Aid flows as compared to others while the depiction listed in figure 1.6 reveal LMICs and UMICs are recipients of the largest and continuous share of developmental Aid since the 1990s.
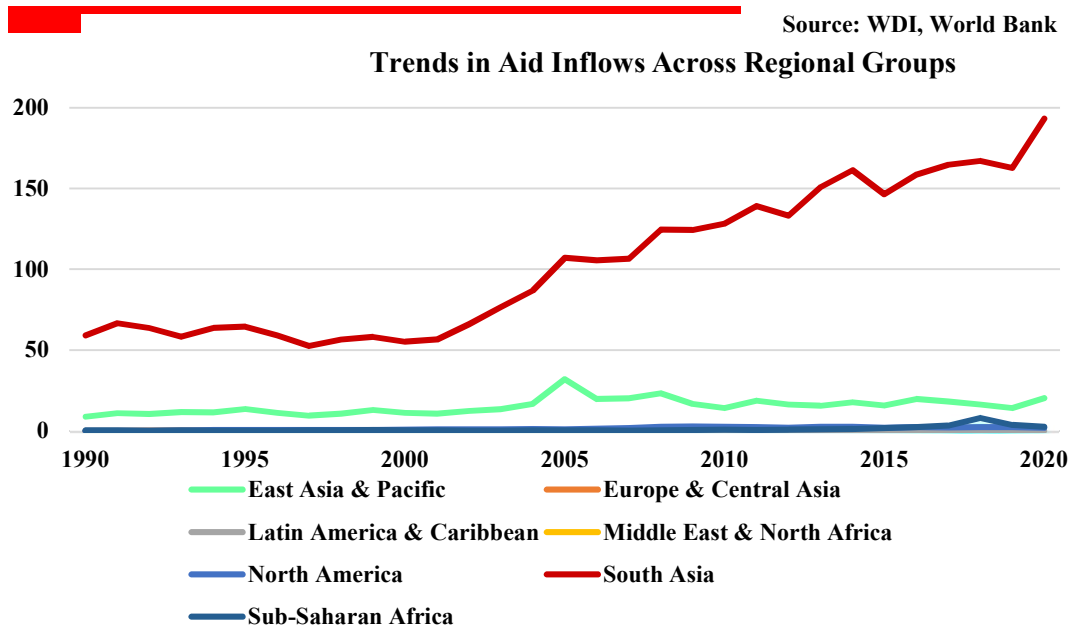
Figure 1.5 – Trends in Aid Inflows Across Regional Groups. (1990 to 2020).
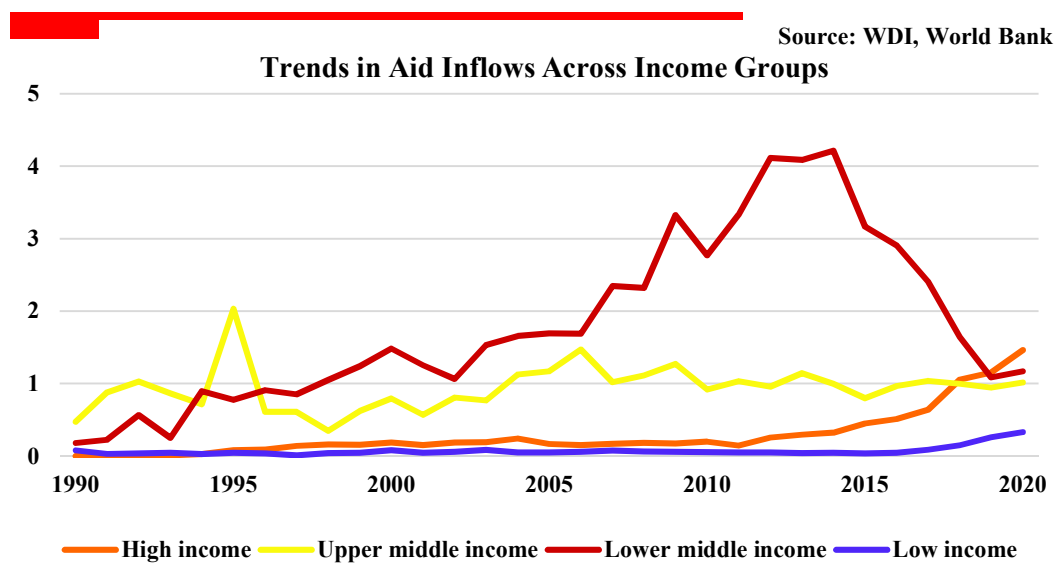
Figure 1.6 – Trends in Aid Inflows Across Income Groups. (1990 to 2020).

1.3 GLOBAL MACROECONOMIC SCENARIOS OF CAPITAL FLOWS

- **Foreign Direct Investment (FDI)**

FDI amongst one of the most prominent and valued flow account to $ 1.3 trillion in the year 2018. FDI flows to both developing and developed economies, the share of FDI to developed economies FDI flows to developed economies reached the lowest point since 2004, a total decline by 27 per cent was recorded. Inflows to Europe was halved in earlier comparison and accounted to less than $200 billion, due to negative inflows in a few large host countries as a result of funds repatriations and to a sizeable drop in the United Kingdom. Inflows in the United States also declined, by 9 per cent to $252 billion.

FDI flows to developing countries however remained stable with a total increase by 2 per cent. As a result of the increase and the abnormal fall in FDI flow to developed countries, the share of developing countries in global FDI increased to 54 per cent.

FDI flows to Africa rose by 11 per cent and accounted to $46 billion, besides a sharp decline in many of the larger recipient countries. The increase was merely supported by continued resource seeking inflows, some diversified investments and a recovery in South Africa after several years of low-level inflows.

Flows to developing Asia, the largest recipient region, rose by 4 per cent.

FDI in Latin America and the Caribbean however was low by 6 per cent, as a results it led to failure in maintaining momentum after the 2017 increase halted a long slide. FDI in this region however was a total of 27 per cent lower than during the peak of the commodities boom.

FDI flows to third world economies accounted for less than 3 per cent of the global total. Flows to the least developed countries have shown a recovery from their 2017 fall, back to $24 billion. FDI flows to economies in transition continued a declining trend in 2018, by 28 per cent to $34 billion, driven by a 49 per cent drop in flows to the Russian Federation.

- ### Remittances

The global flow of remittances has been growing since the last decades and have become one of the main supplement to FDI in many of the less FDI recipient economies. According to World Banks migrations and development report, remittances to low and middle income countries in 2018, reached a record high in value of $529 billion in comparison to previous years 2017 of $483 billion this have shown a steady increase by 9.6 per cent.

Among countries the top remittance recipient countries were India with $79 billion followed by China $67 billion, Mexico $36 billion, Philippines $34 billion, and Egypt $29 billion.

The regional remittance trends show a better view of remittance flows, remittance to the East Asia and the Pacific region grew by almost 7 per cent accounting to $143 billion in 2018 from 2017. Remittances to the Philippines have also increased to $34 billion, and Indonesia by 25 per cent in 2018.

After recording a growth of 22 per cent in 2017 remittances to Europe and Central Asia grew to estimated 11 percent accounting to $59 billion in 2018. Ukraine, was the region's largest remittance recipient, received remittance of a record of more than $14 billion in 2018, which were up about 19 percent over 2017.

Remittances flows into the Latin America and the Caribbean region grew to 10 per cent accounting to $88 billion in 2018. Mexico continued to be the highest recipient posting about $36 billion in 2018, with an increase of 11 per cent over the previous year. Colombia and Ecuador, also received 16 per cent and 8 percent growth in remittances, respectively. Three other countries in this region recorded double-digit growth in remittances i.e. Guatemala (13 per cent), Dominican Republic and Honduras (both 10 per cent) Remittances to the Middle East and North Africa grew by 9 percent to $62 billion in 2018. Egypt being the highest remittance recipient with growth of around 17 percent.

Remittances to South Asia grew by 12 per cent to $131 billion in 2018, outperforming the 6 percent growth recorded in 2017. Remittances growth recorded by more than 14 percent in India, flooding disaster in Kerala likely to be boosting the financial help sent by migrants to families. In Pakistan however, remittance growth was moderate to 7 per cent, due to fall in receipts from Saudi Arabia, it's one of the largest remittance source. In Bangladesh, the remittances showed a flight in 2018 of 15 percent.

Remittances to Sub-Saharan Africa grew by almost 10 percent to $46 billion in 2018, in total remittances as a share of GDP, Comoros has the largest share, followed by the Gambia, Lesotho, Cabo Verde, Liberia, Zimbabwe, Senegal, Togo, Ghana, and Nigeria.

- **Official Development Assistance/Aid (ODA)**

The ODAs also account for a significant alternative to FDI and remittance inflows, such aids are offered by various international institutions and bodies for specific purposes mainly for developmental purposes. Globally the total net ODA flow amounted to $149 billion in 2018. The ODA in percentage terms was down by 2.7 per cent in comparison to 2017.

Aid specifically for bilateral projects, programmes and technical assistance, which accounted over half of total net ODA, rose by 1.3 per cent in real terms from 2017 to 2018. For LDCs ODA is the largest source of external financing. In 2018, ODA to LDCs fell by 3 per cent in real terms from 2017, and aid to Africa fell by 4 per cent.

According to United Nations Report, in 2017, ODA provided by members of the Organization for Economic Cooperation and Development (OECD) Development Assistance Committee (DAC) amounted to $147.2 billion. This shows a total decline of 0.1 per cent in real terms over 2016. Five DAC members (Denmark, Luxembourg, Norway, Sweden and the United Kingdom of Great Britain and Northern Ireland) exceeded the United Nations target of 0.7 per cent of gross national income (GNI). However, on aggregate terms, the DAC donors fell short of the targets, providing only 0.31 per cent of GNI on an average.

1.3 PROBLEM STATEMENT (RESEARCH GAP)

The foreign capital flows have been increasing rapidly since the early 1990's, the move towards globalization gave a significant impetus to cross border capital flows. Over the year scholars have documented their effects on a broader scale and the literature ever since is growing rapidly. Although there exists vast literature, a review of the same points to the inconsistent findings and lacking consensus over the effects and other key issues related to capital flows. A review of the literature to the foremost suggest that almost major section of the studies is devoted to the developing world and the relevance of developed nations go unseen, a notion of fact is it's not only developing countries but the developed countries are also recipients of foreign capital flows and their effects are too born by them as in the case of developing nations, hence this study consider a wide approach and along with developing economies, developed economies are also given

their fair share. A critical review over certain nuances directs to several critical shortcomings which are essential with the point of view of policy making. Primarily, the studies available on capital flows are subdivided into two segments, one stem that takes net flows into consideration (Ahmed & Zlate, 2014; Sarno et al., 2016) while the other relies on the gross capital flows. Several studies like (Forbes & Warnock, 2012), (Byrne & Fiess, 2016), (Baek & Song, 2016) and (Nier, Saadi Sedik, & Mondino, 2014) suggest the use of gross approach relatively over net approach. In this study in order to capture the difference in foreign and domestic investors behaviour, the gross capital flows are considered. Secondly, the literature on drivers of capital flows is subdivided into two segments i.e. pull factors and push factors, while most studies focus only on the pull/domestic factors there exist handful studies that assess the role of global factors on linkage. Thus in this study a proper distinction in the factors as both pull and push factors driving capital flows to the target countries will be examined. Another finding from the review relates to the impact of capital inflows on the macroeconomic fundamentals and growth. Although, there is a growing literature the review indicates a sever lack of consensus predominant over this issues. In the recent year's researchers have started to take into account the role of certain factors like human capital development, financial development, technology advancement, market size, infrastructural development and so on while examining the impact of capital flows. Yet, the findings remain mixed and the number of studies considering this factors are few. Moreover, not a single study is found which seeks to examine this key issue for developing as well as developed nations as well as sub classification based on income level and regional affiliation's, thus this study is focused on examining the role of certain key macroeconomic fundamental that enhance the growth effects of foreign capital flows in the recipient's economies and thereby seek to recommend policy makers the key factors that magnify the effects considering the

literature shortcomings. Lastly, the volatility associated with capital inflows has not received much of its due share of attention in the literature. A hunt in the existing literature on capital flows, I have found very few studies that are devoted to examining the volatile nature of capital flows and their consequences. After the occurrence of 2008/09 global financial crisis, researchers and policy makers realised the inherent risk to the economy on account of persistent volatility in the capital flows, since then the number of studies have grown however much of the issue over volatility of capital flows remains yet untouched. In this study I focus on filling this significant gap in the literature by measuring and modelling the volatility of capital flows and its consequences on the growth and growth instability in both the developing as well as developed economies. The findings will have sought essentially policy implication over the period of time particularly for the developing economies which sees foreign capital flows as a means to augment growth.

Thus, the current study aims to bridge the significant gap and explores the pertinent issues to resolve the rising concerns over the debate on foreign capital flows and economic fundamentals and its implications in the host country specifically in the context of developing nations.

1.4 MOTIVATION

The earliest flows of foreign capital dates back to almost the pre-World War I era, initiated by the British, to the emerging markets for the purpose of infrastructural developments particularly railways. In fact, according to ("Glob. Dev. Financ.," 2000) the world bank report, there were at least four major surges in capital flows identified since 1870s to 2000s, during the times of rapid economic expansions and strong growth, technology outburst and expansion in world trade. The robust modern day literature

emphasising on capital flows emerged only in the early 1970s on account of rise in lending by the international bank to the developing countries due to oil price shocks. The next decade witnessed a sharp drop due to the occurrence of Latin American debt crisis. However, the flows rebounded to Latin America in the late 80s and the 90s against the improvement in fundamentals due to the backdrop experience of US recession. The capital flows experienced an upward trend thereafter, until the Asian Financial crisis hit the world in the late 90s with a prolonged decline over the years. The resurgence was only experienced in the 2000s until the eruption of Global Financial Crisis (GFC) in 2008. Although, the downturn was colossal, capital flows were flowing in a laggard state until 2016 as an aftermath effect of GFC, and then picked up with the high pace thereafter in 2017.

The experience of surges and flights in the capital flows following the events of crisis and other economic downturns, provided a seed to the most captivating question to the researchers which still pertains in the field of capital flows i.e. what drives capital flows? Is it external factors or domestic fundamentals? What are the implications of capital flow surges and stops on the economic front of the host country? The experience of rebounded capital flows to Latin America in the 1990s, led this question to surface more ominously. Researchers were keen to understand what prompted capital flows to Latin America, was it the Crisis or the strong domestic fundamentals of the country? Beginning from this vintage point, the growing literature has focused immensely on explaining how global conditions and domestic fundamentals contributed in explaining the evolution of capital flows over time. The study is deeply motivated by these notions and attempts to assess the factors driving capital flows alongside its implication on the economic growth and economic growth instability in the developing countries around the world.

1.5 RESEARCH AIMS & QUESTIONS

1.5.1 Research Aim

The primary aim of the study is to examine the major foreign capital flows and their dynamic effects in the host country. The aim of the study is three fold where in, first and foremost the study seeks to explain how global conditions and domestic fundamentals contributed in flow of foreign capital across economies. Furthermore, the study also attempts to assess the implications of major capital flows on the economic front in the host country focusing relatively on the role of absorptive capacity on linkage (i.e. Institutions and Financial Development). And Last but not the least, the study also attempts to examine how the volatile nature of capital flows impact the host country's economic development in the long run.

1.5.2 Research Questions

Based on a though revive of empirical and theoretical literature some key specific questions emerge which this study comprehends and attempts to answer through an in-depth analysis of facts, data and trends over a long horizon of time considering a large sample of countries across the world. The key question that emerges on the critical review of existing literature and the answers to which this study seeks to provide are listed as follows:

RQ1. What drives foreign capital flows to developed and developing economies?

a) What are the key drivers of aggregate and disaggregate capital flows? is there any difference?

b) Are the drivers in developing economies different from that of developed economies?

c) Are there any consistent drivers in all the types of flows and across different economies?

d) Can we say that the recent global financial crisis is an important driver?

e) As a policy maker, which type of driver should be focused more while drafting policies?

RQ2. What is the impact of capital flows on economic growth in developing and developed economies?

a) What is the relative contribution of the various capital flows to the economic growth?

b) Are the contributions of capital flows in developing countries different than that in the case of developed countries?

c) Which type of capital flow is more favourable than the other in terms of augmenting growth?

d) Which factors magnify the effects of capital flows on growth?

RQ3. How volatile are capital flows?

a) Which type of capital flows are more volatile?

b) What are the effects of volatility of capital flows on the growth of developing and developed economies?

c) Do volatile capital flows cause growth instability?

1.6 RESEARCH OBJECTIVES

The central aim of this study is to empirically investigate the capital flows in developing and developed economies. This study seeks to examine the key drivers and effects of foreign capital flows and the consequent effects of volatility in the capital flows. The key object of this study is contribute to the growing literature of development finance and extend policy recommendation. The specific objectives based on the above research question of this study are listed as follows:

1) To empirically examine the determinants of foreign capital flows in developing and developed economies.

2) To determine the relative contribution of foreign capital flows to economic growth in developing economies.

3) To determine the volatility in the capital flows and empirically examine the effects of volatile capital flows on the growth instability in developing economies.

1.7 RESEARCH HYPOTHESIS

Based on the thorough review of literature and the significant research gap identified the study has formulated the following working hypothesis for the purpose of testing through empirical investigations.

Hypothesis for Objective 1

H_0 1   There exists no significant impact of domestic pull factors on FDI inflows in Developing and Developed Economies.

H_0 2   There exists no significant impact of global push factors on FDI inflows in Developing and Developed Economies.

H₀ 3 There exists no significant impact of domestic pull factors on FPI inflows in Developing and Developed Economies.

H₀ 4 There exists no significant impact of global push factors on FPI inflows in Developing and Developed Economies.

H₀ 5 There exists no significant impact of domestic pull factors on Other Investment inflows in Developing and Developed Economies.

H₀ 6 There exists no significant impact of global push factors on Other Investment inflows in Developing and Developed Economies.

Hypothesis for Objective 2

H₀ 1 There exists no significant impact of FDI inflows on Economic Growth in Developing Economies.

  H₀ 1a There exists no significant impact of Institutional Quality on FDI - Economic Growth nexus in Developing Economies.

  H₀ 1b There exists no significant impact of Financial Development on FDI - Economic Growth nexus in Developing Economies.

H₀ 2 There exists no significant impact of Remittance inflows on Economic Growth in Developing Economies.

  H₀ 2a There exists no significant impact of Institutional Quality on Remittance - Economic Growth nexus in Developing Economies.

  H₀ 2b There exists no significant impact of Financial Development on Remittance - Economic Growth nexus in Developing Economies.

H₀ 3 There exists no significant impact of Aid inflows on Economic Growth in Developing Economies.

  H₀ 3a There exists no significant impact of Institutional Quality on Aid - Economic Growth nexus in Developing Economies.

  H₀ 3b There exists no significant impact of Financial Development on Aid - Economic Growth nexus in Developing Economies.

Hypothesis for Objective 3

H_0 1	There exists no significant impact of FDI inflows on Economic Growth Instability in Developing Economies.
H_0 2	There exists no significant impact of Volatility of FDI inflows on Economic Growth Instability in Developing Economies.
H_0 3	There exists no significant impact of Remittance inflows on Economic Growth Instability in Developing Economies.
H_0 4	There exists no significant impact of Volatility of Remittance inflows on Economic Growth Instability in Developing Economies.
H_0 5	There exists no significant impact of Aid inflows on Economic Growth Instability in Developing Economies.
H_0 6	There exists no significant impact of Volatility of Aid inflows on Economic Growth Instability in Developing Economies.

1.8 CONTRIBUTION AND SIGNIFICANCE OF RESEARCH

The study is divided into three stems (see fig.1.7), the first focus of this study is devoted to investigate major drivers of capital inflows. It is obligatory to identify the root cause for why capital flows where it flows? So as to design optimum policies. In essence, this section of this study dwells into identifying the key determinants of different types of capital flows, which can help the authorities and policy makers to better understand the behaviour of this flows and thus further assist in crafting effective policy mix so as to safeguard and stabilize the local financial systems from undesirable ripples from global dynamics. Such as, when pull factor primarily cause capital flows, policy makers can thus device policies that focuses on enhancing the local macroeconomic policies and macro-prudential measure to attract more of capital flows. On the contrary, when global push

factors indicate a strong influence on the movement of capital flows policymakers and authorities can resort to adjustment in the financial account management (ECB, 2016)[1].
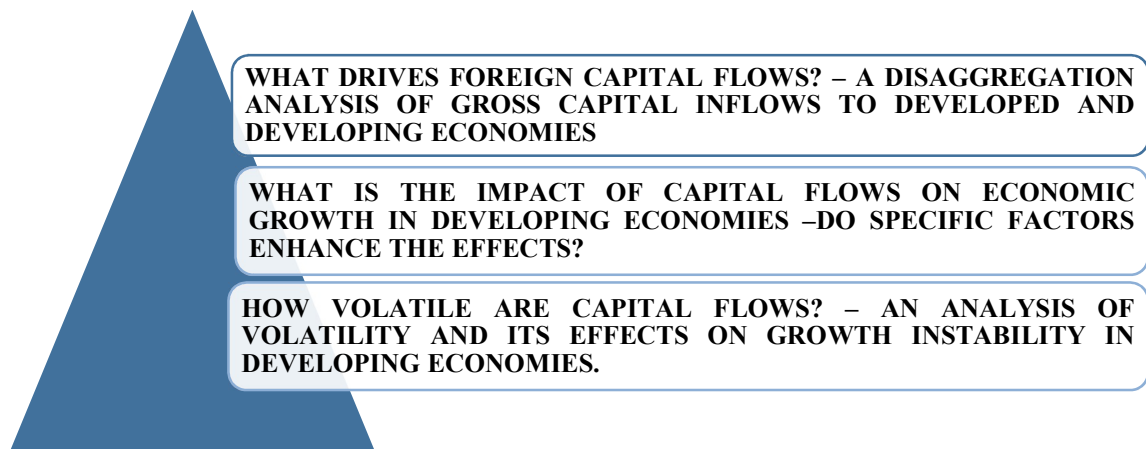
Fig. 1.7 – Thesis structure

Source: researchers illustrating

Once we answer the question 'why capital flows where it flows?' by identifying the key drivers that drive this flows, it is also imperative to study the plausible effects of this flows on the recipient economy. An accurate understanding of the impact of capital flows can assist policy makers to appropriately mitigate and manage the macroeconomic and financial stability risk associated, particularly when the capital flows tends to be surprisingly large and volatile. The (IMF, 2018)[2] recently highlighted policy mix like macro-prudential policies, capital flow management measures and foreign exchange interventions to mitigate the disruption caused by volatile capital flows and thus prevent build-up of systematic risk. Despite this policy proposed by IMF and other organisation from time to time to deal with capital flow shocks yet, the effects and interaction of these policies remain under debate. The recent study of (Mano & Sgherri, 2020) suggest that policy response remain heterogeneous across countries with policy choices highly relied

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[1] Dealing with Large and Volatile Capital Flows and the Role of the IMF
[2] Policy Responses to Capital Flows. IMF-World Bank Annual Meetings

upon the country characteristics. A striking finding of this study was that countries using macro-prudential policies and capital flow management measure to deal with capital flow shocks helped to reduce the burden on monetary policy and thus allowing countries to deal better with domestic cyclical developments. Assessing the impact of capital flows namely foreign direct investments/direct investment (FDI/DI), remittances, official development aid's (ODA) on the economic performance of the developing and developed economies will help determine the relative merit of certain flows over other others and thus better focused policies can be devised to attract the targeted flow for long term sustained growth.

The third stem of this study dwells into modelling the volatile nature of capital flows and its effects. Over the decades of surges in capital flows, concerns have risen regarding 'how stable are the capital flows?'. Researchers like, (Neumann, Penl, & Tanku, 2009) argue that global capital flows have a destabilizing effect in the developing countries, particularly in extreme economic events like the GFC which led to a sudden reversal of these flows. (Forbes & Warnock, 2012) also argue that economic consequences like macroeconomic instability, financial system vulnerability, occurrence of economic cycles on account of swings in capital flows and so on. resulting from volatile flows have been more evident post the occurrence of GFC. Given this consideration to the volatile nature of capital flows, this shoot in the literature emerges only after the GFC, yet not much of attention is given in the literature (Demir, 2009). This section exclusively tries to contribute to the growing literature by modelling the volatility associated with capital flows, and its consequences on growth and growth instability in both the developed and the developing countries, thereby assisting in policy formulation for effective management of foreign capital flows.

1.9 LIMITATIONS OF THE STUDY

Although the study contributes significantly to the growing body of literature, there were however, limitations to this study. First, the availability of data which is found to be not consistent for all the economies around the world as well as for the entire time period. Thus the current study does not include all the countries or economies in developing and developed category for analysis. However, the sample used in the study is sufficient and representative.

Second, the study only focuses on the macro level analysis and does not consider the micro effects of foreign capital flows. Moreover, recent trends in FDI research focuses on Outward FDIs as well as Sectoral FDIs, the same has not been covered in the present study.

Third, most studies based on secondary data are affected by issues such as measurement bias, omitted variable bias and the presence of potential endogeneity, these limitation is also applicable to the current study. Fourth, the data availability of most of the explanatory variables remains a greater limitation. The data for all the variables in not consistent and also missing for many of the sample economies, as such the economies have either been removed from analysis or the variable has been dropped all together, this has curtailed the sample size of the study.

Lastly the time horizon under consideration i.e. from 1990 to 2019 (30 years) is strategically chosen which covers the most number of countries and variables. Although a larger size of time period considered would have had enhanced the outcomes of the study but at the cost of smaller sample size. Therefore, caution should be applied while interpreting the results of the study.

2.0 STRUCTURE OF THE THESIS

The thesis will be organised in Seven elaborative chapters documented as follows:

Chapter 1: This chapter will present the introduction, motivation and background to this study. In this chapter a detailed justification and relevance of the study will be presented. The main aim and the specific objectives on the basis of which the whole thesis will be executed shall be presented along with the research questions to be answered by this study.

Chapter 2: This chapter will dwell into the theoretical and empirical literature supporting the present study. An in depth analysis of the growing literature is presented in the current chapter.

Chapter 3: The content of the chapter three will be dedicated to providing a detailed methodological approach adopted in the present study. The chapter will provide a detailed account of the research methodology used in achieving the three objectives of the study.

Chapter 4: This chapter will dwell into the first objective on the determinants of capital flows in the developing and developed economies. It will include a detailed introduction along with the empirical findings and discussion from the results obtained through the empirical analysis.

Chapter 5: This chapter will be focused on the second objective on the relative contribution of foreign capital flows to economic growth in developing economies. It will include a detailed introduction along with the empirical findings and discussion from the results obtained through the empirical analysis.

Chapter 6: This chapter will be focus on the last objective on the volatility of foreign capital flows and its effects on growth instability in developing economies. It will include a detailed introduction along with the empirical findings and discussion from the results obtained through the empirical analysis.

Chapter 7: This chapter will summarize the findings by discussion, comparing and synthesizing the results and implication. It will also offer in-depth discussion and plausible policy recommendations based on the findings of the study.
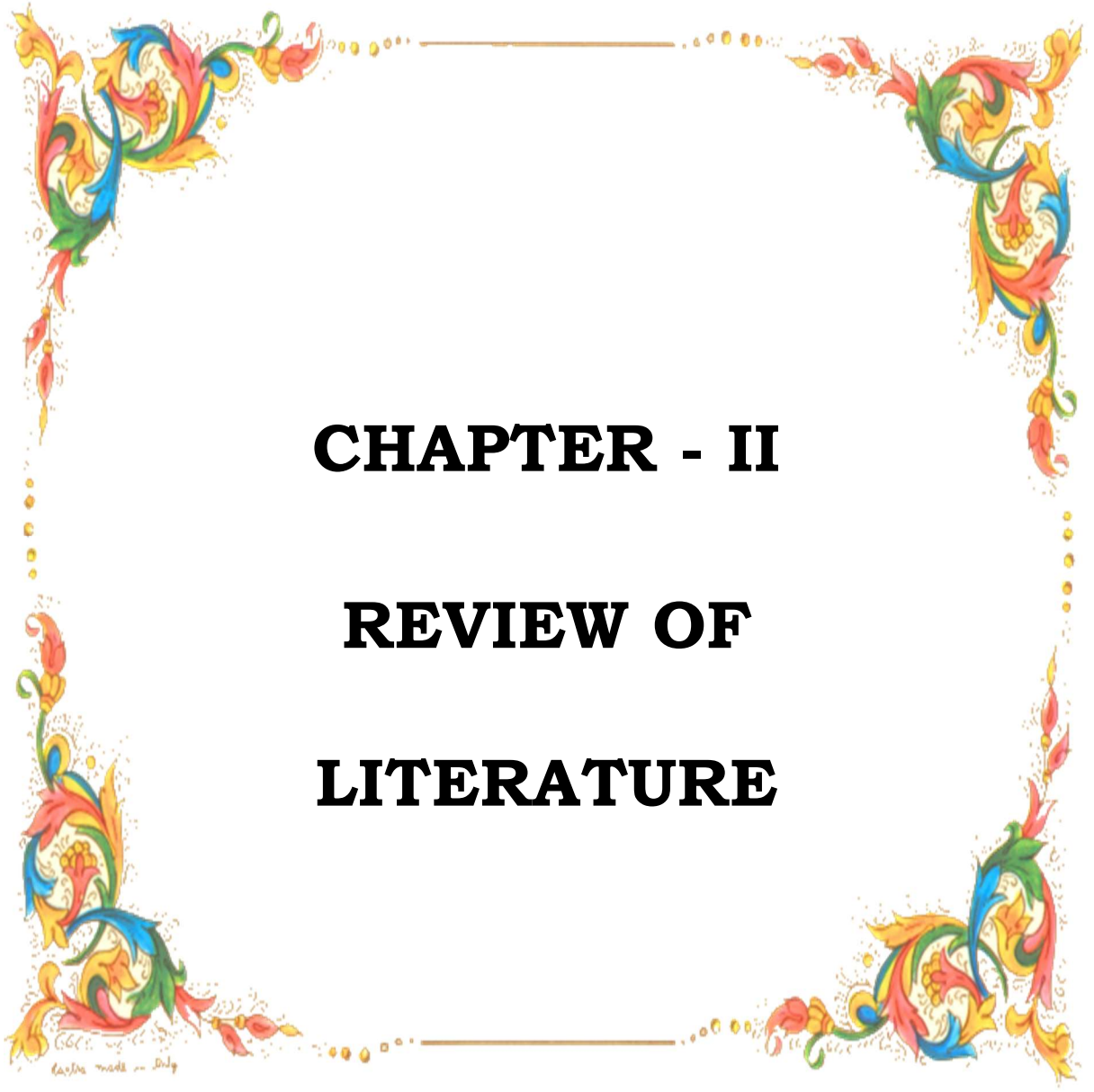
CHAPTER - II

REVIEW OF

LITERATURE

2.1 INTRODUCTION

One of the most remarkable feature of global economy in the recent decades have been the surge towards globalization. Globalization of economic activities, integration of the local financial markets and improved mobility of capital has led to an unforeseen impetus towards unprecedented growth across countries.

The widespread gush towards liberalizing local financial markets, abolishment of capital controls combined with improvements in information and technology has steered the road towards growth and development further achievable.

The recent decade also saw the unparalleled growth and expansion in the cross-border capital flows movements across industrialized as well as emerging market economies. The growth in the global capital flows is accounted to be much larger than the global GDP growth over the years.

In economic theory, the pecuniary benefits accruing from enhanced mobility of goods and capital internationally are quite clear. Borrowing or lending in the international markets permits smooth consumption, furthermore it also facilitates channelling world savings into productive avenues with added benefit of diversification of investment to augment risk. In addition, the literature argues that enhanced capital mobility leads to increase in the efficiency of domestic financial markets on account of exposure to global competition and thus promote economic growth in the recipient country.

Despite the inherent benefits, a major hindrance occurs on account of inefficiency in the financial markets that restrict the growth effects. Additionally, empirics suggest that gain from foreign capital flows are subdued by a number of negative concerns that capital flows unleash on the recipient economy. For instance, interest rate risk, sudden stop and

surges in capital flows etc. This effects coupled up with increased capital mobility causes the nations macroeconomic autonomy to deteriorate thus causing adverse anomalies on the level of inflation, exchange rates and overall financial sector as a consequence making the local economy further prone to global shocks. A great example of this phenomenon was witnessed most recently by almost all of the world economies during and post the occurrence of global financial crisis of 2008/09.

Researchers across the board have now started to focus on capital flows and the associated risk due to its inherent volatile characteristic which surfaced predominantly as an aftermath of global crisis. Policy makers are now faced with an ever-growing challenge from the volatility which needs due management so as to minimize the risk.

For instance, (Calvo, Leiderman, & Reinhart, 1996) argue that large surges in the capital inflow may bring undesirable macroeconomic effects in the form of rapid expansion of monetary policy, induced inflationary conditions along with ill effects in the form of pressure on real exchange rate management and mismanagement of current account deficits, this together can give the economy a tail spin from its growth objective.

Additionally, (Sarno, Tsiakas, & Ulloa, 2016) suggest that surges and stops in capital flows can be more detrimental to growing economies, they reason that sudden stops or declines in the capital inflows can lead a country to suffer from high interest rates, sharp depreciation rate which can further cause corrosion in the financial and institutional development and thus cause sluggishness in the growth processes.

The following section of this chapter focuses on the theoretical and the empirical work of various scholars on different aspects related directly as well indirectly to capital flows and economic growth dynamics.

2.2. LITERATURE REVIEW ON DETERMINANTS OF FOREIGN CAPITAL FLOWS

The widespread discussion on the determinants of capital flows have been carried out in length in the literature. This discussion becomes more specific during the recent episode of global financial crises. The literature on determinants of capital flows can be classified into two segments i.e. the push factors and the pull factors (see, (Agénor, 1998; Byrne & Fiess, 2016; Calvo et al., 1996; Fernandez-Arias, 1996; Forbes & Warnock, 2012; Fratzscher, 2012; Sarno, Tsiakas, & Ulloa, 2016; Taylor & Sarno, 1997)). The push factors which emerged recently as major determinants of capital flows relate to the global factors that drive capital to a specific country, on the other hand pull factors are the traditional domestic factors concerning the macroeconomic fundamentals of the host country.

The existing literature on determinants of capital flows suggest that the push factors hold more relevance than the pull factors. The push factors are closely related to the neoclassical theory, which argues that capital reacts to interest rate differentials between countries. According to (Ahmed Hannan, 2018) under the neoclassical theory, capital flows from countries with low returns to those countries that offers higher rate of returns on the capital. In similar approach several studies like (see, (Arias-Rodríguez, Delgado, Parra-Amado, & Rincón-Castro, 2016; Baek & Song, 2016; Bruno & Shin, 2013; Byrne & Fiess, 2016; Egly & American, 2010; Forbes & Warnock, 2012; Reinhart & Reinhart, 2009; Sarno et al., 2016)), suggest that other variables apart from interest rates such as global economic growth, risk aversion, global liquidity and commodity prices also act as prominent push factors that drive capital flows in other countries.

The recent empirical research on the effects of global (push) factors on capital flows are typically more dominant than that of domestic (pull) factors. Beginning with the study of (Calvo et al., 1996) which stated that the notable surges in the capital flows are driven by interest rate movements.

Similarly, (Fernandez-Arias, 1996) supports the findings of (Calvo et al., 1996), they explain that the surge of capital inflows are driven more by low returns in industrial countries than by domestic factors of the host country and hence the levels of capital inflows would be unsustainable in the long run.

(Taylor & Sarno, 1997) studied the push and pull factor determinants of equity and bond flows from US to nine Latin American and nine Asian countries over 1988-92, the study found that in the case of equity flow both global and domestic factors play a crucial role in attracting the flows whereas, global factors seems to be more relevant in the case of bond flows then the domestic factors. In particular, the study found that U.S. interest rates remains by far the most significant factor to drive capital.

(Forbes & Warnock, 2012) examined the major global factors that drive capital flows, they found that global risk along with contagion factors (regional proximity, financial linkage and trade linkage) are most significant drivers of extreme capital flow episodes. The study also finds that the effects of domestic factors on capital flows remain generally small.

Another most recent study of (Byrne & Fiess, 2016) examined the importance of global factors driving international capital movements into emerging markets. Their study concluded that for capital flowing to the emerging markets, real US long run rate of interest and commodity prices as global push factors have a significant impact on capital

flows, along with relative financial openness of the economy and quality institutions being the most significant pull factors of capital inflows.

On the other hand the study of (Sarno et al., 2016) advocated that countries should resort to capital controls rather than using macro-prudential policies to manage capital flows. Their study found that both push and pull factors effectively contribute to the international flows of portfolio between US and other countries, however they find that the effect of push factors to be stronger than the pull factors.

The recent study of (Arias-Rodríguez et al., 2016) explored the long run determinants of gross capital flows to developing countries using a panel cointegration approach. The study found existence of co-integrating relationship between capital flows and the push and pull factors. They find that growth rate of GDP, level of public debt and interest rate differentials affects the FDI flows whereas, portfolio investments are more driven by volatility of international financial markets and foreign assets prices.

Another study of (Nier, Saadi Sedik, & Mondino, 2014) examined the nonlinear effects of global volatility on capital flows to emerging markets. The study uses the global volatility index (VIX) as an indicator, the study showed that during the lower VIX levels, macro-fundamental factors like the countries growth rate differentials, level of government debt and level of financial sector development are found to be major drivers of capital flows. However, in the event of higher levels of VIX, besides interest rate differentials VIX index relatively becomes the significant drivers of capital flows. The study also highlighted that the level of financial market development and mobility of capital leads to the magnification in the effects of VIX on capital flows to emerging markets.

The traditional literature on the determinants of capital inflows relies heavily on the importance of domestic factors which are presumed to influence the risk-return perception of investors. The traditional studies rely on local macroeconomic fundamentals, official policies of the government and market imperfections to explain the capital inflows surges (Ghosh, Qureshi, Kim, & Zalduendo, 2014).

The literature highlights several factors like domestic interest rates, domestic capital formation, human capital development, infrastructural development, level of inflation, level of financial development, economic openness, quality of domestic institutions, level of public debt, current account balances, real exchange rates and a range of other relevant variables that drive capital flows (see (Ahlquist, 2006), (Alfaro, Kalemli-Ozcan, & Volosovych, 2007), (Papaioannou, 2009), (Milesi-Ferretti & Tille, 2011), (Fratzscher, 2012), (Bruno & Shin, 2013), (Nier et al., 2014), (Ahmed & Zlate, 2014), (Brafu-Insaidoo & Biekpe, 2014), (Olaberriá, 2015), (Dell'Erba & Reinhardt, 2015), (Hashimoto & Wacker, 2016), (Iamsiraroj, 2016), (Baek & Song, 2016), (Arias-Rodríguez et al., 2016) and (Ahmed Hannan, 2017).

The study of (Ahlquist, 2006) focuses on the effects of economic policy outcomes on capital inflows to developing countries, the study found that portfolio flows are more sensitive to governments behaviour and fiscal policy, as such as soon as any new information is available FPI reallocate their funds, on the contrary direct flows are found to be less sensitive to macroeconomic policies however are more concerned to the quality of political institutions. The study found that countries with more stable and democratic institutions attract and sustain more FDIs.

(Alfaro et al., 2007) similarly focuses on the relevance of institutions in explaining the capital flow surges, they find that institutional quality is one of the most important

determinant of capital inflows. They also argue that during 1970-2000 period, legal origins had a direct effect on capital flows however policy is found to be a significant factor that explains the level of capital flows and their volatilities.

Another study of (Papaioannou, 2009) examined the role of quality institutions in attracting financial flows particularly the bank capital flows, the study showed that quality institutions is a significant factor driving bank capital than any other macro factor, the study argue that poorly performing institutions, comprising of weak property rights, legal inefficiency, and a high risk of expropriation impedes foreign bank capital flows.

(Fratzscher, 2012) focused on GFC and its effects on capital flows the study based on 50 advanced and emerging economies found that push factors like shocks to liquidity and risk along with macroeconomic conditions and policies in advanced economies like US had significant effect on capital flows although, the pull factors like macroeconomic fundamentals, quality institutions and economic policies remained significant drivers of capital flows in the 2009–10 recovery period.

In addition, (Ahmed & Zlate, 2014) examined the determinants of private capital flows to 12 EMEs from 2002, the study found that growth and interest rate differentials along with global risk are the most significant determinants of capital flows then other determinant factors.

(Brafu-Insaidoo & Biekpe, 2014) studied the determinants of capital flows to selected Sub-Saharan African countries, the study using a dynamic panel data estimation suggest that Liberalization of the domestic financial system and equity market has a positive and significant impact on international capital flows to the SSA region. However, capital account liberalization does not affect capital flows. The study also found that elimination of multiple exchange rate systems significantly affected international capital flows.

(Dell'Erba & Reinhardt, 2015) examined the surges in FDI and bank debt flows and their global, contagion and domestic factor determinants using a wide sample of 43 countries, the study showed that global and contagion factors, particularly the global growth and regional contagion factor, had a strong and positive impact on FDI surges in the financial sector as well as bank debt flows.

Another study of (Ahmed Hannan, 2017) using a sample of 34 emerging markets from 2009 to 2015 suggested that both push as well as pull factors are significant in driving capital flows, however the study argues that the role of certain factors remains insignificant during normal times but in the case of high or low surges these factors hold paramount importance as a factor determinant. Several important findings from the literature on the determinants of capital inflows are summarized in the following Table 2.1.

Table 2.1. Literature Findings on the Main Drivers of Capital Inflows

Important Drivers	Effect	Authors
Domestic Factors		
Credit	(+)	(Baek & Song, 2016), (Broto, Díaz-Cassou, & Erce, 2011)
Market Size	(+)	(Mohamed & Sidiropoulos, 2010), (Ang, 2008), (Demirhan & Masca, 2008), (Rogmans & Ebbers, 2013), (Apaydin, 2009),
Trade Openness	(+)	(Hashimoto & Wacker, 2016), (Iamsiraroj, 2016), (McQuade & Schmitz, 2017), (Milesi-Ferretti & Tille, 2011), (Ahmed Hannan, 2017)
GDP growth rate	(+)	(Arias-Rodríguez et al., 2016), (Baek & Song, 2016), (Hashimoto & Wacker, 2016), (McQuade & Schmitz, 2017), (Park, Ramayand, & Shin, 2016), (Bruno & Shin, 2013), (Olaberriá, 2015), (Contessi, De Pace, &

		Francis, 2013), (Forbes & Warnock, 2012), (Fratzscher, 2012), (Ahmed Hannan, 2017)
Openness	(+)	(Sarno et al., 2016), (Byrne & Fiess, 2016), (Hashimoto & Wacker, 2016), (Olaberriá, 2015), (Mercado & Park, 2011)
Debt Level	(-)	(Arias-Rodríguez et al., 2016), (Baek & Song, 2016)(Bruno & Shin, 2013), (Nier et al., 2014)
Financial development	(+)	(Nier et al., 2014), (Ahmed Hannan, 2017)
Exchange rates	(+)	(Dell'Erba & Reinhardt, 2015), (Nier et al., 2014), (Ahmed Hannan, 2017)
Interest rates	(+)	(Ahmed Hannan, 2017), (Nier et al., 2014), (Bruno & Shin, 2013), (Contessi et al., 2013)
Political risk/ institutional quality	(+)	(Baek & Song, 2016), (Byrne & Fiess, 2016), (Hashimoto & Wacker, 2016), (Olaberriá, 2015), (Fratzscher, 2012), (Alfaro et al., 2007), (Mercado & Park, 2011)
Capital openness	(+)	(Ahmed Hannan, 2017), (Mercado & Park, 2011)
Inflation rate	(+/-)	(Mercado & Park, 2011)
Government spending	(-)	(Mohamed & Sidiropoulos, 2010)
Human Capital	(+)	(Na & Lightfoot, 2006), (Rodríguez & Pallas, 2008)
Global Factors		
Global growth	(+)	(Dell'Erba & Reinhardt, 2015), (Forbes & Warnock, 2012), (Milesi-Ferretti & Tille, 2011), (Ahmed Hannan, 2017)
US government bond yield	(-)	(Ahmed Hannan, 2017), (Byrne & Fiess, 2016), (Mercado & Park, 2011), (Park et al., 2016)
Global financial market volatility (VXO or VIX index)	(-)	(Fernandez-Arias, 1996), (Arias-Rodríguez et al., 2016), (Baek & Song, 2016), (McQuade & Schmitz, 2017), (Park et al., 2016), (Nier et al., 2014), (Olaberriá, 2015), (Forbes & Warnock, 2012), (Milesi-Ferretti & Tille, 2011), (Pagliari & Hannan, 2017), (Ahmed Hannan, 2017)
Global liquidity	(+)	(Baek & Song, 2016), (Bruno & Shin, 2013), (Ahmed Hannan, 2017)

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Commodity prices (growth)	(-)	(Ahmed Hannan, 2017)
Push/Pull		
Growth differential vis-à-vis U.S	(+)	(Ahmed Hannan, 2017)
Rate differential vis-à-vis U.S.	(+)	(Mercado & Park, 2011)

Source: Compiled by researcher

2.3. LITERATURE REVIEW ON IMPACT OF FOREIGN CAPITAL FLOWS ON ECONOMIC GROWTH

The literature is abounding with several studies on different aspects related to financial flows. While some studies have documented a positive effect (Bailliu, 2000), whereas some showed negative (Levine, 2001; Murshid & Mody, 2011) on the contrary some studies recorded no significant effect on economic growth.

The empirical literature on the growth effects of foreign capital flows have been growing over time, with recorded effects becoming more and more ambiguous and inconclusive. It is of paramount importance to know the relative contribution of each type of capital flow on the economic performance such that policy makers can device appropriate policy to attract some specific flows that best suits the objective of sustaining long term growth.

In the following section, a thorough review of literature is being presented over the effects of different types of capital flows namely, Remittances, FDI, FPI and ODA flows on economic growth and performance of recipient economies.

2.3.1. REMITTANCES AND ECONOMIC GROWTH

International remittance inflows specifically to the developing world have seen manifold increase in the last few decades. In many of the developing nations the quantum of foreign exchange receipts though remittances have surpassed receipts from other prominent sources like export revenue, foreign direct investment (FDI), aid and other forms of capital flows. The remittances have become one of the most attractive source of foreign earnings for many developing economies. Policy makers across nations now view remittances as an unrestricted source of foreign receipts which aids in promoting investment and consumption in the economy. According to (United Nations, 2003)

report, in certain aspects, the receipts from remittances are treated as similar to FDI and other private capital receipts, hence remittances are supposed to have similar effects on economic growth as other capital flows.

However, the debate on the role of remittances specially the growth promotional one proposed through theoratical and empirical studies by scholars remains highly inconclusive. One stem of literature argues that remittances have a positive impact on growth. It suggest that remittances help to reduce credit constraints on household receipts, and thus potentially stimulate entrepreneurial activity and private investment (Woodruff & Zenteno, 2005; Yang, 2008), also there exist both backward and forward linkages within investment activities, as such an increase in the investment of one household could generate an increase in the income of other households. In addition, larger remittance flows might help improve a country's credit rating rank (Jongwanich & Kohpaiboon, 2019).

On the other hand, other researchers argue that remittance inflows could have an adverse effect on economic growth if the remittances are used primarily for consumption other than for investment. The argument also extends to debate that remittances indirectly affect labour supply by encouraging some remittance-recipient households to work less which may reduce not only labour supply but also economic growth (Chami, Fullenkamp, & Jahjah, 2005). In addition, (Amuedo-Dorantes & Pozo, 2004) argue that large and sustained remittance inflows could lead to the so-called 'Dutch disease' problem. The Empirical findings of (Chami et al., 2005) and (Gapen, Chami, Montiel, Barajas, & Fullenkamp, 2009), revealed a negative relationship between remittances and economic growth.

The literature concerning remittances and economic growth offers very little agreement with scant information over the issue. On one hand, empirics suggest that receipts of remittances positively prompt growth in a number of ways. First, remittance receipts are found to be very effective in uplifting credit constraints faced by the developing world and thus promote entrepreneurial activities and boost investment (Woodruff & Zenteno, 2005; Yang, 2008). Secondly, receipts by way of remittances to the developing countries helps to improve credit worthiness and enhance access to international capital. According to (The World Bank, 2006) the credit ratings of countries which are recipients of remittances are positively affected by the magnitude of remittances inflows to that country this thus proliferates physical and human capital investment and hence boost growth. Third, remittance inflows with its given backward and forward linkages creates positive multiplier effects on the economic growth of recipient countries. Given backward and forward linkages in investment activities, an increase in the investment of one household has the propensity to generate an increase in the income of other households. On the other hand, previous studies also argue that remittances may potentially have adverse effects on the growth and development prospects of developing economies in particular. The studies and surveys carried out pertaining to the use of remittances by the recipient households have revealed that remittances instead of being used for productive investments, for most are utilised for consumption and the remainder being utilised for other activities this can have adverse effects on the growth as advocated by (Chami et al., 2005). In addition, (Lartey, Mandelman, & Acosta, 2012) suggest that larger and sustained remittance inflows might cause an appreciation in the real exchange rate and thus make the trading goods sector less profitable, this in turn can lead to the so-called 'Dutch disease' problem. Given these opposing views, determining the actual causal nexus between remittances and GDP growth becomes a matter of empirics.

However, the empirical evidences on the remittance and growth interconnection have so far remained inconclusive. For example (Brown, 1994) augmented the relationship between remittances, savings and investments in Tonga and Samoa, the study based on the micro-level analysis of use of remittances revealed that remittances contribute positively to the savings and investments. (Meyer & Shera, 2017) in their study based on a set of six economies revealed that remittance by far has a significant and positive impact on the per capita growth in the sample economies, moreover fundamental variables like domestic investment, education, current account balance and consumption show positive effects on growth, whereas variables like population growth, real exchange rate and external debt of the government displayed negative implication. The study of (Fayissa & Nsiah, 2010) which examined the role of remittance and other capital flows like FDI, ODA in boosting growth to the 37 African economies suggest that remittance flows to Sub-Saharan African countries positively induce growth in addition to other specific flows like FDI had a positive impact on growth although ODA flows disrupted growth with a negative consequence. The role of other supporting factors cannot go unnoticed in connection to remittance and growth relationship hence addressing this, the study of (Catrinescu, Leon-Ledesma, Piracha, & Quillin, 2009) based on 135 economies probing how institutions and its quality influence remittances to boost growth, the results depicts a positive picture, where remittance most likely to induced sufficient growth in the presence of good quality of institutions and governance and stable progressive political environment and policies. In addition, (Mundaca, 2009) showed that remittance flows had a positive effects on countries equilibrium rates of growth, however the growth effects were larger and sustained only if the economies had a strong and reliable financial system and adequate level of financial development.

In contrast, to the positivist view, other studies like that of (Chami et al., 2005) based on a panel of 113 countries from 1970-1998 attested that the level of remittance inflows are statistically insignificant, while a change in the remittance to GDP negatively affects growth. (Giuliano & Ruiz-Arranz, 2009) applying the system generalized method of moments (GMM) estimator to model remittance and growth on a set of 73 developing countries revealed that remittance inflows do not influence growth positively. In addition, (M. Chowdhury, 2016) inspected financial development, remittances and economic growth nexus for 33 developing remittance recipient countries from 1979 to 2011, the study concluded that neither financial development itself or its interaction with the remittance flow had significance in driving growth, thus conveying that financial development however did not induce remittance growth nexus. In addition, the study suggested that alternate methods like boosting financial literacy, reduction in the cost of remittance and integrating a stronger banking and financial network can boost remittance led growth in developing economies. However, The study of (Feeny, Iamsiraroj, & McGillivray, 2014) which empirically examined the effects of remittance flows on economic growth of Small Island Developing States (SDIS) and other developing countries, found that remittance had no significant impact on growth of non SIDS whereas, remittance proved to be a significant determinant factor to growth for SIDS located in the Pacific and sub-Saharan Africa region, though no such association was found in case of Latin America and the Caribbean, the finding also suggest that remittances reduce economic volatility in the Pacific group of SIDS, besides this remittance also had a favourable labour supply impact in sub-Saharan African SIDS, these impacts are absent in Latin American and Caribbean SIDS.

2.3.2. FOREIGN DIRECT INVESTMENT (FDI) AND ECONOMIC GROWTH

Capital is the basic foundation material for any production process to exist, both at the micro as well as the macro-economy level. Capital can be obtained either through domestic sources as well as from foreign sources, which is generally in the form of Foreign Direct Investment (FDI). FDI inflows have multidimensional features which make them a preferable source of capital in comparison to other available sources of capital. These features include filling the savings-investment gaps, relaxing the foreign exchange constraints, and consisting of a bundle which includes not only capital but also technology, knowledge, and marketing and managerial skills (Grossman & Helpman, 1991; Pradhan, 2003; Walz, 1997).

In the recent decades FDI flows have become the most stable and the largest component of capital flows especially to the emerging markets. As a result, FDI is considered an imperative element in the process of economic development across the board. Yet however, the role of FDI in the economic development process has for long been a topic of intense debate amongst the researchers. To date, the empirical evidence of the modelled effects of FDI on economic growth are not conclusive. While one stream of research indicates a positive impact of FDI on economic growth, another stream accounts for the otherwise. A third stream of research suggests that the effect of FDI on the host country's economy is dependent on the individual country's absorptive capacities in terms of its human capacity and the level of economic and financial development, infrastructure and other factors (Alfaro, Chanda, Kalemli-Ozcan, & Sayek, 2010; Azman-Saini, Law, & Ahmad, 2010; Hermes & Lensink, 2003; Makki & Somwaru, 2004).

The relationship between FDI inflows and consequential effects on growth of the recipient countries are widely studied and debated by several researchers in economic

literature. The review brings three main effects of FDI distinguished as: i) the 'positive'

view: ii) the 'negative' view and iii) the 'dependent' view.

One stem of literature supports the neo classical growth models pertaining to FDI and its

positive impacts in growth promotion for target host economies. The positivist suggest

that FDI tends to promote growth both in the direct as well as indirect forms. The direct

form of effects comes from the argument for the neo classical model which proposes that

capital drives growth, since FDI augments domestic capital accumulation in the host

country it can thus potentially enhance the growth, that is FDI complement limited

domestic savings and thus reducing cost of capital complements growth in the host

country. In addition, studies have also argued that FDI in many host economies promotes

domestic investments in the presence of complementary factors (Sylwester, 2005). The

indirect effects of FDI on the growth are advocated in the endogenous growth theory

which acknowledges knowledge and technology as key factors of production (Romer,

1994). Studies like (Asheghian, 2004; Chakraborty & Basu, 2010; Choe, 2003; A.

Chowdhury & Mavrotas, 2006), across economies have shown that FDI had a positive

and significant long run effects on the growth of host countries. On the other hand several

studies carried out by (Atique, Ahmad, & Azhar, 2004; Baharumshah & Thanoon, 2006;

Basu, Chakraborty, & Reagle, 2003; Bengoa & Sanchez-Robles, 2003; Chang, 2005; Li

& Liu, 2005; Makki & Somwaru, 2004), layed more emphasis on interlinkage factors that

assisted FDI growth nexus and suggested that trade policy, economic openness, domestic

financial markets and financial development, quality human capital and technology are

key factors for FDI to drive growth. As proposed by (Moran, Graham, & Blomström,

2005) FDI flows can enhance productivity gains in the host country through transfers of

technology, inducing skills acquisition, boosting competition and promoting export

potential, it has also been argued by (Kumar & Pradhan, 2002) that FDI led externalities

in promoting growth are more valuable than the direct generation of output by complementing investments.

A quite sceptical and non-reassuring opinion on the role played by FDI in the host country is proposed by the 'negative view' paradigm, it is essentially based and supportive of the 'dependence theory' it argues that FDI may not be so good as it looks from the surface for any economy. the argument is that the contribution of FDI is non growth not promotional however it contributes in causing income inequalities in the host countries as proposed by studies of (Bhattacharya & Bhattacharya, 2011; Bornschier, Chase-Dunn, & Rubinson, 1978; Chakraborty & Basu, 2002; Herzer, Klasen, & Nowak-Lehmann D., 2008; Nolan, 1983). Furthermore, another proposition is of FDI crowding out domestic investments as local firms cannot contest due to posed limitations in size, financing, and marketing power, this argument is in line with the argument of (Amin, 1974) where it is argued that an economy controlled by foreign players would not develop organically, rather grow in a disarticulated manner, as the multiplier impact by which demand in one sector of a country creates demand in another is weak, thereby leading to stagnant growth in host countries.

The inherent conflict between the negative and the positive views over the association between FDI and growth has been now shifted to empirical research. The empirical findings, especially those based on cross-country research, have been largely inconclusive. While some empirical studies conclude that there are growth benefits associated with FDI while other studies tend to find no or limited effects of FDI on growth (Dutt, 1997; Haddad & Harrison, 1993).

Another view is based on the dependent paradigm which suggests that FDI does not have any independent positive effect on the economic growth of host country, rather the impact

of FDI is primarily based on the host country's absorptive capacity. A number of macroeconomic studies by scholars debate that FDI can have a positive impact on economic growth only in a particular set of macroeconomic environment. For instance, (Blomström, Lipsey, & Zejan, 1992) argues that FDI has positive effects on the growth of host countries when the host country is sufficiently wealthy; that is, FDI exert a positive effect on economic growth only at given a threshold level of income in the host country. Below this level of income growth benefits from FDI might die out. (Alfaro, Chanda, Kalemli-Ozcan, & Sayek, 2004) suggest in the presence of sufficiently developed financial markets, FDI can promote economic growth. On the other hand, (Balasubramanyam, Salisu, & Sapsford, 1996) argue that a higher degrees of economic openness with trade and export orientation in the economy can sufficiently facilitate better transfer of technological know-how and managerial skills through FDI, and thus assist in crowd in of domestic investment. (Borensztein, De Gregorio, & Lee, 1998) suggest the importance of minimum level of stock of human capital that leads to technology and other productivity spillovers through FDI which may translate into higher growth. (Rajan & Zingales, 1998) and (Antràs, 2003) argue that poor institutional quality of the host country can limit the indirect benefits of FDI.

2.3.3. FOREIGN AID AND ECONOMIC GROWTH

Foreign aid has been one of the substantial part of capital for the developing countries for more than a decade. Aid is considered as an important element for financing developmental programmes particularly in the developing countries. The growth of aid flows embarked post the occurrence of World War II. The aid provided after the occurrence of World War II was based on the motive of welfare orientation in contrast to aid sanctions before World War II which were motivated by profit. According to

(Morrissey, 2001) the influx of aid assistance can have a dynamic effect on the economic performance of the recipient countries, like: 1) aid can boost physical as well as human capital investments, 2) aid can be a source of earing foreign exchange, 3) aid can help recipient countries to improve their capacity to import goods particularly essential goods, 4) through technological transfers aid can raise human as well as capital productivity and 5) aid can bargain resources for development of managerial skills, organisational capability, research ideas and market access and so on.

The ODA by far is one the most important type of capital flow than any other type of private capital flow to any developing economy, this is because this flows are essentially targeted for development and hence initiating development remains the key motive of aid. Despite, the welfare orientation of this aid flows the developmental problems are not solved completely, moreover in some cases it has further aggravated the existing problems. The debate on foreign aid and its effects on economic growth has drawn great attention of many researchers and policy makers in the last two to three decades. The dispute on aid for growth remains quite controversial and the findings being mixed. While, a good quantum of studies has acknowledged the positive effects of foreign aid on growth (Asteriou, 2009; Burnside & Dollar, 2000; Carl Johan Dalgaard, Hansen, & Tarp, 2004; Hansen & Tarp, 2000; Karras, 2006; Minoiu & Reddy, 2010; Papanek, 1972). On the contrary, (Mosley & Hudson, 1984; Pedersen, 1996; Rajan & Subramanian, 2008) and others found that aid does not have a positive effects on the developing countries economic growth. This essentially pin points to the level of conflict in the available literature pertaining to aid and growth.

Beginning with the study of (Snyder, 1993) which focused on donor biases towards small developing countries as an overlooked factor in aid growth nexus, found that aid tends to

be having a positive effects on growth in bigger economies than in small developing ones. (Burnside & Dollar, 2000) followed thereafter by examining the role of policy in the aid growth nexus using a OLS estimation for 56 developing countries, they found that aid promotes growth effectively only in the presence of good policies (fiscal, monetary and trade policies). Following the work of (Burnside & Dollar, 2000) several researchers further examined the nexus where, (Kosack, 2003) found that aid can be effective in increasing welfare in countries with a democratic structure whereas aid is ineffective in autocracies. (Minoiu & Reddy, 2010) also studies the growth effects of ODA to developing countries from 1960 to 2000 using OLS and 2SLS iv estimation. The study divided aid into two groups i.e. developmental aid and non-developmental aid, they report that aid for developmental purpose has a positive long run effect on economic growth of recipient countries than the non-developmental aid. (Clemens, Radelet, Bhavnani, & Bazzi, 2012) re-examined the debate on aid and growth focusing on the timing of aid receipts, using strictly the regression estimations they argue that aid causes some degree of growth in recipient countries, however the magnitude of this relationship remains highly modest and varies greatly across recipients. The study also showed that growth effects through aid diminishes as the levels of aid receipts rise.

Most of the recent studies on the aid effects on growth stems from the work of (Burnside & Dollar, 2000). However, several researchers are critical about the findings of their work. Using the same data set (C. J. Dalgaard & Hansen, 2001; Hansen & Tarp, 2001; Headey, 2008; Ram, 2004) emphasise that policy environment does not qualify to be a key factor in modelling positive effects of aid on growth. Alike, the earlier studies (Easterly, Levine, & Roodman, 2005) extended the initial sample of (Burnside & Dollar, 2000), and found that the findings reported are not robust with an extended sample. Their

study could not place strong confidence on the findings of Burnside and Dollar that foreign aid has a positive impact on growth in countries with sound policies.

Foreign aid indeed has an impact on economic growth, but along with a strong and dynamic negative side as well. Many studies have shown that foreign aid can create long-run sufferings rather than long-run growth. (Pedersen, 1996) using the game theory found that foreign aid do not have any significant impact on the host countries growth. On the opposing side the study of (Knack, 2001) argued that large inflows of aid reduces the quality of governance indices, which subsequently hinders economic growth process. The study of (Djankov, Montalvo, & Reynal-Querol, 2008) entitled 'The Curse of Aid' examined aid and growth with institutions for 108 recipient countries, they find that aid relatively had a negative effect on growth and aid flows above a certain level deterred institutions. They also compare aid vis-à-vis oil rents they found that aid is relatively aid flow is a bigger curse the oil rents. The most recent study of (Rajan & Subramanian, 2011) which found no concrete evidences to support that aid helps countries to grow. The study showed that aid flows can lead to currency overvaluation and hence can have adverse effects on the countries competitiveness pertaining to exporting sectors. Several other studies concentrating on individual economies like (Mbaku, 1993) which assesses the effects of aid on Cameroon, show that domestic resources have a strong positive effect on growth in comparison to foreign resources like aid. (Feeny & Feeny, 2007) on the effects of aid on growth of Papua New Guinea found that total aid do not contribute to growth, however they found that project aid have a strong positive effect on growth and also its interaction with economic policies. (Sothan, 2018) recently studied the aid effects in Cambodia, based on the data from 1980 to 2014 using the ARDL procedure the study show that aid in the short run causes growth, however in the long run the effect on aid on economic growth turn negative, this shows that aid in Cambodia is detrimental to growth

over long run. In the similar fashion (Mallik, 2008a) using a small sample of six poorest and highly aid dependent African countries found that aid in long run is injurious to economic growth is most of this African economies. The effects of aid can also be due to its unpredictability in its receipts, hence (Kodama, 2012) argued on the same proposition and found that aid unpredictability causes a decrease in aid's growth-enhancing effect. These studies have found that foreign aid is damaging economic growth in receiving countries. Several reasons for this ill effect like, fungibility of foreign aid, poor economic management, high corruption, underutilisation of aid, poor economic policies, high aid dependency etc. can be probable reasons. All of this collectively can be responsible for negative impact of aid on growth and development (Mallick & Moore, 2008; Mallik, 2008b).

2.4. LITERATURE REVIEW ON IMPACT OF FOREIGN CAPITAL FLOWS VOLATILITY ON ECONOMIC GROWTH VOLATILITY

Over the decades of surges in capital flows, concerns have risen regarding 'how stable are the capital flows?'. In this regards, (Neumann, Penl and Tanku, 2009) argue that global capital flows have a destabilizing effect in the developing countries, particularly in extreme economic events like the GFC which led to a sudden reversal of these flows. (Forbes and Warnock, 2012) also argue that economic consequences like macroeconomic instability, financial system vulnerability, occurrence of economic cycles on account of swings in capital flows and so on. resulting from volatile flows have been more evident post the occurrence of GFC. According to (IMF, 2012) capital inflow surges can cause financial markets to be overwhelmed and impede the ability of macroeconomic policy to adjust.

(Mercado and Park, 2011) examined the drivers and factor determinants of capital inflows and their volatility in the context of developing Asia, based on a varied panel of 50 emerging economies, the results from the study pinpoints towards some key facts first, the quality of institutions and the traditional pool factors as highlighted in the literature like per capita income growth, trade openness, and change in stock market capitalization are found to have a significant impact on the size of capital flows in Asia. Second, the quality of institutions in the recipient countries matters more for FDI inflows than in any

other flows another finding suggest that the volatility in the real exchange rate reduces the size of capital inflows and increases the volatility.

(Broto, Díaz-Cassou and Erce, 2011) explored the causes and determinants contributing to volatility in the capital inflows particularly to the emerging markets, the study based on a panel of 48 emerging economies revealed mixed outcomes wherein the economic and political stability on one hand reduce the volatility of portfolio flows but tends to increases that of other flows similarly existence of less competition in the domestic banking sector causes FDI's volatility while reduces that of other flows. However, the study suggests some key factors that reduces the volatility of certain flows without increasing that of others like inflation which was found to be robust and positively associated with the volatility of other flows, a higher volume of reserves and size of the banking system in terms of assets reduces the volatility of FDI and other flows. The study also provides evidences of non-linear relationship between the development of domestic stock markets and the volatility of portfolio flows, where portfolio flows tend to be more volatile in countries at an intermediate level of financial development.

(Neumann, Penl and Tanku, 2009) studied the association between different types of capital flows and the financial liberalisation in the emerging economies, based on a panel of 22 emerging markets the study suggests that financial liberalisation has a positive association with the volatility in FDI inflows to emerging markets then in the case of other specific flows this implies that in emerging markets with more financial

liberalisation FDI inflows become more volatile than portfolio flows of debt and other capital inflows.

The study (Sole Pagliari and Ahmed Hannan, 2017) explored the untouched debate over the capital inflows volatility modelling and factor determinants in the context of 65 emerging markets. The study employs three distinct measure of volatility i.e. Rolling standard deviation, GARCH (1,1), ARIMA models and reveal that portfolio debt and bank flows tend to be more volatile than FDI flows in addition to this the study suggest that volatility is more dominants on account of global financial turmoil's. the study also highlights the factor determinants of capital flow volatility the estimation suggests that the push factors causing capital flight hold more importance than the pull factors of capital inflows.

The study of (Ćorić & Pugh, 2013) Using a global database of 85 countries for the period 1970–2004 found that FDI had a stabilising effect on output growth. The inflow of FDI reduced the level of output growth volatility across the sample.

(Nicet-Chenaf & Rougier, 2014) The study focused on the MENA countries as hosts of European and non-European FDI flows and using the gravity model examined the volatility of both host and source economies. The study concluded that FDI inflows tend to be higher when the source country is having higher volatility. In another words, when there is output volatility in an economy, the economic agents tend to move their investment out of the country by investing in a relatively stable economy. This results in much higher FDI inflows in the host economy than the expected ones leading to stable

output growth. The findings of the study support the presence of a substitution effect between local and foreign investment for source (European) cooperations. Moreover, the authors also concluded that the element of risk-averseness is relatively less for non-traditional sources of FDI than the traditional (Western European economies) ones in the host sample economies.

(Ajide & Osode, 2017) Using a sample of 11 ECOWAS & applying the quantile regression approach to examine whether FDI has volatility reducing or inducing impact on output volatility. The Empirical evidence of the study reveals that FDI plays the role of volatility damper only in the economies experiencing high output volatility. However, this impact is insignificant for relatively stable output growth countries.

(Adeniyi, Ajide, & Raheem, 2019) study using the GMM estimation methodology, which corrects for the potential endogenity and omitted variable bias for data spanning the period 1996–2012 from total of 71 countries reveal that remittances and financial development curtailed the level of growth volatility.

(Tauqir, Majeed, & Kashif, 2021) using a panel data set of 141 economies from 1971 – 2017 examined the effect of FDI inflows and its instability on output growth volatility. The study using the GMM and 2SLS methodology reveal that FDI dampens the growth volatility while the uncertainty in FDI increases volatility in the economic growth.

(Mensah & Mensah, 2021) The study investigates the foreign direct investment and economic growth volatility nexus for the manufacturing sector of OECD countries over the period 1990 to 2015. The study documents a positive and statistically significant relationship between inward FDI stock and sectoral output volatility. Additionally, the study finds that the positive relationship between FDI and volatility is stronger in high

capital-intensive industries. These results are robust to the use of a measure of FDI targeting practices.

(Lensink & Morrissey, 2006) The study based on the cross-section, panel data, and instrumental variable techniques reveal that volatility of FDI has a negative impact on growth while a non-significant positive effect of FDI and human capital levels on growth is evident.
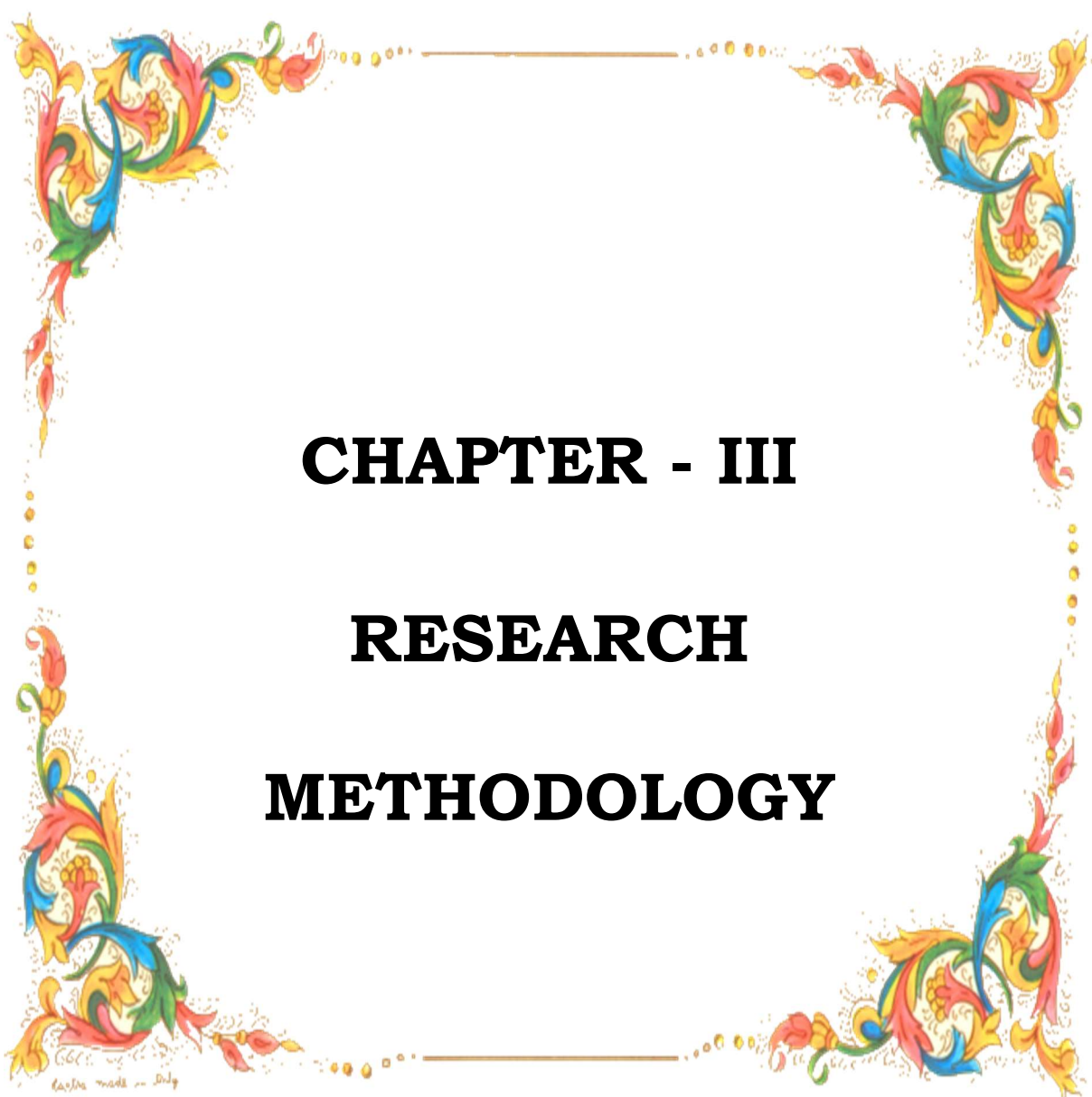
(Boateng, Agbola, & Mahmood, 2021) Using data from 45 Sub-Saharan African countries over the period 1980–2017. The account for different aid types, namely, aid commitment and aid disbursement. Results show that, unlike foreign aid disbursement, the foreign aid commitment flows are growth-enhancing, however the volatility in aid adversely affects the economic growth. Moreover, the study also found that institutional quality and its sub-dimensions enhances economic growth, but fails to curtail the adverse effect of aid volatility on economic growth in the SSA region.

(Museru, Toerien, & Gossel, 2014) study investigates the effects of aid inflows and the volatility of public investment on economic growth in 26 Sub-Saharan African countries over the period from 1992 to 2011. The study considers three volatility variables comprising aid, government revenue, and public investment into the aid-growth model so as to test the effect on economic growth. The empirical results from the study shows that foreign aid has a positive impact on growth once potential endogeneity has been accounted for however, the aid effectiveness on economic growth erodes due to the volatility in public investment in Sub-Saharan African countries.

(Bugamelli & Paternò, 2011) Using the empirical framework based on 60 emerging economies from 1980-2033 reveals that migrants' remittances reduce output growth volatility due to its size, stability and low procyclicality.

(Jawaid & Raza, 2016) The study investigates the effect of remittances and its volatility on economic growth in the five South Asian countries from 1975 to 2009. The results from the cointegration test confirm a significant positive long run association between remittances and economic growth in India, Bangladesh, Sri Lanka and Nepal, but a significant negative relationship in Pakistan. Conversely, the study reveal that the volatility of workers' remittances has a negative and significant effect on economic growth only in Pakistan, Indian, Bangladesh and Sri Lanka, while a negative but insignificant impact in Nepal.

(Chami, Hakura, & Montiel, 2012) study based on a sample of 70 remittance-recipient countries around the world found that there exist a negative effect of remittances receipts on output growth volatility, thus supporting the well-established notion that remittance flows have a stabilizing effect on output and output growth volatility.

CHAPTER - III

RESEARCH

METHODOLOGY

3.1. INTRODUCTION

The existing empirical literature focusing on the foreign capital - growth nexus is largely based on the panel based fixed/random effects models, pooled ordinary least square (POLS) or the least square dummy variable models (LSDV). Most of these models rely heavily on the assumption of strict homogeneity across panels besides this models suffer greatly to account for endogeneity and cross sectional dependence. The study is based on superior methods of estimation adapted from the literature which corrects for the inherent flaws and shortfalls in the previous literature. The in depth account of the methodology adopted in the study in presented as follows.

3.2. EMPIRICAL METHODOLOGY FOR THE DETERMINANTS OF FOREIGN CAPITAL FLOWS.

The 2008/09 global financial crisis (GFC) is one of the crude examples of plausible adversities of free financial flows and globalization. A lot has changed since the occurrence of crisis, particularly in the context of international capital flows. In the pre-crisis era capital flows were seen gradually rising, however during the GFC they were completely tanked and the post-crisis era saw an upsurge in capital flows with quotient of a high volatility (Ahmed & Zlate, 2014).

While capital flows spur growth and investments, the surge of capital flows can also fetch risk and challenges particularly when the size and volatility changes dramatically over a short period of time. According to (Calvo, Leiderman, & Reinhart, 1996)"large chunks of capital flows can be seen desirable, but they can also prove to be detrimental too mainly with adverse macroeconomic effects like rapid monetary expansion, uncontrolled inflation, appreciation in exchange rates and expansion of current account deficit".

Although, a strong post-crisis recovery has led to investors regain their risk appetite for investment particularly in the emerging economies, the dips in 2008 and 2009 leaves policy makers baffled in both advanced as well as in emerging world. A major challenge that surfaced post the GFC episode is 'how to effectively manage capital flows'. In this regards, there is need to effectively understand the forces driving capital flows and thereby make conducive policies for effective management of foreign capital.

This study thus seeks to account for policy formulation pertaining to capital flows and their long run management for sustainable growth effects. In this chapter a due importance is given to examining factors driving various capital inflows to both the emerging as well as advanced economies.

3.2.1 Objectives and Contribution

The prime objective of this chapter is to study various factors that drive capital inflows to emerging and advanced economies. Understanding the nature and behaviours of different types of capital flows is of paramount importance particularly to the authorities and policy makers, to draft appropriate policies. Literature has shown that capital flows can deter the strength of domestic markets particularly the financial system, which was evident during the GFC. In line with the same policy makers need to draft appropriate mix of policies that can strengthen the domestic markets and systems which can face any future global meltdowns unlike the GFC.

This study thus aims to identify key factor drivers of aggregate as well as disaggregate capital inflows to the emerging and advanced economies. This study comprehends three major component of capital flows namely, direct investment (DI), portfolio investments (PI) and other investments (OI) which comprises of other unclassified investments like banking flows, derivative transactions and trade credits etc.

Furthermore, this study following the literature categorizes the key drivers into two fragments, the domestic (pull) factors and the global (push) factors. Another contribution of this study is that this study will rely on the gross capital flow approach conversely from the net approach of measuring capital flows. This segregation will allow perceiving the behaviour of foreign investors. The prime objective can be further broken down in the form of several research questions like

a) What are the key drivers of aggregate and disaggregate capital flows? Is there any difference?

b) Are the drivers in emerging economies different from that of advanced economies?

c) Are there any consistent drivers in all the types of flows and across different economies?

d) Can we say that the recent global financial crisis is an important driver?

e) As a policy maker, which type of driver should be focused more while drafting policies?

3.2.2. Data and Measurement

3.2.2.1. Data

This study uses 25 years of annual data observations, starting from 1995 to 2019. The sample comprises of a total of 119 economies, which are further bifurcated as 46 advanced economies and 73 emerging economies. The selection of countries in the sample is purely based on the availability of data pertaining to capital flows and other key variables. A list of countries included in the sample is presented in the appendices (Table A2-1).

The required data is primarily sourced from the IMF, specifically from the Balance of Payments (BOP), International Financial Statistics (IFS) and World Economic Outlook (WEO). Other data sources include data gathered from World Development Indicators (WDI-WB), World Governance Indicators (WGI-WB), the Chicago Board Options Exchange (CBOE), and Chin & Ito (2008). The following Table 2-2 lists the dependent and independent variables along with their sources.

This study covers three major categories of capital flows, namely Direct Investments (DI's), Portfolio Investments (PI's) and Other Investments (OI's). The summation of these three components defines the Aggregate Investments (AI's). All capital flows data are obtained in US dollars and divided by the nominal GDP (in US dollars) to obtain the ratio of capital flows over GDP.

The independent variables are split into two main categories the first set represents the domestic drivers of capital flows also known as pull factors.

It comprises of macroeconomic variables such as domestic GDP growth rate, government consumption expenditure, level of gross debt along with economic policy variables such as inflation, interest rate spread, exchange rate, money growth. Also The external exposure is measured by incorporating trade openness and capital openness as key variables. In addition, the study also uses other domestic drivers which include financial development, which represent the level of development of financial institutions and financial markets, and the country risk, that is denoted by the institutional quality index.

Table 3.1. List of Variables and Data Sources

Variables	Unit	Sources
Dependent Variables		
• Direct Investment	Percent of GDP	Balance of Payments (BOP), Author calculations
• Portfolio Investment	Percent of GDP	Balance of Payments (BOP), Author calculations
• Other Investment	Percent of GDP	Balance of Payments (BOP), Author calculations
• Aggregate Investment	Percent of GDP	Balance of Payments (BOP), Author calculations
Independent Variables		
Domestic (Pull) Factors		
• Domestic GDP Growth	Percent	World Development Indicator (WDI- WB)
• Government Consumption Expenditure	Percent of GDP	World Development Indicator (WDI- WB)
• Gross Debt	Percent of GDP	World Economic Outlook (WEO- IMF)
• Inflation	Percent, CPI	World Development Indicator (WDI- WB)
• Interest Rate Spread	Percent	World Development Indicator (WDI- WB)
• Exchange Rate	Index	World Development Indicator (WDI- WB)
• Money Growth	Percent of GDP	World Development Indicator (WDI- WB)
• Trade Openness	Percent of GDP	World Development Indicator (WDI- WB)
• Financial Development	Index	International Financial Statistics (IFS-IMF)
• Institutional Quality	Index	World Governance Indicator (WGI-WB)
• Capital Openness	Index	(Chinn & Ito, 2008)
Global (Push) Factors		
• Commodity Prices	Index	Global Price Index of All Commodities, Federal Reserve Economic Data, extracted from https://fred.stlouisfed.org/
• Global Liquidity	Percent	International Financial Statistics (IFS-IMF)
• Global GDP Growth	Percent	World Development Indicator (WDI- WB)
• S&P 500 Returns	Index returns	Annual Data of Index extracted from www.macrotrends.net
• Bond Yield	Percent	International Financial Statistics (IFS-IMF)&Bloomberg
• Global Volatility Index (VIX)	Index	Chicago Board Options Exchange (CBOE)

Source: Compiled by researcher

The second set measures the global factors also referred to as push factors, which includes

commodity price index, global liquidity, global GDP growth, global returns proxied by

S&P 500 returns, US government bond yield and global risk aversion variable which is denoted by global volatility index (VIX). Prior to the empirical analysis we expect that a county with robust institutions and strong economic fundamentals will attract more foreign capital inflows than others. Furthermore, these countries generally would face minimal risk of capital flow reversals and thus gain sufficient protection from harmful external shocks.

3.2.2.2. Variables

While considering the capital flows, instead of working with net capital flows this study has focused on utilizing the gross capital flows. As explained in the previous sections, the gross capital approach allows to better capture the behaviour of foreign investors and their response to external shocks. In this study, four measures of capital inflows (aggregated and disaggregated) are estimated for each set of sample. Furthermore, both push and pull factors are chosen based on the discussion in literature. One of the key reason for inclusion of both these factors stems from the traditional neoclassical theory, which suggest that under the assumption of free capital mobility, capital will flow from more advanced countries with abundance of resources to less advanced ones with limited resources. However, in real practice this is not always the case, as only limited capital flows in the said direction, this is well elaborated as the Lucas paradox. The Lucas paradox offered two main reasons for this, specifically fundamental factors and capital market imperfections with asymmetric information. Furthermore, the Lucas paradox also proves that rate of return in not the sole consideration for foreign investors to invest in a particular country. Recent studies such as that of (Alfaro, Kalemli-Ozcan, & Volosovych, 2008) and (Reinhardt, Ricci, & Tressel, 2013) have empirically proven the paradox. The studies suggest that factors like financial openness and institutional quality can

significantly explain the direction of capital flows. Hence in this study a relative importance is given to the inclusion of these key variables in the empirical model.

The Balance of Payment and International Investment Position Manual (BPM6) of IMF classifies transactions into international accounts into 5 broad categories of investments, specifically: direct investment, portfolio investment, other investment, financial derivatives (other than reserves) and employee stock options, and reserve assets. However, following the existing literature, this study focuses on only three main categories of investments namely, the gross the direct investment, portfolio investment, and other investments.

a.   Direct Investments

The Balance of Payment and International Investment Positon Manual (BPM6) published by the IMF, in paragraph 6.8 specifically defines direct investment as follows:

> "A category of cross-border investment associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy".

(Contessi et al., 2013) classifies direct investments as equity capital, reinvested earnings, other capital, and financial derivatives which are associated with various inter-company transactions between affiliated companies.

b.   Portfolio Investment

The definition of portfolio investment provided by the IMF in BPM6, paragraph 6.54 states that:

"Portfolio investment is cross border transactions and positions involving debt or equity securities, other than those included in direct investment or reserve assets. Portfolio investment covers, but is not limited to, securities traded on organized or other financial markets".

Moreover, (Contessi et al., 2013) based on the International Financial Statistics (IFS), IMF explained that portfolio investment includes financial securities of any maturity, in the form of corporate securities, bonds, notes, money market instruments, and other than those included in direct investment or reserve assets. They also suggest that unlike direct investments which seek to create long term relationship and acquire significant degree of control and influence over the management, portfolio investments mostly focus on earnings rather than control. In other words, obtaining significant returns on the investments by far remains the sole goal of portfolio investors.

c. Other Investment

Lastly, in Para 6.61 of the BPM6, IMF describes other investment as:

"Other investment is a residual category that includes positions and transactions other than those included in direct investment, portfolio investment, financial derivatives and employee stock options, and reserve assets".

Furthermore, additional investments such as: (i) other equity, (ii) currency and deposits, (iii) loans (including use of IMF credit and loans from the IMF), (iv) nonlife insurance technical reserves, life insurance and annuities entitlements, pension entitlements, and provisions for calls under standardized guarantees, (v) trade credit and advances, (vi) other accounts receivable/payable, and (vii) SDR allocations (SDR holdings are included in reserve assets) are also included in the category of other investments by IMF.

In addition to the three main types of capital flows variables, below are the several determinants used as independent variables in the estimation following the literature:

▪ Domestic GDP Growth

The International Financial Statistics, IMF defines Gross Domestic Product (GDP) growth rate as the annual percentage change in the volume of domestic GDP of a country. There exist an extensive body of literature that explored the role of domestic GDP growth in driving capital flows, for instance see (Arias-Rodríguez et al., 2016), (Baek & Song, 2016), (Hashimoto & Wacker, 2016), (McQuade & Schmitz, 2017), (D. Park et al., 2016), (Bruno & Shin, 2013), (Olaberriá, 2015), (Contessi et al., 2013), (Forbes & Warnock, 2012), (Fratzscher, 2012), (Ahmed Hannan, 2017). Several empirical studies have shown that positive effects while few also have argued in favour of negative association.

▪ Government Consumption Expenditure

The government spending is denoted by government consumption expenditure which is defined as all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security, but excludes government military expenditures that are part of government capital formation. The study of (Mohamed & Sidiropoulos, 2010) found that government spending had a negative on FDI inflows.

▪ Gross Debt

The variable gross debt pertains to a proxy of sovereign risk. It refers to the general government gross debt derived from the World Economic Outlook (WEO) expressed as the percentage of GDP.

According to the WEO, Gross debt consists of all liabilities that require payment or payments of interest and/or principal by the debtor to the creditor at a date or dates in the future. This includes debt liabilities in the form of SDRs, currency and deposits, debt securities, loans, insurance, pensions and standardized guarantee schemes, and other accounts payable.

Several studies such as that of (Nier et al., 2014) suggest that level of gross debt is an essential determinant of a country's credit rating and hence can affect capital flows. While, (Milesi-Ferretti & Tille, 2011) suggest that country's indebtedness is an important consideration by the foreign investors while miming investments abroad.

Thus countries with disproportionately large debt levels inherit more risk than other thus make it less attractive to foreign investments. Many other studies have previously documented the ill effects of high debt on capital flows, such as that of (Arias-Rodríguez et al., 2016), (Baek & Song, 2016), (Bruno & Shin, 2013).

- Inflation

The variable inflation relates to the macroeconomic policy of a country. Previous literature has documented that countries with stable macroeconomic policies attract more foreign capital than others. In essence, inflation pertains to the general prices prevailing in the country, a controlled level is perceived as an indication of strong macroeconomic fundamentals. Inflation is measured by the consumer price index which reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. Several studies have documented negative association, the most recent being (Mercado & Park, 2011) and (Bommadevara & Sakharkar, 2021).

- Interest Rate Spread

Interest rate spread is the interest rate charged by banks on loans to private sector customers minus the interest rate paid by commercial or similar banks for demand, time, or savings deposits. Generally, foreign investors seek a higher investment return, which leads to financial flows to those countries with more favourable interest rates. Most recently (Contessi et al., 2013) analyzed the linkage of this variable with gross financial inflows.

- Exchange Rate

The exchange rate variable denotes real effective exchange rate (REER) which is defined by IMF as a nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs. As documented by (Calvo, Leiderman, & Reinhart, 1993), an increase in REER index denotes appreciation of the domestic currency and thus represent competitiveness in the international markets. Most recently, (Dell'Erba & Reinhardt, 2015) found that higher REER led to more FDIs, similarly(Nier et al., 2014)also suggest that the higher financial flows were associated with higher REER.

- Money Growth

The IFS defines money growth as broad money which is the sum of currency outside banks; demand deposits other than those of the central government; the time, savings, and foreign currency deposits of resident sectors other than the central government; bank and traveler's checks; and other securities such as certificates of deposit and commercial paper.

▪ Trade Openness

In thus study, trade openness is utilized as a measure of degree of openness in term so international trade. The World Development indicators, World Bank defines trade openness as the sum of exports and imports of goods and services measured as a share of gross domestic product. A higher level indicates higher integration in global markets, several studies such as that of (Sarno et al., 2016), (Byrne & Fiess, 2016a), (Hashimoto & Wacker, 2016), (Olaberriá, 2015), (Mercado & Park, 2011),(Iamsiraroj, 2016a)and (McQuade & Schmitz, 2017) documented trade openness as a significant driver of capital flows.

▪ Financial Development

This indicator has been sourced from the IMF, it is one of the most comprehensive and multidimensional measure of financial development. As described by (Svirydzenka, 2016), the financial development indicator quantifies for the development of financial institutions as well as for the financial markets.

"Financial development is defined as a combination of depth (size and liquidity of markets), access (ability of individuals and companies to access financial services), and efficiency (ability of institutions to provide financial services at low cost and with sustainable revenues, and the level of activity of capital markets)" (Svirydzenka, 2016).

Most of the pervious literature such as (Nier et al., 2014) and(Ahmed Hannan, 2017)emphasized on the role of financial development for capital inflows in emerging economies.

- Institutional Quality

The institutional quality index is a proxy of domestic country risk it relates to the robust institutional infrastructure in the host country. The index is computed by merging all the six indicators namely, control of corruption, government effectiveness, regulatory quality, political stability, rule of law and voice and accountability from the Worldwide Governance Indicators (WGI), World bank. A higher value refers to lower risk, and vice versa. The association of this index with capital flows has been studied previously, such as(Baek & Song, 2016), (Byrne & Fiess, 2016a), (Hashimoto & Wacker, 2016), (Olaberriá, 2015), (Fratzscher, 2012), (Alfaro et al., 2007), (Mercado & Park, 2011).

- Capital Openness

The capital openness also referred to as financial openness is adopted for (Chinn & Ito, 2008). This index measures the degree of capital account openness of a country. The calculation of this index is based on the cross-border financial transactions reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions.

A Higher level of openness index indicates low restrains and relatively opens economy and vice versa. There has been a growing literature examining the effect of capital openness on capital flows see(Ahmed Hannan, 2017), (Mercado & Park, 2011)(Baek & Song, 2016), (Byrne & Fiess, 2016a), (Hashimoto & Wacker, 2016), (Olaberriá, 2015), (Fratzscher, 2012), (Alfaro et al., 2007).

- Commodity Prices

The global commodity price index represents the index of traded commodities worldwide it represents components of global trade. The data has been gathered from the Federal Reserve Economic Data.

Very few studies have accounted for this variable as a potential determinant of foreign capital flows, until recently (Ahmed Hannan, 2017) in her study found that global commodity price has a significant effect on foreign capital flows.

- Global Liquidity

Following some existing literature, the global liquidity indicator has been computed based on the broad money growth of the G7 economies. Many of the previous studies ignored this variable as a potential determinant of foreign capital flows until recently (Baek & Song, 2016), (Bruno & Shin, 2013), (Ahmed Hannan, 2017) found that global liquidity was strongly associated with global capital flows.

- Global GDP Growth

The global GDP growth used in this study is the world GDP growth rates based on compilation of the IMF. Several studies such as that of(Dell'Erba & Reinhardt, 2015), (Forbes & Warnock, 2012), (Milesi-Ferretti & Tille, 2011), (Ahmed Hannan, 2017) found it as an important push factor of foreign capital flows.

- S&P 500 Returns

In this study distinctively, the S&P 500 index returns as a proxy for global stock market returns is used as one amongst the other types of push factors. Although sufficient literature exist on the use of bond yield, almost none were found using this factor apart from the study of (Ahmed Hannan, 2017).

- Bond Yield

The US government bond yield is directly associated with long-term global interest rates. It qualifies for being one of the low risk investment avenue for foreign investors since it

is backed up by the US government. Numerous studies examining the determinants of foreign capital flows have adopted bond yields as one of the important push factor of foreign capital inflows, see for instance,(Ahmed Hannan, 2017), (Byrne & Fiess, 2016a), (Mercado & Park, 2011),(D. Park et al., 2016).

▪ Global Volatility Index (VIX)

The global volatility index (VIX) represent the annual average of the VXO index calculated by the Chicago Board Options Exchange (CBOE) based on the trading of S&P 100 (OEX) 31 options. In this study, the index is considered as an indicator of perceived risk of foreign investors. A higher index value suggests higher volatility in the stock markets. Some of the recent literature emphasizes on the role of global risk aversion as a important driver of foreign capital flows. For instance,(Fernandez-Arias, 1996), (Arias-Rodríguez et al., 2016), (Baek & Song, 2016), (McQuade & Schmitz, 2017), (D. Park et al., 2016), (Nier et al., 2014), (Olaberriá, 2015), (Forbes & Warnock, 2012), (Milesi-Ferretti & Tille, 2011), (Pagliari & Hannan, 2017), (Ahmed Hannan, 2017) observe that stock market volatility is one of the substantial push factors associated with gross capital inflows.

▪ Dummy crisis variable for the global financial crisis (GFC)

This variable represents the global financial crisis with the value of 1 for the crisis period (2007-2008) and 0 otherwise.

3.2.3. Methodology

The prime objective of this chapter is to study various factors that drive capital inflows to advanced and emerging economies. In line with the same, this study applies numerous estimation methodologies to identify the key drivers of capital inflows both at aggregated

and disaggregated levels. The disaggregated capital flows refer to direct investments (DI's), portfolio investments (PI's) and other investments (OI's), while the aggregate investments (AI's) comprises all the three components. The drivers of aggregate capital flows are estimated using the ordinary least squares (OLS) and the fixed effects (FE) or random effects (RE) estimator.

The choice between the fixed effect (FE) and random effect (RE) estimator, is based on the Hausman test (Hausman, 1978), in the case when RE is recommended, additionally Breusch and Pagan Lagrange Multiplier test is carried out to test if random effects or OLS is best suited to explain the correlations. Due to the expected correlation and cross-sectional dependence, the disaggregated capital flows are estimated separately using the Fixed Effects with Seemingly Unrelated Regression (FE with SUR) estimations.

Additionally, the bootstrap approach is applied, following(Cameron & Trivedi, 2005). Prior to estimation using the bootstrapped FE with SUR, the Breusch and Pagan test for error independence is applied to confirm for cross-sectional dependence and error correlation. Under the null hypothesis that residuals across equations are not correlated, a rejection of the null hypothesis confirms correlation and in this case efficient estimates can be derived using the SUR estimator rather than the standard FE or RE estimator.

3.2.3.1. Pooled OLS Model (Ordinary Least Square)

The pooled OLS estimation dictates the methodology section of a number of classical studies. The OLS is found to be the best estimator when an individual effect (pertaining to cross sectional or time specific effects) does not exist. The OLS model is given in equation 1 as follows:

$$Y_{it} = \alpha + \beta_k X_{k,it} + \varepsilon_{it} \ where \ (u_i = 0) \tag{1.1}$$

According to (Greene, 2012) the usability of the OLS estimation is based on its ability to comply with some core assumption like

    i.   Linearity

    ii. Strict exogeneity – imply that disturbances are not correlated with regressors

    iii. Homoscedasticity – the errors must have same variance

    iv. Multicollinearity – no linear relationships amongst independent regressors

Thus, if the OLS violates any of the key assumptions it is deemed to be inconsistent estimator. In the event of OLS being inappropriate the use of advanced models like the fixed effects models (FEM) or the random effects models ((REM) is well suited.

3.2.3.2. Fixed Effects Models (FEM)

The fixed effects model has a wide adaptability in the literature. The fixed effects model is designed to study the effects and relationships amongst variables over a definitive period of time.

The fixed effects model emphasizes on the impact of variables within the individuals or countries in terms of the unobserved heterogeneity within the given sample. In simpler terms, the fixed effects model is well suited to control for the time-invariant differences between the sample countries and thereby provide unbiased values of the parameters controlling for the unobserved heterogeneity.

The general form of fixed effects model is given in equation (1.2) as follows:

$$Y_{it} = (\alpha + u_i) + \beta_1 X_{1,it} + \beta_2 X_{2,it} + \ldots + \beta_k X_{k,it} + \varepsilon_{it} \qquad (1.2)$$

Where,

Y_{it} = dependent variable

α = intercept

β_k = parameter estimates of the kth explanatory variable

$X_{k,it}$ = the kth explanatory variable

ε_{it} = the error term

u_i = is the fixed or random effects specific to individual or time period

the subscripts i and t denote country and the year

In the fixed effects model, the u_i which is the part of the intercept term is allowed to correlate with the regressors because the individual specific effects is time invariant and thus is reflected in the intercept term.

In the equation (1.2) the u_i term refers to unobserved heterogeneity or it is also called as unobserved effect. The u_i term is randomly drawn from the population along with Y_{it} and X_{it}. In the fixed effects model the impact of time invariant difference is eliminated so that the net impact can be unbiasedly estimated. Also, controlling for the heterogeneity fixed effects model allows to estimate actual influence of explanatory variables on the dependent variable.

Given the merits, the fixed effects model in literature is widely substituted with the random effects model which is estimated using the generalized least square (GLS) estimation considering that error terms within countries may be correlated which is ignored by the fixed effects model.

3.2.3.3. Random Effects Model (REM)

The random effects model in contrast to the fixed effects model is based on the assumption that the variation across individuals (α) is random and uncorrelated with the explanatory variables (X_{it}) in the model. One of the relative advantages of using the random effects model over the fixed effects model is based on the possibility of including the time-invariant variables. According to (H. M. Park, 2011) the main difference between fixed and random effects is the use of dummy variables in the estimation methodology. If we notice in the fixed effect models as in equation (1.2) the dummy variables are integrated with the intercept term, while in the random effects estimation this dummies are integrated in with the error term or error component see equation (1.3) as follows:

$$Y_{it} = \alpha + \beta_1 X_{1,it} + \beta_2 X_{2,it} + \ldots + \beta_k X_{k,it} + (u_i + \varepsilon_{it} \qquad (1.3)$$

Since we have the error terms integrated (δ_{it})) with the fixed or random effects specific to individual or time period (u_i), we can thus call it as a composite error term (δ_{it}) such that,

$[\delta_{it} = \varepsilon_{it} + u_i]$ hence the equation (1.3) can be rewritten as follows:

$$Y_{it} = \alpha + \beta_1 X_{1,it} + \beta_2 X_{2,it} + \ldots + \beta_k X_{k,it} + \delta_{it} \qquad (1.4)$$

A random effects model in equation (1.4) is deemed to be consistent as long as it satisfies strict exogeneity assumption below

$$E\langle \delta_{it} | X_{it} \rangle = 0 \ \ where \ t = 0,1,2,3 \ldots T \qquad (1.5)$$

3.2.3.4. Hausman Test

With the relative applicability of both fixed effects and random effects model, the use of appropriate model remained a key baffling question in the researcher community. However, the Hausman test proposed by (Hausman, 1978) provides answers to the best applicable model. The Hausman test is used to test for the presence of exogeneity assumption in the error term. Thus, enables to test for any significance difference between the fixed and random effects models (Cameron & Trivedi, 2005).

In the Hausman test, the null hypothesis states that individual specific effects are uncorrelated with the regressors (X_{it}) and thus a rejection of this null hypothesis suggest that fixed effects models are more efficient and preferred over the random effects model. In the event of non-rejection of null we rely on the estimated random effects model however, we further test Breusch and Pagan Lagrange Multiplier test to test if random effects or OLS is best suited to explain the correlations.

3.2.3.5. Seemingly Unrelated Regression (SUR)

The Seemingly Unrelated Regressions (SUR) proposed by (Zellner, 1962) is one of the efficient estimators to estimate a system of linear regression equations allowing the error terns to be correlated.

To understand the SUR estimations, consider the following set of equations:

$Y_i = \beta_i X_i + \varepsilon_i$ For i= 1, 2, 3. . . n, where index i is the ith equation in the equations system.

This general for of equation can also be specified in matrices form as below:

$$\begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ y_n \end{bmatrix} = \begin{bmatrix} X_1 & 0 & \cdots & 0 \\ 0 & X_2 & \cdots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \cdots & X_n \end{bmatrix} \begin{bmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_n \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \vdots \\ \varepsilon_n \end{bmatrix} \qquad (1.6)$$

If K_t parameters are estimated in i^{th} equation, the total number of coefficients is, $K = \sum_{i=1}^{n} K_i$, where $K_i > T_i$. Where the assumption of strict exogeneity is applied, such $E(\varepsilon | X_1, \dots, X_n) = 0$

However, Under SUR approach proposed by (Zellner, 1962), the covariance matrix of the error term is assumed to be not diagonal given as follows:

$$\Omega = E(\varepsilon|'X_1, \dots, X_n) = \begin{bmatrix} \sigma_{11}^2 I & \sigma_{12}^2 I & \cdots & \sigma_{1n}^2 I \\ \sigma_{21}^2 I & \sigma_{22}^2 I & \cdots & \sigma_{2n}^2 I \\ \vdots & \vdots & \ddots & \vdots \\ \sigma_{n1}^2 I & \sigma_{n2}^2 I & \cdots & \sigma_{nn}^2 I \end{bmatrix} \qquad (1.7)$$

The empirical literature suggests using the feasible generalized least squares (FGLS) method in order to estimate the error terms variance-covariance matrix as depicted above. This process is executed in two key steps: first, an OLS regression is estimated followed by estimating the GLS regression in the second step. Thus, the unbiased estimates of variance-covariance matrix (Ω) from OLS are adopted in the following step using the GLS estimation.

$$\hat{\beta}^{SUR} = \left(X'\hat{\Omega}^{-1}X\right)^{-1} X'\hat{\Omega}^{-1}y \qquad (1.8)$$

When, the variance-covariance matrix (Ω) is diagonal, the estimated value of $\hat{\beta}^{SUR}$ will be close to the estimation results from the standard OLS.

However, this study is based on a panel data setting hence, for panel data estimation the system of equations for a standard linear model can be expressed as follows:

$$
\begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ y_N \end{bmatrix} = \begin{bmatrix} \beta'_1 X_1 + \varepsilon_1 \\ \beta'_2 X_2 + \varepsilon_2 \\ \vdots \\ \beta'_N X_N + \varepsilon_N \end{bmatrix} \qquad (1.9)
$$

Where β'_N is the individual specific vector of the structural parameter and ε_N is the error terms.

Although, each of the empirical equations being estimated are based on different sets of dependent variables, each equation can be sufficiently said to be different from the other however, with similar sets of explanatory variables and given the nature of this flows, we can expect some degree of correlation amongst variables as well as the possibility of correlation between the error terms of the equations. When correlation exists, the standard OLS does not offer efficient estimates although unbiased, as it does not account for cross-sectional dependence. Thus, in this case the SUR framework proposed by (Zellner, 1962) offers more efficient estimates by accounting for the cross equation dependence.

Furthermore, (Zellner, 1962) also argues that SUR estimation may not be further advantageous if the estimating equations jointly follow this two conditions: (1) when error are uncorrelated across equations and (ii) regressors are identical. In this case the results drawn will be similar to the results from the OLS and hence the procedure may not add any innovation in the estimates. Given the nature of the capital flows and their inter-linkages, we can expect some level of cross-correlation in the error terms which may lead to OLS estimates being no longer efficient. Therefore, in this study the disaggregated capital flows namely direct investments (DI's), portfolio investments (PI's) and other investments (OI's) are estimated separately using the Fixed Effects with Seemingly Unrelated Regression (FE with SUR) estimations, while the aggregate

investments (AI's) comprises all the three components is estimated using the ordinary least squares (OLS) and the fixed effects (FE) or random effects (RE) estimator.

The use of SUR however is purely based on the presence of cross-correlation in the error terms of these three equations. In order to test the correlation the (Breusch & Pagan, 1980) test for error independence is applied. Below is the suggested LM statistic for this approach:

$$LM = T \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{\rho}_{i,j}^2 \qquad (1.10)$$

Where, $\hat{\rho}_{i,j}$ is the coefficient of cross-sectional correlation as expressed in the equation below

$$\hat{\rho}_{i,j} = \frac{\sum_{t=1}^{T} \hat{\varepsilon}_{i,t}\, \hat{\varepsilon}_{j,t}}{(\sum_{t=1}^{T} \hat{\varepsilon}_{i,t})^{\frac{1}{2}} (\sum_{t=1}^{T} \hat{\varepsilon}_{j,t})^{\frac{1}{2}}} \qquad (1.11)$$

Here, the LM statistic is asymptomatically distributed as χ^2 with N*(N-1)/2 degrees of freedom.

3.2.3.6. Bootstrap Approach

The bootstrap approach is one of the most popular and widely adopted technique of in econometrics used to obtain robust estimates of standard errors, confidence intervals and p-values used for statistical inferences. Under this approach, the sampling variability is estimated by drawing repeated samples from the original sample. Thus, this method helps to check for stability of the estimated results.

Furthermore, (Cameron & Trivedi, 2005) suggest that bootstrap method may give efficient t and accurate results in the case when sample size is relatively large. Thus based

on the assumption that sample can go up to infinity, compared to the standard intervals based on normality assumption, the application of bootstrap approach can draw efficient and precise results.

The following paragraph concisely explains the steps in a bootstrapping process:

(a) Re-sampling the data – the bootstrap procedure resamples the data randomly with replacements. Thus it draws N observations randomly from the dataset having N observations. (b) Secondly, using the pre-determined bootstrapping statistics on the resampled data, repeated number of replications are carried out. (c) Once the data set is recomputed, the robust standard errors are computed using the standard deviation of the bootstrap distribution.

Following (Andrews & Buchinsky, 2000) and (Poi, 2004), a total of 1500 bootstrapping replications have been considered.

3.2.3.7. Empirical Model

The literature on capital flows determinants is segregated in the form of pull factors (Domestic country specific characteristics) and push factors (global characteristics). This factors are closely associated with the idea of portfolio balance approach. According to (Ahmed & Zlate, 2014) and (Ahmed Hannan, 2017) expected returns, risk and the risk preferences of investors across countries are key for capital flows.

In similar approach (Ghosh et al., 2014) suggested that country specific domestic factors significantly influences risk and returns preferences of investors thus macro fundamentals and official policies play a key role in driving capital flows. For most of the recent literature on determinants, it has been focused to offer the explanations favouring the neoclassical theory or otherwise the 'Lucas Paradox' (Lucas, 1990).

A section of the literature is a strong proponent of the traditional neoclassical theory. The theory under the assumption of free capital mobility suggests that capital flows from capital rich countries (developed countries) to the capital scarce countries (less developed countries). The returns are generally high in the capital-scarce countries due its low capital-labour ratio. (Ahmed Hannan, 2018) examined the linkage between the neoclassical theory and the global push factors as determinants of capital flows, the author found that capital reacts significantly to the interest rate differential amongst countries thus capital flows from countries offering low returns to those where the relative rate of return on capital was high. This theory posits that the capital movements will in due course continue until returns on investments equalize in all the countries.

In practice however, we see limited capital flowing in the direction as proposed by the neoclassical theory. (Obstfeld & Taylor, 2004) suggest that greater flows of capital are mobilized amongst the advanced countries and the emerging countries remains relatively marginalized. This conflicting trend in literature is known as the 'Lucas Paradox' as proposed by (Lucas, 1990).

The intriguing work carried out by (Lucas, 1990) explains why capital does not flow from rich countries to the poor ones. In his study Lucas questions the reliability of the neoclassical theory by comparing India and United States based on marginal product of capital. Lucas argues that for the neoclassical model to work the marginal product of India must be 58 time to that of the United States, only under such condition all capital would flow from United States to India. In reality, Lucas finds no such trends and hence questions the assumptions underlying the neoclassical theory.

Over the years, an extensive body of empirical literature has emerged subsequent to the work of (Lucas, 1990). These includes studies like that of (C. Reinhart & Rogoff, 2003),

(Alfaro et al., 2008) and (Deléchat, Wakeman-Linn, Wagh, & Ramirez, 2009). On one hand, the study of (Alfaro et al., 2008) suggested that institutional quality sufficiently explained the paradox while (Reinhardt et al., 2013) confirmed empirically the legitimacy of the neoclassical theory and suggested that financial openness explained the flows of capital from developed countries to less developed ones.

Following the literature and theories on determinants of capital flows, a general empirical model employed by (Hannan, 2017) is used as a starting point in the empirical process. The model proposed to analyze determinants of capital flow is as flows:

$$y_{it} = \alpha_0 + \sum_{i=0}^{n=1} \alpha_i D_i + \beta_0 Pull_t + \beta_1 Push_t + \varepsilon_{i,t} \qquad (1.12)$$

Where, the y_{it} represents the capital flows – either total or individual capital flows to country (i) during (t) time period. The capital flows are modelled as a function of fixed effects ($D_i = 1$ if the observations belongs to country (i), otherwise 0). β_0 and β_1 are the k dimensional vectors of variables indicating the push (external factors) and pull (domestic factors) and $\varepsilon_{i,t}$ is the error term. Based on the general panel model and the chosen variables described earlier in this study, the following model will be estimated

$$
\begin{aligned}
Y_{it} = \alpha_i &+ \beta_1 DGDPg_{it} + \beta_2 Gexp_{it} + \beta_3 Debt_{it} + \beta_4 Inf_{it} + \beta_5 Interest_{it} \\
&+ \beta_6 REER_{it} + \beta_7 M2\ growth_{it} + \beta_8 TO_{it} + \beta_9 FD_{it} + \beta_{10} IQ_{it} \\
&+ \beta_{11} KO_{it} + \beta_{12} Commodity_{it} + \beta_{13} Liquidity_{it} + \beta_{14} Global\ GDPg_{it} \\
&+ \beta_{15} Returns_{it} + \beta_{16} Yield_{it} + \beta_{17} VIX_{it} + \beta_{18} GFC_{it} \\
&+ \varepsilon_{it} \qquad\qquad\qquad\qquad (1.13)
\end{aligned}
$$

Where,

Y_{it}	:	capital flows variables, which consist of (i) disaggregate investment (direct investments (DI's), portfolio investments (PI's) and other investments (OI's)) and (ii) aggregate investment that is defined as the sum of these three flow components
$DGDPg_{it}$	:	Domestic GDP growth rate
$Debt_{it}$	:	Gross debt level
Inf_{it}	:	Inflation (CPI index)
$Interest_{it}$	:	Interest rate spread
$REER_{it}$	:	Real effective exchange rate
$M2\ growth_{it}$	:	Broad money (M2) growth rate
TO_{it}	:	Trade openness
FD_{it}	:	Financial development index
IQ_{it}	:	Institutional quality index
KO_{it}	:	Capital/Financial openness
$Commodity_{it}$	:	Global Commodity prices index
$Liquidity_{it}$	:	Global liquidity
$Global\ GDPg_{it}$	:	Global GDP growth rate
$Returns_{it}$	:	Global S&P 500 index returns
$Yield_{it}$	:	Bond yield
VIX_{it}	:	Global Volatility Index (VIX)
GFC_{it}	:	Crisis dummy GFC

The estimation in this study is carried out in twosteps; the first step estimation is applied on the Aggregate Investment flows (AI's) as well as on the disaggregated capital flows i.e. DI's, PI's and OI's. In the first step estimation the standard OLS alongside the fixed effects (FE) and random effects (RE) estimations are carried out to see the significance of the initial base variables.

For the aggregate investment's (AI's) this study applies the first step estimation. The Hausman test is used to determine the most suitable estimator for AI's, if in case the Hausman test recommends random effects (RE) as appropriate, an additional test is performed using the Breusch-Pagan Lagrange multiplier (LM), to decide on the suitability of RE or otherwise OLS estimator.

For the disaggregate capital flows, this study applies the second step estimation. Prior to estimation based on the first step estimations the most relevant variables are selected for each flow under each sample. Here the insignificant variables are eliminated by performing the joint significance test, with a null hypothesis that the selected coefficients are jointly significant at 5% level of confidence.

Next, all the capital flows are re-estimated using the Bootstrapped FE with SUR estimation. This estimation is applied due to the expected cross-correlation in the residuals from these three types of capital flows. Thus to confirm for the presence of correlation and suitability of the SUR estimation, an additional test is performed using the Breusch Pagan test for error independence along with addition to the correlation matrix residuals.

As discussed earlier the SUR estimator is best suited when errors are correlated across equations and regressors are not identical, otherwise the results drawn will be perfectly similar to that of the standard OLS estimator (Zellner, 1962). Furthermore, given the

possibility of error correlation the standard OLS estimator may provide inefficient estimates additionally, with the elimination of certain variables from the main system of equation, we can rightly argue that regressors in all the three equations are not perfectly identical. Thus different models and sub samples may include different sets of variables as described in the following equations:

1. Full sample

$$
\begin{aligned}
DI_{it} &= \alpha_i + \beta_1 DGDPg_{it} + \beta_2 Debt_{it} + \beta_3 REER_{it} + \beta_4 M2\ growth_{it} + \beta_5 TO_{it} + \beta_6 FD_{it} \\
&+ \beta_7 IQ_{it} + \beta_8 KO_{it} + \beta_9 Commodity_{it} + \beta_{10} Liquidity_{it} + \beta_{11} VIX_{it} + \beta_{12} GFC_{it} \\
&+ \varepsilon_{it}
\end{aligned}
\tag{1.14}
$$

$$
\begin{aligned}
PI_{it} &= \alpha_i + \beta_1 DGDPg_{it} + \beta_2 Gexp_{it} + \beta_3 Debt_{it} + \beta_4 Inf_{it} + \beta_5 Interest_{it} \\
&+ \beta_6 REER_{it} + \beta_7 M2\ growth_{it} + \beta_8 TO_{it} + \beta_9 FD_{it} + \beta_{10} IQ_{it} \\
&+ \beta_{11} KO_{it} + \beta_{12} Liquidity_{it} + \beta_{13} Returns_{it} + \beta_{14} VIX_{it} + \beta_{15} GFC_{it} \\
&+ \varepsilon_{it}
\end{aligned}
\tag{1.15}
$$

$$
\begin{aligned}
OI_{it} &= \alpha_i + \beta_1 Gexp_{it} + \beta_2 Debt_{it} + \beta_3 Inf_{it} + \beta_4 Interest_{it} + \beta_5 REER_{it} \\
&+ \beta_6 M2\ growth_{it} + \beta_7 TO_{it} + \beta_8 FD_{it} + \beta_9 IQ_{it} + \beta_{10} KO_{it} \\
&+ \beta_{11} Commodity_{it} + \beta_{12} Liquidity_{it} + \beta_{13} Global\ GDPg_{it} \\
&+ \beta_{14} Returns_{it} + \beta_{15} VIX_{it} + \beta_{16} GFC_{it} + \varepsilon_{it}
\end{aligned}
\tag{1.16}
$$

2. Advanced economies

$$
\begin{aligned}
DI_{it} &= \alpha_i + \beta_1 DGDPg_{it} + \beta_2 Debt_{it} + \beta_3 Interest_{it} + \beta_4 REER_{it} + \beta_5 TO_{it} + \beta_6 FD_{it} \\
&+ \beta_7 IQ_{it} + \beta_8 KO_{it} + \beta_9 Commodity_{it} + \beta_{10} Liquidity_{it} + \beta_{11} Yield_{it} \\
&+ \beta_{12} VIX_{it} + \beta_{13} GFC_{it} \\
&+ \varepsilon_{it}
\end{aligned}
\tag{1.17}
$$

$$PI_{it} = \alpha_i + \beta_1 DGDPg_{it} + \beta_2 Gexp_{it} + \beta_3 Debt_{it} + \beta_4 Inf_{it} + \beta_5 Interest_{it}$$
$$+ \beta_6 REER_{it} + \beta_7 M2\ growth_{it} + \beta_8 TO_{it} + \beta_9 FD_{it} + \beta_{10} IQ_{it}$$
$$+ \beta_{11} KO_{it} + \beta_{12} Commodity_{it} + \beta_{13} Liquidity_{it} + \beta_{14} Returns_{it}$$
$$+ \beta_{15} VIX_{it} + \beta_{16} GFC_{it} + \varepsilon_{it} \qquad (1.18)$$

$$OI_{it} = \alpha_i + \beta_1 DGDPg_{it} + \beta_2 Gexp_{it} + \beta_3 Debt_{it} + \beta_4 Inf_{it} + \beta_5 Interest_{it}$$
$$+ \beta_6 REER_{it} + \beta_7 M2\ growth_{it} + \beta_8 TO_{it} + \beta_9 FD_{it} + \beta_{10} IQ_{it}$$
$$+ \beta_{11} KO_{it} + \beta_{12} Liquidity_{it} + \beta_{13} Returns_{it} + \beta_{14} VIX_{it} + \beta_{15} GFC_{it}$$
$$+ \varepsilon_{it} \qquad (1.19)$$

3. Emerging economies

$$DI_{it}$$
$$= \alpha_i + \beta_1 DGDPg_{it} + \beta_2 Debt_{it} + \beta_3 Interest_{it} + \beta_4 REER_{it} + \beta_5 TO_{it} + \beta_6 FD_{it}$$
$$+ \beta_7 IQ_{it} + \beta_8 KO_{it} + \beta_9 Commodity_{it} + \beta_{10} Liquidity_{it} + \beta_{11} VIX_{it} + \beta_{12} GFC_{it}$$
$$+ \varepsilon_{it} \qquad (1.20)$$

$$PI_{it} = \alpha_i + \beta_1 DGDPg_{it} + \beta_2 Gexp_{it} + \beta_3 Debt_{it} + \beta_4 Inf_{it} + \beta_5 Interest_{it}$$
$$+ \beta_6 REER_{it} + \beta_7 M2\ growth_{it} + \beta_8 TO_{it} + \beta_9 FD_{it} + \beta_{10} IQ_{it}$$
$$+ \beta_{11} KO_{it} + \beta_{12} Liquidity_{it} + \beta_{13} Returns_{it} + \beta_{14} VIX_{it} + \beta_{15} GFC_{it}$$
$$+ \varepsilon_{it} \qquad (1.21)$$

$$OI_{it} = \alpha_i + \beta_1 DGDPg_{it} + \beta_2 Gexp_{it} + \beta_3 Debt_{it} + \beta_4 Inf_{it} + \beta_5 Interest_{it}$$
$$+ \beta_6 REER_{it} + \beta_7 TO_{it} + \beta_8 FD_{it} + \beta_9 IQ_{it} + \beta_{10} KO_{it}$$
$$+ \beta_{11} Commodity_{it} + \beta_{12} Liquidity_{it} + \beta_{13} Global\ GDPg_{it}$$
$$+ \beta_{15} Returns_{it} + \beta_{15} VIX_{it} + \beta_{16} GFC_{it} + \varepsilon_{it} \qquad (1.22)$$

3.3. EMPIRICAL METHODOLOGY FOR THE IMPACT OF FOREIGN CAPITAL FLOWS ON ECONOMIC GROWTH.

The key achievement of globalization is the free moment of capital across borders. According to the economic literature free moving capital is beneficial to all the recipients as it leads to efficient allocation of financial resources which can further raise productivity and economic welfare. The globalization waves enabled players to move large sums of money in fraction of seconds from one place to another, to say nearly anywhere on earth without much restrictions. Given the ease, certain questions arise on the impact of such capital flows that flows across the globe uninterruptedly:

a) Do these capital flows augment growth?

b) Are they effective in promoting development? Or otherwise and

c) Do capital flows destabilize the economic system of the recipient country?

Although the literature is vast, not much due attention has been given to these questions. These questions have important policy implications particularly to the developing economies. Therefore, I believe that it is most important with a policy induced motive to carry out this exercise of re-examining the effects of foreign capital flows on economic growth and development in both the developed and the developing economies particularly in the post GFC era.

3.3.1. Objective and Contributions

The main object of this study is to empirically investigate and determine the contributions of financial flows to the growth and development of developing and developed economies. Although the literature on this issue remains far from being conclusive, this

study tries to fill this gap by examining the effects of capital flows on the recipient economies with major emphasis on key factors that augment the inherent effects. This study will seek to contribute immensely in the area of foreign policy construction.

The research will profoundly help in identifying the impact of various levels of capital flows like remittances, FDI, FPI, Aid flows and other flows on the financial growth and other macroeconomic factors of the recipient country. This study in essence seeks to contribute to the knowledge of development finance and help policy makers across globe to device fundamental policies for sustainable growth.

3.3.2. Data and Variable Measurement

3.3.2.1 Data

This study uses 25 years of annual data observations, starting from 1995 to 2019. The sample comprises of a total of 150 economies, which are further bifurcated as 48 high incomes economies (HIEs), 40 upper middle income economies (UMIEs) and 62 low and lower middle income economies (LMIEs).

The selection of countries in the sample is purely based on the availability of data pertaining to capital flows and other key macroeconomic variables. A list of countries included in the sample is presented in the appendices (Table A3-1).

The required data is primarily sourced from the IMF, specifically from the Balance of Payments (BOP), International Financial Statistics (IFS) and World Economic Outlook (WEO). Other data sources include data gathered from World Development Indicators (WDI-WB) and World Governance Indicators (WGI-WB),

The following Table 3.2 lists the dependent and independent variables along with their sources.

Table 3.2. List of Variables and Data Sources

Variables	Unit	Sources
Dependent Variables		
Real GDP growth rate	Percentage	World Bank (WDI)
Independent Variables		
Foreign direct investment, net inflow	Percent of GDP	Balance of Payments (BOP), World Bank (WDI)
Portfolio investment, net , received	Percent of GDP	Balance of Payments (BOP), World Bank (WDI)
Personal remittances, received	Percent of GDP	Balance of Payments (BOP), World Bank (WDI)
Net official development assistance, received	Percent of GDP	Balance of Payments (BOP), World Bank (WDI)
Other investment, received	Percent of GDP	Balance of Payments (BOP), Author calculations
Inflation	Percent	World Bank (WDI)
Govt. spending	Percent of GDP	World Bank (WDI)
Domestic savings	Percent of GDP	World Bank (WDI)
Capital formation	Percent of GDP	World Bank (WDI)
Natural resource rent	Percent of GDP	World Bank (WDI)
Trade	Percent of GDP	World Bank (WDI)
Human capital	Mean years	(Barro & Lee, 2013)
Financial development	Index	IMF, IFS (Svirydzenka, 2016)
Financial institutions	Index	IMF, IFS (Svirydzenka, 2016)
Financial markets	Index	IMF, IFS (Svirydzenka, 2016)
Debt	Percent of GDP	World Bank (WDI)
Institutional quality	Index	World Governance Indicator (WGI-WB)

Source: Compiled by researcher

This study covers five major categories of capital flows, namely foreign direct investment, foreign portfolio investment, remittances, foreign aid and other investments. Apart for this, the key control variable comprises of inflation which is based on GDP deflator (annual %), government spending which represents General government final consumption expenditure (% of GDP), gross domestic savings (% of GDP), domestic capital formation which is Gross fixed capital formation (% of GDP), natural rents indicate Total natural resources rents (% of GDP), Trade represents the ratio of exports and imports expressed as (% of GDP), the mean years of schooling in adult population sourced from (Barro & Lee, 2013) is used as a proxy for human capital, while debt represents Central government debt, total (% of GDP) and finally our key variables institutions and financial development and its sub components are sourced from World Governance Indicator (WGI-WB) and IMF, IFS (Svirydzenka, 2016) respectively.

3.3.2.2. Variable Description

The study seeks to examine the impact of foreign capital receipts on the economic growth of selected countries. Although, vast literature exists, non-consensus pertaining to the finding's makes it oblivious to further analyse this association and derive auxiliary insights on the relevance of foreign capital to sustain growth in developing nations.

In order to work out this goal following the literature, along with the key capital receipts several key prominent control variables have been introduced in our econometric specification to prevent omitted variables biases as well as to meaningfully draw further insights on the role of key supporting factors in enhancing the growth effects or otherwise demining. A detailed description of the key variables included in this study are presented as follows.

- Real GDP growth rate

Gross domestic product (GDP) represents the sum of value added by all its producers. According to World bank and OECD,

'The GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.'

It represents Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars.

- Foreign direct investment, net inflow

The Foreign Direct investment (FDI) is investment made to acquire a lasting interest in or effective control over an enterprise operating outside of the economy of the investor. FDI net inflows are the value of inward direct investment made by non-resident investors in the reporting economy, including reinvested earnings and intra-company loans, net of repatriation of capital and repayment of loans.

The internationally accepted definition of FDI is provided in the fifth edition of the IMF's Balance of Payments Manual (1993). Under this definition FDI has three components: equity investment, reinvested earnings, and short- and long-term inter-company loans between parent firms and foreign affiliates.

- Personal remittances, received

Personal remittances comprise personal transfers and compensation of employees. Personal transfers consist of all current transfers in cash or in kind made or received by

resident households to or from non-resident households. Personal transfers thus include all current transfers between resident and non-resident individuals. Compensation of employees refers to the income of border, seasonal, and other short-term workers who are employed in an economy where they are not resident and of residents employed by non-resident entities.

- Net official development assistance, received

Net official development assistance (ODA) consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients. It includes loans with a grant element of at least 25 percent (calculated at a rate of discount of 10 percent).

- Inflation

The variable inflation relates to the macroeconomic policy of a country. Inflation pertains to the general prices prevailing in the country, a controlled level is perceived as an indication of strong macroeconomic fundamentals. Inflation is measured by the consumer price index which reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly.

- Government spending

The government spending is denoted by government consumption expenditure which is defined as all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national

defence and security, but excludes government military expenditures that are part of government capital formation.

- Domestic savings

Gross Domestic Saving is GDP minus final consumption expenditure. It is expressed as a percentage of GDP. Gross Domestic Saving consists of savings of household sector, private corporate sector and public sector.

- Capital formation

Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings.

- Natural resource rent

According to OECD, the economic rent of a natural resource equals the value of capital services flows rendered by the natural resources, or their share in the gross operating surplus; its value is given by the value of extraction. Resource rent may be divided between depletion and return to natural capital

- Trade

Trade is utilized as a measure of degree of openness in term so international trade. The World Development indicators, World Bank defines trade openness as the sum of exports

and imports of goods and services measured as a share of gross domestic product. A higher level indicates higher integration in global markets.

- Human capital

The human capital index is based on the average years of schooling sourced from the study of (Barro & Lee, 2013) and an assumed rate of return to education, based on Mincer equation estimates around the world (Psacharopoulos, Psacharopoulos, & George, 1994).

- Financial development

This indicator has been sourced from the IMF, it is one of the most comprehensive and multidimensional measure of financial development. As described by (Svirydzenka, 2016), the financial development indicator quantifies for the development of financial institutions as well as for the financial markets.

"Financial development is defined as a combination of depth (size and liquidity of markets), access (ability of individuals and companies to access financial services), and efficiency (ability of institutions to provide financial services at low cost and with sustainable revenues, and the level of activity of capital markets)" (Svirydzenka, 2016).

- Debt

The variable debt pertains to a proxy of sovereign risk. It refers to the general government gross debt derived from the World Economic Outlook (WEO) expressed as the percentage of GDP. According to the WEO, Gross debt consists of all liabilities that require payment or payments of interest and/or principal by the debtor to the creditor at a date or dates in the future. This includes debt liabilities in the form of SDRs, currency

and deposits, debt securities, loans, insurance, pensions and standardized guarantee schemes, and other accounts payable.

- Institutional quality

The institutional quality index is a proxy of domestic country risk it relates to the robust institutional infrastructure in the host country. The index is computed by merging all the six indicators namely, control of corruption, government effectiveness, regulatory quality, political stability, rule of law and voice and accountability from the Worldwide Governance Indicators (WGI), World bank. A higher value refers to lower risk, and vice versa.

3.3.3. Methodology

The prime objective of this study is to examine the impact of foreign capital receipts on the economic growth of selected countries. Although the vast literature is filled up with numerous studies based on specific and cross-sectional panel based estimations, none however focuses on all the types of capital flows along with a substantially larger panel dataset of 150 countries as in this study. Thus to achieve the key objective, this study employs the widely used systems-GMM methodology to empirical test the effects of different types of foreign capital flows on economic growth. A detailed description on the applicability of the method of estimation and the underlying empirical model is presented in the following section.

3.3.3.1. Generalized Method of Moments (GMM)

The results of estimates from panel estimation models using pooled OLS or fixed and random effect, particularly when dealing with potential endogeneity of the independent variables would lead to bias if the static panel data estimation is used (Nickell, 1981).

Thus in terms of empirical modelling, this study seeks to employ a very popular and widely accepted GMM methodology developed by (Anderson & Hsiao, 1982), (Bond, 1991), (Arellano & Bover, 1995) and (Blundell & Bond, 1998). This study favors the use of two step systems GMM over other GMM models as it is more effective to deal with any potential methodological issues which persist like bias on account of inherent endogeneity, omission biases and static model frameworks.

The literature comprising of vast studies in the field of development finance, several researchers have been faced with the potential problem of endogeneity. Inclusion of a lagged dependent variable into the empirical model can also trigger this issue and hence if not treated accurately can lead to unreliable estimates (Canh, Binh, Thanh, & Schinckus, 2020). Studies particularly considering growth models have a common endogeneity problem. For instance, the study of (Kosack & Tobin, 2006) found that FDI and ODA were endogenous factors in the growth model, similarly (Benmamoun & Lehnert, 2013) and (Driffield & Jones, 2013) found that remittances, FDI and ODA were endogenous. (Peter Boone, 1996; Petter Boone, 1994) and (Burnside & Dollar, 2000) make similar arguments that aid flows tends to show the characteristic of endogenous factors in growth regression. Given this citing from referred works in literature it becomes paramount to use efficient econometric procedures that can produce unbiased estimates in the presence of endogenous regressors. To handle endogeneity researchers earlier relied on the use of two stage least square estimation (2SLS), however with its inherent shortcomings of being non dynamic (Kosack & Tobin, 2006) suggest the use of systems GMM. Precisely, the GMM estimator is embodied on the assumption of endogenous regressors by relying on moment conditions for estimations, which makes the estimation process more efficient (Blundell & Bond, 1998; Kosack & Tobin, 2006; Roodman, 2006). Furthermore, several studies use basic econometric procedures like the OLS for

empirical growth research (Edison, Levine, Ricci, & Sløk, 2002). The research findings of this studies may become unbiased on account of omissions of unobserved country specific effects or time effects as well as weak instruments (Kosack & Tobin, 2006). Thus to exclude these unexpected effects, we should use an empirical approach that takes these effects into account and deliver reliable results.

A system GMM model deals with these problems efficiently; to better understand the GMM estimation methodology let us assume the following equation (1.23):

$$\Delta Y_{i,t} = \beta_0 + \beta_1 Y_{i,t-1} + \beta_2 X_{i,t} + u_i + \varepsilon_{i,t} \qquad (1.23)$$

Considering a growth model where,

$Y_{i,t}$= growth rate of real GDP per capita

β_0= intercept

$Y_{i,t-1}$= initial level of GDP per capita

$X_{i,t}$= vector of independent variables

u_i= unobserved country specific effects

$\varepsilon_{i,t}$= time varying error term

The subscripts *i* and *t* denote country and the year

As per (Arellano & Bond, 1991) the first difference transformation of the above equation (3.1) can be rewritten as follows:

$$\Delta Y_{i,t} = \left(Y_{i,t} - Y_{i,t-1}\right) = \Delta\beta_1 Y_{i,t-1} + \Delta\beta_2 X_{i,t} + \Delta\varepsilon_{i,t} \qquad (1.24)$$

The equation (1.24) is a difference GMM (DGMM) estimator, which eliminates the country specific effects (u_i) this, can treat the omitted variable bias in estimation.

Furthermore, the DGMM uses lagged values of explanatory variables $(X_{i,t})$ as instruments which additionally treat the potential endogeneity problem.

However, with the inclusion of a lagged variable it causes severe correlation with the error term $(\varepsilon_{i,t})$. To correct this delinquent issue (Arellano & Bover, 1995) and (Blundell & Bond, 1998) suggest the use of system GMM which is an efficient estimator as it estimates both the (1.23) level equation and (1.24) differenced GMM equations jointly.

Despite, the relative merit of GMM methodology the use depends upon two important conditions

    i. The instruments used must have validity

    ii. There must not exist a second order correlation

In order to test for this conditions (Arellano & Bond, 1991) and (Arellano & Bover, 1995) suggest to apply the Sargan/Hansen test of over-identification, a p-value greater than 5 percent indicate that instruments are valid and vice versa. Secondly they suggest to test for absence of second order correlation using the AR (2) auto correlation test, a p-value of AR (2) function greater than 5 percentage imply that estimation is free from second order correlation. Prior to testing the empirical model, a test for Variance Inflation Factors (VIFs) will be carried out on all the variables in the model to ensure that the problem of biasness and multi-collinearity does not exist.

3.3.3.2. Empirical Model

The study employs the widely examined endogenous growth model which is popularly known as the 'AK Model". This model has been extensively used by (Pagano, 1993), and further extended by (Bailliu, 2000). The relative contribution made by (Bailliu, 2000)

was the introduction of international capital flows in the pre-existing model to capture the interrelationship between capital flows and economic growth in the recipient countries. The AK model in a closed economy version is given by:

$$Y_t = AK_t \qquad (1.25)$$

Where,

Y_t= countries aggregate output at time t

K_t= is the capital stock (Composite of human and physical capital) at time t

A= is the marginal productivity of capital denoted by MPK

For the AK model to hold true certain underlying assumptions are made as follows:

i.   Population is assumed to remain constant or otherwise no growth in population

ii. The country produces only one good which can either be consumed or invested

The theory also assumes that capital stock depreciates with a rate of δ per period, which gives the gross investment as

$$I_t = K_{t+1} - (1 - \delta)K_t \qquad (1.26)$$

In the above model the role of financial intermediation is important to transform savings into productive investments. Assuming that ϕ is a fraction available for every unit of investment say dollar, the financial intermediaries would retain (1-ϕ) for service offered. This retaining is often the interest rate spread and to reach an equilibrium state in a closed-economy setting, the fraction of domestic savings left after the charge of financial intermediaries (1-ϕ) must equate to gross investments (I_t).

$$\phi S_t = I_t \qquad\qquad (1.27)$$

Using the equation (3.3) to (3.5) by dropping the time indices, the growth rate (g) of output is given by

$$g = A \left(\frac{I}{Y}\right) - \delta = A\,\phi\,s - \delta \qquad\qquad (1.28)$$

In equation (4) depicts a steady state growth rate of a relatively closed economy under the AK model where s denotes gross savings.

It can be observed from the above that financial development has a significant impact on growth through effective financial intermediation which can channel savings for investments. On account of increased financial intermediation, the expertise gained by banks leads to effective fall in the spread within the lending and borrowing rates which further cause an increase savings to investments thereby triggering an increase in growth (g) through an increase in ϕ in equation (1.28). Furthermore, an increased financial intermediation causes improvement in the allocation of capital to productive investments thus improving the marginal productivity of capital thus causing higher growth.

Based on the above framework of AK model, drawing on the work of (Bailliu, 2000) relaxing the closed economy assumption and thus allowing capital to move freely in and out of domestic economy, the equilibrium conditions modified to incorporate foreign capital flows can be represented as follows:

$$\phi * (S_t + CF_t = I_t^* \qquad\qquad (1.29)$$

Where CF_t represents the international capital flows and * denotes open economy, thus a new steady-state growth rate model is given by

$$g^* = A^* \left(\frac{I^*}{Y}\right) - \delta == A^* \phi^* \frac{(s + CF_t)}{Y} - \delta = A^* \phi^* S^* - \delta \qquad (1.30)$$

In essence, the model in equation (1.30) suggests that in the event of absence of friction an increase in capital flow ($CF_t > 0$) will help to augment savings ($S^* > S$). Thus in the event of foreign capital flows being invested productively and not diverted towards consumption can raise the level of domestic investments in the country which further cause growth to escalate ($g^* > g$).

Based on the review of literature it is quite evident that the effects of different types of capital flows on economic growth is quite heterogeneous, different types of capital flows effects growth in the recipient country differently. For instance, FDI is found to have a positive effect on growth in some countries while in the other the converse is true, moreover capital accumulation and technology transfers are the common means through which FDI is seen contributing to growth. FPI flows on the other hand are found to be less productive in causing growth in comparison to FDI flows given the high quotient of volatility and reversibility seen during time of economic unrests. Aid and remittances offer more of mixed results wherein aid seems useful to growth in the presence of adequate policies while remittances contributed positively only if invested and not consumed.

Grounded on the empirical model of (Bailliu, 2000) and the literature on the impact of capital flows on economic growth the empirical model to achieve the objective two is elaborated as follows:

$$Y_i = \beta_0 + \beta_1 Y_{i,t-1} + \beta_1 \delta_{i,t} + \beta_2 X_{i,t} + \varepsilon_{i,t} \qquad (1.31)$$

Where, Y_i is the dependent variable which represents real GDP growth rate, $Y_{i,t-1}$ is one period lagged variable of the dependent variable, $\delta_{i,t}$ is the vector of capital flows, $X_{i,t}$ is a vector of controls, $\varepsilon_{i,t}$ is the estimated error terms and β is a vector of coefficients to be estimated. Specifically, the above equation can be expressed as below,

$$GDPg_{it} = \alpha_i + \beta_1 GDPg_{i,t-1} + \beta_2 \delta_{it} + \beta_3 Inf_{it} + \beta_4 Gexp_{it} + \beta_5 Savings_{it} +$$

$$\beta_6 GFCF_{it} + \beta_7 Nrent_{it} + \beta_8 Trade_{it} + \beta_9 HC_{it} + \beta_{10} Debt_{it} + \beta_{11} FD_{it} + \beta_{12} IQ_{it} +$$

$$\varepsilon_{it} \qquad (1.32)$$

Where,

$GDPg_{it}$	:	Real GDP growth rate
δ_{it}	:	Vector of foreign capital flows (FDI, FPI, Remittances, Aid and Other investments)
Inf_{it}	:	Inflation
$Gexp_{it}$	:	Government spending
$Savings_{it}$	:	Gross domestic savings
$GFCF_{it}$	:	Capital formation
$Nrent_{it}$	:	Resource rent
$Trade_{it}$	:	Trade openness
HC_{it}	:	Human capital
$Debt_{it}$	:	Government debt
FD_{it}	:	Financial development index
IQ_{it}	:	Institutional quality index

3.3.3.3. Econometrics of the Dynamic Panel Threshold Model

It is obvious from a thorough study of the literature that almost majority of the studies are being carried out assuming a linear form of association between foreign capital flows and economic growth using a static otherwise a dynamic panel methodology. However,

the assumption of linearity relationship may not be reasonable as the relationship may differ across countries due to several factors. In literature several studies argue for the presence of threshold effects of certain variables on the FDI. For instance (Asongu & De Moor, 2017; Ayhan Kose, Prasad, & Taylor, 2011; Ibhagui, 2020; Kurul, 2017; Liu, Islam, Khan, Hossain, & Pervaiz, 2020; Wu & Hsu, 2008) studies modelled the effects of threshold. Recent studies have started to consider the interaction term particularly between FDI and other variables such as institutional quality (Aziz, 2018; Ezeoha & Cattaneo, 2012; Hayat, 2019; Huynh & Hoang, 2019; Sabir, Rafique, & Abbas, 2019). Nonetheless, this method is widely adopted, a major shortfall of a priori restriction is imposed in these estimations as the interaction term may increase or decrease monotonically with development in the quality of institutions, hence may not reasonably detect an equilibrium level of institutional quality that may need to be attained by countries.

Thus, in this study, an attempt is made to bridge the gap and contribute to the literature on effects of foreign capital flows on economic growth by examining the presence of nonlinear association and the impact of foreign capital flows on economic growth based on local conditions in the recipient countries which are referred to as factors of absorptive capacity. For instance, several studies such as (Azman-Saini, Baharumshah, & Law, 2010; Azman-Saini, Law, et al., 2010; Brahim & Rachdi, 2014; Chen & Quang, 2014; Jude & Levieuge, 2017) examined specifically the effects of FDIs on economic growth based on factors such as institutional quality, financial development and so on. Thus in order to fill these gaps with new insights into the nonlinear effect of foreign capital flows on economic growth conditional on two key absorptive factors namely development of local financial markets and institutional quality in the emerging economies, we adopt the dynamic panel threshold model proposed by (Kremer, Bick, & Nautz, 2013). The

threshold methodology is originally based on the study of (B. E. Hansen, 1999) which has been further improved by (Caner & Hansen, 2004) which allows for GMM type estimators to correct the problem of endogeneity. However, one of the main problem in this models is concerned to the manner in which country fixed effects are eliminated without violating the underlying assumptions of both the models, see (B. E. Hansen, 2000). For instance by first differencing the standard fixed effects it may induce serial correlation in the transformed error terms, hence, the dynamic panel threshold model proposed by (Kremer et al., 2013) solves this problem by using forward orthogonal transformation as suggested by (Arellano & Bover, 1995). Thus in this study I adopt the superior method proposed by (Kremer et al., 2013) to examine the impact of different types of foreign capital flows on economic growth in emerging economies conditioned on local absorptive capacity in terms of financial development and institutional quality. A more detailed description of the econometrics of a dynamic panel threshold model is provided as follows.

The econometric model based on (Kremer et al., 2013) for the dynamic panel threshold model is documented as below:

$$Y_{it} = \mu_i + \beta'_1 z_{it} I(q_{it} \leq \gamma) + \delta_1 x_{it} I(q_{it} > \gamma) + \beta'_2 z_{it} I(q_{it} \leq \gamma)$$
$$+ \varepsilon_{it} \qquad (1.33)$$

Where, the subscript *'i'* = 1,2,……,N represents the country and *'t'* = 1,2,……,T is the time index. μ_i is the country specific fixed effect and $\varepsilon_{it} \underset{\sim}{\overset{iid}{}} (0, \sigma^2)$. The indicator function *I(.)* is the regime defined threshold variable q_{it} and the threshold level γ. z_{it} is the m-dimensional vector representing the explanatory variables which may also include the lagged value of Y_{it} and other endogenous regressors. The explanatory variables are

divided into two categories exogenous regressors uncorrelated with error terms z_{1it} and z_{2it} which represents the vector of endogenous regressors correlated with the error terms.

Following (Kremer et al., 2013) the estimation runs into a series of steps, primarily the focus is on elimination of individual effects μ_i via a fixed-effects transformation using the forward orthogonal deviations transformation suggested by (Arellano & Bover, 1995). A distinct feature of forward orthogonal deviations transformation is that serial correlation of the transformed error terms is avoided. Instead of subtracting the pervious observations it subtracts the average of all future available observations of a variable. The forward orthogonal deviations transformation is given by,

$$\varepsilon_{it}^* = \sqrt{\frac{T-t}{T-t+1}} \, [\varepsilon_{it} - \frac{1}{T-t}(\varepsilon_{i(t+1)}+..+\varepsilon_{iT})] \qquad (1.34)$$

Thus the forward orthogonal deviation transformation maintains the un-correlatedness of the error term, $Var(\varepsilon_i) = \sigma^2 I_T \; \rightarrow Var(\varepsilon_i^*) = \sigma^2 I_{T-1}$.

The forward orthogonal deviation transformation ensures that the estimation procedure developed by (Caner & Hansen, 2004) for a cross sectional model can be applied to dynamic model with endogenous regressors. In the first step a reduced form of regression is estimated for all the endogenous variables z_{2it} as a function of the instruments X_{it}. In step two, the equation is estimated using the least square for a fixed threshold γ where endogenous variables z_{2it} are replaced with the smallest sum of squared residuals. Once $\hat{\gamma}$ is determined the slope coefficients are estimated using the GMM. Following the (Caner & Hansen, 2004; B. E. Hansen, 1999) the confidence interval of the estimated threshold is given by $\{ \Gamma = \gamma : LR(\gamma) \leq C(\alpha) \}$ where, $C(\alpha)$ is the 95% percentile of the asymptotic distribution of the likelihood ratio statistics $LR(\gamma)$.

Specifically, based on the above discussion of the dynamic panel threshold model proposed by (Kremer et al., 2013) the following model for examining the foreign capital flows – growth nexus conditioned on financial development and institutional quality is proposed.

$$GDP_{it} = \mu_i + \beta'_1 \tilde{\pi}_{it} I(\tilde{\pi}_{it} \le \gamma) + \delta_1 I(\tilde{\pi}_{it} \le \gamma) + \beta'_2 \tilde{\pi}_{it} I(\tilde{\pi}_{it} > \gamma) + \emptyset z_{it}$$
$$+ \varepsilon_{it} \quad (1.35)$$

Where, financial development and institutional quality both are considered alternatively as threshold variables, and foreign capital flows are considered as regime dependent regressors. z_{it} Denotes the vector of partly endogenous variables, while initial income is considered as lagged endogenous variable $z_{2it} = Initial\_income_{it}$ and z_{1it} contains other control variables. Following (Arellano & Bover, 1995) the lagged levels of endogenous variable are used as instruments.

3.4. EMPIRICAL METHODOLOGY FOR THE IMPACT OF FOREIGN CAPITAL FLOWS VOLATILITY ON ECONOMIC GROWTH VOLATILITY.

Over the decades of surges in capital flows, concerns have risen regarding 'how stable are the capital flows?'. In this regards, (Neumann, Penl and Tanku, 2009) argue that global capital flows have a destabilizing effect in the developing countries, particularly in extreme economic events like the GFC which led to a sudden reversal of these flows. (Forbes and Warnock, 2012) also argue that economic consequences like macroeconomic instability, financial system vulnerability, occurrence of economic cycles on account of swings in capital flows and so on. resulting from volatile flows have been more evident post the occurrence of GFC. According to (IMF, 2012) capital inflow surges can cause financial markets to be overwhelmed and impede the ability of macroeconomic policy to adjust.

Given this, the literature on capital flows volatility remains highly unexplored prior to the GFC, however until recently researchers have started focusing on modelling the volatile nature of capital flows and the resultant consequences on the macroeconomic performance of the recipient economies. This study tries to contribute to the growing literature by modelling the volatility associated with capital flows, and its consequences in both the developed and the developing countries, thereby assisting in policy formulation.

3.4.1. Objectives and Contribution

The principal object of this chapter is to determine the volatility in the capital flows and empirically examine the effects of volatile capital flows on the growth and growth instability in developing and developed economies. With the occurrence of 2008/09 GFC,

researchers have started to give importance to the volatile nature of capital flows and their effects, yet the literature on this key issue is very scarce.

On the basis of the review most studies are found focusing on the determinants of volatility of capital flows, whereas very few studies actually evaluate the effects, with almost no study examining the effects on the instability of growth in the recipient countries.

The relative contribution of this study is to empirically fill the gap in the literature on volatility of capital flows and its consequences. This study for all intents and purposes is devoted to the policy drafting concerning the management of capital flows for sustainable growth and development.

3.3.2. Data Measurement

3.3.2.1 Data

This study uses 25 years of annual data observations, starting from 1995 to 2019. The sample comprises of a total of 112 economies. The selection of countries in the sample is purely based on the availability of data pertaining to capital flows and other key macroeconomic variables. A list of countries included in the sample is presented in the appendices (Table A3-1).

The required data is primarily sourced from the IMF, specifically from the Balance of Payments (BOP), International Financial Statistics (IFS) and World Economic Outlook (WEO). Other data sources include data gathered from World Development Indicators (WDI-WB) and World Governance Indicators (WGI-WB),

The following Table 3.2 lists the dependent and independent variables along with their sources.

Table 3.3. List of Variables and Data Sources

Abbreviation	Variable Definition	Source of Data
Gdp_vol	Volatility of GDP – GDP is measures as GDP per capita (constant 2015 US$)	The World Bank, World Development Indicators, database, and World Economic Outlook (WEO) data IMF.
FDI	Foreign direct investment, net inflows (% of GDP)	
FDI_Vol	Volatility of Foreign direct investment, net inflows (% of GDP)	
REM	Personal remittances, received (% of GDP)	
REM_Vol	Volatility of Personal remittances, received (% of GDP)	
AID	Net ODA received (% of GDP)	
AID_Vol	Volatility of Net ODA received (% of GDP)	
GFC	Gross fixed capital formation (% of GDP)	
INF	Inflation, consumer prices (annual %)	
POP	Population growth (annual %)	
TO	Trade Openness expressed as Trade (% of GDP)	
FD	Financial Development	IMF, IFS (Svirydzenka, 2016).
HC	School enrollment, secondary (% gross) Human Capital is measured as Average total years of schooling for adult population (years)	(Barro & Lee, 2013)
OPEN	Capital Openness	(Chinn & Ito, 2008)

Source: Compiled by researcher

3.4.3. Methodology

3.4.3.1 Measuring capital flow volatility

In order to approximate reliable estimate of capital flow volatilities, distinct approaches adopted by (Engle and Rangel, 2008), (Broto, Díaz-Cassou and Erce, 2011) and (Combes *et al.*, 2019) are employed.

1. Standard deviation over a rolling window (RW)

This method consists of computation of volatilities based on the standard deviation approach. Here the standard deviation of capital flows over a rolling window of annual data is estimated. The approximation of capital flows volatility for country *'i'* in year *'t'*, $\sigma_{i,t}$ is given by:

$$\sigma_{i,t} = \left(\frac{1}{n} \sum_{k=t-(n-1)}^{t} \left(flow_{i,k} - \mu \right)^2 \right)^{\frac{1}{2}} \dots (1.36)$$

Where, $\mu = \frac{1}{n} \sum_{k=t-(n-1)}^{t} flow_{i,k}$ and $flow_{i,k}$ denotes the capital flow for country *'i'* at time *'t'*. This measure of volatility however is subject to shortfalls. According to (Broto, Díaz-Cassou and Erce, 2011) some of the caveats associated to this measure are listed as follows:

    a) There is significant loss of data, particularly in the beginning of the sample, which depends on the length of the window period (n).

b) The $\sigma_{i,t}$ is strongly persistent as it predictions depends on the previous observations. This gives rise to the problem of endogeneity and serial correlation and thus can produce non-robust estimates.

c) In comparison to other measures, this method of estimation tends to assign similar weights to $flow_{i(t-1)}$ and $flow_{it(n-1)}$, which results in smoothing of the volatility series. This can result in underestimation of volatility during shocks and overestimation thereafter.

2. Estimated standard deviation produced using GARCH (1,1) model.

The second measure of volatility is in line with (Bekaerta and Harvey, 1997) and (Lagoarde-Segot, 2009). The volatility is estimated using the GARCH (1,1) model, the process is defined as below.

$$y_{it} = \varepsilon_{it}\sigma_{it} \quad ....(1.37)$$

$$\sigma_{it}^2 = \alpha_0 + \alpha_1 y_{i(t-1)}^2 + \alpha_2 \sigma_{i(t-1)}^2 \quad .....(1.38)$$

Where, $y_{it} = \Delta flow_{it}$, ε_{it} is the Gaussian white noise process, and σ_{it}^2 is the corresponding conditional variance of the series.

Although widely used, this measure of volatility also suffers from severe downsides, Particularly.

a) Convergence errors can creep in on account of data scarcity.

b) For a relative small sample, the Maximum-Likelihood estimates can be biased.

c) The estimates to be positive and stationary requires that the $\widehat{\alpha_1} + \widehat{\alpha_2} < 1$, $\widehat{\alpha_0} > 0$, $\widehat{\alpha_1} > 0$ and $\widehat{\alpha_2} > 0$. In the event of any of the aforementioned condition being violated for any country 'i' then the model produces invalid estimates for that specific country.

d) In many cases the residual series do not indicate the presence of ARCH effect, as such the application of GARCH model becomes unsuitable.

3. Estimated standard deviations produced by ARIMA (1,1,0) model.

Following the (Sole Pagliari and Ahmed Hannan, 2017) study, the volatility can be estimated using the ARIMA (1,1,0) model. Where the standard deviation of the residual series obtained through the ARIMA is used. The process involves the following stages

a) Firstly, the residual series is obtained using the following AR (1) process

$$\Delta flow_{it} = c + \beta \Delta flow_{i(t-1)} + v_{it} \quad \ldots \ldots (1.39)$$

b) Secondly, a test to detect the presence of ARCH effect in the residual series is performed. In the event of the null hypothesis being rejected we estimate volatility as follows:

$$\sigma_{it}^2 = \frac{1}{4} + \sum_{j=t-(n-3)}^{t+(n-2)} \left(v_{ij} \right)^2 \ldots \ldots (1.40)$$

   c) Otherwise, a conditional volatility is estimated by suitably fitting a GARCH (1,1) model to the derived residuals.

In this study a distinct model of estimating volatility is adopted following the pre-existing literature on volatility of foreign capital flows and economic growth. The following approach if followed:

1. First, an OLS regression estimate is made following the specification as follows:

$$X_{it} = \alpha_i + X_{it-1} + \varepsilon_{it} \qquad \ldots\ldots(1.41)$$

Where,

X_{it} is the specific variable for which volatility will be estimated (i.e. FDI, Aid, Remittances & GDP.)

X_{it-1} is the one period lag or difference of the variable.

ε_{it} is the error term.

2. We then run the model and as an outcome the residual series is generated this residual series is the considered as the volatility variable or series.

3. Since the generated variable depicting the volatile nature may include huge fluctuations we adopt the widely used moving standard deviation approach on the generated series or

variables. Specifically, for the current study based on the availability of data a 4 year moving average estimation is applied.

4. In order to further stabilize the data series, the application of Hodrick-Prescott Time – Series Filter is made to smoothen the series before application.

5. The resultant data series is used as an estimate of volatility for the specific variables.

3.4.3.2. Generalized Method of Moments (GMM)

The results of estimates from panel estimation models using pooled OLS or fixed and random effect, particularly when dealing with potential endogeneity of the independent variables would lead to bias if the static panel data estimation is used (Nickell, 1981). Thus in terms of empirical modelling, this study seeks to employ a very popular and widely accepted GMM methodology developed by (Anderson & Hsiao, 1982), (Bond, 1991), (Arellano & Bover, 1995) and (Blundell & Bond, 1998). This study favors the use of two step systems GMM over other GMM models as it is more effective to deal with any potential methodological issues which persist like bias on account of inherent endogeneity, omission biases and static model frameworks.

The literature comprising of vast studies in the field of development finance, several researchers have been faced with the potential problem of endogeneity. Inclusion of a lagged dependent variable into the empirical model can also trigger this issue and hence if not treated accurately can lead to unreliable estimates (Canh, Binh, Thanh, & Schinckus, 2020). Studies particularly considering growth models have a common endogeneity problem.

For instance, the study of (Kosack & Tobin, 2006) found that FDI and ODA were endogenous factors in the growth model, similarly (Benmamoun & Lehnert, 2013) and (Driffield & Jones, 2013) found that remittances, FDI and ODA were endogenous. (Peter Boone, 1996; Petter Boone, 1994) and (Burnside & Dollar, 2000) make similar arguments that aid flows tends to show the characteristic of endogenous factors in growth regression.

Given this citing from referred works in literature it becomes paramount to use efficient econometric procedures that can produce unbiased estimates in the presence of endogenous regressors. To handle endogeneity researchers earlier relied on the use of two stage least square estimation (2SLS), however with its inherent shortcomings of being non dynamic (Kosack & Tobin, 2006) suggest the use of systems GMM. Precisely, the GMM estimator is embodied on the assumption of endogenous regressors by relying on moment conditions for estimations, which makes the estimation process more efficient (Blundell & Bond, 1998; Kosack & Tobin, 2006; Roodman, 2006). Furthermore, several studies use basic econometric procedures like the OLS for empirical growth research (Edison, Levine, Ricci, & Sløk, 2002). The research findings of this studies may become unbiased on account of omissions of unobserved country specific effects or time effects as well as weak instruments (Kosack & Tobin, 2006). Thus to exclude these unexpected effects, we should use an empirical approach that takes these effects into account and deliver reliable results.

A system GMM model deals with these problems efficiently; to better understand the GMM estimation methodology let us assume the following equation (1.42):

$$\Delta Y_{i,t} = \beta_0 + \beta_1 Y_{i,t-1} + \beta_2 X_{i,t} + u_i + \varepsilon_{i,t} \qquad (1.42)$$

Considering a growth model where,

$Y_{i,t}$= growth rate of real GDP per capita

β_0= intercept

$Y_{i,t-1}$= initial level of GDP per capita

$X_{i,t}$= vector of independent variables

u_i= unobserved country specific effects

$\varepsilon_{i,t}$= time varying error term

The subscripts i and t denote country and the year

As per (Arellano & Bond, 1991) the first difference transformation of the above equation (3.1) can be rewritten as follows:

$$\Delta Y_{i,t} = \left(Y_{i,t} - Y_{i,t-1}\right) = \Delta\beta_1 Y_{i,t-1} + \Delta\beta_2 X_{i,t} + \Delta\varepsilon_{i,t} \qquad (1.43)$$

The equation (1.43) is a difference GMM (DGMM) estimator, which eliminates the country specific effects (u_i) this, can treat the omitted variable bias in estimation. Furthermore, the DGMM uses lagged values of explanatory variables $(X_{i,t})$ as instruments which additionally treat the potential endogeneity problem.

However, with the inclusion of a lagged variable it causes severe correlation with the error term $(\varepsilon_{i,t})$. To correct this delinquent issue (Arellano & Bover, 1995) and (Blundell & Bond, 1998) suggest the use of system GMM which is an efficient estimator as it estimates both the (3.1) level equation and (3.2) differenced GMM equations jointly.

Despite, the relative merit of GMM methodology the use depends upon two important conditions

    i.   The instruments used must have validity

ii.   There must not exist a second order correlation

In order to test for this conditions (Arellano & Bond, 1991) and (Arellano & Bover, 1995) suggest to apply the Sargan/Hansen test of over-identification, a p-value greater than 5 percent indicate that instruments are valid and vice versa. Secondly they suggest to test for absence of second order correlation using the AR (2) auto correlation test, a p-value of AR (2) function greater than 5 percentage imply that estimation is free from second order correlation. Prior to testing the empirical model, a test for Variance Inflation Factors (VIFs) will be carried out on all the variables in the model to ensure that the problem of biasness and multi-collinearity does not exist.

3.4.4 Empirical Model

The specific objective of this study is to analyse the volatility of capital flows and its effects on growth and growth instability in developing and developed economies. The main objective however is fragmented into two key subdivisions. Firstly, the focus is mounted on exploring the factors determining the volatility of capital flows, and Secondly the analysis dwells into the probable consequences of volatile capital flows on growth and growth instability in developed and developing economies. To achieve the twin goals, the following methodological approaches are adopted.

In order to determine the impact of volatile capital flows on the growth and growth instability in the recipient country, this study bank on the study of (Combes *et al.*, 2019). The empirical model to measure the effect is provided as follows:

$$GDPgrowth_{it} = \delta GDPgrowth_{it-1} + \beta CF_{it} + \theta X'_{it} + \varepsilon_{it} \quad \text{... (1.44)}$$

Where, $GDPgrowth_{it}$ is the country's GDP growth rate for time 't', $GDPgrowth_{it-1}$ is the one period lag of GDP growth rate included into the system of equation, CF_{it} denotes the corresponding volatility of different types of capital flows viz. total, foreign direct, portfolio, and other investments as a percentage of GDP for country *'i'* at year *'t'*. X'_{it} is the vector of other control variables in the system and ε_{it} represents the error term.

The equation above can be extended with inclusion of other control variables in the systems as presented below:

$$GDPgrowth_{it} = \alpha_i + \beta_1 GDPgrowth_{it-1} + \beta_2 CF_{it} + \beta_3 DI_{it} + \beta_4 Export_{it}$$

$$+ \beta_5 Import_{it} + \beta_6 Financial\ Development_{it}$$

$$+ \beta_7 Govt.\ Consumption\ Expenditure_{it} + \beta_8 Inflation_{it}$$

$$+ \beta_9 Trade\ Openness_{it} + \beta_{10} Private\ Credit_{it}$$

$$+ \beta_{11} Exchange\ Rate_{it} + \beta_{12} Polity2_{it} + \beta_{13} Human\ Capital_{it}$$

$$+ \beta_{14} Institutional\ Quality_{it} + \beta_{15} Natural\ Rents_{it} + \vartheta_i$$

$$+ \varepsilon_{it} \dots \dots \dots \dots \dots \dots (1.45)$$

In similar fashion, we devise the following equation to assess the effects of capital flow volatility on growth instability. The altered equation is based on the pervious equation follows:

$$GDPgrowth\ instabilty_{it}$$

$$= \delta GDPgrowth\ instability_{it-1} + \beta CF_{it} + \theta X'_{it} + \varepsilon_{it} \ \dots (1.46)$$

The classical OLS estimation although widely used is confronted with several flaws, particularly in relation to controlling for simultaneity and omitted variables biases. Thus, in order to overcome such issues two-fold estimation methodology is being adopted. Firstly, the equation above are estimated using the (Driscoll and Kraay, 1998) methodology. One of the severe problem with studies associated to volatilities is the errors being serially correlated along with spatial correlation (cross-sectional correlation) due to contagion factors which can make the estimated standard errors bias. The (Driscoll and Kraay, 1998) is one of the widely adopted measure to overcome this shortfalls, the estimator produces robust standard error and handles not only the problem of serial correlation in error terms, but also accounts for heteroscedasticity and special correlation errors (Driscoll and Kraay, 1998; Hoechle, 2007). Secondly, the (Blundell and Bond, 1998) systems GMM estimator for dynamic panels is used particularly over the OLS as the OLS estimator tends to be inconsistent when the lagged dependent variable is included in the system of equation (Nickell, 1981). Furthermore, the GMM estimator is widely adopted as it sufficiently controls for potential endogeneity in the explanatory variables as well as any measurement error, reverse causality and omission error. The use of both the models are following the literature, furthermore both estimation methodologies will act as counterweights to compare the results so obtained.

In order to determine the impact of volatile capital flows on the growth and growth instability in the recipient country, this study bank on the study of (Combes *et al.*, 2019). The empirical model to measure the effect is provided as follows:

$$Vol\_GDPgrowth_{it} = \delta Vol\_GDPgrowth_{it-1} + \beta CF_{it} + \theta X'_{it} + \varepsilon_{it} \; \ldots\ldots \; (1.47)$$

$$Vol\_GDPgrowth_{it} = \delta Vol\_GDPgrowth_{it-1} + \beta CF_{it} + \beta Vol\_CF_{it} + \theta X'_{it} + \varepsilon_{it} (1.48)$$

Where, $Vol\_GDPgrowth_{it}$ is the estimated volatility of country's GDP growth rate for time 't', $Vol\_GDPgrowth_{it-}$ is the one period lag of estimated volatility of GDP growth rate included into the system of equation, CF_{it} denotes the capital flows and corresponding volatility of different types of capital flows as a percentage of GDP for country $'i'$ at year $'t'$. X'_{it} is the vector of other control variables in the system and ε_{it} represents the error term.

CHAPTER - IV

WHAT DRIVES FOREIGN CAPITAL

FLOWS?

A DISAGGREGATION ANALYSIS OF GROSS

CAPITAL INFLOWS TO ADVANCED AND

EMERGING ECONOMIES

4.1 INTRODUCTION

The widespread discussion on the determinants of capital flows have been carried out at length in the literature. According to the conventional school of thought, domestic factors are more significant in explaining the surges in capital flows in the 1990s (López Mejía, 1999; Schadler, Carkovic, Bennett, & Kahn, 1993). On the other hand, taking an alternate view (Calvo, Leiderman, & Reinhart, 1993) argued that fundamental and political reforms matter to capital inflows. The study showed that global factors such as drop in US short term interest rates, US recession, US BOP and change in international capital markets regulations were significant drivers of capital flows in the Latin American countries. Alongside, many studies such as that of (Fernandez-Arias, 1996) supported this claim whereas studies like that of (Chuhan, Claessens, & Mamingi, 1998) contested the findings of (Calvo et al., 1993).

The traditional literature on the determinants of capital inflows relies heavily on the importance of domestic factors which are presumed to influence the risk-return perception of investors. The traditional studies rely on local macroeconomic fundamentals, official policies of the government and market imperfections to explain the capital inflows surges (Ghosh, Qureshi, Kim, & Zalduendo, 2014). The literature highlights several factors like domestic interest rates, domestic capital formation, human capital development, infrastructural development, level of inflation, level of financial development, economic openness, quality of domestic institutions, level of public debt, current account balances, real exchange rates and a range of other relevant variables that drive capital flows (see (Ahlquist, 2006), (Alfaro, Kalemli-Ozcan, & Volosovych, 2007), (Papaioannou, 2009), (Milesi-Ferretti & Tille, 2011), (Fratzscher, 2012), (Bruno & Shin,

2013), (Nier, Saadi Sedik, & Mondino, 2014), (Ahmed & Zlate, 2014), (Brafu-Insaidoo & Biekpe, 2014), (Olaberriá, 2015), (Dell'Erba & Reinhardt, 2015), (Hashimoto & Wacker, 2016), (Iamsiraroj, 2016), (Baek & Song, 2016), (Arias-Rodríguez, Delgado, Parra-Amado, & Rincón-Castro, 2016) and (Ahmed Hannan, 2017).

On the contrary, several other recent studies on determinants of capital flows suggest that the push factors hold more relevance than the pull factors. The push factors are closely related to the neoclassical theory, which argues that capital reacts to interest rate differentials between countries. According to (Ahmed Hannan, 2018) under the neoclassical theory, capital flows from countries with low returns to those countries that offers higher rate of returns on the capital. In similar approach several studies like (see, (Arias-Rodríguez et al., 2016; Baek & Song, 2016; Bruno & Shin, 2013; Byrne & Fiess, 2016; Egly & American, 2010; Forbes & Warnock, 2012; Reinhart & Reinhart, 2009; Sarno, Tsiakas, & Ulloa, 2016)), suggest that other variables apart from interest rates such as global economic growth, risk aversion, global liquidity and commodity prices also act as prominent push factors that drive capital flows in other countries.

The widespread debate on the prominence of push versus pull factors have continued in the 2000s in the context of evolving global and macroeconomic fundamentals. With more granular data available to the researchers, the focus has moved from estimating aggregate capital flows determinants to individual capital flows and their determinants. The 2008/09 global financial crisis (GFC) has proved to be one of the crude example of plausible adversities of free financial flows and globalization and its effects on global capital flows landscapes. Understanding the nature and behaviours of different types of capital flows is of paramount importance particularly to the authorities and policy makers, to draft appropriate policies. Literature has shown that capital flows can deter the strength

of domestic markets particularly the financial system, which was evident during the GFC. In line with the same policy makers need to draft appropriate mix of policies that can strengthen the domestic markets and systems which can face any future global meltdowns unlike the GFC. Hence, policies in both source and recipient countries are important in driving capital flows to emerging markets.

4.2. EMPIRICAL RESULTS AND DISCUSSION

4.2.1. Unit Root Test

Before estimating the empirical models in this study, panel based unit root tests is performed on all the variables using the Fisher-type unit root tests as discussed in (Baltagi, 2005; Choi, 2001)to test for stationarity assumptions in the data. The tests accept balanced as well as unbalanced panels along with gaps, hence is more suitable.

The Fisher-type unit root test is applied using the Augmented Dickey-Fuller (ADF) test. According to (Choi, 2001)the test is widely suitable and beneficial in many other terms, for instance the test applies for both finite as well as infinite samples, also the test treats stochastic as well as non-stochastic elements in the data. Moreover, the test can also accommodate panels with unit roots as well as without unit roots. In the Fisher-type unit root, the ADF Unit – root test is applied to every panel in the larger dataset. The null hypothesis states that All panels contain unit roots, while the alternate hypothesis suggest at least one panel is stationary, a trend term is included to account for the trend stationarity and the stationarity test is based on the inverse normal (Z) statistics.

Table 4.1. Fisher-type ADF unit-root tests results of the key drivers of capital inflows

Fisher-type ADF unit-root tests				
Dependent Variables				
	Level - I(0)		Differenced - I(1)	
	Statistics	p-value	Statistics	p-value
Aggregate Investment	-12.86***	0.0000	-25.94***	0.0000
Direct Investment	-9.00***	0.0000	-25.10***	0.0000
Portfolio Investment	-11.87***	0.0000	-25.40***	0.0000
Other Investment	-16.26***	0.0000	-26.16***	0.0000
Independent Variables				
	Level - I(0)		Differenced - I(1)	
Domestic Factors	Statistics	p-value	Statistics	p-value
Money Growth	-22.55***	0.0000	-32.40***	0.0000
Domestic GDP Growth	-23.91***	0.0000	-35.23***	0.0000
Government Consumption Expenditure	-16.20***	0.0000	-25.91***	0.0000
Gross Debt	-18.65***	0.0000	-25.65***	0.0000
Inflation	0.4318	0.6671	-19.81***	0.0000
Interest Rate Spread	-24.81***	0.0000	-24.21***	0.0000
Exchange Rate	-14.72***	0.0000	-22.51***	0.0000
Trade Openness	-12.94***	0.0000	-27.39***	0.0000
Financial Development	-16.56***	0.0000	-27.32***	0.0000
Institutional Quality	-16.07***	0.0000	-28.62***	0.0000
Capital Openness	-9.72***	0.0000	-15.30***	0.0000
Global Factors				
Commodity Prices	-13.88***	0.0000	-23.02***	0.0000
Global Liquidity	26.29	1.0000	-5.97***	0.0000
Global GDP Growth	-29.85***	0.0000	-37.65***	0.0000
S&P 500 Returns	-27.27***	0.0000	-34.15***	0.0000
Bond Yield	-13.16***	0.0000	-40.07***	0.0000
Global Volatility Index (VIX)	-22.52***	0.0000	-31.20***	0.0000

Note:
Fisher-type unit-root test using augmented Dickey-Fuller (ADF): Ho: All panels contain unit roots; Ha: At least one panel is stationary; a trend term is included to account for the trend stationarity; the stationarity test is based on the inverse normal (Z) statistics.
*, **, *** are significant levels at 10%, 5%, 1% respectively.

The results of the unit root test are presented in Table 4.1. All the dependent and independent variables are having a small p-value suggesting a rejection of the null hypothesis and stationarity at level i.e. I (0) except, inflation and global liquidity. However, the first differenced series of all the variables possess significant p-values, which indicate that all the variables follow the stationarity assumption to a maximum of order one integration i.e. I (1) but not order two i.e. I (2).Moreover, as discussed in (Choi, 2001), in the Fisher-type unit root tests, the Z test possess superior performance relative to the other tests like (L*, P, Pm). Therefore, the author suggested that the inverse normal (Z) statistic is suitable in the empirical work.

4.2.2. Unit Root Test in the Presence of Cross-Sectional Dependence

A common assumption related to panel data models pertains to the disturbances being cross sectionally independent. This assumption holds particularly when there are large number of cross sectional units (N) and small time units (T). However, a growing body of literature has shown that panel data likely exhibits substantial cross-sectional dependence due to the presence of common shocks or unobserved components that becomes a part of error term see for instance, (Baltagi, 2005; Pesaran, 2004; Robertson & Symons, 2000).

Although, a number of tests are available to determine stationarity, they mostly rely on the assumption that individual time series in the panel are cross-sectionally independent which may not be the case as argued by many studies, thus to overcome the drawback in the traditional test like Fisher-type unit root test, as employed in the study, A superior test proposed by (Pesaran, 2007)is used to test for panel unit root in the presence of cross-sectional dependence in data. In Pesaran panel unit root test standard augmented Dickey–

Fuller (ADF) regressions are augmented with the cross-section averages of lagged levels and first-differences of the individual series. New asymptotic results are obtained both for the individual cross-sectionally augmented ADF (CADF) statistics and for their simple averages.

Before estimating the Pesaran panel unit root test, a cross sectional dependence test is run on all the variables to confirm the presence of cross-sectional dependence in the date series. The study uses the Pesaran's CD-test for cross-sectional dependence in panel. The CD-test for cross-sectional dependence as described in(Pesaran, 2004, 2015) investigates the mean correlation between panel units. The null hypothesis is either strict cross-sectional independence (Pesaran, 2004) or weak cross-sectional dependence (Pesaran, 2015).

Table 4.2 presents the results of cross sectional dependence test; all the coefficients of variables in the empirical model possess a small p-value significant at 1% level, which suggest the presence of strong cross-sectional dependence amongst cross-sections in the panel data.

The results of Pesaran's panel unit root in the presence of cross-sectional dependence in data is presented in Table 4.3, similar conclusions are drawn pertaining to the stationarity the results suggest that few of the variables such as are stationary at level with small p-value. However, with the first differencing of all the series, the test confirms stationarity at the most to order one i.e. I (1) hence no further data transformation is required.

Table 4.2. Cross-sectional dependence test results of the key drivers of capital inflows

Pesaran's Cross-Sectional Dependence Test		
Dependent Variables		
	Statistics	p-value
Aggregate Investment	221.76***	0.0000
Direct Investment	242.41***	0.0000
Portfolio Investment	172.08***	0.0000
Other Investment	122.22***	0.0000
Independent Variables		
	Statistics	p-value
Domestic Factors		
Money Growth	38.23***	0.0000
Domestic GDP Growth	75.56***	0.0000
Domestic Per-Capita GDP Growth	71.69***	0.0000
Government Consumption Expenditure	19.73***	0.0000
Gross Debt	67.60***	0.0000
Inflation	387.56***	0.0000
Interest Rate Spread	7.73***	0.0000
Exchange Rate	68.16***	0.0000
Trade Openness	61.28***	0.0000
Financial Development	176.85***	0.0000
Institutional Quality	4.29***	0.0000
Capital Openness	10.74***	0.0000
Global Factors		
Commodity Prices	418.95***	0.0000
Global Liquidity	418.95***	0.0000
Global GDP Growth	418.95***	0.0000
S&P 500 Returns	418.95***	0.0000
Bond Yield	418.95***	0.0000
Global Volatility Index (VIX)	418.95***	0.0000

Note: Under the null hypothesis of cross-section independence, CD ˜ N (0, 1) p-values close to zero indicate data are correlated across panel groups.
*, **, *** are significant levels at 10%, 5%, 1% respectively.

Table 4.3. Pesaran panel unit root testresults of the key drivers of capital inflows

Pesaran Panel Unit Root Test		
Dependent Variables		
	Level - I(0) Statistics	Differenced - I(1) Statistics
Aggregate Investment	-2.206**	-4.327***
Direct Investment	-2.113**	-4.280***
Portfolio Investment	-2.062**	-4.186***
Other Investment	-2.332***	-4.611***
Independent Variables		
	Level - I(0) Statistics	Differenced - I(1) Statistics
Domestic Factors		
Money Growth	-2.956***	-4.477***
Domestic GDP Growth	-3.523***	-5.573***
Government Consumption Expenditure	-1.754	-4.214***
Gross Debt	-1.733	-3.851***
Inflation	-1.111	-3.128***
Interest Rate Spread	-1.100	-2.453***
Exchange Rate	-1.480	-3.375***
Trade Openness	-1.536	-4.077***
Financial Development	-2.156***	-4.781***
Institutional Quality	-1.585	-4.104***
Capital Openness	0.270	-4.912***
Global Factors		
Commodity Prices	2.610***	2.610***
Global Liquidity	2.610***	2.610***
Global GDP Growth	2.610***	2.610***
S&P 500 Returns	2.610***	2.610***
Bond Yield	2.610***	2.610***
Global Volatility Index (VIX)	2.610***	2.610***

Note: Pesaran Panel Unit Root Test in the Presence of Cross-section Dependence: H0: (homogeneous non-stationary); Critical values are -2 (10%), -2.05 (5%) and -2.14 (1%) levels respectively.
*, **, *** are significant levels at 10%, 5%, 1% respectively.

4.2.3. Estimation Results

The empirical results of push and pull factor determinants of capital inflows to the advanced and emerging economies have been presented in this section. The sample covers a total of 119 countries (see Table A-1) over the period of 1995 to 2019. The study is carried out in two phases of estimations, the first phase estimation is carried out on the aggregate capital flows which is the sum total of all the three types of capital flows.

The first phase estimations cater to the aggregated models of capital flows using the standard ordinary least squares (OLS), fixed effects (FE) and random effects (RE) estimation methods. The choice between suitability of modeled estimates between fixed effects (FE) and random effects (RE) is decided based on the Hausman test results. In the case if random effects (RE) is recommended by the Hausman test, the Breusch-Pagan Lagrange multiplier (LM) test is used to decide between the reliability of RE and OLS estimator.

In the second step estimation, the disaggregated models of capital flows are estimated using the bootstrapped fixed effects with seemingly unrelated regression (FE with SUR). The study uses this distinct estimation procedure due to expected residuals correlation between the three equations of disaggregated capital flows i.e. direct investments (DI), portfolio investments (PI) and other investments (OI).

Prior to estimation of disaggregated capital flows models using the bootstrapped fixed effects with seemingly unrelated regression (FE with SUR) estimator, the Breusch-Pagan test of error independence is applied on the residuals from the three equations.

Table 4.4. Correlation Matrix of Residuals and BP Test for Error Independence

		Direct Investment	Portfolio Investment	Other Investment
Full Sample	Direct Investment	1.0000		
	Portfolio Investment	0.5015	1.0000	
	Other Investment	0.4216	0.3742	1.0000

Breusch-Pagan test of independence: chi2(3) = 1693.608, p-value = 0.0000

		Direct Investment	Portfolio Investment	Other Investment
Advanced Economies	Direct Investment	1.0000		
	Portfolio Investment	0.7680	1.0000	
	Other Investment	0.7077	0.7750	1.0000

Breusch-Pagan test of independence: chi2(3) = 1945.014, p-value= 0.0000

		Direct Investment	Portfolio Investment	Other Investment
Emerging Economies	Direct Investment	1.0000		
	Portfolio Investment	0.3196	1.0000	
	Other Investment	0.1568	0.1270	1.0000

Breusch-Pagan test of independence: chi2(3) = 260.669, p-value = 0.0000

The results are presented in Table 4.4, which suggest a significant correlation between the error terms as confirmed by a significant p-value of BP test. Hence, the use of FE with SUR estimator is well suited and appropriate to draw efficient and reliable estimates than the classical OLS, FE and RE estimators. Additionally, for the purpose of comparison the OLS, FE and RE estimations are carried out and are provided in Appendix A.

4.2.4. Direct Investment Inflows

The empirical results applying the Bootstrapped FE with SUR estimation on the components of foreign capital flows are presented in Table 4.5 to Table 4.9. Table 4.5 presents the results for direct investment flows (DI's) for the full sample consisting of 119 economies along with 46 advanced economies and 73 emerging economies. Estimation results from all the three samples suggest that DI's are strongly driven by domestic as well as global factors. However, the influence of domestic factors is much more significant than the global factors. From the domestic factors, the key drivers come from three main categories specifically: (a) external exposures (trade openness and financial/capital openness); (b) macroeconomic fundamentals (exchange rate and gross debt) and other domestic drivers (interest rate spread, money growth, financial development and institutional quality). From the push side commodity prices, global liquidity and global volatility index (VIX) emerged as the most influential drivers of capital inflows in this samples.

For the full sample, the external exposure of a country represented by relative openness to trade and capital emerged as significant drivers of DI's. Countries with relatively higher level of capital openness experience larger inflows of DI's. In this case, the effect of capital openness indicator is positive and highly significant, such that for every one percentage point increase in capital openness index, DI's rises by 0.29% relative to GDP. This result is also consistent with the findings of (Byrne & Fiess, 2016b; Hashimoto & Wacker, 2016; Olaberriá, 2015; Sarno et al., 2016).

Furthermore, trade openness which represents the ratio of exports and imports relative to GDP suggest the level of integration in global markets. The empirical suggest that trade openness is considered as an important indicator perceived by international inventors.

The positive and significant value of the coefficient implies 0.24% increase in DI's for every 1 percentage point increase in the level of trade openness. This results support the previous findings from the study of(Iamsiraroj, 2016a; Milesi-Ferretti & Tille, 2011)who found trade openness as a significant driver of foreign direct investment.

Similarly, macroeconomic fundamentals pertaining to exchange rate and gross debt simultaneously are found exerting a negative pressure on DI's. Empirical findings suggest that for every 1 percentage point increase in relative exchange rates and the level of gross debt, DI's reduces by 0.03% and 0.12% respectively. The findings are consistent with the literature (Arias-Rodríguez et al., 2016; Baek & Song, 2016; Bruno & Shin, 2013; Dell'Erba & Reinhardt, 2015; Hannan, 2017; Nier et al., 2014). Relative appreciation in the value of domestic currency can cause higher payment obligations this can become a deterring factor for DI's investment decision. Interestingly, the results contradicts the findings of (Dell'Erba & Reinhardt, 2015), who found that exchange rate appreciation is associated with higher FDI flows. Additionally, higher debt represents higher obligations on part of government, which account for public indebtedness, thus countries with higher payment obligations are seen as least favourable avenue for investment particularly in the case of DI's which come with a sufficiently high sunk cost. The rate of inflation can also be sufficiently considered as a deterrent of DI's as advocated by previous studies such as that of (Mercado & Park, 2011), although the empirical results suggest a negative coefficient value however with an insignificant p-value.

In addition to the external and macroeconomic fundamentals money growth, financial development and institutional quality can be considered as significant drivers of DI's. Interest rate spread measures the difference between lending rate and deposit rate. Foreign investors normally seek a higher investment return, which leads to higher

financial flows to those countries with more favourable interest rates(Contessi et al., 2013). The empirical results suggest a positive effect however with an insignificant coefficient value. The growth rate of money in the economy is found to be negatively associated with DI's, while a positive effect was displayed by financial development and institutional quality.

The indicator of financial development denotes to the overall financial development, this comprehensive indicators of financial development is provided by (Svirydzenka, 2016). The study of (Svirydzenka, 2016) suggest the importance of two main factors to overall financial system: financial institutions (i.e. consisting of banks, insurance companies, funds, venture capital firms and other types of non-bank financial institutions) and financial markets (i.e. consisting of stock markets, bond markets, wholesale money markets and by-passing traditional bank lending).Unlike the previous studies which use credit or money growth as indicators of financial development, this study uses the financial development indicator provided by (Svirydzenka, 2016) to gauge the true effect of comprehensive financial development in the economy. The positive and highly significant coefficient of financial development suggests that for every 1 percentage point increase in financial development in the country, DI's rise by a staggering 3.73% relative to GDP. These results advocates that countries with higher financial development attract more DI's and thus financial development in the host country is considered as an important decisive factor for DI's decisions by investors.

Apart from the macroeconomic factors the role of institutional quality has also been widely deliberate in the literature. The study of (North, 1990) provide for the unambiguous association between institutions and economic growth. Empirical works have demonstrated a significant positive link between the quality of institutions and

economic growth (Acemoglu & Verdier, 1998). Several studies have focused on examining how institutions affect FDI flows, one of the key factor identified by studies like that of (Root, 1979; Schneider & Frey, 1985; Wei, 1997) is political factors as key determinants of FDI flows, over time the debate intensified with studies like (Jensen, 2003) suggest that democratic governments attract more FDI than others, while (Li, Resnick, Li, & Resnick, 2003) argue that democracy had a negative effect on FDI flows. The most recent studies ranging from the study of (Globerman & Shapiro, 2002) emphasizes the role of other institutional factors like political, institutional, and legal environment being the key factor drivers of FDI inflows. Following similar lines (Bénassy-Quéré, Coupet, & Mayer, 2007) found that for the selected 52 economies bureaucracy, corruption, information, banking sector and legal institutions were significant drivers of FDI flows. (Buchanan, Le, & Rishi, 2012) also argue in favour of institutional quality as driver of FDI while, they suggest institutional quality is negatively associated to FDI volatility. (Aziz, 2018) also found that economic freedom, ease of doing business and international country risk are significant drivers of FDI flows to Arab countries. In this study, an index of institutional quality has been developed merging all the six indicators namely, control of corruption, government effectiveness, regulatory quality, political stability, rule of law and voice and accountability. The empirical results suggest a positive association between intuitional quality and DI's, for every 1 percentage point increase in the domestic institutional quality DI's rises by 0.49% relative to GDP. The findings are consistent with the existing literature on the drivers of DI's.

From the global factors commodity prices, global liquidity and global volatility index (VIX) emerged as the most influential drivers of DI's. The global commodity price index represents the index of traded commodities worldwide it represents components of global

trade. The empirical results suggest that global commodity price index has a positive effect on DI's. For every 1 percentage point increase in the price index DI's rise by 0.003% level of GDP, the small coefficient value suggests that commodity prices exert a weak impact on DI's around the world. Furthermore, global liquidity represents the broad money growth of the G7 economies the positive and significant coefficient value denotes that growth in global liquidity is significant driver of DI's. The empirical results suggest that for every 1 percentage point's rise in global liquidity indicator, DI's rise by 0.017% relative to GDP. Amongst the global factors, DI's in emerging economies are found to be significantly affected by global risk volatility indicator i.e. (VIX). For every 1 percentage point rise in VIX, DI's plunge by 0.009% level of GDP. This finding is consistent with the study of (Nier et al., 2014)who suggest that stock market volatility is one of the key push factors associated with capital inflows.

Several similar findings are found to be consistent for both the sub samples comprising of advanced economies and emerging economies. Such as capital openness, institutional quality, financial development, trade openness, and other macroeconomic factors while, from the global factors commodity prices, global liquidity and global volatility index (VIX) are consistent drivers in the sub-samples as well. Interestingly, In the case of advanced and emerging countries, interest rate spread had a negative effect while a positive effect was evident in emerging countries. This result suggests that for advanced economies higher interest rate spread does not attract more DI's while for the emerging countries the positive association is highly significant with a coefficient value of 0.09% level of GDP as opposed to a negative value of 0.20% level of GDP for advanced countries. Furthermore, exchange rates are positively associated with DI's in advanced countries on the contrary a negative association is found for the emerging countries. In

the case of global drivers for both the sub-samples commodity prices, global liquidity and global volatility index (VIX) are key drivers while only for the emerging countries the variable GFC which captures the effect of global financial crisis of 2007-08 is statistically significant with a negative coefficient value of 0.28 whereas a positive insignificant value of 0.16 for advanced countries.

In summary, the empirical results on the drivers of Direct Investments (DI's) suggest that both domestic and global factors matter greatly to DI flows. The association between drivers is found consistent in both the sub-samples viz. advanced and emerging economies. Although a wide range of global factors were identified and incorporated in the estimation, the study recognized very few global drivers such as commodity prices, global liquidity and global volatility index (VIX). These drivers were consistent in both the sub-samples. Interestingly, the study highlights the relative dominance of domestic pull factors over global push factors in the case of DI's. the study found trade openness, financial development, institutional quality and capital openness as key and consistent drivers of DI's throughout the estimations as well as for the advanced and emerging countries while, mixed effects were evident for other domestic drivers of DI's.

Table 4.5. FE with SUR estimation results – Direct Investments

	(1) Full Sample	(2) Advanced Economies	(3) Emerging Economies
Domestic(Pull) Factors			
Domestic GDP Growth	**-0.0574****	**-0.1654*****	-0.0353
	(0.0279)	(0.0496)	(0.0345)
Gross Debt	**-0.1232*****	**-0.1312*****	**-0.1032*****
	(0.0204)	(0.0462)	(0.0230)
Interest Rate Spread		**-0.2091*****	**0.0954*****
		(0.0515)	(0.0252)
Exchange Rate	**-0.0357*****	0.0377	**-0.0400*****
	(0.0116)	(0.0241)	(0.0130)
Money Growth	**-0.0958*****		
	(0.0213)		
Trade Openness	**0.2414*****	**0.8624*****	-0.0294
	(0.0344)	(0.0868)	(0.0255)
Financial Development	**3.7310*****	**3.0633*****	**3.9061*****
	(0.2650)	(0.2651)	(0.5103)
Institutional Quality	**0.4946*****	**0.3887*****	0.1330
	(0.0679)	(0.0969)	(0.0809)
Capital Openness	**0.2982*****	0.1659	**0.1985*****
	(0.0640)	(0.1365)	(0.0567)
Global (Push) Factors			
Commodity Prices	**0.0035*****	**0.0028*****	**0.0024*****
	(0.0008)	(0.0011)	(0.0009)
Global Liquidity	**0.0167*****	**0.0220*****	**0.0133*****
	(0.0014)	(0.0029)	(0.0016)
Bond Yield		**-0.0904***	
		(0.0485)	
Global Volatility Index (VIX)	**-0.0095****	**-0.0228*****	-0.0024
	(0.0044)	(0.0074)	(0.0054)
Dummy GFC	-0.1039	0.2388	**-0.2803****
	(0.1062)	(0.1625)	(0.1314)
Const.	-1.7017***	-3.4363***	-1.0233***
	(0.2077)	(0.6514)	(0.1870)
Observations	2,975	1,150	1,825
No. of countries	119	46	73
R-squared	0.5717	0.5223	0.3119
$\chi2$ test	3973.36***	1258.63***	839.82***
$\chi2$ test (Prob.>$\chi2$)	0.0000	0.0000	0.0000

Note: Robust standard errors in parentheses (.)
*, **, *** are significant levels at 10%, 5%, 1% respectively

4.2.5. Portfolio Investment Inflows

The estimation results of portfolio investments (PI's) are presented in Table 4.6. The results highlight the relative dominance of domestic pull factors over global push factors in the case of PI's. Amongst the domestic pull factors trade openness, financial development, institutional quality and capital openness while in the case of global pull factors global liquidity, global returns and global volatility are found to be consistent and key drivers of PI's in aggregated sample as well as in the sub-sample of advanced and emerging countries.

As expected key factors like capital openness and financial development matter significantly to foreign investors. Factors like financial development are crucial factors considered in investment decisions by foreign investors, thus indicating that PI's are strongly driven by host countries level of financial development. The empirics suggest that for every 1 percentage point increase in the level of financial development in terms of depth a rise of 2.61% level of GDP in PI's is evident, this positive association is consistent with advanced as well for the emerging countries. The results are in line with previous literature, for instance(Lusine Lusinyan, 2002).

The variable measuring capital openness represents the relative openness of the capital account of the county. The index varies from 0 to 1, where 1 being the highest level of openness. The empirical results show that for every 1-point increase in the level of capital openness, PI's rise by 0.31% level of GDP, this is also true for the advanced as well as emerging countries in the sample. The results indicate that higher PI's are associated with higher levels of capital openness, thus relative open economies offering easy capital movement attract more PI's than countries with stringent regulations pertaining to capital flight and lower capital account openness.

Moreover, countries with lower debt levels may attract more PI's than countries with high indebtedness. The estimation output suggests that for every 1 percentage point increase in gross debt ratio, PI's decreases by 0.16% level of GDP for all the countries while 0.07% and 0.16% for advanced and emerging economies respectively. Foreign investors generally consider to evaluate country's indebtedness before investment allocation, thus countries with disproportionately larger levels of debt are considered as vulnerable avenues and are often do not attract PI's (Milesi-Ferretti & Tille, 2011). Therefore, the negative sign of the estimated coefficient implicates that countries within the safe levels of debt are presumed to be safer avenues with lower default risk and hence attract more of PI's than others. The findings are consistent with other studies such as that of (Nier et al., 2014).

Beside the above explained domestic factors, government consumption expenditure which relates to the spending of the central government on development has a significant influence on the PI's. For all the countries, in the aggregated sample a positive association is evident with a coefficient value of 0.18% level of GDP, similar findings are registered for emerging countries while a negative association is found for the advanced nations. Overall, this estimation suggest that public spending is a significant driver of PI's in emerging markets, countries with higher spending on welfare and developmental projects are attractive avenues for investment for PI's. Furthermore, exchange rate is found to have a negative correlation with PI's in all the estimations. The negative and significant coefficient suggests that PI's are sensitive to exchange rate movements. This outcome is as expected, as returns from PI's fluctuate with undulation in the exchange rates hence countries with stable exchange rates and relatively less fluctuation attract more of PI's due to the strong fundamentals and policies. Similarly, the level of inflation and money

growth in the host country also matter to PI's, the negative coefficient suggest that higher levels of inflation excessive circulation of currency can decrease PI's significantly. Both these indicators point towards weak fundamentals and thus make a country unattractive to foreign investments particularly PI's.

The variable trade openness representing relative economic openness via favourable trade balance is also a positive driver of PI's. The coefficient value indicates that PI's rise by 0.13% level of GDP for every 1-point increase in trade openness.

Besides the above mentioned domestic indicators of PI's, institutional quality is also found to be a significant driver of PI's similar to DI's. Institutional quality measure the risk associated to investment in a host country pertaining to rule of law, corruption, contracts and other areas which together form the institutional infrastructure. The empirics suggest that countries with strong and robust institutional infrastructure attract more PI's than others. Hence it can be rightly argued that PI's consider the institutional infrastructure prior to investments and gene is the need of policy makers to draft suitable polices to create robust institutions to attract more of foreign capital.

In addition to the pull drivers, the push drivers also play an imperative role in attracting PI's. For instance, VIX index which measure the volatility of global stock market is one of the most important indicators driving PI's to both advanced as well as emerging countries. The empirics suggest that foreign investors evaluate the perceived risk and uncertainty in the expectations in the global markets before deciding to invest, reinvest or reallocate portfolios. This results are in line with the recent available literature for instance, (Arias-Rodríguez et al., 2016) and (Cerutti, Claessens, & Puy, 2019) who found that volatility in the financial markets is negatively associated with portfolio investments.

Furthermore, (Forbes & Warnock, 2012) and (Baek & Song, 2016) who also suggest that global volatility is directly associated with extreme capital flows episodes. Although, this finding is not surprising as it is based on the common goal of investor to earn significant returns on its portfolio, where the intention of the investor is particularly on buying and selling shares and other securities to maximize earnings and reduce risk. Thus the global risk factor particularly, financial market volatility is one of the crucial factor into consideration for investment to PI's.

Moreover, global returns measure the returns variability in the global market based on the broad S&P 500 index, is found to be negatively correlated with PI's. These findings are consistent for advanced as well as emerging countries. Higher variability in returns can reduce PI's in all the countries.

Furthermore, global liquidity which represents the broad money growth of the G7 economies the positive and significant coefficient value denotes that growth in global liquidity is significant driver of PI's which is similar to DI's. The empirical results suggest that for every 1 percentage point rise in global liquidity indicator, PI's rise by approximately 0.01% relative to GDP for all the countries while 0.02% and 0.01% rise was evident for the advanced and emerging nations.

Interestingly, in the case of PI's, the crisis dummy is found to be positive for all the countries as well as for the advanced and emerging countries although no significance was derived for emerging countries. The empirical results indicate that a higher level of international financial instability causes higher portfolio investment flow into advanced economies preferably due to the inherent stability in its fundamentals.

Table 4.6. FE with SUR Estimation Results – Portfolio Investments

	(1) Full Sample	(2) Advanced Economies	(3) Emerging Economies
Domestic(Pull) Factors			
Domestic GDP Growth	**-0.0620***	**-0.1378****	-0.0334
	(0.0370)	(0.0580)	(0.0515)
Government Consumption Expenditure	**0.1890****	**-0.3574****	**0.2419****
	(0.0449)	(0.1031)	(0.0501)
Gross Debt	**-0.1643****	-0.0705	**-0.1676****
	(0.0327)	(0.0493)	(0.0399)
Inflation	**-0.0822****	0.1392	**-0.0765****
	(0.0110)	(0.1343)	(0.0117)
Interest Rate Spread	**-0.0977***	**-0.2969****	0.0363
	(0.0387)	(0.0601)	(0.0470)
Exchange Rate	**-0.0818****	**-0.0599***	**-0.0634****
	(0.0162)	(0.0254)	(0.0225)
Money Growth	**-0.2424****	-0.0456	**-0.2006****
	(0.0296)	(0.0317)	(0.0374)
Trade Openness	**0.1397****	**0.7237****	-0.0601
	(0.0390)	(0.0893)	(0.0366)
Financial Development	**2.6168****	**2.4940****	**1.6467***
	(0.4980)	(0.2645)	(0.9093)
Institutional Quality	**0.8100****	**0.4251****	**0.5654****
	(0.1050)	(0.1050)	(0.1121)
Capital Openness	**0.3145****	**0.5726****	**0.1318***
	(0.0912)	(0.1566)	(0.0971)
Global (Push) Factors			
Commodity Prices		0.0015	
		(0.0009)	
Global Liquidity	**0.0144****	**0.0202****	**0.0087****
	(0.0016)	(0.0024)	(0.0021)
S&P 500 Returns	**-0.0085****	**-0.0086****	**-0.0074***
	(0.0021)	(0.0024)	(0.0031)
Global Volatility Index (VIX)	**-0.0370****	**-0.0489****	**-0.0226***
	(0.0069)	(0.0091)	(0.0095)
Dummy GFC	**0.4615****	**0.5763****	0.2526
	(0.1439)	(0.1690)	(0.1985)
Const.	0.5552*	-1.7741**	1.1329***
	(0.2908)	(0.8402)	(0.3669)
Observations	2,975	1,150	1,825
No. of countries	119	46	73
R-squared	0.5717	0.4947	0.1143
χ2 test	2685.56***	1138.39***	237.94***
χ2 test (Prob.>χ2)	0.0000	0.0000	0.0000

Note: Robust standard errors in parentheses (.)
*, **, *** are significant levels at 10%, 5%, 1% respectively

In addition, the study also suggest that interest rate spread and bond yield are negatively

associated with PI's in the case of aggregated samples and advanced economies while a

positive non-significant association was found for emerging countries. This finding challenges the standard portfolio assumption, the previous study on the relationship between portfolio investment flows and interest rate differentials by Arias et al. (2016) also suggested the same outcome. These findings indicate that the investors of PI flows appear to be more affected by other indicators rather than the rate of returns.

4.2.6. Other Investment Inflows

The empirical results for other investment flows (OI's) which account for the residual category of investments are presented in Table 4.7. Similar to the driver of DI's and PI's, the OI's are also driven by similar key factors for instance, from the pull side capital openness, institutional quality, financial development, trade openness while from the push side commodity prices, global liquidity, global returns and global volatility remains the key consistent drivers of OI's. Interestingly, the variations in the outcomes of these key drivers for advanced and emerging countries are significant.

While articulating the consistent pull factors, it is evident that capital openness, financial development and trade openness by far remains the most consistent in terms of their effects. For both the advanced as well for the emerging countries capital openness has a significant positive effect on the OI's. For every 1 percentage point increase in relative capital openness, OI's rise by 0.57% and 0.18% level of GDP for advanced and emerging countries respectively.

Similar is the case of financial development, the study suggested a robust and significant positive association between the level of financial development and OI's across samples. Higher level of financial development attracts more OI's in both advanced as well as emerging countries accounting to 1.84% and 0.52% level of GDP respectively. The

empirical results also suggest that economic openness drive OI's in both advanced and emerging countries.

Besides these domestic drivers, other key drivers pertain to government consumption expenditure which show a positive effect in emerging countries while a negative effect in advanced countries. This empirical result suggest that OI's are positively driven on the size of government spending only in the emerging countries, while higher spending does not induce higher OI's in the case of advanced nations. Furthermore, the level of gross debt as an indicator of country's indebtedness is negatively associated with OI's this finding are similar to the earlier findings for PI's as well.

The effects of Inflation as well as exchange rates on the other hand is consistently negative in terms of their effects; the consistent negative effects in all samples and across the type of capital flows suggest the importance of maintaining stable macroeconomic policies and robust fundamentals in order to attract more capital inflows. In terms of the global push factors, global commodity prices are found to have a significant positive effect on OI's in both advanced as well as in emerging economies. The findings are consistent with the previous findings of this study for DI's and PI's.

Furthermore, global liquidity indicator is also persistent in terms of its effects on OI's as similar to DI's and PI's. A positive and significant effect is evident across specifications. Interestingly, even for the OI's the portfolio assumption theory does not hold true, the negative coefficient of interest rate spread and bond yield justify that returns do not attract OI's as similar to PI's.

Table 4.7. FE with SUR Estimation Results – Other Investments

	(1) Full Sample	(2) Advanced Economies	(3) Emerging Economies
Domestic(Pull) Factors			
Domestic GDP Growth		**-0.1599*****	-0.0355
		(0.0537)	(0.0335)
Government Consumption Expenditure	**0.2747*****	**-0.3948****	**0.3001*****
	(0.0365)	(0.1584)	(0.0354)
Gross Debt	**-0.0340***	**-0.1588*****	0.0062
	(0.0197)	(0.0500)	(0.0209)
Inflation	**-0.0168****	**-0.5290*****	**-0.0149***
	(0.0086)	(0.1230)	(0.0080)
Interest Rate Spread	-0.0183	**-0.1736*****	**0.0580****
	(0.0231)	(0.0610)	(0.0246)
Exchange Rate	**-0.0508*****	**-0.0810*****	**-0.0422*****
	(0.0097)	(0.0212)	(0.0108)
Money Growth	**-0.0889*****	-0.0137	
	(0.0216)	(0.0361)	
Trade Openness	**0.3177*****	**0.7769*****	**0.1561*****
	(0.0419)	(0.0950)	(0.0392)
Financial Development	**1.4630*****	**1.8498*****	**0.5281*****
	(0.1692)	(0.2570)	(0.1982)
Institutional Quality	**0.1711*****	-0.1286	**-0.1405****
	(0.0518)	(0.1121)	(0.0644)
Capital Openness	**0.4052*****	**0.5761*****	**0.1846*****
	(0.0622)	(0.1468)	(0.0593)
Global (Push) Factors			
Commodity Prices	**0.0039*****		**0.0045*****
	(0.0007)		(0.0008)
Global Liquidity	**0.0114*****	**0.0148*****	**0.0142*****
	(0.0012)	(0.0023)	(0.0015)
Global GDP Growth	**-0.0471****		**-0.0504****
	(0.0188)		(0.0228)
S&P 500 Returns	**-0.0097*****	**-0.0053****	**-0.0111*****
	(0.0019)	(0.0025)	(0.0024)
Global Volatility Index (VIX)	**-0.0308*****	**-0.0181****	**-0.0320*****
	(0.0059)	(0.0087)	(0.0067)
Dummy GFC	**0.2633****	**0.3578****	**0.2164***
	(0.1031)	(0.1584)	(0.1218)
Const.	-0.2152	2.4414***	-0.2050
	(0.2781)	(0.8202)	(0.2932)
Observations	2,975	1,150	1,825
No. of countries	119	46	73
R-squared	0.4334	0.3075	0.3371
$\chi 2$ test	2281.23***	536.50***	926.94***
$\chi 2$ test (Prob.>$\chi 2$)	0.0000	0.0000	0.0000

Note: Robust standard errors in parentheses (.)
*, **, *** are significant levels at 10%, 5%, 1% respectively

The estimates also suggest that VIX index which measure the volatility of global stock market is one of the most important indicators driving OI's to both advanced as well as emerging countries. The empirical results are consistent throughout the study for DI's and well as for PI's flows. And lastly, the crisis variable measuring the effects of global meltdown suggest a positive coefficient significant only for emerging economies which implicates that OI's find it attractive to invest in emerging market at times of global uncertainties like the recent crisis.

Furthermore, compared to emerging economies, OI's in advanced economies are strongly driven by push factors. Given the heterogeneous nature of this flow, that contains components such as trade credit, loans and bank deposits, this result is not surprising.

4.2.7. Aggregate Inflows

As discussed in the prior sections, the analysis of aggregate investment flows is based on the first step estimation. The aggregate investment flows are computed by summing all three component of foreign capital inflows i.e. direct investment (DI's), portfolio investment (PI's) and other investment (OI's). Table 4.8 presents the results following the fixed effects (FE) and random effects (RE) estimations. The Hausman test is used to determine the suitability of the models, although the test recommends either of the two estimates, both are displayed for the purpose of comparison.

Both the random effects (RE) and fixed effects (FE) have their own empirical merits and demerits. The FE estimator being one of the best fitted models to account for unobserved heterogeneity, the estimation suffers tremendously in capturing cross-sectional difference between countries as it focuses on capturing variations across individual countries. Neither can FE account for the impact of a variable which tend to change over time. This

specific weakness is covered by RE, the RE estimation efficiently captures the cross-sectional differences across countries by treating unobserved heterogeneity as random and assumes it being uncorrelated with the explanatory variables. Although, despite the merit RE suffers from a major drawback in terms of its assumption of uncorrelated errors with the independent variables, which may lead to biased estimates in the empirical model.

Based on the Hausman test, the FE estimator is selected for full sample and emerging countries, while RE is chosen as a superior model for advanced economies. Since, the RE model is found suitable for advanced economies, an additional test has been performed using the Breusch-Pagan Lagrange multiplier (LM) to help decide between the RE and OLS estimator. The LM test with a significant p-value suggests that compared to OLS, RE is a better estimator for all of the tested equations.

The estimated results for the aggregated investment flows (AI's) are presented in Table 4.8, the empirical results suggest that both push and pull factors matter to AI's however a dominant effect is consistent from the push factors than that of the pull factors. Amongst the consistent global push factors commodity prices have a significantly positive effect on AI's for both the advanced and well for the emerging countries. Similarly, global liquidity which represents the money growth rate of G7 economies also is found to be a significant positive determinant of AI's. Interestingly, in the case of AI's, the empirics suggest a negative association between global growth rate and AI's which is not evident in the case of the sub components i.e. DI's, PI's and OI's.

One of the significant and consistent drivers across capital flows is the VIX indicator which measure the volatility of global stock market, and thus account of global risk

aversion motive of investors. Interestingly, throughout the estimations for both the advanced as well as emerging economies a significant negative effect has been listed. This results are consistent with the previous findings of this study as well as the existing literature see (Fernandez-Arias, 1996), (Arias-Rodríguez et al., 2016), (Baek & Song, 2016), (McQuade & Schmitz, 2017), (D. Park et al., 2016), (Nier et al., 2014), (Olaberriá, 2015), (Forbes & Warnock, 2012), (Milesi-Ferretti & Tille, 2011), (Pagliari & Hannan, 2017), (Bommadevara & Sakharkar, 2021) and (Ahmed Hannan, 2017).

Furthermore, the crisis dummy is found to be positive and highly significant across all the estimation suggesting that a higher level of international financial instability causes a more inflows of AI's. This result can relate to the fact that investor's move their investments across countries more frequently under unfavourable condition and both advanced as well as emerging economies are recipient of this flows.

However, from the pull side very few factors qualify as determinants of AI's in contrast to DI's, PI's and OI's where the pull factors were found to be more dominant that push factors. Amongst the pull factors, most factors are generated for emerging economies while very few pull factors are found to be significant determinants of AI's in advanced economies. The growth rate of GDP, which represents the economic growth of the country, is found to positively related to AI's in the case of emerging economies, while a negative significant association has been found in the case of advanced economies. For every 1 percentage point rise in economic growth AI's rise by 0.07% level of GDP for emerging economies while a fall of 0.13% level of GDP is recorded for advanced economies.

Table 4.8. FE & RE Estimation Results – Aggregate Investments

	Full Sample		Advanced Economies		Emerging Economies	
	(1)	(2)	(3)	(4)	(5)	(6)
	FEM#	REM	FEM	REM#	FEM#	REM
Domestic(Pull) Factors						
Domestic GDP Growth	-0.0015	0.0001	-0.1243**	**-0.1219****	**0.0684****	0.0595*
	(0.0281)	(0.0283)	(0.0564)	(0.0562)	(0.0307)	(0.0307)
Government Consumption Expenditure	**0.3785****	0.4194***	0.4428**	0.2779	**0.3898****	0.4067***
	(0.0484)	(0.0460)	(0.2052)	(0.1857)	(0.0438)	(0.0417)
Gross Debt	**0.0470****	0.0433*	-0.1758***	**-0.1755****	**0.0962****	0.0859***
	(0.0229)	(0.0226)	(0.0615)	(0.0594)	(0.0226)	(0.0221)
Inflation	**-0.0994****	-0.0558***	0.0354	-0.0497	**-0.1213****	-0.0511***
	(0.0301)	(0.0208)	(0.2313)	(0.2180)	(0.0276)	(0.0181)
Interest Rate Spread	**0.1449****	0.0949***	0.0413	-0.0452	**0.1625****	0.1512***
	(0.0389)	(0.0361)	(0.1136)	(0.1015)	(0.0371)	(0.0345)
Exchange Rate	0.0426	-0.0303	0.0308	0.0152	**0.1066****	-0.0251
	(0.0294)	(0.0221)	(0.0453)	(0.0398)	(0.0480)	(0.0272)
Money Growth	**0.0548****	0.0229	0.0620	0.0297	0.0366	0.0340
	(0.0232)	(0.0228)	(0.0520)	(0.0497)	(0.0237)	(0.0236)
Trade Openness	0.0255	0.0623	0.1242	**0.2863****	-0.0065	0.0055
	(0.0461)	(0.0442)	(0.1573)	(0.1354)	(0.0430)	(0.0415)
Financial Development	**0.6298***	1.7946***	-0.8351	0.7940	**0.7211****	1.0141***
	(0.3429)	(0.2726)	(0.8146)	(0.5737)	(0.3479)	(0.3115)
Institutional Quality	0.0808	0.3207***	0.4219***	**0.4145****	-0.1147	-0.0517
	(0.0816)	(0.0723)	(0.1420)	(0.1358)	(0.1076)	(0.0985)
Capital Openness	0.0301	0.1119	0.2466	0.2737*	-0.0590	-0.0355
	(0.0767)	(0.0733)	(0.1615)	(0.1542)	(0.0825)	(0.0787)
Global (Push) Factors						
Commodity Prices	**0.0066****	0.0060***	0.0066***	**0.0056****	**0.0065****	0.0062***
	(0.0008)	(0.0008)	(0.0016)	(0.0016)	(0.0009)	(0.0009)
Global Liquidity	**0.0193****	0.0172***	0.0148***	**0.0133****	**0.0204****	0.0203***
	(0.0018)	(0.0018)	(0.0036)	(0.0036)	(0.0020)	(0.0020)
Global GDP Growth	**-0.0813****	-0.0758***	-0.1003***	**-0.0915****	**-0.0739****	-0.0719***
	(0.0194)	(0.0197)	(0.0382)	(0.0382)	(0.0210)	(0.0212)
S&P 500 Returns	**-0.0125****	-0.0118***	-0.0160***	**-0.0136****	**-0.0096****	-0.0105***
	(0.0018)	(0.0018)	(0.0034)	(0.0034)	(0.0020)	(0.0020)
Bond Yield	-0.0097	-0.0164	-0.1162	-0.1189	0.0308	0.0294
	(0.0380)	(0.0386)	(0.0740)	(0.0741)	(0.0419)	(0.0422)
Global Volatility Index (VIX)	**-0.0370****	-0.0375***	-0.0576***	**-0.0537****	**-0.0285****	-0.0298***
	(0.0051)	(0.0051)	(0.0102)	(0.0101)	(0.0056)	(0.0056)
Dummy GFC	**0.2483****	0.2466***	0.4054**	**0.3632****	**0.2060****	0.1937*
	(0.0944)	(0.0957)	(0.1836)	(0.1836)	(0.1033)	(0.1041)
Const.	0.7243*	0.3048	3.1711**	2.6056**	-0.7219*	-0.6327
	(0.4043)	(0.4018)	(1.2790)	(1.2201)	(0.4258)	(0.4206)
Observations	2,975	2,975	1,150	1,150	1,825	1,825
R-squared	0.4210		0.3480		0.5076	
No. of countries	119	119	46	46	73	73
Hausman Test	1448.70 (0.0000) ***		20.50 (0.2494)		78.64 (0.0000)***	
BP LM test for RE			1243.90 (0.0000)***			

Note: Robust standard errors in parentheses (.)
*, **, *** are significant levels at 10%, 5%, 1% respectively
# denotes the recommended results from Hausman test & BP LM test.

Furthermore, for the advanced economies trade openness and institutional quality are found to be significant positive drivers the same however is not true for the emerging economies. Whilst, in the case of emerging economies financial development emerged as the most influential driver of AI's. In comparison to the results of sub components of AI's, i.e. DI's, PI's and OI's, he results for the AI's vary tremendously.

Interestingly, for the emerging economies the variable of interest rate differential is found to be positive and significant as in the case of estimations from DI's and OI's which suggest that capital inflows, generally have a positive connection with the interest rates. Nevertheless, the coefficient of this indicator is very small. This findings are in contrast to the pervious findings of (Arias-Rodríguez et al., 2016) who suggest that foreign capital inflows are negatively associated with interest rate differential, although this was related to the FDI flows. However, the coefficient of bond yield is found to be insignificant even in the case of AI's which suggest that rate of return is not the only consideration for the investor to invest in a particular country.

4.2.8. Linear regression with panel-corrected standard errors – Robustness Check

Any econometric procedure carried out can never be referred to as complete without sufficient robustness of the estimates which add to the reliability of the outcomes. Thus in this study an additional empirical analysis have been carried out so as to check for robustness of the main results using the panel corrected standard errors model (PCSE) proposed by (Beck & Katz, 1995). The results presented in Table X. Table X shows the presence of cross-sectional dependence in all the selected variables, moreover (Pesaran, 2007) stationarity test confirms that the variables are stationary either at level or at the most after first differencing. Since the data suggest the presence of strong cross-sectional

dependence and first order stationarity, the use of panel corrected standard errors model (PCSE) proposed by (Beck & Katz, 1995) is most suitable. The PCSE estimator estimates the full (N × N) cross-sectional covariance matrix to correct the contemporaneous correlation in the variables specified in the model. Furthermore, according to (Hoechle, 2007) this method is suitable when the sample comprises of large N (119 countries) and small T (25 years, 1995-2019). The results of robustness checks are provided in the appendix.

The PCSE estimator is applied on the aggregated as well as disaggregated capital flows for both the advanced as well as emerging economies. The empirical results show consistency in terms of the effects of determinants on capital flows. In summary for the DI's, PI's and OI's alike the FE with SUR estimation the results suggest that on the pull side host country's financial development, institutional infrastructure, economic openness and capital openness are some of the key consistent and significant drivers for both the advanced as well as for the emerging economies, while on the push side factors like commodity prices, global liquidity global returns and global volatility have shown robust effects throughout.

Furthermore, the results for the aggregate investment flows (AI's) as well draw similar results. The role of pull and push factors is found to be significant in the case of AI's, the empirical results suggest that commodity prices, global liquidity, global returns and risk aversion are key factors influencing the allocation of AI's across economies while capital openness, financial development, trade openness are consistent factors attracting AI's in both advanced as well as emerging economies. Interestingly, a significant variation on the effects of drivers in advanced and emerging economies is evident. The results suggest, while capital openness drive sufficient AI's to advanced economies, no such significant

positive association is found for emerging economies. Similarly, while interest rate spread had a negative effect on AI's in advanced economies, a positive effect was seen in the case of emerging economies. Similar is the case for government spending variable.

In essence, the additional estimations carried out applying the PCSE estimator confirm robustness of the estimations from the FE with SUR estimation for DI's, PI's and OI's as well as the traditional FE and RE estimation for AI's. Furthermore, all the estimations draw similar outcomes and effects of drivers across the larger sample comprising of all the countries as well as for the sub-samples consisting of advanced and emerging economies around the world.

4.2.9. Marginal effects of Key Drivers of Capital Inflows

In order to further illustrate the association between capital flows and their drivers, this study applies the predictive marginal analysis. The marginal effects are computed by incorporating a squared term of the driver in addition to the regression and plotting the predictive marginal effects with 95% confidence interval. For the purpose of marginal effects, following equation has been developed

$$Y_i = \beta_i X_i + \beta_i X_i^2 + \varepsilon_i \qquad (1.49)$$

Where,

Y_i : is the dependent variables representing capital flows variables, which consist of (i) disaggregate investment (direct investments (DI's), portfolio investments (PI's) and other investments (OI's)) and (ii) aggregate investment that is defined as the sum of these three flow components.

X_i : is the individual driver of capital flows

X_i^2 : is the squared term of the individual driver of capital flows

ε_i : is the error term

Table 4.9. Summary of predictive marginal analysis for determinants of capital flows

Variables	Direct Investment	Portfolio Investment	Other Investment	Aggregate Investment
Domestic(Pull) Factors				
Domestic GDP Growth	Inverted U-shaped	Inverted U-shaped	Inverted U-shaped	Inverted U-shaped
Government Consumption Expenditure	Increasing	U-shaped	Increasing	Increasing
Gross Debt	Inverted U-shaped	Increasing	Inverted U-shaped	Inverted U-shaped
Inflation	Inverted U-shaped	Decreasing	Inverted U-shaped	Inverted U-shaped
Interest Rate Spread	Inverted U-shaped	Inverted U-shaped	Inverted U-shaped	Inverted U-shaped
Exchange Rate	Decreasing	U-shaped	U-shaped	U-shaped
Money Growth	Inverted U-shaped	Inverted U-shaped	Inverted U-shaped	Inverted U-shaped
Trade Openness	U-shaped	U-shaped	U-shaped	U-shaped
Financial Development	Inverted U-shaped	Inverted U-shaped	Inverted U-shaped	Inverted U-shaped
Institutional Quality	Increasing	Increasing	Increasing	Increasing

Global (Push) Factors

Commodity Prices	Inverted U-shaped	Inverted U-shaped	Inverted U-shaped	Inverted U-shaped
Global Liquidity	Inverted U-shaped	Inverted U-shaped	Inverted U-shaped	Inverted U-shaped
Global GDP Growth	Decreasing	Decreasing	Decreasing	Decreasing
S&P 500 Returns	Inverted U-shaped	Inverted U-shaped	Inverted U-shaped	Inverted U-shaped
Bond Yield	Decreasing	Inverted U-shaped	Inverted U-shaped	Inverted U-shaped
Global Volatility Index (VIX)	U-shaped	U-shaped	U-shaped	U-shaped

Note: This table reports the summary of actual estimation of predictive margins for each type for capital flow and all the drivers based on the marginal plots presented in appendix for reference.

The predictive margins are obtained by estimating the above regression equation for each type of capital flow and for each factor variable and using the margins command in STATA 16 software. The marginal plots are obtained are presented in the following section. The marginal analysis plots reveal four types of formations namely, (a) A U-shaped formation: which implicates that at initial level we see a fall in the effect, however beyond a certain tipping point the association becomes positive. This implies transition from a negative to positive association. (b) An Inverted U-shaped formation: it implies a transition from positive to negative association. (c) An increasing trend (denoted by a line formation moving from left to right in an increasing pattern): this implies that there exists a positive increasing association. Lastly (d) a decreasing trend (denoted by a line formation moving from left to right in a decreasing pattern): this implies that there exists a negative association.

The predictive marginal analysis helps to draw insightful inferences on the association of capital flows with its drivers. The predictive margins are based on the key driver and its squared term relying on the 95% confidence interval of the estimates. The empirics suggest that for the variable domestic GDP growth which is used as a proxy for economic development in the host country, there exist an inverted U-shaped association across all then types of capital flows. This suggest that domestic GDP growth can stimulate capital flows up to a certain point only beyond which any further growth can cause fall in the capital flows. The finding is consistent and follow the priori expectation that foreign investors seek underdeveloped markets in order to exploit resources by means of DI's while maximize returns via PI's and OI's. Thus, low economic growth rates are conducive to foreign capital while higher growth suggests higher development and conversely less attractive avenue for investment.

In the case of Government Consumption Expenditure, the variable implicates the government size and its spending for development. Interestingly throughout the empirical estimations the effects of this variable remains mixed across countries while the predictive margins provide further light on its implications. Only in the case of PI's we find a U-shaped relationship whereas for the rest types of flows i.e. DI's, OI's and AI's the result suggest an increasing association. This finding indicate that low government spending causes low inflows of PI's while higher government spending can bring in more PI's as higher government spending results in more development and thus financial markets are stimulated which can generate higher returns while, conversely an increasing association for the rest flows suggest that as governments spending increases the inflows also rises, creating an overall positive association between higher spending and higher capital inflows. As discussed earlier, the indebtedness resultant from the level of gross

debt can significantly influence the investment decisions of foreign investors. Empirics have argued that higher debt levels result in higher indebtedness and low credit ratings which together makes a country less attractive to foreign investments. Using the predictive margins, we find an increasing trend only for PI's while for the rest capital flows an inverted U-shaped association is plausible. Foreign investors generally consider to evaluate country's indebtedness before investment allocation, thus countries with disproportionately larger levels of debt are considered as vulnerable avenues and are often do not attract capital (Milesi-Ferretti & Tille, 2011). Therefore, the inverted U-shaped association implicate that countries within the safe levels of debt are presumed to be safer avenues with lower default risk and hence attract more of capital than others. The findings are consistent with other studies such as that of (Nier et al., 2014).

Inflation is one of the key macroeconomic indicator considered in various studies pertaining to growth and growth economics, several studies have accounted for inflation to be a significant driver of foreign capital flows as it directly relates to the macroeconomic policies. This study also tests for the relevance of inflation as a driver of foreign capital flows. The marginal analysis reveals an inverted U-shaped association of inflation with foreign capital flows, with only PI's showing a decreasing association. This results suggest that higher levels of inflation in the domestic markets deter inflows of capital. Higher levels of inflation correlate to weak macroeconomic fundamentals and instability, furthermore high inflation also affects the demand and hence distresses domestic consumption. Thus weak fundamentals with rising inflation can affect the attractiveness of a country for investments.

The real effective exchange rate connotes to the value of domestic currency against USD, a stable index is favourable while constant undulations can affect country BOP balances.

The empirical literature suggest that exchange rate appreciation is positively associated with capital flows, for instance (Dell'Erba & Reinhardt, 2015; Nier et al., 2014) suggest that higher REER is directly associated to higher capital inflows. The marginal analysis suggest that exchange rates have direct decreasing association with DI's while for other capital flows a U-shaped association is apparent. This finding is in line with the existing literature, a U-shaped association states that exchange rate appreciation cause more capital inflows particularly PI's and OI's, however gross DI's do not show similar association. Based on the standard portfolio assumption, foreign investors seek returns and hence capital flows absolutely have a positive association with interest rates. However, over the year several researchers have raised suspicions on the applicability of the assumption in real life, for instance (Arias-Rodríguez et al., 2016) who found a negative association of interest rates with capital flows. This puzzling findings relates to the Lucas paradox argument, interestingly our empirics also supports the Lucas paradox based on the inverted U-shaped association between interest rates and foreign capital flows. Higher levels of interest do not necessarily cause more foreign capital to flows in, this could be due to the difference in the fundamental factors such as technologies, factors of production, and government policies as well as capital market imperfections and hence we can rightly argue that rate of return is not the only sole consideration of foreign investors investing invest in a particular country. Additionally, the growth rate of broad money, which denotes money circulation show similar association as in the case of interest. For our main determinants from the pull side i.e. trade openness, financial development and institutional quality show consistent results across samples. The results suggest a U-shaped association for trade openness while an inverted U-shaped association for financial development. Interestingly, institutional quality throughout show a

consistently increasing association with capital inflows. These result argue that higher trade openness which denotes higher trade liberalization cause more capital to flows. Thus countries with relatively open economy attract more foreign capital than otherwise. Furthermore, financial development which relates to the financial markets and financial institutions attract more capital flows until a certain tipping point, beyond which we see a negative association. This relationship between financial development and capital flows specifically FDI's has been widely documented in the growing literature. For instance, (Bailliu, 2000; Boateng, Amponsah, & Annor Baah, 2017; Desbordes & Wei, 2017; Donaubauer, Neumayer, & Nunnenkamp, 2020) examined the effects of financial development on FDI inflows and found that although financial development boost FDI inflows and their effects, higher levels of financial development may not cause more FDI inflows. Interestingly, the institutional quality variable throughout show an increasing association with all types of capital flows. Higher institutional quality is associated with high levels if capital inflows in both advanced and emerging markets. This finding is consistent with the pervious empirical works such as that of (Baek & Song, 2016), (Byrne & Fiess, 2016a), (Hashimoto & Wacker, 2016), (Olaberriá, 2015), (Fratzscher, 2012), (Alfaro et al., 2007), (Mercado & Park, 2011). From the previous analysis it is quite evident that along with domestic (pull) factors, global (push) factors considerably matter for foreign capital flows. Using the marginal analysis further inferences on this association is achieved. The empirical results suggest that some of the key factors such as commodity prices, global liquidity, global returns and bond yield have a direct inverse association with foreign capital flows. This implicates that a higher level of commodity prices, global liquidity, global returns and bond yield do not bargain high foreign capital flows. Interestingly, these findings pin-points to the limitation of effects of this factors in

driving foreign capital flows. Furthermore, the marginal analysis suggests a decreasing association between foreign capital flows and global GDP growth rates. While, a U-shaped association amidst risk aversion and foreign capital flows reconfirms the initial findings of this study as well as the prevailing empirical findings that higher risk aversion is one of the most significant driver of foreign capital flows. This results are in line with the recent available literature for instance, (Arias-Rodríguez et al., 2016) and (Cerutti et al., 2019) who found that volatility in the financial markets is negatively associated with portfolio investments. Furthermore, (Forbes & Warnock, 2012) and (Baek & Song, 2016) who also suggest that global volatility is directly associated with extreme capital flows episodes. Thus the global risk factor particularly, financial market volatility is one of the crucial factor taken into consideration by foreign investors prior to investment.

CHAPTER - V

IMPACT OF FOREIGN CAPITAL FLOWS

ON ECONOMIC GROWTH

DO SPECIFIC FACTORS ENHANCE

THE EFFECTS?

5.1. INTRODUCTION

The key achievement of globalization is the free moment of capital across borders. According to the economic literature free moving capital is beneficial to all the recipients as it leads to efficient allocation of financial resources which can further raise productivity and economic welfare. The globalization waves enabled players to move large sums of money in fraction of seconds from one place to another, to say nearly anywhere on earth without much restrictions. Given the ease, certain questions arise on the impact of such capital flows that flows across the globe uninterruptedly:

a) Do these capital flows augment growth?

b) Are they effective in promoting development? Or otherwise and

c) Do capital flows destabilize the economic system of the recipient country?

Although the literature is vast, not much due attention has been given to these questions. These questions have important policy implications particularly to the developing economies. Therefore, I believe that it is most important with a policy induced motive to carry out this exercise of re-examining the effects of foreign capital flows on economic growth and development in the developing economies particularly in the post GFC era.

This chapter investigates on the role and impact of foreign capital flows namely, FDI, Remittances and Aid flows on economic growth in the developing economies controlling for various controls and using methodologies such as the GMM approach proposed by (Arellano & Bover, 1995; Roodman, 2009) and the threshold approach proposed by (Kremer, Bick, & Nautz, 2013) using a panel data of 62 developing economies from 1995 to 2019.

5.2. EMPIRICAL RESULTS AND DISCUSSION

5.2.1. Unit root test

Prior to estimating the empirical models in this study, panel based unit root tests is performed on all the variables using the Fisher-type unit root test as discussed in (Baltagi, 2005; Choi, 2001) to test for stationarity assumptions in the data. The test is adopted over other test particularly as it accepts balanced as well as unbalanced panels along with gaps. The Fisher-type unit root test is applied using the Augmented Dickey-Fuller (ADF) test. According to (Choi, 2001) the test is widely suitable and beneficial in many other terms, for instance the test applies for both finite as well as infinite samples, also the test treats stochastic as well as non-stochastic elements in the data. Moreover, the test can also accommodate panels with unit roots as well as without unit roots. The null hypothesis states that All panels contain unit roots, while the alternate hypothesis suggest at least one panel is stationary, a trend term is included to account for the trend stationarity and the stationarity test is based on the inverse normal (Z) statistics.

The results of the unit root test are presented in Table 3-2. The dependent and independent variables are having a small p-value suggesting a rejection of the null hypothesis and stationarity at level i.e. I (0) except, domestic savings, trade, debt, human capital, financial development index and index of institutional quality. However, the first differenced series of all the variables possess significant p-values, which indicate that all the variables follow the stationarity assumption to a maximum of order one integration i.e. I (1) but not order two i.e. I (2). Moreover, as discussed in (Choi, 2001), in the Fisher-type unit root tests, the Z test possess superior performance relative to the other tests like (L*, P, Pm). Therefore, the author suggested the use of inverse normal (Z) statistic is suitable in the empirical work.

Post confirmation of stationarity, the empirical analysis based on the model proposed in

the study are presented in detail in the following section.

Table 5.1. Panel Unit Root test

	Level - I(0)		Differenced - I(1)	
Fisher-type unit-root test				
	Statistics	*p-value*	*Statistics*	*p-value*
Dependent Variable				
Real GDP growth rate	-13.3722***	0.0000	-34.6409***	0.0000
Independent variables				
Capital Flows				
Foreign Direct Investment	-9.5176***	0.0000	-29.2477***	0.0000
Remittances	-4.6421***	0.0000	-20.7336***	0.0000
Official development assistance	-4.7866***	0.0000	-25.4596***	0.0000
Control Variables				
Inflation	-15.2567***	0.0000	-38.6874***	0.0000
Govt. spending	-2.2399***	0.0125	-19.7294***	0.0000
Domestic savings	-0.5396	0.2948	-19.1688***	0.0000
Fixed capital formation	-5.1286***	0.0000	-20.6781***	0.0000
Natural resource rent	-3.0673***	0.0011	-21.9344***	0.0000
Trade	1.1673	0.8785	-21.1826***	0.0000
Debt	0.5337	0.7032	-7.4827***	0.0000
Human capital	1.3753	0.9155	-3.0703***	0.0000
Financial development index	3.2201	0.9994	-9.3396***	0.0000
Institutional quality index	-0.1071	0.4574	-22.4537***	0.0000

Note:
Fisher-type unit-root test using augmented Dickey-Fuller (ADF): Ho: All panels contain
unit roots; Ha: At least one panel is stationary; a trend term is included to account for
the trend stationarity; the stationarity test is based on the inverse normal (Z) statistics.
*, **, *** are significant levels at 10%, 5%, 1% respectively.

Source: Authors Computation
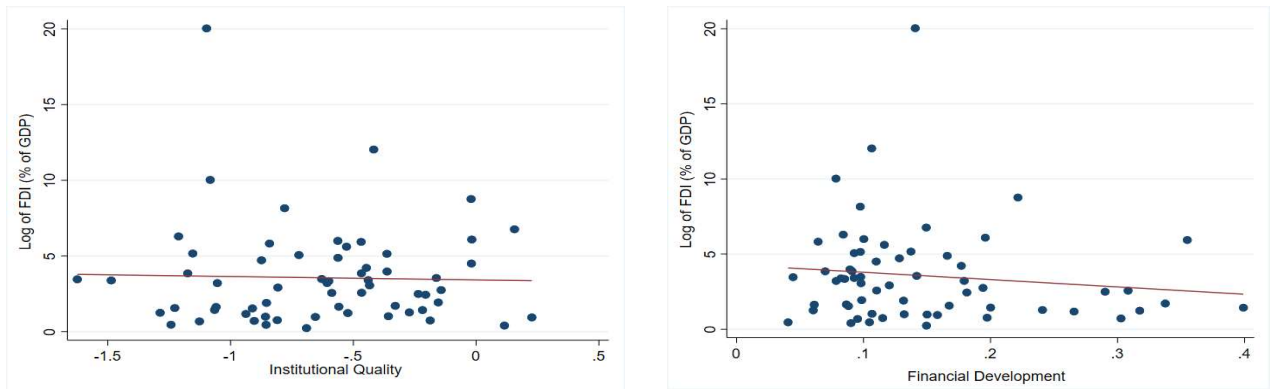
Figure 1.7: FDI, institutional quality and financial development

Figure 1.8: Remittances, institutional quality and financial development

Figure 1.9: Aid, institutional quality and financial development

Notes: Figure 1.7, 1.8 and 1.9 shows a positive relationship between the measure of institutional quality, financial development and foreign capital flows. The horizontal line represents the measure of institutional quality, the vertical line represents the natural logarithm of foreign capital inflows as a percentage of GDP.

5.2.2. Estimation Results

The empirical results from the analysis of impact of foreign capital inflows on economic growth in developing and developed economies have been presented in this section. The sample covers a total of 62 countries (see Table A3-1) over the period of 1995 to 2019. The empirical analysis is carried out in three phases of estimations, the first phase estimation is carried out focusing on the raw effects of foreign capital flows on economic growth across country specifications. In the second phase the analysis narrows down to examining the role of specific factors such as financial development and institutional quality on the effects of foreign capital flows on economic growth. Finally, in the third stage the study examines the presence of nonlinear association and the impact of foreign capital flows on economic growth based on local conditions in the recipient countries which are referred to as factors of absorptive capacity. The following sections offer detailed discussions on the empirical findings.

The estimates of the present study are based on the GMM approach proposed by (Arellano & Bover, 1995; Roodman, 2009). The approach is superior to the basic OLS and 2SLS approach widely adopted in most of the previous studies examining the impact of foreign capital flows on economic growth. A different and unique approach in estimation is also employed to simultaneously assess the robustness of the empirical results derived from the study. The baseline estimates provide a detailed analysis of the standalone effect of foreign capital flows namely, FDI, Remittances and Aid flows on economic growth as well as conditional effect based on the quality of institutions and financial development in the host country. Table 5.2 presents the empirical results for FDI and its association with economic growth in developing countries. The empirical modelling is based on the bottom up approach where in each variable i.e. key variable

FDI and the controls are entered in the main model subsequently until the entire model is built in Column (11). The results suggest throughout that the coefficient of FDI variable is consistently positive and significant across all the specifications. A positive and highly significant coefficient of 0.1155 indicate that for every 1-point increase in FDI, GDP of the host country rises by proportionate 0.1155 points. This indicate a strong positive impact of FDI on economic growth in the host country. The baseline results are found to be consistent with the extant literature on FDI-Growth nexus.

Table 5.3 presents the empirical results for Remittances and its association with economic growth in developing countries. The empirical modelling is based on the bottom up approach where in each variable i.e. key variable Remittances and the controls are entered in the main model subsequently until the entire model is built in Column (11). The results suggest throughout that the coefficient of Remittances variable is consistently positive and significant across all the specifications. A positive and highly significant coefficient of 0.0115 indicate that for every 1-point increase in Remittances, GDP of the host country rises by proportionate 0.0115 points. This indicate a strong positive impact of Remittances on economic growth in the host country. Although the magnitude of the impact is not as strong as FDI however, the baseline results are found to be consistent with the extant literature on Remittances -Growth nexus. Table 5.4 presents the empirical results for Aid and its association with economic growth in developing countries. The empirical modelling is based on the bottom up approach where in each variable i.e. key variable Aid and the controls are entered in the main model subsequently until the entire model is built in Column (11). The results suggest throughout that the coefficient of Aid variable does not offer consistently positive and significant effect across all the specifications. However, a positive and highly significant coefficient of 0.1305 indicate

that for every 1-point increase in Remittances, GDP of the host country rises by proportionate 0.1305 points. This indicate a strong positive impact of Aid on economic growth in the host country. Interestingly the magnitude of the impact is much stronger as almost similar to FDI, the baseline results are found to be consistent with the extant literature on Aid - Growth nexus in the developing countries.

A look into the magnitude of the impact suggest that both financial development and institutional quality are highly related to economic growth. The findings are in line with the pre-existing literature (Arestis & Demetriades, 1997; Butkiewicz & Yanikkaya, 2006; Calderón & Liu, 2003; Catrinescu et al., 2009; De Gregorio & Guidotti, 1995; Khalifa Al-Yousif, 2002; Khan & Senhadji, 2003; Knack & Keefer, 1995; Mauro, 1995; Ram, 2004; Redek & Sušjan, 2016)

The baseline estimates also extend to examine the role of Institutional quality and the level of financial development in the host country on the FDI, Remittance & Aid – Growth nexus. Table 5.5 and 5.6 presents the empirical results on the role of institutional quality and financial development in the FDI and economic growth association. Six variables of institutional quality i.e. control of corruption, government effectiveness, regulatory quality, political stability, rule of law and voice and accountability are used to construct the overall variable of institutional quality. The financial development indicator is sourced from the IMF, (Svirydzenka, 2016), which comprises of financial institutions and financial markets as sub indicators. The results for the overall quality index as well as for the individual variables of institutional quality is presented in Table 5.5. The empirical results based on the interaction factor variable clearly indicate a positive effect on economic growth. Similarly, when we look into the individual factors only variables such as political stability, rule of law and voice and accountability show a negative and

significant effect while rest variables are found to be insignificant. In essence focusing on the key overall quality of institutions a positive and significant coefficient of 0.0944 is suggestive of the fact that institutional quality in the host country matter to FDIs and also it enhances the effect of FDI on economic growth specifically in developing countries.

The results from Table 5.6 presents the role of financial development and its sub indicators on the FDI-growth nexus. The empirical results strongly indicate towards the positive and significant role played by financial development in enhancing the effects of FDI on economic growth in the host country. A strong and significant coefficient value of 0.5503 for the overall financial development suggest that for every 1-point rise in financial development and FDI, Economic growth is found to be having a positive simulation and a rise of 0.55 points. Similarly, the results of financial institutions and financial market development also supports the theory and findings of the previous estimates in the study. The empirical methodology is also replicated for examining the roles of institutions and financial development in the remittance – growth nexus for the sample of developing countries. The results for the overall quality index as well as for the individual variables of institutional quality is presented in Table 5.7. The empirical results based on the interaction factor variable clearly indicate a positive effect on economic growth. Similarly, when we look into the individual factors most of the sub variables such as control of corruption, government effectiveness, regulatory quality, rule of law and voice and accountability show a positive and significant effect. In essence focusing on the key overall quality of institutions a positive and significant coefficient of 0.0313 is suggestive of the fact that institutional quality in the host country enhances the effect of remittances on economic growth specifically in developing countries.

The results from Table 5.8 presents the role of financial development and its sub indicators on the remittance-growth nexus. The empirical results strongly indicate towards the positive and significant role played by financial development in enhancing the effects of remittance receipts on economic growth in the host country. A strong and significant coefficient value of 0.3675 for the overall financial development suggest that for every 1-point rise in financial development and receipts by way remittance, Economic growth is found to be having a positive simulation and a rise of 0.3675 points. Similarly, the results of financial institutions and financial market development also supports the theory and findings of the previous estimates in the study. Table 5.9 and 5.10 presents the a positive and significant effect of institutional quality and financial development in the aid-growth nexus in the developing economies. Empirical results suggest that for every 1-point increase in aid and institutional interaction, the economic growth rises by 0.1428 points while a rise of 0.4322 is evident in the case of financial development.

The rest of the coefficient of the control variables used in the study are very much as expected. The lagged value of the coefficient of real GDP per capital growth which is our dependent variables is found to be positive and significant which suggest that economies that grow faster in the preceding years tend to grow somewhat in a similar manner in the following year as well. The coefficient of trade, natural rent and savings are all positive and significant while inflation is found to be negatively associated with economic growth. The results from the explanatory variables in our model are all according to the expectations following the existing literature.

Table 5.2. FDI & Economic Growth Baseline Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Gdpg (-1)	0.2073***	0.2110***	0.2109***	0.2020***	0.1929***	0.1932***	0.1953***	0.2004***	0.1721***	0.1686***	0.1677***
	(0.0182)	(0.0186)	(0.0186)	(0.0183)	(0.0178)	(0.0186)	(0.0186)	(0.0194)	(0.0203)	(0.0206)	(0.0201)
FDI	**0.1168*****	**0.1160*****	**0.1159*****	**0.1199*****	**0.0889*****	**0.1011*****	**0.1366*****	**0.1359*****	**0.1231*****	**0.1201*****	**0.1155*****
	(0.0113)	(0.0114)	(0.0116)	(0.0130)	(0.0139)	(0.0141)	(0.0152)	(0.0153)	(0.0153)	(0.0155)	(0.0156)
Inf		0.0002	-0.0000	0.0005	0.0011	0.0025***	0.0019**	0.0022**	0.0055***	0.0054***	0.0055***
		(0.0009)	(0.0009)	(0.0009)	(0.0008)	(0.0008)	(0.0008)	(0.0009)	(0.0011)	(0.0011)	(0.0010)
Gexp			-0.0106	-0.0027	-0.0282*	-0.0253	-0.0025	-0.0066	-0.0414**	-0.0498***	-0.0502***
			(0.0135)	(0.0160)	(0.0161)	(0.0161)	(0.0165)	(0.0170)	(0.0171)	(0.0173)	(0.0177)
Saving				0.0112*	-0.0046	-0.0002	0.0009	-0.0031	-0.0262***	-0.0292***	-0.0290***
				(0.0062)	(0.0064)	(0.0064)	(0.0064)	(0.0076)	(0.0081)	(0.0084)	(0.0084)
Gfc					0.0494***	0.0473***	0.0507***	0.0504***	0.0400**	0.0393**	0.0387**
					(0.0126)	(0.0131)	(0.0141)	(0.0142)	(0.0160)	(0.0161)	(0.0162)
Nrent						-0.0184*	-0.0121	-0.0052	0.0166	0.0329*	0.0255
						(0.0100)	(0.0113)	(0.0135)	(0.0127)	(0.0180)	(0.0184)
Trade							-0.0118***	-0.0141***	-0.0120**	-0.0137***	-0.0098*
							(0.0044)	(0.0050)	(0.0050)	(0.0053)	(0.0054)
HC								0.0534	0.0694	0.0724	0.0045
								(0.0555)	(0.0576)	(0.0576)	(0.0652)
Debt									-0.0172***	-0.0162***	-0.0162***
									(0.0025)	(0.0024)	(0.0025)
Inst.										0.6296	0.3873
										(0.4280)	(0.4522)
FD											3.3996***
											(1.1037)
Constant	3.1053***	3.0981***	3.2443***	3.0113***	2.6406***	2.6827***	2.9227***	2.8449***	4.3915***	4.9194***	4.5127***
	(0.1278)	(0.1290)	(0.2339)	(0.2909)	(0.3546)	(0.3450)	(0.3535)	(0.3610)	(0.4732)	(0.6330)	(0.6698)
Observations	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488
No. of Countries	62	62	62	62	62	62	62	62	62	62	62
No. of Instruments	31	31	31	31	31	31	31	31	31	32	33
AR(1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR(2)	0.7470	0.7290	0.7360	0.8040	0.9400	0.9820	0.8580	0.8400	0.8290	0.7930	0.7780
Sargan test	0.0130	0.0100	0.0070	0.0080	0.0110	0.0100	0.0330	0.0240	0.4840	0.4740	0.5800
Hansen test	0.1130	0.1030	0.0830	0.0590	0.1130	0.0910	0.0850	0.0780	0.2370	0.2780	0.5150

Notes: GMM estimation of the dynamic panel data models: dependent variable: real GDP growth (1995–2019). ***; **; * Indicates a significance at a 1%, 5% and 10% confidence interval. The reported standard errors in parenthesis based on (Windmeijer, 2005) procedure. The values reported for AR (1) and AR (2) are the p-values for the first and second-order auto-correlated disturbances in the first difference equations. The value for Hansen J-test and Sargan test reports the p-value for the null hypothesis of instrument validity.

Table 5.3. Remittances & Economic Growth Baseline Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Gdpg (-1)	0.2475***	0.2466***	0.2463***	0.2458***	0.2287***	0.2297***	0.2278***	0.2270***	0.1998***	0.1889***	0.1856***
	(0.0161)	(0.0170)	(0.0169)	(0.0171)	(0.0181)	(0.0183)	(0.0189)	(0.0202)	(0.0198)	(0.0213)	(0.0213)
Rem	**0.0182**	**0.0137**	**0.0130**	**0.0334****	**0.0354****	**0.0474*****	**0.0575*****	**0.0962*****	**0.0216***	**0.0120***	**0.0115***
	(0.0116)	(0.0121)	(0.0121)	(0.0140)	(0.0152)	(0.0165)	(0.0179)	(0.0236)	(0.0143)	(0.0129)	(0.0127)
Inf		-0.0012	-0.0022	-0.0009	0.0010	-0.0006	-0.0022	-0.0015	0.0041**	0.0041**	0.0046***
		(0.0014)	(0.0016)	(0.0014)	(0.0012)	(0.0014)	(0.0017)	(0.0016)	(0.0018)	(0.0016)	(0.0016)
Gexp			-0.0204	-0.0172	-0.0568***	-0.0546***	-0.0458***	-0.0355**	-0.0703***	-0.0799***	-0.0669***
			(0.0128)	(0.0147)	(0.0140)	(0.0156)	(0.0171)	(0.0180)	(0.0172)	(0.0175)	(0.0191)
Saving				0.0089	-0.0145***	-0.0146**	-0.0197***	-0.0101	-0.0422***	-0.0451***	-0.0414***
				(0.0068)	(0.0056)	(0.0059)	(0.0072)	(0.0079)	(0.0067)	(0.0069)	(0.0077)
Gfc					0.0767***	0.0704***	0.0798***	0.0748***	0.0777***	0.0810***	0.0779***
					(0.0115)	(0.0129)	(0.0151)	(0.0154)	(0.0177)	(0.0176)	(0.0180)
Nrent						0.0206	0.0298**	0.0328**	0.0268*	0.0404**	0.0373**
						(0.0126)	(0.0134)	(0.0142)	(0.0147)	(0.0167)	(0.0160)
Trade							-0.0084*	-0.0078*	-0.0039	-0.0048	-0.0029
							(0.0046)	(0.0045)	(0.0051)	(0.0051)	(0.0050)
HC								-0.0524	0.0072	0.0019	-0.0587
								(0.0451)	(0.0414)	(0.0413)	(0.0468)
Debt									-0.0196***	-0.0184***	-0.0196***
									(0.0029)	(0.0029)	(0.0030)
Inst.										0.6566	0.3511
										(0.4187)	(0.4541)
FD											3.3007***
											(1.1420)
Constant	3.2907***	3.3290***	3.6085***	3.3310***	2.5956***	2.4798***	2.7100***	2.5417***	4.2627***	4.7816***	4.2421***
	(0.1492)	(0.1486)	(0.2303)	(0.3107)	(0.3662)	(0.3980)	(0.4215)	(0.4545)	(0.5182)	(0.6395)	(0.6945)
Observations	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488
No. of Countries	62	62	62	62	62	62	62	62	62	62	62
No. of Instruments	31	31	31	31	31	31	31	31	31	32	33
AR(1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR(2)	0.5460	0.5340	0.5470	0.5600	0.7420	0.6940	0.6580	0.6570	0.9250	0.9870	0.9560
Sargan test	0.0310	0.0250	0.0180	0.0180	0.1410	0.1220	0.1390	0.1270	0.9550	0.9550	0.9820
Hansen test	0.0740	0.0580	0.0620	0.0520	0.1020	0.0890	0.0780	0.0610	0.1110	0.1510	0.3220

Notes: GMM estimation of the dynamic panel data models: dependent variable: real GDP growth (1995–2019). ***; **; * Indicates a significance at a 1%, 5% and 10% confidence interval. The reported standard errors in parenthesis based on (Windmeijer, 2005) procedure. The values reported for AR (1) and AR (2) are the p-values for the first and second-order auto-correlated disturbances in the first difference equations. The value for Hansen J-test and Sargan test reports the p-value for the null hypothesis of instrument validity.

Table 5.4. Aid & Economic Growth Baseline Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Gdpg (-1)	0.2409***	0.2393***	0.2361***	0.2279***	0.2046***	0.2035***	0.2034***	0.2027***	0.1881***	0.1917***	0.1852***
	(0.0145)	(0.0188)	(0.0188)	(0.0194)	(0.0185)	(0.0187)	(0.0197)	(0.0191)	(0.0180)	(0.0177)	(0.0177)
Aid	**-0.0159**	**-0.0103**	**-0.0036**	**0.0227**	**0.0320**	**0.0503**	**0.0493**	**0.1326*****	**0.1305*****	**0.1253*****	**0.1305*****
	(0.0114)	(0.0146)	(0.0151)	(0.0244)	(0.0229)	(0.0340)	(0.0355)	(0.0424)	(0.0462)	(0.0457)	(0.0392)
Inf		-0.0019	-0.0027	-0.0039*	-0.0026*	-0.0020	-0.0029*	-0.0028**	0.0028	0.0025	0.0020
		(0.0017)	(0.0018)	(0.0020)	(0.0015)	(0.0014)	(0.0016)	(0.0014)	(0.0021)	(0.0019)	(0.0018)
Gexp			-0.0223*	-0.0254**	-0.0816***	-0.0824***	-0.0789***	-0.0886***	-0.1027***	-0.1010***	-0.0948***
			(0.0134)	(0.0124)	(0.0138)	(0.0143)	(0.0161)	(0.0170)	(0.0180)	(0.0179)	(0.0185)
Saving				0.0098	-0.0178**	-0.0119	-0.0129	0.0042	-0.0090	-0.0099	-0.0098
				(0.0094)	(0.0085)	(0.0107)	(0.0109)	(0.0121)	(0.0130)	(0.0127)	(0.0111)
Gfc					0.0812***	0.0824***	0.0859***	0.0913***	0.0871***	0.0877***	0.0901***
					(0.0123)	(0.0137)	(0.0147)	(0.0151)	(0.0184)	(0.0174)	(0.0172)
Nrent						-0.0115	-0.0094	-0.0156	-0.0142	-0.0191	-0.0247
						(0.0159)	(0.0158)	(0.0173)	(0.0208)	(0.0229)	(0.0223)
Trade							-0.0028	-0.0081*	-0.0058	-0.0051	-0.0044
							(0.0036)	(0.0048)	(0.0053)	(0.0050)	(0.0045)
HC								0.1101**	0.1195**	0.1187**	0.0673
								(0.0483)	(0.0543)	(0.0547)	(0.0502)
Debt									-0.0147***	-0.0147***	-0.0137***
									(0.0030)	(0.0027)	(0.0027)
Inst.										-0.2857	-0.5850
										(0.3514)	(0.3971)
FD											3.5647***
											(1.2481)
Constant	3.4438***	3.4310***	3.6731***	3.4852***	2.8726***	2.7453***	2.8161***	1.9082***	2.9207***	2.7434***	2.0899***
	(0.1538)	(0.1572)	(0.2140)	(0.3398)	(0.3175)	(0.3525)	(0.3511)	(0.4616)	(0.6321)	(0.7021)	(0.7457)
Observations	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488
No. of Countries	62	62	62	62	62	62	62	62	62	62	62
No. of Instruments	31	31	31	31	31	31	31	31	31	32	33
AR(1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR(2)	0.5940	0.5740	0.6070	0.6430	0.8600	0.8740	0.8530	0.8360	0.9360	0.9790	0.9440
Sargan test	0.0030	0.0030	0.0020	0.0020	0.0180	0.0130	0.0130	0.0110	0.5680	0.5400	0.6600
Hansen test	0.1320	0.1050	0.1300	0.1320	0.3820	0.3280	0.2920	0.3350	0.2750	0.2720	0.4040

Notes: GMM estimation of the dynamic panel data models: dependent variable: real GDP growth (1995–2019). ***; **; * Indicates a significance at a 1%, 5% and 10% confidence interval. The reported standard errors in parenthesis based on (Windmeijer, 2005) procedure. The values reported for AR (1) and AR (2) are the p-values for the first and second-order auto-correlated disturbances in the first difference equations. The value for Hansen J-test and Sargan test reports the p-value for the null hypothesis of instrument validity.

Table 5.5. FDI & Institutional Quality – Interaction Effect

	(1) Overall Institutional Quality	(2) Control of Corruption (CC)	(3) Government Effectiveness (GE)	(4) Political Stability & Absence of Violence (PSAV)	(5) Regulatory Quality (RQ)	(6) Rule of Law (ROL)	(7) Voice and Accountability (VA)
Gdpg (-1)	0.1973***	0.1976***	0.1881***	0.1957***	0.1941***	0.1988***	0.1975***
	(0.0090)	(0.0088)	(0.0085)	(0.0094)	(0.0076)	(0.0096)	(0.0098)
FDI	0.0611***	0.1574***	0.1338***	0.0453***	0.1198***	0.0285	0.1756***
	(0.0224)	(0.0191)	(0.0369)	(0.0120)	(0.0194)	(0.0246)	(0.0102)
Inst.	0.3544	0.1165	0.9639***	0.3243***	0.4293	0.3325*	-0.7604***
	(0.3097)	(0.2669)	(0.2260)	(0.1085)	(0.3019)	(0.1989)	(0.2189)
FDI x Inst.	**0.0944***	**0.0372**	**0.0072**	**-0.1938***	**-0.0039**	**-0.1173***	**0.1224***
	(0.0302)	(0.0275)	(0.0332)	(0.0229)	(0.0194)	(0.0261)	(0.0217)
Inf	0.0045***	0.0039***	0.0037***	0.0057***	0.0042***	0.0047***	0.0035***
	(0.0004)	(0.0004)	(0.0003)	(0.0006)	(0.0004)	(0.0004)	(0.0004)
Gexp	-0.0241***	-0.0294***	-0.0383***	-0.0222***	-0.0259***	-0.0258***	-0.0276***
	(0.0079)	(0.0070)	(0.0072)	(0.0083)	(0.0075)	(0.0072)	(0.0081)
Saving	-0.0063	-0.0078**	-0.0200***	-0.0040	-0.0106***	-0.0063	-0.0105***
	(0.0044)	(0.0036)	(0.0048)	(0.0050)	(0.0037)	(0.0044)	(0.0032)
Gfc	0.0381***	0.0421***	0.0381***	0.0289***	0.0438***	0.0378***	0.0401***
	(0.0079)	(0.0082)	(0.0083)	(0.0082)	(0.0087)	(0.0079)	(0.0080)
Nrent	-0.0061	-0.0041	0.0179**	-0.0161***	0.0049	-0.0084	-0.0213**
	(0.0091)	(0.0079)	(0.0070)	(0.0061)	(0.0092)	(0.0072)	(0.0089)
Trade	-0.0059**	-0.0065**	-0.0084***	-0.0045	-0.0071**	-0.0051*	-0.0029
	(0.0028)	(0.0028)	(0.0029)	(0.0029)	(0.0028)	(0.0027)	(0.0031)
HC	-0.0090	-0.0119	-0.0211	0.0126	-0.0138	-0.0080	-0.0310
	(0.0245)	(0.0258)	(0.0267)	(0.0244)	(0.0267)	(0.0246)	(0.0235)
Debt	-0.0136***	-0.0128***	-0.0131***	-0.0196***	-0.0122***	-0.0140***	-0.0132***
	(0.0011)	(0.0010)	(0.0010)	(0.0013)	(0.0010)	(0.0011)	(0.0008)
Constant	4.0634***	3.9031***	4.8711***	4.2755***	4.0303***	4.0884***	3.5750***
	(0.3087)	(0.2875)	(0.3036)	(0.2607)	(0.3279)	(0.2574)	(0.2377)
Observations	1,488	1,488	1,488	1,488	1,488	1,488	1,488
No. of Countries	62	62	62	62	62	62	62
No. of Instruments	58	58	58	58	58	58	58
AR (1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR (2)	0.9300	0.8810	0.9520	0.8440	0.9300	0.9140	0.8650
Sargan Test	0.4870	0.4520	0.5522	0.6950	0.4720	0.5020	0.4220
Hansen Test	0.3730	0.3740	0.3390	0.3390	0.3930	0.3770	0.3890

Notes: GMM estimation of the dynamic panel data models: dependent variable: real GDP growth (1995–2019). ***; **; * Indicates a significance at a 1%, 5% and 10% confidence interval. The reported standard errors in parenthesis based on (Windmeijer, 2005) procedure. The values reported for AR (1) and AR (2) are the p-values for the first and second-order auto-correlated disturbances in the first difference equations. The value for Hansen J-test and Sargan test reports the p-value for the null hypothesis of instrument validity.

Source: Researchers Computation using STATA

Table 5.6. FDI & Financial Development– Interaction Effect

	(1) Overall Financial Development	(2) Financial Institutions Development	(3) Financial Market Development
Gdpg (-1)	0.2017***	0.1916***	0.1981***
	(0.0082)	(0.0081)	(0.0073)
FDI	0.0247	0.0492***	-0.0356**
	(0.0196)	(0.0151)	(0.0153)
FD	1.3464	0.0630	-3.8484***
	(0.9359)	(0.6564)	(1.2644)
FDI x FD	**0.5503***	**0.2319***	**2.3713***
	(0.1333)	(0.0678)	(0.1933)
Inf	0.0040***	0.0042***	0.0014***
	(0.0005)	(0.0004)	(0.0004)
Gexp	-0.0282***	-0.0327***	-0.0233***
	(0.0070)	(0.0070)	(0.0085)
Saving	-0.0182***	-0.0159***	-0.0107***
	(0.0037)	(0.0035)	(0.0034)
Gfc	0.0399***	0.0453***	0.0459***
	(0.0074)	(0.0078)	(0.0094)
Nrent	0.0046	0.0052	-0.0007
	(0.0059)	(0.0060)	(0.0062)
Trade	-0.0084***	-0.0077***	-0.0091***
	(0.0023)	(0.0026)	(0.0032)
HC	-0.0310	-0.0091	-0.0060
	(0.0283)	(0.0269)	(0.0278)
Debt	-0.0136***	-0.0131***	-0.0127***
	(0.0010)	(0.0009)	(0.0014)
Constant	4.0436***	3.9815***	4.2044***
	(0.2531)	(0.2392)	(0.2506)
Observations	1,488	1,488	1,488
No. of Countries	62	62	62
No. of Instruments	59	59	59
AR (1)	0.0000	0.0000	0.0000
AR (2)	0.7800	0.9080	0.5990
Sargan Test	0.5850	0.4450	0.7540
Hansen Test	0.7500	0.7170	0.5400

Notes: GMM estimation of the dynamic panel data models: dependent variable: real GDP growth (1995–2019).

***; **; * Indicates a significance at a 1%, 5% and 10% confidence interval. The reported standard errors in parenthesis based on (Windmeijer, 2005) procedure. The values reported for AR (1) and AR (2) are the p-values for the first and second-order auto-correlated disturbances in the first difference equations. The value for Hansen J-test and Sargan test reports the p-value for the null hypothesis of instrument validity.

Source: Researchers Computation using STATA

Table 5.7. Remittances & Institutional Quality – Interaction Effect

	(1) Overall Institutional Quality	(2) Control of Corruption (CC)	(3) Government Effectiveness (GE)	(4) Political Stability & Absence of Violence (PSAV)	(5) Regulatory Quality (RQ)	(6) Rule of Law (ROL)	(7) Voice and Accountability (VA)
Gdpg (-1)	0.2030***	0.2026***	0.1908***	0.2081***	0.2024***	0.2020***	0.2076***
	(0.0094)	(0.0094)	(0.0098)	(0.0096)	(0.0089)	(0.0098)	(0.0096)
Remit.	-0.0110***	-0.0142***	-0.0485***	0.0188***	-0.0429***	-0.0270***	0.0196***
	(0.0038)	(0.0048)	(0.0047)	(0.0039)	(0.0061)	(0.0043)	(0.0066)
Inst.	-0.0025	0.0624	0.9668***	-0.0444	0.6096**	-0.2941*	-0.5497***
	(0.2137)	(0.1813)	(0.2132)	(0.1191)	(0.2414)	(0.1696)	(0.1331)
Remit. x Inst.	**0.0313***	**0.0289***	**0.0208**	**0.0068**	**0.0270**	**0.0348***	**0.0391***
	(0.0114)	(0.0081)	(0.0104)	(0.0068)	(0.0166)	(0.0089)	(0.0100)
Inf	0.0034***	0.0038***	0.0029***	0.0042***	0.0026***	0.0034***	0.0038***
	(0.0006)	(0.0007)	(0.0007)	(0.0006)	(0.0006)	(0.0007)	(0.0007)
Gexp	-0.0774***	-0.0809***	-0.0897***	-0.0641***	-0.0675***	-0.0784***	-0.0673***
	(0.0091)	(0.0104)	(0.0069)	(0.0074)	(0.0067)	(0.0087)	(0.0065)
Saving	-0.0455***	-0.0460***	-0.0621***	-0.0358***	-0.0421***	-0.0485***	-0.0398***
	(0.0032)	(0.0033)	(0.0034)	(0.0021)	(0.0041)	(0.0035)	(0.0024)
Gfc	0.0845***	0.0872***	0.0829***	0.0803***	0.0751***	0.0879***	0.0767***
	(0.0081)	(0.0085)	(0.0083)	(0.0072)	(0.0085)	(0.0079)	(0.0080)
Nrent	0.0182**	0.0158**	0.0391***	0.0187**	0.0328***	0.0070	0.0062
	(0.0090)	(0.0075)	(0.0088)	(0.0082)	(0.0079)	(0.0084)	(0.0089)
Trade	-0.0047*	-0.0044	-0.0075***	-0.0039	-0.0056*	-0.0038	-0.0025
	(0.0028)	(0.0027)	(0.0027)	(0.0027)	(0.0029)	(0.0025)	(0.0025)
HC	0.0599***	0.0645***	0.0634***	0.0072	0.0510**	0.0748***	0.0404
	(0.0218)	(0.0227)	(0.0212)	(0.0220)	(0.0223)	(0.0208)	(0.0253)
Debt	-0.0158***	-0.0158***	-0.0166***	-0.0154***	-0.0145***	-0.0168***	-0.0166***
	(0.0012)	(0.0012)	(0.0012)	(0.0009)	(0.0015)	(0.0013)	(0.0010)
Constant	4.1642***	4.1980***	5.5098***	3.8442***	4.5170***	4.0584***	3.7106***
	(0.2905)	(0.2697)	(0.3694)	(0.2384)	(0.3122)	(0.2569)	(0.2156)
Observations	1,488	1,488	1,488	1,488	1,488	1,488	1,488
No. of Countries	62	62	62	62	62	62	62
No. of Instruments	58	58	58	58	58	58	58
AR (1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR (2)	0.9050	0.9390	0.9800	0.8960	0.8860	0.9250	0.9040
Sargan Test	0.6090	0.6230	0.6660	0.6080	0.6240	0.5840	0.6100
Hansen Test	0.2630	0.2540	0.2810	0.2670	0.2690	0.2610	0.2480

Notes: GMM estimation of the dynamic panel data models: dependent variable: real GDP growth (1995–2019). ***; **; * Indicates a significance at a 1%, 5% and 10% confidence interval. The reported standard errors in parenthesis based on (Windmeijer, 2005) procedure. The values reported for AR (1) and AR (2) are the p-values for the first and second-order auto-correlated disturbances in the first difference equations. The value for Hansen J-test and Sargan test reports the p-value for the null hypothesis of instrument validity.

Source: Researchers Computation using STATA

Table 5.8. Remittances & Financial Development– Interaction Effect

	(1) Overall Financial Development	(2) Financial Institutions Development	(3) Financial Market Development
Gdpg (-1)	0.2035***	0.1991***	0.2101***
	(0.0086)	(0.0079)	(0.0098)
Remit.	-0.0871***	-0.1143***	-0.0002
	(0.0110)	(0.0110)	(0.0043)
FD	0.3419	-1.2758**	-0.0759
	(0.8998)	(0.5235)	(1.2451)
Remit. x FD	**0.3675***	**0.2819***	**0.5173***
	(0.0635)	(0.0340)	(0.1814)
Inf	0.0038***	0.0034***	0.0040***
	(0.0007)	(0.0006)	(0.0007)
Gexp	-0.0686***	-0.0776***	-0.0513***
	(0.0054)	(0.0057)	(0.0061)
Saving	-0.0480***	-0.0490***	-0.0365***
	(0.0020)	(0.0023)	(0.0022)
Gfc	0.0818***	0.0840***	0.0713***
	(0.0075)	(0.0069)	(0.0088)
Nrent	0.0173***	0.0120*	0.0238***
	(0.0064)	(0.0063)	(0.0066)
Trade	-0.0058**	-0.0047*	-0.0049**
	(0.0025)	(0.0027)	(0.0025)
HC	0.0313	0.0679***	-0.0152
	(0.0273)	(0.0245)	(0.0275)
Debt	-0.0161***	-0.0172***	-0.0152***
	(0.0013)	(0.0012)	(0.0013)
Constant	4.3575***	4.6868***	4.0018***
	(0.2373)	(0.2228)	(0.2192)
Observations	1,488	1,488	1,488
No. of Countries	62	62	62
No. of Instruments	59	59	59
AR (1)	0.0000	0.0000	0.0000
AR (2)	0.9000	0.9260	0.8540
Sargan Test	0.6790	0.6160	0.6580
Hansen Test	0.3550	0.2910	0.2980

Notes: GMM estimation of the dynamic panel data models: dependent variable: real GDP growth (1995–2019).

***; **; * Indicates a significance at a 1%, 5% and 10% confidence interval. The reported standard errors in parenthesis based on (Windmeijer, 2005) procedure. The values reported for AR (1) and AR (2) are the p-values for the first and second-order auto-correlated disturbances in the first difference equations. The value for Hansen J-test and Sargan test reports the p-value for the null hypothesis of instrument validity.

Source: Researchers Computation using STATA

Table 5.9. Aid & Institutional Quality– Interaction Effect

	(1) Overall Institutional Quality	(2) Control of Corruption (CC)	(3) Government Effectiveness (GE)	(4) Political Stability & Absence of Violence (PSAV)	(5) Regulatory Quality (RQ)	(6) Rule of Law (ROL)	(7) Voice and Accountability (VA)
Gdpg (-1)	0.1919***	0.1944***	0.1858***	0.1956***	0.1864***	0.1928***	0.1957***
	(0.0070)	(0.0077)	(0.0080)	(0.0083)	(0.0081)	(0.0072)	(0.0092)
Aid	0.2369***	0.2575***	0.4323***	0.0547*	0.3146***	0.2057***	0.0957***
	(0.0484)	(0.0452)	(0.0644)	(0.0282)	(0.0306)	(0.0368)	(0.0179)
Inst.	-1.5064***	-1.8033***	-1.3152***	0.0697	-0.8230***	-1.1479***	-0.4622*
	(0.4588)	(0.4716)	(0.4391)	(0.2299)	(0.2381)	(0.3402)	(0.2549)
Aid x Inst.	**0.1428***	**0.2007***	**0.3430***	**-0.0458*	**0.2173***	**0.0904***	**-0.0385**
	(0.0502)	(0.0547)	(0.0539)	(0.0239)	(0.0256)	(0.0327)	(0.0271)
Inf	0.0027***	0.0020***	0.0020***	0.0025***	0.0032***	0.0028***	0.0029***
	(0.0007)	(0.0005)	(0.0006)	(0.0007)	(0.0006)	(0.0007)	(0.0006)
Gexp	-0.0917***	-0.0998***	-0.1213***	-0.0473***	-0.0794***	-0.0846***	-0.0571***
	(0.0120)	(0.0135)	(0.0128)	(0.0121)	(0.0081)	(0.0101)	(0.0084)
Saving	-0.0018	-0.0046	-0.0250***	-0.0105*	-0.0130***	0.0000	-0.0083
	(0.0054)	(0.0042)	(0.0040)	(0.0054)	(0.0047)	(0.0054)	(0.0052)
Gfc	0.0913***	0.0898***	0.0974***	0.0731***	0.0848***	0.0930***	0.0744***
	(0.0047)	(0.0042)	(0.0085)	(0.0071)	(0.0062)	(0.0046)	(0.0065)
Nrent	-0.0214**	-0.0125	0.0286***	-0.0122	0.0013	-0.0237**	-0.0281***
	(0.0107)	(0.0089)	(0.0085)	(0.0085)	(0.0096)	(0.0105)	(0.0094)
Trade	-0.0056*	-0.0067**	-0.0091***	-0.0051*	-0.0053*	-0.0070**	-0.0032
	(0.0030)	(0.0030)	(0.0031)	(0.0029)	(0.0031)	(0.0031)	(0.0025)
HC	0.1378***	0.1197***	0.2268***	0.0750**	0.1664***	0.1362***	0.1025***
	(0.0298)	(0.0274)	(0.0377)	(0.0306)	(0.0327)	(0.0303)	(0.0285)
Debt	-0.0116***	-0.0101***	-0.0085***	-0.0168***	-0.0104***	-0.0122***	-0.0175***
	(0.0013)	(0.0012)	(0.0015)	(0.0010)	(0.0012)	(0.0013)	(0.0012)
Constant	1.2557**	1.2770***	1.0921*	3.1297***	1.3852***	1.4516***	2.5811***
	(0.5015)	(0.4091)	(0.6479)	(0.4096)	(0.3161)	(0.4009)	(0.2531)
Observations	1,488	1,488	1,488	1,488	1,488	1,488	1,488
No. of Countries	62	62	62	62	62	62	62
No. of Instruments	58	58	58	58	58	58	58
AR (1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AR (2)	0.9430	0.9060	0.9640	0.9690	0.8380	0.9850	0.9880
Sargan Test	0.2240	0.2330	0.4350	0.2190	0.3040	0.2170	0.2370
Hansen Test	0.2280	0.2370	0.3280	0.2350	0.2790	0.1980	0.2010

Notes: GMM estimation of the dynamic panel data models: dependent variable: real GDP growth (1995–2019). ***; **; * Indicates a significance at a 1%, 5% and 10% confidence interval. The reported standard errors in parenthesis based on (Windmeijer, 2005) procedure. The values reported for AR (1) and AR (2) are the p-values for the first and second-order auto-correlated disturbances in the first difference equations. The value for Hansen J-test and Sargan test reports the p-value for the null hypothesis of instrument validity.

Source: Researchers Computation using STATA

Table 5.10. Aid & Financial Development– Interaction Effect

	(1) Overall Financial Development	(2) Financial Institutions Development	(3) Financial Market Development
Gdpg (-1)	0.1887***	0.1837***	0.1906***
	(0.0069)	(0.0070)	(0.0078)
Aid	0.0551***	0.0787***	0.0795***
	(0.0149)	(0.0173)	(0.0132)
FD	2.6134***	0.4060	1.9621**
	(0.7605)	(0.6133)	(0.8331)
Aid x FD	**0.4322***	**0.2573***	**0.8352***
	(0.0990)	(0.0728)	(0.2554)
Inf	0.0026***	0.0028***	0.0029***
	(0.0005)	(0.0005)	(0.0006)
Gexp	-0.0552***	-0.0694***	-0.0419***
	(0.0089)	(0.0096)	(0.0097)
Saving	-0.0095**	-0.0020	-0.0063
	(0.0046)	(0.0049)	(0.0049)
Gfc	0.0721***	0.0786***	0.0639***
	(0.0064)	(0.0058)	(0.0058)
Nrent	0.0029	-0.0051	0.0001
	(0.0073)	(0.0079)	(0.0079)
Trade	-0.0087***	-0.0089***	-0.0085***
	(0.0030)	(0.0030)	(0.0031)
HC	0.0574*	0.1018***	0.0715**
	(0.0317)	(0.0321)	(0.0339)
Debt	-0.0146***	-0.0149***	-0.0161***
	(0.0011)	(0.0009)	(0.0010)
Constant	2.7315***	2.7108***	2.9935***
	(0.2401)	(0.2237)	(0.2506)
Observations	1,488	1,488	1,488
No. of Countries	62	62	62
No. of Instruments	59	59	59
AR (1)	0.0000	0.0000	0.0000
AR (2)	0.9790	0.9300	0.9110
Sargan Test	0.3000	0.2620	0.2940
Hansen Test	0.2840	0.2390	0.2620

Notes: GMM estimation of the dynamic panel data models: dependent variable: real GDP growth (1995–2019).

***; **; * Indicates a significance at a 1%, 5% and 10% confidence interval. The reported standard errors in parenthesis based on (Windmeijer, 2005) procedure. The values reported for AR (1) and AR (2) are the p-values for the first and second-order auto-correlated disturbances in the first difference equations. The value for Hansen J-test and Sargan test reports the p-value for the null hypothesis of instrument validity.

Source: Researchers Computation using STATA

The rest of the coefficient of the control variables used in the study are very much as expected. The lagged value of the coefficient of real GDP per capital growth which is our dependent variables is found to be positive and significant which suggest that economies that grow faster in the preceding years tend to grow somewhat in a similar manner in the following year as well. The coefficient of trade, natural rent and savings are all positive and significant while inflation is found to be negatively associated with economic growth. The results from the explanatory variables in our model are all according to the expectations following the existing literature.

An attempt is made to bridge the gap and contribute to the literature on effects of foreign capital flows on economic growth by examining the presence of nonlinear association and the impact of foreign capital flows on economic growth based on local conditions in the recipient countries which are referred to as factors of absorptive capacity. For instance, several studies such as (Azman-Saini, Baharumshah, & Law, 2010; Azman-Saini, Law, & Ahmad, 2010; Brahim & Rachdi, 2014; Chen & Quang, 2014; Jude & Levieuge, 2017) examined specifically the effects of FDIs on economic growth based on factors such as institutional quality, financial development and so on.

Thus in order to fill these gaps with new insights into the nonlinear effect of foreign capital flows on economic growth conditional on two key absorptive factors namely development of local financial markets and institutional quality in the emerging economies, we adopt the dynamic panel threshold model proposed by (Kremer, Bick, & Nautz, 2013).

The threshold methodology is originally based on the study of (Hansen, 1999) which has been further improved by (Caner & Hansen, 2004) which allows for GMM type estimators to correct the problem of endogeneity. However, one of the main problem in

this models is concerned to the manner in which country fixed effects are eliminated without violating the underlying assumptions of both the models, see (Hansen, 2000).

For instance by first differencing the standard fixed effects it may induce serial correlation in the transformed error terms, hence, the dynamic panel threshold model proposed by (Kremer et al., 2013) solves this problem by using forward orthogonal transformation as suggested by (Arellano & Bover, 1995).

Thus in this study we adopt the superior method proposed by (Kremer et al., 2013) to examine the impact of different types of foreign capital flows on economic growth in emerging economies conditioned on local absorptive capacity in terms of financial development and institutional quality.

The empirical results presented in Table 5.11 to Table 5.19 relates to the threshold model adopted to assess the non-linearity role performed by institutional quality and financial development in the foreign capital and economic growth nexus based on the (Kremer et al., 2013).

The study models the estimates by measuring institutional quality and financial development as the threshold variables while, the foreign capital flows representing FDI, remittances and aid are modelled as regime dependent variables. In essence the study tries to assess if higher and lower regimes of institutional quality and financial development make the effect of foreign capital on economic growth vary. The first row in Table 5.11 to Table 5.19 displays the estimated threshold of institutional quality and financial development corresponding to 95% confidence intervals.

Table 5.11. FDI & Economic Growth – Threshold for Overall Institutional Quality

	Model (1)
	Overall Institutional Quality
Estimated threshold ($\hat{\gamma}$)	**-1.3400**
95% Confidence Interval	[-1.4600 ~ -1.2700]
Impact of capital flow	
$\hat{\beta}_1$	**-0.3996***
	(0.1483)
$\hat{\beta}_2$	**0.5268***
	(0.0849)
Impact of covariates	
Gdpg (-1)	-0.4589***
	(0.0222)
Inf	0.0110*
	(0.0066)
Gexp	0.4382***
	(0.1597)
Saving	0.0916**
	(0.0409)
Gfc	-0.7045***
	(0.0889)
Nrent	0.2074***
	(0.0490)
Trade	0.1134***
	(0.0221)
HC	-1.2803***
	(0.3966)
Debt	0.0022
	(0.0135)
Constant	10.2668***
	(2.3153)
Obs.	1,488
No. of countries	62
No. of Instruments	47
Sargan test $\varkappa^2$	39.8683
p-value	0.2625

Notes: Column 1 shows the coefficient from regression and standard errors are in parentheses. Institutional Quality index is used as the threshold variables. The point estimates of the thresholds and the corresponding 95% confidence intervals (C.I.) are reported in the first two rows respectively. The regime dependent marginal effects of foreign capital flows (FDI) on economic growth are denoted by $\hat{\beta}_1$ and $\hat{\beta}_2$. ***; **; * indicate significance at the 1%, 5% and 10% level, respectively.

Source: Researchers Computation using STATA

Table 5.12. FDI & Economic growth – Threshold for Sub indicators of Institutional Quality

	Model (1) Control of Corruption (CC)	Model (2) Government Effectiveness (GE)	Model (3) Political Stability & Absence of Violence (PSAV)	Model (4) Regulatory Quality (RQ)	Model (5) Rule of Law (ROL)	Model (6) Voice and Accountability (VA)
Estimated threshold ($\hat{\gamma}$)	**-1.2600**	**-1.3900**	**-2.0300**	**-1.4700**	**-1.5100**	**-1.4500**
95% Confidence Interval	[-1.2600 ~ -1.0200]	[-1.3900 ~ -1.3800]	[-2.0900 ~ -1.6200]	[-1.4700 ~ -1.2800]	[-1.5200 ~ -1.4200]	[-1.4500 ~ -1.4400]
Impact of capital flow						
$\hat{\beta}_1$	**0.0848**	**0.0585**	**-0.3643****	**-0.5708*****	**-0.2869****	**-0.4206****
	(0.0853)	(0.1276)	(0.1837)	(0.1962)	(0.1277)	(0.1937)
$\hat{\beta}_2$	**0.4868*****	**0.4594*****	**0.5124*****	**0.5348*****	**0.4877*****	**0.4695*****
	(0.0974)	(0.0777)	(0.0753)	(0.0785)	(0.0863)	(0.0805)
Impact of covariates						
Gdpg (-1)	-0.4746***	-0.4724***	-0.4430***	-0.4554***	-0.4528***	-0.4496***
	(0.0259)	(0.0229)	(0.0250)	(0.0242)	(0.0230)	(0.0243)
Inf	0.0117	0.0155**	0.0105	0.0033	0.0064	0.0115
	(0.0101)	(0.0076)	(0.0078)	(0.0083)	(0.0077)	(0.0090)
Gexp	0.2596	0.3140	0.4098**	0.3755**	0.3712**	0.3613**
	(0.1897)	(0.1923)	(0.1805)	(0.1739)	(0.1740)	(0.1706)
Saving	0.0585	0.0206	0.0908*	0.0909**	0.0754**	0.0882**
	(0.0485)	(0.0431)	(0.0492)	(0.0408)	(0.0345)	(0.0424)
Gfc	-0.7314***	-0.7141***	-0.7105***	-0.6681***	-0.6574***	-0.6185***
	(0.0889)	(0.0881)	(0.0914)	(0.0945)	(0.0888)	(0.0937)
Nrent	0.0693	0.1472***	0.2274***	0.2655***	0.2108***	0.2605***
	(0.0565)	(0.0542)	(0.0565)	(0.0569)	(0.0519)	(0.0596)
Trade	0.1492***	0.1207***	0.1015***	0.0797***	0.1081***	0.0909***
	(0.0245)	(0.0223)	(0.0222)	(0.0206)	(0.0217)	(0.0209)
HC	-1.1269***	-1.1363***	-1.2370***	-1.1146***	-1.4361***	-1.1810***
	(0.4310)	(0.4343)	(0.3969)	(0.3664)	(0.4132)	(0.3798)
Debt	-0.0246*	-0.0250*	-0.0067	0.0129	-0.0044	-0.0086
	(0.0133)	(0.0132)	(0.0141)	(0.0159)	(0.0136)	(0.0146)
Constant	12.7580***	13.4857***	11.2795***	10.6810***	11.8981***	10.4775***
	(2.7820)	(2.5539)	(2.6053)	(2.8605)	(2.3211)	(2.3681)
Obs.	1,488	1,488	1,488	1,488	1,488	1,488
No. of countries	62	62	62	62	62	62
No. of Instruments	47	47	47	47	47	47
Sargan test $\varkappa^2$	37.3553	39.5619	39.5387	38.2480	38.2425	41.1017
p-value	0.3614	0.2735	0.2744	0.3242	0.3244	0.2208

Notes: Each column shows the coefficient from a separate regression and standard errors are in parentheses. Sub components of Institutional Quality are used as the threshold variables. The point estimates of the thresholds and the corresponding 95% confidence intervals (C.I.) are reported in the first two rows respectively. The regime dependent marginal effects of foreign capital flows (FDI) on economic growth are denoted by $\hat{\beta}_1$ and $\hat{\beta}_2$. ***; **; * indicate significance at the 1%, 5% and 10% level, respectively.

Source: Researchers Computation using STATA

The results in Table 5.11 show the results for FDI – growth nexus and the role of institutional quality. The point estimate of the threshold value of (-1.34) represents the estimated threshold of institutional quality variable for the selected sample of developing countries. With respect to the regime dependent marginal effect, FDI is found to have a negative significant impact of (-0.3966) on economic growth in the lower regime while a positive and significant impact of (0.5268) in the higher regime above the estimated threshold. All the other policy covariates are found to have a plausible significant effect as expected. The empirical results indicate that FDI does not foster economic growth in countries with lower levels of institutional quality while countries above the threshold with strong and robust institutions experience a FDI led growth through the institutional channel. The results in essence suggest robust institutions are essential thresholds that drive FDI flows as well as foster economic growth in the developing countries. Furthermore, the study also examines the role of sub-indicators of institutional quality for FDI – growth nexus. The empirical results presented in Table 5.12 indicate a heterogeneous effect in the lower regimes of the estimated threshold however, a strong and significant effect in the covariates in the upper regime suggest that each indicator of institutional quality promotes higher levels of economic growth. Thus, suggesting that countries specifically developing once should focus on strengthening its institutional infrastructure for experiencing sustainable economic growth. The results from the models are stable and specific to the current discussion, the reliability test using the Sargans test and Hansen test for validity of instruments with an insignificant p-value confirms that the instruments used are valid. Similarly, the robust p-values reported for AR (1) and AR (2) for the first and second-order auto-correlated disturbances are also found to be insignificant in specifications.

Table 5.13. FDI & Economic Growth – Threshold for Financial Development and its Sub Indicators.

	Model (1) Overall Financial Development	Model (2) Financial Institutions Development	Model (3) Financial Market Development
Estimated threshold ($\hat{\gamma}$)	**0.2600**	**0.2700**	**0.3000**
95% Confidence Interval	[0.0700 ~ 0.3000]	[0.0700 ~ 0.4000]	[0.07000 ~ 0.3600]
Impact of capital flow			
$\hat{\beta}_1$	**0.3041***	**0.4468***	0.0766
	(0.0739)	(0.0693)	(0.1005)
$\hat{\beta}_2$	**0.8254***	**-0.0168**	**0.4956***
	(0.2126)	(0.2125)	(0.1584)
Impact of covariates			
Gdpg (-1)	-0.4734***	-0.4948***	-0.4951***
	(0.0240)	(0.0255)	(0.0251)
Inf	0.0124	0.0166**	0.0143**
	(0.0085)	(0.0074)	(0.0062)
Gexp	0.2701	0.0335	0.1913
	(0.1957)	(0.2109)	(0.2453)
Saving	-0.0097	-0.0805*	-0.0402
	(0.0459)	(0.0468)	(0.0469)
Gfc	-0.6687***	-0.6328***	-0.6210***
	(0.0875)	(0.0909)	(0.1080)
Nrent	0.0971	0.1234*	0.0836
	(0.0655)	(0.0641)	(0.0709)
Trade	0.1271***	0.1171***	0.1490***
	(0.0217)	(0.0244)	(0.0246)
HC	-1.1941**	-0.7568	-1.4927***
	(0.5053)	(0.4935)	(0.3964)
Debt	-0.0393***	-0.0443***	-0.0547***
	(0.0138)	(0.0117)	(0.0124)
Constant	15.0920***	16.7517***	16.8743***
	(2.5655)	(2.5679)	(2.7050)
Obs.	1,488	1,488	1,488
No. of countries	62	62	62
No. of Instruments	47	47	47
Sargan test $\varkappa^2$	37.0923	34.6083	40.9091
p-value	0.3727	0.4869	0.2270

Notes: Each column shows the coefficient from a separate regression and standard errors are in parentheses. Financial development index is used as the threshold variables. The point estimates of the thresholds and the corresponding 95% confidence intervals (C.I.) are reported in the first two rows respectively. The regime dependent marginal effects of foreign capital flows (FDI) on economic growth are denoted by $\hat{\beta}_1$ and $\hat{\beta}_2$. ***; **; * indicate significance at the 1%, 5% and 10% level, respectively.

Source: Researchers Computation using STATA

The results in Table 5.13 show the results for FDI – growth nexus and the role of financial development. The point estimate of the threshold value of (0.26) represents the estimated threshold of financial development variable for the selected sample of developing countries. With respect to the regime dependent marginal effect, FDI is found to have a positive significant impact of (0.301) on economic growth in the lower regime while a strong positive and significant impact of (0.8254) in the higher regime above the estimated threshold. All the other policy covariates are found to have a plausible significant effect as expected. The empirical results indicate that countries both having low and high level of financial development experience FDI induced economic growth however the magnitude of the effect is found to be much stronger in the case of countries with higher level of financial development. The results in essence suggest robust and well-functioning financial markets and institutions are essential thresholds that drive FDI flows as well as foster economic growth in the developing countries. Furthermore, the study also examines the role of sub-indicators financial development for FDI – growth nexus. The empirical results presented in Table 5.12 indicate a similar effect in the lower regimes of the estimated threshold however, a strong and significant effect in the covariates in the upper regime suggest that each indicator of financial development promotes higher levels of economic growth. Thus, suggesting that countries specifically developing once should focus on strengthening its financial institutions and markets or experiencing sustainable economic growth. The results from the models are stable and specific to the current discussion, the reliability test using the Sargans test and Hansen test for validity of instruments with an insignificant p-value confirms that the instruments used are valid. Similarly, the robust p-values reported for AR (1) and AR (2) for the first and second-order auto-correlated disturbances are also found to be insignificant in specifications.

Table 5.14. Remittances & Economic Growth – Threshold for Overall Institutional Quality

	Model (1)
	Overall Institutional Quality
Estimated threshold ($\hat{\gamma}$)	**-0.7100**
95% Confidence Interval	[-1.4600 ~ 0.0900]
Impact of capital flow	
$\hat{\beta}_1$	**0.7683***
	(0.3997)
$\hat{\beta}_2$	**-2.4118***
	(0.5354)
Impact of covariates	
Gdpg (-1)	-0.5388***
	(0.0190)
Inf	-0.0045
	(0.0118)
Gexp	0.4697
	(0.3461)
Saving	0.1329*
	(0.0710)
Gfc	-0.5982***
	(0.1209)
Nrent	0.3173***
	(0.0892)
Trade	0.1159***
	(0.0328)
HC	-1.8311***
	(0.6527)
Debt	-0.0214
	(0.0187)
Constant	18.3823***
	(5.4150)
Obs.	1,488
No. of countries	62
No. of Instruments	47
Sargan test $\varkappa^2$	41.6245
p-value	0.2046

Notes: Column 1 shows the coefficient from regression and standard errors are in parentheses. Institutional Quality index is used as the threshold variables. The point estimates of the thresholds and the corresponding 95% confidence intervals (C.I.) are reported in the first two rows respectively. The regime dependent marginal effects of foreign capital flows (Remittances) on economic growth are denoted by $\hat{\beta}_1$ and $\hat{\beta}_2$. ***; **; * indicate significance at the 1%, 5% and 10% level, respectively.

Source: Researchers Computation using STATA

Table 5.15. Remittances & Economic growth – Threshold for Sub Indicators of Institutional Quality

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
	Control of Corruption (CC)	Government Effectiveness (GE)	Political Stability & Absence of Violence (PSAV)	Regulatory Quality (RQ)	Rule of Law (ROL)	Voice and Accountability (VA)
Estimated threshold ($\widehat{\gamma}$)	**-0.9800**	**-0.5200**	**-0.7300**	**-1.2700**	**-0.7300**	**-0.8300**
95% Confidence Interval	[-1.3600 ~ 0.0900]	[-1.5400 ~ 0.0300]	[-2.0900 ~ 0.7200]	[-1.4700 ~ 0.0100]	[-1.5200 ~ 0.1800]	[-1.6100 ~ 0.5000]
Impact of capital flow						
$\widehat{\beta}_1$	**-0.3574**	**0.0994**	**0.9226*****	**0.2781**	**-0.2495**	**-0.1856**
	(0.2734)	(0.2021)	(0.3394)	(0.9017)	(0.2516)	(0.3162)
$\widehat{\beta}_2$	**0.4894****	**-0.0204**	**-0.5547***	**0.1126**	**0.5551****	**0.1068**
	(0.2100)	(0.2725)	(0.2887)	(0.1958)	(0.2300)	(0.1888)
Impact of covariates						
Gdpg (-1)	-0.4380***	-0.4495***	-0.5304***	-0.4501***	-0.4544***	-0.4427***
	(0.0258)	(0.0218)	(0.0234)	(0.0215)	(0.0246)	(0.0230)
Inf	0.0134*	0.0060	0.0040	0.0159	0.0066	0.0084
	(0.0082)	(0.0099)	(0.0107)	(0.0101)	(0.0090)	(0.0095)
Gexp	0.1833	0.2234	0.3793*	0.0575	0.2622	0.1840
	(0.1749)	(0.2003)	(0.2243)	(0.2176)	(0.2309)	(0.2033)
Saving	-0.0235	-0.0072	0.0898*	-0.0159	0.0054	0.0002
	(0.0416)	(0.0411)	(0.0541)	(0.0612)	(0.0389)	(0.0385)
Gfc	-0.4842***	-0.4746***	-0.5797***	-0.5100***	-0.5782***	-0.4859***
	(0.0799)	(0.0838)	(0.1152)	(0.0844)	(0.0995)	(0.0860)
Nrent	0.1928***	0.1694***	0.1871**	0.1695**	0.1685***	0.1533***
	(0.0680)	(0.0612)	(0.0810)	(0.0796)	(0.0587)	(0.0568)
Trade	0.1293***	0.1126***	0.0896***	0.1032***	0.1175***	0.1358***
	(0.0206)	(0.0185)	(0.0266)	(0.0252)	(0.0177)	(0.0183)
HC	-1.6090***	-1.5559***	-1.6202**	-0.9095*	-1.3268***	-1.5541***
	(0.5085)	(0.4736)	(0.6425)	(0.4987)	(0.4581)	(0.4517)
Debt	-0.0364***	-0.0408***	-0.0486***	-0.0477***	-0.0500***	-0.0462***
	(0.0131)	(0.0134)	(0.0174)	(0.0145)	(0.0148)	(0.0136)
Constant	12.9934***	14.6847***	15.8428***	14.7883***	14.2374***	14.0155***
	(2.3834)	(2.6421)	(3.3453)	(2.5304)	(2.6826)	(2.4151)
Obs.	1,488	1,488	1,488	1,488	1,488	1,488
No. of countries	62	62	62	62	62	62
No. of Instruments	47	47	47	47	47	47
Sargan test $\varkappa^2$	38.3729	39.3969	34.9248	36.8487	34.8524	39.2817
p-value	0.3192	0.2796	0.4718	0.3834	0.4752	0.2839

Notes: Each column shows the coefficient from a separate regression and standard errors are in parentheses. Sub components of Institutional Quality are used as the threshold variables. The point estimates of the thresholds and the corresponding 95% confidence intervals (C.I.) are reported in the first two rows respectively. The regime dependent marginal effects of foreign capital flows (Remittances) on economic growth are denoted by $\hat{\beta}_1$ and $\hat{\beta}_2$. ***; **; * indicate significance at the 1%, 5% and 10% level, respectively.

Source: Researchers Computation using STATA

The results in Table 5.14 show the results for Remittances – growth nexus and the role of institutional quality. The point estimate of the threshold value of (-0.71) represents the estimated threshold of institutional quality variable for the selected sample of developing countries. With respect to the regime dependent marginal effect, remittances are found to have a positive significant impact of (0.7682) on economic growth in the lower regime while a negative and significant impact of (-2.4118) in the higher regime above the estimated threshold. All the other policy covariates are found to have a plausible significant effect as expected. The empirical results indicate that remittances are favourable for growth in countries with lower institutional quality only while, on the contrary countries with higher levels of institutional quality do not benefit from remittances induced economic growth. Although institutional quality is an important determinant of remittance flows studies such as (Francois, Ahmad, Keinsley, & Nti-Addae, 2022; Schneider & Enste, 2000) suggest that country heterogeneity with respect to consumption and investment across countries can plausibly be responsible for such varied effects, the study of (Abdih, Chami, Dagher, & Montiel, 2012) also suggest that higher ratio of remittance receipts erodes the institutions particularly government effectiveness in the home country. Furthermore, the study also examines the role of sub-indicators of institutional quality for Remittances – growth nexus. The empirical results presented in Table 5.15 indicate a heterogeneous effect in the lower and upper regimes of the estimated threshold. Only control of corruption and rule of law are found to induce growth via this channel while the rest of the variables show mixed outcomes across all specifications. The results from the models are stable and specific to the current discussion, the reliability test using the Sargans test and Hansen test for validity of instruments with an insignificant p-value confirms that the instruments used are valid.

Similarly, the robust p-values reported for AR (1) and AR (2) for the first and second-order auto-correlated disturbances are also found to be insignificant in specifications.

Table 5.16. Remittances & Economic Growth – Threshold for Financial Development and its Sub Indicators.

	Model (1) Overall Financial Development	Model (2) Financial Institutions Development	Model (3) Financial Market Development
Estimated threshold ($\hat{\gamma}$)	**0.1100**	**0.2300**	**0.0800**
95% Confidence Interval	[0.0500 ~ 0.3600]	[0.0700 ~ 0.4000]	[0.0100 ~ 0.3600]
Impact of capital flow			
$\hat{\beta}_1$	**-0.0508**	**-0.0642**	**0.1296**
	(0.2668)	(0.2317)	(0.2438)
$\hat{\beta}_2$	**0.8281*****	**1.2511*****	**1.3799*****
	(0.3003)	(0.2932)	(0.4975)
Impact of covariates			
Gdpg (-1)	-0.4510***	-0.4353***	-0.4547***
	(0.0247)	(0.0220)	(0.0238)
Inf	0.0154*	0.0128	0.0105
	(0.0086)	(0.0086)	(0.0093)
Gexp	0.5688**	0.5048*	0.3992
	(0.2624)	(0.3058)	(0.2481)
Saving	0.0604	0.0773	0.0631*
	(0.0504)	(0.0508)	(0.0323)
Gfc	-0.4833***	-0.5668***	-0.4862***
	(0.1065)	(0.1245)	(0.1023)
Nrent	0.0985	0.0960	0.1394**
	(0.0605)	(0.0810)	(0.0618)
Trade	0.1560***	0.1478***	0.1302***
	(0.0184)	(0.0233)	(0.0177)
HC	-3.4622***	-3.3147***	-2.7238***
	(0.6799)	(0.6429)	(0.4889)
Debt	-0.0371**	-0.0561***	-0.0264
	(0.0163)	(0.0188)	(0.0188)
Constant	14.5264***	17.6540***	13.8908***
	(3.0797)	(3.3098)	(2.5791)
Obs.	1,488	1,488	1,488
No. of countries	62	62	62
No. of Instruments	47	47	47
Sargan test $\varkappa^2$	42.9752	41.2737	40.2062
p-value	0.1666	0.2154	0.2506

Notes: Each column shows the coefficient from a separate regression and standard errors are in parentheses. Financial development index is used as the threshold variables. The point estimates of the thresholds and the corresponding 95% confidence intervals (C.I.) are reported in the first two rows respectively. The regime dependent marginal effects of foreign capital flows (Remittances) on economic growth are denoted by $\hat{\beta}_1$ and $\hat{\beta}_2$. ***; **; * indicate significance at the 1%, 5% and 10% level, respectively.

Source: Researchers Computation using STATA

The results in Table 5.16 show the results for Remittances – growth nexus and the role of financial development. The point estimate of the threshold value of (0.11) represents the estimated threshold of financial development variable for the selected sample of developing countries. With respect to the regime dependent marginal effect, remittances are found to have a negative insignificant impact of (-0.0508) on economic growth in the lower regime while a strong positive and significant impact of (0.8281) in the higher regime above the estimated threshold. All the other policy covariates are found to have a plausible significant effect as expected. The empirical results indicate that remittances contribute to economic growth in countries with well-functioning financial sector comprising of strong financial markets and institutions. Furthermore, remittances create progressive synergies based on its application. The receipts of remittances when channel for productive use in an effective manner can prompt economic growth positively (Bangake & Eggoh, 2019). Furthermore, the study also examines the role of sub-indicators financial development for remittances – growth nexus. The empirical results presented in Table 5.16 indicate a similar effect in the lower regimes of the estimated threshold however, a strong and significant effect in the covariates in the upper regime suggest that each indicator of financial development promotes higher levels of economic growth. Thus, suggesting that countries specifically developing once should focus on strengthening its financial institutions and markets or experiencing sustainable economic growth. The results from the models are stable and specific to the current discussion, the reliability test using the Sargans test and Hansen test for validity of instruments with an insignificant p-value confirms that the instruments used are valid. Similarly, the robust p-values reported for AR (1) and AR (2) for the first and second-order auto-correlated disturbances are also found to be insignificant in specifications.

Table 5.17. Foreign Aid & Economic Growth – Threshold for Overall Institutional Quality

	Model (1)
	Overall Institutional Quality
Estimated threshold ($\hat{\gamma}$)	**-1.3200**
95% Confidence Interval	[-1.3900 ~ -1.1300]
Impact of capital flow	
$\hat{\beta}_1$	**-0.0947**
	(0.1100)
$\hat{\beta}_2$	**0.4679***
	(0.0939)
Impact of covariates	
Gdpg (-1)	-0.4315***
	(0.0218)
Inf	0.0088
	(0.0081)
Gexp	0.2551
	(0.1656)
Saving	0.0349
	(0.0400)
Gfc	-0.4311***
	(0.0809)
Nrent	0.1319**
	(0.0619)
Trade	0.1266***
	(0.0325)
HC	-0.6155*
	(0.3448)
Debt	-0.0140
	(0.0088)
Constant	2.7470
	(2.8218)
Obs.	1,488
No. of countries	62
No. of Instruments	47
Sargan test $\varkappa^2$	40.6885
p-value	0.2342

Notes: Column 1 shows the coefficient from regression and standard errors are in parentheses. Institutional Quality index is used as the threshold variables. The point estimates of the thresholds and the corresponding 95% confidence intervals (C.I.) are reported in the first two rows respectively. The regime dependent marginal effects of foreign capital flows (FPI) on economic growth are denoted by $\hat{\beta}_1$ and $\hat{\beta}_2$. ***; **; * indicate significance at the 1%, 5% and 10% level, respectively.

Source: Researchers Computation using STATA

**Table 5.18. Foreign Aid & Economic Growth – Threshold for Sub Indicators of
Institutional Quality**

	Model (1) Control of Corruption (CC)	Model (2) Government Effectiveness (GE)	Model (3) Political Stability & Absence of Violence (PSAV)	Model (4) Regulatory Quality (RQ)	Model (5) Rule of Law (ROL)	Model (6) Voice and Accountability (VA)
Estimated threshold ($\widehat{\gamma}$)	**-0.7700**	**-1.2400**	**-1.8600**	**-1.2500**	**-1.5200**	**-0.9100**
95% Confidence Interval	[-1.2100 ~ -0.6300]	[-1.2500 ~ -1.1600]	[-1.8600 ~ -1.6700]	[-1.4700 ~ 0.0100]	[-1.5200 ~ -1.4400]	[-0.9400 ~ -0.5700]
Impact of capital flow						
$\widehat{\beta}_1$	**0.4884*****	**0.5068*****	**-0.3556****	**0.2307****	**-0.2956****	**0.0777**
	(0.1574)	(0.1134)	(0.1581)	(0.0948)	(0.1312)	(0.1019)
$\widehat{\beta}_2$	**0.4106*****	**0.3720*****	**0.7608*****	**0.5787*****	**0.6513*****	**0.5953*****
	(0.1005)	(0.1017)	(0.1028)	(0.1193)	(0.1016)	(0.1267)
Impact of covariates						
Gdpg (-1)	-0.4424***	-0.4474***	-0.4319***	-0.4297***	-0.5117***	-0.4365***
	(0.0233)	(0.0226)	(0.0196)	(0.0201)	(0.0218)	(0.0221)
Inf	0.0069	0.0024	0.0048	0.0025	0.0134**	0.0058
	(0.0091)	(0.0079)	(0.0042)	(0.0085)	(0.0068)	(0.0086)
Gexp	0.3599	0.4931**	0.0733	0.2931*	0.0869	0.2826
	(0.2386)	(0.2389)	(0.1930)	(0.1750)	(0.1875)	(0.1899)
Saving	0.0672**	0.0919***	0.1151***	0.0594*	-0.0572	0.0341
	(0.0324)	(0.0329)	(0.0368)	(0.0339)	(0.0503)	(0.0377)
Gfc	-0.5162***	-0.5862***	-0.2837***	-0.4382***	-0.1317	-0.4278***
	(0.0876)	(0.0909)	(0.0786)	(0.0729)	(0.0985)	(0.0785)
Nrent	0.0954*	0.0679	0.0916	0.0709	0.2586***	0.1326**
	(0.0492)	(0.0509)	(0.0596)	(0.0512)	(0.0731)	(0.0606)
Trade	0.1134***	0.1151***	0.0818***	0.1412***	0.0855**	0.1132***
	(0.0258)	(0.0248)	(0.0300)	(0.0187)	(0.0355)	(0.0348)
HC	-0.5950	-0.6466	-0.3444	-0.5146	-0.7620**	-0.7444*
	(0.5337)	(0.4938)	(0.2703)	(0.4445)	(0.3626)	(0.3870)
Debt	-0.0422***	-0.0358***	-0.0115	-0.0331***	-0.0038	-0.0120
	(0.0111)	(0.0094)	(0.0087)	(0.0090)	(0.0098)	(0.0118)
Constant	5.5172*	5.6551*	1.2460	1.9079	1.1750	4.2196
	(3.2646)	(3.1568)	(3.3539)	(3.2684)	(3.6000)	(3.4325)
Obs.	1,488	1,488	1,488	1,488	1,488	1,488
No. of countries	62	62	62	62	62	62
No. of Instruments	47	47	47	47	47	47
Sargan test $\varkappa^2$	38.8845	34.3783	41.7229	40.1871	44.6275	40.6860
p-value	0.2990	0.4979	0.2016	0.2512	0.1277	0.2343

Notes: Each column shows the coefficient from a separate regression and standard errors are in parentheses. Sub components of Institutional Quality are used as the threshold variables. The point estimates of the thresholds and the corresponding 95% confidence intervals (C.I.) are reported in the first two rows respectively. The regime dependent marginal effects of foreign capital flows (FPI) on economic growth are denoted by $\hat{\beta}_1$ and $\hat{\beta}_2$. ***; **; * indicate significance at the 1%, 5% and 10% level, respectively.

Source: Researchers Computation using STATA

The results in Table 5.17 show the results for Aid – growth nexus and the role of institutional quality. The point estimate of the threshold value of (-1.32) represents the estimated threshold of institutional quality variable for the selected sample of developing countries. With respect to the regime dependent marginal effect, remittances are found to have a negative insignificant impact of (0.0947) on economic growth in the lower regime while strong positive and significant impact of (0.4679) in the higher regime above the estimated threshold. All the other policy covariates are found to have a plausible significant effect as expected. The empirical results indicate that aid flows are favourable for growth in countries with higher levels of institutional quality only while, on the contrary countries with lower levels of institutional quality do not benefit from aid induced economic growth. Although institutional quality is an important determinant of aide flows. Thus, Aid flows stimulate economic growth by financing the health and educational infrastructure, strengthening of political institutions, providing emergency relief, and stabilizing economies that are afflicted by supply shocks (Bhandari, Pradhan, Dhakal, & Upadhyaya, 2007; Fatima, 2010; Gapen, Cosimano, & Chami, 2006; Morrissey, 2001). Furthermore, the study also examines the role of sub-indicators of institutional quality for Remittances – growth nexus. The empirical results presented in Table 5.18 indicate a heterogeneous effect in the lower regimes of the estimated threshold. While, the upper regimes across all variables presents a strong positive effects across specification. The results from the models are stable and specific to the current discussion, the reliability test using the Sargans test and Hansen test for validity of instruments with an insignificant p-value confirms that the instruments used are valid. Similarly, the robust p-values reported for AR (1) and AR (2) for the first and second-order auto-correlated disturbances are also found to be insignificant in specifications.

Table 5.19. Foreign Aid & Economic Growth – Threshold for Financial Development and its Sub Indicators.

	Model (1)	Model (2)	Model (3)
	Overall Financial Development	Financial Institutions Development	Financial Market Development
Estimated threshold ($\hat{\gamma}$)	**0.0600**	**0.1100**	**0.0500**
95% Confidence Interval	[0.0600 ~ 0.0600]	[0.1100 ~ 0.1100]	[0.0100 ~ 0.3600]
Impact of capital flow			
$\hat{\beta}_1$	**-0.0820**	**-0.0705**	**0.4947*****
	(0.1037)	(0.1136)	(0.1409)
$\hat{\beta}_2$	**0.7399*****	**0.8188*****	**0.2849**
	(0.1103)	(0.1227)	(0.2452)
Impact of covariates			
Gdpg (-1)	-0.4802***	-0.4814***	-0.4427***
	(0.0152)	(0.0174)	(0.0224)
Inf	0.0102	0.0098	0.0047
	(0.0072)	(0.0080)	(0.0079)
Gexp	0.3464	0.2419	0.2311
	(0.2155)	(0.2082)	(0.2631)
Saving	0.1310***	0.1169**	0.0745**
	(0.0442)	(0.0457)	(0.0333)
Gfc	-0.1963**	-0.1114	-0.4678***
	(0.0792)	(0.0980)	(0.0936)
Nrent	-0.1006*	-0.1089**	0.0459
	(0.0551)	(0.0549)	(0.0662)
Trade	0.1431***	0.1457***	0.1207***
	(0.0256)	(0.0267)	(0.0283)
HC	-1.7827***	-1.5586***	-0.4036
	(0.5380)	(0.5482)	(0.5872)
Debt	-0.0385***	-0.0371***	-0.0471***
	(0.0090)	(0.0090)	(0.0138)
Constant	2.1821	0.0525	5.0501
	(3.9480)	(4.2689)	(3.3464)
Obs.	1,488	1,488	1,488
No. of countries	62	62	62
No. of Instruments	47	47	47
Sargan test $\varkappa^2$	42.4705	43.8900	38.6208
p-value	0.1802	0.1441	0.3093

Notes: Each column shows the coefficient from a separate regression and standard errors are in parentheses. Financial development index is used as the threshold variables. The point estimates of the thresholds and the corresponding 95% confidence intervals (C.I.) are reported in the first two rows respectively. The regime dependent marginal effects of foreign capital flows (FPI) on economic growth are denoted by $\hat{\beta}_1$ and $\hat{\beta}_2$. ***; **; * indicate significance at the 1%, 5% and 10% level, respectively.

Source: Researchers Computation using STATA

The results in Table 5.19 show the results for Aid – growth nexus and the role of financial development. The point estimate of the threshold value of (0.06) represents the estimated threshold of financial development variable for the selected sample of developing countries. With respect to the regime dependent marginal effect, aid are found to have a negative insignificant impact of (-0.0820) on economic growth in the lower regime while a strong positive and significant impact of (0.7399) in the higher regime above the estimated threshold. All the other policy covariates are found to have a plausible significant effect as expected. The empirical results indicate that aid contribute to economic growth in countries with well-functioning financial sector comprising of strong financial markets and institutions. Furthermore, aid create progressive synergies based on its application. The receipts of aid when channel for productive use in an effective manner can prompt economic growth positively (Burnside & Dollar, 2004; Combes, Kinda, Ouedraogo, & Plane, 2019; Kholdy & Sohrabian, 2012; Morrissey, 2001). Furthermore, the study also examines the role of sub-indicators financial development for aid – growth nexus. The empirical results presented in Table 5.19 indicate a similar effect in the lower regimes of the estimated threshold however, a strong and significant effect in the covariates in the upper regime suggest that each indicator of financial development promotes higher levels of economic growth. Thus, suggesting that countries specifically developing once should focus on strengthening its financial institutions and markets or experiencing sustainable economic growth. The results from the models are stable and specific to the current discussion, the reliability test using the Sargans test and Hansen test for validity of instruments with an insignificant p-value confirms that the instruments used are valid. Similarly, the robust p-values reported for AR (1) and AR (2) for the first and second-order auto-correlated disturbances are also found to be insignificant in specifications.

CHAPTER - VI

VOLATILITY OF FOREIGN CAPITAL FLOWS

AN ANALYSIS OF VOLATILITY AND ITS EFFECTS ON ECONOMIC GROWTH INSTABILITY.

6.1. INTRODUCTION

Over the decades of surges in capital flows, concerns have risen regarding 'how stable are the capital flows?'. In this regards, (Neumann, Penl, & Tanku, 2009) argue that global capital flows have a destabilizing effect in the developing countries, particularly in extreme economic events like the GFC which led to a sudden reversal of these flows. (Forbes & Warnock, 2012) also argue that economic consequences like macroeconomic instability, financial system vulnerability, occurrence of economic cycles on account of swings in capital flows and so on. resulting from volatile flows have been more evident post the occurrence of GFC. According to (IMF, 2012) capital inflow surges can cause financial markets to be overwhelmed and impede the ability of macroeconomic policy to adjust.

Given this, the literature on capital flows volatility remains highly unexplored prior to the GFC, however until recently researchers have started focusing on modelling the volatile nature of capital flows and the resultant consequences on the macroeconomic performance of the recipient economies. This study tries to contribute to the growing literature by modelling the volatility associated with capital flows, and its consequences in both the developed and the developing countries, thereby assisting in policy formulation.

6.2. EMPIRICAL RESULTS AND DISCUSSION

6.2.1. Unit Root Test

Prior to estimating the empirical models in this study, panel based unit root tests is performed on all the variables using the Fisher-type unit root test as discussed in (Baltagi, 2005; Choi, 2001) to test for stationarity assumptions in the data. The test is adopted over other test particularly as it accepts balanced as well as unbalanced panels along with gaps. The Fisher-type unit root test is applied using the Augmented Dickey-Fuller (ADF) test. According to (Choi, 2001) the test is widely suitable and beneficial in many other terms, for instance the test applies for both finite as well as infinite samples, also the test treats stochastic as well as non-stochastic elements in the data. Moreover, the test can also accommodate panels with unit roots as well as without unit roots. The null hypothesis states that All panels contain unit roots, while the alternate hypothesis suggest at least one panel is stationary, a trend term is included to account for the trend stationarity and the stationarity test is based on the inverse normal (Z) statistics.

The results of the unit root test are presented in Table 6.1. The dependent and independent variables are having a small p-value suggesting a rejection of the null hypothesis and stationarity at level i.e. I (0) except, remittances, population and human capital variables. However, the first differenced series of all the variables possess significant p-values, which indicate that all the variables follow the stationarity assumption to a maximum of order one integration i.e. I (1) but not order two i.e. I (2). Moreover, as discussed in (Choi, 2001), in the Fisher-type unit root tests, the Z test possess superior performance relative to the other tests like (L*, P, Pm). Therefore, the author suggested the use of inverse normal (Z) statistic is suitable in the empirical work.

Post confirmation of stationarity, the empirical analysis based on the model proposed in the study are presented in detail in the following section.

Table 6.1. Panel Unit Root test

	Fisher-type unit-root test			
	Level - I(0)		*Differenced - I(1)*	
	Statistics	*p-value*	*Statistics*	*p-value*
Dependent Variable				
Volatility Real GDP growth rate	-24.2083***	0.0000	-23.8417***	0.0000
Independent variables				
Capital Flows				
Foreign Direct Investment	-6.2359***	0.0000	-33.2207***	0.0000
Vol_Foreign Direct Investment	-22.3356***	0.0000	-22.5330***	0.0000
Remittances	-1.2131	0.1125	-23.5549***	0.0000
Vol_Remittances	-21.1172***	0.0000	-24.9312***	0.0000
Aid	-4.0258***	0.0000	-29.3898***	0.0000
Vol_Aid	-23.4840***	0.0000	-24.9337***	0.0000
Control Variables				
Financial Development	-14.6285***	0.0000	-43.0056***	0.0000
Gross Fixed Capital	-4.8176***	0.0000	-27.0758***	0.0000
Inflation_Volatility	-21.7378***	0.0000	-25.4758***	0.0000
Population	-0.2302	0.4090	-23.0814***	0.0000
Human Capital	8.1338	1.0000	-17.5450***	0.0000
Trade Openness	-3.2591***	0.0000	-27.2746***	0.0000
Capital Openness	-3.8142***	0.0000	-25.0199***	0.0000

Note:

Fisher-type unit-root test using augmented Dickey-Fuller (ADF): Ho: All panels contain unit roots; Ha: At least one panel is stationary; a trend term is included to account for the trend stationarity; the stationarity test is based on the inverse normal (Z) statistics.
*, **, *** are significant levels at 10%, 5%, 1% respectively.

Source: Authors Computation

6.2.2. Estimation Results

The empirical results from the analysis of impact of volatility of foreign capital inflows on economic growth instability or volatility in emerging and developing economies have been presented in this section. The sample covers a total of 110 countries (see Table C-1) over the period of 1995 to 2019. The empirical analysis is carried out by splitting the whole sample into emerging economies (68 countries) which comprises of high income and upper middle income countries while, developing economies (44 countries) consist of economies in the lower middle income to low income classification. The estimates of the present study are based on the GMM approach proposed by (Arellano & Bover, 1995; Roodman, 2009). The approach is superior to the basic OLS and 2SLS approach widely adopted in most of the previous studies.

The empirical results presented in the Table 6.2 refers to the baseline estimation for the impact of FDI and its volatility on economic growth. The analysis is run using the full sample of 110 countries and utilising the Pooled OLS, Fixed Effects (FEM) & Random Effects (REM) estimation and the 2 - stage least square (2SLS). The empirical analysis is carried out to assess the hypothesis that volatility in FDI increases economic growth volatility. The empirical results across all the models and specification suggest that the coefficient of variable FDI is consistently negative and significant suggesting that FDI inflows decreases economic growth instability. The study also models the role of Volatility in FDI flows, across the empirical results a positive and significant coefficient indicate that FDI volatility causes an increase in the economic growth instability. The results from the baseline estimations are significant and also confirms validity though different model reliability test presented in the lower section of the Table 6.2.

Table 6.2 Output Volatility: Baseline Estimates of FDI and its Volatility

	Pooled OLS Estimates		Fixed Effects Estimates		2SLS Estimates	
	(1)	(2)	(3)	(4)	(5)	(6)
GDP_Vol (-1)	0.6179***	0.6243***	0.4350***	0.4370***	0.6204***	0.6228***
	(0.0155)	(0.0155)	(0.0233)	(0.0235)	(0.0156)	(0.0155)
FDI	**-0.0065****	**-0.0068****	**-0.0180*****	**-0.0183*****	**-0.0116***	**-0.0101***
	(0.0031)	(0.0031)	(0.0044)	(0.0044)	(0.0062)	(0.0060)
FDI_Vol		**0.0609*****		**0.0272****		**0.0620*****
		(0.0196)		(0.0242)		(0.0196)
FD	0.0002***	0.0002***	0.0001	0.0001	0.0002***	0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
GFC	-0.0004	-0.0003	-0.0072**	-0.0071**	-0.0000	-0.0001
	(0.0020)	(0.0020)	(0.0035)	(0.0035)	(0.0020)	(0.0020)
INF_Vol	0.2335***	0.2302***	0.2783***	0.2685***	0.2414***	0.2298***
	(0.0643)	(0.0640)	(0.0787)	(0.0789)	(0.0641)	(0.0640)
POPG	0.0402***	0.0346**	0.2216***	0.2273***	0.0338**	0.0344**
	(0.0139)	(0.0139)	(0.0301)	(0.0302)	(0.0139)	(0.0138)
HC	0.0019***	0.0018***	-0.0002	-0.0001	0.0018***	0.0018***
	(0.0006)	(0.0006)	(0.0021)	(0.0021)	(0.0006)	(0.0006)
TO	0.0005	0.0006	0.0030***	0.0032***	0.0007	0.0007
	(0.0004)	(0.0004)	(0.0011)	(0.0011)	(0.0005)	(0.0005)
KO	-0.0031	-0.0017	0.0221	0.0237	-0.0004	-0.0001
	(0.0114)	(0.0114)	(0.0215)	(0.0215)	(0.0115)	(0.0115)
Constant	-0.2266***	-0.2094***	-0.4799**	-0.5060***	-0.2102***	-0.2142***
	(0.0704)	(0.0702)	(0.1915)	(0.1919)	(0.0708)	(0.0707)
# of Obs.	2,223	2,220	2,223	2,220	2,214	2,214
R-squared	0.4350	0.4420	0.2191	0.2200	0.4386	0.441
# of Countries			110	110		
Hausman Test			52.98	164.58		
p-value			[0.0000]	[0.0000]		
Wu-Hausman					0.9904	0.4073
p-value					[0.3197]	[0.5234]
Sargan chi-square					5.9559	0.7597
p-value					[0.1138]	[0.8591]
Basmann chi-square					5.9369	0.7552
p-value					[0.1147]	[0.8601]

Notes: dependent variable: Volatility of real GDP growth (1995–2019).

***; **; * Indicates a significance at a 1%, 5% and 10% confidence interval.

Source: Researchers Computation using STATA

The empirical results presented in Table 6.3 relates to the impact of remittances and its volatility on the economic growth volatility. Using the full sample comprising of 110 countries from 1995-2019, the study presents the baseline estimates employing the Pooled OLS, Fixed Effects (FEM) & Random Effects (REM) estimation and the 2 - stage least square (2SLS). The empirical analysis is carried out to assess the hypothesis that volatility in remittances increases economic growth volatility. The empirical results across all the models and specification suggest that the coefficient of variable remittances is consistently positive and insignificant suggesting a weak evidence of the notion that remittances inflows increases economic growth instability. Furthermore, the study also models the role of Volatility in remittances flows, across the empirical results a negative and insignificant coefficient indicating a weak proposition that remittances curtails economic growth instability.

The empirical results presented in Table 6.4 relates to the impact of Aid and its volatility on the economic growth volatility. Using the full sample comprising of 110 countries from 1995-2019. The empirical analysis is carried out to assess the hypothesis that volatility in aid increases economic growth volatility. The empirical results across all the models and specification suggest that the coefficient of variable aid is inconsistent but positive and insignificant in some cases suggesting a weak evidence of the notion that aid inflows increases economic growth instability. Furthermore, the study also models the role of Volatility in aid flows, across the empirical results a positive and significant coefficient indicates that aid volatility causes economic growth instability.

The results from the baseline estimations are significant and also confirms validity though different model reliability test presented in the lower section of the Table 6.3 and Table 6.4.

Table 6.3 Output Volatility: Baseline Estimates of Remittance and its Volatility

	Pooled OLS Estimates		Fixed Effects Estimates		2SLS Estimates	
	(1)	(2)	(3)	(4)	(5)	(6)
GDP_Vol (-1)	0.6078***	0.6163***	0.4236***	0.4300***	0.6215***	0.6222***
	(0.0164)	(0.0165)	(0.0242)	(0.0248)	(0.0165)	(0.0165)
REM	**0.0014**	**0.0020**	**0.0153****	**0.0122***	**0.0015**	**0.0021**
	(0.0025)	(0.0024)	(0.0064)	(0.0069)	(0.0025)	(0.0025)
REM_Vol		**-0.0883**		**-0.0426**		**-0.1455***
		(0.0744)		(0.0910)		(0.0782)
FD	0.0001	0.0005	0.0001	0.0006	0.0005	0.0005
	(0.0001)	(0.0004)	(0.0001)	(0.0005)	(0.0004)	(0.0004)
GFC	-0.0015	-0.0018	-0.0089**	-0.0113***	-0.0015	-0.0015
	(0.0020)	(0.0021)	(0.0036)	(0.0038)	(0.0021)	(0.0021)
INF_Vol	0.3166***	0.3160***	0.4860***	0.4232***	0.3015***	0.2959***
	(0.0754)	(0.0754)	(0.0922)	(0.0944)	(0.0759)	(0.0759)
POPG	0.0427***	0.0369**	0.2581***	0.2770***	0.0354**	0.0348**
	(0.0153)	(0.0154)	(0.0331)	(0.0336)	(0.0155)	(0.0155)
HC	0.0020***	0.0018***	0.0005	0.0008	0.0018***	0.0018***
	(0.0007)	(0.0007)	(0.0022)	(0.0022)	(0.0007)	(0.0007)
TO	0.0005	0.0005	0.0007	0.0011	0.0005	0.0005
	(0.0004)	(0.0004)	(0.0012)	(0.0013)	(0.0004)	(0.0004)
KO	-0.0087	-0.0074	0.0231	0.0231	-0.0071	-0.0073
	(0.0117)	(0.0118)	(0.0228)	(0.0235)	(0.0118)	(0.0118)
Constant	-0.2344***	-0.2151***	-0.4358**	-0.5098**	-0.2207***	-0.2184***
	(0.0769)	(0.0780)	(0.2001)	(0.2045)	(0.0785)	(0.0784)
# of Obs.	2,001	1,962	2,001	1,962	1,928	1,928
R-squared	0.430	0.439	0.236	0.237	0.444	0.445
# of Countries			108	108		
Hausman Test			62.24	65.24		
p-value			[0.0000]	[0.0000]		
Wu-Hausman					1.3585	1.1384
p-value					[0.2439]	[0.2861]
Sargan chi-square					1.9134	0.5964
p-value					[0.5906]	[0.8973]
Basmann chi-square					1.9024	0.5922
p-value					[0.5929]	[0.8982]

Notes: dependent variable: Volatility of real GDP growth (1995–2019).

***; **; * Indicates a significance at a 1%, 5% and 10% confidence interval.

Source: Researchers Computation using STATA

Table 6.4 Output Volatility: Baseline Estimates of Aid and its Volatility

	Pooled OLS Estimates		Fixed Effects Estimates		2SLS Estimates	
	(1)	(2)	(3)	(4)	(5)	(6)
GDP_Vol (-1)	0.6192***	0.6045***	0.4357***	0.4352***	0.6240***	0.6053***
	(0.0159)	(0.0160)	(0.0240)	(0.0236)	(0.0170)	(0.0171)
AID	**0.0015**	**-0.0019**	**0.0207*****	**0.0158*****	**0.0063**	**0.0052**
	(0.0026)	(0.0026)	(0.0055)	(0.0054)	(0.0129)	(0.0128)
AID_Vol		**0.1474*****		**0.2930*****		**0.1708*****
		(0.0279)		(0.0355)		(0.0297)
FD	0.0002***	0.0002**	0.0001	0.0001	0.0006	0.0006
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0004)	(0.0004)
GFC	-0.0010	-0.0015	-0.0094***	-0.0096***	-0.0010	-0.0016
	(0.0020)	(0.0020)	(0.0036)	(0.0035)	(0.0024)	(0.0024)
INF_Vol	0.2303***	0.2330***	0.2847***	0.2702***	0.2241***	0.2264***
	(0.0661)	(0.0657)	(0.0814)	(0.0801)	(0.0749)	(0.0742)
POPG	0.0470***	0.0414***	0.2386***	0.1981***	0.0402**	0.0358**
	(0.0156)	(0.0155)	(0.0333)	(0.0331)	(0.0171)	(0.0170)
HC	0.0019**	0.0016**	-0.0005	-0.0014	0.0026*	0.0022
	(0.0008)	(0.0007)	(0.0022)	(0.0022)	(0.0015)	(0.0015)
TO	0.0003	0.0003	0.0019	0.0013	0.0005	0.0005
	(0.0004)	(0.0004)	(0.0012)	(0.0012)	(0.0006)	(0.0006)
KO	-0.0090	-0.0108	0.0262	0.0169	-0.0088	-0.0112
	(0.0120)	(0.0119)	(0.0234)	(0.0231)	(0.0126)	(0.0125)
Constant	-0.2255***	-0.1805**	-0.5312***	-0.3361*	-0.3064*	-0.2508
	(0.0813)	(0.0813)	(0.1977)	(0.1959)	(0.1579)	(0.1565)
# of Obs.	2,119	2,118	2,119	2,118	1,839	1,838
R-squared	0.432	0.440	0.209	0.236	0.440	0.450
# of Countries			110	110		
Hausman Test			58.52	41.66		
p-value			[0.0000]	[0.0000]		
Wu-Hausman					0.4953	0.3724
p-value					[0.4816]	[0.5417]
Sargan chi-square					1.3191	1.5986
p-value					[0.7246]	[0.6597]
Basmann chi-square					1.3108	1.5878
p-value					[0.7266]	[0.6622]

Notes: dependent variable: Volatility of real GDP growth (1995–2019).

***; **; * Indicates a significance at a 1%, 5% and 10% confidence interval.

Source: Researchers Computation using STATA

The results of estimates from panel estimation models using pooled OLS or fixed and random effect, particularly when dealing with potential endogeneity of the independent variables would lead to bias if the static panel data estimation is used (Nickell, 1981). Thus in terms of empirical modelling, this study seeks to employ a very popular and widely accepted GMM methodology developed by (Anderson & Hsiao, 1982), (Bond, 1991), (Arellano & Bover, 1995) and (Blundell & Bond, 1998).

This study favors the use of two step systems GMM over other GMM models as it is more effective to deal with any potential methodological issues which persist like bias on account of inherent endogeneity, omission biases and static model frameworks.

The results presented in Table 6.5 pertains to the empirical findings based on the application of the systems GMM for the hypothesis that foreign capital flows namely, FDI, Remittances and Aid decreases economic growth volatility while the volatility in foreign capital flows contributes positively towards economic growth volatility.

The empirical results presented in Model 1 and 2 suggest that FDI inflows augments economic growth volatility whereas, the analysis of volatility of FDI reveal that FDI volatility contributes and enhances economic growth volatility. The results suggest that for every 1%-point increase in FDI inflows there is a significant evidence of diminishing volatility of economic growth by 0.0098 points. Moreover, with every 1%-point rise in FDI volatility a proportionate expansion of 0.28 points is evident in economic growth volatility. These findings are in line with the existing literature see (Mensah & Mensah, 2021; Tauqir, Majeed, & Kashif, 2021).

The study also models the role of remittances and remittance volatility on economic growth volatility the empirical results are presented is model 3 and 4 respectively. As

opposed to the previous findings pertaining to FDIs, receipts of remittances are found to enhances economic growth volatility. The empirical results show that for every 1%-point increase in remittances inflows there is a significant evidence of increase in volatility of economic growth by 0.0075 points. Furthermore, the analysis of volatility of remittance also reveals that the volatility in remittances increases economic growth volatility. For every 1%-point increase in the volatility of remittances inflows there is a significant evidence of increase in volatility of economic growth by 0.9153 points.

Empirics presented in Table 6.5 also pertains to examining the impact of aid and its volatility. Interestingly, the results do not present a strong evidence to the fact that aid dampens volatility of economic growth. Results show that for every 1%-point increase in aid inflows there is an insignificant evidence of decrease in volatility of economic growth by 0.0010 points. Furthermore, the analysis of volatility of aid also reveals that the volatility in aid increases economic growth volatility. For every 1%-point increase in the volatility of aid inflows there is a significant evidence of increase in volatility of economic growth by 0.4893 points. The reported coefficients of other explanatory covariates are also as per the priory expectations and consistently significant across all the specifications.

As compared to the results for the standard OLS, FEM and the 2SLS, results presented by the systems GMM are much superior and stable. The results from the models are stable and specific to the current discussion, the reliability test using the Hansen test for validity of instruments with an insignificant p-value confirms that the instruments used are valid. Similarly, the robust p-values reported for AR (1) and AR (2) for the first and second-order auto-correlated disturbances are also found to be insignificant in specifications.

Table 6.5. Output Volatility: System GMM Estimates of Foreign capital flows and its Volatility.

	FDI		Remittances		Foreign Aid	
	(1)	(2)	(3)	(4)	(5)	(6)
GDP_Vol (-1)	0.3266***	0.3338***	0.3533***	0.3165***	0.3202***	0.2931***
	(0.0075)	(0.0086)	(0.0081)	(0.0061)	(0.0079)	(0.0074)
FDI	**-0.0098***	**-0.0120***				
	(0.0009)	(0.0007)				
FDI_Vol		**0.2800***				
		(0.0175)				
REM			**0.0075***	**0.0076***		
			(0.0007)	(0.0007)		
REM_Vol				**0.9153***		
				(0.0115)		
AID					**-0.0010**	**-0.0010**
					(0.0010)	(0.0010)
AID_Vol						**0.4893***
						(0.0297)
FD	0.0040***	0.0040***	0.0210***	0.0119***	0.0038***	0.0031***
	(0.0005)	(0.0006)	(0.0003)	(0.0002)	(0.0003)	(0.0004)
GFC	0.0032**	0.0031**	0.0004	-0.0029***	0.0027***	0.0013
	(0.0014)	(0.0014)	(0.0010)	(0.0009)	(0.0009)	(0.0011)
INF_Vol	2.1903***	2.1357***	1.8522***	1.6196***	1.9231***	1.8734***
	(0.0700)	(0.0782)	(0.0375)	(0.0292)	(0.0507)	(0.0524)
POPG	0.0439***	0.0542***	0.1027***	0.0792***	0.0692***	0.0487***
	(0.0060)	(0.0054)	(0.0089)	(0.0073)	(0.0107)	(0.0103)
HC	0.0019***	0.0022***	0.0030***	0.0034***	0.0027***	0.0017***
	(0.0003)	(0.0003)	(0.0004)	(0.0002)	(0.0004)	(0.0004)
TO	0.0014***	0.0016***	0.0018***	0.0013***	0.0011***	0.0009***
	(0.0002)	(0.0002)	(0.0003)	(0.0002)	(0.0002)	(0.0002)
KO	0.0110	0.0142*	0.0450***	0.0095	0.0057	0.0029
	(0.0069)	(0.0076)	(0.0084)	(0.0067)	(0.0065)	(0.0059)
Constant	-0.4407***	-0.4871***	-0.9081***	-0.6318***	-0.5252***	-0.3567***
	(0.0465)	(0.0425)	(0.0478)	(0.0335)	(0.0524)	(0.0494)
# of Obs.	1,928	1,928	1,724	1,707	1,833	1,833
# of Countries	109	109	104	104	109	109
# of IVs	86	86	86	86	86	86
AR(1)	0.1470	0.1570	0.0010	0.0010	0.1510	0.1310
AR(2)	0.1440	0.1660	0.1170	0.2010	0.1520	0.1190
Hansen test	85.07	86.17	86.63	82.31	85.85	88.50
p-value	0.2230	0.1780	0.1900	0.2640	0.2060	0.1360

Notes: GMM estimation of the dynamic panel data models: dependent variable: real GDP growth (1995–2019).

***; **; * Indicates a significance at a 1%, 5% and 10% confidence interval. The reported standard errors in parenthesis based on (Windmeijer, 2005) procedure. The values reported for AR (1) and AR (2) are the p-values for the first and second-order auto-correlated disturbances in the first difference equations. The value for Hansen J-test reports the p-value for the null hypothesis of instrument validity.

Source: Researchers Computation using STATA

The results presented in Table 6.6 pertains to the empirical findings based on the application of the systems GMM for the hypothesis that foreign capital flows decreases economic growth volatility while the volatility in foreign capital flows contributes positively towards economic growth volatility for the emerging economies.

The empirical results presented in Model 1 and 2 suggest that FDI inflows augments economic growth volatility whereas, the analysis of volatility of FDI reveal that FDI volatility contributes and enhances economic growth volatility. The results suggest that for every 1%-point increase in FDI inflows there is a significant evidence of diminishing volatility of economic growth by 0.0044 points.

Moreover, with every 1%-point rise in FDI volatility a proportionate expansion of 0.2099 points is evident in economic growth volatility. These findings are in line with the existing literature see (Mensah & Mensah, 2021; Tauqir, Majeed, & Kashif, 2021).

The study also models the role of remittances and remittance volatility on economic growth volatility the empirical results are presented is model 3 and 4 respectively. As opposed to the previous findings pertaining to FDIs, receipts of remittances are found to increase economic growth volatility.

The empirical results show that for every 1%-point increase in remittances inflows there is a significant evidence of increase in volatility of economic growth by 0.0110 points. Furthermore, the analysis of volatility of remittance also reveals that the volatility in remittances induce economic growth volatility. For every 1%-point increase in the volatility of remittances inflows there is a significant evidence of increase in volatility of economic growth by 1.1857 points.

Empirics presented in Table 6.5 also pertains to examining the impact of aid and its volatility. The results show that for every 1%-point increase in aid inflows there is a significant evidence of decrease in volatility of economic growth by 0.0029 points.

Furthermore, the analysis of volatility of aid also reveals that the volatility in aid increases economic growth volatility. For every 1%-point increase in the volatility of aid inflows there is a significant evidence of increase in volatility of economic growth by 0.1438 points.

The overall results for the emerging economies suggest that FDI and Aid significantly curtailed the economic growth volatility, however remittances are found to stimulate economic growth volatility. The results of the volatility component of capital flows however brings consistent findings to light, the study finds a significant role of all the types of capital flows in increasing the economic growth volatility in the emerging economies.

The reported coefficients of other explanatory covariates are also as per the priory expectations and consistently significant across all the specifications. As compared to the results for the standard OLS, FEM and the 2SLS, results presented by the systems GMM are much superior and stable.

The results from the models are stable and specific to the current discussion, the reliability test using the Hansen test for validity of instruments with an insignificant p-value confirms that the instruments used are valid. Similarly, the robust p-values reported for AR (1) and AR (2) for the first and second-order auto-correlated disturbances are also found to be insignificant in specifications.

Table 6.6. Output Volatility: System GMM Estimates of Foreign capital flows and its Volatility in Emerging Economies

	FDI		Remittances		Foreign Aid	
	(1)	(2)	(3)	(4)	(5)	(6)
GDP_Vol (-1)	0.3843***	0.3824***	0.4444***	0.3910***	0.3715***	0.3718***
	(0.0036)	(0.0060)	(0.0062)	(0.0057)	(0.0028)	(0.0037)
FDI	**-0.0044***	**-0.0049***				
	(0.0005)	(0.0004)				
FDI_Vol		**0.2099***				
		(0.0103)				
REM			**0.0110***	**0.0107***		
			(0.0008)	(0.0006)		
REM_Vol				**-1.1857***		
				(0.0218)		
AID					**-0.0029***	**-0.0028***
					(0.0008)	(0.0009)
AID_Vol						**0.1438***
						(0.0079)
FD	0.0015***	0.0014***	0.0121***	0.0075***	0.0014***	0.0014***
	(0.0001)	(0.0002)	(0.0003)	(0.0008)	(0.0001)	(0.0001)
GFC	-0.0063***	-0.0055**	-0.0065***	-0.0105***	-0.0051***	-0.0051***
	(0.0014)	(0.0022)	(0.0007)	(0.0009)	(0.0007)	(0.0011)
INF_Vol	2.0142***	2.1555***	2.1834***	2.0560***	1.9658***	1.9343***
	(0.0796)	(0.0740)	(0.0397)	(0.0516)	(0.0547)	(0.0644)
POPG	0.0148***	0.0294**	0.0464***	0.0202***	0.0471***	0.0510***
	(0.0031)	(0.0123)	(0.0044)	(0.0060)	(0.0047)	(0.0036)
HC	0.0016***	0.0020**	0.0024***	0.0018***	0.0024***	0.0026***
	(0.0002)	(0.0009)	(0.0004)	(0.0003)	(0.0004)	(0.0002)
TO	0.0007***	0.0010***	0.0015***	0.0013***	0.0005***	0.0005***
	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)
KO	-0.0022	0.0025	0.0186***	-0.0060	-0.0078*	-0.0097**
	(0.0036)	(0.0055)	(0.0044)	(0.0051)	(0.0046)	(0.0046)
Constant	-0.0713*	-0.1649	-0.4780***	-0.1963***	-0.2033***	-0.2258***
	(0.0368)	(0.1316)	(0.0390)	(0.0403)	(0.0474)	(0.0270)
# of Obs.	1,305	1,305	1,199	1,189	1,195	1,195
# of Countries	65	65	62	62	65	65
# of IVs	86	86	86	86	86	86
AR(1)	0.0030	0.0020	0.0000	0.0000	0.0030	0.0030
AR(2)	0.0590	0.0710	0.0340	0.0380	0.0610	0.0640
Hansen test	55.06	59.54	54.66	55.16	61.59	61.1700
p-value	0.9660	0.9040	0.9690	0.9590	0.8840	0.8750

Notes: GMM estimation of the dynamic panel data models: dependent variable: real GDP growth (1995–2019).

***; **; * Indicates a significance at a 1%, 5% and 10% confidence interval. The reported standard errors in parenthesis based on (Windmeijer, 2005) procedure. The values reported for AR (1) and AR (2) are the p-values for the first and second-order auto-correlated disturbances in the first difference equations. The value for Hansen J-test reports the p-value for the null hypothesis of instrument validity.

Source: Researchers Computation using STATA

The results presented in Table 6.7 pertains to the empirical findings based on the application of the systems GMM for the hypothesis that foreign capital flows decrease economic growth volatility while the volatility in foreign capital flows contributes positively towards economic growth volatility for the developing economies.

The empirical results presented in Model 1 and 2 suggest that FDI inflows augments economic growth volatility whereas, the analysis of volatility of FDI reveal that FDI volatility contributes and enhances economic growth volatility. The results suggest that for every 1%-point increase in FDI inflows there is a significant evidence of diminishing volatility of economic growth by 0.0303 points.

Moreover, with every 1%-point rise in FDI volatility a proportionate expansion of 0.1980 points is evident in economic growth volatility. These findings are in line with the existing literature see (Mensah & Mensah, 2021; Tauqir, Majeed, & Kashif, 2021).

The study also models the role of remittances and remittance volatility on economic growth volatility the empirical results are presented is model 3 and 4 respectively. As opposed to the previous findings pertaining to FDIs, receipts of remittances are found to increase economic growth volatility.

The empirical results show that for every 1%-point increase in remittances inflows there is a significant evidence of increase in volatility of economic growth by 0.0041 points. Furthermore, the analysis of volatility of remittance also reveals that the volatility in remittances induce economic growth volatility. For every 1%-point increase in the volatility of remittances inflows there is a significant evidence of increase in volatility of economic growth by 0.0305 points.

Empirics presented in Table 6.7 also pertains to examining the impact of aid and its volatility. The results show that for every 1%-point increase in aid inflows there is a significant evidence of decrease in volatility of economic growth by 0.0025 points.

Furthermore, the analysis of volatility of aid also reveals that the volatility in aid increases economic growth volatility. For every 1%-point increase in the volatility of aid inflows there is a significant evidence of increase in volatility of economic growth by 1.0042 points.

The overall results for the developing economies suggest that FDI and Aid significantly curtailed the economic growth volatility, however remittances are found to stimulate economic growth volatility. The results of the volatility component of capital flows however brings consistent findings to light, the study finds a significant role of all the types of capital flows in increasing the economic growth volatility in the emerging economies.

The reported coefficients of other explanatory covariates are also as per the priory expectations and consistently significant across all the specifications. As compared to the results for the standard OLS, FEM and the 2SLS, results presented by the systems GMM are much superior and stable.

The results from the models are stable and specific to the current discussion, the reliability test using the Hansen test for validity of instruments with an insignificant p-value confirms that the instruments used are valid. Similarly, the robust p-values reported for AR (1) and AR (2) for the first and second-order auto-correlated disturbances are also found to be insignificant in specifications.

**Table 6.7. Output Volatility: System GMM Estimates of Foreign capital flows and
its Volatility in Emerging Economies**

	FDI		Remittances		Foreign Aid	
	(1)	(2)	(3)	(4)	(5)	(6)
GDP_Vol (-1)	0.2711***	0.2676***	0.2240***	0.2255***	0.2605***	0.1364***
	(0.0086)	(0.0069)	(0.0043)	(0.0047)	(0.0131)	(0.0104)
FDI	**-0.0303***	**-0.0335***				
	(0.0015)	(0.0011)				
FDI_Vol		**0.1980***				
		(0.0201)				
REM			**0.0041***	**0.0047***		
			(0.0011)	(0.0014)		
REM_Vol				**0.0305***		
				(0.0170)		
AID					**-0.0025**	**-0.0080***
					(0.0030)	(0.0021)
AID_Vol						**1.0042***
						(0.0753)
FD	0.0016***	0.0019***	0.0057***	0.0058***	0.0015	0.0025***
	(0.0005)	(0.0005)	(0.0008)	(0.0012)	(0.0016)	(0.0002)
GFC	0.0106***	0.0110***	0.0051**	0.0056***	0.0058***	-0.0026
	(0.0013)	(0.0019)	(0.0022)	(0.0021)	(0.0021)	(0.0022)
INF_Vol	0.7787***	0.5969***	-0.1497***	-0.2320***	0.5207***	0.1775*
	(0.0401)	(0.0301)	(0.0526)	(0.0447)	(0.1089)	(0.0999)
POPG	0.1810***	0.1917***	0.1843***	0.1846***	0.1638***	0.0968**
	(0.0221)	(0.0228)	(0.0176)	(0.0220)	(0.0480)	(0.0403)
HC	0.0038***	0.0043***	0.0052***	0.0049***	0.0039**	0.0005
	(0.0009)	(0.0007)	(0.0004)	(0.0004)	(0.0018)	(0.0014)
TO	0.0033***	0.0033***	0.0018***	0.0020***	0.0023***	0.0027***
	(0.0005)	(0.0005)	(0.0006)	(0.0007)	(0.0006)	(0.0008)
KO	-0.0389*	-0.0290*	-0.0711***	-0.0738***	-0.0639***	-0.1234***
	(0.0219)	(0.0174)	(0.0084)	(0.0126)	(0.0217)	(0.0277)
Constant	-1.0971***	-1.1366***	-1.1586***	-1.1800***	-0.9597***	-0.4622**
	(0.1111)	(0.1129)	(0.0808)	(0.1146)	(0.2811)	(0.2038)
# of Obs.	623	623	525	518	638	638
# of Countries	44	44	42	42	44	44
# of IVs	86	86	86	86	86	86
AR(1)	0.2000	0.1580	0.2420	0.2460	0.2220	0.0490
AR(2)	0.1950	0.1590	0.2300	0.2190	0.1770	0.1050
Hansen test	37.21	36.15	37.02	35.56	36.03	37.99
p-value	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Notes: GMM estimation of the dynamic panel data models: dependent variable: real GDP growth (1995–2019).

***; **; * Indicates a significance at a 1%, 5% and 10% confidence interval. The reported standard errors in parenthesis based on (Windmeijer, 2005) procedure. The values reported for AR (1) and AR (2) are the p-values for the first and second-order auto-correlated disturbances in the first difference equations. The value for Hansen J-test reports the p-value for the null hypothesis of instrument validity.

Source: Researchers Computation using STATA
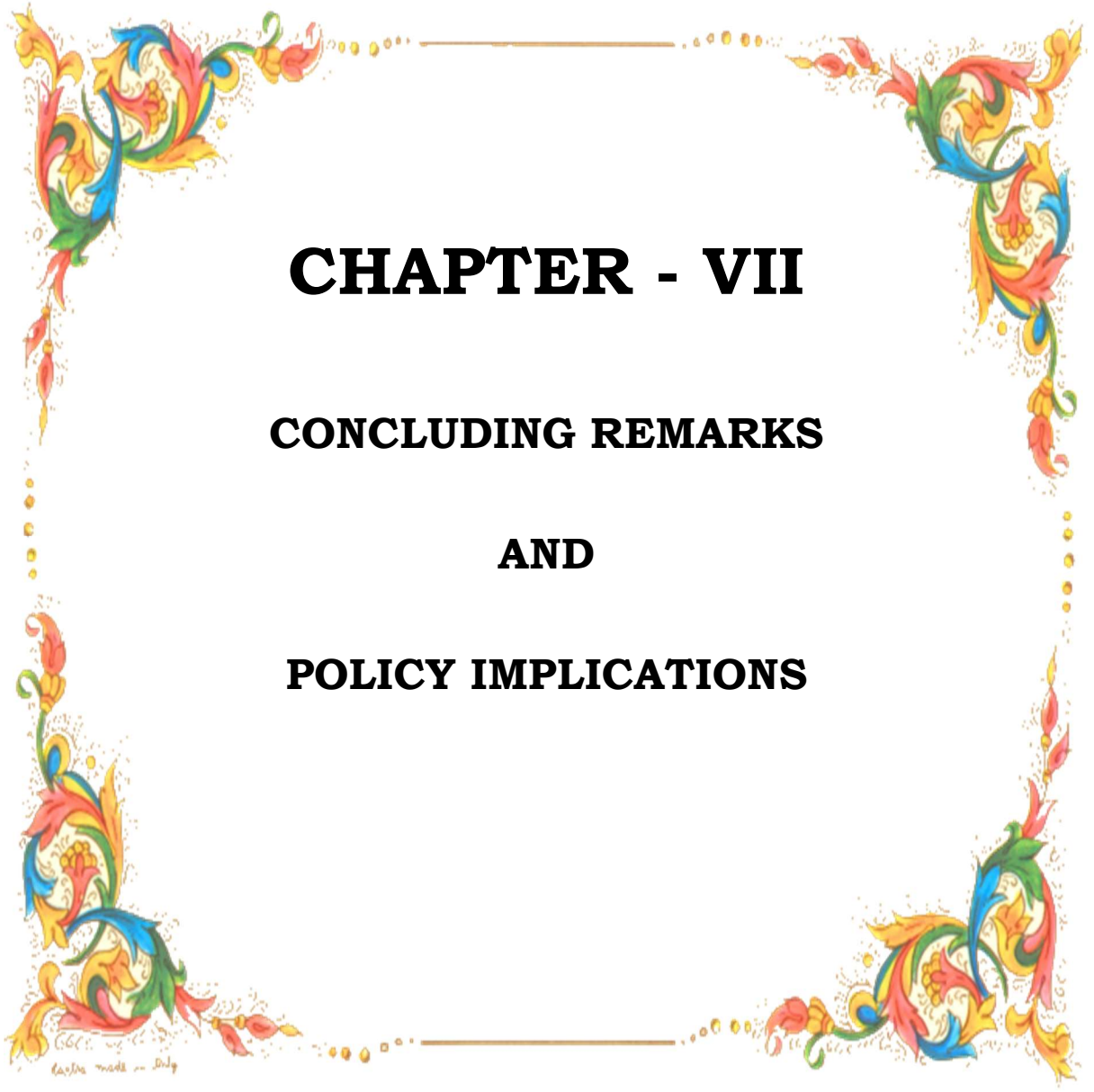
CHAPTER - VII

CONCLUDING REMARKS

AND

POLICY IMPLICATIONS

7.1. MAJOR FINDINGS OF THE STUDY

The current sections present the key empirical findings from the extensive analysis of data for all specified objectives under consideration for the study.

Objective I: To empirically examine the determinants of foreign capital flows in developing and developed economies.

Using an extensive panel data on the gross capital inflows and their drivers identified based on the empirical literature in advanced and emerging markets for the last 25 years, the study explored the key drivers of aggregate and disaggregate capital flows emphasizing on the both the push as well as pull factors. The disaggregated capital flow which comprises of three main categories of foreign investments i.e. direct investments (DI's), portfolio investments (PI's) and other investments (OI's) while, the summation of these three components defines the aggregate investments (AI's). Both the categories are analysed separately as they may respond to the drivers differently. Furthermore, due to the expected correlation between the residuals across the equations of disaggregated capital flows, the estimation is performed using the bootstrapped FE with SUR. Whilst, the aggregated capital flows are estimated using the standard fixed effects (FE) and random effects (RE) estimators or the OLS, based on the Hausman and Breusch-Pagan LM test results.

The estimations are primarily focused on all countries in the sample grouped together while further focus is devoted to examine variations on the effects of drivers for country classification based on the level of development i.e. advanced and emerging economies respectively. At the aggregate level, we find a strong association between capital flows and global drivers then domestic factors. Amongst the most consistent drivers, we can

see further variations in terms of country groupings. For instance, in the case of advanced economies amongst the very few domestic drivers, domestic GDP growth, gross debt level and institutional quality matter significantly to investors. While, in the case of emerging markets we find a strong positive association of capital flows with domestic GDP growth, level of debt, interest rates and financial development. Interestingly, these findings suggest that the effects of domestic drivers are not consistent for all the countries. However, interestingly on the push factor determinants we find identical outcomes across both advanced and emerging economies. Factors such as, commodity prices, global liquidity, returns global output growth and global volatility are some of the consistent drivers of capital flows. Additionally, the crisis variable also shows a strong influence on aggregate capital flows.

The empirical findings on the disaggregated capital flows suggest that different types of capital flows are driven by the drivers differently, although some drivers are consistent most however suggest varied effects across the types of capital flows. The most important domestic drivers of direct investments (DI's) consist of financial development, financial openness and institutional quality. While factors such as global liquidity, commodity prices and global risk form the most consistent global drivers. In essence, the estimations for DI's across samples advocate that both domestic as well as global factors drive DI's flows. In the case of portfolio investments (PI's) empirics suggest that both domestic as well as global factors are equally dominating PI's flows across economies. Amongst the drivers, diverse effects are registered in advanced and emerging economies, such as government spending which has a positive effect in emerging economies while a negative effect is evident for advanced economies while, debt which had a significant negative effect in emerging economies and insignificant effect in advanced markets. For most of the drives of PI's are similar to DI's flows, with the exception of interest rates and

exchange rates which foresee a consistent negative effects on PI flows. Similarly, amongst the global factors global returns and global risk along with global liquidity had a significant influence on PI flows. Finally, in the case of other investment flows (OI's) more diverse findings have emerged. The influence of global factors on OI's is much stronger than domestic factors. Interestingly, crisis dummy variable is positive and highly significant indicating that OI's fluctuate more rapidly during times of international instability most of the economies were recipients of larger chucks of OI's during the crisis period. Thus, based on the entire discussion in the chapter we can rightly conclude that from the policy perspective, disaggregation of capital flows is essential so as to draft suitable policies. Furthermore, the effect of foreign capital flows in different economies and their drivers significantly vary, thus policies targeting these specific drivers can substantially improve the inflows of foreign capital in the country.

Based on the entire empirical findings this study vouches in favour of disaggregation of capital flows for policy making. This is based on two critical dimensions firstly with respect to empirics based on advanced and emerging economies suggest significant difference and thus one size fits all approach widely evident in the empirical literature. The effects of drivers of each capital flows vary considerably across economies, thus suggesting that country specific examination is key for effective policy making. The second dimension pertains to disaggregation of capital flows while examining their drivers rather than following a collective approach. For instance, the empirical results in this study suggest that factors that drive DI's are not the same for PI's or OI's and vice versa. Although, the estimations suggest interconnectedness, this positive correlation can be related to factors such as random events which make all types of capital flows appear attractive to investors.

Objective II: To determine the relative contribution of foreign capital flows to economic growth in developing economies.

The empirical results based on 65 developing economies from 1995 to 2019 focuses on capturing the effect of three key capital flows namely FDI, remittances and foreign aid on economic growth in the developing economies. Additionally, the study also assesses the role of financial development and institutions as key absorptive factors for enhancing the growth effects of foreign capital flows om economic growth of the countries.

The positive and highly significant coefficients for FDI, remittances and foreign aid is a strong indication that the inflow of these flows significantly enhances the economic growth in host country. The study tests robustness by including all the three capital flows in one system of equation, interestingly the study reports no ambiguities in our results, all the types of capital flows impact economic growth in similar manner together.

The empirical model also seeks to capture the role of institutions and level of financial development on economic growth in developing countries. The findings show that both institutional quality index and the index of financial development have a positive and significant coefficient values across the specifications respectively. Moreover, the impact of financial development is more strong and significant as compared to the quality of institutions. A look into the magnitude of the impact suggest that both financial development and institutional quality are highly related to economic growth. The findings are in line with the pre-existing literature (Arestis & Demetriades, 1997; Butkiewicz & Yanikkaya, 2006; Calderón & Liu, 2003; Catrinescu et al., 2009; De Gregorio & Guidotti, 1995; Khalifa Al-Yousif, 2002; Khan & Senhadji, 2003; Knack & Keefer, 1995; Mauro, 1995; Ram, 2004; Redek & Sušjan, 2016)

Initially, the study examines the role of institutions and financial development in FDI-growth nexus in our sample of developing countries by including an interaction term between FDI and institutions (FDI x Inst.) and FDI and financial development (FDI x FD) as additional explanatory variables. The coefficient of interest here is γ, where $\gamma = \frac{dY}{dFDI}$. The positive and highly significant coefficient value suggests that in the presence of robust institutions and financial development, FDI generates positive synergy effect on economic growth in developing countries. The study also examines the role of institutions and financial development in remittance – growth and aid – growth association, the empirical results suggest that both remittances and foreign aid interaction with the level of institutional quality and financial development in the host country positively affects economic growth.

Although a plethora of cross country studies examining the role of foreign capital on economic growth, empirical evidences by far remains inconclusive. Moreover, most studies are restricted to examining the direct or indirect effect via interactions, our study however extends the scope by examining the presence of threshold alike the recent studies of (Ajide & Raheem, 2016; Ali & Isse, 2005; An & Yeh, 2020; Bangake & Eggoh, 2019; Slesman, Baharumshah, & Wohar, 2015; Wu & Hsu, 2008; Yiew & Lau, 2018). The study also adopts a superior methodology of dynamic panel threshold model based on the (Kremer et al., 2013) study. The study models the estimates by measuring institutional quality and financial development as the threshold variables while, the foreign capital flows representing FDI, remittances and aid are modelled as regime dependent variables. In essence the study tries to assess if higher and lower regimes of institutional quality and financial development make the effect of foreign capital on economic growth vary. The

slope parameters estimates, $\hat{\beta}_1$ and $\hat{\beta}_2$ denotes the regime dependent marginal effects of foreign capital flows on economic growth.

The results for FDI – growth nexus and the role of institutional quality and financial development. The point estimate of the threshold value of (-1.39) and (0.16) represents the estimated threshold of institutional quality and financial development indices for the selected sample of developing countries. With respect to the regime dependent marginal effect, FDI is found to have a negative significant impact of (-0.4437) on economic growth in the lower regime while a positive and significant impact of (0.5112) in the higher regime above the estimated threshold. Interestingly, unlike the case of institutions, FDI is found to have a significant positive effect on economic growth of (0.2478) in the lower regime of financial development and a cumulative effect of (0.5082) in the higher regime. All the other policy covariates are found to have a plausible significant effect as expected. The empirical results indicate that FDI does not foster economic growth in countries with lower levels of institutional quality while countries above the threshold with strong and robust institutions experience a FDI led growth through the institutional channel. On the other hand, the study also observes that countries both having low and high level of financial development experience FDI induced economic growth however the magnitude of the effect is found to be much stronger in the case of countries with higher level of financial development. The results in essence suggest robust institutions and well-functioning financial markets and institutions are essential thresholds that drive FDI flows as well as foster economic growth in the developing countries. The results also exhibit the role of institutional quality and financial development in remittances-growth nexus. The estimates of (-0.7059) and (0.1107) represents the thresholds for institutional quality and financial development over the remittance – growth association for the selected developing countries. The regimes specific marginal effect of remittances on

economic growth is reported to be (0.7676) in the lower regime while (-2.4133) in the upper regime. This results suggest that remittances are favourable for growth in countries with lower institutional quality only while, on the contrary countries with higher levels of institutional quality do not benefit from remittances induced economic growth. Although institutional quality is an important determinant of remittance flows studies such as (Francois, Ahmad, Keinsley, & Nti-Addae, 2022; Schneider & Enste, 2000) suggest that country heterogeneity with respect to consumption and investment across countries can plausibly be responsible for such varied effects, the study of (Abdih, Chami, Dagher, & Montiel, 2012) also suggest that higher ratio of remittance receipts erodes the institutions particularly government effectiveness in the home country. On the contrary, remittances are found to have significant positive effects of (1.1049) points in upper regime while a negative insignificant effect of (-0.1266) is reported in the lower regime. Specifically, remittances contribute to economic growth in countries with well-functioning financial sector comprising of strong financial markets and institutions. Furthermore, remittances create progressive synergies based on its application. The receipts of remittances when channel for productive use in an effective manner can prompt economic growth positively (Bangake & Eggoh, 2019).

The impact of aid on economic growth particularly in the developing countries have been emphasized over the past decades, the literature however remains highly inconclusive. Majority of the study proposing the negative effects or at the best insignificant effect stems for the assumption that aid growth association is uniform and linear across countries (C. J. Dalgaard & Hansen, 2001; Papanek, 1972). Since the study of (C. J. Dalgaard & Hansen, 2001) the focus on absorptive capacity on the aid – growth nexus has led to many recent studies reassessing the association. One main channel that emerged is institutional channel (Bräutigam & Knack, 2004; Feeny & de Silva, 2012;

Tang & Bundhoo, 2017). The analysis focuses to examine the role of institutional and financial development channel on the widely debated aid-growth nexus in developing countries. At an estimated level of threshold, aid is found to be highly productive in fostering economic growth in the upper regimes of institutional quality and financial development. We find a highly positive and significant coefficient of (0.4721) and (0.7166) for foreign aids marginal effect on economic growth dependent on the level of institutional quality and financial development in the host country.

The empirical results using the dynamic panel threshold estimation are found to be consistent and robust throughout. The test the reliability by performing the Sargans test for validity of instruments an insignificant p-value confirms that the instruments used are valid. Similarly, the empirics are also found to be stable and robust with the p-values reported for AR (1) and AR (2) for the first and second-order auto-correlated disturbances being insignificant in the first difference equations throughout specifications. The p-value for the Hansen J-test and Sargans test is also found to be insignificant as expected and thus confirms instrument validity.

Objective III: To determine the volatility in the capital flows and empirically examine the effects of volatile capital flows on the growth instability in developing economies.

The empirical results to examine the impact of volatility of foreign capital inflows on economic growth instability or volatility in emerging and developing economies is based on a large sample covering a total of 110 countries over the period of 1995 to 2019. The empirical analysis is carried out by splitting the whole sample into emerging economies (68 countries) which comprises of high income and upper middle income countries while, developing economies (44 countries) consist of economies in the lower middle income

to low income classification. The estimates of the present study are based on the GMM approach proposed by (Arellano & Bover, 1995; Roodman, 2009). The approach is superior to the basic OLS and 2SLS approach widely adopted in most of the previous studies.

The empirical results of the baseline estimation to examine the impact of FDI and its volatility on economic growth is based on the full sample of 110 countries and utilising the Pooled OLS, Fixed Effects (FEM) & Random Effects (REM) estimation and the 2 - stage least square (2SLS). The empirical analysis is carried out to assess the hypothesis that volatility in FDI increases economic growth volatility. The empirical results across all the models and specification suggest that the coefficient of variable FDI is consistently negative and significant suggesting that FDI inflows decreases economic growth instability. Whilst, the FDI volatility causes an increase in the economic growth instability. The results for remittances are consistently positive and insignificant suggesting a weak evidence of the notion that remittances inflows increase economic growth instability. Furthermore, the study report that volatility in remittances flows, across the empirical results a negative and insignificant coefficient indicating a weak proposition that remittances curtails economic growth instability. The empirics for Aid and its volatility on the economic growth volatility across all the models and specification suggest that the coefficient of variable aid is inconsistent but positive and insignificant in some cases suggesting a weak evidence of the notion that aid inflows increases economic growth instability. Furthermore, the reports that volatility in aid flows, across the empirical results show a positive and significant coefficient indicating that aid volatility causes economic growth instability.

The results of estimates from panel estimation models using pooled OLS or fixed and random effect, particularly when dealing with potential endogeneity of the independent variables would lead to bias if the static panel data estimation is used (Nickell, 1981). Thus in terms of empirical modelling, this study seeks to employ a very popular and widely accepted GMM methodology developed by (Anderson & Hsiao, 1982), (Bond, 1991), (Arellano & Bover, 1995) and (Blundell & Bond, 1998). The results pertaining to the empirical findings based on the application of the systems GMM for the hypothesis that foreign capital flows namely, FDI, Remittances and Aid decreases economic growth volatility while the volatility in foreign capital flows contributes positively towards economic growth volatility. The empirical results suggest that FDI inflows augments economic growth volatility whereas, the analysis of volatility of FDI reveal that FDI volatility contributes and enhances economic growth volatility. The results suggest that for every 1%-point increase in FDI inflows there is a significant evidence of diminishing volatility of economic growth by 0.0098 points. Moreover, with every 1%-point rise in FDI volatility a proportionate expansion of 0.28 points is evident in economic growth volatility. These findings are in line with the existing literature see (Mensah & Mensah, 2021; Tauqir, Majeed, & Kashif, 2021). The results examining the role of remittances and remittance volatility on economic growth volatility suggest that for every 1%-point increase in remittances inflows there is a significant evidence of increase in volatility of economic growth by 0.0075 points. Furthermore, the analysis of volatility of remittance reveals that the volatility in remittances increases economic growth volatility. For every 1%-point increase in the volatility of remittances inflows there is a significant evidence of increase in volatility of economic growth by 0.9153 points. Interestingly, the results do not present a strong evidence to the fact that aid dampens volatility of economic growth. Results show that for every 1%-point increase in aid inflows there is an

insignificant evidence of decrease in volatility of economic growth by 0.0010 points. Furthermore, the analysis of volatility of aid also reveals that the volatility in aid increases economic growth volatility. For every 1%-point increase in the volatility of aid inflows there is a significant evidence of increase in volatility of economic growth by 0.4893 points. The results also present empirical findings based on the application of the systems GMM for the hypothesis that foreign capital flows decrease economic growth volatility while the volatility in foreign capital flows contributes positively towards economic growth volatility for the emerging economies and developing economies samples. The empirical results suggest that FDI inflows augments economic growth volatility whereas, the analysis of volatility of FDI reveal that FDI volatility contributes and enhances economic growth volatility. Secondly, as opposed to the previous findings pertaining to FDIs, receipts of remittances are found to increase economic growth volatility. The empirical results show that increase in remittances inflows causes significant increase in volatility of economic growth. Furthermore, the volatility of remittance also induces economic growth volatility. Lastly, empirics examining the impact of aid and its volatility suggest that increase in aid inflows leads to significant evidence of decrease in volatility of economic growth while, volatility in aid increases economic growth volatility. The overall results for the emerging economies and the developing economies suggest that FDI and Aid significantly curtailed the economic growth volatility, however remittances are found to stimulate economic growth volatility. The results of the volatility component of capital flows however brings consistent findings to light, the study finds a significant role of all the types of capital flows in increasing the economic growth volatility in the emerging economies.

7.2. CONCLUSION OF THE STUDY

The ever growing literature has extensively documented both empirically as well as theoretically the important role of foreign capital flows along with its inherent risk on the economy. However, despite all the benefits they offer capital flows also bring in together some prominent challenges for policy makers around the world. In today's times, management of foreign capital flows, their directions, their size as well as their inherent volatility has emerged as on one the intimidating task for policy makers. With further thrust towards global integration, the need for managing capital flows has escalated further, this regards to the growing literature which suggest that unmanaged capital flows can threaten and weaken domestic fundamentals.

The present study has thee fold implications and examines three prominent aspects in the growing literature of foreign capital flows. First, identifying the key drivers of prominent capital flows around the world is crucial to understanding the behavior of these investment flows and thereby devising effective policy mix for safeguarding and strengthening domestic fundamentals such as financial system and so on. In particular, more precise and effective policies can be made by understanding the nature of capital flows and whether to focus on domestic or global drivers of these capital flows. The present study examines the global and domestic drivers of foreign capital flows in the emerging and developing economies for a period of 25 years ranging from 1995 to 2019. Based on the entire empirical findings this study vouches in favor of disaggregation of capital flows for policy making. This is based on two critical dimensions firstly with respect to empirics based on advanced and emerging economies suggest significant difference and thus one size fits all approach widely evident in the empirical literature. The effects of drivers of each capital flows vary considerably across economies, thus

suggesting that country specific examination is key for effective policy making. The second dimension pertains to disaggregation of capital flows while examining their drivers rather than following a collective approach. For instance, the empirical results in this study suggest that factors that drive DI's are not the same for PI's or OI's and vice versa. Although, the estimations suggest interconnectedness, this positive correlation can be related to factors such as random events which make all types of capital flows appear attractive to investors.

Secondly, the study emphasizes on examining the relative contribution of foreign capital flows toward economic growth specifically focusing on the discourse in developing economies. Although the vast literature on this issue remains far from being conclusive, this study tries to fill this gap by examining the effects of capital flows on the recipient economies with major emphasis on key factors such as financial development and institutional quality of the host country that augment the inherent effects. The empirical analysis is carried out in three phases of estimations, the first phase estimation is carried out focusing on the raw effects of foreign capital flows on economic growth across country specifications. The study reports a significant and positive effect of FDI, Remittances and Aid flows on economic growth in the sample of developing countries. In the second phase the analysis narrows down to examining the role of specific factors such as financial development and institutional quality on the effects of foreign capital flows on economic growth, the study reports that both level of financial development and the quality of institutions in the host country matter greatly to foreign capital flows moreover, a significant positive enhanced effect is evident across the specifications. Finally, in the third stage the study examines the presence of nonlinear association and the impact of foreign capital flows on economic growth based on local conditions in the recipient countries which are referred to as factors of absorptive capacity, the study

suggest that in the presence of good quality of institutional infrastructure and financial system foreign capital flows positively stimulates economic growth.

Lastly, the study explores the quite less explored strand focusing on the role of foreign capital flows and their inherent volatilities on output growth volatility in host country. The study hypothesizes based on the literature that receipts of foreign capital flows dampens economic growth instability whereas, volatility in foreign capital receipts magnifies the output growth volatility in host country. The empirics suggest that for the emerging and the developing economies, FDI and Aid significantly curtailed the economic growth volatility, however remittances are found to stimulate economic growth volatility. The results of the volatility component of capital flows however brings consistent findings to light, the study finds a significant role of all the types of capital flows in increasing the economic growth volatility in the emerging economies. The conclusions drawn from the intensive empirical work carried out in the present study is noteworthy and also significantly contributes to the growing discourse on foreign capital flows and economic growth dynamics around the world.

7.3. POLICY IMPLICATIONS OF THE STUDY

As widely documented in the theoretical and empirical literature, regardless of the benefits of capital flows, large and volatile inflows significantly affect stability of domestic economy and its macroeconomic fundamentals. Despite the inherent advantages a major concern for the developed and developing nations relates to the sudden stops and surges associated with the capital flows. Kawai and Takagi (2010) discussed that the vulnerability can be observed from three main types of risks: the macroeconomic risk, financial stability risk, and capital flow reversal risk. In the case of high and volatile capital inflows, the macroeconomic risk can be explained further by

sharp exchange rate appreciation, the high rise of inflation, and rapid credit expansion. The financial stability risk can be associated with the increasing asset prices, the maturity and currency mismatch and the lower quality of assets. Moreover, capital flow reversals can bring significant risks to the international reserves, as well as severe currency depreciation, which can endanger the domestic economy.

The empirical findings based on the determinants of capital flows implied that at the aggregate level, capital inflows to emerging economies are mainly driven by the country-specific pull factors (such as financial market development, exchange rates and political risk) and only showed limited connection with the push factors (global volatility). This result contrasts with the finding in advanced economies, where the influence of push factors is more dominant. Our finding calls for different policy implications in both economies. Policy responses in emerging economies for example, should be more focused on making their domestic economies more resilient to external shocks by deepening financial markets, improving the quality of financial institutions, as well as enhancing macroeconomic policies. In this case, as the inflows are mainly driven by the country-specific factors, imposing capital control may not be effective in these economies. On the contrary, when the role of the push factors is substantial as found in advanced countries, the policymakers may wish to concentrate more on strengthening their capability to withstand capital flows volatility, as those factors are outside of the control of policymakers. To reduce the volatility of the flows, cooperation of the policymakers across countries, as well as across international institutions needs to be enhanced.

Tentative recommendations based on the analysis of impact of capital flows on economic growth in developing economies relates to significant implications for public policy for

the developing countries, such as India. The policy measures for the attraction of greater inflows of international capital must be complemented with measures for increasing the depth of domestic financial markets by means of increasing access to- and availability of credit, as well as improving financial infrastructure and intermediation. This will reduce the susceptibility of these countries to shocks emanating from unexpected changes on the global commodities markets.

Policies should be put in place such as reduction of fees for the transfer of remittances which would favour the inflow of remittances to achieve a greater inflow of this type of foreign capital into the developing economies. Remittances should be put into viable use like investments to ensure that they translate into economic growth. With the remittances invested rather than consumed, employment opportunities would be created and income generated; thereby leading to further increases in the level of output of the country, hence rapid economic growth.

The diversification of FDI into different sectors should also be targeted so as to contribute more positively to economic growth. FDI should be targeted into sectors which have been identified to bring about growth in the economy. economies should focus on encouragement of more foreign direct investment into the country rather than portfolio equity which is highly volatile and easily reversible in times of crisis especially in a country such as South Africa should be the focus.

This good economic performance can also be attributed to the political stability, a strong institutional framework, open trade policies, a favourable regulatory environment and a low level of corruption existing in the country. Political instability, which is a drawback in many of the developing countries, has contributed to their low growths and one of the reasons why capital flows have not been efficient in leading to economic growth in the

countries, therefore it is recommended that leaders should guarantee stability by addressing the concerns of citizens and avoiding violence so as to make the country attractive to foreign investors.

In addition, the role of financial development is also highlighted to be a significant factor fostering economic growth. Countries with higher levels of financial development with well-functioning financial markets and institutions trade higher levels of economic growth. Sound policies directed towards productive channelizing of foreign capital especially aid and remittances can create positive synergies for enhanced growth effects in developing countries. The policy implications are exclusively more relevant for developing countries with low levels of per capita GDP, institutional quality and financial development. These countries can achieve faster growth and prosperity by improving the quality of their institutions and achieving financial development.

Lastly, a look into the volatility of foreign capital flows and its effects on output volatility reveal that volatility in the capital flows transverse in the output growth volatility in both the developed and developing economies. This implicate that policy makers should focus on drafting suitable policies to curtail the inherent volatility in the capital flows. For instance, FDI should be targeted into sectors which have been identified to bring about growth in the economy, also policy makes should focus on drafting suitable policies related to the specific sectors that keep the attractiveness intact. With respect to other flows such as remittance, reduction of fees for the transfer of remittances which would favour the inflow of remittances to achieve a greater inflow, moreover policies leading to more productive use of remittances should also be drafted that can sustain positive synergies of remittances on economic growth. Lastly, aid being one of the notable source of developmental capital should be monitored closely, moreover more emphasis should

be devoted in strengthening the institutional infrastructure and political association that can lead to more aid flow and transverse in higher economic growth in the developing countries.

In essence, understanding the dynamics of foreign capital flows and its association with economic growth based and resultant consequences on the macroeconomic fundamentals of the host country is key to policy making in the 21st century, with the wide availability of data and tools policy making should focus more deliberately on taping the positive synergies and translating the same towards long run sustainable economic growth. The current study brings in more light on the pertinent issues related to foreign capital flows and economic growth dynamics.

Based on the extensive study carried out a specific policy package to attract and make foreign capital more growth oriented for developing nations particularly is presented as follows:

1. Macroeconomic Policies

a) Reducing the burden of external debt - External debt by far remains as one of the most significant source of capital for growth in many of the developing economies. Research has shown that if the borrowed money is invested in the non-traded sector, it will lead the economy in a situation where it will be unable to pay for imports required to maintain growth. Moreover, a heavy debt burden also hinders a country's ability to restore confidence in its domestic economy and credibility to its reform programme. The IMFs HIPC initiative have significantly helped in reducing the debt-service burden to sustainable levels for several heavily indebted poor countries that have a track record of

implementing sound economic policies. These countries are required to invest the savings made from HIPC relief in priority areas such as health and education.

b) Capital account convertibility - Over the years many countries have made tremendous progress in eliminating the capital account restrictions relating to long-term capital flows, however a number of developing countries still continue to have restrictions relating to FDI and the repatriation of foreign exchange, these has severely affected the investor confidence in these countries (IMF, 1999). Freeing-up capital account transactions can send a positive signal to the investment community about the intention of the government towards welcoming foreign investment. Opening up the capital account should be carefully sequenced so that it is sustainable.

2. Ensuring Macroeconomic Stability.

Macroeconomic stability is a prerequisite for attracting sustainable, long-term foreign investment, the growing literature has concluded this effect empirically and theoretically. However, much is still needed on the policy front so as to improve and to ensure that countries which continue to perform poorly carry out the significant and necessary reforms such as improvements in macroeconomic performance — low inflation, low and sustainable budget deficits, stable but competitive exchange rates etc. will help to enhance the overall environment. For instance, low budget deficits can ensure that the private sector is not crowded out of the market for credit, similarly a stable and competitive exchange rate reduces uncertainty and ensures export competitiveness.

3. Investment in Public Infrastructure.

The low level of development in infrastructure, institutions and human capital constitute major underlying challenges in most of the developing and under developed nations.

Inadequate investment in the public infrastructure reduces the return to private investment since they are complementary. Thus investment in public utilities, human development in terms of health and education can create positive synergies to attract and create growth opportunities for sustainable growth in the economy.

4. Building Sound Institutions

Government agencies can have a considerable impact on the investment decision of foreign investors. It is evident that the cost of doing business increases when such institutions are very inefficient. A fair and efficient legal system is thus essential prerequisite in order to ensure that all economic agents are treated fairly and there exists an effective mechanism for resolving conflict. Country's should focus on protection and strengthening of Legal rights (property rights for instance) and the rule of law should prevail. Such a system can then act as a restraint against abuse of power by the executive arm of government, and a check against reversal of policies that are enshrined in the law.

5. Strengthening the Financial Sector

The financial sector plays a significant role in the management and sustenance of capital inflows. For instance, inflows of foreign capital can augment the deposit base of banks and other institutions and consequently their ability to expand their loan portfolio in addition the foreign inflows also present foreign exchange risks, which need to be effectively managed both internally and by external supervision by the Central Bank or other supervisory authority. The influx of foreign capital into a country depends on the nature and purpose of the inflow itself. For example, portfolio flows are more likely to flow into the country if there is a broad-based and liquid stock exchange where equity can be traded. Indeed, where a fledgling stock market already exists, foreign capital can

enhance liquidity and diversify holdings of equity holdings. However, one danger that has been highlighted by recent events in Latin America and East Asia is that short-term portfolio flows can be subject to sudden reversal, causing an exchange rate crisis.

6. Political reform

Political disorder is one key factor damaging the economic growth (Chege, 1999) and is not a conducive environment for both domestic and foreign investment. Political reform in a country should be primarily aimed at building frameworks which are more inclusive, encourage power-sharing and allow for enhanced public participation in the political process. The system should provide room for political debate; opposition groups should be given official recognition under the law. Lack of access to television and radio and other forms of communication that unfairly limit the ability of opposition views to campaign for support can lead to alternative, including violent, forms of struggle. A strong and robust political and democratic structure is essential to uphold the rights and provide remedies both domestic and foreign investors.

7. Insurance against policy risk

Countries particularly the small and developing once should sign bilateral or multilateral investment treaties that have legal binding elements which focuses on establishing the obligations of the host country toward foreign investors from other signatory countries. These can help to ensure continuity in the environment under which foreign investors operate and also to limit the power of governments to renege on their promises.

8. Regional Co-operation

Regional trade agreements that lower barriers to trade by eliminating tariff and non-tariff barriers can potentially solve various economic problems faced by many small

economies. Presence of regional groupings significantly helps prospective investors however the absence causes difficulties to potential investors in identifying market opportunities. Complicated structures usually cause red tape and thus demanding more investment in expertise in the areas of taxation and legal procedures, this in turn result in an increases in the cost of doing business. Thus efforts should be made to associate with more Regional Trade Agreements (RTAs) and other associations to allow free platform for domestic and foreign investors and boost investment.

9. Microeconomic and Sectoral Policies

Macroeconomic policies alone are unlikely to effectively promote foreign investment. Complementary microeconomic policies at the industry and firm level can play a critical role in providing incentives for foreign investors.

a) Tourism - Tourism is one of the potential and a significant source of foreign inflows. Tourism should be promoted in a way that will safeguards the long-term viability of the countries natural resources. Sound policies should be drafted that boost tourism activities without affecting the natural resources, flora and fauna. The policies in the tourism sector should be properly focused such that it creates local opportunities for employment and entrepreneurship.

b) Investment promotion centres - Potential investors should be clearly identified and targeted so that they are introduced with the opportunities available to them that they are currently not aware of. This requires skilled communication and a well thought out strategy on the part of agencies such as investment authorities. This type of marketing has been seen in trade and investment missions from developed countries. They usually

involve a high level politician (such as the minister for trade) and chief executives of top tier companies from the host country.

c) Export promotion zones - These are zones defined to provide various incentives so as to attract both domestic and foreign investment into the export sectors. These incentives include tax exemptions on profits, favourable utility prices and guaranteed service provision and reduced red tape, among others. While EPZs may be costly in the short-run, they contribute significant positive externalities in the form of technology and management skill spillovers. Other benefits include increased employment and skill acquisition through training and development. The use of the EPZ in Mauritius has resulted in strong links between the domestic textile industry and textile producers in Hong Kong, China.

7.4. SCOPE OF FUTURE RESEARCH

Based on the limitations of the current study number plausible avenues for future research have been identified. First, future research can be focused on examining the dynamics on specific groups of countries such as SSA, MENA etc. this will contribute significantly to the discourse. Second, in relation to FDIs, researchers can examine the firm level and sector level effects based on a panel setting this will bring more insights on the suitability of FDI inflows. Third, focusing on FDI as a channel, researcher can also focus on examining the determinants of FDI at firm level and sector level in the economy. Fourth, a cross country analysis focusing on the present research framework will also bring about significant contributions to the literature. Lastly, a growing body on literature now focuses on the environmental effects of foreign capital flows and long run substance of sustainable economic growth, the study does not consider the debate hence researchers can attempt on elaborate the growing debate with further empirical evidences.

RESEARCH
PUBLICATIONS
&
PRESENTATIONS

RESEARCH PUBLICATIONS

1. Bommadevara, Ramesh., & Sakharkar, Akshay. (2021). Do Good Institutions and Economic Uncertainty Matter to Foreign Direct Investment? *Asian Economic and Financial Review*, *11*(6), 471-487.

   (Scopus Indexed Journal)

2. Sakharkar, Akshay., Padyala, Sri Ram. & Bommadevara, Ramesh., (2023). Foreign Capital Flows and Economic Growth in Developing Countries - Examining The Role of Institutional Quality and Financial Development. *Review of Economics and Finance,* 2023, 21, 690-701.

   (Scopus Indexed Journal)

RESEARCH PRESENTATIONS

1. Presented a research paper titled *"What drives foreign capital flows? – A disaggregation analysis of gross capital inflows to advanced and emerging economies"* at International Conference on Digital Transformation – A Strategic Approach Towards Sustainable Development" organised by the Institute of Management Education Research and Training (IMERT), Pune, Maharashtra on 11th & 12th February, 2022. **(Best Paper Award).**

2. Presented a research paper titled *"Foreign Direct Investment and Economic Growth in Developing Countries - Examining The Role of Institutional Quality and Financial Development."* At the 4th International Conference on Latest Trends in Engineering and Management (ICLTEM-2023), Organized by Institute for Engineering Research and Publication (IFERP), Pune, Maharashtra, India on 23rd & 24th March 2023. **(Best Paper Award).**

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APPENDIX

Table A1. List of countries

Advanced Economies				Emerging Economies					
1.	Aruba	31.	New Zealand	1.	Argentina	31.	Indonesia	61.	South Africa
2.	Australia	32.	Norway	2.	Armenia	32.	Jamaica	62.	Sri Lanka
3.	Austria	33.	Panama	3.	Bangladesh	33.	Jordan	63.	Suriname
4.	Bahrain	34.	Poland	4.	Belarus	34.	Kazakhstan	64.	Thailand
5.	Barbados	35.	Portugal	5.	Benin	35.	Kenya	65.	Timor-Leste
6.	Belgium	36.	Romania	6.	Bolivia	36.	Kiribati	66.	Togo
7.	Canada	37.	Seychelles	7.	Bosnia and Herzegovina	37.	Kosovo	67.	Tunisia
8.	Chile	38.	Singapore	8.	Botswana	38.	Kyrgyz Republic	68.	Turkey
9.	Croatia	39.	Slovak Republic	9.	Brazil	39.	Madagascar	69.	Uganda
10.	Cyprus	40.	Slovenia	10.	Bulgaria	40.	Malawi	70.	Ukraine
11.	Czech Republic	41.	Spain	11.	Burkina Faso	41.	Malaysia	71.	Vanuatu
12.	Denmark	42.	Sweden	12.	Burundi	42.	Mali	72.	Venezuela, RB
13.	Estonia	43.	Switzerland	13.	Cabo Verde	43.	Mexico	73.	Zambia
14.	France	44.	United Kingdom	14.	Cambodia	44.	Moldova		
15.	Germany	45.	United States	15.	China	45.	Morocco		
16.	Greece	46.	Uruguay	16.	Colombia	46.	Mozambique		
17.	Hungary			17.	Costa Rica	47.	Namibia		
18.	Iceland			18.	Cote d'Ivoire	48.	Nicaragua		
19.	Ireland			19.	Dominica	49.	Niger		
20.	Israel			20.	Dominican Republic	50.	Nigeria		
21.	Italy			21.	Egypt, Arab Rep.	51.	Pakistan		
22.	Japan			22.	El Salvador	52.	Paraguay		
23.	Korea, Rep.			23.	Georgia	53.	Peru		
24.	Kuwait			24.	Ghana	54.	Philippines		
25.	Latvia			25.	Grenada	55.	Russian Federation		
26.	Lithuania			26.	Guatemala	56.	Rwanda		
27.	Luxembourg			27.	Guinea	57.	Samoa		
28.	Malta			28.	Guinea-Bissau	58.	Senegal		
29.	Mauritius			29.	Honduras	59.	Serbia		
30.	Netherlands			30.	India	60.	Solomon Islands		

Table A2. Summary Statistics of Variables

Variable	Full Sample					Advanced Economies					Emerging Economies				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Capital Flows															
Direct Investment	2975	71.44	526.6	-3.92	10776.36	1150	178.43	836.04	-.83	10776.36	1825	4.02	8.42	-3.923	78.12
Portfolio Investment	2975	70.18	445.87	0.00	7364.42	1150	164.91	700.10	0.00	7364.42	1825	10.48	78.47	0.00	1142.95
Other Investment	2975	53.29	215.00	0.00	3581.13	1150	117.83	335.25	0.00	3581.13	1825	12.62	16.93	0.00	153.16
Aggregate Investment	2975	194.90	1138.07	0.00	20378.28	1150	461.18	1795.96	0.00	20378.28	1825	27.10	84.23	0.00	1185.96
Domestic(Pull) Factors															
Domestic GDP Growth	2951	3.73	4.101	-28.10	88.958	1145	2.93	3.25	-14.83	25.16	1806	4.24	4.48	-28.10	88.95
Govt. Consumption Expenditure	2781	16.81	8.811	0.91	147.73	1142	18.63	4.26	8.25	39.45	1639	15.53	10.72	0.91	147.73
Gross Debt	2741	54.34	35.51	0.00	260.96	1114	60.35	39.07	3.09	237.54	1627	50.23	32.23	0.00	260.96
Inflation	2957	1.68e+11	1.95e+12	0.56	3.40e+13	1150	95.45	33.02	2.67	261.94	1807	2.769e+11	2.491e+12	0.56	3.430e+13
Interest Rate Spread	1789	7.32	8.546	-58.92	74.18	504	5.21	5.30	-3.26	55.80	1285	8.15	9.39	-58.92	74.18
Exchange Rate	2658	378.19	1278.77	0.01	14236.93	853	80.37	236.15	0.20	1736.20	1805	518.94	1523.28	0.00	14236.93
Money Growth	2413	15.51	19.16	-57.56	351.44	662	9.84	11.98	-25.55	125.03	1751	17.65	20.85	-57.56	351.44
Trade Openness	2915	86.17	52.39	13.38	437.32	1144	107.26	68.84	16.67	437.32	1771	72.55	31.40	13.38	220.40
Financial Development	2925	0.35	24.00	0.00	2.27	1125	0.55	0.21	0.08	1.00	1800	0.22	0.15	0.00	2.27
Institutional Quality	2950	0.16	0.76	-1.92	2.40	1125	0.92	0.54	-0.29	2.40	1825	-0.29	0.43	-1.92	1.00
Capital Openness	2755	0.57	0.36	0.00	1.00	1084	0.83	0.27	0.00	1.00	1671	0.40	0.32	0.00	1.00
Global (Push) Factors															
Commodity Prices	2975	104.14	43.36	47.30	182.47	1150	104.14	43.37	47.30	182.47	1825	104.14	43.36	47.30	182.47
Global Liquidity	2975	72.75	25.69	37.00	121.57	1150	72.75	25.70	37.00	121.57	1825	72.75	25.69	37.00	121.57
Global GDP Growth	2975	2.96	1.21	-1.67	4.40	1150	2.96	1.21	-1.67	4.40	1825	2.96	1.21	-1.67	4.40
S&P 500 Returns	2975	9.74	17.64	-38.49	34.11	1150	9.74	17.64	-38.49	34.11	1825	9.74	17.64	-38.49	34.11
Bond Yield	2975	3.77	1.42	1.78	6.45	1150	3.77	1.42	1.78	6.45	1825	3.77	1.42	1.78	6.45
Global Volatility Index (VIX)	2975	19.99	6.59	11.04	40.00	1150	19.99	6.60	11.04	40.00	1825	19.99	6.60	11.04	40.00

Table A3. OLS Estimation Results – Direct Investments

	(1) Full Sample	(2) Developed Economies	(3) Emerging Economies
Domestic(Pull) Factors			
Domestic GDP Growth	**-0.0573***	**-0.1310**	-0.0331
	(0.0325)	(0.0570)	(0.0372)
Government Consumption Expenditure	0.0468	-0.1540	0.0587
	(0.0367)	(0.1316)	(0.0362)
Gross Debt	**-0.1296***	**-0.1537***	**-0.1018***
	(0.0227)	(0.0470)	(0.0241)
Inflation	-0.0012	0.1895	-0.0045
	(0.0095)	(0.1543)	(0.0088)
Interest Rate Spread	0.0144	**-0.1810***	**0.0999***
	(0.0271)	(0.0647)	(0.0285)
Exchange Rate	**-0.0364***	**0.0470**	**-0.0420***
	(0.0109)	(0.0220)	(0.0120)
Money Growth	**-0.0978***	-0.0507	0.0070
	(0.0233)	(0.0420)	(0.0280)
Trade Openness	**0.2192***	**0.8610***	-0.0554
	(0.0360)	(0.0736)	(0.0387)
Financial Development	**3.6932***	**2.9928***	**3.8700***
	(0.1639)	(0.2613)	(0.2146)
Institutional Quality	**0.5105***	**0.4234***	**0.1548**
	(0.0529)	(0.0987)	(0.0744)
Capital Openness	0.2825***	0.1678	**0.1930***
	(0.0597)	(0.1137)	(0.0689)
Global (Push) Factors			
Commodity Prices	**0.0030***	**0.0050***	0.0015
	(0.0010)	(0.0017)	(0.0012)
Global Liquidity	**0.0129***	**0.0142***	**0.0117***
	(0.0022)	(0.0037)	(0.0026)
Global GDP Growth	-0.0391	**-0.0801**	-0.0190
	(0.0246)	(0.0408)	(0.0281)
S&P 500 Returns	-0.0033	-0.0053	-0.0012
	(0.0022)	(0.0035)	(0.0026)
Bond Yield	-0.0701	**-0.1320***	-0.0457
	(0.0484)	(0.0789)	(0.0557)
Global Volatility Index (VIX)	**-0.0204***	**-0.0393***	-0.0073
	(0.0064)	(0.0106)	(0.0074)
Dummy GFC	-0.0881	0.1613	**-0.2447***
	(0.1196)	(0.1948)	(0.1377)
Const.	-0.7338	-2.6357**	-0.4909
	(0.4479)	(1.0606)	(0.5062)
Observations	2,975	1,150	1,825
R-squared	0.573	0.528	0.314
No. of countries	119	46	73

Note: Robust standard errors in parentheses (.)
*, **, *** are significant levels at 10%, 5%, 1% respectively

Table A4. OLS Estimation Results – Portfolio Investments

	(1) Full Sample	(2) Developed Economies	(3) Emerging Economies
Domestic(Pull) Factors			
Domestic GDP Growth	-0.0701	**-0.1019***	-0.0336
	(0.0437)	(0.0610)	(0.0583)
Government Consumption Expenditure	**0.2202***	**-0.4827***	**0.2746***
	(0.0494)	(0.1409)	(0.0568)
Gross Debt	**-0.1681***	**-0.0878***	**-0.1648***
	(0.0305)	(0.0503)	(0.0379)
Inflation	**-0.0832***	**0.2722***	**-0.0787***
	(0.0128)	(0.1651)	(0.0138)
Interest Rate Spread	**-0.0879****	**-0.2767***	0.0393
	(0.0365)	(0.0692)	(0.0448)
Exchange Rate	**-0.0820***	**-0.0534****	**-0.0644***
	(0.0147)	(0.0236)	(0.0188)
Money Growth	**-0.2444***	**-0.0848***	**-0.1949***
	(0.0313)	(0.0449)	(0.0439)
Trade Openness	**0.1237****	**0.7125***	-0.0665
	(0.0484)	(0.0787)	(0.0607)
Financial Development	**2.5863***	**2.4085***	**1.6186***
	(0.2204)	(0.2796)	(0.3365)
Institutional Quality	**0.8203***	**0.4724***	**0.5820***
	(0.0712)	(0.1057)	(0.1167)
Capital Openness	**0.3025***	**0.5674***	-0.1357
	(0.0803)	(0.1216)	(0.1080)
Global (Push) Factors			
Commodity Prices	0.0008	**0.0037****	-0.0012
	(0.0014)	(0.0018)	(0.0019)
Global Liquidity	**0.0126***	**0.0112***	**0.0132***
	(0.0030)	(0.0039)	(0.0040)
Global GDP Growth	-0.0193	**-0.0846***	0.0090
	(0.0331)	(0.0437)	(0.0440)
S&P 500 Returns	**-0.0111***	**-0.0123***	**-0.0087****
	(0.0030)	(0.0038)	(0.0040)
Bond Yield	-0.0073	-0.0860	0.0640
	(0.0651)	(0.0844)	(0.0874)
Global Volatility Index (VIX)	**-0.0434***	**-0.0630***	**-0.0222***
	(0.0086)	(0.0113)	(0.0116)
Dummy GFC	**0.4294***	**0.4836****	0.3130
	(0.1609)	(0.2085)	(0.2159)
Const.	0.8729	-0.6204	0.6068
	(0.6023)	(1.1349)	(0.7938)
Observations	2,975	1,150	1,825
R-squared	0.473	0.500	0.116
No. of countries	119	46	73

Note: Robust standard errors in parentheses (.)
*, **, *** are significant levels at 10%, 5%, 1% respectively

Table A5. OLS Estimation Results – Other Investments

	(1) Full Sample	(2) Developed Economies	(3) Emerging Economies
Domestic(Pull) Factors			
Domestic GDP Growth	-0.0215	**-0.1213****	-0.0365
	(0.0300)	(0.0565)	(0.0329)
Government Consumption Expenditure	**0.2913*****	**-0.5033*****	**0.3085*****
	(0.0339)	(0.1306)	(0.0321)
Gross Debt	**-0.0373***	**-0.1720*****	0.0069
	(0.0209)	(0.0466)	(0.0214)
Inflation	**-0.0175****	**-0.4348*****	**-0.0156****
	(0.0088)	(0.1531)	(0.0078)
Interest Rate Spread	-0.0135	**-0.1591****	**0.0580****
	(0.0250)	(0.0641)	(0.0253)
Exchange Rate	**-0.0505*****	**-0.0761*****	**-0.0423*****
	(0.0101)	(0.0219)	(0.0106)
Money Growth	**-0.0875*****	-0.0460	0.0066
	(0.0214)	(0.0416)	(0.0248)
Trade Openness	**0.3124*****	**0.7575*****	**0.1525*****
	(0.0332)	(0.0730)	(0.0342)
Financial Development	**1.4423*****	**1.7568*****	**0.5203*****
	(0.1511)	(0.2592)	(0.1899)
Institutional Quality	**0.1759*****	-0.0767	**-0.1334****
	(0.0488)	(0.0979)	(0.0659)
Capital Openness	**0.3984*****	**0.5659*****	**0.1841*****
	(0.0550)	(0.1128)	(0.0609)
Global (Push) Factors			
Commodity Prices	**0.0040*****	**0.0030***	**0.0046*****
	(0.0010)	(0.0017)	(0.0011)
Global Liquidity	**0.0103*****	0.0057	**0.0151*****
	(0.0020)	(0.0036)	(0.0023)
Global GDP Growth	**-0.0588*****	-0.0636	**-0.0541****
	(0.0227)	(0.0405)	(0.0248)
S&P 500 Returns	**-0.0112*****	-0.0086**	**-0.0116*****
	(0.0020)	(0.0035)	(0.0023)
Bond Yield	-0.0142	-0.0772	0.0214
	(0.0446)	(0.0783)	(0.0493)
Global Volatility Index (VIX)	**-0.0351*****	**-0.0309*****	**-0.0325*****
	(0.0059)	(0.0105)	(0.0066)
Dummy GFC	0.2673**	0.2319	0.2168*
	(0.1103)	(0.1932)	(0.1218)
Const.	0.0712	3.5914***	-0.3461
	(0.4128)	(1.0521)	(0.4479)
Observations	2,975	1,150	1,825
R-squared	0.434	0.316	0.337
No. of countries	119	46	73

Note: Robust standard errors in parentheses (.)
*, **, *** are significant levels at 10%, 5%, 1% respectively

Table A6. OLS Estimation Results – Aggregate Investment

	(1) Full Sample	(2) Advanced Economies	(3) Emerging Economies
Domestic(Pull) Factors			
Domestic GDP Growth	-0.0138	**-0.1373****	-0.0079
	(0.0327)	(0.0642)	(0.0356)
Government Consumption Expenditure	**0.4594*****	**-0.2666***	**0.4676*****
	(0.0370)	(0.1483)	(0.0346)
Gross Debt	**-0.1072*****	**-0.2286*****	**-0.0654*****
	(0.0229)	(0.0530)	(0.0231)
Inflation	**-0.0163***	**-0.3329***	**-0.0168****
	(0.0096)	(0.1739)	(0.0084)
Interest Rate Spread	-0.0080	**-0.1987*****	**0.0803*****
	(0.0273)	(0.0729)	(0.0273)
Exchange Rate	**-0.0376*****	-0.0135	**-0.0435*****
	(0.0110)	(0.0248)	(0.0114)
Money Growth	**-0.0877*****	-0.0405	0.0003
	(0.0234)	(0.0473)	(0.0268)
Trade Openness	0.2499***	**0.6919*****	**0.0951****
	(0.0363)	(0.0829)	(0.0370)
Financial Development	**2.3117*****	**2.2568*****	**1.6638*****
	(0.1651)	(0.2944)	(0.2051)
Institutional Quality	**0.3865*****	0.1753	0.0240
	(0.0533)	(0.1113)	(0.0711)
Capital Openness	**0.3609*****	**0.5675*****	**0.1193***
	(0.0601)	(0.1281)	(0.0658)
Global (Push) Factors			
Commodity Prices	**0.0053*****	**0.0046****	**0.0058*****
	(0.0011)	(0.0019)	(0.0012)
Global Liquidity	**0.0165*****	**0.0132*****	**0.0202*****
	(0.0022)	(0.0041)	(0.0025)
Global GDP Growth	**-0.0693*****	**-0.0818***	**-0.0612****
	(0.0248)	(0.0460)	(0.0268)
S&P 500 Returns	**-0.0135*****	**-0.0115*****	**-0.0139*****
	(0.0022)	(0.0040)	(0.0025)
Bond Yield	-0.0239	-0.0951	0.0160
	(0.0487)	(0.0889)	(0.0533)
Global Volatility Index (VIX)	**-0.0416*****	**-0.0447*****	**-0.0358*****
	(0.0065)	(0.0119)	(0.0071)
Dummy GFC	**0.2441****	0.2417	0.1854
	(0.1205)	(0.2195)	(0.1316)
Const.	0.0076	3.0350**	-0.4357
	(0.4512)	(1.1951)	(0.4838)
Observations	2,975	1,150	1,825
R-squared	0.5405	0.3725	0.4393
No. of countries	119	46	73

Note: Robust standard errors in parentheses (.)
*, **, *** are significant levels at 10%, 5%, 1% respectively

Table A7. FE & RE Estimation Results – Direct Investments

	Full Sample		Advanced Economies		Emerging Economies	
	(1)	(2)	(3)	(4)	(5)	(6)
	FEM #	REM	FEM #	REM	FEM #	REM
Domestic(Pull) Factors						
Domestic GDP Growth	**-0.0694****	**-0.0696****	**-0.0891***	**-0.0919***	-0.0368	-0.0348
	(0.0276)	(0.0277)	(0.0497)	(0.0499)	(0.0315)	(0.0315)
Government Consumption Expenditure	-0.0758	-0.0407	0.2823	0.1062	-0.0496	-0.0243
	(0.0475)	(0.0454)	(0.1811)	(0.1645)	(0.0450)	(0.0432)
Gross Debt	-0.0161	-0.0238	**-0.1794*****	**-0.1644*****	0.0345	0.0190
	(0.0225)	(0.0221)	(0.0543)	(0.0527)	(0.0232)	(0.0227)
Inflation	**-0.1553*****	**-0.0736*****	**0.6526*****	**0.5654*****	**-0.1128*****	**-0.0477****
	(0.0296)	(0.0210)	(0.2042)	(0.1932)	(0.0284)	(0.0195)
Interest Rate Spread	-0.0571	-0.0499	-0.0961	**-0.1577***	0.0129	0.0464
	(0.0382)	(0.0356)	(0.1003)	(0.0899)	(0.0381)	(0.0358)
Exchange Rate	**-0.0682****	**-0.0937*****	0.0534	0.0554	-0.0676	**-0.0835*****
	(0.0289)	(0.0222)	(0.0400)	(0.0352)	(0.0494)	(0.0297)
Money Growth	-0.0151	-0.0282	0.0372	0.0117	-0.0167	-0.0098
	(0.0227)	(0.0224)	(0.0459)	(0.0441)	(0.0244)	(0.0243)
Trade Openness	**0.1326*****	**0.1421*****	**0.1992**	**0.4066*****	0.0630	0.0414
	(0.0452)	(0.0435)	(0.1388)	(0.1198)	(0.0442)	(0.0429)
Financial Development	**1.5516*****	**2.7461*****	-0.6601	**1.3841*****	**1.6780*****	**2.1943*****
	(0.3366)	(0.2723)	(0.7190)	(0.5060)	(0.3578)	(0.3255)
Institutional Quality	0.0712	**0.2773*****	**0.2372***	**0.2983****	0.1477	**0.1729***
	(0.0801)	(0.0716)	(0.1254)	(0.1204)	(0.1107)	(0.1026)
Capital Openness	**0.2115*****	**0.2540*****	**0.5585*****	**0.4696*****	**-0.1845****	-0.1315
	(0.0753)	(0.0722)	(0.1426)	(0.1367)	(0.0849)	(0.0815)
Global (Push) Factors						
Commodity Prices	**0.0039*****	**0.0034*****	**0.0074*****	**0.0063*****	**0.0019****	**0.0018***
	(0.0008)	(0.0008)	(0.0014)	(0.0014)	(0.0009)	(0.0009)
Global Liquidity	**0.0172*****	**0.0146*****	**0.0155*****	**0.0137*****	**0.0155*****	**0.0141*****
	(0.0018)	(0.0018)	(0.0032)	(0.0032)	(0.0021)	(0.0021)
Global GDP Growth	**-0.0455****	**-0.0403****	**-0.1012*****	**-0.0909*****	-0.0253	-0.0236
	(0.0191)	(0.0193)	(0.0337)	(0.0339)	(0.0216)	(0.0218)
S&P 500 Returns	**-0.0035****	-0.0027	**-0.0104*****	**-0.0076****	0.0005	0.0006
	(0.0017)	(0.0017)	(0.0030)	(0.0030)	(0.0020)	(0.0020)
Bond Yield	-0.0592	**-0.0645***	-0.1015	**-0.1124***	-0.0253	-0.0268
	(0.0373)	(0.0377)	(0.0653)	(0.0657)	(0.0431)	(0.0433)
Global Volatility Index (VIX)	**-0.0173*****	**-0.0174*****	**-0.0422*****	**-0.0393*****	-0.0034	-0.0035
	(0.0050)	(0.0050)	(0.0090)	(0.0090)	(0.0058)	(0.0058)
Dummy GFC	-0.0969	-0.0990	0.1572	0.1319	**-0.2150****	**-0.2227****
	(0.0927)	(0.0936)	(0.1621)	(0.1630)	(0.1063)	(0.1069)
Const.	0.6692*	0.0195	-1.5604	-2.4952**	-0.2570	-0.5098
	(0.3969)	(0.3952)	(1.1289)	(1.0814)	(0.4379)	(0.4351)
Observations	2,975	2,975	1,150	1,150	1,825	1,825
R-squared	0.3303		0.4893		0.2447	
No. of countries	119	119	46	46	73	73
Hausman Test	101.92 (0.0000)***		31.86 (0.0228)**		42.09 (0.0011)***	
BP LM test for RE	-		-		-	

Note: Robust standard errors in parentheses (.)

*, **, *** are significant levels at 10%, 5%, 1% respectively

\# denotes the recommended results from Hausman test & BP LM test.

Table A8. FE & RE Estimation Results – Portfolio Investments

	Full Sample		Advanced Economies		Emerging Economies	
	(1)	(2)	(3)	(4)	(5)	(6)
	FEM [#]	REM	FEM	REM [#]	FEM	REM [#]
Domestic(Pull) Factors						
Domestic GDP Growth	0.0265	0.0163	-0.0423	-0.0452	**0.0954****	**0.0911****
	(0.0345)	(0.0349)	(0.0494)	(0.0492)	(0.0447)	(0.0452)
Government Consumption Expenditure	**0.1146***	**0.1569*****	0.1651	0.0620	**0.1929*****	**0.2073*****
	(0.0594)	(0.0575)	(0.1800)	(0.1674)	(0.0639)	(0.0623)
Gross Debt	**0.0936*****	**0.0768*****	-0.0582	-0.0536	**0.1387*****	**0.1059*****
	(0.0281)	(0.0279)	(0.0539)	(0.0526)	(0.0329)	(0.0327)
Inflation	**-0.1661*****	**-0.1492*****	**0.6868*****	**0.6190*****	**-0.0904****	**-0.1094*****
	(0.0369)	(0.0274)	(0.2029)	(0.1945)	(0.0402)	(0.0288)
Interest Rate Spread	-0.0023	-0.0347	**-0.2366****	**-0.2627*****	**0.1082****	**0.1230****
	(0.0477)	(0.0452)	(0.0997)	(0.0919)	(0.0541)	(0.0517)
Exchange Rate	**-0.3790*****	**-0.3125*****	**-0.1263*****	**-0.1126*****	**-0.5396*****	**-0.3056*****
	(0.0361)	(0.0288)	(0.0397)	(0.0362)	(0.0700)	(0.0441)
Money Growth	0.0050	-0.0211	0.0507	0.0357	0.0033	-0.0057
	(0.0284)	(0.0283)	(0.0456)	(0.0441)	(0.0346)	(0.0349)
Trade Openness	**0.2018*****	**0.1991*****	**0.2776****	**0.3733*****	**0.1490****	**0.1291****
	(0.0565)	(0.0551)	(0.1380)	(0.1240)	(0.0627)	(0.0618)
Financial Development	0.0176	**1.5219*****	-0.0938	**0.9286***	**-0.9221***	-0.4326
	(0.4204)	(0.3503)	(0.7145)	(0.5488)	(0.5076)	(0.4720)
Institutional Quality	-0.0969	**0.1899****	**0.5064*****	**0.5172*****	**-0.5843*****	**-0.4119*****
	(0.1000)	(0.0912)	(0.1246)	(0.1206)	(0.1570)	(0.1485)
Capital Openness	**0.2614*****	**0.3121*****	**0.5876*****	**0.5689*****	**-0.2088***	**-0.2146***
	(0.0940)	(0.0914)	(0.1417)	(0.1370)	(0.1204)	(0.1176)
Global (Push) Factors						
Commodity Prices	0.0002	-0.0000	**0.0047*****	**0.0042*****	**-0.0036*****	**-0.0032****
	(0.0010)	(0.0010)	(0.0014)	(0.0014)	(0.0013)	(0.0014)
Global Liquidity	**0.0193*****	**0.0166*****	**0.0113*****	**0.0107*****	**0.0204*****	**0.0181*****
	(0.0022)	(0.0022)	(0.0032)	(0.0031)	(0.0030)	(0.0030)
Global GDP Growth	-0.0341	-0.0285	**-0.1029*****	**-0.0978*****	-0.0080	-0.0058
	(0.0238)	(0.0242)	(0.0335)	(0.0334)	(0.0307)	(0.0312)
S&P 500 Returns	**-0.0073*****	**-0.0068*****	**-0.0144*****	**-0.0132*****	-0.0023	-0.0016
	(0.0022)	(0.0022)	(0.0030)	(0.0030)	(0.0029)	(0.0029)
Bond Yield	0.0082	0.0032	-0.0941	-0.0964	0.0281	0.0377
	(0.0466)	(0.0475)	(0.0649)	(0.0648)	(0.0611)	(0.0621)
Global Volatility Index (VIX)	**-0.0275*****	**-0.0290*****	**-0.0660*****	**-0.0645*****	-0.0118	-0.0102
	(0.0062)	(0.0063)	(0.0089)	(0.0089)	(0.0082)	(0.0083)
Dummy GFC	**0.3171*****	**0.3249*****	**0.5190*****	**0.5016*****	**0.2806***	**0.2816***
	(0.1157)	(0.1178)	(0.1611)	(0.1606)	(0.1507)	(0.1534)
Const.	0.6852	0.1348	-1.2882	-1.6155	-0.2559	-0.8016
	(0.4958)	(0.5008)	(1.1219)	(1.0865)	(0.6213)	(0.6280)
Observations	2,975	2,975	1,150	1,150	1,825	1,825
R-squared	0.1990		0.4863		0.1158	
No. of countries	119	119	46	46	73	73
Hausman Test	62.06 (0.0000)***		12.11 (0.6706)		2.91 (1.0000)	
BP LM test for RE	-		2299.99 (0.0000)***		4132.42 (0.0000)***	

Note: Robust standard errors in parentheses (.)
*, **, *** are significant levels at 10%, 5%, 1% respectively
# denotes the recommended results from Hausman test & BP LM test.

Table A9. FE & RE Estimation Results – Other Investments

	Full Sample		Advanced Economies		Emerging Economies	
	(1)	(2)	(3)	(4)	(5)	(6)
	FEM	REM #	FEM #	REM	FEM #	REM
Domestic(Pull) Factors						
Domestic GDP Growth	-0.0254	-0.0220	**-0.1119****	**-0.1098****	0.0301	0.0219
	(0.0249)	(0.0250)	(0.0482)	(0.0483)	(0.0282)	(0.0282)
Government Consumption Expenditure	**0.3323*****	**0.3463*****	**0.3324***	**0.1355**	**0.3394*****	**0.3368*****
	(0.0428)	(0.0410)	(0.1754)	(0.1604)	(0.0403)	(0.0386)
Gross Debt	**0.0402****	**0.0448****	**-0.1190****	**-0.1209****	**0.0767*****	**0.0772*****
	(0.0203)	(0.0200)	(0.0526)	(0.0512)	(0.0208)	(0.0203)
Inflation	**-0.0836*****	**-0.0495****	-0.1561	-0.2245	**-0.1155*****	**-0.0500*****
	(0.0266)	(0.0193)	(0.1978)	(0.1880)	(0.0254)	(0.0173)
Interest Rate Spread	**0.1177*****	**0.0822****	0.0954	0.0146	**0.1085*****	**0.1016*****
	(0.0344)	(0.0323)	(0.0972)	(0.0878)	(0.0341)	(0.0320)
Exchange Rate	**0.0870*****	0.0038	0.0457	0.0062	**0.1741*****	0.0175
	(0.0260)	(0.0203)	(0.0387)	(0.0344)	(0.0442)	(0.0263)
Money Growth	**0.0444****	0.0176	0.0583	0.0214	0.0238	0.0221
	(0.0205)	(0.0202)	(0.0444)	(0.0428)	(0.0218)	(0.0217)
Trade Openness	0.0028	0.0461	0.0858	0.2732**	-0.0129	0.0061
	(0.0407)	(0.0393)	(0.1345)	(0.1173)	(0.0395)	(0.0383)
Financial Development	0.3782	**1.1163*****	-0.3392	0.6385	0.3216	0.4102
	(0.3031)	(0.2479)	(0.6964)	(0.5006)	(0.3202)	(0.2904)
Institutional Quality	0.0846	**0.2482*****	**0.3257*****	**0.2960***	-0.0381	-0.0156
	(0.0721)	(0.0649)	(0.1214)	(0.1170)	(0.0990)	(0.0916)
Capital Openness	-0.0407	0.0340	0.0208	0.0826	-0.0130	0.0108
	(0.0678)	(0.0653)	(0.1381)	(0.1328)	(0.0759)	(0.0728)
Global (Push) Factors						
Commodity Prices	**0.0053*****	**0.0048*****	**0.0049*****	**0.0041*****	**0.0055*****	**0.0052*****
	(0.0007)	(0.0007)	(0.0014)	(0.0014)	(0.0008)	(0.0008)
Global Liquidity	**0.0120*****	**0.0107*****	**0.0072****	**0.0061****	**0.0144*****	**0.0147*****
	(0.0016)	(0.0016)	(0.0031)	(0.0031)	(0.0019)	(0.0018)
Global GDP Growth	**-0.0692*****	**-0.0653*****	**-0.0802****	**-0.0745****	**-0.0646*****	**-0.0633*****
	(0.0172)	(0.0174)	(0.0327)	(0.0328)	(0.0194)	(0.0195)
S&P 500 Returns	**-0.0113*****	**-0.0108*****	**-0.0131*****	**-0.0112*****	**-0.0093*****	**-0.0101*****
	(0.0016)	(0.0016)	(0.0029)	(0.0029)	(0.0018)	(0.0018)
Bond Yield	-0.0087	-0.0134	**-0.1176***	**-0.1169***	0.0390	0.0363
	(0.0336)	(0.0340)	(0.0633)	(0.0636)	(0.0385)	(0.0387)
Global Volatility Index (VIX)	**-0.0341*****	**-0.0342*****	**-0.0483*****	**-0.0444*****	**-0.0278*****	**-0.0290*****
	(0.0045)	(0.0045)	(0.0087)	(0.0087)	(0.0052)	(0.0052)
Dummy GFC	**0.2817*****	**0.2799*****	**0.4293*****	**0.3931***	**0.2239***	**0.2147***
	(0.0834)	(0.0844)	(0.1570)	(0.1577)	(0.0951)	(0.0956)
Const.	0.9121**	0.6419*	3.7749***	3.4599***	-0.4585	-0.2825
	(0.3574)	(0.3575)	(1.0935)	(1.0511)	(0.3919)	(0.3887)
Observations	2,975	2,975	1,150	1,150	1,825	1,825
R-squared	0.3351		0.2474		0.4229	
No. of countries	119	119	46	46	73	73
Hausman Test	14.51 (0.6952)		33.15 (0.0160)**		32.15 (0.0211)**	
BP LM test for RE	5336.59 (0.0000)***		-		-	

Note: Robust standard errors in parentheses (.)
*, **, *** are significant levels at 10%, 5%, 1% respectively
# denotes the recommended results from Hausman test & BP LM test.

Table A10. FE & RE Estimation Results – Aggregate Investments

	Full Sample		Advanced Economies		Emerging Economies	
	(1)	(2)	(3)	(4)	(5)	(6)
	FEM#	REM	FEM	REM#	FEM#	REM
Domestic(Pull) Factors						
Domestic GDP Growth	-0.0015	0.0001	**-0.1243****	**-0.1219****	**0.0684****	**0.0595***
	(0.0281)	(0.0283)	(0.0564)	(0.0562)	(0.0307)	(0.0307)
Government Consumption Expenditure	**0.3785*****	**0.4194*****	**0.4428****	0.2779	0.3898***	0.4067***
	(0.0484)	(0.0460)	(0.2052)	(0.1857)	(0.0438)	(0.0417)
Gross Debt	**0.0470****	**0.0433***	**-0.1758*****	**-0.1755*****	**0.0962*****	**0.0859*****
	(0.0229)	(0.0226)	(0.0615)	(0.0594)	(0.0226)	(0.0221)
Inflation	**-0.0994*****	**-0.0558*****	0.0354	-0.0497	**-0.1213*****	**-0.0511*****
	(0.0301)	(0.0208)	(0.2313)	(0.2180)	(0.0276)	(0.0181)
Interest Rate Spread	**0.1449*****	**0.0949*****	0.0413	-0.0452	**0.1625*****	**0.1512*****
	(0.0389)	(0.0361)	(0.1136)	(0.1015)	(0.0371)	(0.0345)
Exchange Rate	0.0426	-0.0303	0.0308	0.0152	**0.1066****	-0.0251
	(0.0294)	(0.0221)	(0.0453)	(0.0398)	(0.0480)	(0.0272)
Money Growth	**0.0548****	0.0229	0.0620	0.0297	0.0366	0.0340
	(0.0232)	(0.0228)	(0.0520)	(0.0497)	(0.0237)	(0.0236)
Trade Openness	0.0255	0.0623	0.1242	**0.2863****	-0.0065	0.0055
	(0.0461)	(0.0442)	(0.1573)	(0.1354)	(0.0430)	(0.0415)
Financial Development	**0.6298***	**1.7946*****	-0.8351	0.7940	**0.7211****	**1.0141*****
	(0.3429)	(0.2726)	(0.8146)	(0.5737)	(0.3479)	(0.3115)
Institutional Quality	0.0808	**0.3207*****	**0.4219*****	**0.4145*****	-0.1147	-0.0517
	(0.0816)	(0.0723)	(0.1420)	(0.1358)	(0.1076)	(0.0985)
Capital Openness	0.0301	0.1119	0.2466	0.2737*	-0.0590	-0.0355
	(0.0767)	(0.0733)	(0.1615)	(0.1542)	(0.0825)	(0.0787)
Global (Push) Factors						
Commodity Prices	**0.0066*****	**0.0060*****	**0.0066*****	**0.0056*****	**0.0065*****	**0.0062*****
	(0.0008)	(0.0008)	(0.0016)	(0.0016)	(0.0009)	(0.0009)
Global Liquidity	**0.0193*****	**0.0172*****	**0.0148*****	**0.0133*****	**0.0204*****	**0.0203*****
	(0.0018)	(0.0018)	(0.0036)	(0.0036)	(0.0020)	(0.0020)
Global GDP Growth	**-0.0813*****	**-0.0758*****	**-0.1003*****	**-0.0915****	**-0.0739*****	**-0.0719*****
	(0.0194)	(0.0197)	(0.0382)	(0.0382)	(0.0210)	(0.0212)
S&P 500 Returns	**-0.0125*****	**-0.0118*****	**-0.0160*****	**-0.0136*****	**-0.0096*****	**-0.0105*****
	(0.0018)	(0.0018)	(0.0034)	(0.0034)	(0.0020)	(0.0020)
Bond Yield	-0.0097	-0.0164	-0.1162	-0.1189	0.0308	0.0294
	(0.0380)	(0.0386)	(0.0740)	(0.0741)	(0.0419)	(0.0422)
Global Volatility Index (VIX)	**-0.0370*****	**-0.0375*****	**-0.0576*****	**-0.0537*****	**-0.0285*****	**-0.0298*****
	(0.0051)	(0.0051)	(0.0102)	(0.0101)	(0.0056)	(0.0056)
Dummy GFC	**0.2483*****	**0.2466*****	**0.4054****	**0.3632****	**0.2060****	**0.1937***
	(0.0944)	(0.0957)	(0.1836)	(0.1836)	(0.1033)	(0.1041)
Const.	0.7243*	0.3048	3.1711**	2.6056**	-0.7219*	-0.6327
	(0.4043)	(0.4018)	(1.2790)	(1.2201)	(0.4258)	(0.4206)
Observations	2,975	2,975	1,150	1,150	1,825	1,825
R-squared	0.4210		0.3480		0.5076	
No. of countries	119	119	46	46	73	73
Hausman Test	1448.70 (0.0000) ***		20.50 (0.2494)		78.64 (0.0000)***	
BP LM test for RE			1243.90 (0.0000)***			

Note: Robust standard errors in parentheses (.)
*, **, *** are significant levels at 10%, 5%, 1% respectively
# denotes the recommended results from Hausman test & BP LM test.

A11. Joint Significance Test Results for the Eliminated Variables

	Full Sample		Advanced Economies		Emerging Economies	
Direct Investment	Government Consumption Expenditure Inflation Interest Rate Spread Global GDP Growth S&P 500 Returns Bond Yield	0.1119	Government Consumption Expenditure Inflation Money Growth Global GDP Growth S&P 500 Returns	0.1026	Government Consumption Expenditure Inflation Money Growth Global GDP Growth S&P 500 Returns Bond Yield	0.5676
Portfolio Investment	Commodity Prices Global GDP Growth Bond Yield	0.8280	Bond Yield	.0.3044	Commodity Prices Global GDP Growth Bond Yield	0.5210
Other Investment	Domestic GDP Growth Bond Yield	0.7374	Money Growth Bond Yield	0.3138	Money Growth Bond Yield	0.8717

Note: The Prob. > F (F-test for FE model) and Prob. > $\chi 2$ (Wald $\chi 2$ test for RE model) that are higher than 0.05 indicate that we fail to reject the null hypothesis of the coefficients to be jointly significant.

Table A12. Panel Corrected Standard Errors (PCSEs) Estimation Results – Direct Investments

	(1) Full Sample	(2) Advanced Economies	(3) Emerging Economies
Domestic(Pull) Factors			
Domestic GDP Growth	-0.0573*	-0.1310**	-0.0331
	(0.0333)	(0.0551)	(0.0385)
Government Consumption Expenditure	0.0468	-0.1540	0.0587**
	(0.0302)	(0.2051)	(0.0261)
Gross Debt	-0.1296***	-0.1537***	-0.1018***
	(0.0294)	(0.0340)	(0.0297)
Inflation	-0.0012	0.1895	-0.0045
	(0.0059)	(0.1522)	(0.0047)
Interest Rate Spread	0.0144	-0.1810***	0.0999***
	(0.0211)	(0.0618)	(0.0205)
Exchange Rate	-0.0364***	0.0470***	-0.0420***
	(0.0065)	(0.0123)	(0.0073)
Money Growth	-0.0978***	-0.0507	0.0070
	(0.0231)	(0.0349)	(0.0267)
Trade Openness	0.2192***	0.8610***	-0.0554*
	(0.0582)	(0.1553)	(0.0305)
Financial Development	3.6932***	2.9928***	3.8700***
	(0.1674)	(0.1949)	(0.3084)
Institutional Quality	0.5105***	0.4234***	0.1548***
	(0.0584)	(0.0789)	(0.0553)
Capital Openness	0.2825***	0.1678	0.1930***
	(0.0457)	(0.1226)	(0.0638)
Global (Push) Factors			
Commodity Prices	0.0030***	0.0050***	0.0015*
	(0.0008)	(0.0013)	(0.0008)
Global Liquidity	0.0129***	0.0142***	0.0117***
	(0.0016)	(0.0029)	(0.0016)
Global GDP Growth	-0.0391**	-0.0801**	-0.0190
	(0.0179)	(0.0316)	(0.0178)
S&P 500 Returns	-0.0033**	-0.0053*	-0.0012
	(0.0016)	(0.0027)	(0.0017)
Bond Yield	-0.0701**	-0.1320**	-0.0457
	(0.0349)	(0.0605)	(0.0349)
Global Volatility Index (VIX)	-0.0204***	-0.0393***	-0.0073
	(0.0047)	(0.0081)	(0.0048)
Dummy GFC	-0.0881	0.1613	-0.2447***
	(0.0867)	(0.1476)	(0.0875)
Const.	-0.7338**	-2.6357***	-0.4909
	(0.3605)	(0.9751)	(0.3348)
	2,975	1,150	1,825
R-squared	0.5732	0.5282	0.3138
No. of countries	119	46	73

Note: Robust standard errors in parentheses (.)
*, **, *** are significant levels at 10%, 5%, 1% respectively

Table A13. Panels Corrected Standard Errors (PCSEs) Estimation Results – Portfolio Investments

|	(1) Full Sample	(2) Advanced Economies	(3) Emerging Economies
Domestic(Pull) Factors			
Domestic GDP Growth	-0.0701	-0.1019	-0.0336
	(0.0447)	(0.0672)	(0.0581)
Government Consumption Expenditure	**0.2202***	**-0.4827***	**0.2746***
	(0.0364)	(0.1824)	(0.0443)
Gross Debt	**-0.1681***	**-0.0878**	**-0.1648**
	(0.0593)	(0.0417)	(0.0704)
Inflation	**-0.0832***	0.2722	**-0.0787***
	(0.0081)	(0.2167)	(0.0081)
Interest Rate Spread	**-0.0879***	**-0.2767***	0.0393
	(0.0292)	(0.0631)	(0.0417)
Exchange Rate	**-0.0820***	**-0.0534***	**-0.0644***
	(0.0179)	(0.0183)	(0.0218)
Money Growth	**-0.2444***	**-0.0848**	**-0.1949***
	(0.0479)	(0.0422)	(0.0574)
Trade Openness	**0.1237**	**0.7125***	-0.0665
	(0.0501)	(0.1239)	(0.0500)
Financial Development	**2.5863***	**2.4085***	**1.6186***
	(0.2716)	(0.2035)	(0.4733)
Institutional Quality	**0.8203***	**0.4724***	**0.5820***
	(0.1133)	(0.1016)	(0.1365)
Capital Openness	**0.3025***	**0.5674***	**-0.1357***
	(0.0694)	(0.1386)	(0.0792)
Global (Push) Factors			
Commodity Prices	0.0008	**0.0037**	-0.0012
	(0.0012)	(0.0018)	(0.0012)
Global Liquidity	**0.0126***	**0.0112***	**0.0132***
	(0.0025)	(0.0038)	(0.0025)
Global GDP Growth	-0.0193	**-0.0846**	0.0090
	(0.0281)	(0.0423)	(0.0267)
S&P 500 Returns	**-0.0111***	**-0.0123***	**-0.0087***
	(0.0027)	(0.0037)	(0.0030)
Bond Yield	-0.0073	-0.0860	0.0640
	(0.0554)	(0.0813)	(0.0525)
Global Volatility Index (VIX)	**-0.0434***	**-0.0630***	**-0.0222***
	(0.0078)	(0.0109)	(0.0079)
Dummy GFC	**0.4294***	**0.4836**	**0.3130**
	(0.1378)	(0.1991)	(0.1312)
Const.	0.8729	-0.6204	0.6068
	(0.5910)	(1.3409)	(0.6958)
Observations	2,975	1,150	1,825
R-squared	0.473	0.500	0.116
No. of countries	119	46	73

Note: Robust standard errors in parentheses (.)
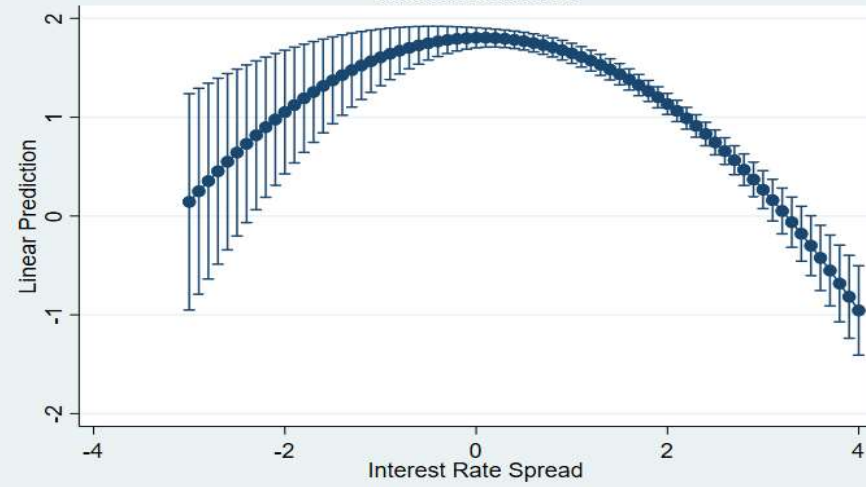*, **, *** are significant levels at 10%, 5%, 1% respectively

Table A14. Panels Corrected Standard Errors (PCSEs) Estimation Results – Other Investments

	(1) Full Sample	(2) Advanced Economies	(3) Emerging Economies
Domestic(Pull) Factors			
Domestic GDP Growth	-0.0215	**-0.1213****	-0.0365
	(0.0320)	(0.0575)	(0.0403)
Government Consumption Expenditure	**0.2913***	**-0.5033***	**0.3085***
	(0.0458)	(0.1886)	(0.0379)
Gross Debt	**-0.0373***	**-0.1720***	0.0069
	(0.0192)	(0.0371)	(0.0203)
Inflation	**-0.0175***	**-0.4348***	**-0.0156***
	(0.0064)	(0.1526)	(0.0055)
Interest Rate Spread	-0.0135	**-0.1591***	**0.0580****
	(0.0232)	(0.0559)	(0.0229)
Exchange Rate	**-0.0505***	**-0.0761***	**-0.0423***
	(0.0060)	(0.0135)	(0.0082)
Money Growth	**-0.0875***	-0.0460	0.0066
	(0.0235)	(0.0343)	(0.0231)
Trade Openness	**0.3124***	**0.7575***	**0.1525***
	(0.0558)	(0.1159)	(0.0451)
Financial Development	**1.4423***	**1.7568***	**0.5203***
	(0.1629)	(0.1811)	(0.3096)
Institutional Quality	**0.1759***	-0.0767	**-0.1334****
	(0.0449)	(0.1150)	(0.0619)
Capital Openness	**0.3984***	**0.5659***	**0.1841***
	(0.0664)	(0.1278)	(0.0628)
Global (Push) Factors			
Commodity Prices	**0.0040***	**0.0030***	**0.0046***
	(0.0014)	(0.0017)	(0.0014)
Global Liquidity	**0.0103***	0.0057	**0.0151***
	(0.0029)	(0.0037)	(0.0030)
Global GDP Growth	**-0.0588***	-0.0636	**-0.0541***
	(0.0319)	(0.0405)	(0.0327)
S&P 500 Returns	**-0.0112***	**-0.0086****	**-0.0116***
	(0.0029)	(0.0036)	(0.0030)
Bond Yield	-0.0142	-0.0772	0.0214
	(0.0634)	(0.0797)	(0.0647)
Global Volatility Index (VIX)	**-0.0351***	**-0.0309***	**-0.0325***
	(0.0085)	(0.0107)	(0.0087)
Dummy GFC	**0.2673***	0.2319	0.2168
	(0.1570)	(0.1950)	(0.1600)
Const.	0.0712	3.5914***	-0.3461
	(0.5832)	(0.9602)	(0.5961)
Observations	2,975	1,150	1,825
R-squared	0.434	0.316	0.337
No. of countries	119	46	73

Note: Robust standard errors in parentheses (.)
*, **, *** are significant levels at 10%, 5%, 1% respectively

Table A15. Panels Corrected Standard Errors (PCSEs) Estimation Results – Aggregate Investments

	(1) Full Sample	(2) Advanced Economies	(3) Emerging Economies
Domestic(Pull) Factors			
Domestic GDP Growth	-0.0138	**-0.1373****	-0.0079
	(0.0371)	(0.0666)	(0.0452)
Government Consumption Expenditure	**0.4594*****	-0.2666	**0.4676*****
	(0.0430)	(0.2223)	(0.0377)
Gross Debt	**-0.1072*****	**-0.2286*****	**-0.0654***
	(0.0313)	(0.0393)	(0.0336)
Inflation	**-0.0163****	**-0.3329****	**-0.0168****
	(0.0082)	(0.1676)	(0.0071)
Interest Rate Spread	-0.0080	**-0.1987*****	**0.0803*****
	(0.0237)	(0.0635)	(0.0250)
Exchange Rate	**-0.0376*****	-0.0135	**-0.0435*****
	(0.0072)	(0.0137)	(0.0104)
Money Growth	**-0.0877*****	-0.0405	0.0003
	(0.0277)	(0.0383)	(0.0279)
Trade Openness	**0.2499*****	**0.6919*****	**0.0951****
	(0.0588)	(0.1449)	(0.0467)
Financial Development	**2.3117*****	**2.2568*****	**1.6638*****
	(0.1732)	(0.2093)	(0.3217)
Institutional Quality	**0.3865*****	0.1753	0.0240
	(0.0508)	(0.1163)	(0.0679)
Capital Openness	**0.3609*****	**0.5675*****	0.1193
	(0.0640)	(0.1361)	(0.0738)
Global (Push) Factors			
Commodity Prices	**0.0053*****	**0.0046****	**0.0058*****
	(0.0017)	(0.0019)	(0.0018)
Global Liquidity	**0.0165*****	**0.0132*****	**0.0202*****
	(0.0036)	(0.0042)	(0.0039)
Global GDP Growth	**-0.0693***	**-0.0818***	-0.0612
	(0.0397)	(0.0459)	(0.0423)
S&P 500 Returns	**-0.0135*****	**-0.0115*****	**-0.0139*****
	(0.0036)	(0.0040)	(0.0039)
Bond Yield	-0.0239	-0.0951	0.0160
	(0.0790)	(0.0896)	(0.0840)
Global Volatility Index (VIX)	**-0.0416*****	**-0.0447*****	**-0.0358*****
	(0.0105)	(0.0120)	(0.0113)
Dummy GFC	0.2441	0.2417	0.1854
	(0.1956)	(0.2193)	(0.2078)
Const.	0.0076	**3.0350*****	-0.4357
	(0.7131)	(1.1067)	(0.7688)
Observations	2,975	1,150	1,825
R-squared	0.541	0.373	0.439
No. of countries	119	46	73

Note: Robust standard errors in parentheses (.)
*, **, *** are significant levels at 10%, 5%, 1% respectively

Figure A1. Predictive Marginal Analysis of Determinants of Direct Investments
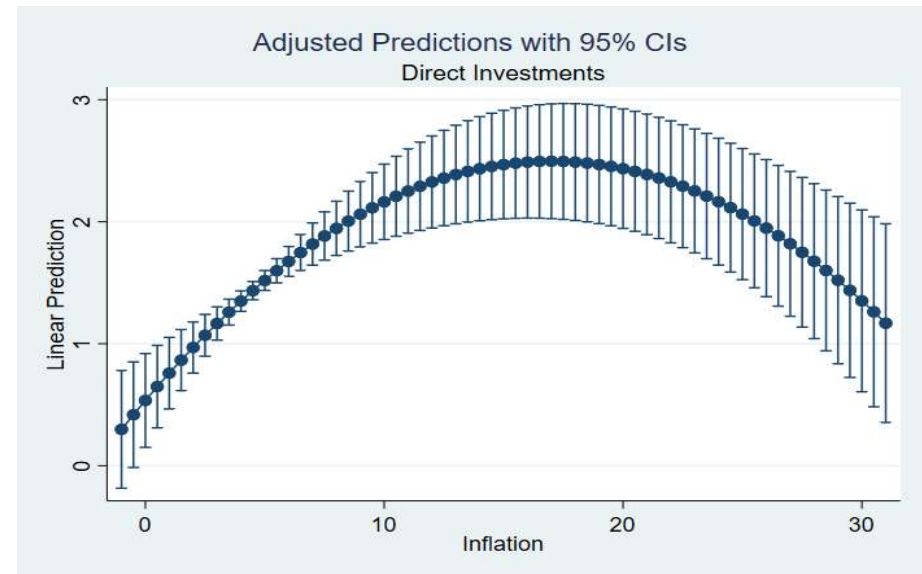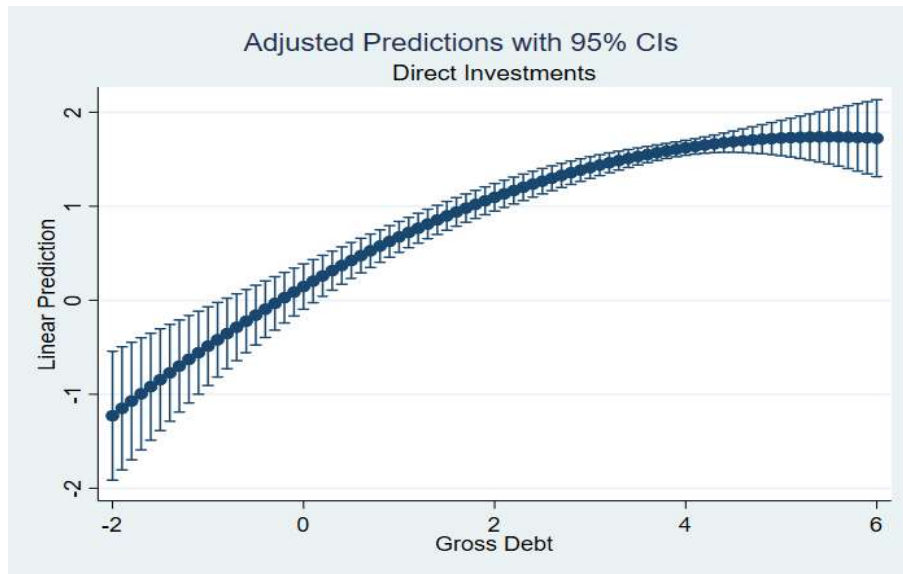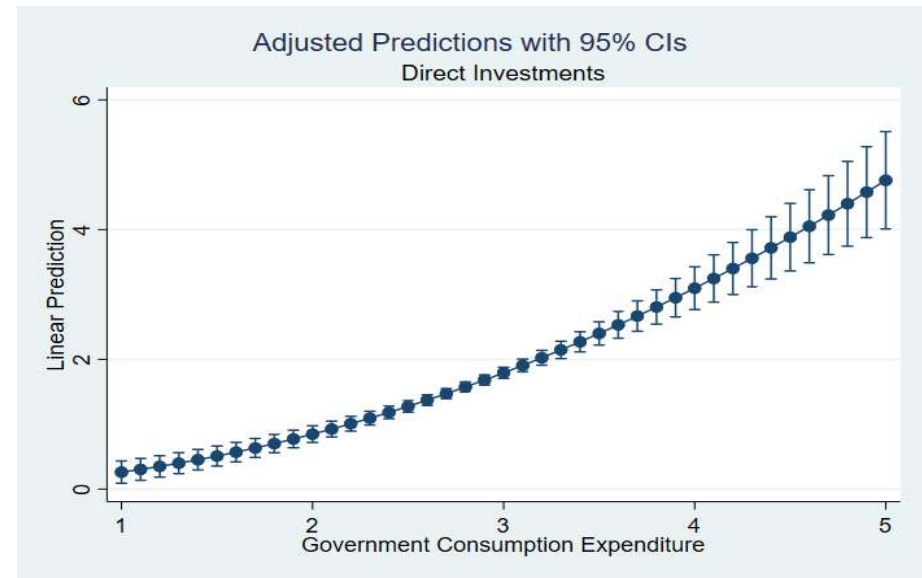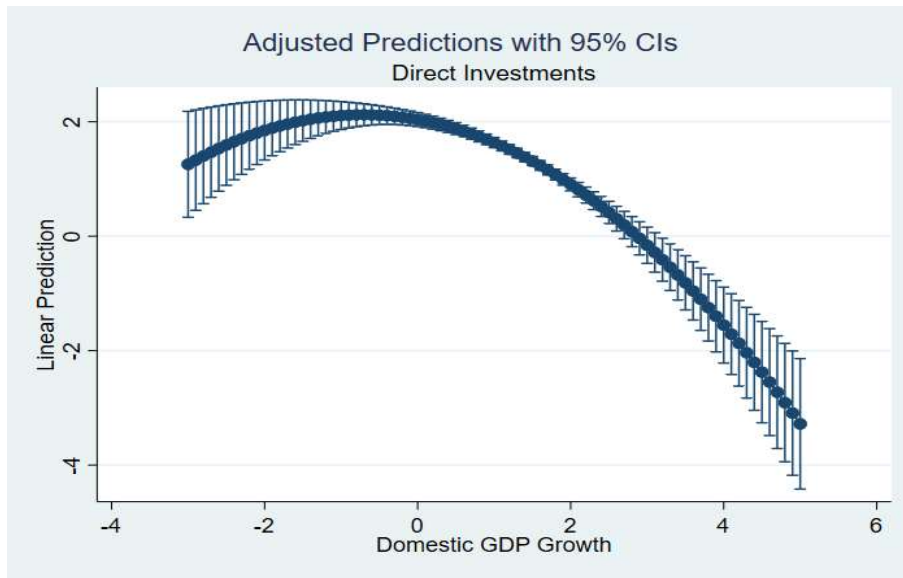
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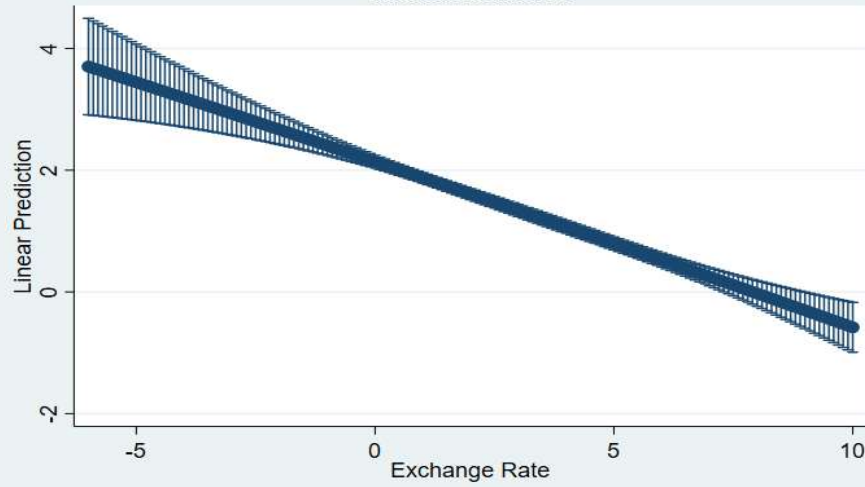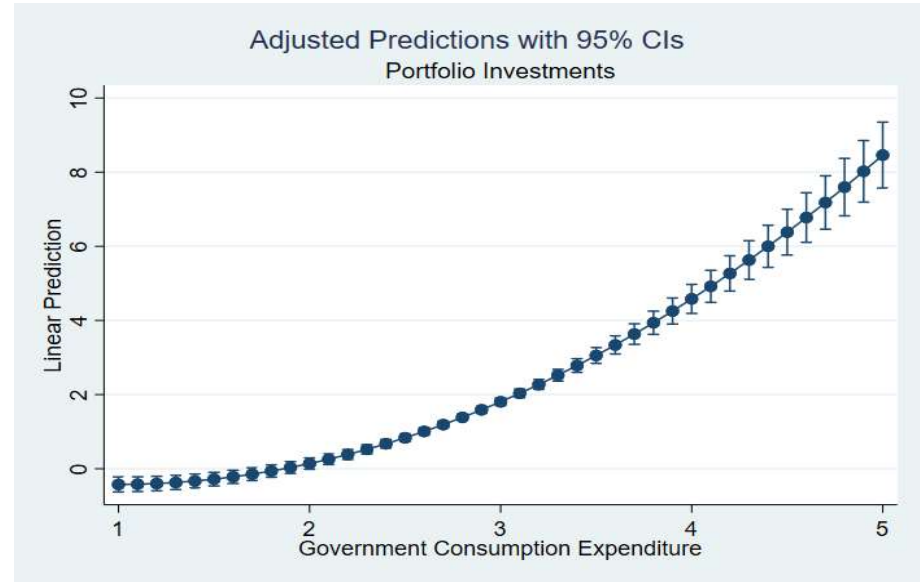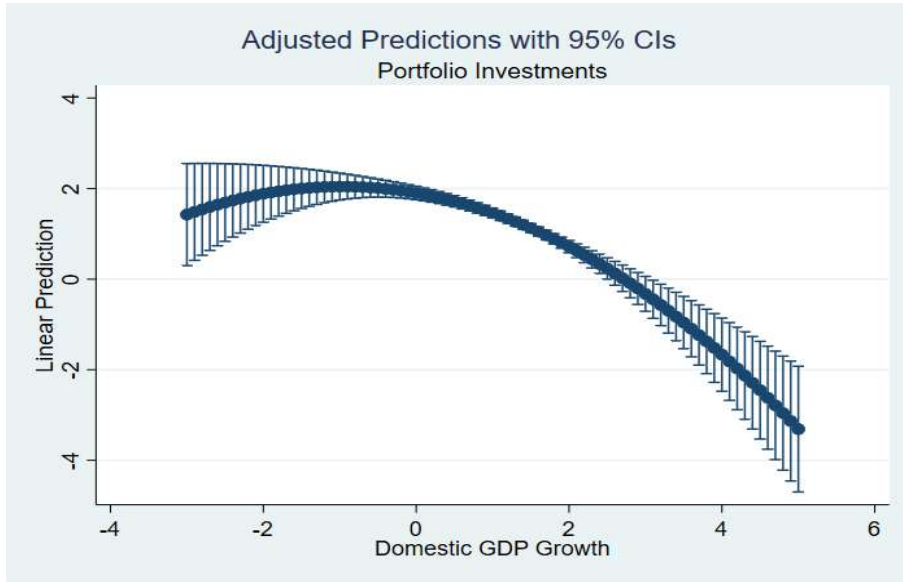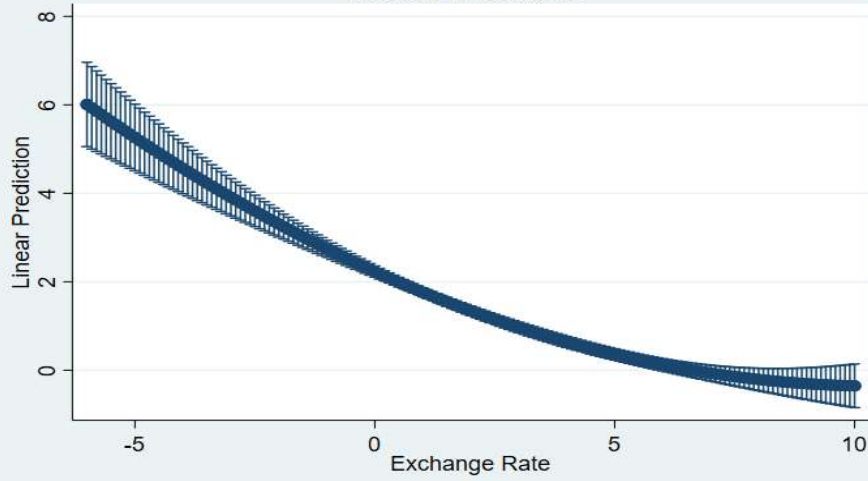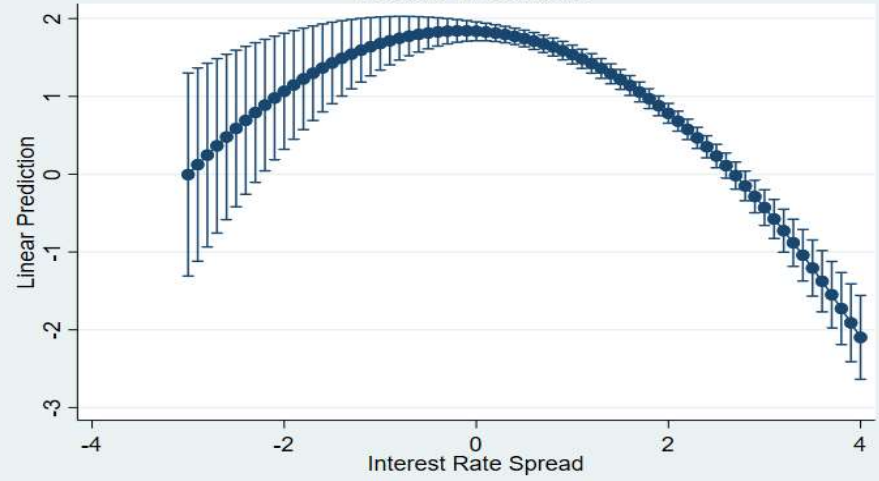
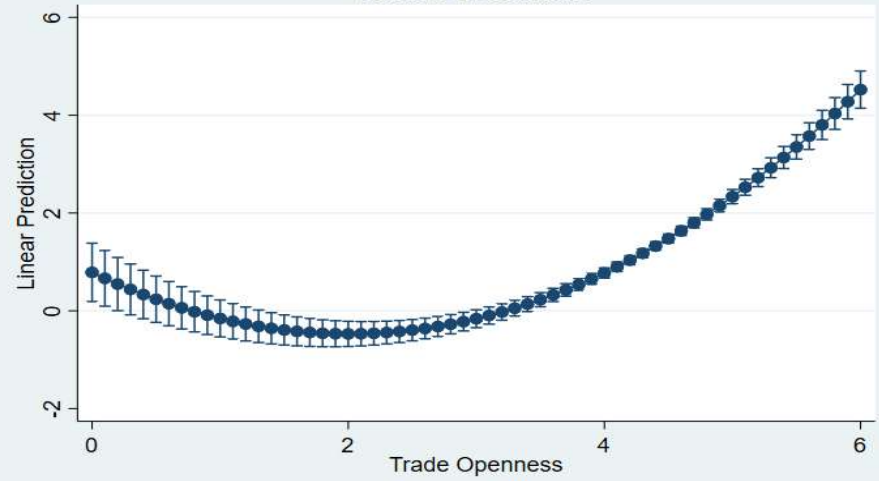Adjusted Predictions with 95% CIs — Direct Investments (Institutional Quality)

Adjusted Predictions with 95% CIs — Direct Investments (Commodity Prices)
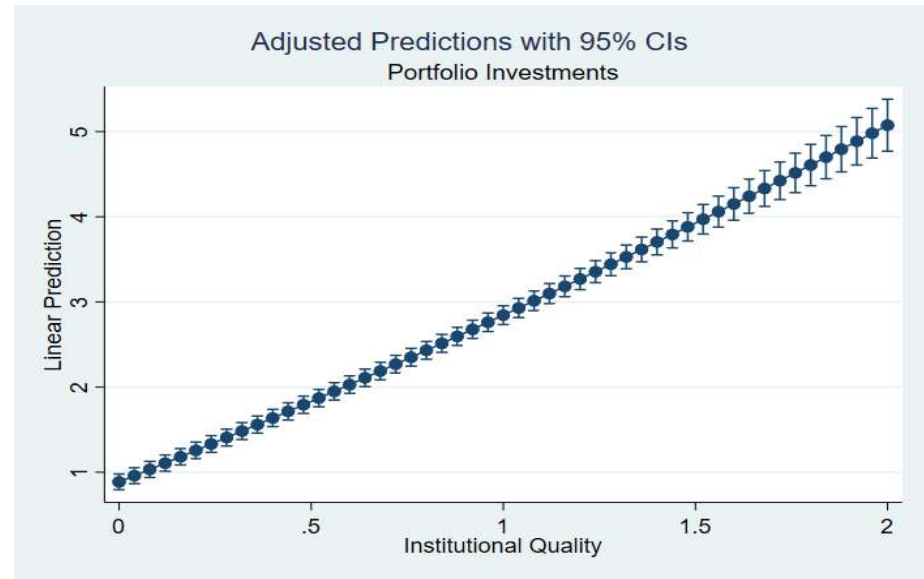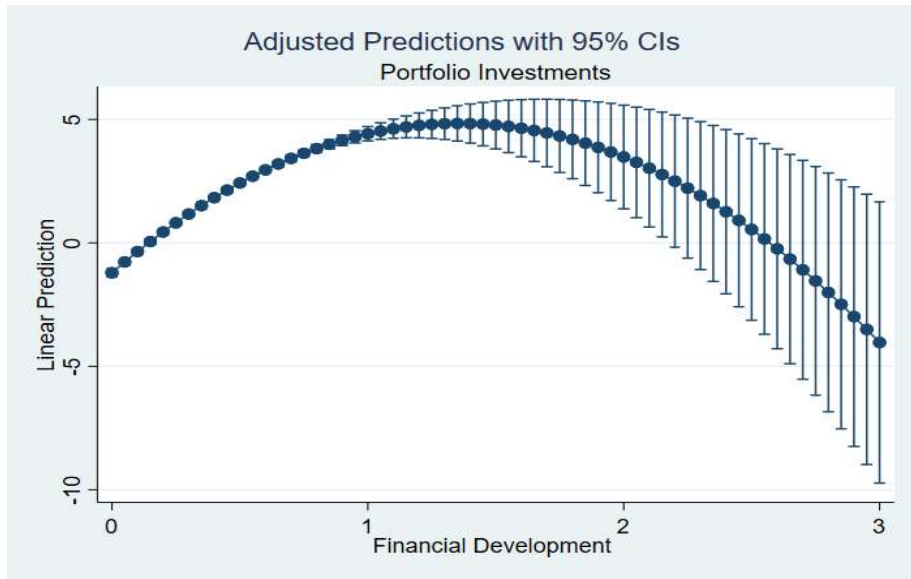
Adjusted Predictions with 95% CIs — Direct Investments (Global Liquidity)

Adjusted Predictions with 95% CIs
Direct Investments

(top-left) Linear Prediction vs. Global GDP Growth

Adjusted Predictions with 95% CIs
Direct Investments

(top-right) Linear Prediction vs. S&P 500 Returns

Adjusted Predictions with 95% CIs
Direct Investments

(bottom-left) Linear Prediction vs. Bond Yield

Adjusted Predictions with 95% CIs
Direct Investments

(bottom-right) Linear Prediction vs. Global Volatility Index (VIX)
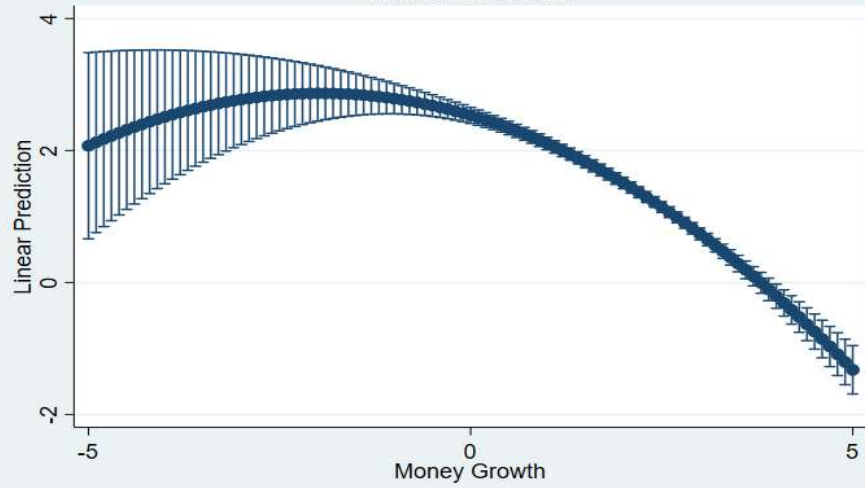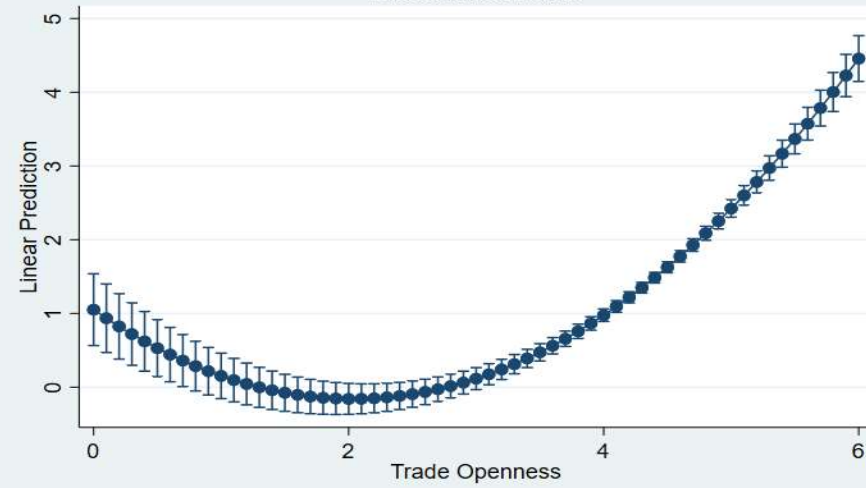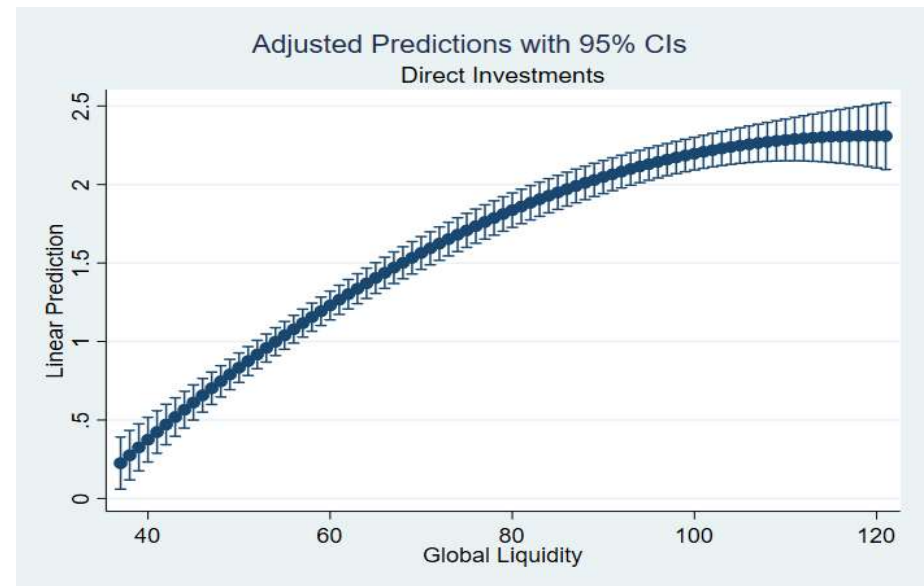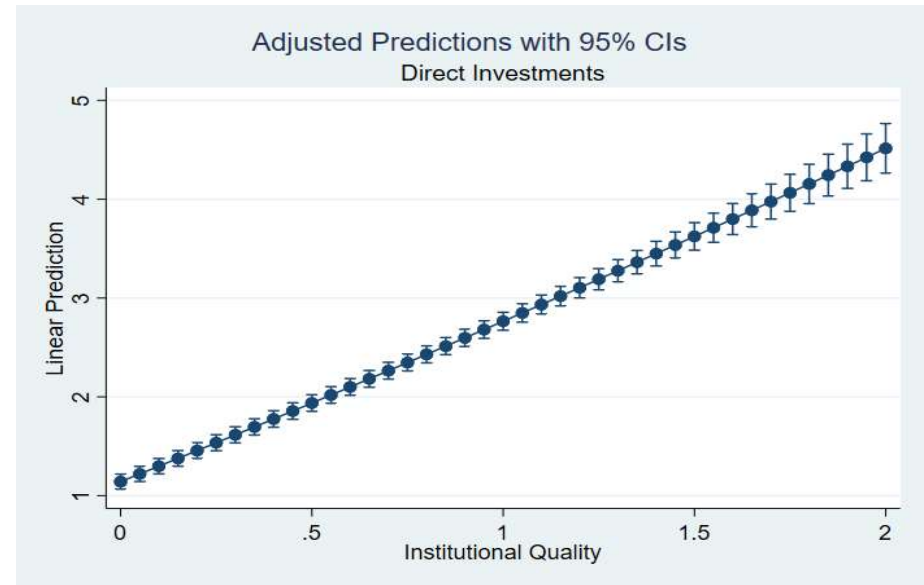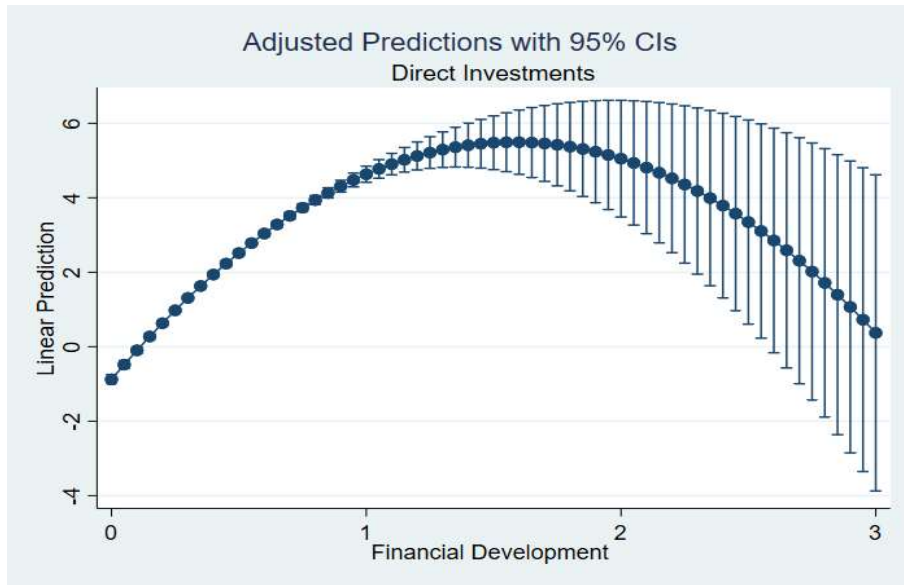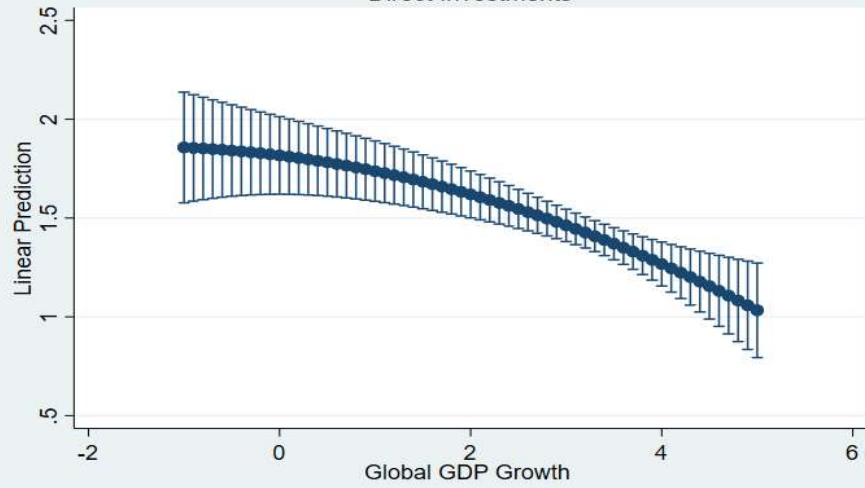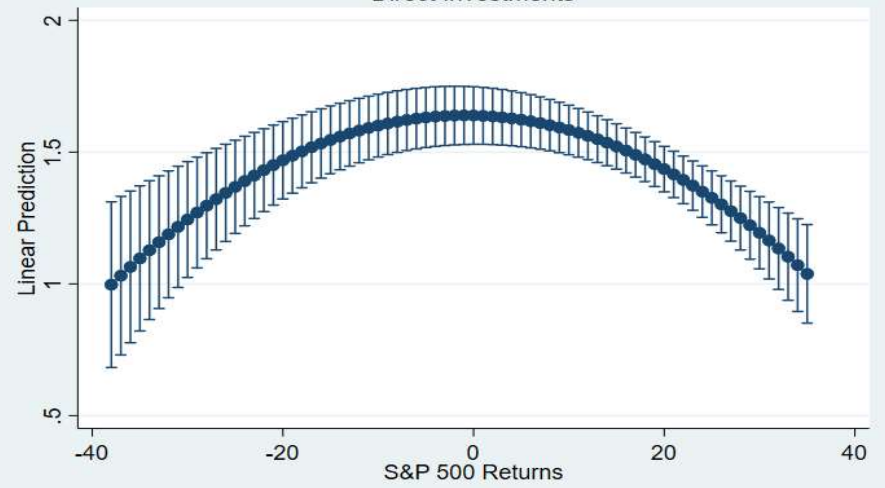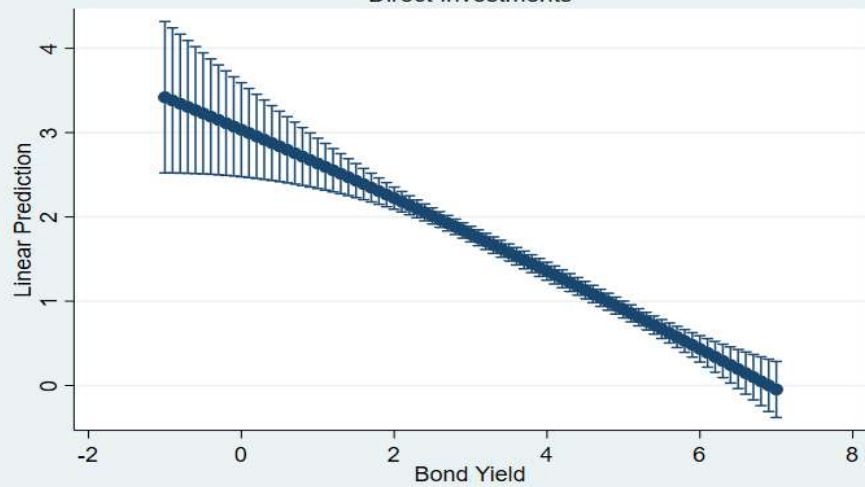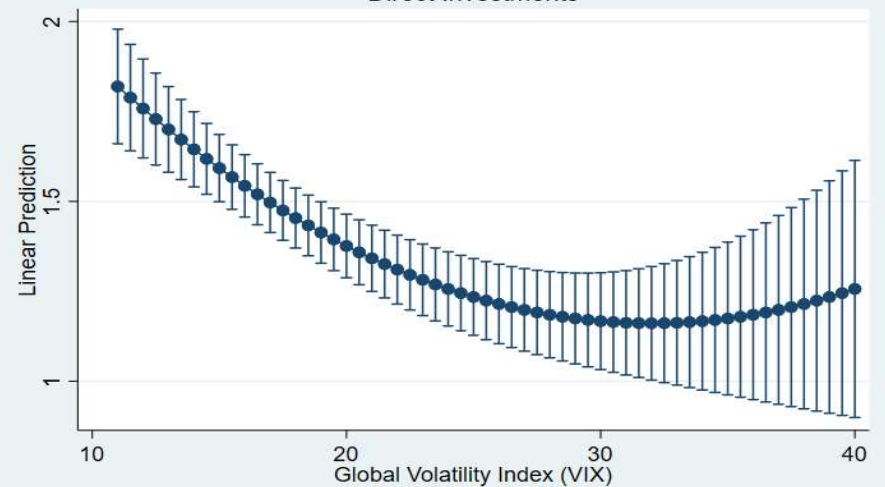
Figure A2. Predictive Marginal Analysis of Determinants of Portfolio Investments
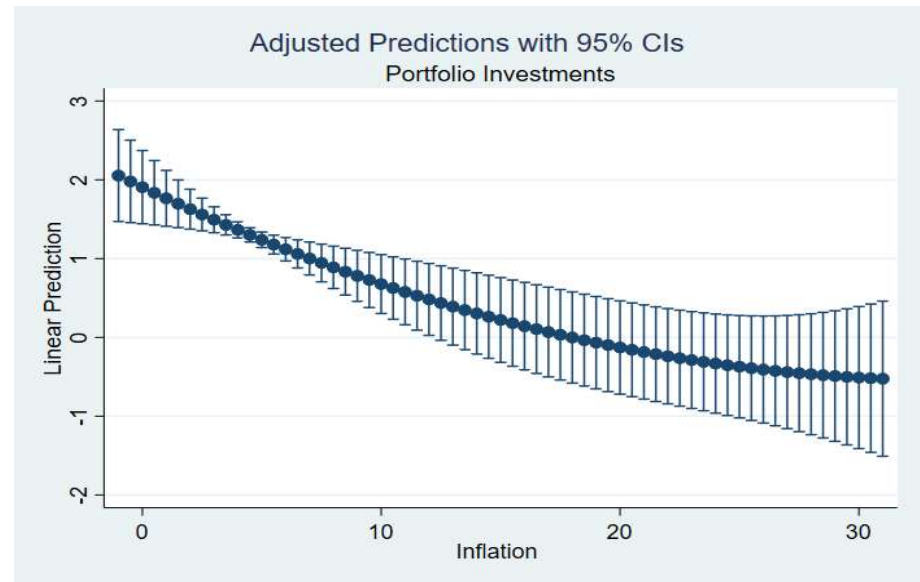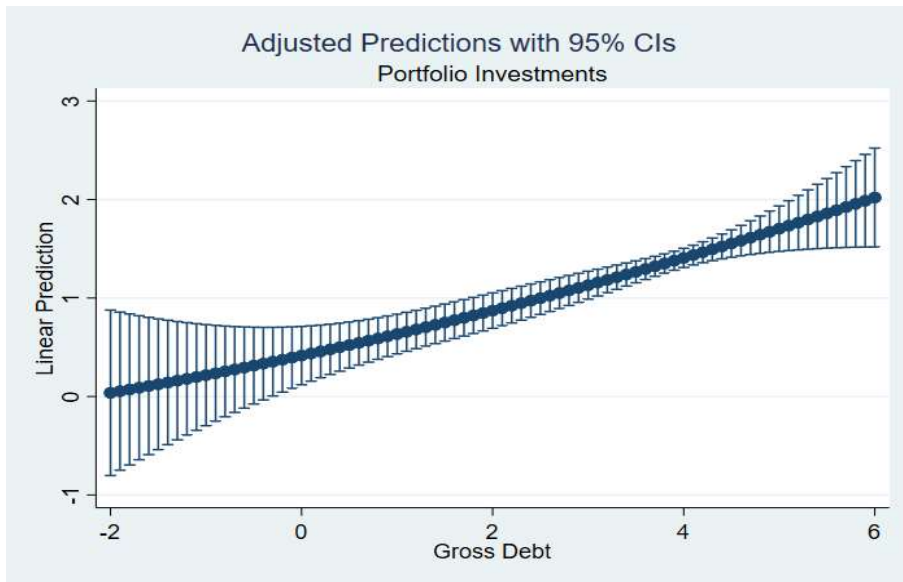
Adjusted Predictions with 95% CIs — Portfolio Investments (Exchange Rate)

Adjusted Predictions with 95% CIs — Portfolio Investments (Interest Rate Spread)

Adjusted Predictions with 95% CIs — Portfolio Investments (Money Growth)

Adjusted Predictions with 95% CIs — Portfolio Investments (Trade Openness)

Adjusted Predictions with 95% CIs
Portfolio Investments

Adjusted Predictions with 95% CIs
Portfolio Investments
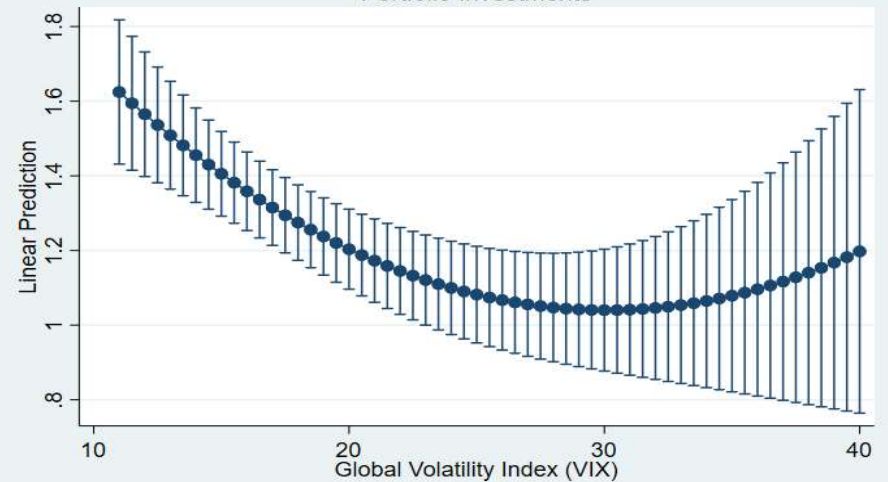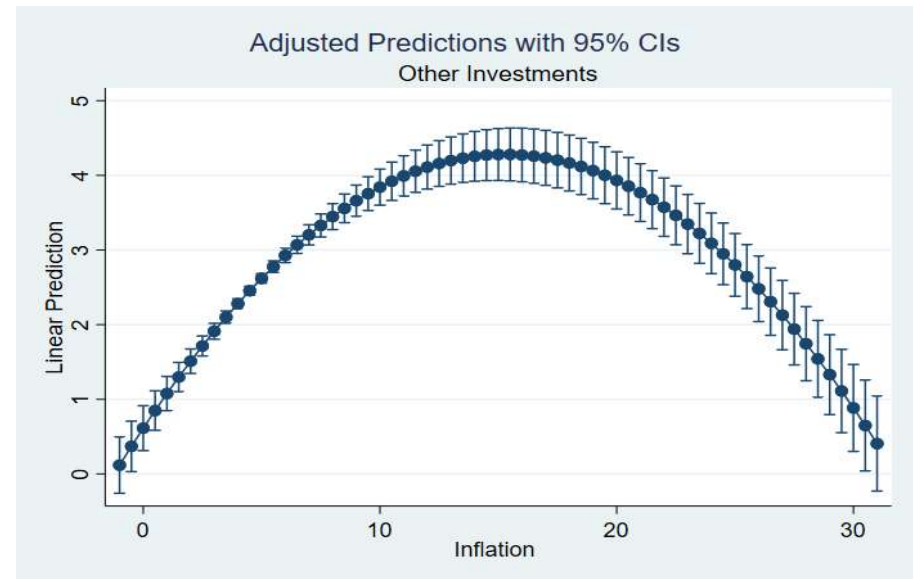
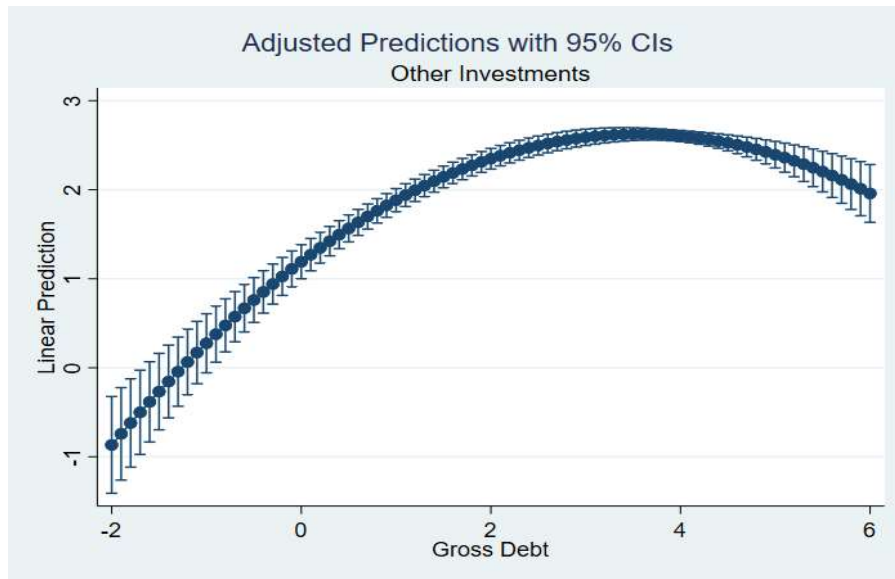Adjusted Predictions with 95% CIs
Portfolio Investments
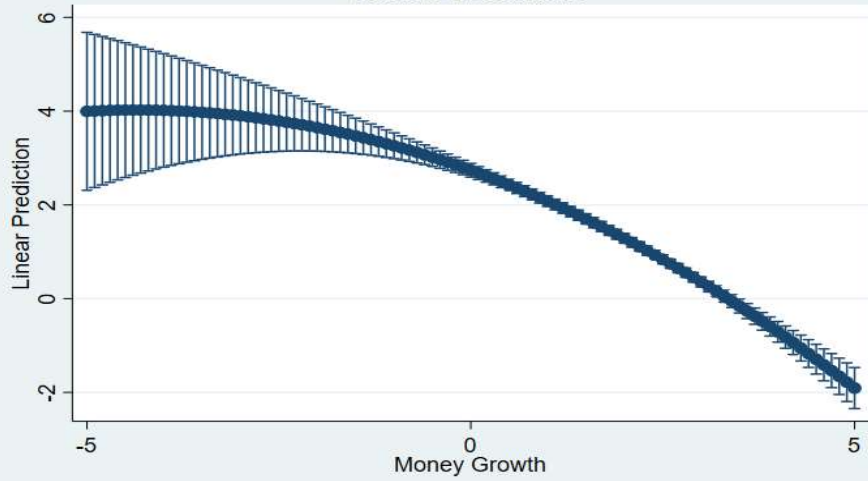
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Portfolio Investments
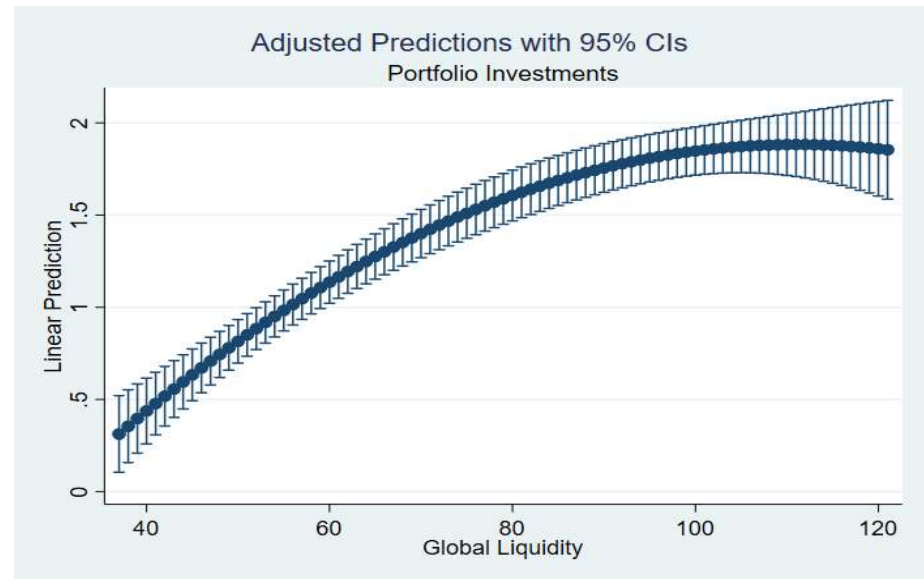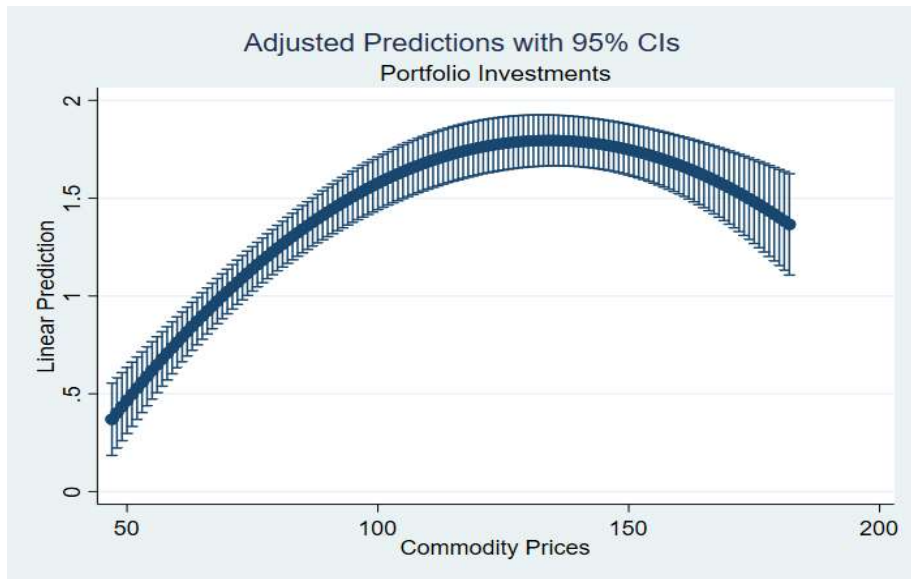
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Portfolio Investments
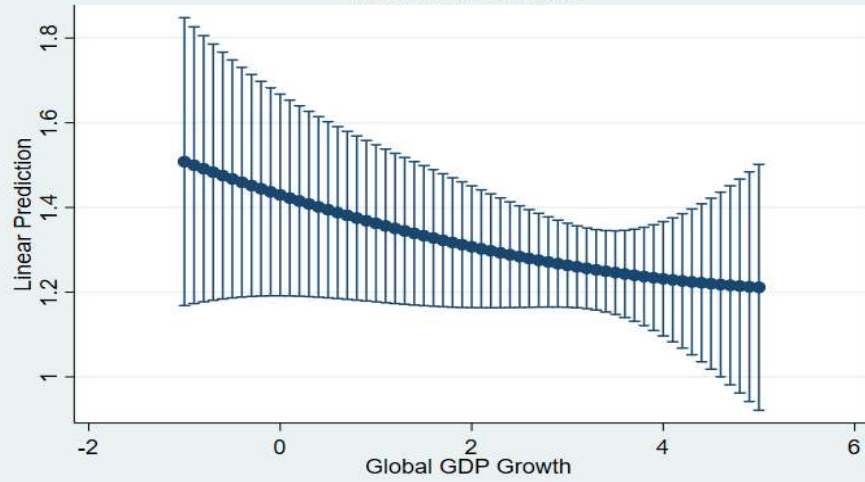
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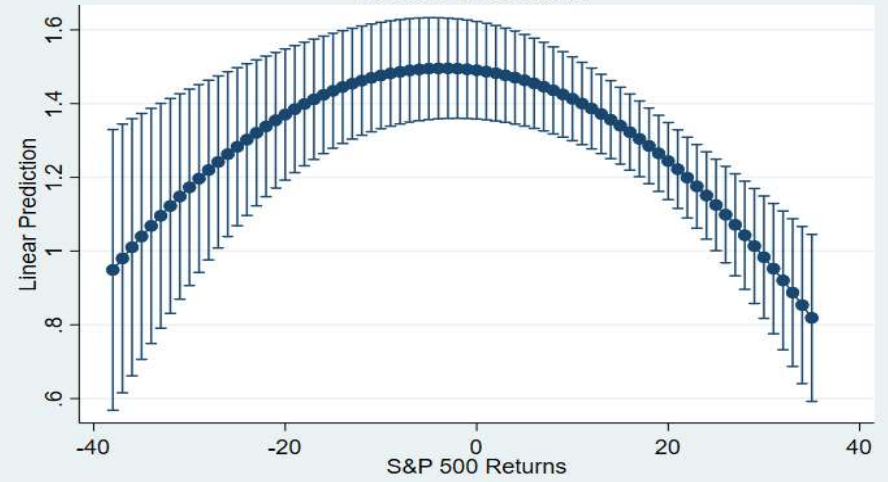
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Portfolio Investments
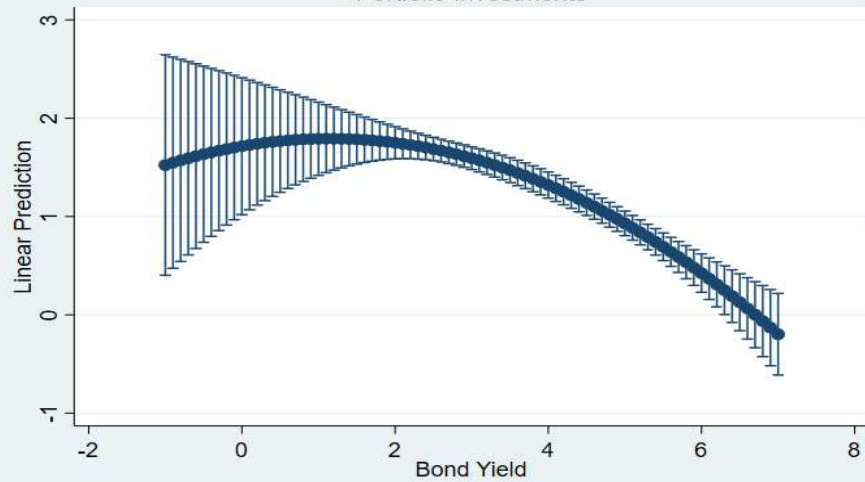
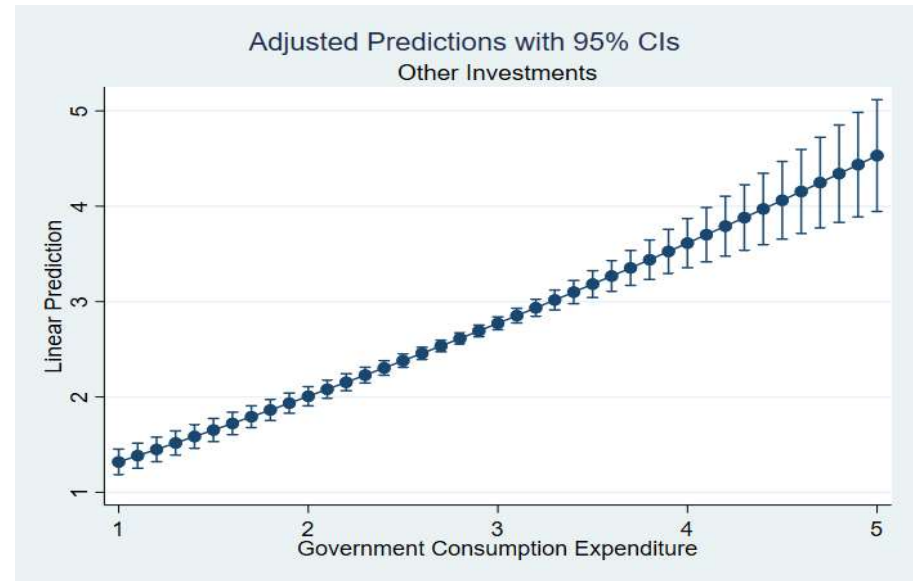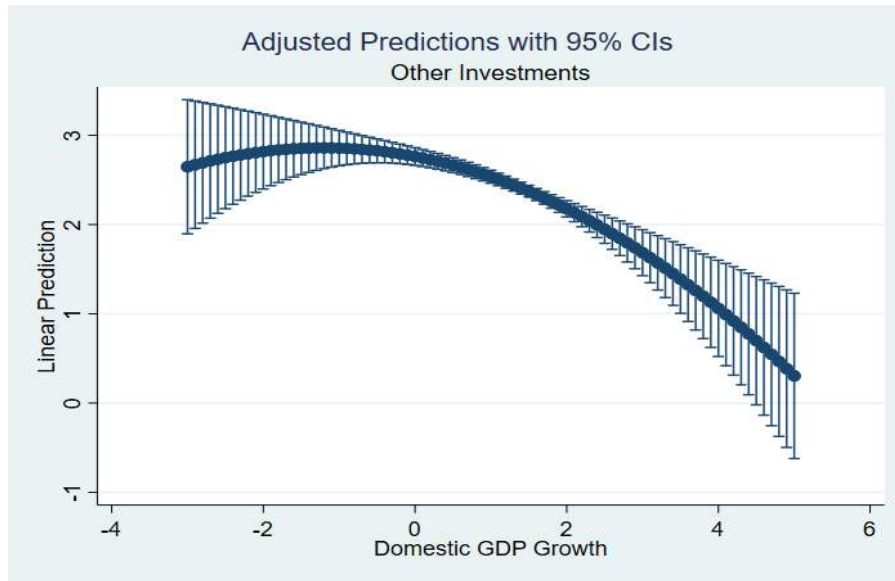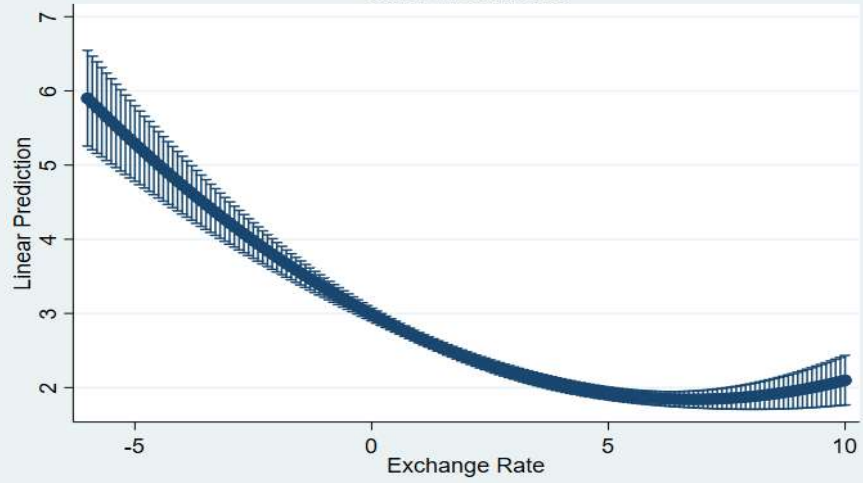**Adjusted Predictions with 95% CIs**
Portfolio Investments

Figure A3. Predictive Marginal Analysis of Determinants of Other Investments

Adjusted Predictions with 95% CIs
Other Investments

Adjusted Predictions with 95% CIs
Other Investments

Adjusted Predictions with 95% CIs
Other Investments

Adjusted Predictions with 95% CIs
Other Investments

Adjusted Predictions with 95% CIs
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Adjusted Predictions with 95% CIs
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Adjusted Predictions with 95% CIs
Other Investments

Adjusted Predictions with 95% CIs
Other Investments

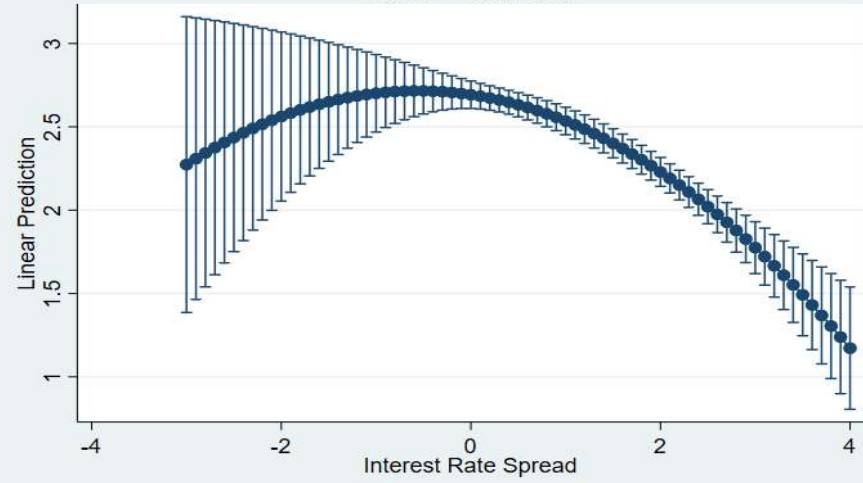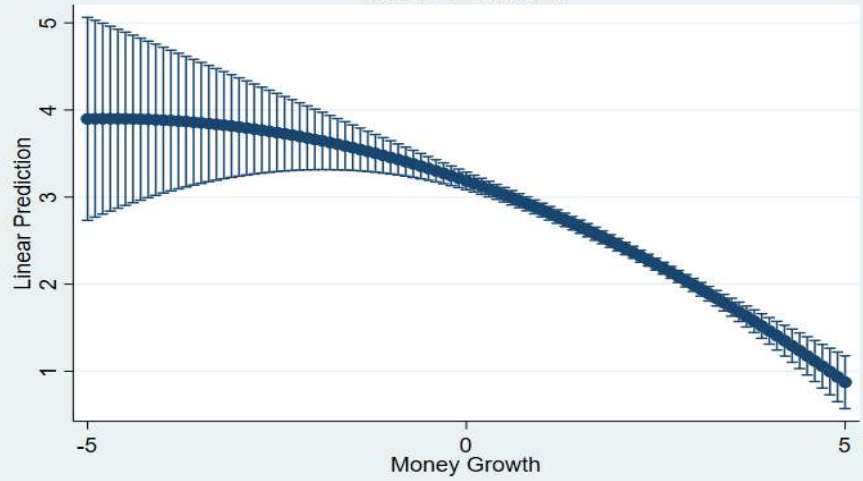**Adjusted Predictions with 95% CIs**
Other Investments
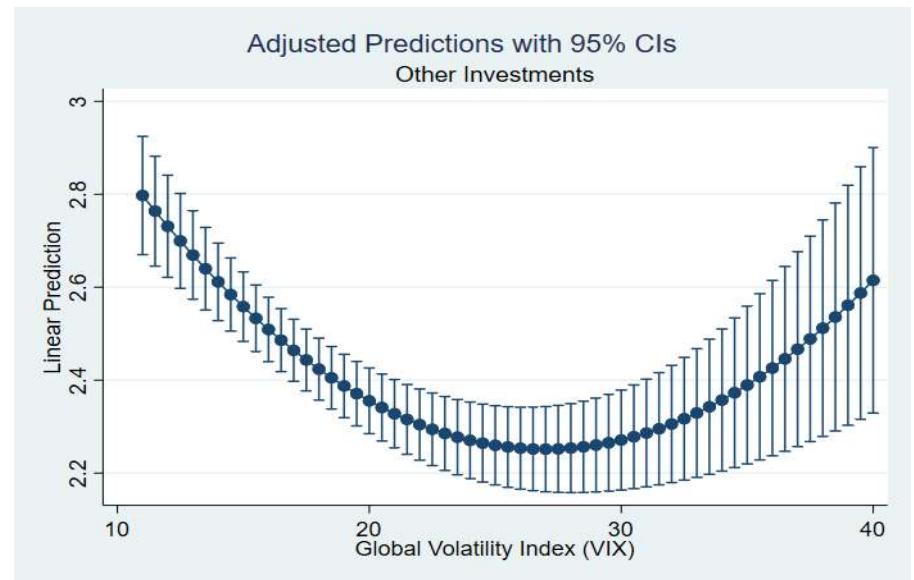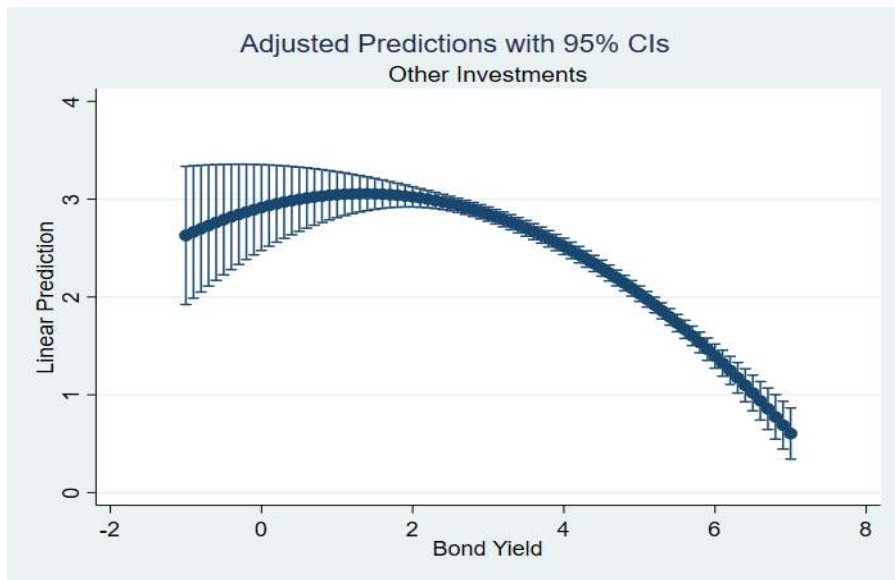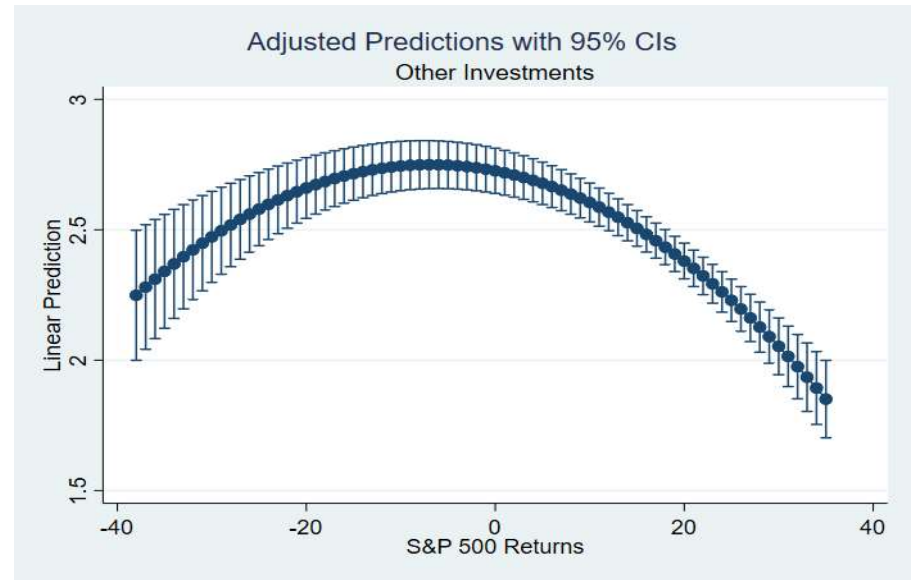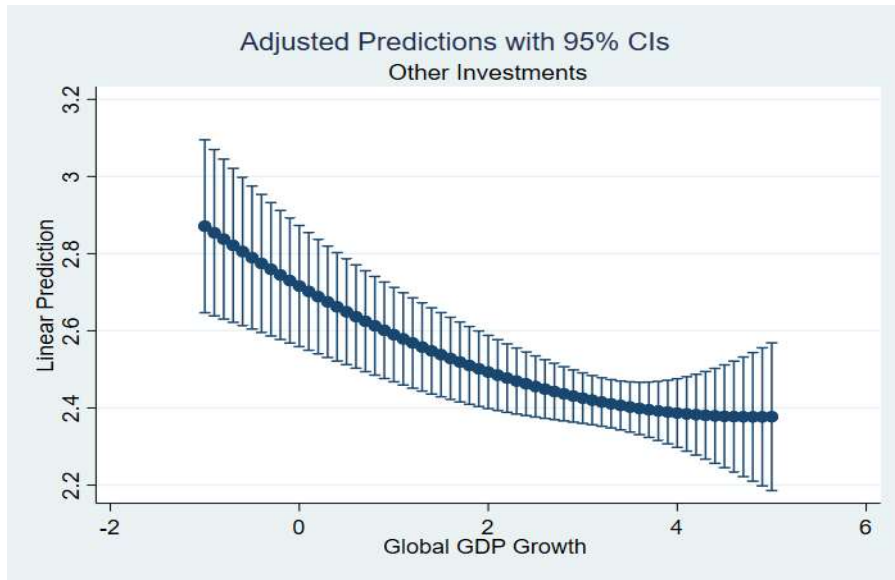
Figure A4. Predictive Marginal Analysis of Determinants of Aggregate Investments

Adjusted Predictions with 95% CIs
Aggregate Investments

Adjusted Predictions with 95% CIs
Aggregate Investments

Adjusted Predictions with 95% CIs
Aggregate Investments

Adjusted Predictions with 95% CIs
Aggregate Investments

Adjusted Predictions with 95% CIs
Aggregate Investments

Adjusted Predictions with 95% CIs
Aggregate Investments

Adjusted Predictions with 95% CIs
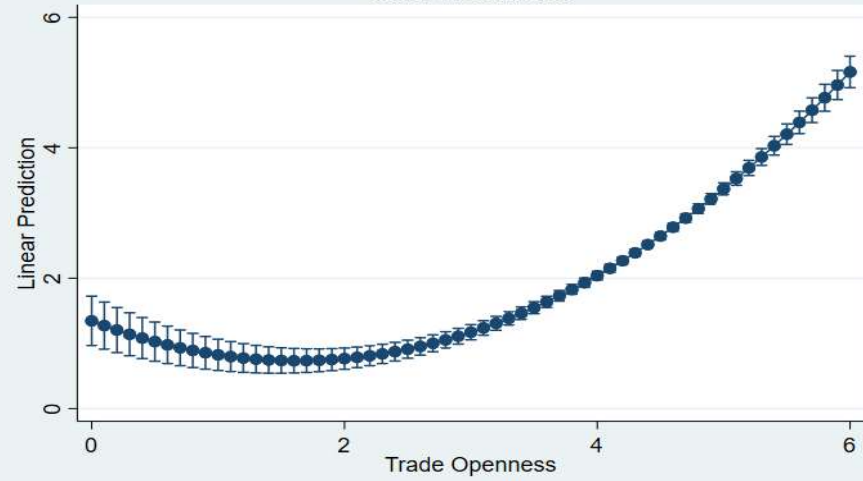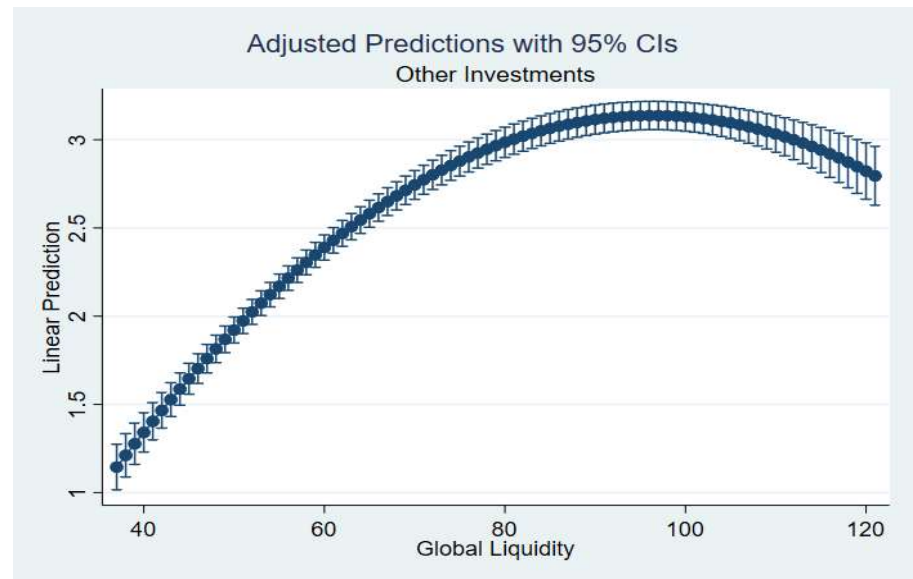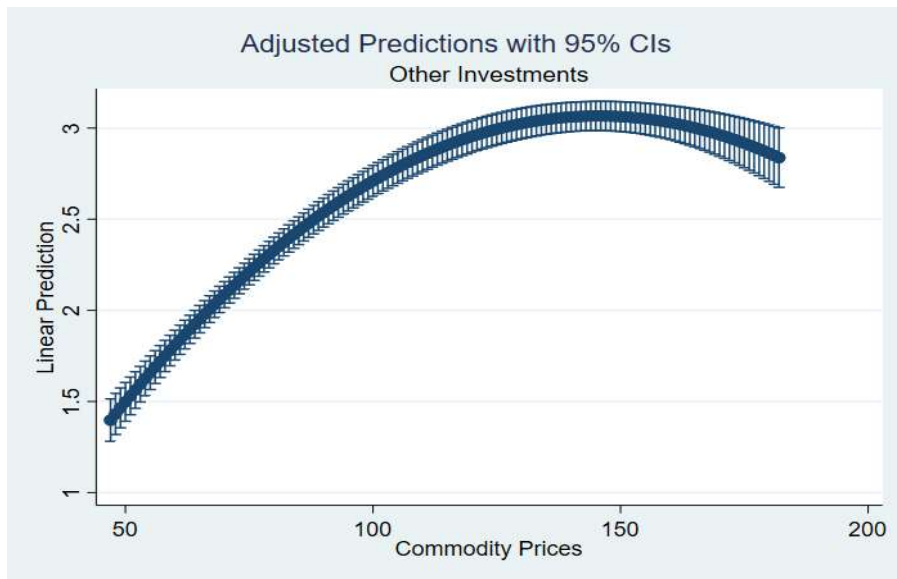Aggregate Investments

Adjusted Predictions with 95% CIs
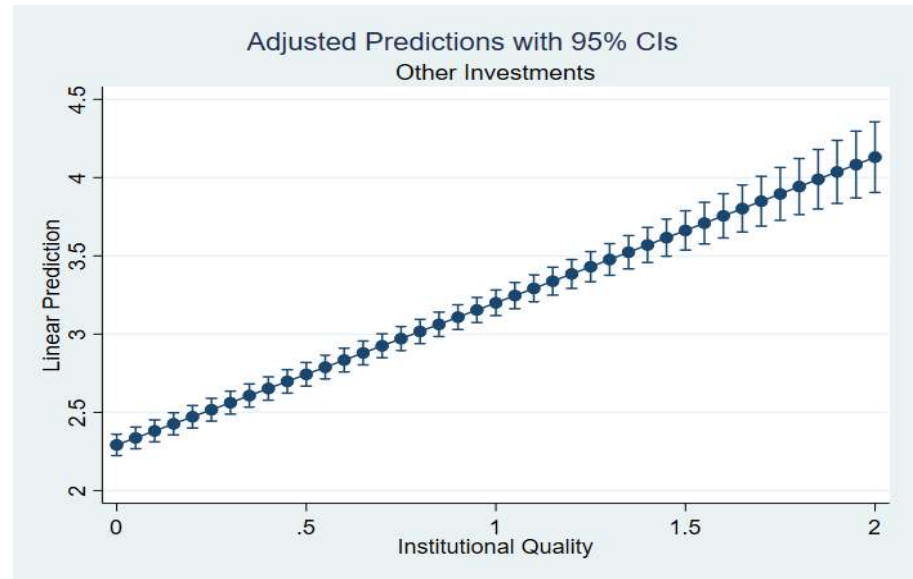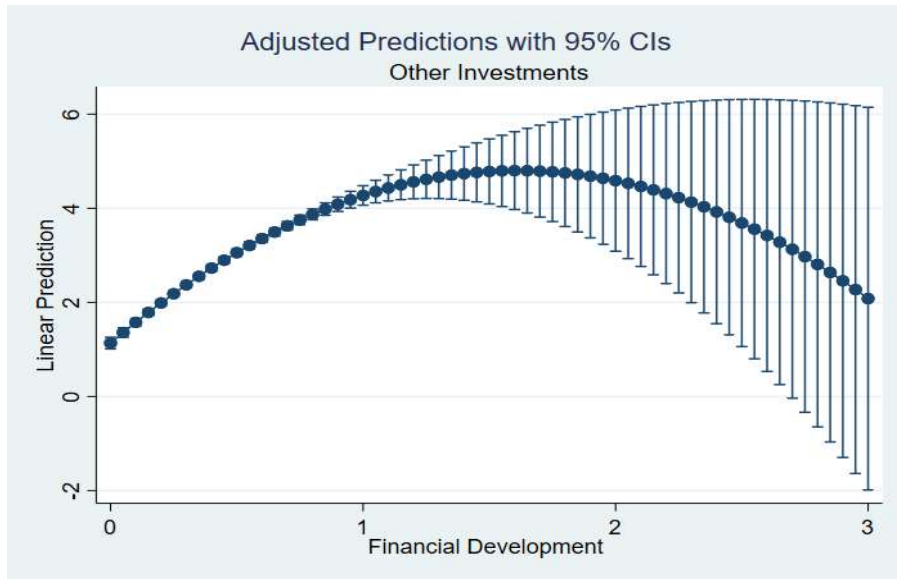Aggregate Investments

Adjusted Predictions with 95% CIs
Aggregate Investments

Table B1. List of countries

Developing Economies

1.	Argentina	31.	Indonesia	61.	South Africa
2.	Armenia	32.	Jamaica	62.	Sri Lanka
3.	Bangladesh	33.	Jordan	63.	Suriname
4.	Belarus	34.	Kazakhstan	64.	Thailand
5.	Benin	35.	Kenya	65.	Timor-Leste
6.	Bolivia	36.	Kiribati	66.	Togo
7.	Bosnia and Herzegovina	37.	Kosovo	67.	Tunisia
8.	Botswana	38.	Kyrgyz Republic	68.	Turkey
9.	Brazil	39.	Madagascar	69.	Uganda
10.	Bulgaria	40.	Malawi	70.	Ukraine
11.	Burkina Faso	41.	Malaysia	71.	Vanuatu
12.	Burundi	42.	Mali	72.	Venezuela, RB
13.	Cabo Verde	43.	Mexico	73.	Zambia
14.	Cambodia	44.	Moldova		
15.	China	45.	Morocco		
16.	Colombia	46.	Mozambique		
17.	Costa Rica	47.	Namibia		
18.	Cote d'Ivoire	48.	Nicaragua		
19.	Dominica	49.	Niger		
20.	Dominican Republic	50.	Nigeria		
21.	Egypt, Arab Rep.	51.	Pakistan		
22.	El Salvador	52.	Paraguay		
23.	Georgia	53.	Peru		
24.	Ghana	54.	Philippines		
25.	Grenada	55.	Russian Federation		
26.	Guatemala	56.	Rwanda		
27.	Guinea	57.	Samoa		
28.	Guinea-Bissau	58.	Senegal		
29.	Honduras	59.	Serbia		
30.	India	60.	Solomon Islands		

Table B2. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
gdpg	3723	3.813	4.881	-62.076	123.14
fdi	3684	7.258	34.272	-58.249	981.985
rem	3332	6.74	38.334	0	817.982
odi	2830	4.866	7.272	-.616	81.792
inf2	3723	12.389	102.075	-26.3	4800.532
gexp	3621	15.532	6.103	.911	73.876
saving	3642	19.497	16.621	-141.974	87.827
gfc	3612	22.6	7.304	-2.424	81.052
nrent	3738	6.844	10.71	0	87.459
to	3708	85.305	53.966	13.388	442.62
hc2	3620	7.877	3.178	.69	14.1
fd	3600	.32	.234	0	1
debt1	3618	52.286	41.064	0	593.737
iq	3750	-.003	.885	-2.1	1.97

Table B3. VIF

```
. vif

    Variable |       VIF       1/VIF
-------------+----------------------
      saving |      3.03    0.329982
         odi |      2.01    0.498192
       nrent |      1.82    0.550007
         gfc |      1.78    0.562533
          iq |      1.56    0.641957
          to |      1.52    0.659871
         hc2 |      1.49    0.669745
        gexp |      1.47    0.678374
          fd |      1.42    0.702825
         rem |      1.34    0.746316
         fdi |      1.23    0.810811
       debt1 |      1.17    0.854689
        inf2 |      1.06    0.943875
-------------+----------------------
    Mean VIF |      1.61
```

Table B4. Test for multivariate normality

Test for multivariate normality

Doornik-Hansen   chi2(28) = 5.33e+05   Prob>chi2 = 0.0000

Table B5. Summary Statistics

Variable		Mean	Std. Dev.	Min	Max	Observations		
gdpg	overall	4.388148	4.199012	-36.39	35.22	N =		1550
	between		1.681585	.9912	9.2016	n =		62
	within		3.853283	-33.67705	32.18775	T =		25
fdi	overall	3.563542	6.572737	-37.15	103.34	N =		1550
	between		3.265248	.238	20.0352	n =		62
	within		5.718761	-42.35246	86.86834	T =		25
rem	overall	5.009348	8.257897	0	108.4	N =		1550
	between		6.640144	0	41.91	n =		62
	within		4.978403	-21.19065	71.49935	T =		25
odi	overall	7.57451	8.403853	-.28	81.79	N =		1550
	between		6.405839	.0716	27.196	n =		62
	within		5.497796	-15.07549	66.71451	T =		25
inf2	overall	18.11115	150.6352	-21.17	4800.53	N =		1550
	between		47.87234	1.324	336.3676	n =		62
	within		142.95	-335.0164	4482.273	T =		25
gexp	overall	12.66526	7.450722	0	73.88	N =		1550
	between		4.574174	4.812	28.8856	n =		62
	within		5.908838	-16.22034	57.65966	T =		25
saving	overall	12.48652	17.85211	-141.97	64.93	N =		1550
	between		14.7497	-42.822	49.6976	n =		62
	within		10.22324	-86.66148	92.98852	T =		25
gfc	overall	20.89028	10.23662	-2.42	81.05	N =		1550
	between		7.383151	2.782	50.7004	n =		62
	within		7.149971	-1.081723	65.23668	T =		25
nrent	overall	8.968742	9.584133	0	58.65	N =		1550
	between		8.472169	.056	41.9264	n =		62
	within		4.603269	-15.61766	34.95834	T =		25
to	overall	68.55579	35.00538	0	311.35	N =		1550
	between		27.63719	28.4916	142.4216	n =		62
	within		21.75768	-49.68781	261.6622	T =		25
hc2	overall	4.995884	2.739607	0	11.5	N =		1550
	between		2.410705	1.096	10.7692	n =		62
	within		1.335661	-5.052116	11.70228	T =		25
debt1	overall	54.99416	47.4004	0	593.74	N =		1550
	between		28.35567	1.1656	178.98	n =		62
	within		38.14724	-123.9858	469.7542	T =		25
fd	overall	.1463355	.0931016	0	.49	N =		1550
	between		.0817855	.0396	.3992	n =		62
	within		.0456363	-.2528645	.3251355	T =		25
iq	overall	-.6329097	.4767452	-2.1	.59	N =		1550
	between		.4196341	-1.6236	.2268	n =		62
	within		.2322101	-1.43371	.9906903	T =		25

.

Table B5. Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) gdpg	1.000													
(2) fdi	-0.001	1.000												
	(0.974)													
(3) rem	-0.001	0.557	1.000											
	(0.939)	(0.000)												
(4) odi	0.070	0.068	0.110	1.000										
	(0.000)	(0.000)	(0.000)											
(5) inf2	-0.014	-0.009	-0.007	-0.004	1.000									
	(0.398)	(0.605)	(0.667)	(0.849)										
(6) gexp	-0.202	0.038	0.019	0.139	-0.073	1.000								
	(0.000)	(0.021)	(0.289)	(0.000)	(0.000)									
(7) saving	0.064	0.009	-0.076	-0.560	-0.008	-0.105	1.000							
	(0.000)	(0.580)	(0.000)	(0.000)	(0.630)	(0.000)								
(8) gfc	0.195	0.023	0.001	-0.152	-0.040	0.040	0.333	1.000						
	(0.000)	(0.165)	(0.965)	(0.000)	(0.016)	(0.017)	(0.000)							
(9) nrent	0.100	-0.050	-0.072	0.060	0.113	-0.099	0.302	0.036	1.000					
	(0.000)	(0.002)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.032)						
(10) to	0.029	0.115	-0.025	-0.049	-0.024	0.106	0.214	0.167	-0.068	1.000				
	(0.075)	(0.000)	(0.147)	(0.009)	(0.146)	(0.000)	(0.000)	(0.000)	(0.000)					
(11) hc2	-0.117	0.053	-0.012	-0.392	-0.056	0.316	0.300	0.130	-0.269	0.303	1.000			
	(0.000)	(0.002)	(0.494)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)				
(12) fd	-0.127	0.108	0.006	-0.438	-0.073	0.278	0.364	0.079	-0.285	0.252	0.659	1.000		
	(0.000)	(0.000)	(0.716)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)			
(13) debt1	-0.157	0.073	0.072	0.189	0.085	0.000	-0.267	-0.181	-0.087	0.010	-0.113	-0.002	1.000	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.981)	(0.000)	(0.000)	(0.000)	(0.544)	(0.000)	(0.897)		
(14) iq	-0.129	0.116	0.016	-0.203	-0.089	0.391	0.272	0.071	-0.415	0.329	0.635	0.791	-0.067	1.000
	(0.000)	(0.000)	(0.347)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

Figure B1: Confidence interval construction for threshold model in FDI- growth relationship
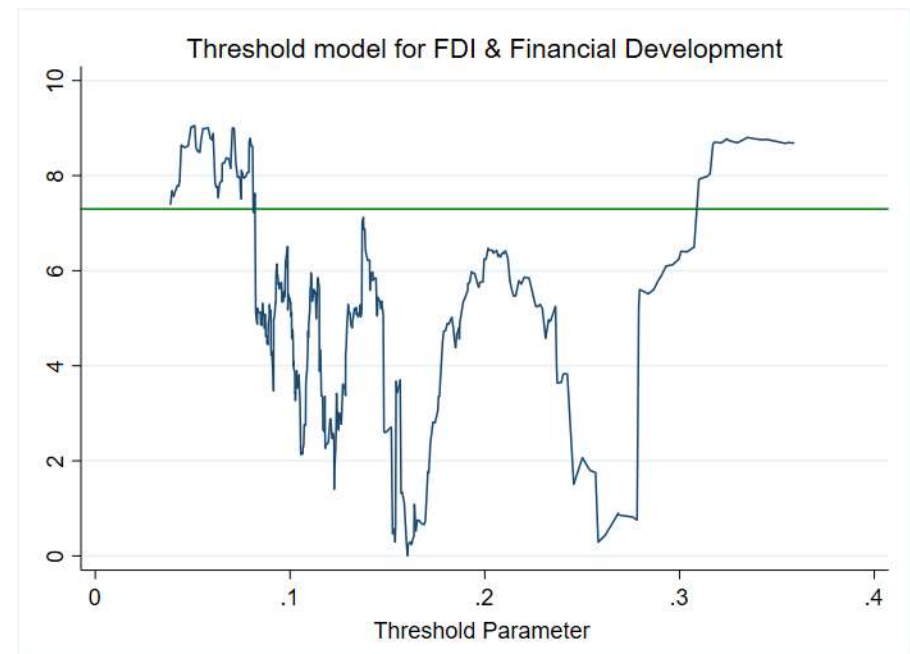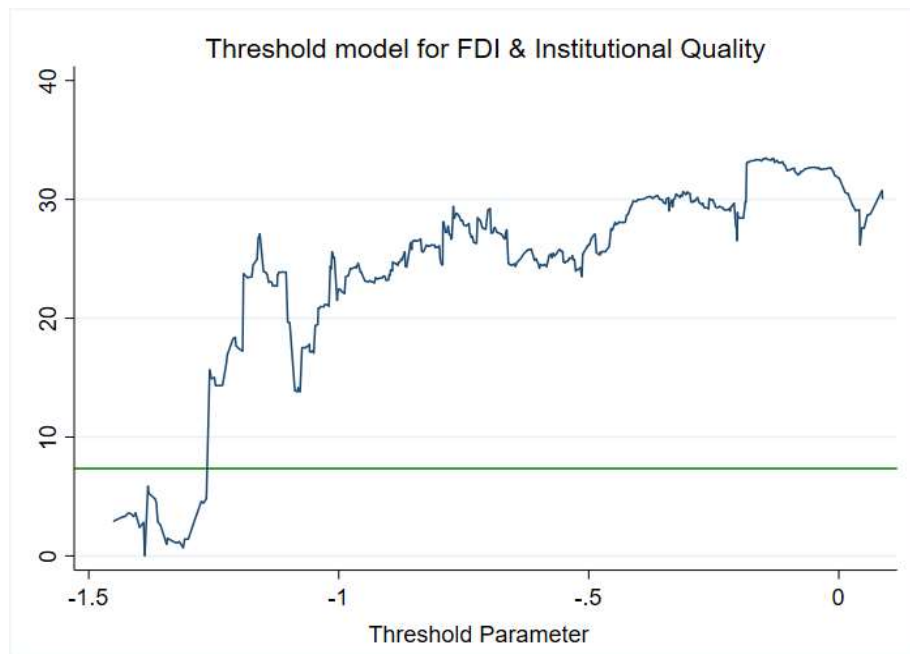
Figure B2: Confidence interval construction for threshold model in remittance - growth relationship
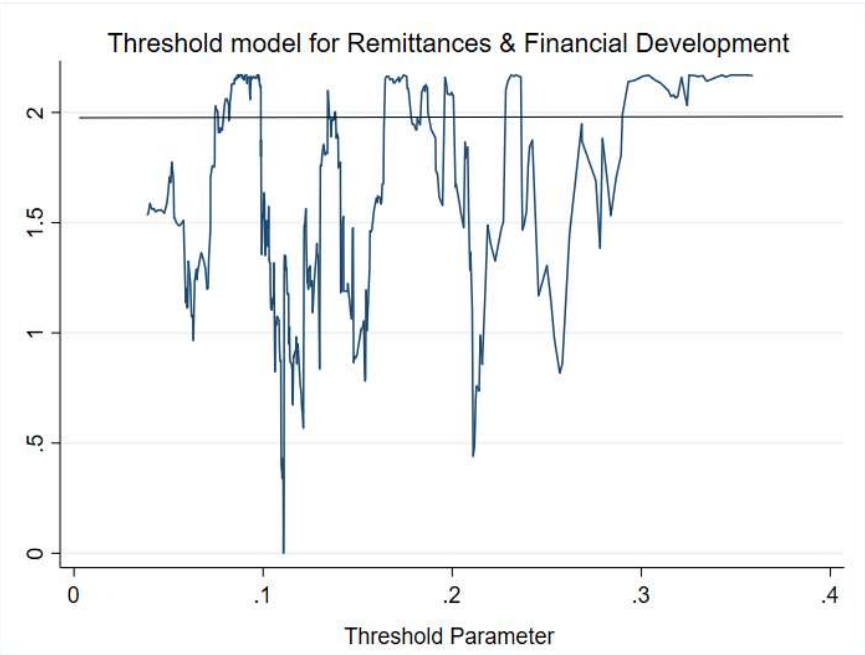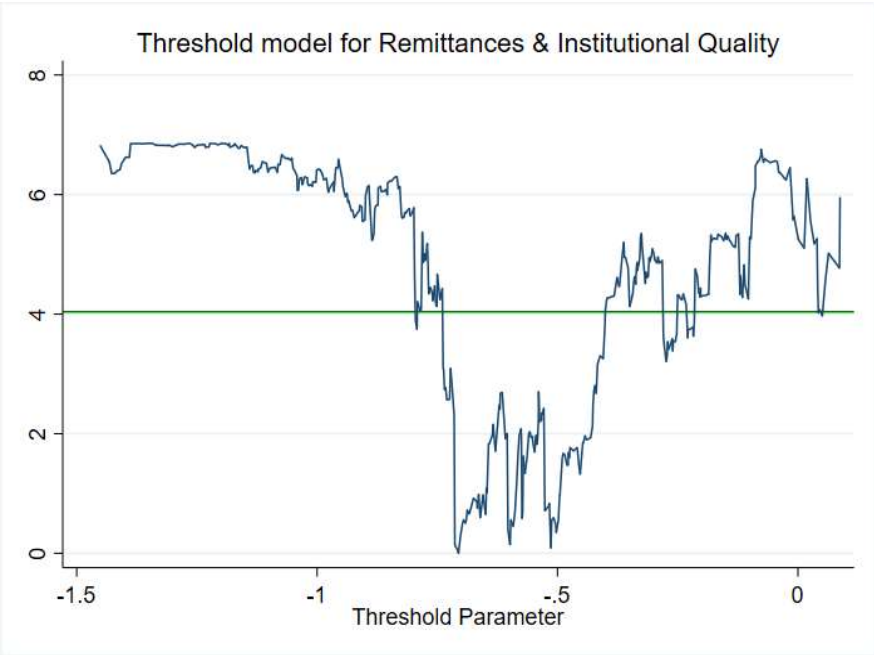
Figure B3: Confidence interval construction for threshold model in aid - growth relationship
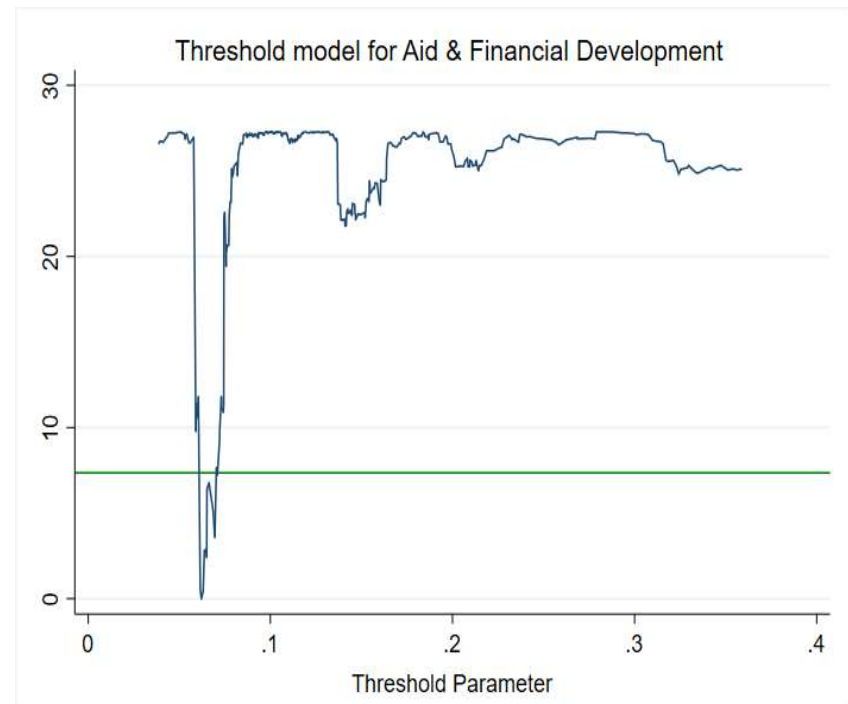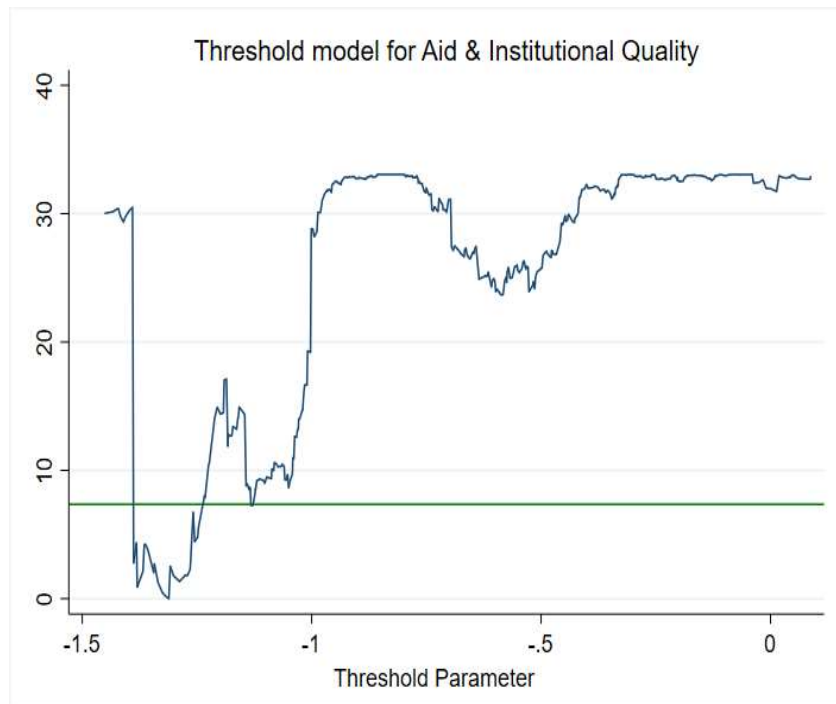
Table C1 – List of Countries in Sample

Sr No.	country	region	incomegroup
1	Albania	Europe & Central Asia	Upper middle income
2	Algeria	Middle East & North Africa	Lower middle income
3	Antigua and Barbuda	Latin America & Caribbean	High income
4	Argentina	Latin America & Caribbean	Upper middle income
5	Armenia	Europe & Central Asia	Upper middle income
6	Azerbaijan	Europe & Central Asia	Upper middle income
7	Bahamas, The	Latin America & Caribbean	High income
8	Bahrain	Middle East & North Africa	High income
9	Barbados	Latin America & Caribbean	High income
10	Belarus	Europe & Central Asia	Upper middle income
11	Belize	Latin America & Caribbean	Upper middle income
12	Bolivia	Latin America & Caribbean	Lower middle income
13	Botswana	Sub-Saharan Africa	Upper middle income
14	Brazil	Latin America & Caribbean	Upper middle income
15	Bulgaria	Europe & Central Asia	Upper middle income
16	Chile	Latin America & Caribbean	High income
17	China	East Asia & Pacific	Upper middle income
18	Colombia	Latin America & Caribbean	Upper middle income
19	Costa Rica	Latin America & Caribbean	Upper middle income
20	Croatia	Europe & Central Asia	High income
21	Dominican Republic	Latin America & Caribbean	Upper middle income
22	Ecuador	Latin America & Caribbean	Upper middle income
23	Egypt	Middle East & North Africa	Lower middle income
24	El Salvador	Latin America & Caribbean	Lower middle income
25	Fiji	East Asia & Pacific	Upper middle income
26	Gabon	Sub-Saharan Africa	Upper middle income
27	Georgia	Europe & Central Asia	Upper middle income
28	Guatemala	Latin America & Caribbean	Upper middle income
29	Guyana	Latin America & Caribbean	Upper middle income
30	Hungary	Europe & Central Asia	High income
31	India	South Asia	Lower middle income
32	Indonesia	East Asia & Pacific	Lower middle income
33	Iran	Middle East & North Africa	Lower middle income
34	Jamaica	Latin America & Caribbean	Upper middle income
35	Jordan	Middle East & North Africa	Upper middle income
36	Kazakhstan	Europe & Central Asia	Upper middle income
37	Libya	Middle East & North Africa	Upper middle income
38	Malaysia	East Asia & Pacific	Upper middle income
39	Maldives	South Asia	Upper middle income
40	Mauritius	Sub-Saharan Africa	Upper middle income
41	Mexico	Latin America & Caribbean	Upper middle income
42	Mongolia	East Asia & Pacific	Lower middle income
43	Morocco	Middle East & North Africa	Lower middle income

44	Namibia	Sub-Saharan Africa	Upper middle income
45	Oman	Middle East & North Africa	High income
46	Pakistan	South Asia	Lower middle income
47	Panama	Latin America & Caribbean	High income
48	Paraguay	Latin America & Caribbean	Upper middle income
49	Peru	Latin America & Caribbean	Upper middle income
50	Philippines	East Asia & Pacific	Lower middle income
51	Poland	Europe & Central Asia	High income
52	Romania	Europe & Central Asia	High income
53	Russia	Europe & Central Asia	Upper middle income
54	Saudi Arabia	Middle East & North Africa	High income
55	Seychelles	Sub-Saharan Africa	High income
56	South Africa	Sub-Saharan Africa	Upper middle income
57	Sri Lanka	South Asia	Lower middle income
58	Suriname	Latin America & Caribbean	Upper middle income
59	Syria	Middle East & North Africa	Low income
60	Thailand	East Asia & Pacific	Upper middle income
61	Tonga	East Asia & Pacific	Upper middle income
62	Tunisia	Middle East & North Africa	Lower middle income
63	Turkey	Europe & Central Asia	Upper middle income
64	Ukraine	Europe & Central Asia	Lower middle income
65	United Arab Emirates	Middle East & North Africa	High income
66	Uruguay	Latin America & Caribbean	High income
67	Vanuatu	East Asia & Pacific	Lower middle income
68	Albania	Europe & Central Asia	Upper middle income
69	Bangladesh	South Asia	Lower middle income
70	Benin	Sub-Saharan Africa	Lower middle income
71	Bhutan	South Asia	Lower middle income
72	Burkina Faso	Sub-Saharan Africa	Low income
73	Burundi	Sub-Saharan Africa	Low income
74	Cambodia	East Asia & Pacific	Lower middle income
75	Cameroon	Sub-Saharan Africa	Lower middle income
76	Central African Republic	Sub-Saharan Africa	Low income
77	Chad	Sub-Saharan Africa	Low income
78	Comoros	Sub-Saharan Africa	Lower middle income
79	Congo, Democratic Republic of the	Sub-Saharan Africa	Low income
80	Congo, Republic of	Sub-Saharan Africa	Lower middle income
81	Cote d'Ivoire	Sub-Saharan Africa	Lower middle income
82	Gambia, The	Sub-Saharan Africa	Low income
83	Ghana	Sub-Saharan Africa	Lower middle income
84	Guinea	Sub-Saharan Africa	Low income
85	Guinea-Bissau	Sub-Saharan Africa	Low income
86	Honduras	Latin America & Caribbean	Lower middle income
87	Kenya	Sub-Saharan Africa	Lower middle income
88	Kyrgyz Republic	Europe & Central Asia	Lower middle income

89	Lao P.D.R.	East Asia & Pacific	Lower middle income
90	Lesotho	Sub-Saharan Africa	Lower middle income
91	Madagascar	Sub-Saharan Africa	Low income
92	Mali	Sub-Saharan Africa	Low income
93	Mauritania	Sub-Saharan Africa	Lower middle income
94	Moldova	Europe & Central Asia	Upper middle income
95	Mozambique	Sub-Saharan Africa	Low income
96	Myanmar	East Asia & Pacific	Lower middle income
97	Nepal	South Asia	Lower middle income
98	Nicaragua	Latin America & Caribbean	Lower middle income
99	Niger	Sub-Saharan Africa	Low income
100	Nigeria	Sub-Saharan Africa	Lower middle income
101	Papua New Guinea	East Asia & Pacific	Lower middle income
102	Rwanda	Sub-Saharan Africa	Low income
103	Senegal	Sub-Saharan Africa	Lower middle income
104	Sierra Leone	Sub-Saharan Africa	Low income
105	Solomon Islands	East Asia & Pacific	Lower middle income
106	Sudan	Sub-Saharan Africa	Low income
107	Tajikistan	Europe & Central Asia	Lower middle income
108	Tanzania	Sub-Saharan Africa	Lower middle income
109	Togo	Sub-Saharan Africa	Low income
110	Uganda	Sub-Saharan Africa	Low income
111	Uzbekistan	Europe & Central Asia	Lower middle income
112	Zimbabwe	Sub-Saharan Africa	Lower middle income

Table C2 - Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
gdpg_vol	3,903	.0000461	1.19131	-15.96	17.21
fdi	4,092	2.919262	4.936663	-55.23	60.24
fdi_vol	3,880	.0000129	.7594163	-9.38	8.84
rem	3,499	4.719151	13.2471	0	235.92
rem_vol	3,392	-.0000295	.3863192	-13.44	8.09
aid	4,015	5.647412	7.899986	-.63	94.67
aid_vol	3,885	-.0000232	.6656826	-7.67	9.46
fd1	4,031	40.35763	330.1077	-81.7	12513.1
gfc	3,919	22.20658	8.709178	-2.42	93.55
linf_vol	3,877	-2.94e-10	.2216437	-2.512564	2.630534
popg	4,440	1.852273	1.369064	-6.77	15.18
hc	3,030	60.35998	30.67443	2.48	141.36
to	4,017	72.96435	38.82146	1.22	375.38
open	4,063	-.3417696	1.390035	-1.92	2.32

Table C3- Normality

Test for multivariate normality

Doornik-Hansen   chi2(28) = 1.82e+05   Prob>chi2 = 0.0000

Table C4- VIF

. vif

Variable	VIF	1/VIF
hc	2.33	0.430061
popg	1.70	0.586680
aid	1.47	0.682137
to	1.32	0.755138
fdi	1.24	0.806447
open	1.19	0.840793
rem	1.14	0.874820
gfc	1.12	0.892172
fd1	1.02	0.976211
fdi_vol	1.01	0.985571
aid_vol	1.01	0.987464
linf_vol	1.01	0.987636
rem_vol	1.01	0.990012
Mean VIF	1.28	

Table C5- Summary Statistics

Variable		Mean	Std. Dev.	Min	Max	Observations	
gdpg_vol	overall	.0000461	1.19131	-15.96	17.21	N =	3903
	between		.000557	-.001	.0016216	n =	111
	within		1.19131	-15.96106	17.20893	T-bar =	35.1622
fdi	overall	2.919262	4.936663	-55.23	60.24	N =	4092
	between		2.586512	-4.001	14.92	n =	111
	within		4.280736	-48.30974	53.19685	T-bar =	36.8649
fdi_vol	overall	.0000129	.7594163	-9.38	8.84	N =	3880
	between		.0005	-.0013043	.0015789	n =	111
	within		.7594161	-9.380358	8.839643	T-bar =	34.955
rem	overall	4.719151	13.2471	0	235.92	N =	3499
	between		9.73331	.0028571	89.4465	n =	108
	within		8.335104	-69.01735	151.1927	T-bar =	32.3981
rem_vol	overall	-.0000295	.3863192	-13.44	8.09	N =	3392
	between		.0005669	-.0012	.0023077	n =	108
	within		.3863188	-13.44056	8.089444	T-bar =	31.4074
aid	overall	5.647412	7.899986	-.63	94.67	N =	4015
	between		5.8508	.013	31.267	n =	111
	within		5.240372	-17.75959	82.55741	T-bar =	36.1712
aid_vol	overall	-.0000232	.6656826	-7.67	9.46	N =	3885
	between		.0005003	-.0010714	.00125	n =	111
	within		.6656824	-7.66969	9.459451	T-bar =	35
fd1	overall	40.35763	330.1077	-81.7	12513.1	N =	4031
	between		90.84999	7.667	652.8322	n =	111
	within		316.907	-631.1246	11900.62	T-bar =	36.3153
gfc	overall	22.20658	8.709178	-2.42	93.55	N =	3919
	between		6.239299	10.5165	45.93775	n =	111
	within		6.285224	-.5581746	75.67222	T-bar =	35.3063
linf_vol	overall	-2.94e-10	.2216437	-2.512564	2.630534	N =	3877
	between		6.15e-09	-2.00e-08	1.97e-08	n =	111
	within		.2216437	-2.512564	2.630534	T-bar =	34.9279
popg	overall	1.852273	1.369064	-6.77	15.18	N =	4440
	between		1.105018	-.588	5.87475	n =	111
	within		.8148619	-7.244727	11.15752	T =	40
hc	overall	60.35998	30.67443	2.48	141.36	N =	3030
	between		28.34444	9.657879	107.3767	n =	111
	within		14.1419	2.825112	128.3338	T-bar =	27.2973
to	overall	72.96435	38.82146	1.22	375.38	N =	4017
	between		35.528	21.57025	189.2681	n =	111
	within		19.135	-10.3568	259.0763	T-bar =	36.1892
open	overall	-.3417696	1.390035	-1.92	2.32	N =	4063
	between		1.115585	-1.92	2.32	n =	111
	within		.8590686	-3.48327	2.13323	T-bar =	36.6036

Table C6 - Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) gdpg_vol	1.000													
(2) fdi	-0.051	1.000												
	(0.002)													
(3) fdi_vol	0.019	0.079	1.000											
	(0.232)	(0.000)												
(4) rem	-0.001	0.018	-0.001	1.000										
	(0.937)	(0.294)	(0.947)											
(5) rem_vol	0.013	-0.017	0.029	-0.028	1.000									
	(0.451)	(0.331)	(0.090)	(0.106)										
(6) aid	0.025	-0.037	-0.001	0.188	-0.008	1.000								
	(0.135)	(0.020)	(0.972)	(0.000)	(0.661)									
(7) aid_vol	0.212	0.040	0.028	0.000	0.020	0.123	1.000							
	(0.000)	(0.014)	(0.080)	(0.979)	(0.252)	(0.000)								
(8) fd1	0.013	-0.037	-0.009	-0.022	0.001	0.024	-0.027	1.000						
	(0.438)	(0.019)	(0.586)	(0.205)	(0.972)	(0.146)	(0.096)							
(9) gfc	-0.036	0.242	0.023	0.049	0.004	-0.125	0.024	-0.039	1.000					
	(0.032)	(0.000)	(0.158)	(0.005)	(0.828)	(0.000)	(0.150)	(0.018)						
(10) linf_vol	0.067	-0.009	0.025	-0.016	-0.016	-0.008	-0.005	-0.034	-0.016	1.000				
	(0.000)	(0.575)	(0.121)	(0.356)	(0.353)	(0.607)	(0.742)	(0.039)	(0.341)					
(11) popg	0.022	-0.115	0.019	-0.072	-0.005	0.142	0.056	0.008	-0.036	0.009	1.000			
	(0.171)	(0.000)	(0.242)	(0.000)	(0.752)	(0.000)	(0.000)	(0.631)	(0.023)	(0.558)				
(12) hc	0.036	0.197	-0.016	-0.036	-0.008	-0.480	0.034	-0.030	0.121	-0.008	-0.559	1.000		
	(0.060)	(0.000)	(0.408)	(0.077)	(0.696)	(0.000)	(0.079)	(0.111)	(0.000)	(0.683)	(0.000)			
(13) to	0.004	0.329	0.027	0.167	-0.014	-0.001	0.029	-0.042	0.228	-0.010	-0.093	0.291	1.000	
	(0.793)	(0.000)	(0.099)	(0.000)	(0.422)	(0.928)	(0.079)	(0.009)	(0.000)	(0.562)	(0.000)	(0.000)		
(14) open	-0.006	0.189	0.000	0.023	0.004	-0.158	0.003	-0.066	0.029	-0.012	-0.018	0.378	0.313	1.000
	(0.702)	(0.000)	(0.980)	(0.182)	(0.830)	(0.000)	(0.845)	(0.000)	(0.080)	(0.450)	(0.263)	(0.000)	(0.000)	

Figure C1 – Data Plots for Key Variables