Determinants, Identification and Effects of Extreme Net Capital Flows on Developing Economies

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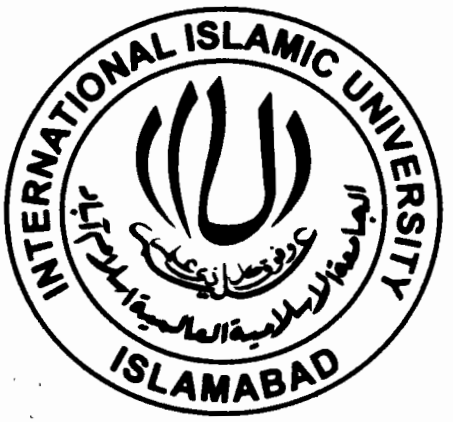

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A Dissertation Submitted to the School of Economics, International Institute of Islamic Economics in Partial Fulfillment for the Award of Doctor of Philosophy Degree in Economics of the International Islamic University, Islamabad.

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DECLARATION

I, **Muhammad Imran** S/O **Babar Hussain** Registration No. 146-SE/PhD/F14, student of Ph. D. Economics at the School of Economics, International Institute of Islamic Economics, International Islamic University Islamabad, do hereby solemnly declare that the thesis entitled "**Determinants, Identification and Effects of Extreme Net Capital Flows on Developing Economies**", submitted by me in the partial fulfillment for the award of Ph. D. degree in Economics. It is my original work, except where otherwise acknowledged in the text, and has not been submitted, printed or published earlier and shall not, in future, be submitted by me for obtaining any degree from this or any other university or institution.

Signature: _____

Dated: September 28, 2022

Muhammad Imran

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DEDICATION

This dissertation is dedicated to my Uncle Mr. Zubair Abdullah, My aunt Bushra Zubair and to my beloved parents. I am deeply thankful to the Almighty who has blessed me with these amazing people to support me, uplift me and comfort me. May Allah (SWT) bless them with good health and long life.

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ABSTRACT

We empirically investigate the determinants of net capital flows (hereafter NCF) using panel quantile regression. In addition, we empirically investigate the determinants of NCF and its episodes before and after the global financial crisis (GFC) 2007-08. The GFC offers the right time to reconsider international financial integration. Thus, we split our sample period into pre and post-crisis periods. We identify the extreme episodes namely surge, stop, flight, and retrenchment based on the deviation of NCF to GDP ratio from its historical trend. We empirically investigate the determinants of these episodes utilizing the probit model and complementary log-log regression for 47 developing economies over the period 1980-2018. Using local projections regression, we investigate the impact of the surge, stop flight, and retrenchment on real sector indicators (GDP growth rate, employment, and savings) and financial sector variables (inflation, interest rate, and domestic credit). We construct an institutional quality index and examine the role of institutional quality in establishing the impact of episodes on the real and financial sectors by differentiating between high-institutional and low-institutional quality.

We document that both push and pull factors are important factors in determining NCF. In particular, external factors such as the global growth rate, the global interest rate, and the world uncertainty index are more associated with NCF in the pre-crisis period as compared to the post-crisis period. In particular, push factors such as the global growth rate, the global interest rate, and the world uncertainty index are more associated with NCF in the pre-crisis period as compared to the post-crisis period. However, the estimated coefficients across the quantiles show that the country-specific characteristics are more important in the post-GFC period as compared to global push factors in driving NCF.

Based on the probit model we report that WUI is significant and negatively associated with the surge occurrence. Similarly, the current account to GDP is negatively associated and the GDP growth rate is positively connected with the surge episode. Moreover, the push factors namely the global growth rate and the regional contagion are significant and positively associated with flight episodes. In addition, the domestic interest rates and current account are positively associated with flight episodes. We conclude that episodes have significant impacts on the real and nominal sectors of the developing economies and our findings support the notion that large capital flows bring imbalances in the developing economies. We also conclude that both the liability flow-driven episode surges and asset flow-driven flight have a more strong influence on the real and financial sectors of the developing economies as compared to stop and retrenchment. In particular, we find that the level of institutional quality acts as a gatekeeper in the host economy. We conclude that the countries with a higher level of institutional quality are less prone to the negative impacts of the large episodes as compared to the countries with a low level of institutional quality.

JEL Classifications: C21; F21; O43
Keywords: Capital flows; Episodes; Institutions; Quantile regression; Local projections

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LIST OF ABBREVIATIONS AND ACRONYMS

DCP	Domestic Credit to Private Sector
FDI	Foreign Direct Investment
FE	Fixed Effects
FEPM	Fixed Effects Probit Model
GCF	Gross Capital Flows
GFC	Global Financial Crisis
IRF	Impulse Response Function
ICRG	International Country Risk Guide
IFS	International Financial Statistics
IMF	International Monetary Fund
IQ	Institutional Quality
KAOPEN	Capital Account Openness
LP	Local Projections
NCF	Net Capital Flows
OLS	Ordinary Least Square
PCA	Principal Component Analysis
PQR	Panel Quantile Regression
PRS	Political Risk Services
PWT	Penn World Table
QR	Quantile Regression
REER	Real Effective Exchange Rate
RER	Real Exchange Rate
WCP	World Commodity Prices
WDI	World Development Indicators
WGDPg	World Gross Domestic Product growth
WUI	World Uncertainty Index

CHAPTER 1

INTRODUCTION

Foreign capital flows are generally defined as the exchange of financial assets between domestic and foreign residents. In recent decades, many developing and emerging economies have decreased the restrictions on capital flows which lead them to more integrated international financial markets (Montiel, 2014). In principle, capital inflows usually provide access to external finance, which helps to reduce the funding constraints.

The increasing globalization, trade openness, integration, and capital account liberalization of financial market have broadened the international investment opportunity set (Rashid et al., 2019). Moreover, these trends have been associated with various factors such as a tremendous shift in macroeconomic policy, changes in the economic fundamentals of developing economies (DEs), trade openness, development in the capital market, diversification of the domestic markets, no or less capital account restrictions and banking regulations. These advancements have provided a favorable platform for the movement of capital from advanced economies to DEs. The prominent growth in foreign capital flows (hereafter FCF) to DEs since the early 1990s has renewed the academic debate in the literature on the drivers of FCF (Calvo et al., 1993; De Vita & Kyaw, 2008).

The neoclassical theory states that the movement of capital across the DEs as a result of the growing financial globalization is an efficient allocation of resources

(Ahmed & Zlate, 2014; Tchorek et al., 2017). Reallocation of capital flows from capital-abundant economies having lower marginal returns on capital to DEs having relatively higher marginal returns on capital can be associated with potential benefits, such as a reduction in capital cost, providing funds for domestic industries, encouraging competitiveness, technology spillover, enhance productive capacity, improve efficiency, and many others (Blomstrom et al., 1994; Borensztein et al., 1998; Hwang et al., 2017).

However, many facets cross the argument on capital flows. For example, there is the matter of gross capital flows (GCF) versus net capital flows (NCF), which contains different implications for macroeconomic management and financial stability (De Gregorio et al., 2000; Efremidze et al., 2017). NCF is the net of asset flows and liability flows. In this study we focus on NCF because they are more closely related than GCF to the exchange rate movement and economic overheating (Ahmed & Zlate, 2014; Ghosh et al., 2014; Hwang et al., 2017).

The volatility of NCF and how to manage them has received a significant place on the agenda of decision-makers (De Gregorio et al., 2012). Nonetheless, the way to look at the data in the literature often seems incomplete and ambiguous (Broner et al., 2013; Bludedorn et al., 2013; Ibarra et al., 2019). The impasse is that NCF impacts the economy from many angles (Fratzscher, 2012; Hwang et al., 2017). In general, therefore, dealing with NCF is an important issue, particularly in DEs. In the literature, capital flows are relevant from the points of view of financial stability, macroeconomic fluctuations, and the exchange rates (Tillmann, 2013; Cesa-Bianchi et al., 2015).

The existing literature shows that NCF are "volatile" and "pro-cyclical" and decline during crisis times (Broner et al., 2013). These patterns are even more acute in DEs and are often called "sudden stops" to refer to the crumble in net inflows that often leads to crises (Calvo, 1998; Cavallo & Frankel, 2008). Nonetheless looking at GCF is useful, NCF still matters, as they are connected with the real exchange rate changes and current account adjustments (Forbes & Warnock, 2012; Ghosh et al., 2014).

NCF are especially important in developing and emerging countries as they are highly dependent on international trade (Hwang et al., 2017). Therefore, researchers began to differentiate between asset flows and liability flows in the analysis of NCF (Ghosh et al., 2014; Janus & Riera-Crichton, 2016; Hwang et al., 2017).

In principle, NCF are determined by global push and domestic pull factors, and these push-pull factors are significant in determining the magnitude and movements of NCF (Ying & Kim, 2001; Fratzscher, 2012; Hannan, 2017). The seminal work by Calvo et al. (1993) and Fernandez-Arias (1996) introduced the distinction between country-specific "pull" factors and external "push" factors. Push-pull factors provide the theoretical framework for much of the empirical analysis since the early 1990s.[1]

The "push or external factors" are the supply-side factors and are mostly beyond the control of the borrowing country such as a fall in global interest rates, global

[1]For detail discussions see, Calvo et al. (1993) and Fernandez-Arias (1996).

market uncertainty, world uncertainty index, and global liquidity.[2] The "pull factors" or "internal factors" are the demand-side factors such as improvements in capital productivity, the domestic growth, the macroeconomic fundamentals, the capital market openness, trade liberalization, and institutional quality. These factors are the main driving forces to determining NCF (Fratzscher, 2012; Cieślik, 2019; Eller et al., 2020).

Historical trends of NCF in DEs show that they are episodic in nature (Ghosh et al., 2014; Sahu, 2020b). However, the recent episodes of capital flows to DEs have posed some serious macroeconomic policy challenges and threats to financial stability (Caballero, 2014; Hwang, 2017). Sudden fall of capital flows (stops) hurt economic performance while surges in capital inflows lead to currency depreciation and economic recessions (Calvo & Reinhart, 2000; Rothenberg & Warnock, 2011; Yan & Wang, 2022).

Even in good times, a surge in capital inflows disrupts the inflationary dynamics, may cause overvaluation of the exchange rate, and also leads to currency crises in the economy (Eichengreen & Leblang, 2003; Glick et al., 2006; Rashid & Hussain, 2013). Further, the existing literature focuses on a particular type of capital flow episode see, for example, Reinhart and Reinhart (2009), Cardearelli et al. (2010) and Ghosh et al. (2014) for surges in capital inflows; Calvo (1998), Agosin and Huaita (2010), and Ma et al. (2020) for the sudden stop; Khan and Haque, (1985); Efremidze et al. (2017) on capital flight.

[2]See, for example, Fratzscher (2012), Liyanage (2016) and Hannan (2017).

However, after the global financial crisis of 2007-08 (GFC) many DEs observed remarkably large capital inflows when the interest rates in the developed nations hit the zero lower bound (Fratzscher et al., 2013; Balakrishnan et al., 2013; Ibara et al., 2019). This situation led to a concern among the researchers and economists that once the developed economies start relaxing such exceptional-expansionary monetary policies, there might be a reversal in the direction of the capital flows from these developing countries, which may have negative consequences on the DEs (Rey, 2016; Dhar, 2021). Thus, a rise in the capital inflows to DEs (offering higher returns), particularly, after the GFC (2007-08) once again has diverted the attention of the policymakers towards the understanding of cross-border capital flows because of their effects on the real and financial sectors of the economy (Fratzscher, 2012; Hannan, 2017).

An increase in NCF can have an effect on DEs in at least two ways. First, in principle, NCF permits a country to lift investment without giving up its consumption (Calvo et al., 1996; Eichengreen & Gupta, 2016). Second, in contrast, large capital flows may be followed by current account deficits (Chinn & Prasad, 2003; Cardarelli et al., 2010), appreciation of the exchange rates, currency crises, and inflationary pressures in the host economy (Bluedorn et al., 2013; Rashid et al., 2019). In addition to that, the latter in turn can cause a decrease in the trading sector (Ibarra et al., 2019). As a result, the current account may become more susceptible to the global financial cycle, and reversals of NCF (De Vita & Kyaw, 2008; Cowan et al., 2008; Calvo, 2011).

NCF has significant consequences for the real sector in terms of growth, inflation, asset prices, and the exchange rates (Kim &Wu, 2008; Sethi & Sucharita, 2015; Zhang & Ward, 2015; Davis et al., 2021). Moreover, lack of required absorptive capacity in the DEs, inapt supervision, and also ineffective sterilization of the capital inflows may worsen the weak banking system and cause financial bubbles (Rashid & Husain, 2013; Shiller, 2014). Likewise, large outflows are capable of adversely harming the domestic economy. For example; they may cause a liquidity shortage and augment the probability of currency crises (Rashid et al., 2019).

NCF have significant consequences for the transmission of real and financial shock across the economies and the country's own macroeconomic outcomes (Avdjiev et al., 2018). The domestic macroeconomic environment and global shocks also affect the amount and direction of capital flows. Theoretically, how capital flows affect the real and financial indicators of an economy largely depends on the source in which it inflows or outflows to the economy. Further, the macroeconomic impacts of capital flows on the real and financial sectors of the economy also depend upon whether the flows are long-lasting or temporary in nature (Blanchard et al., 2016; Rashid et al., 2019).

Large capital inflows also increase the exposure of the economy to foreign liabilities and heighten credit booms, which may consequently turn to burst when NCF are reversed. These arguments have by and large been held by the pertinent literature (Eichengreen & Leblang, 2003; Edwards, 2007; Reinhart & Reinhart, 2008; Agosin & Huaita, 2010; Ghosh et al., 2016). In a similar vein, Gunter

(2004) argues that overvaluation of the local currency and higher cost of financial transactions is the major drivers of capital flight. So from a macroeconomic policy point of view, it is very important to investigate issues like how episodes of NCF (surge, stop, flight, and retrenchments) affect the real and financial sectors of the DEs.

Institutions shape human interactions, reduce the uncertainty in everyday life, and affect the performance of the economies due to their effect on the cost of production and exchange (North, 1990). The empirical and theoretical literature provides intuition into the Lucas paradox, by adapting the neoclassical model through the inclusion of supplementary factors. According to Martin (2018), the factors that support the Lucas paradox can be categorized into two major strands. The first strand of the variables associated to the elements of the production function, that is, differences in technologies, differences in factors of production (human capital, infrastructure among others) and government policies taxation and capital control policies (Reinhardt et al., 2013).

On the other hand, the second group of the variables associated to the role of institutions and economic uncertainty such as enforcement of property rights and private contracts, control of corruption, imperfections of the capital market, moral hazard, voice and accountability, asymmetric information, government effectiveness, and sovereign default risks (Eichergreen, 2003; Reinhart & Rogoff, 2004; Alfaro et al., 2008).

Theoretically, quality institutions are considered an important catalyst for the domestic investment climate (Osei-Assibey et al., 2017). According to the existing theoretical literature, institutional quality positively influences economic activities (North, 1990; Ali et al., 2010). In addition to that, Buchanan et al. (2012) document that countries with stronger institutions are likely to attract higher foreign capital flows. Similarly, North (1990) argues that investment decisions depend on whether property rights and other investment-promoting institutions are in place because these quality institutions indirectly increase the return by lowering transaction costs.

Similarly, Alvarez et al. (2013) are of the view that host countries typically attract foreign capital through; political stability, reducing corporation tax rates, providing quality infrastructure, protecting property rights, controlling corruption, rule of law and also allowing market forces to work without any distortions. In contrast, weak institutions often give rise to the capital outflow it is because the investors lose confidence and therefore transfer their funds abroad (Hermes & Lensink, 2003). In addition to that, existing literature is consistent with the findings that a county with quality of institutions is linked with a lower incidence of capital outflows (Le & Zak, 2006; Cerra et al., 2008). In a similar vein, Ndikumana (2016), documents that capital flight is lower in better-governed regimes.

Existing literature highlighted two important factors good governance and political economy variables as crucial determinants of capital inflows (Bissoon, 2012). In order to attract more foreign capital governments have to create a

business environment in their country. Instead, considering the importance of macroeconomic factors existing literature also highlighted the role of institutional factors in creating a better investment environment (Alfaro et al., 2008; Nasir & Hassan, 2011). These institutional factors are characterized by well-defined property rights, corruption, effective use of resources, political instability the absence of trade barriers, restrictive policies, and violence.

The association between NCF and institutional quality across developed economies is well recognized in the literature (Buchanan et al., 2012; Asiedu & Lien, 2011; Kurul & Yalta, 2017; Peres et al., 2018). However, the impact of episodes on the real and financial sectors through institutional quality is even more scant.

1.1 Gap Analysis

There is a large and growing body of literature on the determinants of NCF, particularly in developed economies. However, limited literature is available on DEs. Moreover, unraveling the push and pull factors are of paramount importance to practitioners and decision-makers (Eller et al., 2020). Further, the literature on determinants of NCF is inconclusive (Montiel, 2014). There are some advantages of examining NCF and their episodes. For example, often some risks depend on the country's gross external liabilities but in most of the cases macroeconomic outcomes of NCF such as the exchange rate appreciation, recession, and macroeconomic overheating are associated with NCF (Ahmad & Zalate, 2014; Alberola et al., 2016; Adler et al., 2016).

Earlier work on large episodes of NCF such as Reinhart and Reinhart (2009) and Cardarelli et al. (2010) mostly listed stylized facts of bonanza episodes. In addition, their works do not assume the proper empirical analysis of the determinants of NCF. However, Forbes and Warnock (2012), and Ghosh et al. (2014) are the closest to our work, yet there are some major differences in methodology, sample countries, time period, and most important the policy implications. For example, Forbes and Warnock (2012) identify episodes on the basis of GCF, rather than on the basis of NCF. They also pool advanced and emerging economies in their analysis, yet capital flow characteristics for the two different groups may be somewhat different for instance, unlike industrial economies, emerging economies usually are more subject to sudden stops. On the other hand, Ghosh et al. (2014) focus on the surge in capital inflows and ignore other episodes such as stop, flight, and retrenchment.

However, no researcher has attempted to examine the determinants of both NCF (normal flows) and episodes on a net basis such as (surge, stop, flight, and retrenchment) for the wide data set of developing countries. Thus, keeping in view the importance of NCF and its potential effects on the economy, as discussed earlier we focus on NCF. In this study, we empirically investigate the determinants of the episodes based on NCF for the DEs.

Large capital inflows and outflows could have different characteristics and they often affect an economy more significantly than normal capital flows. Capital inflows may disrupt the inflationary dynamics, leads to exchange rate appreciation, assets boom, and improper supervision can also deteriorate the

fragile banking system of the country (Furceri et al., 2012; Rashid & Hussain, 2013). Some researchers report that large episodes of NCF posed a severe risk to the financial stability of the host countries (Combes et al., 2012; Tillman, 2013). In the literature, many researchers attempted to examine the effects of normal capital flows mostly on macroeconomic variables (Alfaro et al., 2010; Beltran et al., 2013; Acheampong, 2019; Combes et al., 2019; Soylu, 2019; Ben-Salha & Zmami, 2020; Inoguchi, 2021).

Moreover, a small number of studies are available on the nexus between episodes and macroeconomic variables, though, we deviate from the existing literature in many aspects. For example, Janus and Riera-Crichton (2016) use volume-based analysis to classify the episodes based on GCF. In addition to that, Ghosh et al. (2014) mainly focus on the extreme rise in large inflows. Cavallo et al. (2015) consider episodes based on both NCF and GCF but they considered only extreme fall in capital outflows. Sahu (2020b) finds the impact of surge episodes on the episodes of GDP growth.

However, there is no such research work, which has explored the effects of episodes on the real and financial sectors of the DEs. Therefore, in order to abridge this gap, we investigate the influence of extreme episodes based on NCF on several real sector indicators (the real GDP growth rate, employment and gross savings) and financial sector indicators (the inflation rate, the interest rates, and the domestic credit to private sector).

Moreover, compared to the existing literature on the episodes, this study considers the complete cycle of the episodes namely surge, stop, flight, and retrenchment based on NCF. We empirically examine the potential effects of these episodes on real (the real GDP growth rate, employment and savings) and financial (the inflation rate, the interest rates and domestic credit) sector indicators. Thus, our four types of extreme episodes provide a detailed classification of NCF episodes and their potential effects on the real and financial sector variables in DEs.

We distinguish the differential effects of extreme episodes of large capital inflows/outflows on the real and financial sectors of the DEs. Many researchers argue the importance of the size of NCF matters for the developed economies (Kim &Wu, 2008; Furceri et al., 2012). Therefore, surge episodes are likely to have different characteristics and may have distinct long-term effects than normal flows (Rashid et al., 2019).

Further, in the literature, most of the prior studies on the impact of capital flows on macroeconomic variables are time series based analyses or focusing on a panel of developed countries. Moreover, the literature on the effects of NCF on the real and financial sectors is limited to DEs. Therefore, we extend the existing literature to empirically investigate the effects of each episode (surge, stop, fight, and retrenchment) on the real and financial sectors of the DEs.

Jones and Romer (2010) argue that institutions are now at the center of mainstream economic theory, whilst the researchers such as Economides and Egger (2009) view institutions as the most important tool to gauge the economic

health of a country. Exclusively, the notion that domestic institutions affect the economic growth of a country is no longer controversial (North, 1990).

However, in spite of the huge amount of hits on the said issue, there exist copious gaps in the existing literature. In this study, we document the role of institutional quality in establishing the impact of episodes on real and financial sectors of the DEs. In particular, we explore the moderating role of high and low institutional quality in establishing the effects of episodes on the real and financial sectors of the DEs.

To sum up, this study contributes to the existing literature in many regards. First, this study empirically investigates the determinants of NCF using quantile regression. Second, we identify the episodes surge, stop, flight, and retrenchment based on NCF. Third, we empirically investigate the determinants of the surge, stop, flight and retrenchments. Fourth, unlike the existing literature mostly work investigate the nexus between normal capital flows and economic growth, however, we investigate the impact of NCF and each episode on both real (the real GDP growth rate, employment, and savings) and financial sectors (the inflation rate, the interest rates, and domestic credit to private sector) of the DEs. Fifth, we examine the moderating role of institutional quality in establishing the impact of episodes on the real and financial sectors of the DEs.

1.2 Objectives of the Study

The major objectives of the study are to find the determinants of NCF and its episodes. Further, how these episodes influence the real and financial sectors of

the DEs. In addition we also highlight moderating role of institutional quality in establishing the impact of episodes on the real and financial sectors of the developing economies. The specific objectives of the study are as follows:

1. To investigate the determinants of NCF in both pre and post-global financial crisis periods.

2. To identify the episodes of NCF such as surge, stop, flight, and retrenchment.

3. To empirically investigate the determinants of episodes.

4. To assess the impact of NCF and its episodes on the real sector (real GDP growth rate, employment, and domestic savings) of the developing countries.

5. To examine the impact of NCF and its episodes on the financial sector (the inflation rate, the interest rates, and domestic credit to private sector).

6. To investigate the moderating role of institutional quality in establishing the impact of episodes on the real and financial sectors of the developing economies.

1.3 Research Questions

With reference to the above research objectives, the research questions are:

1. What are the determinants of NCF in pre and post global financial crisis periods (2007-08)?

2. How to identify the large episodes of NCF (surge, stop, flight, and retrenchment)?

3. What are the major determinants of the episodes in case of developing economies?

4. Does the push and pull factors matters in pre and post crisis periods?

5. What are the impacts of episodes on the real and financial sectors of the selected developing economies?

6. What is the moderating role of institutional quality in establishing the impact of episodes on the real and financial sectors of the developing countries?

1.4 Significance and Scope of the Study

Understanding the behavior of the NCF could facilitate the policymakers, practitioners and academicians to design suitable strategy mix in order to protect the internal stability of the domestic markets and for functioning of the financial system. The past trend shows that NCF are episodic in nature[3]. The magnitude and recent episodes of NCF to DEs have posed some serious macroeconomic policy challenges and threats to financial stability. Moreover, the harmful effects of the large NCF raises the concerns to policymakers, for example, may disrupt the inflationary dynamics, may also raise the exchange rate instability and currency crisis in DEs[4].

In particular, the recent waves of NCF to DEs particularly, after the GFC (2007-08) has renewed academic interest due to their potential effects on the real and financial sector of the DEs. For example, overheating of the domestic economy, due to the large influx of NCF needs more attention, and appropriate policy

[3] See Broner et al.(2013), Ghosh et al. (2014) and Sahu et al. (2020b) for extended view.
[4]For discussion, see, Rey (2013), Zhang and Ward (2015).

responses. Thus, understanding these relationships is important for the authorities to devise prudent policies in order to get maximum benefits by allowing countries while minimizing associated potential risks. So from macroeconomic policy perspective an important question emerges that how episodes of NCF (surge, stop, flight and retrenchments) affect the real and financial sectors of the DEs need to be investigated in order to adopt appropriate policies to sterilize the impact of NCF and its episodes.

The neo-classical theory states that capital move to capital scarce countries due to the higher expected return. However quality of institutions can also affect the expected net value of investment[5]. Therefore, it has some policy implications as improvement in institutional quality attracts more NCF because investors always look for safer investment. In addition to that, while examining the potential effect of episodes on the real and nominal sectors on the DEs it would be beneficial to examine the response of the real and financial sectors of the DEs with different level of institutional quality. This study will help the policymakers to plan new strategies to manage NCF, improve the institutional quality in such a way that enhance growth process in the capital-recipient economy and also reduce the unfavorable impact on both the real and financial sectors of the DEs.

1.5 Contributions of the Study

In principle economic and financial crises can spill cross borders by means of trade and financial linkages (Claessens et al., 2010; Sahasrabuddhe, 2019). The

[5]See Montiel (2014) and Aziz (2018).

GFC (2007-08) is one of the best examples which shows that how a financial crisis in a one country can be transmitted to other countries across the globe. In similar vein, cross-border capital-flows can also transmit both positive and negative impacts for host economies. Therefore, adopting less restrictive capital account policy, DEs can be in a rickety situation of reaping benefits from or paying costly prices for cross-border inflows.

This study makes a number of contributions to the existing literature of NCF. First, the study empirically investigates the determinant of NCF and episodes. This study gives better insight to understand the determinants of extreme episodes of NCF. The existing literature on the determinant of episodes is very limited. Second, the research on NCF and episodes with reference to DEs is limited. The study aims to the DEs because these economies are more vulnerable to small changes in international markets and mostly rely on the large cross-border flows.

Third, this study covers a longer sample period that is from 1980 to 2018 that improves the quality of the data and thus the empirical results as well. Fourth, the study also investigates the impact of overwhelming GFC (2007-08) on the DEs. In order to get better insight on the determinants of NCF and episodes we split data set into two major parts i.e., before the crisis period and after the crisis period. This exercise provides us more in depth analysis on the changes in push and pulls factors of NCF/episodes. Therefore, this study captures the changes in the international market during the study period.

Fifth, the study offers new empirical evidence in the presently unsettled discussion on the pros and cons of extreme episodes of NCF, whether these extreme episodes are favorable to the real and financial sectors. Based on the empirical evidence, this study presents insight to a better understanding of the positive and negative consequences of episodes on the DEs.

Sixth, this study also investigates the moderating role of the IQ in establishing the impact of episodes on real and financial sectors of the DEs. Specifically, we explore the role of high and low IQ and how these institutions influence the relationship between episodes and the real and financial sectors of the DEs which are marginally explored in the existing literature. Therefore, by employing interactions between episodes and IQ (high and low) this study aids to add to the discussion whether the impacts of these episodes are conditional on institutional quality of the host economies.

1.6 Structure of the Study

The thesis is organized into six chapters. Chapter 2 documents an overview of the existing relevant literature to indentify the potential research gap. In Chapter 3 we discuss the determinants of capital flows. In addition, Chapter 3 documents the theoretical background of the existing theories. Specifically, we discuss the theoretical underpinning which supports the objectives of the study. We also discuss the economic channels that how capital flows affects the real and financial sectors.

Chapter 4 outlines the empirical methodology and specifically the empirical models. We indentify each episode and their identification criterion. In addition, we discuss the empirical models, variable description, data and sample. Furthermore, we also discuss the panel quantile regression, probit fixed effects model, complementary log-log regression and local projections estimation method.

Chapter 5 covers empirical results and discussion. First, the chapter starts from the discussion of descriptive statistics followed by the results of the determinants of NCF using quantile regression technique. In Chapter 5 we also discuss the determinants of episodes using probit fixed effects and complementary log-log regression. In addition, Chapter 5 depicts the impulse response functions based on local projections regression results to explore the impact of episodes on the real and financial sectors. In the end we also discuss the moderating effects of institutional quality to establish the impact of episodes on the real and financial sectors of the DEs. Chapter 6 concludes the thesis. Specifically, we present a summary of brief findings and propose some policy implications in light of the empirical findings. Finally, we provide the possible directions for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter comprised of the past empirical work and provides brief review of the existing literature on NCF. Further, according to the objectives of the study the existing literature is reviewed under three subsections. Section 2.2 begins with the overview of the empirical literature exploring the determinants of NCF and episodes. In Section 2.3, we document those studies which examine the impact of NCF on real sector (the real GDP growth, employment, savings) and financial sectors (the inflation rate, the interest rates, and domestic credit). Finally, Section 2.4 critically reviews previous studies related to the role of institutional quality in assessing the impact of NCF on real and financial sectors.

2.2 Determinants of Foreign Capital Flow: Prior Evidence

NCF play important in the global economy. NCF have been considered critical for economic growth and financial stability in DEs (Obstfeld, 2012). However, they are intimately connected to financial conditions and carry a range of benefits and risks to host economies. Moreover, Hayward and Gregoriou (2021) argue that NCF increased in DEs during the past decades. As a result international financial integration has been significantly increased in DEs during the past decades.

The literature categorizes the determinants of NCF into global (push) factors and country-specific (pull) factors (Calvo et al., 1993; Fernandez-Arias, 1996). The push factors are the global conditions such as macroeconomic policies in advanced economies, the world GDP growth, the global interest rate, the global liquidity growth rate, world commodity price index, and world economic uncertainty may have a push effect. On the other hand, pull factors denote the domestic characteristics and institutional settings of a particular country that may affect risks and returns to investors.

Specifically, the domestic interest rate, the real effective exchange rate (REER), current account openness, the domestic real GDP growth rate (DGDPg), the exchange rate regime (ERR), degree of capital account openness (KAOPEN), the level of institutional quality (IQ), internal macroeconomic stability, financial development, and trade openness, of the host economy have a pull effect. In the literature, both strands find that push and pull factors are crucial to determine NCF (IMF, 2016a). The most importantly the push-pull framework in explaining the behavior of NCF remained useful during and after the GFC (2007-08) and revives the academic debate among the policymakers on the importance of FCF for DEs (Forbes & Warnock, 2021).

Since exploring the significance of the external as well as domestic factors in motivating NCF has important policy implications for the DEs. The study of push-pull factors is important especially for government authorities, decision makers and investors. We argue that NCF are driven either due to the change in the global or domestic factors or both. If NCF are largely explained by the global

factors, in that case, countries may be likely to expose to external shocks and as a result perhaps, they might have limited domestic policy actions to counter such external shock prudently. On the other hand, if NCF driven by country-specific variables, then it may be viewed as that the recipient countries have prudent policy actions to reap the potential benefits from it.

Calvo et al. (1993) investigate the major determinants of NCF to Latin America. They document that fall in the GDP growth rate and the policy rate of the United States is the key push factors that caused foreign capital inflows to Latin American countries. Authors also find that economic and political reforms are also brought remarkable change in the capital inflows to the Latin American countries.

Fernandez-Arias (1996) find that most of the capital inflows to DEs are driven by push factors rather than pull factors. Similarly, Taylor and Sarno (1997), document that external factors are more important determinants of NCF. Ghosh and Ostry (1993), Chuhan et al. (1998), Hernandez and Rudolf (1999) report domestic variables are central in explaining the foreign capital inflows to DEs. The most importantly pioneering work of Ghosh and Ostry (1993), Calvo et al. (1993), Taylor and Sarno (1997), and Montiel and Reinhart (1999) have been played vital role in exploring the drivers of NCF which offers an important starting point for the volume of the recent literature.

Montiel and Reinhart (1999) find that the host country's domestic policy attracts short-term capital inflows to Asia. Alfaro et al. (2008) explore the role of pull factors for 47 countries for the period of 1970 to 2000. The authors conclude that level of IQ, and domestic factors are crucial in driving NCF. Fostel and Kaminsky (2007) explore the role of push factors in determining the NCF for twenty Latin American economies in equity, bond and loan markets for the period of 1980 to 2005. According to the authors push factors are more dominant in driving NCF. Reinhart and Reinhart (2009) examine the factors driving capital inflows (bonanza or surge episodes). The authors conclude that low level of the world interest rate often leads to bonanzas episodes.

Ahmed and Zlate (2014) find that the growth and the interest rate differentials between emerging and developed countries are the major drivers of NCF. Byrne and Fiess (2016) report that in advanced economies commodity prices and long-run bond yields decide whether capital moves to the emerging economies and financial openness and IQ derive whether emerging economies pull capital inflows. Cerutti et al. (2019) find that soundness of the domestic financial market attracts capital flows to DEs.

The empirical findings by Pagliari and Hannan (2017) suggest that external factors are relatively important as compared to the internal factors to explain the drivers of NCF volatility. Similarly, Sarno et al. (2016) and Boero et al. (2019) find that external variables are more essential than domestic variables in explaining the determinants of foreign portfolio flows to DEs. The empirical literature on the determinants of NCF also considers whether the drivers are the

same before, during and after the GFC (2007-09). For example, Fratzcher (2012) highlights the drivers of foreign portfolio investment in both during crisis and recovery periods. According to the author external factors explain the foreign portfolio investment during the crisis period while domestic factors determine the portfolio flows in the recovery period. According to Broner et al. (2013) GCF are pro-cyclical in nature which indicates that capital inflows as well as outflows decrease in crises and rise in expansions.

Forbes and Warnock (2012) disaggregate GCF by domestic and foreign investors. Authors explore the role of global, domestic and contagion factors on different episodes of GCF. They find that the global uncertainty is highly associated with extreme GCF episodes while contagion factors are linked with stop and retrenchment. The empirical findings by Ghosh et al. (2014) reveal that push factors determine the large capital inflows and pull factors determine the magnitude of inflows. In addition the researchers argue that the capital inflows to emerging economies are more sensitive to global factors than capital outflows.

Similarly, Calderón and Kubota (2019) investigate the key determinants of surge in capital inflows and document that domestic factors determine the surge episodes. Researchers conclude that the deterioration of the global financial conditions such as increase in uncertainty decrease in the interest rate leads to the end of the surges.

In general, uncertainty directly influences the economic activities (Schinckus, 2009). However, the impact varies across the country depending on the characteristics of that economy. The role of uncertainty on NCF have received considerable attention from many policymakers and academicians in recent years motivated by the GFC (2007-08) and the Brexit (Gao et al., 2019; Canh et al., 2020). The apparent wisdom reveals that NCF remained resilient during and after the crisis period (Hlaing & Kakinaka, 2019). However, one cannot deny that with the presence of economic uncertainty wait-and-see behavior of the investors may influence the investment decision due to the associated higher fixed cost.

Moreover, the rise in world economic uncertainty decreases the stocks' returns and this influence is stronger when the capital flows are more volatile (Ko & Lee, 2015; Arouri & Roubaud, 2016).The extent literature, examining the impact of world uncertainty on the capital flows report negative association (Gulen & Ion, 2016; Drobetz et al., 2018). Similarly, Julio and Yook (2016), Bonaime et al. (2018) report negative association between uncertainty and FDI flows. Many researchers report that domestic economic uncertainty reduces FDI (Gao et al., 2019; Canh et al., 2020) while on the other hand, Canh et al. (2020) also report that world uncertainty augment FDI. Numerous researchers highlight the influence of uncertainty on variety of macroeconomic variables. Yet, we know less about the influence of world economic policy uncertainty on NCF (Ahir et al., 2022; Avom et al., 2020).

According to Cetorelli and Goldberg (2012) the liquidity shocks in the advanced economies affected the provision of funds in emerging economies. Amiti et al. (2018), find that during the non-crisis period debt flows are mainly determined by global external condition. Avdjiev et al. (2018) reveal that NCF and their main components are inversely related with VIX and positively related with economic growth. The empirical work by Eichengreen et al. (2018) find, foreign portfolio flows are driven by global factors while FDI flows are determined mainly by the pull factors and other investment flows (debt flows) are driven by both external pull as well as push factors.

The market size of the host country and its growth potential are among the essential pull factors for attracting NCF (Cieślik, 2019). The voluminous literature is available on the association between NCF and DGDPg, reporting significant positive influence of DGDPg on NCF (Fratzscher, 2012; Blonigen & Piger, 2014). Previous studies such as Fratzscher (2012), major among others identified the role of DGDPg as crucial determinants of NCF. As large and growing economies can easily accommodate large number of domestic as well as foreign firms, which assist to produce tradable products more efficiently.

The pertinent literature advocates that structural and institutional settings openness to trade, diversified domestic market, sound banking system and better intellectual property rights are critical in explaining capital inflows to DEs. Dunning and Zhang (2008), argue that abundance of natural and human resource availability, having high degree of IQ and better prospect for economic development present location advantages to the host economies. Similarly, Khan

and Nawaz (2010) and Vijayakumar et al. (2010) identify market size and infrastructure as important determinants of FDI flows.

Majeed and Ahmad (2010) conclude that trade openness and DGDPg are the main determinants of NCF. Demirhan and Masca (2008) conclude that DGDPg, trade openness, and infrastructure development have a significant positive impact on inflows in DEs while the inflation rate and higher tax rate inversely linked with capital inflows. Ang (2008) documents that sound financial system and trade openness play an important role to determine the inflows because it provide basis for the adaptation of new technology in a host country.

In the literature, well-established financial system is a vital pillar of economic growth because it plays an important role in allocating resources in a country. Certainly the soundness of the domestic financial sector is an important factor to distinguish between developing and developed countries (Naceur et al., 2014). Among the pull factors, the credit acquired by the private sector is utilized to proxy the degree of financial development of an economy. Liu et al. (2020) document that domestic financial system in the host economy largely considered as a symbol of trust and attract the foreign investors across the globe. A sound financial system facilitates to allocate resource efficiently and reduce the cost of transaction (Jiang & Ma, 2019). In fact, many researchers agree on that the financial development positively influences the NCF (Desbordes & Wei, 2017; Canh et al., 2020;).

Kapuira-Foreman (2007) is of the view that countries that have high degree of economic freedom with better intellectual property rights are more attractive to foreign investors. Alfaro et al. (2008) document that level of IQ is vital for explaining the Lucas paradox. Flexible ERR allows countries to reconcile external shocks (Edwards, 2011). In similar fashion, di Giovanni et al. (2008) indicate that influence of external shocks is more harmful in highly rigid ERRs. In addition, Erdem and Özmen (2015) reveal, the effect of external real and financial shocks are prolong in managed ERR as compared to floating ERR. On the other hand, empirical literature on the connection between ERR and NCF also presents conflicting results. For example, Magud et al. (2014), Passari and Rey (2015) and Boudias (2015) find ERR flexibility has no impact on the NCF in the emerging market economies.

In principle, foreign investors usually favor free trade over restricted. If a host country has a restricted policy towards the trade it may amplify the cost of doing business and may discourage the foreign investor to invest. In the literature, following studies (Ismail &Yussof, 2003; Awan et al., 2011; Shah & Khan, 2016) reports a positive connection between NCF and openness. Nevertheless, many researchers also reports negative link between NCF and trade openness (see, for instance, Busse & Hefeker, 2007).

The existing literature highlights the importance of the degree of KAOPEN that is a capital control policy and its influence on the NCF (Reinhardt et al., 2013). Many researchers confer that controls on cross-border inflows perhaps less harmful than control on outflows. The possible explanation can be that since

controls on capital inflows probably seem as a form of cautious regulation whereas controls on capital outflows conceivably view as lack of authority's dedication towards prudent policies. For instance, controls on the magnitude of cross-border inflows lessen the vulnerability of a currency crisis; however, at the same time controls on outflows may increase the risk (Rossi, 1999).

According to Klein and Olivei (2008), countries with higher degree of capital accounts openness experienced greater financial deepening and more rapid economic growth. On contrary Chanda (2005) reports a negative impact of capital controls on growth. Prasad et al. (2007) and Molnar et al. (2013) document that the influence of capital control on cross-border flows is inconclusive.

After reviewing the relevant literature we argue that the voluminous literature discussing the determinants of cross border flows mainly centered on a fundamental research question that whether pull or push factors are the key driving forces of NCF. However, many researchers such as Calvo et al. (1993) and Chuhan et al. (1998) report that external factor are more important than country-specific factors. Similarly, Hernandez et al. (2001) stress that the influence of country-specific factors is stronger as compare to the global push factors. Moreover, Mody et al. (2001) and Alfaro et al. (2008) also find that country-specific characteristics are important factors driving the cross-border flows. However, the extensive scholarly literature on determinants of NCF for DEs especially has been silent on this point. Determinants of NCF and its waves are a debated topic in recent times. Yet, this topic is far from being resolved (Montiel, 2014). Empirical studies document at best an ambiguous and

inconclusive discussion on the determinants of extreme episodes of NCF. This study aims to fill in the gap.

2.3 Impact of Capital Flows on Real Sector and Financial Sectors: Prior Evidence

In principle, the NCF is considered as a key to economic growth and a source to fill the saving and investment gap in DEs. There are numerous possible channels through which foreign investment influence the economic growth and the significance of these channels are probably to differ with the macroeconomic policy of the recipient economy and diversification of the domestic economy. The findings by Kose et al. (2009) point out that macroeconomic policy that encourage the financial development, promote IQ and trade openness tend to help the DEs to gain the benefits of globalization.

Capital inflows may have positive impacts in developing and emerging economies, however, various risks are associated with capital flows. These risks pose a great threat and can hinder or even completely disrupt the economic growth process. In this section, we review the impact of NCF on various real and financial indicators. The empirical findings on the impact of NCF on financial and real sectors are limited and present mixed results. For example, Choong et al. (2010), De Mello (1999), and Adams (2009) reports positive association between capital inflows and GDP growth, whereas others such as Ullah et al. (2012), Kim and Wu (2008), Combes et al. (2012) and Rashid and Hussain (2013) have documented contrary evidence that capital inflows generate macroeconomic

imbalances. Moreover, the literature on the impact of extreme episodes on financial and real sector is silent.

Broadly speaking empirical work on foreign capital inflows and GDP growth is divided in different streams. Many researchers advocate that inflows are essential for economic growth for example, Pegkas (2015) and Chigbu et al. (2015). In contrast some other studies such as Duasa (2007), and Agbloyor (2016) are of the view that NCF stimulates the economic growth.

Borensztein et al. (1998) finds that NCF plays important role in transferring technology and contribute more towards economic growth than the local investment. Similarly, Markusen and Venables (1998) report that NCF play important role in the establishment of the local industrial sector. Similarly, Alfaro et al. (2012) find a negative effect of NCF on productivity growth. Aizenman et al. (2013) investigate the association between growth and NCF. Findings suggest that NCF and growth depends on the structure of the economy and also the global growth patterns. Ekeocha et al. (2012) document that due to the GFC (2007-08) portfolio investment has been grown more relative to other types of inflows. Authors confirm the long-run relationship between portfolio investment and trade openness.

Chigbu et al. (2015) report the positive effects of inflows on growth of the DEs. Similarly, Pegkas (2015) finds a positive association between economic growth and NCF for Euro zone. Fiess and Byrne (2016) investigate the national and global determinants of international capital flows both (aggregate and

disaggregate level of capital inflows) for emerging markets. The authors identify that in advanced economies long-run bonds yields and commodity prices are the major determinants of the global capital flows. Agbloyor et al. (2016) explore the relationship among NCF, IQ and economic growth. Authors could not find any relation between foreign capital, institution and economic growth. Combes et al. (2012) reveal capital inflows augment the economic growth in DEs.

NCF may consider as a transfer of funds across the countries, crucial for capital accumulation, creating employment opportunities for many countries. In the empirical literature, the effect of NCF on employment level presents mixed results. We find the most of the studies reveal a positive association between capital inflows and employment such as (Jayaraman & Singh, 2007; Vacaflores, 2011; Bandick & Karpaty, 2011; Jude & Silaghi, 2016). However, some researchers report negative effects for example, (Girma, 2005; Jenkins, 2006; Mucuk &Demirsel, 2013; Inekwe, 2013). Similarly, many authors documents insignificant impact of foreign capital on employment level in the host nations see (Rizvi & Nishat, 2009; Brincikova & Darmo, 2014).

Craigwell (2006) examines the association between NCF and employment for the group of 20 Caribbean economies over the period of 1990 to 2000. Empirical results reveal that surge in FDI tend to increase the employment level in the Caribbean countries. Jayaraman and Singh (2007) investigate the association between NCF and employment by using multivariate. The findings reveal that foreign capital have significant positive impact on the employment level. Using dynamic panel model Vacaflores (2011), investigate the impact of NCF on

employment generation. The results reveal the positive link between FDI and employment generation for the period of 1980 to 2006. This positive effect on employment generation in Latin American countries is dominated by the male labor force. Furthermore, a surge in the domestic investment leads to rise in the employment level and thus enhance productive capacity.

Habib and Sarwar (2013) find the existence of long-run relationship between NCF and employment level. Zeb et al. (2014) examine the impact of foreign investment on unemployment for Pakistan by using multiple regression analysis. According to the authors FDI inflows create more employment opportunities and enhance economic growth in the host country. Authors conclude that NCF play significant role in the reduction of unemployment level in Pakistan. Similarly, Narender and Dhankar (2016) confirm the positive impact of FDI on private sectors.

Jude and Silaghi (2016) have undertaken a study on 20 Central and Eastern European economies to examine the role of FDI and employment level for the period of 1995 to 2012. Study documents a positive long-run association between FDI and employment because with the passage of time, foreign firms improve linkages with the local firms and increases their share in the production of local product. Alili (2015) empirically investigates the impact of FDI on the employment. According to the findings skilled biased technological change and specialization in goods intensive in low skilled labors are the major factors that influence the employment level.Rizvi and Nishat (2009) examine the impact of FDI on employment generations and find that FDI have no direct impact on the employment. Inekwe (2013) finds a negative significant association between FDI

and employment rate for the service sector. However, Brincikova and Darmo (2014) report no significant impact of FDI on employment level.

As broadly accepted view that of capital flows has positive impact on employment, further, it boosts economic growth in the host countries. Investment in any economy leads to decline in the unemployment level. This widely accepted claim is tested by many researchers in the past, but the results are inconclusive. Further, the existing literature on the nexus between NCF and its episodes on employment is silent.

According to Amadou (2011) in developing countries, where domestic financial capital are comparatively inadequate, therefore, NCF may be utilize as domestic investment. Griffin (1968) inspects the impact of foreign capital inflows on the economic growth of the Colombia for the period of 1950 to 1963 using cross section analysis. The variables used for their analysis were net inflows of capital, domestic savings and the GDP of Colombia. Author concludes that capital inflows caused reduction in domestic savings.

Griffin (1970) use cross section data to examine the interdependence of NCF and domestic savings for the 32 developing nations and find that decrease in NCF caused to increase in both exports to capital ratio and domestic savings for the sample countries. Weisskopf (1972) use pooled OLS technique to examine the impact of NCF on savings for 44 DEs. The author finds that capital inflows have negative impact on the domestic savings. Gruben and Mcleod (1998) investigate the interrelationship between capital flows, savings and economic growth for the

Latin American and Asian countries. The authors conclude that FDI and FPI have a significant and positive impact on domestic savings.

Felsdstein and Horioka (1980) analyze the link between domestic savings and investment. The authors find the correlation between domestic savings and investment in OECD countries. Similarly, Feldstein (1983) utilizes OLS technique to examine the relationship between NCF and local savings. According to the author restriction imposed by the government on perfect mobility of capital affects the domestic savings which can also affects significantly the domestic capital formation. Study supports the earlier results of the Felsdstein and Horioka (1980) that constant rise in the domestic saving rates leads to increase in the domestic investment rates.

Agosin and Machado (2005) find that FDI has no effect on local savings. Study concluded that FDI has no effect on the domestic investment of the sample countries. Similarly the empirical results by Ndikumana and Verick (2008) find that FDI crowds in the domestic investment. According to Kose et al. (2006) the NCF have an indirect effect on the domestic investment of the developing countries. They suggest that if developing nations wants to enhance NCF, governments should have to design prudent macroeconomic policies further, improvement in political process and economic governance is also required. Portfolio investments and foreign loans can also contribute in the expansion of the domestic financial markets; although, they are not directly intend for capital formation, further, loans may also be utilized to enhance consumption.

After reviewing the existing literature we conclude that NCF play important role to fill the saving and investment gap in the DEs. NCF also ease the reduction of domestic saving constraints. In this fashion, NCF influence domestic savings and thus economic growth. However, the impact of episodes on the domestic savings is yet to be explored. Therefore, in this study we fill this gap.

Standard theories envisage that the exchange rate arrangement has significant repercussion for the interdependency of domestic monetary policy and the transmission of inflation across borders (Cheung & Yuen, 2002). The voluminous literature both theoretically and empirically is available on the association between capital flows and inflation. On the theoretical ground, it is obvious and widely accepted that the capital inflows may influence the general price level in a country which can be explain through different channels but most recognized channel in the literature is through money supply which is conditioned upon the capital account liberalization and the kind of ERR (Krugman, 1991).

The influence of the capital flows on the real exchange rate (RER) will depend on the nature of the exchange rate system, composition of capital flows (Combes et al., 2012) and in the way in which the monetary authorities react to the changes in key macroeconomic aggregates. Similarly, Calvo et al. (1993) discuss the major aspects of the revival of NCF to Latin America in the early 1990's. Researchers find that all the Latin American countries except Brazil faced real appreciation of exchange rate, further; they observed cyclical behavior of real exchange rates. The authors conclude that these cyclical behaviors of the RER is attributed to

fluctuation in capital flows, other shocks like changes in terms of trade, monetary and fiscal policies in the recipient countries also influenced them.

Reinhart and Khan (1995) find that capital flows leads to appreciation in RER, further, the magnitude of appreciation in RER is observed in Asian economies is lesser as compared to Latin American economies. Calvo et al. (1996) present mixed response while examining the macroeconomic effect of capital inflows in Asian and Latin American economies, during 1988 to 1994. Results indicate that in most Latin American countries, capital inflows caused the appreciation of the RER. Edwards (2000) reports the similar results while using unrestricted VAR technique, the impulse response function indicates that rise in foreign capital inflows linked with the RER appreciation. Furthermore, declines in the level of capital inflows are linked with the depreciation of the RER.

Athukorala and Rajapatirana (2003) find that higher degree of RER appreciation in Latin American than Asian countries although Asian countries observed higher inflows as proportional to the size of the economy. Aizenman and Crichton (2008) conclude that a currency depreciation effect depends on the level of trade liberalization in a country. Bakardzhieva et al. (2010) find that rise in net capital flow results in exchange rate appreciation. Jongwanich and Kohpaiboon (2013) report that capital outflows cause larger degree of RER variation than capital inflows. Similarly, Rabanal and Tuesta (2013) report that volatility in the RER due to positive demand shocks in the non-traded sector.

In general, in an open economy, under fixed exchange rate regime, money supply will be more influenced by the capital flows due to the difference between recipient country's interest rate with the global interest rate. Consequently, in order to maintain fixed exchange rate the monetary authority will issue domestic currency to purchase foreign exchange. Thus, it will raise the money supply in the domestic market which will further increase the domestic price level. However, according to Mundell (1963), Turnovsky and Kaspura (1974), and Dorncusch (1976) under flexible ERR the effect of NCF on inflation can be decreased through automatic adjustment mechanism such as appreciation or depreciation.

In the literature, the level of capital account liberalization is recognized as another important measure to have an effect on domestic inflation that is a because of changes in money supply due to the capital inflows. In the 1960s Mundell and Fleming utilized IS-LM model in an open economy to examine how variations of capital account openness between nations influence the NCF and domestic money supply. If a country has a full open capital account, the capital flows will be more sensitive to the fluctuations in the interest rates. Thus, in this situation equilibrium will be achieved when the interest rate will become equal between countries. On the other hand, the country with restrictive capital account will take longer time to achieve equilibrium interest rate and this delay tends to adjustment in the domestic money supply.

Turnovsky and Kaspura (1974) recognized four different channels through which foreign inflation invade on the domestic economy and described how each of these generates following impact through the system. However, in case of perfect

mobility, surge in imported inflation guided to increase the price of domestic goods as well as in general domestic inflation. The authors conclude that recipient country will face rise in its domestic output which leads to improvement in BOP, however country's terms of trade will go down.

Haiyue (2013) empirically analyze the impact of capital inflows on inflation in China. Findings suggest that capital flows significantly affect the inflation rate in China. Further, GDP explained 9% of variance in inflation which is statistically strongest among other variables. Similarly, FDI explains only 2% of variance in inflation while trade surplus accounts for only 0.1% to the variance of inflation. The author concludes that capital flows are more responsive to policy changes.

Sun and Zang (1995) conclude that capital inflow increased the inflation directly and in this line they argues that the allocation of domestic resources is the major factor which defined that up to what extent the capital inflows can influence the domestic inflation. Yan and Feng (1997) results are consistent with the Sun and Zang (1995), in which authors conclude that there is positive association between capital flows and price level. However, with the increase in consumption of goods, raise the increase in the demand for goods consequently, raise the inflation (Nazir et al., 2012).

To sum up, NCF may cause monetary expansion, surge in domestic demand, consequently, it cause to increase the inflation, disrupt the financial system, create bubbles. The existing literature on the effects of NCF on economic and financial indicators document mixed results. However, the impact of episodes is still an

open debate in the international finance literature. Moreover, the empirical literature on the impact of episodes on financial indicators such as the inflation rate, the interest rates and domestic credit is scarce. Therefore, to fill this gap we investigate the impact of NCF and its episodes on the real and financial sectors of the DEs.

2.4 Capital Flows, Real/Financial Sectors and Institutions: Prior Evidence

As good governance followed by the law and order situation and political stability can provide sustainable stability of the fiscal regime are more likely to attract foreign capital inflows. Olson (1996) explains that due to cultural norms and quality of institutions some countries grew rich and others remained poor.

According to Wei (2000) lack of quality institutions and the levels of distortions in the economy create an environment which is harmful for both domestic and foreign business. Rodrik (2000) discusses the types of quality institutions and their role in the markets to perform effectively. According to the author participatory political systems are the effective tools for aggregating local knowledge and thus, enhance higher quality economic growth. Gagliaridi (2008) discuss the channels in which institutions influence the economic change and how it leads to economic development. Study concludes that institutions matters for the economic performance of a country.

In a broader sense political stability is defined as the "likelihood that the government will be destabilized or overthrown" (Kaufmann et al., 2009). Foreign firms mostly favor stable, credible and honest political institutions (Globerman and Shapiro, 2003), because they enhance legitimacy within the host economy. Moreover, the political instability in a recipient economy is less attractive for the foreign investors (Woodward & Rolfe, 1993; Loree & Guisinger, 1995; Buthe & Milner, 2008) that can disrupt economic processes (Schneider & Frey, 1985). The countries with low IQ along with less developed domestic financial markets raises the costs of the production and ultimately, affects profitability (Jensen, 2003).

Asteriou and Price (2000) find strong association between DGDPg and political instability. Pin (2008) measures the political instability and its impact on DGDPg .They reported that higher growth rates correlates to the lower levels of politically motivated violence. Kim (2010) examines the relationship between political stability and capital flows. Researcher concludes that FDI inward performance is positively correlated with the level of corruption of governments and negatively associated with the level of democracy.

Aisen and Veiga (2013) find that political instability is linked with lower growth rates. However, Arif et al. (2012) conclude that democracy has both positive direct effects and indirect effects through different channels and interrelation between democracy and economic growth maybe different across countries and region. According to Durnev et al. (2015), in majority owned investment, foreign investors hold control and benefit from fewer agency problems while political instability limits the charm of minority owned investments. Ahmed and Pulok

(2013) find a negative effect of political instability on economic performance in the long-run.

Theory also suggests that, higher IQ is positively associated with NCF however, the empirical findings provide mixed results. For example, some authors document that political stability is positively associated with capital flows see for instance (Campos & Nugent, 2003; Sethi et al., 2003). However, Globerman & Shapiro (2003) finds no association between institution and NCF.

Haan and Sturm (2000) explore the connection between economic freedom and economic growth. They conclude that higher economic freedom leads to higher level of economic growth. Bengoa and Sanchez-Robles (2003) examine the association among capital flows, economic freedom and economic growth. Study utilized the panel data analysis over the period of 1970 to 1999 and find that economic freedom find positive and significant with capital inflows. They conclude that in order to enhance growth DEs should design adequate policies to attract more capital flows, liberalized their markets and increase the economic freedom.

Azman-Saini et al. (2010) conclude with three major findings are as follows: (i) foreign capital has no direct effect on economic growth (ii) there is direct positive association between economic freedom and growth and (iii) capital flows effect on the economic growth depends on degree of economic freedom in the recipient economies. Naisr and Hassan (2011) explore the relation between the economic freedom, the exchange rate and the foreign capital in South Asia using annual

time series data for the period of 1995 to 2008. Result revealed that economic freedom is an important factor in enhancing FDI in South Asian region. Further, economic freedom has significant effect and positively related with NCF. They suggested that government should design such policies to stabilize their currencies.

Bissoon (2012) report that IQ matters for the capital inflows in the host country. The author concluded that as the institutions are complementary in nature to each other, the combined effect of the overall institutions on the capital inflows is more significant than the quality of a specific institution. Tun et al. (2012) find that institutions play important role in determining the inward FDI because if improvement in local institution takes place it will reduce the cost of doing business, reduce uncertainty and thus it will enhance the productivity. Buchanan et al. (2012) empirically examined the effects of NCF on IQ. The authors find that IQ has positive effects on NCF but negatively associated with foreign capital volatility.

After reviewing the existing literature, we conclude that the impact of IQ on macroeconomic variables is inconclusive. Moreover, countries with weak institutions often harm the growth and development process. In addition to that, due to the lack of research on moderating impact of IQ it is critical to investigate the impact of episodes on real and financial sectors of the DEs. To this end, we extend the ongoing debate by considering the role of IQ in an attempt to uncover the impacts of surge, stop, flight and retrenchment on the real and financial sectors.

Chapter 3

Theoretical Background

3.1 Introduction

There are different strands of literature explaining the drivers of the cross-border capital mobility. The illustration of these strands makeup the background and justification for our hypotheses. The first one is the standard neoclassical theory, the second is the Capital Asset Pricing Model (CAMP), third is push and pull framework, fourth is intertemporal and fifth is intratemporal trade approach describing movements of NCF. The major forces motivating foreign investor interest in DEs and which have led to their increased financial integration in global capital markets are the search for higher returns on investment and also for risk diversification (Khan& Khan, 1998).

These forces have always driven investors' decisions but the sensitivity of capital to opportunities in developing markets has increased in the early 1990s due to domestic and global factors. The international short-term capital movements between countries have generally been referred to as a source of disturbance and instability. On the other hand, it has been recognized in the past that temporary loans can play a useful part in offsetting short-period fluctuations in a country's international balance and in smoothing the effects of more permanent changes; in fact, it has long been an important part of bank-rate policy to encourage these capital flows in appropriate circumstances.

3.2 Determinants of Foreign Capital Flows: Theoretical Framework

3.2.1 Neoclassical Theory

In the context of economic growth the justification of cross-border capital mobility can be ferret out to the neoclassical growth models such as "Harrod-Domar model" which hypothesize that factors of production, capital and labor are in fixed proportions in order to attain equilibrium growth. Neoclassical theory postulates that cross-border capital mobility is provoked by interest rate differentials between two nations, from rich nation with usually lower rates of expected return to a capital scarce nation with expected higher returns (Tchorek et al., 2017).

In general, neoclassical theory relies on an important assumption that current account is the difference between national savings and investment. In addition, the domestic savings rate and domestic investments are considered the major factors in determining the NCF. Moreover, according to Lucas (1990) the neo-classical growth model which hypothesizes that cross-border capital mobility will occur until equilibrium is achieved is inadequate because it fails to sufficiently make clear the reality of observed cross-border capital mobility. Lucas (1990) observe that however, the marginal return on capital in India is 58 times that of USA, yet the capital flows from USA to India is quite low.

In addition to that, the large amount of capital flows take place between developed economies even they have lower marginal productivity (Lipsey, 2000). In the capital flow's literature, this phenomenon is known as, the "Lucas

paradox". The pre-crisis period of GFC (2007-08) world evidently illustrates that NCF in moved "uphill" instead of "downhill". However, Lane and Milesi-Ferretti (2007), Brzozowski and Prusty (2014) provide the justification of that it was due to the international assets holdings and more integration of the DEs with the global capital market. However, this neoclassical theoretical framework is fall short to explain the recent movements of NCF (Bonizzi, 2013).

In the literature, there are various unsolved puzzles, for example, Lucas paradox further, the savings-glut phenomena and global imbalances identified by many researchers (Lucas, 1990; Bonizzi, 2013). However, Lucas (1990) also provides two explanations for the paradox. First, difference in the quality of human capital is attributed to the higher marginal productivity of capital, assuming that there is no spillover of knowledge, between the two nations. The lessening the difference in human capital can decrease the difference in the marginal productivity of capital between developed and DEs.

Second, financial market imperfections such as political uncertainty and asymmetric information avert capital mobility from the country having lows marginal returns of capital to high returns. Albeit, country would likely to compensate for higher expected returns, but information asymmetry prevent the foreign investor to assess the risk-return outcome efficiently.

3.2.2 Capital Asset Pricing Model

Another important theory which describes the cross-border capital mobility is the capital asset pricing model (hereafter CAPM) proposed by (Grubel, 1968). CAPM

is based on the assumption of the financial assets diversification. Moreover, the risk diversification through holding foreign assets from various markets tends to decrease its global variance (Tchorek et al., 2017). However, according to the push-pull framework an amount of empirical evidence fails to explain this theoretical model. In general, it is observed that financial flows are vulnerable to rapid change in external factors (Bonizzi, 2013).

It is also pertinent to mention that the international financial markets are also influenced by asymmetric information which also open the discussion on the following, for example, home bias (Coval & Moskowitz, 1999), sudden stop & reversals (Dornbusch et al., 1995; Efremidze et al., 2017) positive feedback trading (Koutmos & Saidi, 2001; Koutos, 2014), by and large in DEs. However, there are numerous theories and models which enlighten the motive behind capital flow movements between the nations but not conclusive (Itaki, 1991).

3.2.3 Push-Factor and Pull-Factor Theory

NCF are crucial for any economy because they are linked with countries' economic, social and financial conditions (Koepke, 2019). In addition, they also carry benefits and potential risks to the host countries. Thus, the investigating the drivers of NCF particularly to DEs has policy relevance.

The debate on the push-pull factors relevance in driving NCF can be trace back to 1990s when NCF rebound to Latin America, particularly, subsequent to the debt crisis of the late 1980s (Calvo et al., 1993). Moreover, during this time the interest

rate in the U.S. economy drop to its record low level (due to the 1990-91 recessions) and also in other advanced economies.

Similarly, Calvo et al. (1993) provides the justification for this rebound, that external push factors were certainly major driving force of capital flows. These following studies generally support for the view that capital inflows are by far driven by external factors see for instance Taylor and Sarno (1997). On contrary, Ghosh and Ostry (1993) argue that domestic economic fundamentals are the main driver of NCF. Moreover, authors findings based on a theoretical model of "intertemporal-current account determination", whose prediction mainly in line with observed cross-border mobility.

Calvo et al. (1993) and Fernandez-Arias (1996) made a distinction between pull factors and push factors. This difference between the push- pull factors in explaining the NCF provides theoretical frame work for the empirical analysis. Moreover, the GFC (2007-08) began in the Unites States, and resulted in the considerable spillovers towards emerging economies which breathe life into the academic debate on the significance and effectiveness of the NCF to DEs.

The push-pull framework also explains the direction of capital mobility (Calvo et al., 1993). Push or external factors are exogenous and connected to economic and financial innovation in advanced economies that affect the supply of capital to DEs. For example, the fall in the interest rates, slowdown of business cycles, macroeconomic policy changes in industrial economies and also rising trend toward international diversification (Calvo, 1998; Montiel & Reinhart, 1999).

In principle, these global factors almost reveal the general macroeconomic and financial position of the world economy. However, these global factors are beyond the control of a capital importing country. Thus, these global factors show that how these capital flows are integrated with the financial market, while, large episodes of inflows and outflows arise at the same time in many economies, and thus, may need equal treatment (Tchorek et al., 2017).

In a series of papers Calvo et al. (1993, 1994, and 1996) suggest that cyclical situation in industrial economies have been remain the significant factor causing capital to flow from developed to DEs. Above all, the record fall in global real interest rates (in advanced economies) in the early 1990s forced the investors to invest in DEs (relatively more attractive destination for profit) and also enhanced the creditworthiness and decreased the default risk of debtor countries.

The common argument regarding the significance of the global push factors was due to the existing view in the early 1990s. Nevertheless, the insistence rise of flows after the rise in global interest rates in 1994 and more importantly the Mexican crisis suggest that importance of the external structural factors. Two specific improvements in the financial structure of advanced countries have augmented the receptivity of capital to avail the investment opportunities abroad. First, firms in industrial countries have looked for higher efficiency and profits by producing abroad as a consequence of falling competition and increasing costs in local markets.

The second improvement that takes place in the financial structure of advanced economies is the rising importance of institutional investors. However, several factors can be attributed to the rise in institutional investor's interest in DEs such as the rise in long-term return, improvements in country creditworthiness particularly, structural reforms accompanied by macroeconomic stabilization programmes during the early 1990s adopted by the DEs.

Thus, in quest of higher expected returns and risk diversification these institutional investors start investment in developing and emerging economies. In addition, these opportunities also increase, when markets in creditor countries become more globalized. Thus, all this happens due to the competition, financial innovation, deregulation and technological change that, in turn, increase the importance of institutional investors.

Pull factors are related to country-specific factors. These factors arise from economic development in DEs, liberalization of the stock market and capital account of the domestic market, diversification of the domestic market, money supply, macroeconomic conditions and domestic growth rate (Calvo et al., 1993; Chinn & Prasad, 2003; Fratzscher, 2012; Tchorek et al., 2017). Pull factors influence the demand for capital flows (DeVita & Kyaw, 2008).

3.2.4 Intertemporal Approach

As financial transactions take place across the countries. A free mobility of capital market provides an opportunity to a country to borrow during economic downturn. In contrast, a country is also free to lend during economic prosperity

such as high economic growth. Thus, liberalization of the financial market helps the households to carry "smoothness" in their consumption-patterns over-time thus, raising the economic welfare in the economy.

For example, a Pakistani bank lends to a Canadian firm or Pakistani residents to purchase shares in Canada or Pakistani firm make investment all these types of financial transactions are made will result in the capital mobility. It can view as peculiar trade because it is not of one good for another good at a point of time, rather it is exchange of assets today for the exchange of goods and services in future. Such type of trade is known as intertemporal trade.

According to the Obstfeld and Rogoff (1995), theoretical benefits of NCF can be examined in the context of "intertemporal approach to the current account". As assets give rights to the owner for future consumption on the other hand, goods and services are entitled for smoothing current consumption. Therefore, in this approach NCF are explained in terms of in terms of intertemporal trade that is current-consumption is traded for the future consumption. In this approach, country with higher rate of returns on capital will attract more foreign NCF to finance domestic investment in anticipation, until its rate of return will equal to the global rate of return.

To sum up on the production side, the basis of NCF is that resources will flow from a country with lower returns on capital to countries with higher returns on capital; consequently, it will lead to efficient-allocation of global-capital. However, on the consumption side, the underlying principle behind NCF is to

allow economies to attain an enhanced intertemporal-consumption pathway by letting the individuals to smooth consumption, in the face of anticipated fluctuations, in national income. In addition, an appropriate example is given by Sachs et al. (1981) in his paper as follow: as natural resources are subject to depletion, therefore, oil exporting countries utilize their current income from oil exports in order to accrue foreign assets which will help to finance their future consumption.

3.2.5 Intratemporal Trade

By contrast, GCF referred to trade in assets for other assets known as intratemporal trade in the "intertemporal-approach to the current account" (Koepke, 2019). According to Grubel (1968) and Obstfeld and Rogoff (1995) countries can diversify their portfolios and that make them able to share risks internationally, further, it enables the provider of the capital to secure themselves against the concentrated risk. Thus, it enables the residents of a country to attain a smoother consumption path by engaging in intertemporal trade.

For instance, if a economy is adversely affected by the natural disaster and its aftershocks, the individual's income level, consumption pattern and also the firm's profitability tend to decrease. However, in given condition for example, in an economy business is largely owned by the foreign investors, thus, it is likely that loss will be borne by the foreign investor which reduces the domestic investor's exposure to risk. The ultimate consumption benefits of GCF as a result, is probably crop up by diversifying across unidentified deviation in income level

and expected returns. On the other hand, the potential benefits of NCF that restrain from expected fluctuations in incomes.

In addition to that, Obstfeld and Rogoff (1995) explain in a theoretical model the international-risk sharing be capable of produce striking welfare gains via a world portfolio shift towards riskier assets. Moreover, the production benefits of GCF as compare to NCF can be different because NCF enable the investor to get higher returns for a given amount of risk, while GCF assist to avail the higher returns while taking on more risk that is better diversified.

3.3 The Impact of Capital Flows on Real and Financial Sector: Theoretical Framework

The linking NCF to growth merely expand on the existing theories of growth. There are no specific models or theories designed especially to explain the effects of NCF on economic performance (Mazumdar, 2005). The existing theories of growth may divided into two schools of thought: the exogenous and the endogenous theory of growth, also known as the "new theory of growth". These growth modes triumphs in the 1950s and 1960s developed by Solow (1956). Based on diminishing returns of capital they these models predicts that nation with lower per capita income may have higher expected growth rate. Within the framework of the neo-classical growth model, foreign investment could exert a level effect on output per capita because of augmented investment but not on the growth rate of output (Solow, 1997).

NCF can play an important role in development by adding up to the savings of DEs in order to boost their speed of investment. Transfer of technology, through

FDI flows could influence research and development of developing countries in that they could stimulate innovation thereby enhancing growth in the host country (Grossman & Helpman, 1991).

It is necessary to completely understand how NCF can influence the macroeconomic indicators of the DEs. There has been no agreement in this regard as different scholars and economists have rather different point of view. The globalization is spreading out around the globe; several nations attempt to get benefit of this opportunity. Globalization makes easier and cheaper in obtaining capital for many countries. Thus, with the pace of globalization affinity, capital movements across the globe and its importance for the growth and development received attention in recent years.

The major advantage of capital inflows is that it allows greater investments in the country and helps to cater for lack of savings which helps to foster economic growth. Investment is always considered a crucial contributor to a productive capacity and therefore, enhances the rate of output growth and employment. Mostly developing nations, which do not have sufficient level of national savings in order to meet their development goals, try to get some support for their deficit by foreign resources. It is implicitly assumed that FDI among the foreign investments, have huge impact on economic variables of an economy such as; GDP, trade balance, productivity, and inflation. Thus, it helps to reduce the level of unemployment.

Employment can be described as a state of being employed. Where as a person will be consider unemployed who is able and want to do work but unable to find a work. People who do not take part in the production process have very high social and economic costs. Economic theory suggests negative relationship between employment rate and poverty. Higher unemployment rate cause damages to the economy such as; economy cannot attain the potential level of national output because economy cannot use its resources efficiently and thus, actual rate of national output falls. In addition to that higher unemployment rate constitutes an important threat for poverty in any economy. Higher rate of unemployment is curse for economies. In emerging and DEs the solution of the higher rate of unemployment can be guarantee by the FDI.

There are different channels at work in analyzing the impact of FDI on employment generation. First, FDI enhance the employment by directly generating new jobs in foreign firms. Actually FDI creates employment opportunities by assisting the developing process of many industries and thus, generates additional business spaces by forward and backward linkages. Direct employment generation would be higher, if foreign investment takes place in labor intensive sectors (Jenkins, 2006).

As Greenfield investment is considered to have more potential for employment generation because, it generates more new employment opportunities in the economy as that did not exist before the foreign investments. According to Dunning (1988), in result of mergers or acquisitions, the immediate effects on employment level is very small. Furthermore, Geishecker and Hunya and (2005)

argue that, if privatization takes place there might be possibility, for short-term, firm restructuring could arises accompanied by the job losses.

Second, surge in FDI can have a negative impact on employment because of the higher efficiency in the use of labor market. Foreign firms often possess certain intangible firm specific assets which enhance productivity of the firms. According to Conyon et al. (2002) these assets may transfer to their subsidiaries or their partners, which leads to higher productivity latter, with less number of labors per unit of output. Third, FDI may affect the labor demand of local firms, through both in terms of competition and productivity spillover effects. In case if FDI creates competition pressure and crowds out local firms the labor intensity of the receiving industries might be negatively affected (Mencinger, 2003).

According to Smarzynska (2004) to the degree, foreign affiliates source locally the labor demand to upstream sectors can increase and thus, it enhance the employment level. FDI spillovers are very crucial, when foreign firms hire locally, as they persuade local suppliers to improve and produce quality inputs and in some cases often grant them with technical assistance if required (Uzagalieva et al., 2012). Finally, linkages that formed by the foreign firms within the local economy can lead to productivity spillovers for the domestic firms (Smarzynska, 2004; Blonigen & Piger, 2014).

As is well known, a rise in consumption and investment will appreciate the RER because of upward pressure on the relative price of the non-traded goods. The composition of total consumption also has an effect on the RER if government

consumption is more biased toward non-traded goods than private consumption. In developing countries openness to NCF may enhance their domestic investments or it may harm their economies by increasing the risks of financial crises (Amadou, 2011).

As if developing countries want to enhance NCF, their governments should have to design prudent macroeconomic policies further, improvement in political process and economic governance is required. Portfolio investments and foreign loans can also contribute in the expansion of financial markets, although if they are not directly mean for capital formation, further, loans can also be used to enhance consumption. Therefore, it can enhance growth of GDP when the decrease in the demand is anticipated.

When a country intends openness policy to attract foreign capital, undoubtedly its impact depends on the environment of domestic investment and the motives of the foreign investor's behind investment. However two different situations can be taken into considerations; first it depends on the marginal rate of return on capital are higher than the international interest rate. Thus, extensive capital will move into the economy and it will definitely compensate domestic savings, consequently, it will lead to a strong relation between foreign capital and domestic investment.

Blanchard and Giavazzi (2002) discuss the case study of the two important members of the European monetary union; i.e., Portugal and Greece. The fact that both countries are the poorest and their economic and financial conditions can

suggest us best explanation for current account deficits as described by the theory, because both countries are strongly connected with goods and financial markets of the European Union (EU). To the extent that they are the economies with higher expected return, poor countries should see an increase in investment.

Thus, economies with better growth prospects should face decrease in savings, should run large current account deficits, on contrary to this side, richer countries should run larger current account surpluses. According to Blanchard and Giavazzi (2002) findings suggest that the openness of Greece and Portugal, due to their linkage to the European Union leads allows NCF which are used to finance required level of investment and smooth the consumption.

A second situation arises when an economy opens to attract NCF even when domestic returns are quite low, than international market interest rates. In such situation, according to Kraay and Ventura (2000), international capital can still come into this economy for diversification purposes. However, in such situation when domestic interest rate is low foreign capital inflows may not intensify domestic investment. Further, DEs appear to fit into this type because of not having the required level of infrastructures decreases the returns of capital.

3.4 Capital Flows Real/Financial Sectors and Institutional Quality

The focus of the current economic literature over the role of good governance, institutions, culture, and geography can be linked with finding the deep determinants of economic growth and development. The neoclassical growth models introduced by Solow (1956) and Swan (1956) identify the investment or

capital accumulation as a crucial factor in explaining the levels of per capita income in an economy. In the past, several studies attempted to test these models empirically, but they concluded with ambiguous results.

Investment and technological innovations explains for the large differences in the long-run levels of per capita output, across nations, however, the puzzle remained unsolved that, why certain nations succeeded while others have been failed to achieve certain level of accumulations and innovations. Empirically, the growth models failed to answer this question. However, according to North and Thomas (1973) innovations, economies of scale, investment and, education etc, are not basis of growth. They considered it as a growth. In this sense the growth models have revealed only the mechanics of growth. In search of deep determinant of development and growth a new strand of literature has emerged, which is known as new institutional economics (hereafter, NIE), which proceeded the impressive work of North and Thomas, 1973; North, 1981 and 1990.

NIE extended the neoclassical model by focusing on the institutional analysis in explaining the long-run economic growth. North defines institutions as "rules of the game", that is, the human-devised formal and informal constraints that shape human interactions. Political foundations is necessary for the economic markets to their success and government should have the power to protect the property rights and strong enough to enforce the contracts further also able to confiscate the wealth of its citizen (Weingast, 1993). Such strong role of government provides basis for accountability and transparency, protection of properties, further it

encourages the essential participation of societies and various organizations to social order and control.

To sum up, according to this framework; accountability, transparency, political permanence, rule of law, bureaucratic competence, control of corruption, protecting property rights and enforcement of legal contracts are the distinctive features of the growth enhancing institutions. Thus, this theoretical argument lead us to build a hypothesis that if a society falls short to ascertain such institutions would face problems like high social costs, high market transaction costs etc. Moreover, focusing on the importance of foreign assistance to countries depends on both type of the policies practiced and on the nature of the government as well (Burnside & Dollar, 2000).

Beside these theoretical developments, the practical collective experience from international development organizations shows that the proposal like structural adjustment programs and macroeconomic stabilization which primarily based on foreign assistance have not been succeeded well enough due to the intervention of the political factors. This has led the researchers to investigate the political factors and the process to emphasize the policy implementation, which is beyond the design and content of policy itself.

3.4.1 Linking Institutional Quality with Foreign Capital Flows

According to North (1990) institutions shape the human interactions, reduce the uncertainty in everyday life, and affect the performance of the economies due to their effect on the cost of production and exchange. It is believed that foreign

capital has beneficial effects on economic growth, transferring new technologies. Researchers such as Buchanan et al. (2012) and Tun et al. (2012), documents that economies having stronger institutions, are likely to attract higher foreign capital flow. Thus, the DEs should design policies to attract NCF. Host countries typically attract foreign capital through; lowering corporation tax rates, political stability, infrastructure development, rule of law and protecting property rights.

Recent literature highlighted two important factors good governance and political economy variables as crucial determinants of capital inflows (Bissoon, 2012). Common wisdom suggests that government activities, domestic policies are the best tools to gauge the economic performance of a country. Moreover, the expectations about future profit prospects, investment polices and political stability are crucial in investment decisions as capital flows particularly, FDI leads to large and long-term ownership stake in the recipient economy.

In order to attract more foreign capital government have to create business environment in their country. Instead, considering the importance of macroeconomic factors recent work also highlighted the role of institutional factors in creating better investment environment (Nasir & Hassan, 2011). These institutional factors are characterized by well-defined property rights, corruption, and effective use of resources, political instability the absence of trade barriers, restrictive policies and violence.

The focus question of this study is how institutions play their role in establishing the effect of NCF on real and financial sectors? This hypothesis explicitly relies

on the fact that, foreign investors might make their decisions not only on economic pull factors, but also on the institutional factors as well. Here IQ refers to the governance infrastructure of countries, which is defined as "the traditions and institutions by which authority is exercised" (Kaufman et al., 2005).

According to classical theory of capital flows, capital flows to countries with a higher marginal rate of return. But IQ may affect the expected net value of capital as it takes into account both property rights and the credibility of a government policies. IQ in host country attracts more capital if investor pursue for safer investment. But on the other hand IQ may affect domestic decisions. Here we can say there is trade off, first on the one hand, a prudent institutional framework builds a market friendly atmosphere; enhance domestic demand; and foreign investment. Second, if the property rights in a country are have been improved, then local investors might prefer to invest in their residence country.

North (1990) and Williamson (2000) in their work argued the importance of IQ and its significance on economic growth, income distribution and on foreign capital. Furthermore, justification for the differences in the growth rates and per capita income is due to the quality of institutions (IMF, 2003). Studies like Acemoglu et al. (2003), Azman-Saini et al.(2010) and Efendic et al.(2011) highlighted that IQ matters for economic growth of a country.

Good governance followed by the, law and order situation and political stability can provide sustainable stability of the fiscal regime are more likely to attract foreign capital inflows. According to Wei (2000), lack of quality institutions

which can be seen as corruption by public servants and the levels of distortions in the economy further, create an environment which is harmful for both domestic and foreign business. Thus, due to the lack of good quality institutions in a country may have some higher costs in doing business. However, according to Alvarez et al. (2018) well defined property rights, absence of violence and restrictive policies, contract and company laws are the major factors that attract more foreign capital in a country which provide more confident to investor to invest. It is essential to take into account all the possible factors in analyzing the political economy behind foreign capital inflows.

Despite the vast literature available on the determinants of capital flows, the empirical literature investigating the impact of quality institutions in explaining the foreign capital inflows is limited, due to the lack of information and data availability in the past (Acemoglu et., 2003). However, recent studies suggest several appropriate indicators of IQ to investigate the role of IQ for foreign inflows and growth in the host countries.

CHAPTER 4

DATA DESCRIPTION AND EMPIRICAL FRAMEWORK

In this chapter, we explain sources of data, construction of variables, and theoretical foundation of dependent and independent variables used for the empirical examination. The sample countries and time span selection is primarily based on the availability of data on core variables. This chapter also illustrates empirical framework, identification of the episodes, and estimation techniques applied for the empirical analysis.

4.1 Introduction

We use unbalanced annual panel data over the period of 1980 to 2018 for the 47 DEs provided by the World Bank data set. However, the selection of the sample countries depends on the availability of the data. Further, in order to avoid measurement error we exclude those countries having poor or no data particularly, on core variables. A list of sample countries is provided in Appendix (Table A1).The primary sources of our data are the IMF's International Financial Statistics (IFS) database, World Bank's World Development Indicators (WDI), Penn World Table (PWT), International Country Risk Guide (ICRG) published by PRS.

In this study, our dependent variables are NCF, GDP per capita, gross savings, employment, inflation, the market interest rate and domestic credit to private

sector % of GDP (hereafter DCP). Moreover, NCF comprised on three different components namely FDI, FPI and OI. The data on NCF is obtained from World Development Indicators (WDI). We use several macroeconomic indicators as control variables in our empirical analysis. These variables are IQ, age dependency ratio, exports, import, trade openness, NEER, REER, broad money % of GDP, gross capital formation, human capital index and KAOPEN. Most of these are already used in prior studies (Rashid & Hussain, 2013; Hwang et al., 2017; Rashid et al., 2019; Imran & Rashid et al., 2022).

4.2 The Description of the Variables

This subsection provides a detail note on justification and specification of the main variables which we considered for the analysis in this study. The selection criterion of the variables is purely based on the existing literature, the requirement of our study and the nature of the relationship between the variables as suggested by the economic theories. We follow the World Bank country classification. We select developing countries for our study as classified by the World Bank. The selection of sample countries is solely dictated by the availability of data on the core variables considered for the empirical analysis of this study. Further, detailed description of dependent and independent variables are given in the following sections and subsections.

4.3 Dependent Variables

The Balance of Payments and International Investment Position Manual (BPM6) (IMF, 2009) classifies the international accounts into following functional categories of investment: "direct investment", "portfolio investment", "other investment", "financial derivatives" (other than reserves) and "employee stock options", and "reserve assets". In line with the existing research, (Kirabaeva & Razin, 2010; UNCTAD[6], 2018) we focus on three major types of investments: foreign direct investment, portfolio investment, and other investment[7].

NCF is the net of asset flows and liability flows. "Liability flows (gross capital inflows) are the net of foreign purchases and sales of domestic securities, which are captured in the liabilities column of the financial account in a balance of payment. Asset flows (gross capital outflows) are the net of domestic residents' purchases and sales of foreign securities, which are captured in the assets column of the financial account in a balance of payment". Therefore, NCF is the net of investment behavior of both residents and foreigners.

In order to investigate the determinants of NCF episodes we construct four indicator variables namely surge, stop, flight, and retrenchment. The detail note on the identification of these episodes is discussed in Section 4.7. To examine the effects of NCF on the real and financial sectors we consider wide set of

[6]United Nations Conference on Trade and Development.
[7]Other investment flows are largely consisting of bank lending. For detail information, see, Levy-Yeyati and Zuniga (2016).

macroeconomic variables suggested by the pertinent literature. Second set of dependent variable comprised on the real variables including the domestic GDP growth rate (DGDPg), employment and gross domestic savings. Similarly, financial indicators include: the inflation rate, the interest rate and the DCP.

4.4 Explanatory Variables

In this section, we provide the complete picture of the different set of independent variables. In line with the existing literature, we empirically explore the determinants of NCF and its episodes separately as push and pull factors, as well as considering the regional contagion (Forbes & Warnock, 2012; Ahmed & Zlate, 2014; Ghosh et al., 2014; Hwang et al., 2017; Qureshi & Sugawara, 2018).

Generally speaking, the literature on the determinants of NCF, and its episodes divided the variables into two broad categories namely global and domestic factors. Global factors are comprised on global growth rate, world uncertainty index (WUI), global interest rate, and world commodity price index (WCP). Similarly, in contagion factors, we consider average net flows to the country relative to the region.

However, the pull factors are comprised on the real interest rate, the real effective exchange rate (REER), the current account openness, real GDP growth rate (DGDPg), the exchange rate regime (ERR), capital account openness (KAOPEN), IQ and GDP per capita. In the subsequent subsection, we provide the brief overview of all these explanatory variables.

4.4.1 Global Push Factors

Global push factors show the common factor that exists in the global financial market which affects capital inflows to peripheral economies (Fratzscher, 2012; Kang & Kim, 2019). Global push factors represent the external condition, which are beyond the control of the recipient DEs (Ghosh et al., 2014). We consider four major global push factors as determinants of NCF and their episodes identified by the previous literature. The first one is the global growth rate, identified by the Forbes and Warnock (2012), Burger and Ianchovichina (2017), Sahu (2020a). Global growth rate is based on GDP volume, measured as an annual percentage change and extracted from IMF data set. The major world economies have witnessed the strong growth in last three decades and many researchers identified financial globalization as an important indicator of the rise in world growth because of its spillover effects (Carp, 2014).

Assuming free capital mobility, neoclassical theory (Solow, 1956) suggests that capital will flow from a country having low return to the country where capital is scare and providing higher return to investors. Thus, allocative efficiency of capital is the core focus of neoclassical growth theory and predicts a reallocation of capital from developed (capital-abundant countries) to developing (capital-scarce countries) economies (Akhtaruzzaman, 2019). Thus, due to the low interest rates in the U.S.A or other developed economies like Japan and United Kingdom, capital moves to DEs like China, Brazil and India. Falls in the global interest rate are often considered an opportunity for the DEs to attract and received more flows

to fulfill their demand for foreign capital. This implies that capital will flow from a country of lower interest rate to the one with higher the interest rate.

According to portfolio theory, the risk-averse investors only invest in risk securities when they are compensated by the higher returns. This theory also suggests that investor build their portfolio to diversify risk and to get higher returns. Thus, higher returns in DEs attract foreign investors. In addition to that, the US government bond yields is also used as a one of the global factors of NCF particularly, to and emerging and DEs. Many researchers suggest that higher capital inflows to DEs are associated with a decline in the long-run bond yields in the US see for instance, Park et al. (2015), Byrne & Fiess (2016) and Cerutti et al. (2019).

Uncertainty directly influences economic activities. However, the influence varies across countries depending on the characteristics of their economy. The role of uncertainty on NCF has received considerable attention from many policymakers and academicians in recent years, motivated by the GFC 2008-09 and the Brexit (Canh et al., 2020). However, one cannot deny that with economic uncertainty, investors' prominent "wait-and-see" behavior may influence investment decisions due to the associated higher fixed cost.

The extant literature also reports a negative association between world uncertainty and capital flows (Gulen & Ion, 2016; Drobetz et al., 2018). Many others show that domestic economic uncertainty reduces FDI (Gao et al., 2019; Canh et al., 2020). On the other hand, Canh et al. (2020) report that world uncertainty

increases FDI. Numerous researchers have highlighted the influence of uncertainty on various macroeconomic variables (Gulen & Ion, 2016; Bonaime et al., 2018). Yet, we know less about the influence of world economic policy uncertainty on FDI (Avom et al., 2020).

Following Gao et al. (2019), Canh et al. (2020) and Avom et al. (2020) we use WUI to capture the degree of global economic uncertainty. WUI constructed by Ahir et al. (2022), in which they consider, different uncertainty measures for 143 countries across the globe. The reason behind using WUI is that it actually takes into account both political and economic issue in each country. In addition to that, it also incorporates the economic and political forecast of the highly qualified domestic analyst and the editorial board of the economist.[8]

Another important push factor identified by the literature is world commodity price. Since, greater uncertainty is connected with less inflows in DEs and rise in the commodity prices are often connected with inflows because of the contained feature, i.e., it reflects a boom in demand for DEs export (Ghosh et al., 2014). Therefore, we consider the world commodity price index (WCP) as one of the push factors.

Contagion factors are a 'spill-over' of NCF from one nation to the other nation. Contagion tentatively falls in between the global and the domestic factors (Reinhardt & Dell'Erba, 2013). In addition to that, they are peripheral to the countries that receive capital and most importantly their magnitude depends on the country's economic and political ties with rest of the world. Moreover, their

[8] See, for instance, Avom et al. (2020) and Ahir et al. (2022) for more detailed discussion.

transmission channel depends on the country's regional location, trade and financial ties with the rest of the countries (Forbes, 2012).

According to Tularam & Subramanian (2013) and Sun et al. (2021), regional contagion is one of the major determinants of the currency crisis in the "third generation model" of the financial crisis. Further, as a result of the unwarranted optimism and herd behavior of foreign investors searching for higher returns, contagion effect could amplify the NCF in an economy due to its regional neighbors (Kaya et al., 2022). Thus, following Ghosh et al. (2014), we calculate the contagion regional variable as the average NCF (% of GDP) to other neighbor countries located in the same region.

4.4.2 Domestic Pull Factors

Pull factors or internal factors are host-country-specific characteristics that attract capital from the global financial market to domestic financial markets (Kang & Kim, 2019).Domestic factors affect the risk and return to the investors and also play an important role in stimulating investment in the host economy. In principle, pull factors are domestic interest rate, real effective exchange rate (REER), degree of international trade, domestic real GDP growth (DGDPg), exchange rate regime (ERR), capital market openness (KAOPEN), institutional quality (IQ) and GDP per capita (Fratzscher, 2012; Ahmed & Zlate, 2014;Sarno et al., 2016; Ghosh et al., 2016; Hannan, 2017; Shu et al., 2018).

In principle, a fall in investment returns in developed economies often results in rise in NCF to DEs. If capital flows respond to domestic interest rate then it might

be possible that NCF in terms of size and magnitude will be higher in DEs. For instance, NCF respond to interest rate differential it will cause higher cross-border flows in terms of magnitude, depending on the expected returns in DEs. Consequently, we introduce the deposit interest rate as a domestic pull factor.

A rise in REER demonstrates a lower degree of trade competitiveness, since the prices of goods are exported turn out to be higher while the price of goods imported becomes decreases. As discussed in Calvo et al. (1993), a rise in REER index reflects a appreciation of the domestic currency. Further, the depreciation of the domestic currency is connected with larger capital inflows to the DEs. Moreover, NCF are more sensitive to the movement of the REER (Hwang, 2017). Thus, we include REER as a pull factor. Following Ghosh et al. (2014) and Qureshi and Sugawara (2018) we use current account (% of GDP) as proxy for the external financing needs. The greater value of the current account to GDP shows low external financing and a small value reflects the higher external financing need to the DEs.

Large and growing economies can easily accommodate large number of domestic as well as foreign firms, which assist to produce tradable products more efficiently. In this study we use the real GDP growth rate as a domestic pull factor. Following the literature, (Qureshi & Sugawara, 2018; Hannan, 2017), we consider the de facto exchange rate regime (ERR) in order to uncover the possibility that the fixed ERR often promote higher cross-border capital mobility. The data on the ERR is extracted from IMF's-AREAER with higher values indicates a less-flexible ERR.

The large influx of capital inflows can have unnecessary macroeconomic impacts including REER volatility, a rise in inflation rate and deficit in current account (Agarwal, 1997; Karahan, & Çolak, 2019). However, Under a flexible ERR, rise in current account deficit often leads to a depreciation of domestic currency and consequently worsen the terms of trade (Rafi & Ramachandran, 2018; Ozata, 2020). On the other hand, under a fixed ERR, a rise in current account deficit and decline in competitiveness may weaken the trust in the viability of the pegged exchange rate (Collignon, 2013; Manger & Sattler, 2020). As a result, the liberalization of the capital account may cause a currency crisis and financial instability (Glick et al., 2006; Zehri, 2020).Therefore, capital account control policy play major role in explaining NCF. Capital controls measure the country's capital control policy (Erten et al., 2021). Chinn-Ito index also known as "KAOPEN" is largely used in the existing literature of NCF. The index is designed by Chinn and Ito (2008)[9] to assess the extent of capital account openness in an economy based on 182 world economies. This study utilized KAOPEN index as a determinant of NCF.

Similarly, many researchers also point out the role of IQas an important determinant of NCF (Aziz & Mishra, 2015; Aziz, 2018). We use set of institutional variables extracted from the ICRG data set. The ICRG data are available in annual frequency and covers three different dimensions of

[9]Chinn and Ito (2006) initially introduced this index, and Chinn and Ito (2008) give more information on how the index is constructed and how it compares with other measures of cross-border financial flows. "This index of openness can also be regarded as a measure of financial integrations/interconnectedness with the international financial markets."

government such as "bureaucratic quality", "law & order" and "corruption". ICRG has been used widely in economic literature to proxy IQ (Law et al., 2013; Atiq-ur-Rehman et al., 2021; Imran & Rashid, 2022).

Based on the ICRG data, we constructed an index by aggregating six dimensions of the IQ index using principal component analysis (PCA). IQ is a composite measure of institutional quality index. It is an unweighted average of six indicators, which include government stability, investment profile, control of corruption, law and order, democratic accountability and bureaucracy quality. In principle, IQ plays an important role in driving the NCF to the DEs (Aziz, 2018). Therefore, to this end we argue a rise in IQ will create higher incentive for foreign investors. Furthermore, these six major indicators can play an essential role to attract NCF in the DEs.

The fraction of variance accounted for by a factor is represented by Eigenvalues, also known as latent roots. This means that the Eigenvalues can be used to break down the variance of each regression coefficient. Because these proportions can be transformed to percentages, a percentage of the variance of the regression coefficient is linked to a specific eigenvalue.

Thus, we keep the factors with high "Eigenvalues" and eliminated the ones with low "Eigenvalues". Clif (1988), citing Kaiser (1960), advises that factors with Eigenvalues greater than 1.0 should be preserved because this indicates a significant amount of variation. The relaxed criteria, on the other hand, propose that Eigenvalues greater than "0.7" should be used as a criterion for picking

factors. All elements above the point of infliction maybe kept because only a few factors are above this threshold, while the rest are below. Thus, it can be seen in Tables A2 that two factors have a large then one Eigenvalue and explain a relatively large part of the variance contained in all indicators. The other factors have a lower Eigenvalue and provide details a relatively smaller part of the variance contained in all indicators.

In addition to that, we provide a detailed explanation on the construction of the IQ index in Appendix (Tables A2 and A3). Moreover, we also provide the graphical illustration of the Eigenvalues of factors known as Scree plot. The eigenvalue of a factor shows the variance explained by each factor (Antony et al., 2002). Moreover, an elbow in the Scree plot reflects the point at which the addition of new factors may not have significant contribution in explaining the variance of the sample data (Alli et al., 1993). The Scree plot is displayed in Appendix (Figure A1).

In addition to that, higher values of the IQ index reveal better performance of the institutions while the lower values specify poor performance in an economy. In the literature, many scholars, for example, Issah and Antwi (2017), Rashid et al. (2019) argued that the most of macroeconomic variables are correlated. Therefore, under such circumstances, it is valuable to use the PCA. The PCA carry useful attributes of the larger set of variables in form of a unique index (Park& Mercado, 2021).Similarly PCA is a method that allows the reduction of the number of variables being examined without losing much information in the

covariance matrix (Campbell et al., 1997).The definitions and sources of variables are provided in Appendix (Table A7).

4.5 Empirical Framework

This section presents the empirical framework to analyze the determinants of NCF using panel quantile regression (QR). Further, we identify the extreme episodes such as surge, stop, flight, and retrenchment based on NCF. We also explore the major determinants of these episodes using probit and complementary log-log model. In addition to that, we discuss the empirical model which assesses the effect of episodes on real and financial sectors of the DEs. Finally, we discuss the role of IQ in establishing the impact of episodes on the real and financial sectors of the DEs.

4.6 Determinants of Net Capital Flows

The determinants of NCF may be grouped into two main strands. The first strand focuses on normal flows rather than episodes (Bluedorn et al., 2013; Ahmed & Zlate, 2014; Hannan, 2017; Kang & Kim, 2019; Wang & Yang, 2022).On the other hand, the second category of work focuses on the extreme movements in capital flows that are surges and sudden stops (Clavo, 1998; Forbes & Warnock, 2012; Ghosh et al., 2014).

We consider the broad set of various push and pull factors that affect NCF to DEs. The selection of the variables is purely influenced by the existing literature, the requirement of the study, and the nature of the relationship among variables. In

order to empirically investigate the determinants of NCF for the sample countries we use panel QR technique. In the following sub-section we briefly introduce the panel QR technique.

4.6.1 Quantile Regression

Researchers have utilized numerous econometrics and statistical techniques to investigate the determinants of NCF. For example, Alfaro et al. (2008) uses instrumental variable and two-stage least squares techniques to provide different explanation for the "Lucas paradox". Ahmed and Zlate (2014) rest their empirical outcome on fixed-effects model. For illustration, Byrne and Fiess (2016) employ a panel fixed-effects methodology. Vo (2018) uses common panel least squared and GMM approaches to explore the determinants of NCF. Sarno et al. (2016) use dynamic latent factor model to analyze the NCF. Boero et al. (2019), use global vector autoregressive to model the NCF.

However, most of the researchers employ panel models. For instance, Hannan (2017) use panel framework to explore the determinants of NCF. Some other researchers use GMM technique to investigate the determinants of NCF (Choong et al., 2010; Mercado & Park, 2011; Al-Khouri, 2015; Canh et al., 2020; Hossain et al., 2020). On the other hand, Ben-Salha and Zmami (2020) use fixed-effects panel QR to explore the impact of NCF on economic growth in the MENA region. Finally, Wang & Yan (2022) use panel QR to analyze the importance of the push and pull factors of NCF for emerging market economies.

We empirically investigate the determinants of NCF using panel QR. QR technique which is introduced by Koenker and Bassett (1978), is an extension of the classical linear regression model.Unlike OLS estimation, the QR examines the effects of independent variables not only at the center but also at the tail of the distribution of the dependent variable, therefore, providing a more detailed description of the association between dependent and independent variables (Wu et al., 2022). QR fit a regression line with the help of conditional quantiles of a given distribution.

However, OLS method assumes that, errors are normally distributed whereas QR does not follow that assumption. QR provides the estimates of the relationship between dependent and explanatory variables across the various quantiles of the conditional distribution of the variable of interest (Ben-Salha & Zmami, 2020). In addition to that, QR estimates are robust in the presence of the outliers, heteroscedasticity, and, extreme distributions on the dependent variable (Fitzenberger et al., 2015; Koenker & Hallock, 2001). The conditional QR of NCF is written as follows.

$$Q_{NCF_i}(\tau|x_i) = x_i^T \beta_\tau \qquad (4.1)$$

where$0 < \tau < 1$, $Q_{NCF_i}(\tau|x_i)$ denotes τ^{th} conditional quantile of dependent variable NCF_i, while $x_i$is the set of independent variables. Further, $\beta_\tau$is the coefficient of interest and capture the effects of the explanatory variable,x_i, on the conditional τ^{th}quantile of the conditional distribution of NCF_i.

Equation (4.1), empirically estimate the response of the dependent variable (NCF) to the explanatory variables while considering distribution of a dependent variable. Following Ghosh et al. (2014), Asongu et al. (2015) Hlaing and Kakinaka (2019), we use panel QR to estimate our model as follows:

$$NCF_{jt} = g_t^{'}\alpha_1^q + d_{jt}^{'}\beta_1^q + \epsilon_{jt}\, q = 25{,}30{,}50{,}70{,}75, \& \, 90 \qquad (4.2)$$

In equation (4.2), NCF_{jt} denotes net capital flows and expressed in % of GDP to a country j at time t, g represents a set of global push factors and$d$ represents a set of domestic pull factors. Similarly, q denotes the different quantiles of NCF and ϵ is the random error term. Global push factors represent the external conditions and are beyond the control of the host economies.

We consider four major global variables, recognized by the previous researchers as discussed in Section 4.4.2. We utilized one-year lagged values of predictors to control for the possibility of endogeneity in the model. The literature suggests that the global factors are adjusted rapidly because of their characteristics, and also they are common across the recipient countries. However, the impacts of the domestic factors are likely to influence the capital flows in the lag period (Ghosh et al., 2014; Sahu, 2020b).

In QR, median regression estimator, that minimizes a sum of absolute errors. On the other hand, in classical regression such as, OLS tend to minimize, the sum of squared errors. However, the other conditional quantile functions are estimated by

minimizing an asymmetrically weighted sum of absolute errors. This makes QR robust to the presence of outliers.[10]

According to Hao and Naiman (2007), QR overcomes some of the shortcoming associated with the conditional mean analysis based on central tendencies, which has the tendency to lose some information on phenomena whose tendencies are toward the tails of a given distribution. In addition to that the use of QR technique is highly preferable while analyzing skewed distributions, therefore, typical assumption of normally distributed error terms, is not reasonable and may lead to unreliable estimates.

The QR offers more robust parameters than standard OLS-based techniques in the case of non-normally distributed dependent variables (Buchinsky, 1998). Therefore, we conducted a normality test of the dependent variable to validate the employing of QR. The normality tests of NCF are presented in Appendix (Table A4). The estimated value of "skewness" is different from zero, while the value of "kurtosis" exceeds three, showing that NCF is not normally distributed. These findings are confirmed by the "Jarque-Bera", "Shapiro-Wilk", and "Shapiro-Francia" tests that reject the null hypothesis of normal distribution at the 1 percent significance level.

Thus, in our case QR is an appropriate estimation technique to empirically explore the determinants of NCF. Moreover, the properties of OLS estimators are not robust where dependent variable is not normally distributed in such a situation

[10]See for detail discussion on QR Alexander (2008) and Koenker (2005).

QR results are potentially robust to outliers and heavy tailed distributions (Coad & Rao, 2008).

4.7 Identification of the Episodes

In the literature, different approaches have been introduced to identify episodes of NCF, (Cardarelli et al., 2010; Furceri et al., 2012; Balakrishnan et al., 2013; Baek & Song, 2016; Ghosh et al., 2016; Efremidze et al., 2018; Sahu, 2020b). However, there is no consensus among the researchers on a single methodology to identify episodes. Nevertheless, two important criteria that are common among the researchers to identify the episodes that magnitude of NCF for the given time period be large both in relative as well as and in absolute terms.

According to Crystallin et al. (2015), the first criterion "relative magnitude" in which NCF are measured by comparing with previous periods using measures for example, means and percentile values of a sample and also standard-deviation from the long-term trends. On the other hand, the second criterion is "absolute magnitude" which requires NCF to be adequately huge when scaled by different economic indicators like GDP, total trade and population. However, is no clear theoretical foundation for choosing a suitable threshold. Therefore, choosing values for thresholds, and estimation parameters depends on the decision of the practitioners, researchers and requirement of the study (Rashid et al., 2019; Sahu, 2020a).

We briefly discuss the criteria for the identification of the episodes from the existing literature. For example, Reinhart and Reinhart (2009), define surge in inflows a cut off of 20th percentiles for NCF to GDP ratio. Similarly, Cardarelli et al. (2010) define a surge in capital inflows when NCF as % of GDP exceeds its trend by one-standard deviation or fall in the top quartile of the regional distribution. In addition to that, Forbes and Warnock (2012) using quarterly data of GCF define surge as a rise in gross inflows more than one-standard deviation above the historical average and at least two-standard deviations above the historical average in at least-one quarter period.

According to Agosin and Huaita (2012), the episode will be considered as a surge if foreign inflows surpass the sample mean by at least one-standard deviation and also the ratio of capital inflows to GDP is greater than 3%. Ghosh et al. (2014) define surge in capital inflows as "if it lies both in the top 30th percentile of the country's own distribution of NCF (% of GDP) and also in the top 30thpercentile of the entire sample's distribution of net capital flows (% of GDP)."

In addition to that, the common practice among the researchers is to remove a trend component from a series using Hodrick-Prescott (hereafter HP) filter (De Jong & Sakarya, 2016). Further, HP filter's smoothing parameter assigns different weights to different observation periods according to the frequency of the data (Yamada, 2018). Thus, major function of the parameter is to emulate the cycles and therefore trend will act as a nonlinear trend (Crystallin et al., 2015). Therefore, these episodes of NCF are detrended by HP filter, which is described in equation (4.3), (4.4), (4.5) and (4.6) as given below.

Following Forbes and Warnock (2012) and Hwang et al. (2017), we divide NCF into four episodes as follows: (i) surge (ii) stop (iii) flight and (iv) retrenchment. In the following sub-sections we discuss the criteria through which we identify each episode of NCF.

4.7.1 Surge and Stop

We identify surge and stop episodes based on the deviation of NCF to GDP ratio from its historical trend (Cardarelli et al., 2010; Furceri et al., 2012; Rashid et al., 2019; Imran & Rashid, 2022). Given that the volatility of NCF can vary across countries. Therefore, the extremely large movements of NCF are relative to not only to their own trend in each specific country during that period, but also, to the volatility of episodes, that particular country experience in general. Thus, an episode of large NCF in a year t is identified when indicator variables D_{it}^{surge} and D_{it}^{stop} are equal to 1 according to the following rule:

$$D_{it}^{surge} = \begin{cases} 1 & TDev_t > +\sigma_{TDev} and \frac{NCF_t}{GDP_t} > 1\% \\ 0 & otherwise \end{cases} \quad (4.3)$$

$$D_{it}^{stop} = \begin{cases} 1 & TDev_t < +\sigma_{TDev} and \frac{NCF_t}{GDP_t} > 1\% \\ 0 & otherwise \end{cases} \quad (4.4)$$

In equations (4.3) and (4.4), NCF_t represents the net capital flows and $TDev_t = \left(\frac{NCF_t}{GDP_t}\right) - trend$ is the deviation from the historical trend. Similarly, σ_{TDev} describe the standard deviation of detrended NCF. Further, the each episode is linked with sequence of years in which the criterion is met. We identify surge

episode if NCF are more than one standard deviation above the historical average. Similarly, stop episode is defined as NCF are above the historical average and below one standard deviation above the historical average.

4.7.2 Flight and Retrenchment

Episode flight is defined as a sharp increase in outflows. Similarly, retrenchment episode is defined as a sharp decrease in outflows (Forbes & Warnock, 2012). Similarly, we identify flight episode if NCF areless than one-standard deviation below the historical average. Similarly, retrenchment episode is defined as NCF are below the historical average and above one-standard deviation below its historical average. Therefore, an episode of NCF in a year t is recognized when D_{it}^{flight} and D_{it}^{retr} equals 1 according to the following rule:

$$D_{it}^{flight} = \begin{cases} 1 & \text{TDev}_t < -\sigma_{\text{TDev}} \text{ and } \frac{NCF}{\text{GDP}_t} < -1\% \\ 0 & otherwise \end{cases} \quad (4.5)$$

$$D_{it}^{retr} = \begin{cases} 1 & TDev_t > -\sigma_{TDev} \text{ and } \frac{NCF_t}{GDP_t} < -1\% \\ 0 & otherwise \end{cases} \quad (4.6)$$

In equations (4.5) and (4.6), NCF_t represents NCF and $TDev_t = \left(\frac{NCF_t}{GDP_t}\right) - trend$ is the deviation from the historical trend. Similarly, σ_{TDev} describe the standard deviation of detrended NCF. Moreover, each episode is related with the sequence of years in which the criterion is met.

Using the underlying procedure, we identified the episodes in the sample. Specifically, 204 surge, 1047 stop, 101 flight and 183 retrenchment episodes identified in the sample are presented in Appendix(Table A5). Further, the national distribution of each episode is also provided in Appendix (Table A6).

4.8 Determinants of Episodes (Surge, Stop, Flight, and Retrenchment)

To examine the role of global and domestic factors in the context of conditional probability of observing surge, stop, flight, and retrenchment episodes, we propose to estimate the model presented in equations (4.6), (4.7), (4.8), and (4.9) as follows:

$$Prob(D_{jt}^{Surge} = 1) = F(\alpha g_t + \beta d_{j,t-1} + \alpha_j) \qquad (4.7)$$

$$Prob(D_{jt}^{Stop} = 1) = F(\alpha g_t + \beta d_{j,t-1} + \alpha_j) \qquad (4.8)$$

$$Prob(D_{jt}^{Flight} = 1) = F(\alpha g_t + \beta d_{j,t-1} + \alpha_j) \qquad (4.9)$$

$$Prob(D_{jt}^{Retr} = 1) = F(\alpha g_t + \beta d_{j,t-1} + \alpha_j) \qquad (4.10)$$

whereD_{jt} is an observation of indicator variable that observe the value "1" if, country j observes different episodes (surge, stop, flight, and retrenchment) in time t. Similarly, g' and $d'$are the set of globaland domestic variables.

Moreover,α_j is the unobserved country-fixed effects. Moreover, it is noteworthy to note that we incorporate the country-specific effects in the regression model to take into account the cross-country heterogeneity.

Following Ghosh et al. (2014), Sahu et al. (2020b) and Kaya et al. (2022),and we estimate equations (4.7), (4.8), (4.9), and (4.10) using the fixed effects probit model (FEPB). We estimate the fixed effect probit model as presented in equations (4.7) to(4.10) by the analytical bias correction method developed by Fernández-Val and Weidner (2016) in order to overcome the incidental parameter problem.[11] Moreover, this method produces "asymptotically unbiased-estimators" considering N and T dimension converges (Kaya et al., 2022).We incorporate first lagged of all the pull variables, to overcome the endogeneity problem in our empirical model.

Moreover, for robustness check, we estimate our models using complementary logarithmic regression. The cumulative distribution function (cdf)$-F(.)-$is an asymmetric distribution because these episodes occur irregularly. Therefore, we estimate equations (4.7), (4.8), (4.9), and (4.10) using complementary logarithmic framework, which assumes that $F(.)$ is the cumulative distribution function (cdf) of the extreme value distribution. In other words, this estimation strategy assumes that:

$$F(z) = 1 - exp[-exp(z)] \qquad (4.11)$$

[11]For detail, see, Cruz-Gonzalez et al. (2017).

4.9 The Impact of Capital Flows on Real and Financial Sectors: Local Projections Framework

In this section, we present the empirical framework assessing the impact of NCF (normal flows) and episodes on the real and financial sectors of the developing countries included in the sample. The impulse response functions (IRF) has been widely used in the literature to check the response of a variable to a change in another variable (Soltani et al., 2021). In addition, we can check the effects of various shocks on NCF and its episodes into DEs through IRF. It enables us to draw the influence of a one-time shock to an innovation for on both and current and future values of the endogenous variable (De Vita & Kyaw, 2008).

Following Jorda (2005), Furceri et al. (2012), and Rashid et al. (2019) we estimate IRF to explore the effects of episodes. Particularly, we estimate IRFs based on the "extended local projections" (LP) method designed by Teulings and Zubanov (2014). The LP estimator was developed by Jorda (2005) and primarily intended for vector autoregressive (hereafter VAR) model. However, afterward Chong et al., (2012) augments for a non-stationary VAR. Finally, Teulings and Zubanov (2014) corrected the bias in the LP estimator by incorporating the event occurring within the forecast horizon in the LP specification. However, Jorda (2005) introduced methods for computing IRF for a vector time series--based on LP which does not involve specification and estimation of the unknown true multivariate-dynamic system itself.

Moreover, we conduct a dynamic analysis of the effects of the episodes on real and financial indicators in panel framework. LPs method is a more flexible

technique for modeling the dynamic responses relative to standard VAR approach. LPs are easier to use in panel settings, and allows us to estimate IRF for no-linear models as well (Teimourti & Zietz, 2018; Rashid et al., 2019).

According to Jorda (2005), "Local projections are based on sequential regressions of the endogenous variable shifted several steps ahead and therefore, have many points of commonality with direct multi step forecasting". In other words, in LP the parameters of the model are reestimated for each period (Teulings & Zubanov, 2014) rather doing forecast for increasingly distant horizons from given model (Rashid et al., 2019).

There are several advantages of LPs (Jorda, 2005) as discussed in Rashid et al. (2019). These are as follows. (i) "LPs are based on univariate regression techniques and thus, easy to compute by using variety of statistical packages (ii) LPs are more robust and easily contained the misspecification (iii) its joint analytical inference is simplified (iv) they easily accommodate testing on non-linear specifications (v) as they are subset of the slope coefficient estimates the projections are easily produced".

Finally, to sum up, as explained in Jorda (2005) "estimation of a model based on the sample, even when the model is misspecified, it may still produce reasonable one-period ahead forecasts. An impulse response, however, is a function of forecasts at increasingly distant horizons, and therefore, misspecification errors are compounded with the forecast horizon. Moreover, it is preferable to use a

collection of projections local to each forecast horizon instead, thus matching design and evaluation."

4.9.1 The Empirical Model (Local Projections Framework)

Next we turn to examine the influence of both NCF (normal flows) and episodes on the real and financial sectors of the DEs. Following Jorda (2005), Furceri et al. (2012), Teullings and Zubanove (2014), Teimourti and Zietz (2018), and Rashid et al. (2019), IRF is applied by using LP.

The LP calculates the h-step ahead linear projection of the response of the dependent variable Z_{t+k} for a country i in period t to treatment variables, $\delta_k Episode\ Dummy_{i,t}$ by estimating the following regression equations:

$$Z_{i,t+k} - Z_{i,t} = \delta_i + \delta_t + \sum_{j=1}^{R} \delta_{jk}\, Z_{i,t-r} + \beta_k NCF_{i,t} + \gamma_k Control_{i,t} + \epsilon_{i,t} \quad (4.12)$$

$$Z_{i,t+k} - Z_{i,t} = \delta_i + \delta_t + \sum_{j=1}^{R} \delta_{jk}\, Z_{i,t-r} + \beta_k Surge\ Dummy_{i,t} + \gamma_k Control_{i,t} + \epsilon_{i,t} \quad (4.13)$$

$$Z_{i,t+k} - Z_{i,t} = \delta_i + \delta_t + \sum_{j=1}^{R} \delta_{jk}\, Z_{i,t-r} + \beta_k Stop\ Dummy_{i,t} + \gamma_k Control_{i,t} + \epsilon_{i,t} \quad (4.14)$$

$$Z_{i,t+k} - Z_{i,t} = \delta_i + \delta_t + \sum_{r=1}^{R} \delta_{jk}\, Z_{i,t-r} + \beta_k Flight\ Dummy_{i,t} + \gamma_k Control_{i,t} + \epsilon_{i,t} \quad (4.15)$$

$$Z_{i,t+k} - Z_{i,t} = \delta_i + \delta_t + \sum_{j=1}^{R} \delta_{jk}\, Z_{i,t-r} + \beta_k Retr\ Dummy_{i,t} + \gamma_k Control_{i,t} + \epsilon_{i,t} \quad (4.16)$$

The empirical models presented in the equations (4.12), (4.13), (4.14), (4.15) and (4.16) access the impact of NCF and its episodes surge, stop, flight, and retrenchment on real and financial sectors, where, $Z_{t+k} = \{Y_{t+k} + F_{t+k}\}$ presents both real and financial sector variables. Particularly, y_{t+k} representsa set of real sector indicators, the GDP growth rate, employment and domestic savings. On the other hand, F_{t+k} represents a set of financial sector variables such as the inflation rate, the interest rate, and DCP.

Subscript k, $k = 1, \ldots 10$, refers to the k^{th} after the occurrence of the each episode. We select the lag "q" in order to address the autocorrelation problem in the error terms, and is set at 3. With this specification, $\delta_i and \delta_t$ represents the country fixed effects, and time trend respectively. However, Nickell (1981) argues that in the presence of the lagged dependent variable and country specific effects may lead to bias the estimation of δ_{jk} and β_k in small samples.

However, Teimouri and Zietz (2018) are of the view thatbias is small for sample with long time dimensions. Further, δ_{jk} measures the persistence of the dependent variable, while δ_k captures the impact of lag values of dummy variable on the change in real and financial indicators for the each future period k and takes the value 1 if positive and 0 if negative. On the other hand, $\gamma_k$measures the impact of set of the control variables on the of real and financial indicators for the each future period, k.

As discussed earlier, in LP, we estimate a separate regression of each horizon k, $k = 1, \ldots, 10$. In addition to that, the coefficient of β_k estimates for each horizon k estimates the cumulative impact of a surge on outcome variable $Z_{i,t+k}$. For example, if $Z_{i,t+k}$ is DGDPg, β_k represents cumulative percentage point change in the DGDPg relative to its value in year 0 that is a start of each episode. Moreover, IRF are drawn by plotting the estimated coefficients of the β_k against the each horizon for k.

Following Furceri et al. (2012) and Bernardini and Forni (2020) we considered different control variables in order to consider the omitted variable bias, in our model, which can influence the dynamics of our alternative outcome variable. Moreover, in our estimation, we also avoid the "potential-reverse causality" as we are interested in the changes in our response variables ($Z_{i,t+k}$) in the years, following the start of each episode.

4.10 Capital Flows Real and Financial Sectors and Institutional Quality

We explore the role of IQ in establishing the impact of episodes on real and financial sectors for sample countries. Institutions are able to reduce uncertainties and insecurity in foreign investors' decision making. Hence, better IQ is deemed to be more able to have a positive and significant impact in establishing the effects of capital flow on the real and financial sectors of the DEs. Many developing countries have acknowledged the vital role of NCF in long-run economic growth (Dunning & Lundan, 1993).

Evidence suggests that the impact of foreign capital on the growth of host economies is ambiguous (Alguacil et al., 2011; Herzer & Klasen, 2008). However, there are numerous researchers who support the positive contribution of institutional development in sustaining and promoting growth (Acemoglu et al., 2001; Law & Bany-Ariffin, 2008). However, very little is known on the role of IQ in establishing the impact of NCF on real and financial sectors.

We utilize data set namely International Country Risk Guide (ICRG) published by the Political Risk Services (PRS) group. ICRG data set is produced annually and covers three different aspects of government – law and order, bureaucratic quality, and corruption. ICRG has been used widely in the economic literature to proxy IQ. Following Ghalia et al. (2019), Law and Soon (2020) and Asamoah et al. (2021), we develop an index with aggregating six different dimensions of the IQ index using PCA. Next, we set threshold criteria on the basis of their mean value, which enable us to categorize institutions into two different categories namely high quality and low-quality institutions.

Further, these two different categories of institutions namely high and low-quality institutions incorporated into the empirical model to interact with episodes to establish the impact on real and financial sectors of the underlying countries. Therefore, we re-estimate our models as presented in equations (4.12) to (4.16), by incorporating IQ in our empirical models. Further, we separately measure the model for each episode. We use LPs by Jorda (2005) to examine the role of IQ in accessing the impact of surge, stop, flight, and retrenchment on the real and financial sectors of the DEs.

CHAPTER 5

RESULTS AND DISCUSSION

5.1 Introduction

In this chapter, we document the empirical findings on the determinants of NCF and its episodes namely surge, stop, flight, and retrenchment. First, the baseline model explores the importance of global and domestic variables in determining NCF (normal flows) using panel quantile regression (QR). We also identify episodes of NCF. Next, we empirically investigate the impact of episodes on the real sector (the GDP growth rate, employment, and domestic savings) and the financial sector (inflation, interest rate and DCP) of the DEs using LPs regression. Finally, we examine the role of IQ in explaining the impact of episodes on the real and financial sectors.

5.2 Descriptive Statistics

Table 5.1 presents the summary statistics of NCF, global and domestic variables used in the analysis. In particular, we provide the mean, standard deviations, minimum and maximum values for all the variables used in the empirical analysis. In this study, NCF is our variable of interest. NCF reported an average of 3.50 with maximum of 69.70 and minimum of -103.2. This significant variation in NCF reflects that NCF is highly volatile. In general, high volatility of NCF can be associated to many factors such as changes in global factors (the

global growth rate and monetary policy in developed economies) as well as domestic factors (the domestic interest rate and capital account openness).

In principle, higher economic uncertainty is linked with less capital inflows toDEs. Following Perić and Sorić (2018), Avom et al. (2020) and Canh et al. (2020) we use WUI to capture the degree of global uncertainty. WUI computed by Ahir et al. (2022) in which they consider the uncertainty measures for 143 economies across the world[12].

The domestic interest rate reported an average of 6.741% with a minimum of 92.22% and with maximum of -93.51% for a sample of DEs. Similarly, REER is also used as a determinant of NCF. REER is recorded an average of 4.701 with standard deviation of 0.364. The DGDPg registered an average of 3.707 with a maximum value of 26.675 and minimum value of -29.589. The variation in DGDPg of DEs reflects the disparity of the countries' level of economic development over the study period.

The current account to GDP documented an average of -2.584 and reached a maximum of 51.11 and minimum of -78.45.ERR plays an important role in promoting cross-border capital mobility (Hanan, 2017). We utilize the de facto ERR as a determinants of NCF. ERR recorded an average of 2.107 with minimum of 1 and maximum of 4. The data on the ERR is extracted from "IMF's-AREAER" with higher values representing a less-flexible ERR. We use KAOPEN index developed by Chinn and Ito (2008) to assess the degree of capital

[12] See, for instance, Avom et al. (2020) and Ahir et al. (2022) for detailed discussion.

account openness in a country. KAOPEN documented with mean of 0.361 with a standard deviation of 0.297 for the sample countries.

Similarly, DCP documented an average of 32.90%. This shows that the low level of financial sector development in DEs. We use ICRG data set to proxied IQ of a country. The index is constructed based on PCA. The IQ index reported with a mean value of 3.579 with standard deviation of 0.738.

Finally, we use natural logarithm to GDP per capita to decrease the skewness and make interpretation easier because the said variable has a wide variation. In the literature, it is also a general practice to apply natural logarithm to the variable having high values and wide variations (Ghosh et al., 2014). The mean value of the GDP per capita (in natural log form) is 7.706 with standard deviation of 0.984. These statistics present the different level of economic development among the sample of the DEs.

Table 5.1: Descriptive Statistics					
Variables	**Obs.**	**Mean**	**Std. Dev.**	**Min.**	**Max.**
Dependent Variable					
Net Capital Flows	1,797	3.500	7.795	-103.2	69.70
Global Variables					
Global Growth Rate	1,833	3.492	1.207	-0.100	5.600
Global Interest Rate	1,786	-0.272	0.814	-1.970	1.749
World uncertainty Index (WUI)	1,363	11.001	0.374	10.380	11.697
World Commodity Prices (WCP)	1,786	3.193	34.52	-77.48	95.23
Regional Contingent	1,825	0.920	21.99	-495.9	249.0
Domestic Variables					
Domestic Interest Rate	1,317	6.741	13.63	-93.51	92.22
Real Effective Exchange Rate (REER)	1,804	4.701	0.364	2.415	6.444
Domestic GDP Growth rate (DGDPg)	1,823	3.707	4.758	-29.589	26.675
Current Account % of GDP	1,793	-2.584	8.141	-78.45	51.11
Exchange Rate Regime (ERR)	1,256	2.107	0.761	1	4
Capital Account Openness (KAOPEN)	1,661	0.361	0.297	0	1
Domestic Credit to Private Sector (DCP)	1,702	32.90	29.72	0.403	166.5
Institutional Quality (IQ)	1,535	3.579	0.738	1.184	5.279
Real GDP Per Capita (log)	1,780	7.706	0.984	5.608	9.592

Table 5.2 documents the correlation between the variables. Based on the correlation coefficients, NCF generally has a weak relationship with all the variables. In addition, the regional contagion, the domestic interest rate, DGDPg, KAOPEN, and IQ are significant and positively correlated with NCF. The global interest rate is negatively correlated with NCF. However, the correlation between global GDP and the global interest rate is positive. WUI is a negatively related to global GDP and the global interest rate.

Similarly, the WCP is positively correlated with world GDP and global interest rate. However, WCP is negatively correlated with WUI. NCF are positively correlated with regional contingent. Regional contingent is negatively related with WUI. Similarly, the interest rate is positively correlated with global GDP, the

global interest rate and WCP. The REER is negatively correlated with global GDP growth rate, the global interest rate, WCP and interest rate.

However, the correlation between WUI and REER is positive. Current account is negatively correlated with NCF, contingent and the interest rate. Similarly, current account is positively correlated with global GDP, the global interest rate and global commodity index. The correlation of NCF, global GDP and global commodity index with the DGDPg is positive. However, WUI and the interest rate are negatively correlated with DGDPg.

The correlation of NCF, global GDP, global interest rate and contingent is positive with KAOPEN. However, KAOPEN is negatively correlated with current account. IQ is positively correlated with NCF, WUI, contingent and KAOPEN. Similarly, IQ is negatively correlated with interest rate and current account. Real GDP per capita is negatively correlated with NCF, contingent, the interest rate and real GDP growth. In a similar fashion, per capita GDP is positively correlated with current account, KAOPEN and IQ.

Table 5.2: Correlation Matrix

	Variables	1	2	3	4	5	6	7	8	9	10	12	13	14
1	NCF	1 000												
2	Global Growth Rate	-0 048	1.000											
3	Global Interest Rate	-0 104***	0.408***	1.000										
4	WUI	-0 017	-0.214***	-0 157***	1.000									
5	WCP	-0.024	0 372***	0.256***	-0.347***	1 000								
6	Regional Contingent	0.673***	-0.014	0.008	-0 057*	0 025	1.000							
7	Domestic Interest Rate	0 153***	-0.207***	-0.198***	0.095***	-0.080**	0 078**	1.000						
8	REER	0.047	-0 125***	-0.123***	0 074**	-0 145***	0.002	-0 165***	1 000					
9	Current Account	-0.736***	0 082b	0.089**	0.022	0.073**	-0 505***	-0.209***	-0 016	1.000				
10	DGDPg	0.058*	0 260***	0.050	-0 154**	0 117***	0.018	-0 099**	0.016	0 047	1.000			
12	KAOPEN	0.195***	0.066*	0 078**	0 014	0 041	0.194***	-0 021	0 034	-0 143***	-0 027	1.000		
13	IQ	0.208***	0.052	0 040	0 111**	0 021	0 189***	-0.139***	-0 054	-0 135***	0 031	0 285***	1.000	
14	Real GDP Per Capita	-0 184**	0 030	0 030	-0 007	-0 007	-0 153***	-0 210***	-0 045	0 246**	-0 153***	0.126**	0.243***	1 000

Note: *** p<1%, ** p<5%, * p<10%

5.3 Results of Baseline Model

Before presenting the results of the panel quantile regression (QR), we also document the empirical results of our baseline model based on pooled ordinary least squares (OLS) and fixed effects model as shown in the columns [1]-[2]. Next, we turn to panel QR to estimate to investigate the determinants of NCF for a sample of 47 DEs over the period of 1980 to 2018. For more in-depth analysis, we empirically investigate the changes in the drivers of NCF, before and after the GFC (2007-08). To do this exercise, we divide our sample period between pre-crisis period (1980-2006) and post-crisis period (2009-2018). Table 5.3-5.5, present the results based on NCF for the full sample, pre-crisis period and post-crisis period respectively. We present the empirical results for 9 quantiles from 0.10 to 0.90. QR results imply that the association between NCF and push-pull factors widely depends on the magnitude of NCF as depicted in Table 5.3-5.5 (columns [1]-[9]).

The results reported in Table 5.3, columns [1]-[2], are based on pooled-OLS and fixed-effects model and the empirical findings of the panel QR are documented in columns [3]-[9],for the full sample period (1980-2018).First, we discuss the pooled-OLS, and fixed-effects model results. The push factors namely the global interest rate and WUI are negatively associated with NCF at 1% and 10% level of significance respectively in both pooled-OLS and fixed-effects models. The

empirical findings suggest that global interest rate and global uncertainty affect NCF in the DEs.

The negative association between NCF and WUI reveals that a rise in economic uncertainty in international financial market reduces NCF to the DEs. The rationale can be that while investing, the foreign investors consider the long-term association with the host economy. Thus, foreign investors consider the existing global uncertainty a significant driver of NCF. The empirical findings imply that external factors such as the global interest rate and WUI are the significant drivers of NCF toward DEs. Similarly, many researchers also reported that uncertainty reduces investment and output (Baker et al., 2016; Çepni et al., 2021). These findings are in line with the notion that NCF generally respond to global forces that determine the supply of capital flows to DEs (Gauvin et al., 2014; Rey, 2016).

Global factors remained dominant particularly, after the GFC2007-08, due to the easiness in monetary policy, abundant liquidity, and risk-taking behavior by the foreign investors due to lower yields in industrial economies enhanced capital flows towards DEs (Schmidt & Zwick, 2015).However, the regional contagion is positively related to NCF in both pooled OLS and fixed effects models. Ghosh et al. (2014) and Bekeat et al. (2014) also highlighted the importance of the regional contagion in NCF.

However, among the pull factors, the REER is negatively associated with NCF in pooled-OLS settings. However, the current account (% of GDP) enters with a

negative sign and highly significant in both pooled-OLS and fixed-effects specifications. The domestic GDP growth rate (DGDPg), positively influences NCF. Specifically, the impact of DGDPg is a positive and significant for both pooled-OLS and fixed-effect specifications. This significant impact suggests that NCF to DEs are procyclical.

It is argued that financially open markets can pull more NCF; thus, countries with such markets can easily invest more than they save compared to other countries. One explanation for this positive and significant association can be that the DEs with low domestic saving rates, but, with prosperous future prospects for higher economic growth may also accumulate capital stock and finance their investment-saving shortfall through foreign savings (Zhang & Ward, 2015; Rashid et al., 2019). These empirical findings are consistent with the previous studies (Ghosh et al. 2014; Perić, & Sorić, 2018; Canh et al., 2020). The pooled OLS and fixed-effects results show that the estimated coefficients signs are in line with the existing literature.

The findings based on the panel QR are presented in Table 5.3 (columns [3]–[11]). Panel QR provides the "heterogeneous-effects" across different-conditional quantiles of NCF's distribution. For example, the coefficients of the global interest rate, WUI, world commodity prices (WCP), and regional contagion is significant across nearly all quantiles. These findings are consistent with the pooled-OLS and fixed-effects results. However, the magnitudes of the coefficients vary across the quantiles. These heterogeneous effects are particularly fascinating in the context of NCF.

In particular, the panel QR results show that the world GDP growth rate (WGDPg) is a significant and positive on NCF across the quantiles. In particular, the estimated coefficients of WGDPg are from 20^{th} quantile (0.010) to 90^{th} quantile (0.012) except for the 60^{th} quantile. However, the magnitudes of the coefficients at different quantiles vary. Overall, WGDPg has a positive influence on NCF.

The estimated coefficients on global interest rates are negative and statistically significant across the quantiles. Moreover, the global interest rate also remained consistent in terms of sign and significance across all the specifications. The estimated coefficients on global interest rate are negative and highly significant from 10^{th} quantile (-0.789) to 90^{th} quantile (-0.601). Overall, the coefficients of the global interest rate advocate that lower levels of global interest rates reduce returns on investments in international markets, which in turn compel foreign investors to move their resources to DEs where returns on investments are comparatively higher.

Neoclassical theory suggests that capital flows, ought to react to interest-rate differentials between countries flowing from advanced economies having low return to those with high return that is a capital-scarce developing-economy. The global interest rate is a supply-side factor primarily beyond the control of DEs (Hlaing & Kakinaka, 2019). The global interest rate is also an important factor in

determining the supply of global liquidity and encourages investor to raise exposure to DEs (Hwang et al., 2017).

On the other hand, WUI is a negatively connected with NCF from 20^{th} quantile (-0.027)to 90^{th} quantile (-3.247) except for the 10^{th} and 40^{th} quantiles in which WUI enters with positive sign. The negative association between NCF and WUI causes less capital flows to the DEs. The possible rationale for this relationship is a rise in world uncertainty deteriorates the global financial conditions for the capital mobility which badly affect the economies. In other words, during the higher global uncertainty DEs are not been considered as safe havens. On the other hand, a fall in global uncertainty implies that the higher risk-appetite and improved global financial conditions for investors (González-Rozada & Yeyati, 2008; Passari & Rey, 2015; Obstfeld et al., 2019).

Conversely, WCP which likely indicates a higher global demand for DEs exports is positively associated from 50^{th} quantile (0.002) to 90^{th} quantile (0.008). The estimated coefficients of WCP also show increasing trend from 50^{th} quantile to 90^{th}quantile. This also shows that WCP are more strongly associated with the upper quantiles as compared to the lower quantiles. The regional contagion is positively associated with NCF across all the quantiles. In addition, estimated coefficients of NCF also show increasing trend from lower quantiles to upper quantiles. The existing literature also reports similar findings on the association between capital flows and regional contagion (Apergis et al., 2019).

The relationship between cross-border capital flows and trade integration can be complementary in the presence of financial frictions (Antras & Caballero, 2009). Therefore, foreign investors consider the prevailing global uncertainty as a crucial driver of NCF flows. Our findings suggest that global factors such as WGDPg and WUI are the significant drivers of NCF to DEs. In addition to that, the push factors remained more significant in the median and upper quantiles, which shows the importance of the push-factors' on triggering sharp-capital movements (Forbes & Wrnock, 2020; Yan & Wang, 2021). Finally, these findings support the view that global factors matters for NCF in case of DEs.

Among the pull factors, REER and current account are negatively associated with NCF across the quantiles as shown in Table 5.3 (columns [3]-[12]). In particular, REER is negatively associated, with NCF from 10^{th} quantile (-3.197) to 60^{th} quantile (0.515). However, it turns positive in the 70^{th} (0.012), 80^{th} (0.563), and 90^{th} (0.818) quantiles. In addition the magnitudes of the estimated coefficients are also varying across the quantiles.

Similarly, ERR appears with a negative sign and highly significant on NCF. The estimated coefficient of ERR is negatively associated with NCF from 20^{th} quantile (-0.233) to 90^{th} quantile (-0.532). The existing literature suggests that under the flexible ERR foreign capital inflows leads to appreciation in the nominal and the real exchange rate. Moreover, REER appreciation amplifies the possibility of exchange rate adjustment which fuel the huge speculative attack on the domestic currency. Further, flexible ERR tend to discourage capital flows (FDI), while increased sterilization raises short-term debt flows (Carlson & Hernandez, 2002).

The impact of DGDPg on NCF is a positive at all estimated quantiles. This suggests that NCF to DEs are procyclical in nature. In addition to that, the association becomes stronger for higher quantiles. DGDPg appears a more consistent and significant variable across the distribution. Financially and economically open markets can pull more foreign flows and therefore, can easily invest more than they save as compared to their counterparts. One possible rationale for this positive and significant association can be that the DEs having low domestic saving rates. However, with prosperous future prospects for higher economic growth may also accumulate capital stock and finance their investment-saving shortfall through foreign savings (Rashid et al., 2019).

After the GFC 2007-08, capital control and management strategy have received significant attentions from the researchers and policymakers. Although, policy debate on the capital control and management has a long history. It is one of the recurring topics of economic policy-making. The estimated coefficients of KAOPEN are highly significant and positively connected with NCF across all the quantiles.

Moreover, the estimated coefficients across the quantiles vary in terms of magnitude and with increasing trend. The empirical findings show that in the upper quantile range coefficients show decreasing trend till 60^{th} quantile. However, estimated coefficients of KAOPEN show increasing trend from 60^{th} quantile (0.763) to 90^{th} quantile (2.872). This shows that NCF are more associated with KAOPEN at higher quantiles. This also indicates that degree of KAOPEN

associated with the large NCF to DEs. These findings are in line with (Ghosh et al., 2014; Byrne & Fiess, 2016).

The impact of KAOPEN on NCF is higher in the 10^{th} quantile, however, start decreasing from 20^{nd} quantile (0.439) till 40^{th} quantile (0.098). Further, the impact is more prominent in the 50^{th} quantile (0.951) as compared to the lower quantile. The impact of KAOPEN on NCF is stronger at the 80^{th} and 90^{th} quantiles. These findings suggest that the impact of KAOPEN is lower for countries recording lower NCF and higher for the countries when the countries received higher NCF.

Similarly, IQ shows the positive association with NCF at each and every quantiles. IQ is positively associated with NCF and its magnitude increases for higher quantiles. In particular, initially in lower quantiles the estimated coefficients of the IQ show the decreasing trend till the 60^{th} quantile. However, the coefficients of IQ show increasing trend from 70^{th} quantile (0.564) to 90^{th} quantile (1.369). This also confirms the idea that systematic differences in IQ are responsible for the county's economic growth and development (North & Thomas, 1973). A possible explanation can be that fast growing are more prone to experience a huge influx of capital flows because investors are more concerned about the potential-productivity-gains and expected higher returns. In similar fashion, investors may feel secure investing in countries with higher IQ (Alfaro et al., 2008; Ghosh et al., 2014).

Perhaps, a good example on the role of the IQ comes from the North and South Korea. Both the countries have same economic, cultural, and geographic attributes but both vary in their economic outcome due to the potential differences in their IQ. These empirical findings confirm that IQ is one the important domestic determinants of NCF in DEs. In addition, the possible rationale behind the positive association between IQ and NCF is that countries with more protected rights, and political stability, investors are encouraged to make investment which ultimately enhanced the economic growth (Sabir et al., 2019).

Similarly, Bengoa and Sanchez-Robles (2003) are of the view that those countries with more economic freedom and property rights have been more attractive destinations for investors. These results are consistent with the existing literature such as Bengoa and Sanchez-Robles (2003), Kapuira-Foreman (2007) and Lucke and Eichler (2016). On the other hand, poor institutions impede capital flows which ultimately raise the cost of capital flows (Mengistu & Adhikary, 2011).

There is also a significant difference in the effects of GDP per capita on NCF across the lower and upper quantiles. For example, the impact of GDP per capita apparently appears negative for the 10^{th}, 20^{th}, and 50^{th} quantiles with estimated coefficients (-0.333), (-0.009), and (-0.038) respectively. However, we observed a positive and significant impact of GDP per capita on NCF from 70^{th} quantile (0.314) to 90^{th} quantile (0.217). These findings suggest that GDP per capita exerts less impact on NCF for countries recording lower NCF and higher for the countries when the countries received higher NCF.

Table 5.3: Quantile Regression Estimates for Net Capital Flows (Full Sample)

Variables	(1) OLS	(2) Fixed Effects	(3) 10th	(4) 20th	(5) 30th	(6) 40th	(7) 50th	(8) 60th	(9) 70th	(10) 80th	(11) 90th
WGDPg	-0.087	-0.094	-0.007	0.010**	0.203***	0.128*	0.020***	0.008	0.003***	0.071***	0.012***
	(0.142)	(0.146)	(0.037)	(0.003)	(0.003)	(0.065)	(0.002)	(0.025)	(0.001)	(0.0003)	(0.004)
Global interest rate	-0.731***	-0.724***	-0.789***	-0.585***	-0.600***	-0.243***	-0.503***	-0.686***	-0.449***	-0.503***	-0.601***
	(0.252)	(0.254)	(0.033)	(0.010)	(0.003)	(0.018)	(0.009)	(0.137)	(0.001)	(0.001)	(0.008)
WUI	-0.874*	-1.049*	0.920***	-0.151***	-0.527***	0.283***	-0.172***	-1.172***	-2.370***	-2.181***	-3.247***
	(0.523)	(0.598)	(0.191)	(0.022)	(0.004)	(0.106)	(0.009)	(0.100)	(0.006)	(0.002)	(0.015)
WCP	-0.005	0.001	-0.009***	0.002***	-0.003***	-0.007***	0.002***	0.003***	0.005***	0.003***	0.008***
	(0.043)	(0.044)	(0.001)	(0.0001)	(0.0001)	(0.001)	(0.0001)	(0.001)	(0.0001)	(0.0001)	(0.0001)
Regional contagion	0.020***	0.019***	0.026***	0.021***	0.019***	0.019***	0.019***	0.019***	0.021***	0.022***	0.024***
	(0.006)	(0.006)	(0.001)	(0.0001)	(0.0001)	(0.002)	(0.0001)	(0.002)	(0.0001)	(0.000)	(0.001)
Domestic interest rate	-0.025	-0.009	0.008**	-0.027***	-0.001***	0.050***	0.041***	0.004	-0.022***	0.002***	0.062***
	(0.036)	(0.042)	(0.003)	(0.001)	(0.0003)	(0.008)	(0.001)	(0.006)	(0.0002)	(0.0001)	(0.001)
REER	-1.499*	-0.902	-3.197***	-1.243***	-0.803***	-0.567***	-0.567***	-0.515***	0.012**	0.563***	0.818***
	(0.900)	(1.039)	(0.073)	(0.034)	(0.005)	(0.139)	(0.022)	(0.128)	(0.006)	(0.001)	(0.038)
Current Account	-0.496***	-0.459***	-0.452**	-0.517***	-0.521***	-0.515***	-0.496***	-0.450***	-0.498***	-0.458***	-0.471***
	(.029)	(0.037)	(0.004)	(0.001)	(0.0002)	(0.003)	(0.0004)	(0.004)	(0.0003)	(0.0001)	(0.001)
DGDPg	0.087***	0.087***	0.082***	0.095***	0.088***	0.111***	0.138***	0.145***	0.157***	0.128***	0.136***
	(0.027)	(0.028)	(0.002)	(0.001)	(0.0003)	(0.003)	(0.001)	(0.004)	(0.0004)	(0.0001)	(0.0003)
ERR	-0.455*	-0.566	0.438***	-0.223***	-0.233***	-0.440***	-0.725***	-0.754***	-0.523***	-0.771***	-0.532***
	(0.275)	(0.350)	(0.018)	(0.009)	(0.005)	(0.029)	(0.007)	(0.043)	(0.003)	(0.0003)	(0.008)
KAOPEN	0.812	-0.314	0.935***	0.439***	0.393***	0.098**	0.951***	0.763***	0.808***	1.377***	2.872***
	(0.672)	(0.855)	(0.103)	(0.018)	(0.005)	(0.048)	(0.008)	(0.034)	(0.013)	(0.003)	(0.014)
IQ	0.686**	0.325	1.395***	0.882**	0.877***	0.722***	0.505***	0.739***	0.564***	1.073***	1.369***
	(0.334)	(0.394)	(0.074)	(0.013)	(0.003)	(0.034)	(0.008)	(0.074)	(0.004)	(0.001)	(0.005)
RGDP per capita	0.246	1.189	-0.333***	-0.009*	0.237***	0.014	-0.038***	0.017	0.314***	0.215***	0.217***
	(0.283)	(1.053)	(0.023)	(0.005)	(0.004)	(0.021)	(0.011)	(0.049)	(0.003)	(0.0007)	(0.007)
Observations	850	850	850	850	850	850	850	850	850	850	850

Note: Standard errors are in parentheses ***p< 01, **p<.05, *p<.10*

5.3.1 Pre and Post Crisis Periods Analysis

After the GFC (2007-08) many developing nations observed remarkably large capital inflows when the interest rates in the developed nations hit the zero lower bound (Ibara et al., 2019). This rise in the capital inflows to DEs, particularly, after the GFC (2007-08) once again has diverted the attention of the policymakers towards the understanding of cross-border capital flows because of their effects on the real and financial sectors of the economy (Fratzscher, 2012; Hannan, 2017). As discussed earlier, in this study, we compared the global push and pull factors in driving NCF in both pre and post crisis periods of the GFC (2007-08). For this purpose, we investigate the determinants of NCF for the pre-crisis and post-crisis periods separately.

The empirical findings of pre-crisis and post-crisis periods are documented in Tables 5.4 and 5.5, respectively. WGDPg is a significant and negatively associated with NCF across the quantiles in pre-crisis period as shown in Table 5.4. However, the estimated coefficients of WGDPg vary in terms of sign and magnitude in post-crisis period. For example, in pre-crisis period the findings are uniform across the quantiles in terms of magnitude and sign. On the other hand, in post-crisis period the influence of WGDPg differs in terms of magnitude and sign. Moreover, WGDPg appears significant with a positive sign only for 10^{th}, 40^{th}, 60^{th} and 70^{th} quantiles in post crisis period. It shows that in pre-crisis period, WGDPg remained important determinant of NCF for the DEs. However, the relationship does not hold true for the post-crisis period in terms of estimated coefficients and level of significance.

The negative association between NCF and the global interest rate reflects that a increase in the global interest rate in developed economies reduces NCF to DEs both in pre and post crisis periods as shown in Tables 5.4 and 5.5 respectively. Particularly, in the pre-crisis period (see Table 5.4), the global interest rate enters with a negative sign in both pooled-OLS and fixed-effects regressions, with 10% significance level.

However, in panel QR regression, the estimated coefficients of the global interest rates are almost highly significant with negative across the quantiles. On contrary, in the post crisis period (see Table 5.5) the estimated coefficients of the global interest rate in pooled-OLS and fixed- effects regressions results are not significant while the estimated coefficients are also vary in terms of significance level throughout the quantiles.

Uncertainty appears an important determinant of NCF across all the specifications as shown in Tables 5.4 and 5.5. However, in post-crisis period the WUI enters with a negative sign at the 5% level of significance in pooled-OLS regression and at the 10% level of significance in fixed-effects regression. Moreover, DEs are significantly influenced by the WUI. The negative relationship between NCF and WUI shows that a rise in a world economic uncertainty reduces NCF to the DEs. The possible explanation can be that foreign investors consider the long-term relationship with a degree of hold in the management of the enterprise of the host economy. Therefore, the foreign investors consider the prevailing world uncertainty as a crucial determinant of NCF.

WCP remain positive from the 20^{th} quantile (0.012) to the 90^{th} quantile (0.038) in the pre-crisis period, as shown in Table 5.4. On the other hand, the association between WCP and NCF not uniform across the quantiles in post-crisis period. For instance, WCP enters with a negative sign in 10^{th}, 40^{th} and 50^{th} quantiles with the significance level of 1% and 10% respectively. However, it turns positive and highly significant for the upper quantiles. Taking into account the pre and post crisis periods, the estimated coefficients of the WCP, varies tremendously in terms of magnitude as well their significance level across the quantiles.

The estimated coefficients of domestic interest rate appear significant and negative for 10^{th}, 20^{th}, 70^{th}, 80^{th}, and 90^{th}quantiles in pre-crisis period regression results. On the other hand, the estimated coefficients of domestic interest rate are positive and highly significant from 10^{th} quantile (0.130) to 80^{th} quantile (0.012) in post-crisis period. However, at 90^{th} quantile the coefficient of domestic interest rate is a negative and significant.

Similarly, in the post-crisis period the domestic interest rate is negatively associated with NCF. However, the domestic interest rate is significantly and positively associated with NCF across the quantiles for the post-crisis period as shown in Table 5.5 (columns [3]-[11]). The domestic interest rate, which is initially negatively associated with NCF for lower quantiles however, it is significantly and positively connected with NCF particularly for $70^{th}$to 90^{th} quantiles for full sample period. In principle, foreign investors always invest in those markets in which investment returns are higher. Therefore, countries having the higher interest rate cause to large amount of NCF. Our findings suggest that

the higher domestic interest rate is more likely to associate with large capital inflows to DEs. The findings are consistent with Contessi et al. (2013) and Ghosh et al. (2014).

Conversely, the country-specific factor DGDPg is positively associated with NCF across the quantiles in pre-crisis period as shown in Table 5.4. In similar fashion DGDPg also appear a positive and significant in the post-crisis period except for the $80^{th}$and 90^{th} quantiles. However, the estimated coefficients of the DGDPg appear negative and significant for 80^{th} quantile (0.064) and 90^{th} quantile (0.076). In addition to that, DGDPg appears a more consistent and significant variable across the distribution. It is argue that financially and economically open markets can pull more capital flows. Therefore, they can easily invest more than they save as compared to their counterparts. One possible rationale for this positive and significant relationship could be that the DEs having low domestic saving rates.

However, with prosperous future prospects for higher economic growth may also accumulate capital stock and finance their investment-saving shortfall through foreign savings (Rashid et al., 2019). These empirical findings are consistent with the previous studies (Kirkpatrick et al., 2006; Pradhan, 2011; Canh et al., 2020).

KAOPEN and IQ appear positive and significant across all the quantiles in case of pre-crisis period. It is also observed that these co-movements between NCF and aforementioned variables become intensified across the quantiles as shown in Table 5.4 (columns [3]-[11]). The empirical findings for the full sample period and for the pre-crisis period are more or less similar in terms of sign.

Conversely, we find that in the post-crisis period, the estimated coefficient of KAOPEN on NCF is a negative for 10^{th} quantile (-2.267). Further, KAOPEN appear a positive and significant in 30^{th} quantile (0.236) to 60^{th} quantile (0.540). On the other hand, the estimated coefficients of KAOPEN turn negative from 70^{th} quantile to 90^{th} quantile. In post-crisis period the coefficient of KAOPEN shows huge variations in terms of sign and magnitude.

One possible explanation can be that after the GFC, the most of the DEs have revised their macroeconomic policies (Klein, 2012; Forbes et al., 2012).KAOPEN offers a greater degree of financial integration, which in actual, connect an economy with the international financial market via capital inflows and outflows (Chamon & Garcia, 2016; Miranda-Agrippino & Rey, 2020). Nevertheless, one can find a huge lack of parity between financial integration in theory and in implementation. For instance, in DEs particularly, in Latin America in the late 1970s and early 1980s were found it hard to control the movement of capital outflows mainly in times of crisis with considerable controls. On contrary, several DEs, had not prominent controls, however, they are reported least capital mobility.

As discussed earlier for more in depth analysis we divide our sample period into two parts i.e. pre and post crisis period. The empirical findings presented in Table 5.4 and 5.5 are based on the pre and post crisis period respectively. To sum up the empirical findings indicate that the both push and pull factors are important determinants of NCF. However, there is considerable variation in terms of magnitude and significance across the two periods. These differences of the push and pull factors may be associated to the policy responses of the DEs after the GFC (2007-08).

Table 5.4: Quantile Regression Estimates for Net Capital Flows(Pre-Crisis Period)

Variables	(1) OLS	(2) Fixed Effects	(3) 10^{th}	(4) 20^{th}	(5) 30^{th}	(6) 40^{th}	(7) 50^{th}	(8) 60^{th}	(9) 70^{th}	(10) 80^{th}	(11) 90^{th}
WGDPg	-0.807***	-0.832**	-0.818***	-0.339***	-0.279***	-0.290***	-0.559***	-0.650***	-0.563***	-0.672***	-1.264***
	(0.294)	(0.343)	(0.003)	(0.002)	(0.038)	(0.063)	(0.037)	(0.048)	(0.028)	(0.014)	(0.114)
Global interest rate	-0.536*	-0.506*	-0.894***	-0.620***	-0.507***	-0.267***	-0.166***	-0.339***	-0.507***	0.058***	-0.433***
	(0.277)	(0.281)	(0.005)	(.001)	(0.075)	(0.034)	(0.048)	(0.084)	(0.025)	(0.009)	(0.059)
WUI	-2.252***	-2.376***	-1.018***	-1.513***	-1.738***	-1.871***	-1.385***	-1.940***	-3.264***	-3.612***	-5.387***
	(0.782)	(0.833)	(0.012)	(0.011)	(0.192)	(0.145)	(0.415)	(0.145)	(0.059)	(0.018)	(0.112)
WCP	-0.001	-0.003	-0.004***	0.012***	0.018***	0.007**	0.012***	0.007***	0.014***	0.013***	0.038***
	(0.011)	(0.011)	(0.0001)	(0.0001)	(0.002)	(0.003)	(0.001)	(0.002)	(0.001)	(0.0002)	(0.005)
Regional contagion	0.021***	0.020***	0.033***	0.022***	0.020***	0.017***	0.019***	0.015***	0.017***	0.021***	0.015***
	(0.006)	(0.006)	(0.001)	(0.001)	(0.0008)	(0.001)	(0.001)	(0.001)	(0.0004)	(0.0002)	(0.002)
Domestic Interest rate	-0.062	-0.060	-0.073***	-0.038***	0.008*	0.003	0.017	0.008	-0.049***	-0.034***	-0.071***
	(0.047)	(0.057)	(0.0003)	(0.0001)	(0.004)	(0.010)	(0.012)	(0.009)	(0.005)	(0.002)	(0.014)
REER	-1.525	-0.268	-1.452***	-1.173***	-1.635***	-1.781***	-0.637***	0.098	-0.777***	-0.827***	1.143***
	(1.067)	(1.297)	(0.009)	(0.008)	(0.117)	(0.428)	(0.135)	(0.153)	(0.055)	(0.039)	(0.146)
Current Account	-0.399***	-0.343***	-0.359***	-0.434***	-0.4363***	-0.461***	-0.423***	-0.451***	-0.483***	-0.447***	-0.484***
	(0.046)	(0.055)	(0.0003)	(0.0005)	(0.004)	(0.009)	(0.008)	(0.007)	(0.010)	(0.002)	(0.009)
DGDPg	0.100*	0.103	0.085***	0.077***	0.078***	0.143***	0.158***	0.159***	0.183***	0.159***	0.116***
	(0.059)	(0.063)	(0.001)	(.0003)	(0.007)	(0.009)	(0.006)	(0.005)	(0.002)	(0.003)	(0.012)
ERR	-0.507	-0.0890*	0.251***	0.241***	-0.162***	-0.510***	-0.689***	-0.782***	-0.622***	-0.922***	-0.0244
	(0.387)	(0.479)	(0.005)	(.003)	(0.032)	(0.102)	(0.062)	(0.036)	(0.033)	(0.007)	(0.122)
KAOPEN	1.232	0.784	2.388***	0.937***	1.137***	0.905***	0.633***	1.808***	1.593***	2.504***	3.216***
	(0.972)	(1.230)	(0.008)	(0.005)	(0.067)	(.094)	(0.159)	(0.115)	(0.083)	(0.032)	(0.202)
IQ	0.185	-0.478	1.291***	0.694***	0.485***	0.640***	0.730***	0.536***	0.152*	0.742***	1.280***
	(0.415)	(0.500)	(0.003)	(0.003)	(0.031)	(0.082)	(0.079)	(0.047)	(0.083)	(0.013)	(0.071)
RGDP per capita	0.673	1.575	0.184***	0.077***	-0.115***	-0.004	-0.045**	-0.049	0.452***	0.364***	1.328***
	(0.429)	(2.781)	(0.003)	(0.002)	(0.022)	(0.043)	(0.022)	(0.045)	(0.037)	(0.010)	(0.056)
Observations	486	486	486	486	486	486	486	486	486	486	486

*Note: Standard errors are in parentheses *** p<.01, ** p<.05, * p<.10*

Table 5.5: Quantile Regression Estimates for Net Capital Flows (Post-Crisis Period)

	(1) OLS	(2) Fixed Effects	(3) 10^{th}	(4) 20^{th}	(5) 30^{th}	(6) 40^{th}	(7) 50^{th}	(8) 60^{th}	(9) 70^{th}	(10) 80^{th}	(11) 90^{th}
WGDPg	0.087	0.108	0.123***	-0.094	-0.005	0.137***	0.124	0.154***	0.257***	-0.006	-0.012
	(0.135)	(0.137)	(0.007)	(0.067)	(0.013)	(0.013)	(0.081)	(0.023)	(0.002)	(0.026)	(0.018)
Global interest rate	-0.132	0.097	-0.940***	0.161	-0.505***	-0.082**	1.350*	-0.567***	-0.757***	-0.181**	-0.258*
	(0.681)	(0.676)	(0.051)	(0.758)	(0.093)	(0.034)	(0.706)	(0.072)	(0.018)	(0.091)	(0.153)
WUI	-2.296**	-1.770*	-1.668***	-1.676**	-1.937***	-1.985***	-3.783***	-2.264***	-2.712***	-3.091***	-3.913***
	(1.005)	(1.029)	(0.031)	(0.692)	(0.082)	(0.096)	(0.391)	(0.178)	(0.017)	(0.039)	(0.261)
WCP	-0.002	-0.003	-0.006***	0.001	0.0001	-0.002*	-0.016*	0.005***	0.001***	0.002***	0.008***
	(0.004)	(0.005)	(0.0003)	(0.002)	(0.0005)	(0.001)	(0.009)	(0.001)	(.0001)	(0.0003)	(0.001)
Regional contagion	0.155***	0.105***	0.241***	0.228***	0.198***	0.221***	0.132**	0.132***	0.108***	0.149***	0.067***
	(0.033)	(0.035)	(0.002)	(0.011)	(0.004)	(0.002)	(0.056)	(0.003)	(0.001)	(0.002)	(0.009)
Domestic Interest rate	0.109	0.210	0.1306***	0.077***	0.085***	0.046***	0.078***	0.037***	0.035***	0.012***	-0.110***
	(0.092)	(0.140)	(0.002)	(0.025)	(0.008)	(0.004)	(0.009)	(0.009)	(0.001)	(0.004)	(0.007)
REER	-1.765	-2.718	-2.403***	-0.307	-0.247	-2.634***	-1.957***	-0.109	1.892***	4.250***	5.183***
	(1.958)	(2.808)	(0.194)	(0.718)	(0.245)	(0.207)	(0.400)	(0.135)	(0.022)	(0.136)	(0.283)
Current Account	-0.295***	-0.144***	-0.431***	-0.428***	-0.454***	-0.366***	-0.341***	-0.428***	-0.397***	-0.392***	-0.429***
	(0.037)	(0.049)	(0.002)	(0.012)	(0.003)	(0.007)	(0.018)	(0.005)	(0.001)	(0.002)	(0.002)
DGDPg	0.021	0.010	0.064***	0.049***	0.040***	0.022***	0.010*	0.085***	0.076***	-0.002**	-0.019***
	(0.021)	(0.021)	(0.0001)	(0.004)	(0.001)	(0.001)	(0.006)	(0.002)	(0.0004)	(0.001)	(0.003)
ERR	-0.010	0.038	0.463***	0.709***	0.626***	-0.283***	-0.628***	-0.205***	-0.411***	-0.560***	-0.543***
	(0.392)	(0.940)	(0.007)	(0.066)	(0.030)	(0.014)	(0.215)	(0.053)	(0.003)	(0.018)	(0.055)
KAOPEN	-0.019	-4.631**	-2.267***	-0.239	0.236**	0.221***	0.519**	0.540***	-.0227***	-0.724***	-1.175***
	(0.917)	(1.973)	(0.025)	(0.175)	(0.092)	(0.071)	(0.261)	(0.090)	(0.005)	(0.046)	(0.096)
IQ	1.715***	1.656	2.198***	1.432***	0.695***	0.916***	0.963***	1.139***	1.401***	1.579***	0.769***
	(0.652)	(1.142)	(0.068)	(0.170)	(0.052)	(0.024)	(0.155)	(0.047)	(0.003)	(0.027)	(0.0375)
RGDP per capita	-1.087***	-6.608***	-0.127***	-0.535***	-0.563***	-0.566***	-0.327***	-0.336***	-0.320***	-0.512***	-0.740***
	(0.374)	(2.517)	(0.009)	(0.065)	(0.053)	(0.006)	(0.072)	(0.036)	(0.004)	(0.011)	(0.016)
Observations	290	290	290	290	290	290	290	290	290	290	290

*Note: Standard errors are in parentheses *** p<.01, ** p<.05, * p<.10*

5.4 The Determinants of Episodes

In this section, we empirically investigate the determinants of each episode. We estimate Equations (4.7), (4.8), (4.9), and (4.10) for each episode using fixed-effects probit model (FEPB) and Clog–log regression analysis. Table 5.6 presents the empirical findings based on the FEPB estimations of Equation (4.7).

In Table 5.6 we report the empirical findings on the determinants of surge occurrences, their average partial effects, and their magnitude analysis. Columns (1)-(4) show the coefficients of surge occurrence and Columns (5)-(8) present the average partial (marginal) effects while the Columns (9)-(12) present the coefficients of the variables associated with the magnitude of the surge. Since many of the country-specific factors change slowly, therefore, we utilized one-year lagged values of the pull factors to address the endogeneity issue (Imran & Rashid, 2022).

FEPB regression results show that the global factors such as global growth rate and global commodity prices have no significant impact on surge occurrence. However, the global interest rate is negatively linked with the surge occurrence. Similarly, WUI is a negative and significantly associated with surge occurrence. It implies that a one-point increase in WUI is connected with a 0.76% decrease in the likelihood of surge as shows in column (4).

Table 5.6: Surge Panel Probit Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Occurrence				Average Partial Effects				Magnitude			
	Surge	Surge	Surge	Surge	Surge	Surge	Surge	Surge	Surge	Surge	Surge	Surge
WGDPg	-0.001	-0.009	0.093	0.059	-0.0002	-0.002	. 0.093	0.011	-0.0001	0.0002	0.011	0.011
	(0.041)	(0.044)	(0.057)	(0.057)	(0.008)	(0.008)	(0.057)	(0.010)	(0.008)	(0.009)	(0.010)	(0.010)
Global interest rate	-0.127*	-0.190**	-0.281***	-0.280***	-0.024**	-0.036**	-0 281***	-0.051***	-0.025**	-0.034**	-0.054***	-0.056***
	(0.065)	(0.079)	(0.097)	(0.099)	(0.012)	(0.015)	(0.097)	(0.018)	(0.012)	(0.015)	(0.018)	(0.018)
WUI	-0.199	-0.433***	-0.340*	-0.769***	-0.037*	-0.082**	-0.340	-0.139**	-0.039*	-0.055**	-0.057	-0.073**
	(0.126)	(0.161)	(0.204)	(0.250)	(0.024)	(0.031)	(0.204)	(0.046)	(0.024)	(0.028)	(0.036)	(0.036)
WCP	0.0003	-0.0001	-0.001	0.0001	0.0002	-0.000	-0.001	-0.0001	0.0001	-0.0001	-0.0002	-0.0001
	(0.001)	(0.001)	(0.002)	(0.002)	(0.0001)	(0.0003)	(0.002)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Regional contagion	0.001	0.0003	-0.001	-0.001	0.0001	0.0001	-0.001	-0.0002	0.0001	0.0001	-0.0001	0.0001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.0003)	(0.001)	(0.003)	(0.0005)	(0.0003)	(0.0004)	(0.0004)	(0.0004)
Domestic Interest rate		-0.005	0.013	0.018		-0.001	0.013	0.003		0.000	0.002	0.003
		(0.006)	(0.015)	(0.016)		(0.001)	(0.015)	(0.003)		(0.000)	(0.002)	(0.002)
REER		0.509*	0.827*	0.732		0.096	0.827	0.133		0.017	0.013	0.043
		(0.300)	(0.443)	(0.459)		(0.057)	(0.443)	(0.084)		(0.044)	(0.055)	(0.062)
Current Account		-0.038***	-0.065***	-0.071***		-0.007***	-0.065***	-0.013***		-0.006***	-0.007***	-0.010***
		(.008)	(0.016)	(0.016)		(0.002)	(0.016)	(0.003)		(0.001)	(0.002)	(0.002)
DGDPg			0.060***	0.057**			0.060*	0.010**			0.003*	0.004**
			(0.022)	(0.023)			(0.022)	(0.004)			(0.002)	(0.002)
ERR			-0.093	-0.120			-0.093	-0.022			-0.019	-0.014
			(0.117)	(0.119)			(0.117)	(0.022)			(0.016)	(0.017)
KAOPEN				-0.432				-0.078				-0.025
				(0.322)				(0.059)				(0.041)
IQ				0.139				0.025				0.017
				(0.148)				(0.027)				(0.022)
RGDP per capita				1.377***				0.250***				0.052***
				(0.433)				(0.080)				(0.018)
Constant									0.5211**	0.586*	0.624	0.140
									(0.232)	(0.315)	(0.447)	(0.476)
Observations	1247	1024	779	777					1363	1113	858	852
Pseudo R^2	0.042	0.085	0.130	0.151								

*Note: Standard errors are in parentheses- *** p<.01, ** p<.05, * p<.10*

One possible explanation of the negative association can be that when the uncertainty increases the capital flows to DEs tend to decreases because the DEs are considered risky destination for the investors. The findings are consistent with the Ghosh et al. (2014) and Sahu (2020b). Among the pull factors, the REER is positively related with the surge occurrence while the current account is negatively associated with surge occurrence in all the specifications. DGDPg is positively connected with the surge occurrence see columns (3) and (4).

Similarly, RGDP per captia is also positively associated with surge occurrence. Moreover, among the push factors, the global interest rate and WUI are associated with the magnitude of the flows during the surge in DEs while among the internal factors, current account, DGDPg and GDP per captia are correlated to the magnitude. Table 5.7 reports the empirical results based on the FEPB estimations of Equation (4.8).

We report the estimated coefficients of the factors that determine the stop. We also report their marginal effects and their covariates of the magnitude. Columns (1)-(4) show the coefficients of stop occurrence and the columns (5)-(8) present the marginal effects while the columns (9)-(12) present the coefficients of the variables associated with the magnitude of the stop. Pseudo $R^2$is also reported for each specification in Table 5.7. As suggested by the previous literature, we introduce the lagged values of all the explanatory variables in order to address the endogeneity issue except push factors (Ghosh et al., 2014).

Among the push factors, we find that the stop episode is negatively associated with WGDPg while the global interest rate and regional contagion are positively associated with it. However, the regional contagion variable is positive and highly significant with the surge occurrence across all the specifications. On the other hand, among the pull factors, the domestic current account is only associated with the stop occurrence. Interestingly, the most of the domestic factors namely domestic interest rate, current account to GDP, KAOPEN, IQ and GDP per capita are significantly correlated with magnitude of surge.

Table 5.7: Stop Panel Probit Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Occurrence				Average Partial Effects				Magnitude			
	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
WGDPg	-0.081**	-0.050	-0.049	-0.038*	-0.024**	-0.015	-0.014	-0.011*	-0.024**	-0.012	-0.012	-0.014
	(0.035)	(0.037)	(0.044)	(0.045)	(0.010)	(0.011)	(0.013)	(0.013)	(0.011)	(0.012)	(0.013)	(0.013)
Global interest rate	0.056	0.085	0.132*	0.125*	0.017	0.025	0.038*	0.036*	0.0176	0.029	0.043*	0.041*
	(0.053)	(0.064)	(0.074)	(0.075)	(0.016)	(0.019)	(0.022)	(0.022)	(0.017)	(0.020)	(0.024)	(0.023)
WUI	-0.175*	0.063	0.112	0.271	-0.052*	0.019	0.033	0.078	-0.055*	0.034	0.035	0.067
	(0.103)	(0.123)	(0.164)	(0.187)	(0.031)	(0.037)	(0.048)	(0.054)	(0.032)	(0.038)	(0.048)	(0.048)
WCP	-0.0002	-0.0003	-0.0002	-0.001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.0003)	(0.0003)	(0.0004)	(0.0004)	(0.0003)	(0.0004)	(0.0004)	(0.0004)
Regional contagion	0.026***	0.021***	0.050***	0.050***	0.008***	0.006***	0.014***	0.015***	0.002***	0.002***	0.002***	0.0013**
	(0.006)	(0.006)	(0.012)	(0.012)	(0.002)	(0.002)	(0.004)	(0.004)	(0.001)	(0.0005)	(0.001)	(0.001)
Domestic Interest rate		0.001	-0.006	-0.007		0.0001	-0.002	-0.002		0.0001	-0.007**	-0.006*
		(0.0004)	(0.012)	(0.013)		(0.0001)	(0.004)	(0.004)		(0.000)	(0.003)	(0.0034)
REER		-0.005	0.061	-0.029		-0.001	0.018	-0.008		-0.106*	-0.211***	-0.161*
		(0.235)	(0.333)	(0.362)		(0.070)	(0.097)	(0.104)		(0.064)	(0.075)	(0.085)
Current Account		-0.013*	-0.021*	-0.017*		-0.004*	-0.006*	-0.005*		-0.009***	-0.022***	-0.013***
		(0.007)	(0.012)	(0.013)		(0.002)	(0.004)	(0.004)		(0.002)	(0.002)	(0.003)
DGDPg			0.010	0.022			0.003	0.006			0.004	0.002
			(0.011)	(0.018)			(0.003)	(0.005)			(0.003)	(0.003)
ERR			0.050	0.079			0.015	0.023			0.021	0.011
			(0.101)	(0.107)			(0.029)	(0.031)			(0.023)	(0.025)
KAOPEN				0.189				0.054				0.023
				(0.257)				(0.074)				(0.061)
IQ				-0.023				-0.007				0.072**
				(0.118)				(0.034)				(0.031)
RGDP per capita				-0.527				-0.152				-0.147***
				(0.327)				(0.094)				(0.029)
Constant									1.002***	0.605	1.060*	1.435**
									(0.321)	(0.433)	(0.608)	(0.647)
Observations	1334	1085	834	812					1363	1113	858	852
Pseudo R^2	0 216	0.216	0.228	0.215								

*Note: Standard errors are in parentheses- *** p<.01, ** p<.05, * p< 10*

In Table 5.8, we document the estimated coefficients based on equation (4.9) that determine the flight episodes. These findings are based on FEPB. We also report their marginal effects and their covariates of the magnitude during the capital flows. Columns (1)-(4) show the coefficients of flight occurrence and the columns (5)-(8) represent the marginal effects, while, the columns (9)-(12) present the coefficients of the variables associated with the magnitude of the flight. All the independent variables enter with their first lagged in order to address the endogeneity issue except push factors.

The findings suggest that the push factor, such as global growth rate, is positively associated with flight occurrence in our full specification. WUI is a negatively associated with flight occurrence in the first specification only. The regional contagion is positive and significantly associated with the flight occurrence across all the specifications. Among the pull factors, the domestic interest rate and current account is positively associated with flight occurrence. However, DGDPg, IQ and GDP per capita enter remained insignificant in all the specifications.

In Table 5.9, we present the estimated coefficients of the covariates of the retrenchment episodes for the sample countries based on the FEPB regression. We also report their marginal effects and their covariates of the magnitude during the capital flows. Columns (1)-(4) show the coefficients of retrenchment occurrence with different specifications. On the other hand, columns (5)-(8) represents the marginal effects, while, the columns (9)-(12) presents the coefficients of the variables associated with the magnitude of the retrenchment.

Table 5.8: Flight Panel Probit Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Occurrence				Average Partial Effects				Magnitude			
	Flight	Flight	Flight	Flight	Flight	Flight	Flight	Flight	Flight	Flight	Flight	Flight
WGDPg	0.133**	0.137**	0.116	0.098*	0.015**	0.016**	0.013	0.011*	0.013**	0.010	0.009	0.009
	(0.061)	(0.067)	(0.079)	(0.071)	(0.007)	(0.008)	(0.009)	(0.007)	(0.006)	(0.007)	(0.007)	(0.007)
Global interest rate	-0.010	0.028	0.057	0.101	-0.001	0.003	0.006	0.011	0.0003	0.005	0.010	0.014
	(0.082)	(0.092)	(0.107)	(0.111)	(0.009)	(0.011)	(0.012)	(0.012)	(0.009)	(0.012)	(0.013)	(0.013)
WUI	-0.284*	-0.226	-0.244	-0.410	-0.031*	-0.027	-0.027	-0.045	-0.031*	-0.046**	-0.032	-0.029
	(0.159)	(0.198)	(0.245)	(0.276)	(0.018)	(0.024)	(0.028)	(0.031)	(0.018)	(0.022)	(0.026)	(0.027)
WCP	0.0001	0.0001	0.0001	0.0001	0.000	0.0000	0.000	0.0000	0.001	0.001	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(.0002)
Regional contagion	-0.003*	-0.004**	-0.004**	-0.004**	-0.0003*	-0.0004**	-0.0004**	-0.0004**	-0.0008***	-0.001**	-0.001**	-0.001**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Domestic Interest rate		0.024***	0.023	0.027***		0.003***	0.003	0.003		0.001	0.002	0.002
		(0.009)	(0.019)	(0.009)		(0.001)	(0.002)	(0.002)		(0.000)	(0.002)	(0.002)
REER		-0.005	0.111	0.097		-0.001	0.012	0.011		-0.010	-0.020	-0.011
		(0.322)	(0.408)	(0.436)		(0.038)	(0.046)	(0.048)		(0.035)	(0.040)	(0.045)
Current Account		0.026***	0.037***	0.035**		0.003***	0.004***	0.004**		0.004***	0.006***	0.006***
		(0.009)	(0.014)	(0.014)		(0.001)	(0.002)	(0.002)		(0.001)	(0.001)	(0.001)
DGDPg			-0.005	-0.007			-0.001	-0.0007			-0.001	-0.002
			(0.011)	(0.012)			(0.001)	(0.001)			(0.001)	(0.001)
ERR			0.073	0.009			0.008	0.001			-0.011	-0.014
			(0.135)	(0.143)			(0.015)	(0.016)			(0.012)	(0.012)
KAOPEN				0.211				0.023				0.032
				(0.371)				(0.041)				(0.030)
IQ				-0.036				-0.004				-0.013
				(0.170)				(0.019)				(0.016)
RGDP per capita				0.718				0.078				-0.008
				(0.482)				(0.054)				(0.013)
Constant									0.359**	0.579**	0.492	0.532
									(0.174)	(0.247)	(0.327)	(0.347)
Observations	1102	909	680	655					1363	1113	858	852
Pseudo R^2	0.087	0.137	0.103	0.109								

*Note: Standard errors are in parentheses- *** p<.01, ** p<.05, * p<.10*

Among the global factors, we observe that the global growth rate is positively associated with retrenchment in the first two specifications while turns insignificant in the full specification. WUI is positively associated with retrenchment episodes in all the specifications. In addition, the WUI is also positively related with magnitude of the capital flows when the retrenchment occurs. Similarly, WCP is negatively associated with the retrenchment episodes in full specification see column (4). However, the regional contagion is positively associated with the flight occurrence.

The pull factors, such as the interest rate and current account are negatively associated with the retrenchment occurrence. Moreover, the domestic factor such as current account and GDP per captia are positively associated, while, the IQ is negatively associated with the magnitude of the capital outflows see column (12). In addition to that, in Tables 5.6, 5.7, 5.8, and 5.9 we also report the Pseudo $R^2$for each specification. However, it is important to note that unlike OLS - R^2, log-likelihood-based pseudo- R^2 do not indicate the percent of explained variance but relatively the improvement in model likelihood over a null mode (Hemmert et al., 2016).The Pseudo-R^2 which make comparison of the log likelihood of the full model with that of a constant only model (Ghosh et al., 2014).

Table 5.9: Retrenchment Panel Probit Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Retrenchment Occurrence				Average Partial Effects				Magnitude			
	Ret	Ret	Ret	Ret	Ret	Ret	Ret	Ret	Ret	Ret	Ret	Ret
WGDPg	0.119**	0.159**	0.118	0.121	0.015**	0.019**	0.011	0.011	0.015**	0.013*	0.008	0.008
	(0.057)	(0.066)	(.085)	(0.086)	(0.009)	(0.011)	(0.011)	(0.011)	(0.007)	(0.007)	(0.008)	(0.007)
Global interest rate	0.064	0.118	0.184	0.134	0.008	0.014	0.017	0.013	0.007	0.011	0.014	0.010
	(0.087)	(0.102)	(0.143)	(0.146)	(0.012)	(0.014)	(0.018)	(0.016)	(0.011)	(0.013)	(0.013)	(0.013)
WUI	0.481***	0.498**	0.690**	0.773**	0.061***	0.060**	0.065**	0.072**	0.059***	0.051**	0.077***	0.054*
	(0.163)	(0.194)	(0.285)	(0.312)	(0.031)	(0.034)	(0.051)	(0.057)	(0.020)	(0.024)	(0.028)	(0.028)
WCP	-0.0003	-0.002	-0.001	-0.0012*	-0.000	-0.0002	-0.0001	-0.0001*	0.000	-0.0002	-0.0001	0.0002
	(0.002)	(0.002)	(0.002)	(0.0001)	(0.0002)	(0.0003)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0001)
Regional contagion	-0.005**	-0.004*	-0.002	-0.004*	-0.001**	-0.001*	-0.0002	-0.0002	-0.001***	-0.001***	-0.001**	-0.001*
	(0.003)	(0.003)	(0.003)	(0.002)	(0.0004)	(0.0004)	(0.0003)	(0.0003)	(.0003)	(.0003)	(0.0003)	(0.0003)
Domestic Interest rate		0.001	-0.049	-0.060*		0.0002	-0.005	-0.006*		0.000	0.001	0.001
		(0.004)	(0.033)	(0.036)		(0.001)	(0.004)	(0.005)		(0.000)	(0.002)	(0.002)
REER		0.029	0.208	0.208		0.004	0.020	0.019		0.035	0.087*	0.058
		(0.259)	(0.377)	(0.399)		(0.031)	(0.038)	(0.040)		(0.040)	(0.047)	(0.05)
Current Account		0.022***	0.030**	0.033**		0.003***	0.003**	0.003**		0.009***	0.013***	0.010***
		(0.007)	(0.014)	(0.015)		(0.001)	(0.002)	(0.003)		(0.001)	(0.002)	(0.002)
DGDPg			-0.003	-0.003			-0.0002	-0.0003			-0.001	-0.001
			(0.008)	(0.008)			(0.0008)	(0.0008)			(0.001)	(0.001)
ERR			0.242	0.260			0.023	0.024			0.006	0.008
			(0.173)	(0.178)			(0.022)	(0.024)			(0.015)	(0.016)
KAOPEN				-0.009				-0.0008				-0.008
				(0.390)				(0.036)				(0.039)
IQ				-0.001				-0.0001				-0.043**
				(0.257)				(0.024)				(0.016)
RGDP per capita				-0.499				-0.047				0.097***
				(0.567)				(0.062)				(0.022)
Constant									-0.451**	-0.521*	-1.040***	-1.298***
									(0.201)	(0.270)	(0.361)	(0.382)
Observations	609	498	309	305					1363	1113	858	852
Pseudo R^2	0.177	0.214	0.288	0.291								

*Note: Standard errors are in parentheses- *** p<.01, ** p<.05, * p<.10*

5.5 Robustness Check

We perform robustness check on the main findings therefore, we estimate our baseline model while using clog-log regression as reported in Tables 5.10, 5.11 and 5.12 for full sample period, pre-crisis period and post-crisis period, respectively. Further, we also report coefficients of average marginal effects (AME) as shown in Tables 5.10, 5.11, and 5.12.

The AME calculate the marginal effects for all the observed values of the explanatory variables and then average it (Sahu, 2020b). For example, AME of WUI (which reflects the average change in probability of surge when world uncertainty rises) indicates that the probability of NCF surge decreases by 13.1% and 25% when the economy experiences increase in world uncertainty in pre and post crisis period, respectively(see, Tables 5.11 and 5.12).

The Clog–log regression results for the determinants of episodes are presented in Tables 5.10, 5.11 and 5.12. As discussed earlier we also estimate the determinants of the episodes for full sample period, pre crisis period and post crisis period. We incorporate the lagged values of the independent variables in order to address the endogeneity issue except push factors. Moreover, the standard errors are clustered at the country level to take into account the possibility of correlation among the error terms.

Table 5.10: Clog-log Regression for Full Sample

					Average Marginal Effects			
	Surge	Stop	Flight	Ret	Surge	Stop	Flight	Ret
WGDPg	0.082	-0.038	0.102**	0.106**	0.016	-0.012	0.012**	0.013**
	(0.061)	(0.043)	(0.052)	(0.053)	(0.012)	(0.013)	(0.006)	(0.007)
Global interest rate	-0.259***	0.115**	0.076	0.101	-0.052***	0.036**	0.009	0.012
	(0.096)	(0.058)	(0.101)	(0.079)	(0.019)	(0.018)	(0.012)	(0.009)
WUI	-0.326**	0.234*	-0.207	0.422*	-0.065**	0.073*	-0.024	0.050*
	(0.130)	(0.141)	(0.210)	(0.236)	(0.027)	(0.044)	(0.025)	(0.028)
WCP	-0.001	-0.001	-0.000	-0.001	-0.000	-0.000	-0.000	-0.000
	(0.002)	(0.001)	(0.002)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Regional contagion	-0.000	0.051***	-0.003	-0.003	-0.000	0.016***	-0.000	-0.000
	(0.001)	(0.012)	(0.002)	(0.003)	(0.000)	(0.004)	(0.000)	(0.000)
Domestic Interest rate	0.008	-0.016	0.021	0.027*	0.002	-0.005	0.002	0.003*
	(0.013)	(0.013)	(0.015)	(0.014)	(0.003)	(0.004)	(0.002)	(0.002)
REER	0.229	-0.561**	0.087	0.652*	0.046	-0.175**	0.010	0.078*
	(0.339)	(0.254)	(0.368)	(0.333)	(0.068)	(0.079)	(0.043)	(0.040)
Current Account	-0.060***	-0.051***	0.036***	0.058***	-0.012***	-0.016***	0.004***	0.007***
	(0.012)	(0.013)	(0.010)	(0.017)	(0.003)	(0.004)	(0.001)	(0.002)
DGDPg	0.025***	0.009	-0.008	-0.005	0.005***	0.003	-0.001	-0.001
	(0.009)	(0.009)	(0.009)	(0.008)	(0.002)	(0.003)	(0.001)	(0.001)
ERR	-0.060	0.081	-0.140*	0.016	-0.012	0.025	-0.016*	0.002
	(0.098)	(0.092)	(0.080)	(0.141)	(0.020)	(0.028)	(0.009)	(0.017)
KAOPEN	-0.171	0.053	0.204	0.533	-0.034	0.017	0.024	0.064
	(0.199)	(0.169)	(0.160)	(0.336)	(0.039)	(0.053)	(0.019)	(0.041)
IQ	0.088	0.233*	-0.104	-0.468**	0.018	0.073*	-0.012	-0.056**
	(0.145)	(0.120)	(0.114)	(0.215)	(0.029)	(0.037)	(0.013)	(0.026)
RGDP per capita	0.233**	-0.424***	-0.072	0.693***	0.047**	-0.132***	-0.008	0.083***
	(0.098)	(0.099)	(0.097)	(0.147)	(0.020)	(0.030)	(0.011)	(0.018)
Constant	-1.471	2.532	1.030	-12.864***				
	(2.228)	(1.864)	(2.729)	(2.955)				
Regional Dummies	Yes	Yes	Yes	Yes				
Observations	852	852	852	796				
Country	38	38	38	35				
Pseudo R^2	0.088	0.202	0.103	0.387				
Wald chi2 (p-value)	0.000	0.000	0.000	0.000				
Percent correctly predicted	86.38	71.95	93.19	90.45				
Sensitivity	2.586	81.32	1.754	34.78				
Specificity	99.59	60.37	99.75	97.73				

*Note Standard errors are in parentheses- ***p<.01, **p< 05, *p<.10*

Among the global push factors, WGDPg is significant and positively associated with the incidence of flight and retrenchment episodes for the full sample period. Similarly, the global interest rate is negatively correlated with the incidence of surge and positively associated with stop as shown in Table 5.10. Similarly, when the global interest rate increases, the probability of NCF surge decreases by the 3.6% and probability of stop increases by the 5.5% in post-crisis period as shown in Table 5.11.

However, in case of pre-crisis period, WGDPg is positively connected with the retrenchment episode.WUI is a negatively connected with surge episode and positively associated with stop and retrenchment episodes for the full sample period (Table 5.11). The possible explanation can be that foreign investors are more concern regarding the uncertainty at the time of making investment decisions. It has a more deleterious effect on the capital inflows in the DEs. These results are consistent with the Forbes and Warnock (2012). Generally speaking, these findings are reasonable since raise in the world uncertainty is negatively associated with capital flows. This finding reminds that WUI is one of the important determinants for NCF surges in the host country.

Table 5.11: Clog-log Regression for Pre-Crisis Period

					Average Marginal Effects			
	Surge	Stop	Flight	Ret	Surge	Stop	Flight	Ret
WGDPg	-0.061	-0.120	0.069	0.247**	-0.010	-0.036	0.009	0.028**
	(0.116)	(0.096)	(0.108)	(0.116)	(0.020)	(0.028)	(0.014)	(0.015)
Global interest rate	-0.213*	0.184**	0.071	0.077	-0.036*	0.055**	0.010	0.009
	(0.113)	(0.073)	(0.102)	(0.073)	(0.018)	(0.021)	(0.013)	(0.008)
WUI	-0.776**	-0.041	-0.199	0.909**	-0.131**	-0.012	-0.027	0.104**
	(0.308)	(0.266)	(0.287)	(0.371)	(0.054)	(0.079)	(0.038)	(0.045)
WCP	0.002	-0.002	0.006	-0.008*	0.000	-0.001	0.001	-0.001*
	(0.005)	(0.004)	(0.005)	(0.005)	(0.001)	(0.001)	(0.001)	(0.001)
Regional contagion	-0.000	0.074***	-0.003	-0.002	-0.000	0.022***	-0.000	-0.000
	(0.001)	(0.016)	(0.003)	(0.003)	(0.000)	(0.005)	(0.000)	(0.000)
Domestic Interest rate	0.022	-0.026*	0.035**	0.029	0.004	-0.008*	0.005**	0.003
	(0.016)	(0.016)	(0.015)	(0.019)	(0.003)	(0.005)	(0.002)	(0.002)
REER	0.109	-0.322	-0.332	0.359	0.018	-0.096	-0.044	0.041
	(0.469)	(0.300)	(0.510)	(0.321)	(0.079)	(0.090)	(0.068)	(0.037)
Current Account	-0.052***	-0.039**	0.033*	0.062***	-0.009***	-0.011**	0.004*	0.007
	(0.016)	(0.018)	(0.018)	(0.018)	(0.003)	(0.005)	(0.002)	(0.002)
DGDPg	0.048**	0.022	-0.016	-0.013	0.008**	0.007	-0.002	-0.002
	(0.021)	(0.020)	(0.026)	(0.031)	(0.004)	(0.006)	(0.003)	(0.004)
ERR	-0.134	0.122	-0.141	0.049	-0.023	0.036	-0.019	0.006
	(0.145)	(0.115)	(0.142)	(0.151)	(0.025)	(0.034)	(0.019)	(0.017)
KAOPEN	-0.018	-0.078	0.036	0.710	-0.003	-0.023	0.005	0.081
	(0.288)	(0.233)	(0.277)	(0.451)	(0.048)	(0.069)	(0.037)	(0.054)
IQ	0.127	0.233	-0.045	-0.327	0.021	0.069	-0.006	-0.037
	(0.188)	(0.152)	(0.133)	(0.218)	(0.032)	(0.046)	(0.018)	(0.026)
RGDP per capita	0.256*	-0.492***	-0.105	0.591***	0.043*	-0.146***	-0.014	0.068***
	(0.139)	(0.121)	(0.140)	(0.173)	(0.024)	(0.035)	(0.018)	(0.020)
Constant	3.041	5.054	3.003	-16.460***				
	(4.146)	(3.243)	(3.783)	(4.304)				
Observations	487	487	487	461				
Country	38	38	38	35				
Pseudo R^2	0.147	0.237	0.100	0.384				
Wald chi2 (p-value)	0.000	0.000	0.000	0.000				
Percent correctly predicted	87.89	69.82	88.99	90.46				
Sensitivity	1.754	76.23	2.564	32.00				
Specificity	99.30	62.16	99.78	97.57				

*Note: Standard errors are in parentheses- *** p<.01, ** p<.05, * p<.10*

Similarly, the regional contagion for NCF is positively associated with the stop episodes only. Our empirical findings suggest that the domestic interest rate is positively associated with the incidence of retrenchment episode. It shows that higher interest rate reflects the large capital flows into the developing countries. Similarly, REER is negatively linked with the stop episode and positively connected with the retrenchment. However, the current account is highly significant and negatively associated with the flight and retrenchment.

Similarly, DGDPg also increases the likelihood of surge episode in developing countries. Significant and positive association with the probability of surge episode shows that the countries with higher economic growth may likely to experience the surge. In other words surge inflow increases during expansion in the economy.

As Asiedu (2002) argues that in order to reduce the transaction costs, foreign investors favor liberalized markets. Further, these findings support our previous results. For example, DGDPg is highly statistically significant in terms of magnitude at higher quantiles with large NCF as presented in Table 5.4. These findings are in line with the earlier studies such as Reinhardt and Dell' Erba (2013), and Hwang et al. (2017).Further, we find no role of global commodity prices and KAOPEN in explaining any type of NCF episodes. Surprisingly, as expected IQ is positively correlated to the probability of stop but negatively related to retrenchment episodes.

Table 5.12: Clog-log Regression Post - Crisis Period

					Average Marginal Effects			
	Surge	Stop	Flight	Ret	Surge	Stop	Flight	Ret
WGDPg	-0.066	-0.014	0.237**	0.094	0.028	-0.001	0.039**	0.022
	(0.122)	(0.053)	(0.114)	(0.082)	(0.018)	(0.020)	(0.024)	(0.010)
Global interest rate	-0.204*	-0.091	-0.475	0.353	-0.007*	-0.087	-0.017	0.039
	(0.116)	(0.266)	(0.572)	(0.368)	(0.093)	(0.098)	(0.044)	(0.041)
WUI	-0.732**	1.126***	-0.817	0.187	-0.251**	0.102***	0.011	-0.041
	(0.329)	(0.386)	(1.005)	(0.592)	(0.125)	(0.119)	(0.080)	(0.070)
WCP	0.001	-0.000	-0.003	0.000	0.000	-0.001	-0.000	-0.000
	(0.006)	(0.001)	(0.003)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
Regional contagion	-0.000	0.019	-0.037***	-0.033*	0.001	0.009	-0.004***	-0.002*
	(0.001)	(0.016)	(0.013)	(0.018)	(0.004)	(0.005)	(0.001)	(0.003)
Domestic Interest rate	0.022	-0.022	-0.168***	-0.026	-0.000	0.000	-0.022***	-0.004
	(0.017)	(0.026)	(0.059)	(0.035)	(0.008)	(0.008)	(0.007)	(0.004)
REER	0.111	-1.510*	3.379***	2.161*	0.010	-0.436*	0.390***	0.172*
	(0.473)	(0.847)	(1.293)	(1.161)	(0.174)	(0.257)	(0.089)	(0.142)
Current Account	-0.042**	-0.045***	0.038**	0.075**	-0.012**	-0.017***	-0.007**	0.016**
	(0.017)	(0.014)	(0.018)	(0.031)	(0.005)	(0.004)	(0.003)	(0.003)
DGDPg	0.044*	0.006	0.000	-0.002	0.004*	0.003	0.001	-0.001
	(0.023)	(0.005)	(0.004)	(0.004)	(0.002)	(0.002)	(0.001)	(0.000)
ERR	-0.178	0.137	-0.245	0.140	-0.015	0.036	-0.001	0.009
	(0.152)	(0.120)	(0.150)	(0.194)	(0.027)	(0.038)	(0.015)	(0.016)
KAOPEN	-0.078	0.170	0.694	0.728	-0.084	0.065	0.059	0.054
	(0.300)	(0.259)	(0.483)	(0.540)	(0.063)	(0.080)	(0.047)	(0.060)
IQ	0.130	0.347	-0.109	-1.056***	0.007	0.116	-0.049	-0.052***
	(0.194)	(0.213)	(0.350)	(0.404)	(0.043)	(0.063)	(0.034)	(0.044)
RGDP per capita	0.168	-0.453***	0.071	1.313***	0.023	-0.149***	0.042	0.112***
	(0.136)	(0.128)	(0.178)	(0.257)	(0.033)	(0.037)	(0.022)	(0.023)
Constant	3.519	-2.738	-9.789	-20.938**				
	(4.291)	(5.365)	(8.466)	(8.927)				
Observations	429	365	335	335				
Country	34	38	35	35				
Pseudo R^2	0.136	0.233	0.322	0.523				
Wald chi^2(p-value)	0.000	0.000	0.000	0.000				
Percent correctly predicted	86.95	76.44	94.93	92.24				
Sensitivity	0.00	86.89	11.11	59.52				
Specificity	99.20	62.89	99.68	96.93				

*Note: Standard errors are in parentheses- ***p<.01, **p< 05, *p<.10*

This finding indicates that improvement in IQ leads to increase in inflows due to the better investment environment for foreign investors in host economies (Kurul & Yalta, 2017). On the other hand, GDP per capita is positively associated with surge and negatively associated with a higher probability of stop while positively associated with retrenchment episodes. One possible explanation of the negative coefficient of stop episodes can be that NCF is comparatively less productive in countries with lower level of human capital, thus, it tends to reduce net flows (Kheng et al., 2017). These findings are similar to the findings based on the panel QR results presented in Table 5.3, in which GDP per capita is positively associated with NCF for the upper quantiles.

In addition to that, we also perform variety of statistical test to validate the empirical findings. For instance, in Tables 5.10, 5.11, and 5.12 we present statistics of Pseudo-R^2, p-value based on Wald chi^2, percent of correctly predicted the model, sensitivity and specificity of the model. However, it is important to note that unlike OLS - R^2, log-likelihood-based pseudo- R^2 do not indicate the percent of explained variance but relatively the improvement in model likelihood over a null mode (Hemmert et al., 2016). All these estimates validate our empirical findings.

Further, the sensitivity of the model gives the fraction of surge episodes. However, specificity shows the fraction of non-surge observations (Ghosh et al., 2014). Further, the sensitivity of the model is ranges from 62% to 99%, in all the three estimations presented in Tables 5.10 to 5.12. Further, the percentage of the

probit correctly predicted are ranges from 70 % to 95%. These states reflect that probit model has predicted well in all the cases.

5.6 The Impact of Capital Flows on Real and Financial Sectors

The empirical findings we present in subsequent sections are based on local projections framework which is described in Chapter 4, Section 4.9. The detail discussion on the responses of NCF and episodes on the real and financial sectors are presented in Sections 5.6.2 and 5.6.3.Before presenting the results we provided a summary statistics of the variables that are used in our analysis, in Section 5.6.1.

5.6.1 Descriptive Statistics

In this section, we provide the summary statistics of the set of real and financial sectors along with the independent and control variables that are used in our analysis. Real sector is comprised on GDP growth rate, employment, and domestic savings. Similarly, the financial sector indicators are inflation, the interest rate, and DCP. The descriptive statistics presented in Table 5.13, shows the following the information of the underlying variables such as, total number of observations, mean, standard deviation, minimum and maximum value.

Table 5.13: Summary Statistics					
Variables	Obs	Mean	Std. Dev.	Min	Max
Dependent Variables					
GDP per capita (log)	1780	7.70	0.984	5.61	9.59
Gross Savings	1733	20.63	9.690	-11.47	53.21
Employment (log)	1700	4.260	1.710	0.577	8.978
Inflation	1771	21.44	68.020	-8.19	586.28
Domestic Credit to Private Sector % of GDP (DCP)	1702	32.90	29.720	0.403	166.50
Independent Variables					
Surge	1833	0.111	0.315	0	1
Stop	1833	0.571	0.495	0	1
Flight	1833	0.055	0.228	0	1
Ret	1833	0.100	0.300	0	1
Control Variables					
Institutional Quality	1,535	3.579	0.738	1.184	5.279
Age Dependency ratio	1833	73.820	18.640	36.49	112.74
Exports	1798	8.540	1.980	1.860	14.690
Import	1798	8.690	1.820	3.800	14.520
Trade Openness	1798	0.490	0.270	0.090	1.991
NEER	1092	4.830	0.828	3.010	15.150
REER	1804	4.700	0.364	2.410	6.440
Broad Money % of GDP	1678	44.04	31.68	6.540	251.61
Gross Capital Formation	1696	3.130	0.346	0.150	4.490
Human Capital (log)	1662	0.670	0.280	0.020	1.220
KAOPEN	1661	0.361	0.290	0	1.00

5.7 The Impact of NCF and Episodes on Real Sector

In this section, we illustrate the influence of NCF and each episode on the real sector indicators namely the GDP growth rate, employment and domestic investment using the LP regression as discussed in Section 4.9.1. A key research question in this perspective is how these episodes influence the employment or whether their impact is only temporary in the DEs. In this study, we tried to answer the above research question. We obtained the local projections impulse responses (hereafter LPIRFs) for NCF and also for each episode on the real sector indicators separately. LPIRFs are obtained using LP regressions and illustration is presented below.

5.7.1 The Impact NCF/Episodses on Economic Growth

In this section we discuss the impact of NCF and episodes on real GDP growth (RGDP). We obtained LPIRFs estimating Equations 4.12 to 416 for RGDP. In the literature, Romer (1990) and Grossman and Helpman (1991), document a positive and significant long-run impact of trade on economic growth. Similarly, Choong et al. (2010) and Agbloyor et al. (2014) document the importance of financial development to the economic growth amid NCF. Thus, following the literature, we use lagged values of the inflation rate, trade openness, infrastructure development and financial development as a control variables.

LPIRFs are estimated for the horizon of 10 periods as presented on horizontal axis of Figure 5.1[13]. LPIRFs are obtained for NCF as well as the response of RGDP to each episode separately. Figure 5.1 (a) shows LPIRFs for NCF. We obtained LPIRFs for NCF to make comparison of normal flows with episodes. The solid line shows LPIRFs and shaded area reflects the 90% of confidence interval. Initially, the impact of NCF on growth remains constant. However, in 2nd year it shows slightly decrease in growth followed by the little upward movement. However, particularly, in 4thyear, the growth start decreasing and the impact become bigger. This trend prolong for the rest of the years.

Figure 5.1 (b) presents the impact of surge on growth. Initially, RGDP shows no response to the surge. However, after the 2nd period RGDP starts decreasing and

[13]In this study (1-3), years referred as the short-run (4-6) years as the medium-run, and (6-10), years are considered as the long-run.

continues till 10th period. LPIRFs remain smooth as shown in Figure 5.1(b) with bold line. On contrary, the impact of stop (Figure 5.1 (c)) on RGDP for initial period is constant and starts increasing after the 1st period. The impact of stop on RGDP reaches maximum in 6thperiod and then start decreasing. However, the impact of stop on RGDP remains positive. The possible explanation of the negative impact of NCF/episodes on growth can be the limited absorptive ability of capital flows in DEs (Parasad et al., 2007).

On the other hand, the influence of flight (extreme capital outflow) on RGDP shows increasing trends after the almost 1st year till 2nd year followed by gradual decrease till 4th year. After the 4th period once again RGDP increases up to 0.4 point and become smooth after the 6th period as shown in Figure 5.1 (d). Similarly, LPIRFs for the retrenchment shows a positive trend throughout from 1st period to 10th period. Historically, trend of capital inflows/outflows in DEs show that a rise in capital flows followed by a decrease increase in capital outflows. However, these findings are attributed to less diversify domestic economy, little absorptive capacity, less developed financial markets of the DEs (Alfaro et al., 2008; Azman-Saini et al., 2010).

According to the neoclassical growth model, NCF produce positive influence on RGDP in the host economy by fulfilling the required financial constraints. Further, it also suggests that a rise in NCF often causes a fall in cost of capital that generates more economic activities and thus improved economic growth (Gehringer, 2013). In principle, NCF are by and large recognized as a useful for economic growth in DEs, because these economies are relatively capital scarce. It

is also often observed that DEs are capital scarce but they are labor abundant, with higher capital returns so they supposedly can get more gain from NCF.

However, the theoretical benefits of NCF to DEs often cannot automatically converted into advantages without any particular and appropriate setting such as market diversification and technological capabilities. Findings suggest that NCF/episodes growth nexus mainly depends on the absorptive capacities for instance IQ, trade openness and financial depth of the host economy. Because absorptive capacity of the host economy plays an important role not only to reap the benefits but also minimizes the cost of capital (Prasad et al., 2007). As observed in Figure 5.1, a negative impact of surge in capital inflows is a relatively stronger as compared to the normal flows on DEs.

Moreover, these negative impacts of NCF and surge on economic growth in the long-run can be associated to not having a certain threshold level of the absorptive capacity of the developing economy (Honig, 2008). Moreover, the absorptive capacity and the threshold level often vary with the economy's geographical location, and linkages to international market. It is argued that a rise in RGDP reflects the existence of striking investment opportunities at home, which persuade investors to undertake investment in domestic market, thus, decreasing the flight of capital from the country. It can also be explained in the way that capital flight from a developing country often create a deficit of funds and lead to foreign exchange shortages, which eventually restrains economic growth.

5.7.2 The Impact of NCF/Episodes on Employment

In this section, we discuss the dynamic response of NCF and episodes on employment of the DEs using LP framework. Based on the Equation (4.12), NCF, which is a variable of interest, is augmented into the cross-country LP regression model to capture the dynamic response of the employment. To obtain LPIRFs first we transform our dependent variable employment into log form. Further, lagged values of the GDP growth rate, employment, the inflation rate, the infrastructure, and trade openness serve as the control variables in our LP regression. Based on the existing literature, these control variables are used as a key determinants of employment that are frequently used in cross-country empirical analysis (Li & Zhang, 2012; Benigno et al., 2015; Teimouri & Zietz, 2018).

Figure 5.2 (a) shows the impact of NCF on employment. LPIRFs show that increase in NCF leads to temporary increase in employment in the DEs. However, at the medium term the impact becomes muted. In the long-run the impact of NCF on employment dies out. The behavior of employment in the DEs suggests that surges in NCF initially harm the employment particularly in short and medium run period. It is also observed that it recover in the long-run period.

Generally, the DEs are considered as a cheap destination for the foreign firms due to cheap labor and raw material as compared to advanced economies. However, DEs usually suffered with poor infrastructure and unskilled labor, thus they cannot reap the potential benefits of the rise in NCF.

The impact of surge on employment shows a negative impact till 4th period. However, it starts rising and becomes positive in the 8th period. Conversely the impact of stop on employment initially shows an increasing trend, till 6th period. However, after the 6th period the impact of stop on employment becomes weaker and eventually shock dies out as shown in Figure 5.2(c).

Figure 5.2(d) shows the response of employment to flight. Initially, it remained constant however, in the 3rd period it becomes positive for a single year and shows a negative trend over the medium and long-term periods. The fluctuations in graph of response of employment to retrenchment as shown in Figure 5.2(e) show that in the short-run the impact of retrenchment on employment is positive.

In the medium-run, the response of employment to retrenchment becomes negative and in the long-run the response of employment to retrenchment is positive. In general, full recovery does not mean that the episodes cannot be held responsible for a longer period decline in employment (Teimouri & Zietz, 2018). Moreover, the Li and Zhang (2012) also come to the similar conclusion that capital inflows will augment the average wage level, and the outflows remarkably decrease the level of domestic wages.

Figure 5.1: The Impact of NCF/Episodes on Growth

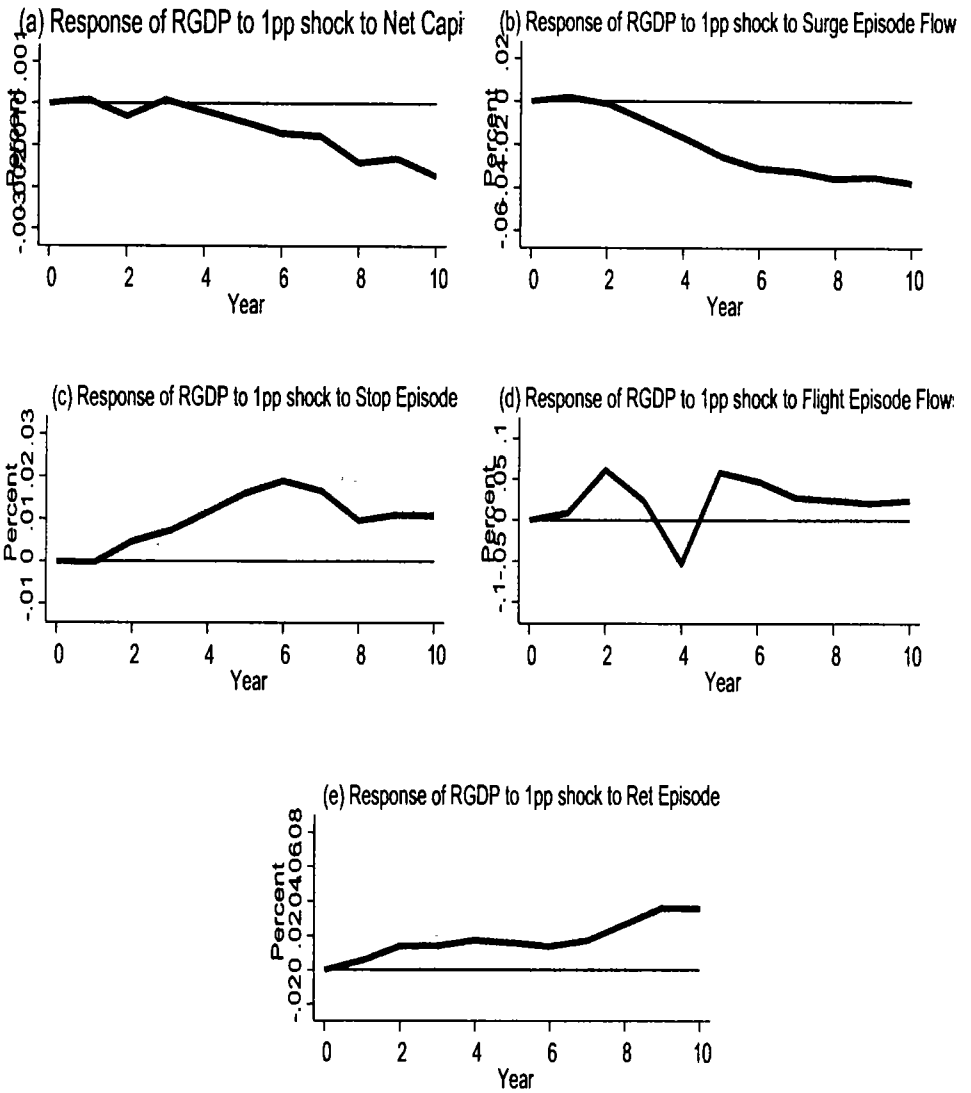
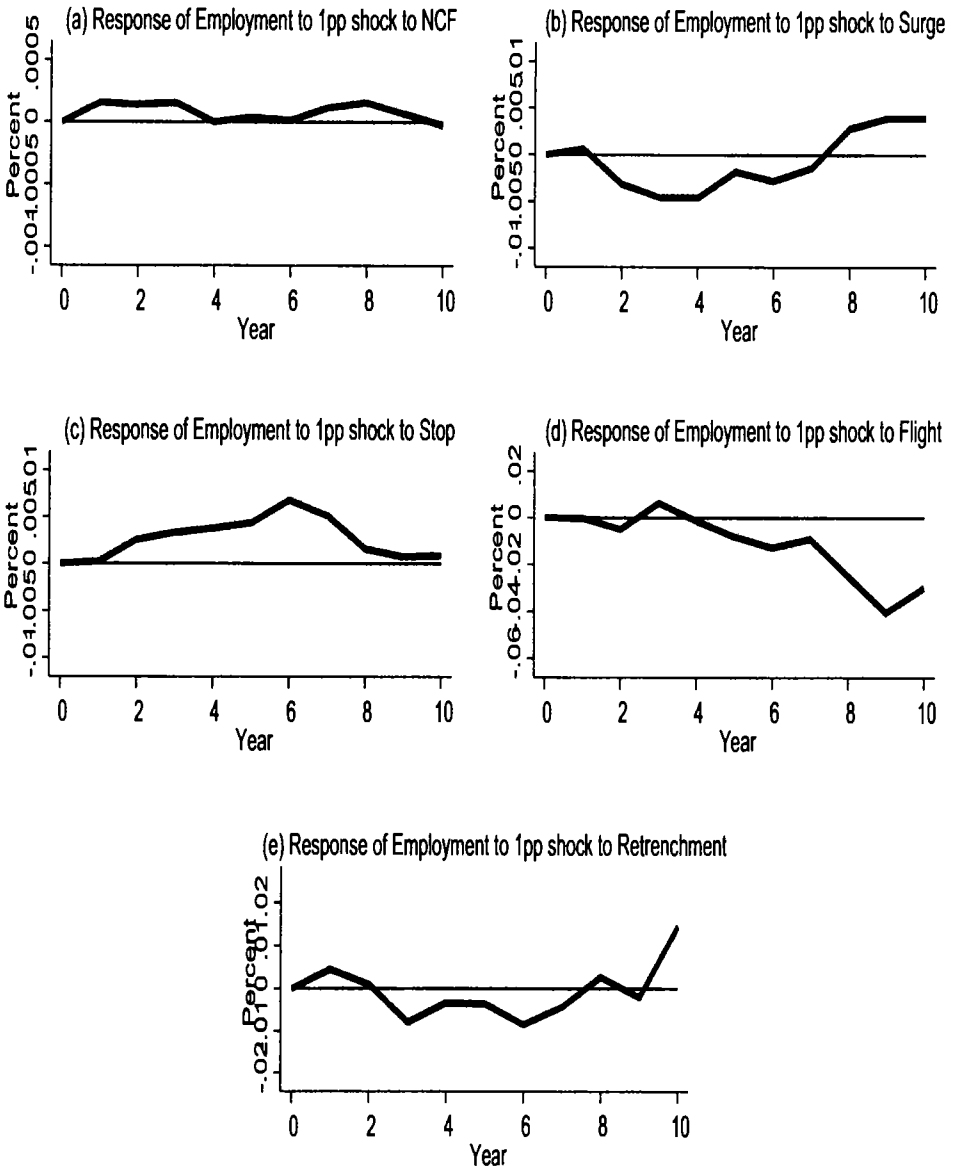


Figure 5.2: The Impact of NCF/Episodes on Employment



5.7.3 The impact of NCF/Episodes on Savings

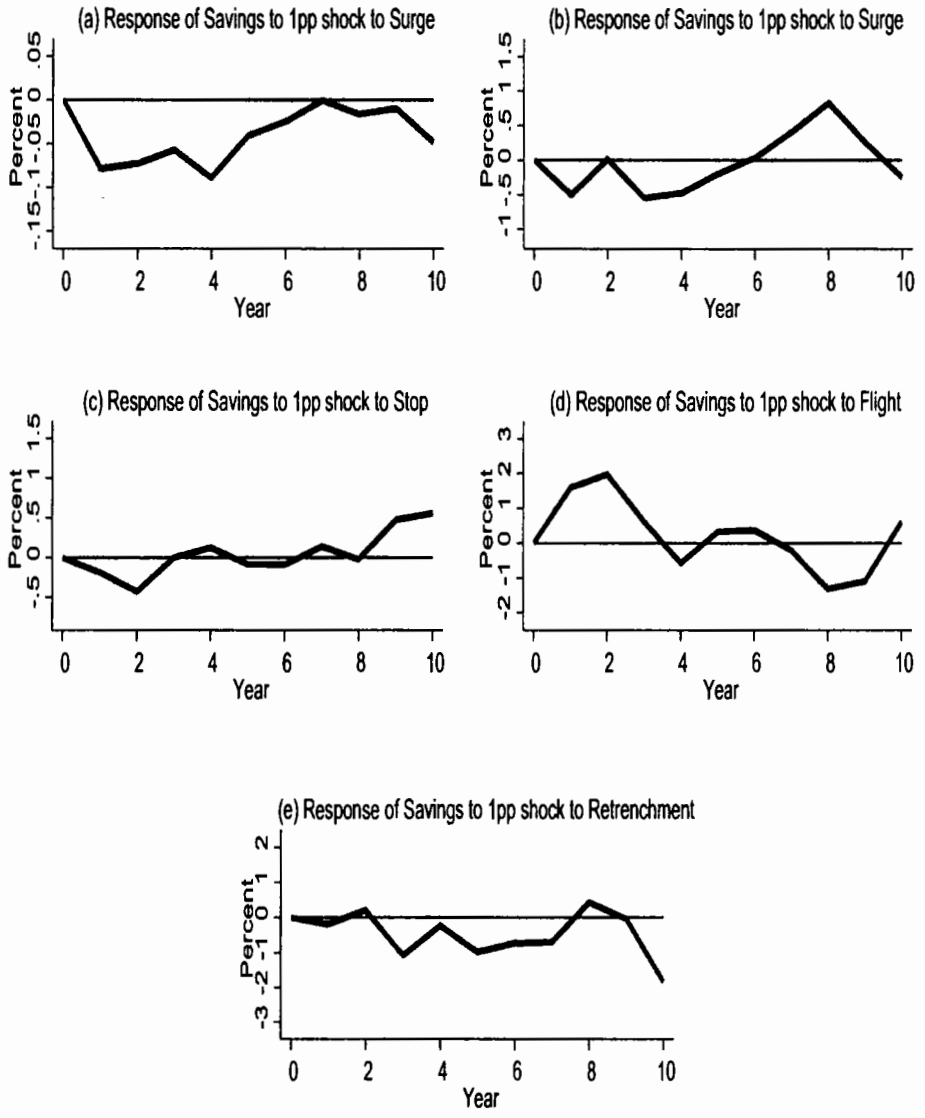
In this section, we explore the impact of NCF/Episodes on gross savings of the DEs. Based on the Equations (4.12), (4.13), (4.14), (4.15), and (4.16), we explore the impact of surge, stop, flight, and retrenchment respectively on gross savings % of GDP. To obtain LPIRFs lagged values of the gross savings, the GDP per capita, the inflation rate, DCP, human capital, and trade openness are used as the control variables in our LP regressions. Following the literature (Ulengin & Yentürk, 2001; Pata, 2017), these control variables are frequently used in the literature.

NCF are negatively correlated with domestic savings for the first four periods as shown in Figure 5.3(a). Similarly, the impact of surge in NCF on savings is negative in the first period and in the second period it becomes almost zero. Later on, from 3rd to 6th year, the said impact remains negative with decreasing trend. Ultimately, it becomes positive in the 7th and 8th period. After that it again shows the declining trend.

The sharp fluctuation in the response of savings to stop shows that the impact of stop on saving is mixed. In the initial two years the said impact remains negative and in the 3rd period it becomes negative however, in the 4th and 5th year it becomes negative. However, after the 5th period the said impact becomes positive as shown in Figure 5.3(c). The impact of capital flight on the savings is positive in the short-run. However, it causes huge fluctuations in medium run while in the long run it becomes positive. The visual inspection of the response of savings to

retrenchment shows the sharp fluctuations in response of savings to retrenchment as shown in Figure 5.3 (e).

Figure 5.3: The Impact of NCF/Episodes on Savings



5.8 The Impact of NCF/Episodes on Financial Sector

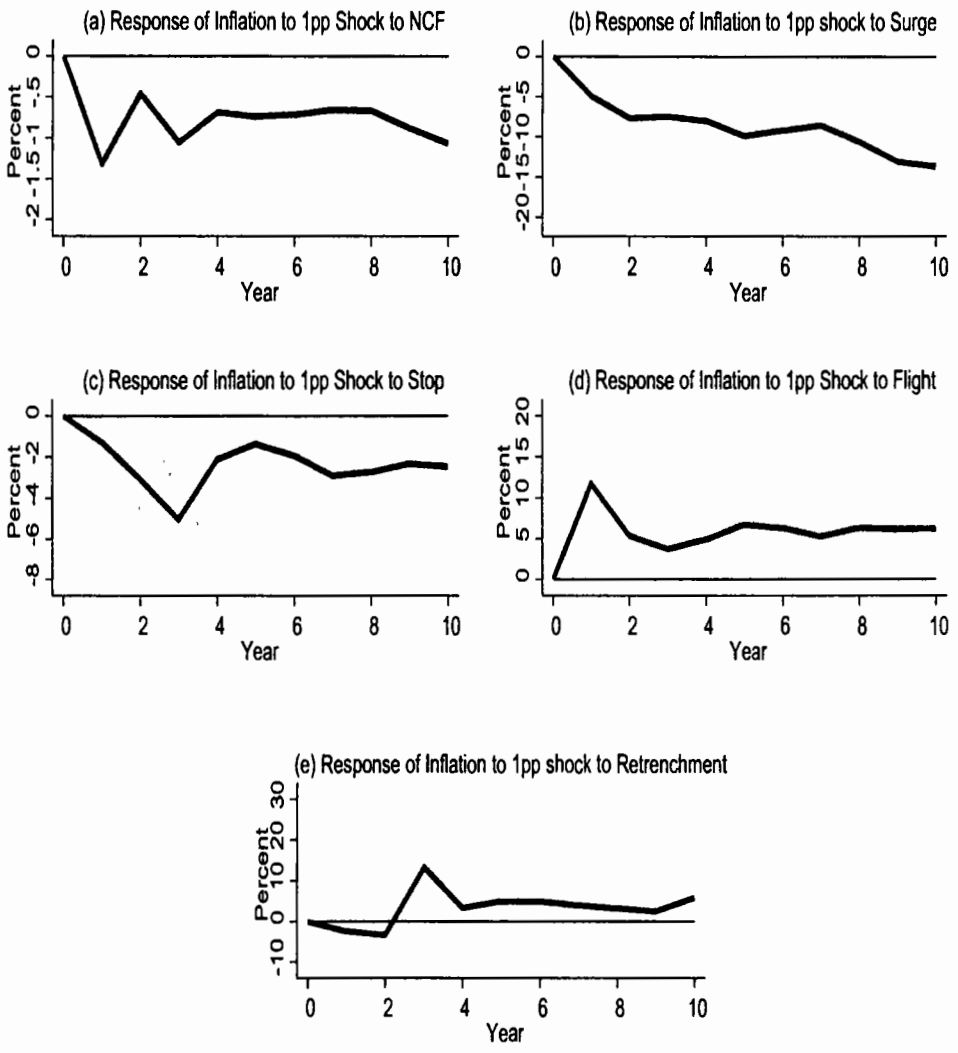
In this section, we show the impact of NCF and each episode on the financial variables namely inflation, the interest rate, and DCP using the LP regression, mentioned in Section 4.9.1. We obtained LPIRFs for each episode on each financial variable for 10 periods of horizon. LPIRFs are obtained using LP regressions and illustration on the each indicator is presented below.

5.8.1 The Response of Inflation to Episodes

We examine the impact of NCF and episodes of on inflation for the sample countries. LPIRFs are presented in Figure 5.4. IRF are obtained using LP method as described earlier, in Section 4.9.1. We obtain LPIRFs for each financial indicator as presented in Figure 5.4. The solid line in Figure 5.4 presents LPIRFs. The shaded area reflects the confidence interval. We report the influence of NCF on inflation in Figure 5.4 (a). However, the passage of time the negative impact of surge on inflation becomes stronger and stronger.

In contrast, the impact of stop is initially negative for first 3 periods. However, it shows the positive trend after the 3rd period till 5th period and it becomes smooth. The impact of flight (large capital outflows) is initially positive. It shows negative trend in 2nd year. However, the impact of flight on inflation becomes smooth and consistent over the years as shown in Figure 5.4(d). Moreover, the impact of retrenchment on inflation is initially negative for 1stperiod and it becomes smooth for 2nd period while it shows increasing trend for only 3rdperiod and becomes smooth after 4th period.

Figure 5.4: The Impact of NCF/Episodes on Inflation



5.8.2 The Response of Interest Rate to Episodes

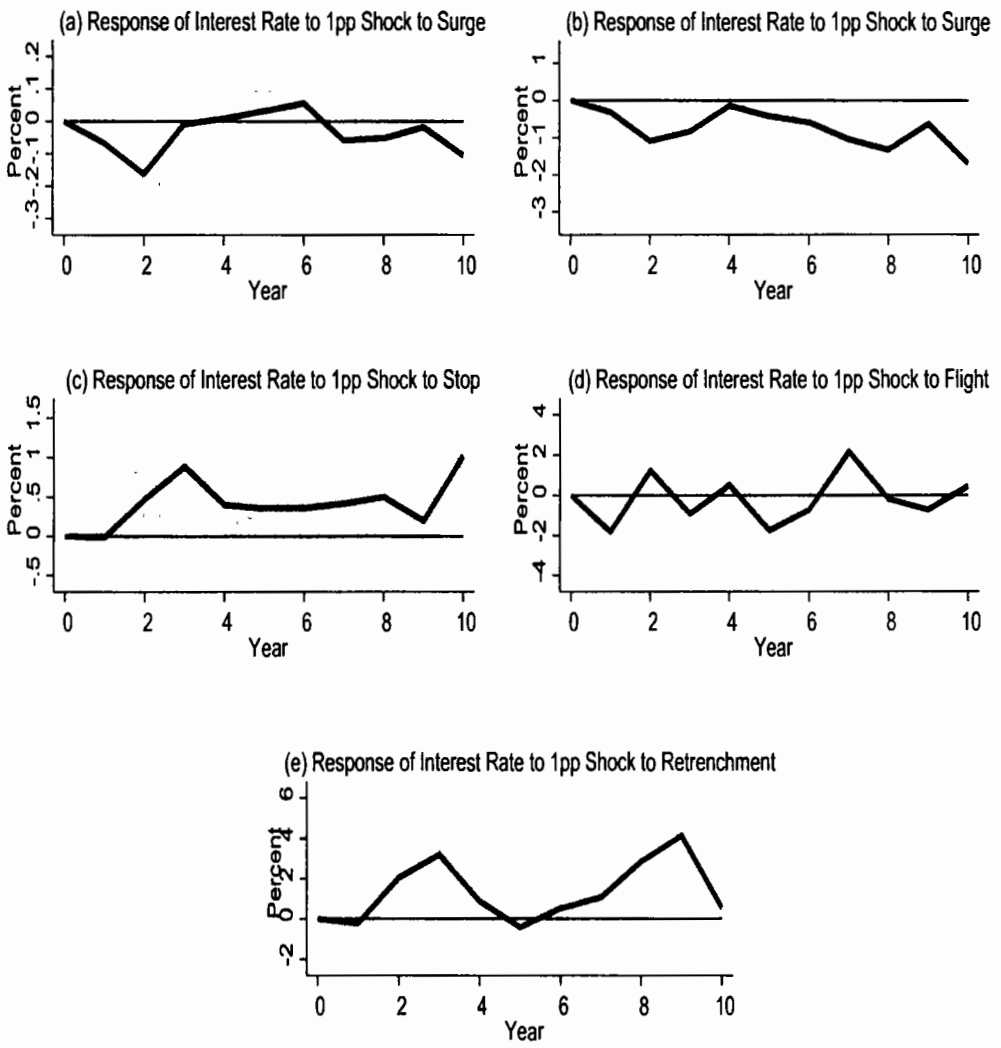
We estimate Equations (4.12) to (4.16) and obtain IRFs to examine the response of the interest rate on normal flows as well as on episodes based on LP framework. Figure 5.5 (a) shows the response of the interest rate on NCF. We find that the interest rate correlates negatively for the first two years followed by the gradual upward trend in the response of the interest rate. However, the impact turns negative in the intermediate and long run trend. Similarly, in Figure 5.5(b), we report the impact of surge in capital inflows on the interest rate. The response of the interest rate based on LPIRFs is negatively associated with the surge in inflows for throughout the period. However, the stop episode is initially shows no response and remains almost zero for the first year.

However, the response becomes positive after the first year and reaches to maximum only in the period of one year. In the 4th period the response of the interest rate becomes smooth and shows no fluctuations as shown in Figure 5.5(c). On the other hand, the response of the interest rate to extreme outflows shows more fluctuations over the year as presented in Figure 5.5 (d). Initially, the response is negative, followed by the little rise and then drop. This trend is almost observed from the short-term to intermediate period. However, the impact of retrenchment is initially constant or almost zero.

The response of the interest rate to retrenchment becomes positive and significant after the 1st year as shown in Figure 5.5(e). However, the impact shows upward trend and persist only for 3rd year. It is observed the response of the interest rate

becomes negative during the 5th period and becomes zero. In 7th period the response of the interest rate to retrenchment gradually rises and almost become zero in the 10th period as shown in Figure 5.5 (e).

Figure 5.5: The Impact of NCF/Episodes on Interest Rates



5.8.3 The Response of Domestic Credit to Episodes

In this section, we discuss the response of the DCP to NCF/episodes in DEs. DCP is a key macro-financial indicator of an economy, reflecting financial stability. We use a set of control variables motivated by the existing literature in order to capture the movements in the DCP. The control variables are GDP growth rate, the inflation rate, the exchange rate, and trade openness.

We first depict the response of DCP to NCF (normal flows) as shown in Figure 5.6 (a).We find that LPIRF for the response of the DCP to surge episodes remains positive from period 1 to 9 with little fluctuations. However, it becomes negative after the 9^{th} period as shown in Figure 5.6 (b). The impact of stop episode on credit takes the lag of 3 years. In the 3^{rd} year the said impact becomes positive. However, in 4^{th} year the influence of stop on DCP becomes negative. After the 4^{th}year the impact of stop on DCP once again becomes positive see Figure 5.6(c).

These findings are in line with the open-economy theory that the surge in inflows would lead to amplify lendable-funds in the host economies and ultimately speed up DCP. The results substantiate a common idea as acknowledged in the pertinent literature that NCF are a vital factor of DCP (Hegerty, 2009; Gozgor, 2014). Many researchers also show that NCF cause "credit booms" in the host economy. For instance, when monetary policies in developed economies are loose or global liquidity is higher, DCP in DEs are more likely to face a higher growth rate (Bruno & Shin, 2013; Fendoğlu, 2017).

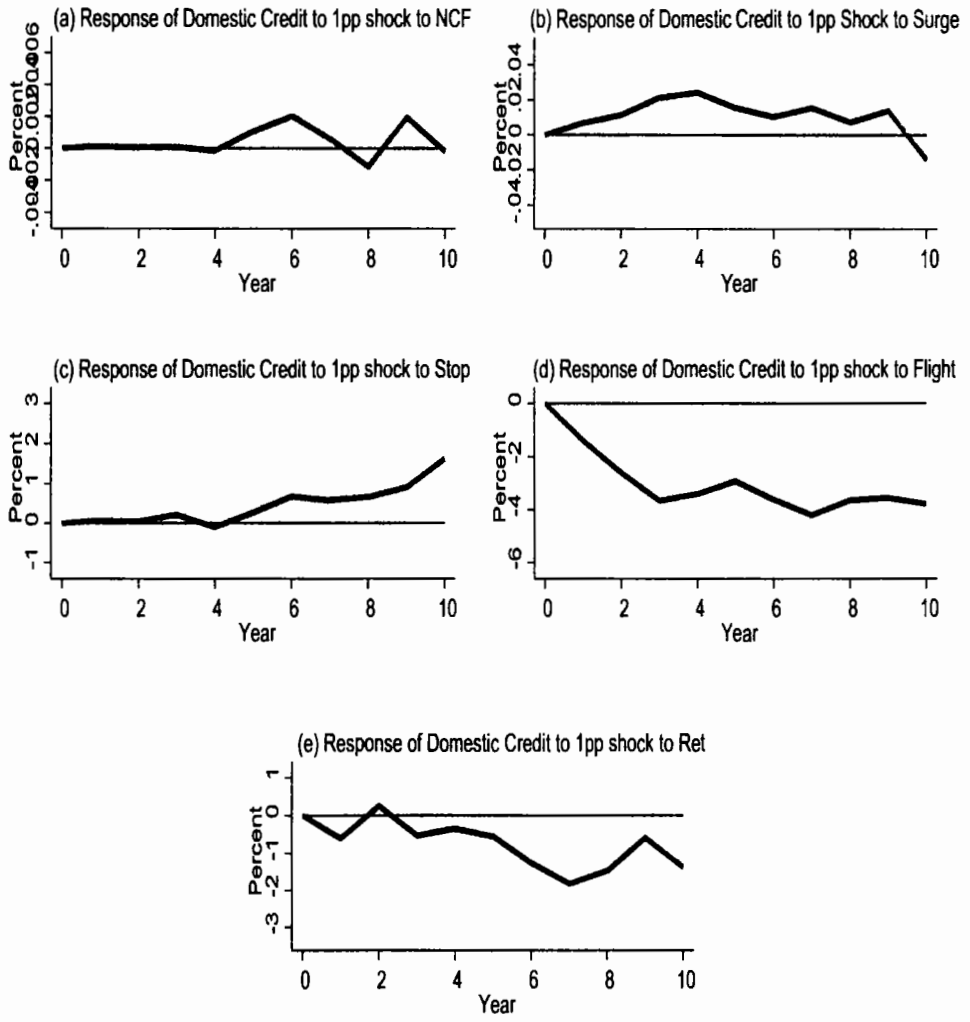
Moreover, the impact of flight on DCP is negative. However, in the short-run the negative impact of flight is smaller on DCP as compare to the impact of flight on DCP in the long-run as shown in Figure5.6 (d). The graphical presentation of the impact of retrenchment on DCP is a negative from short-run to longer period. As shown in Figure 5.6(e), the impact is negative for the 1stperiod and shows positive trend in 2ndperiod and sharply becomes negative for rest of the years.

The findings are consistent with the existing literature, which suggests that credit booms are often lead by the surge in capital flows (Mendoza & Terrones, 2008). In addition to that, the fall in the DCP also shows that the probability to meet the financial crisis of a country is higher when the country is facing surge in capital inflows (Reinhart & Reinhart, 2009; Furceri et al., 2012).Further, the short-term effect of episodes on DCP may depend on country's economic and financial policies such as capital account policy, the exchange rate flexibility and fiscal policy (Furceri et al., 2012).

The opening up of financial systems and the rise in NCF across the borders influence the DCP. Thus, in this situation it is important to understand that both the direct relation between NCF and DCP through the international funding activities of domestic banks and the indirect relation such as the impact of NCF on domestic macroeconomic variables (output growth, level of domestic spending, inflation, exchange rates and asset prices) that can affect DCP. Thus, NCF also cause credit booms.

Understanding the macroeconomic and financial effects of episodes is much important from macroeconomic policy point of view. For example, if surges in NCF raise the risk of financial distress, countries may have incentives to establish administrative controls to certain types of inflows as suggest by (Ostry, 2012). Thus, in such a situation, it is more important to identify the mechanism through which episodes raise financial vulnerabilities and the macroeconomic policies can play in moderate associated vulnerabilities, would help economies in deciding the suitable policy options.

Figure 5.6:The Impact of NCF/Episodes on Domestic Credit



5.9 The Role of IQ in Establishing the Impact of Episodes on Real and Financial Sectors

In this section, we present the moderating role of IQ in establishing the impact of episodes on the real and financial sectors of the DEs. The methodology is based on LPs framework proposed by Jorda (2005) as described in Section 4.9. First, we present the responses of the real sectors namely the GDP growth rate, employment and savings considering the role of IQ. Second, we present the responses of the financial sectors namely inflation, the interest rate, and DCP to private sector for each episode considering the role of IQ. Moreover, we estimate the responses of the real sector and the financial sector indicators for the low and high IQ.

5.10 The Role of Institutional Quality in Establishing the Impact of Episodes on Real Sector

5.10.1 The Impact Episodes on Economic Growth through IQ

In this section, we present LPIRFs for RGDP. We obtain the response of RGDP on each episode re-estimating Equations (4.13) to (4.16) by considering the moderating role of the high and low IQ separately. We re-estimate our model as presented in Equations (4.13) to (4.16) twice once for considering the moderating role of the high IQ and second for the considering role of the low IQ for each future period k, k=10. Thus, Figure 5.7 is divided into two columns (a) and (b). Column (a) shows LPIRFs of RGDP to the episodes considering the moderating

role of high IQ. On the other hand, Column (b) shows LPIRFs of RGDP to the each episode considering the role of low IQ for the sample countries.

The impact of surge on RGDP is presented for the 10 periods of horizon as shown on horizontal axis. Particularly, the impact of surge shock on RGDP is positive and remains positive till almost 3rd period. The correlation become negative and pertains and become positive after the 7th period till 10th period. The impact of surge on RGDP while considering the moderating role of low IQ is initially positive. The RGDP response becomes negative after the 2nd period of the shock and it persists over the forecasted period.

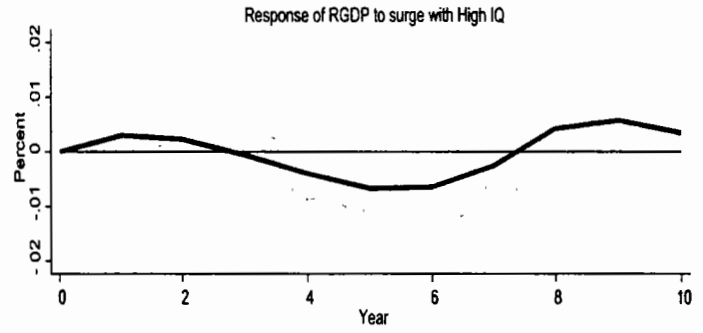
The impact of stop on RGDP is negative for the first period. Conversely, it shows gradual rise in the RGDP over the forecasted period with the increasing trend. On the other hand, we observe that in case of low IQ the influence of gradually decrease in capital inflows (stop) to the RGDP decrease to more than 1 percentage point and remains negative till second period followed by the gradual rise in the RGDP. The response of RGDP to the flight (sharp decrease in capital outflows) shows that the negative association in first period or we see dip in the response of RGDP to the flight in case of countries high IQ. On contrary to short-term period, RGDP response remains positive over the medium term to the shock of flight. In 7th and 9th period it becomes negative as shown, in Figure 5.7.

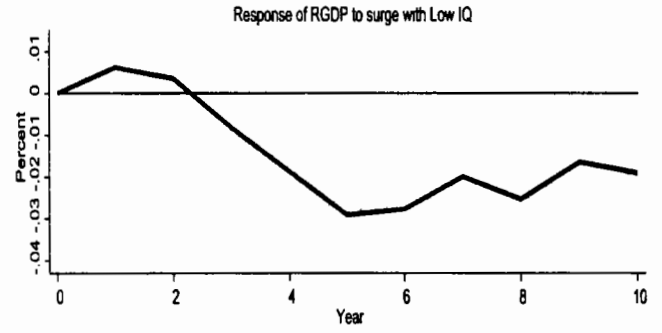
However, in case of low IQ, the effects of flight on RGDP show more fluctuations. As in Figure 5.7, column (b), in the 1st period the RGDP response decreases followed by the sharp rise. However, over the medium term it remains

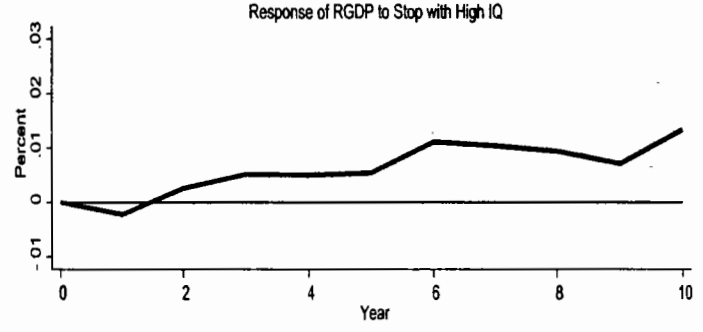
positive. The response of RGDP to retrenchment (shock variable) in short-term- one year immediately after the retrenchment episode- decreases and then rises and becomes positive. However, the RGDP response decreases over the medium term period and remains negative 9th period as shown in Figure 5.7, column (a). LPIRFs of RGDP to the retrenchment in case of low IQ is positive in short-term to medium term range as shown in Figure 5.7, column (b).

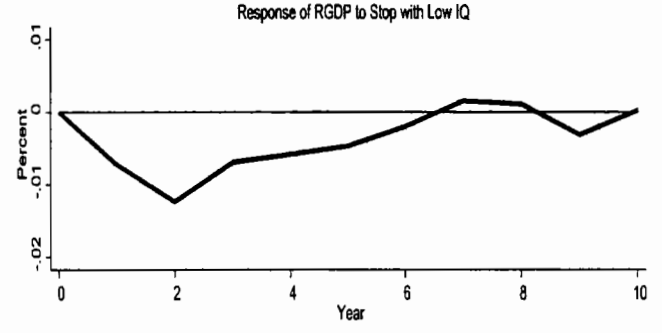
Figure 5.7: The Effects of Episodes on RGDP with High and Low Institutional Quality

Column(a)	Column (b)









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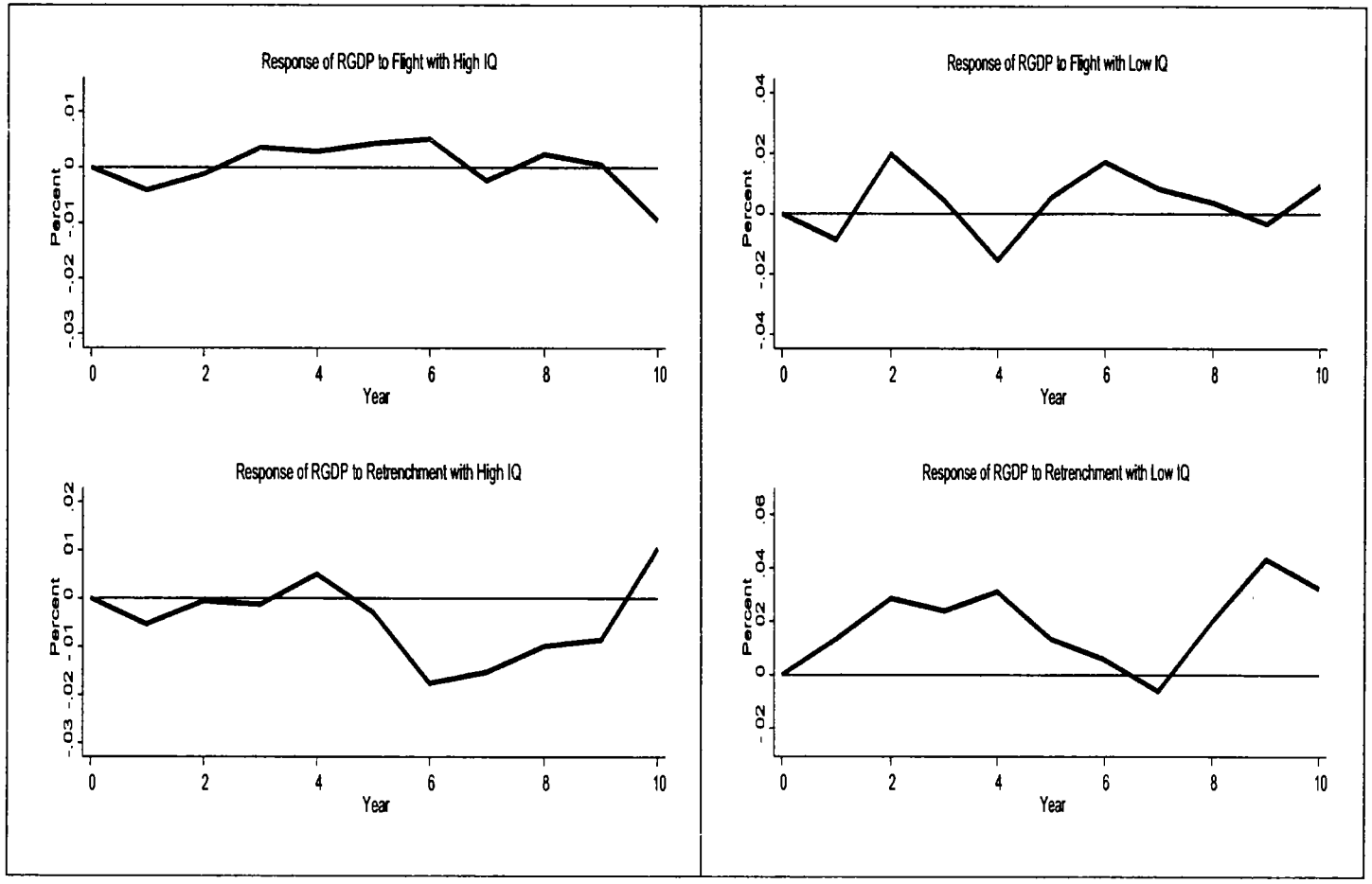

Response of RGDP to Flight with High IQ
Percent
-.03
-.02
-.01
0
.01
0
2
4
6
8
10
Year
Response of RGDP to Flight with Low IQ
Percent
-.04
-.02
0
.02
.04
0
2
4
6
8
10
Year
Response of RGDP to Retrenchment with High IQ
Percent
-.03
-.02
-.01
0
.01
.02
0
2
4
6
8
10
Year
Response of RGDP to Retrenchment with Low IQ
Percent
-.02
0
.02
.04
.06
0
2
4
6
8
10
Year

5.10.2 The Impact of Episodes on Employment through IQ

In this section, we present LPIRFs for the employment based on Equations (4.13) to (4.16). We obtain the response of employment on each episode re-estimating the these equations by considering the moderating role of the high and low IQ separately. We re-estimate our models as presented in Equations 4.13 to 4.16 twice once for considering the moderating role of the high IQ and second, for the considering role of the low IQ for each future period k, k=10. Thus, Figure 5.8 is divided into two columns (a) and (b). Column (a) shows LPIRFs of the employment to the episodes considering the moderating role of high IQ. On the other hand, Column (b) shows LPIRFs of the employment to the each episode considering the role of low IQ for the sample countries.

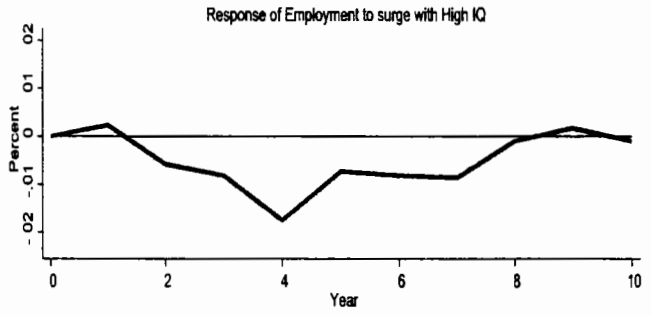
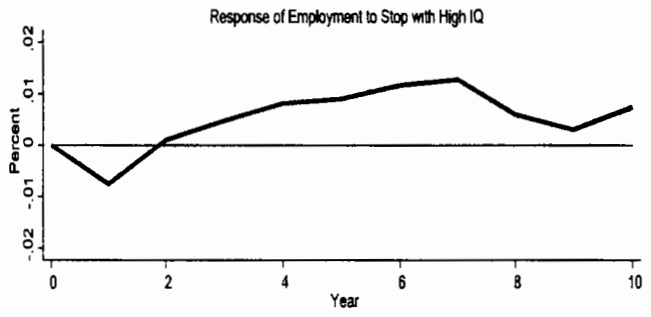
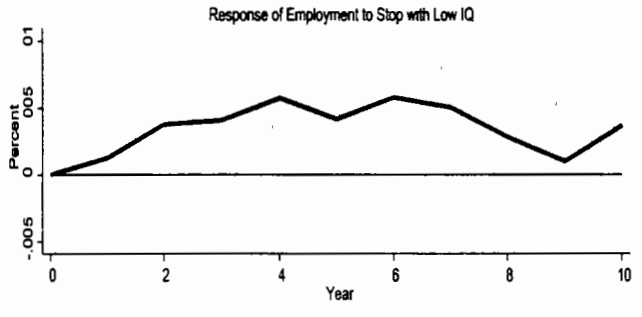
LPIRFs obtained from estimating the impact of surge episode on the employment considering the role of high IQ, using Equation (4.13) show that in the first year following the beginning of stop episode the employment decreases about 1 percentage points as shown in Figure 5.8, column (a). The effects are however, remained positive over the forecasted periods. Moreover, countries with low IQ the influence of stop episode on employment remains positive all throughout the forecasted period.

In addition, LPIRFs for employment to the extreme capital outflows shows that the negative association throughout the forecasted period in case of high IQ. Further, in case of low IQ the response of the employment after first period of

shock remain constant. In medium term range, the response remains negative till 8^{th}period as shown in Figure 5.8, column (b).

Moreover, in the case of retrenchment, the effect of the employment is positive in short-term period and for medium to long-term range it remains negative for high IQ. LPRIFs of employment to retrenchment in low IQ level of economies are almost zero in short-term period. However, over the intermediate period to the long period it remains almost negative. The possible rationale behind the negative response of the employment is that in case of DEs does not reap the potential benefits of capital flows because of the economic fundamentals and country specific characteristic including the skill labor.

Figure 5.8: The Effects of Episodes on Employment with High and Low Institutional Quality

Column (a)	Column (b)
	
	
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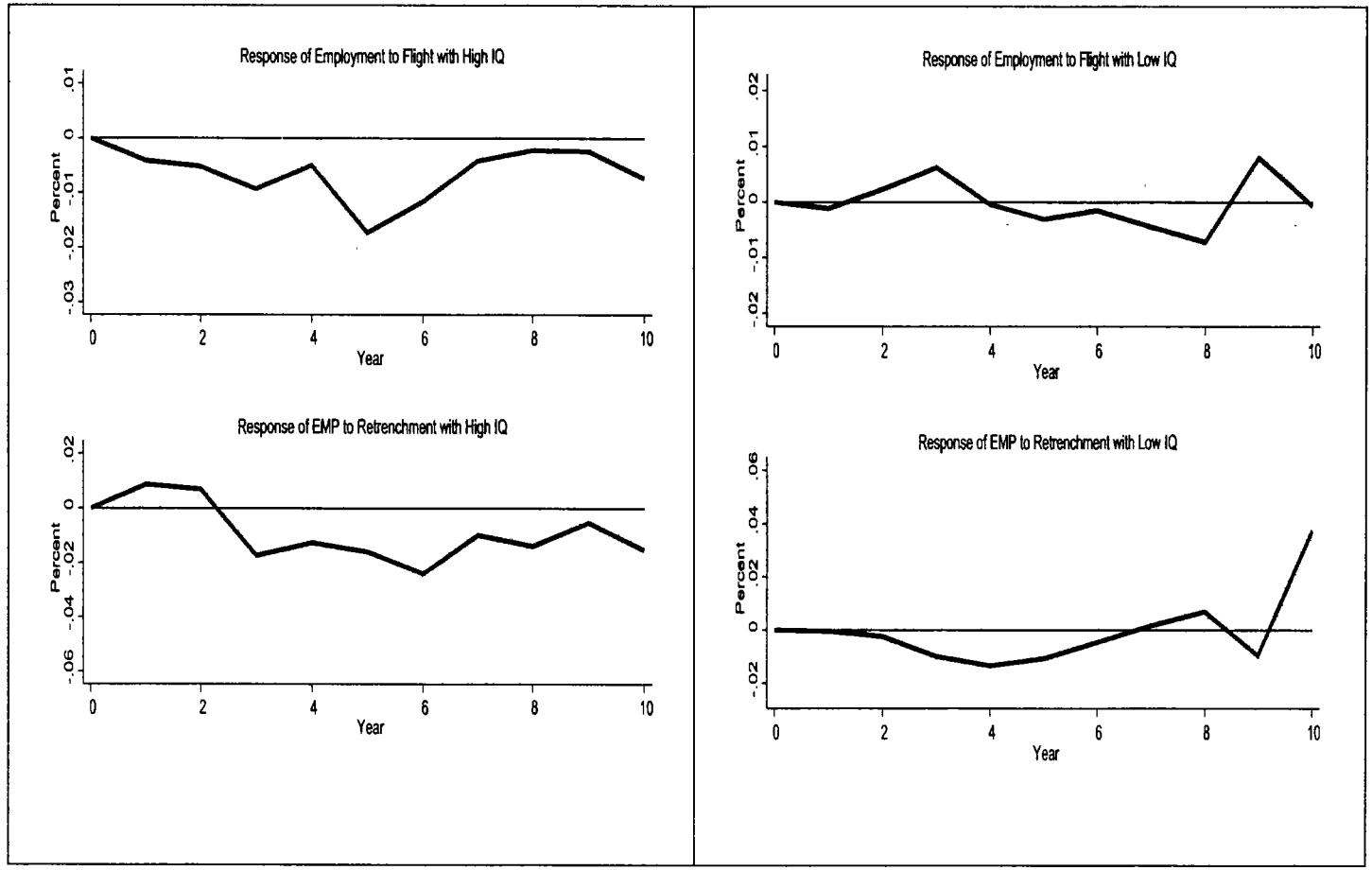

Response of Employment to Flight with High IQ
Percent
.01
0
-.01
-.02
-.03
0
2
4
6
8
10
Year
Response of Employment to Flight with Low IQ
Percent
.02
.01
0
-.01
-.02
0
2
4
6
8
10
Year
Response of EMP to Retrenchment with High IQ
Percent
.02
0
-.02
-.04
-.06
0
2
4
6
8
10
Year
Response of EMP to Retrenchment with Low IQ
Percent
.06
.04
.02
0
-.02
0
2
4
6
8
10
Year

5.10.3 The Impact of Episodes on Savings through IQ

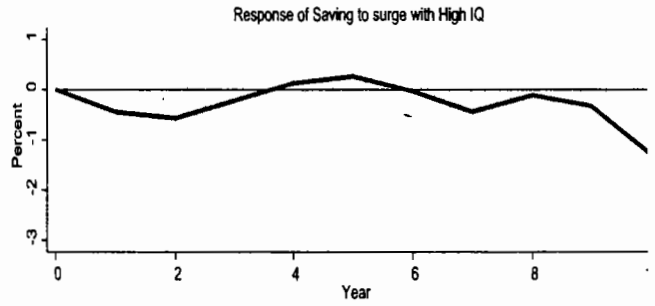
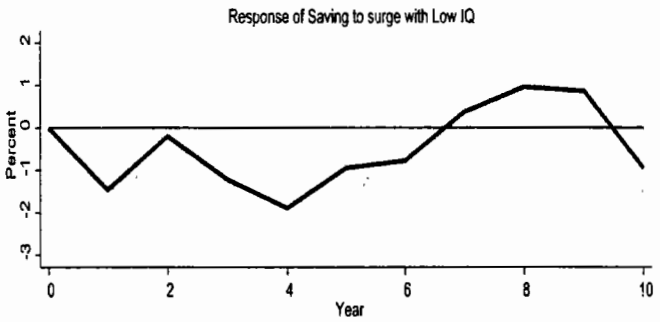
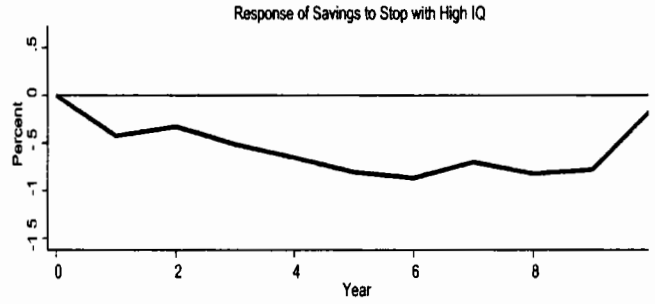
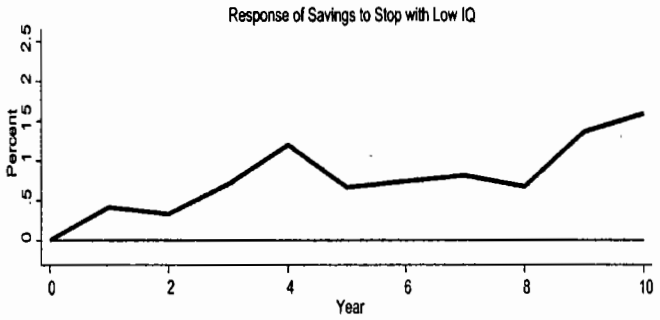
In this section, we present LPIRFs for the domestic savings based on the Equations 4.13 to 4.16. We obtain the response of savings on each episode re-estimating the Equations 4.13 to 4.16 by considering the moderating role of the high and low IQ separately. We re-estimate our model as presented in Equations 4.13 to 4.16 twice once for considering the moderating role of the high IQ and second, for the considering role of the low IQ for each future period k, k=10. Thus, Figure 5.8 is divided into two columns (a) and (b). Column (a) shows LPIRFs of the savings to the episodes through high IQ. On the other hand, Column (b) shows LPIRFs of the savings to the each episode considering the role of the low IQ for the sample countries.

The response of savings to surge in capital inflows is negative over the short-term period and in medium term period is positive that is a from 4^{th} period to 6^{th} period and observed negatively associated over the long-term period in case of high IQ as shown in Figure 5.9, Column (a). On contrary, the effect of surge on savings is negative over the short-term to medium term period. LPIRF of employment becomes positive after the 6^{th} period to 9^{th}period as shown in Figure 5.9, column (b). The impact of stop episode on savings is negative throughout the forecasted period as presented in Figure 5.9, column (a) while the impact of stop on savings is positive for the 10 periods of horizon in case of low IQ (see Figure 5.9, Column (b)).

We also obtain LPIRFs for the savings to extreme capital outflows. The effects of flight on savings is positive for whole forecasted period as presented in Figure 5.9, Column (a). Moreover, the response of the savings to flight is positive in short-term period. We observe that, the savings are positively associated with flight for a shorter period and become negatively associated in 7^{th} to 8^{th} period (Figure 5.9, Column (b)).LPIRFs for the savings to retrenchment is negative from short-term period to medium term period followed by sharp rise which again falls sharply (see Figure 5.9, Column (a)). In contrast, the response of the retrenchment is positive for the short-term and long-term period while in medium term the said response is negative in case of low IQ as presented in Figure 5.9, Column (b).

The impact of episodes in the short and long-run confirms the significance on the role of IQ on the real and financial sectors in the context of the DEs. For example, in the first row of Figure 5.7 the responses of DCP to surge are different considering the moderating role of the high and low IQ. We conclude that at the lower level of real sector growth, the IQ will help in the fair-distribution and allocation of resources of a country. It is only when there are strong institutions that local firms can compete fairly with multinationals. Thus, high IQ can play important role for real sector growth. In general, our findings on the impact moderating role ofIQ and growth support the earlier empirical findings of Arya et al. (2019) and Aisen and Veiga (2013) that the capital flows and growth relation depends on the threshold level of IQ. Similarly Compton and Giedeman(2011) and Baharumshah and Wohar (2015) pointed that IQ affect the economy on different levels and relationship between capital flows and real sector growth depends on the threshold level of IQ.

Figure 5.9: The Effects of Episodes on Savings with High and Low Institutional Quality

Column (a)	Column (b)
	
	
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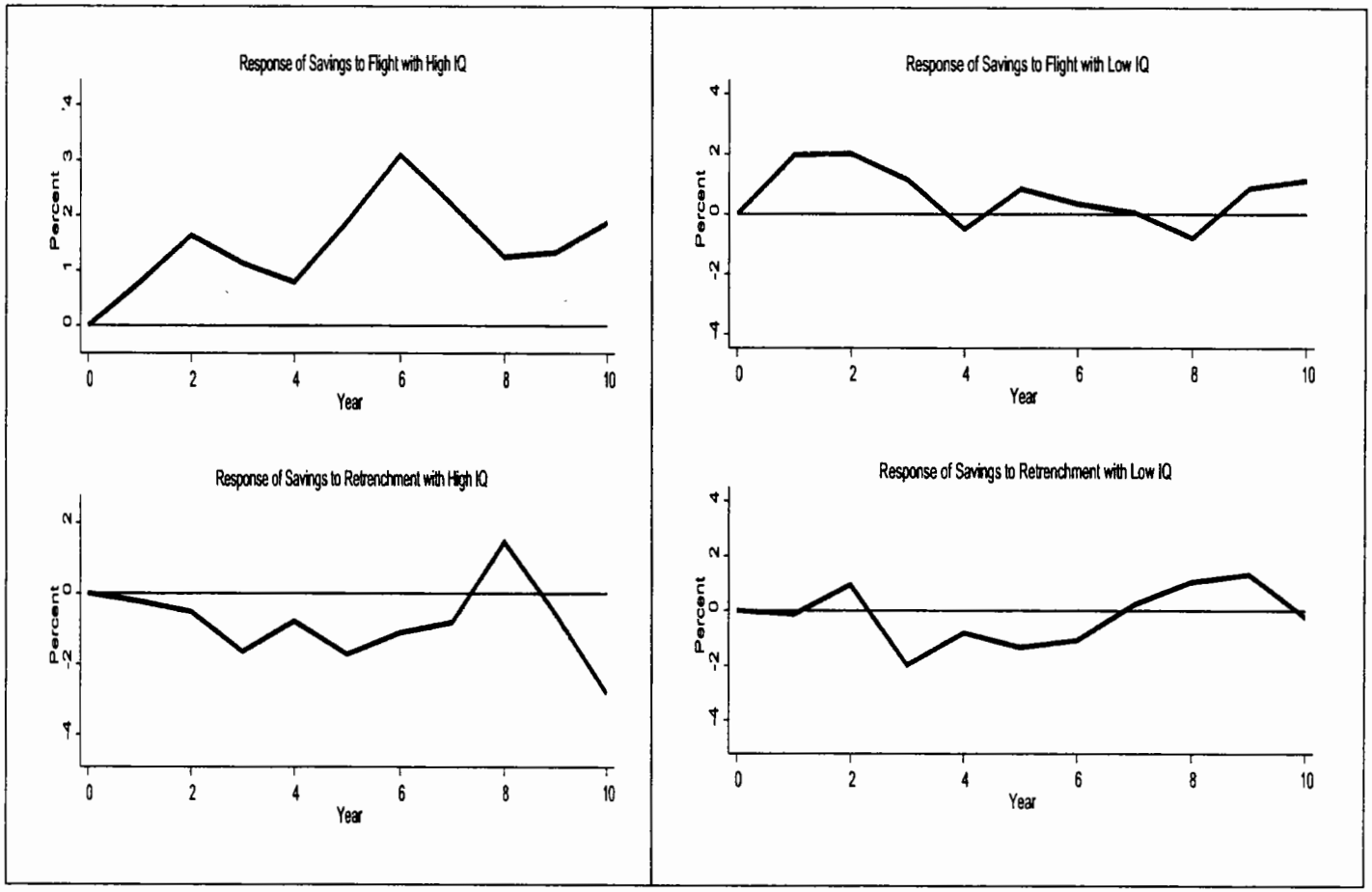

Response of Savings to Flight with High IQ
Percent
Year
Response of Savings to Flight with Low IQ
Percent
Year
Response of Savings to Retrenchment with High IQ
Percent
Year
Response of Savings to Retrenchment with Low IQ
Percent
Year

5.11 The Role of Institutional Quality in Establishing the Impact of Episodes on Financial Sector

In this section, we show the impact of each episode on financial variables namely inflation, interest rate, and DCP, considering the moderating role of the IQ. The methodology is based on LPs framework proposed by Jorda (2005), as described in Section 4.9. In particular, we re-estimate Equation (4.13) to (4.16), after incorporating the interaction term of high and low IQ with each episode separately. The graphical illustration along with discussions on the responses of each financial indicator is presented in subsequent subsection.

5.11.1 The Impact of Episodes on Inflation through IQ

In this subsection, we document the response of inflation to episodes. The graphical illustrations of IRF based on LP are reported in Figure 5.11. We divide the Figure 5.11 into two columns (a) and (b). Column (a) reveals the impact of each episode on inflation considering the moderating role of high IQ, while Column (b) presents the moderating role of the low IQ for the sample countries.

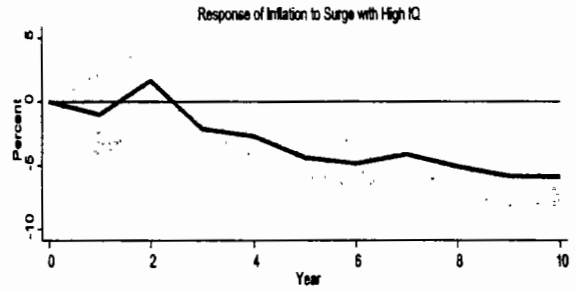
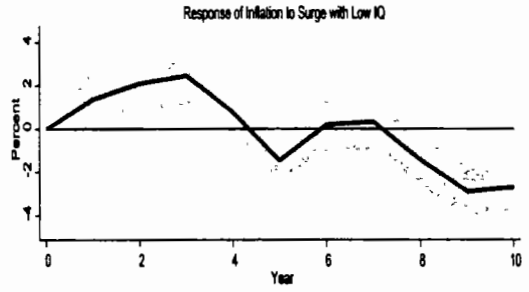
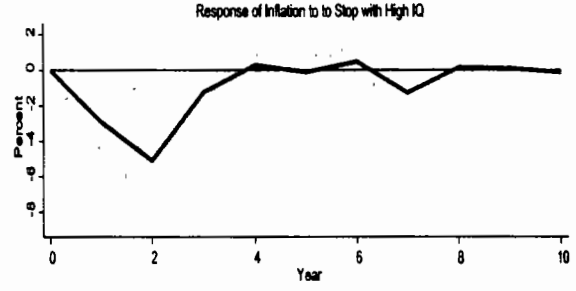
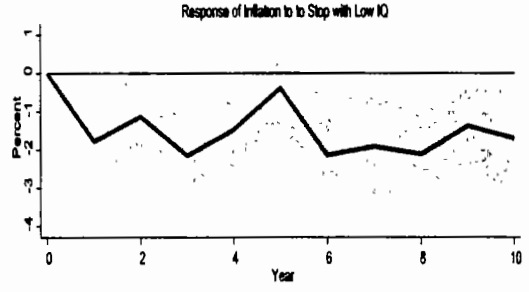
From Figure 5.10 Column (a), IRF based on LP shows that inflation does react negatively and significantly to surge episode for the first period. However, the inflation increases in second period, while start decreasing gradually after the second period, and, remains negative over the forecasted period under review. This implies that countries with high IQ have negative effects of surge on inflation. On the other hand, countries having low IQ, the impact of surge episodes, on inflation are positive for first four periods. After the 4^{th} period the

response is negative for a little time followed by the little rise. After the 7th period the response remains negative for the reaming period as shown in Figure 5.10 Column (b).

We also present the response of inflation to stop considering the role of both high and low IQ as shown in Figure 5.10. The response of inflation to stop is initially negative in first 3 periods. However, over the medium term to long-term the response of inflation to stop in capital inflows is almost zero particularly, from 8th period to 10th period as shown in Figure 5.10, Column (a). On the other hand, the response of the inflation to stop with low IQ shows the negative response over forecasted period under review see Figure 5.10, Column (b).

The graphical presentation of the response of the inflation to the extreme capital outflows is initially positive in first period, followed by sharp decrease in inflation. However, the impact of flight on inflation become small and remains positive see Figure 5.10, Column (a). In contrast, the impact of the flight on inflation is also positive throughout the forecasted period. In addition in case of low IQ the influence of flight on inflation remains positive and higher as presented in Figure 5.10, Column (b). It implies that in terms of magnitude, countries with higher IQ, are less prone to macroeconomic destabilization (higher inflation) as compare to countries having low IQ.

Figure 5.10: The Effects of Episodes on Inflation with High and Low Institutional Quality

Column (a)	Column (b)
	
	
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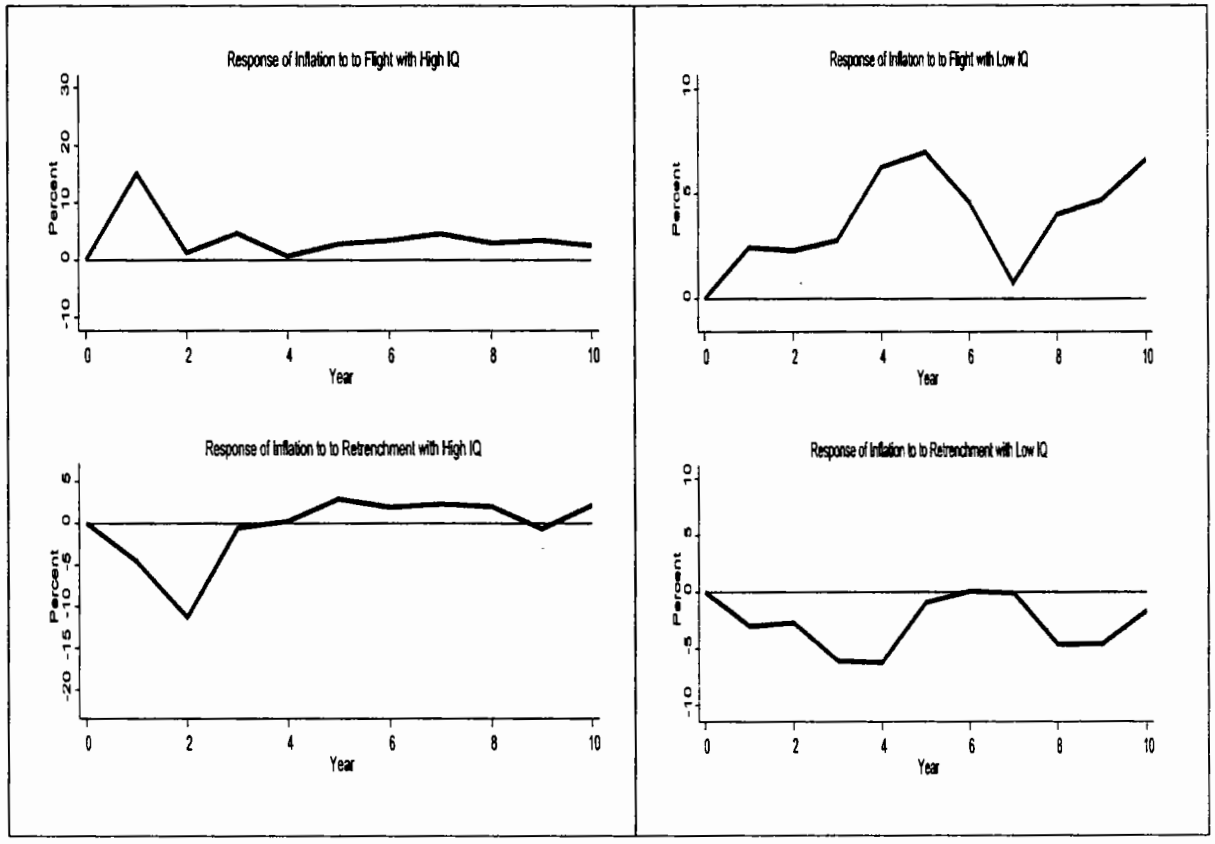
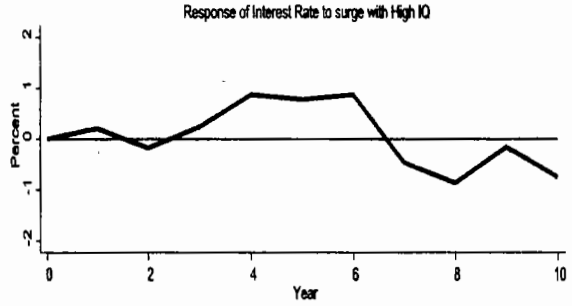
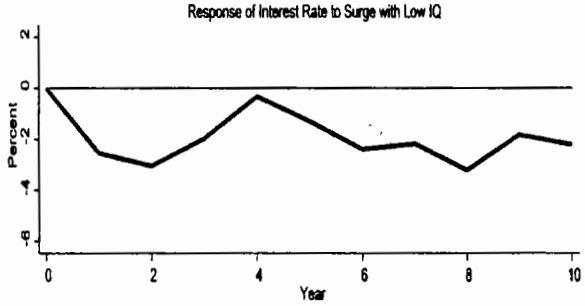
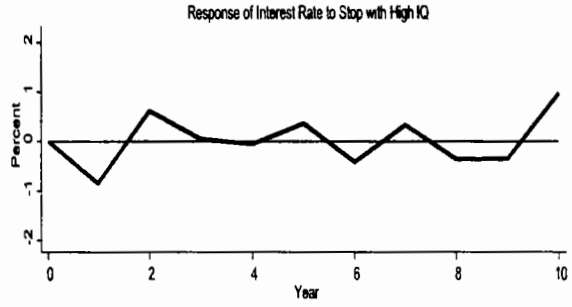
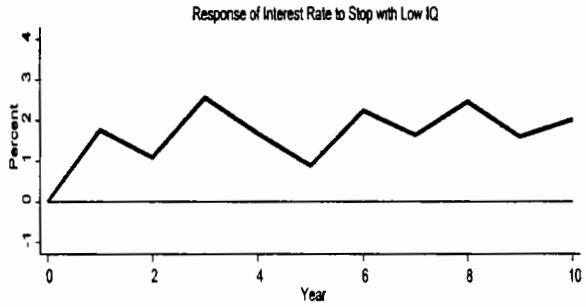

Response of Inflation to to Flight with High IQ
Percent
Year
Response of Inflation to to Flight with Low IQ
Percent
Year
Response of Inflation to to Retrenchment with High IQ
Percent
Year
Response of Inflation to to Retrenchment with Low IQ
Percent
Year

5.11.2 The Impact of Episodes on Interest Rates through IQ

In this section, we document the response of the interest rate to episodes through both high and low IQ. LPIRFs are presented in Figure 5.11. In Figure 5.11, column (a) presents the response of the interest rate to each episode considering the moderating role of the high IQ, while, Column (b) presents the response of the interest rate to the episodes considering the moderating role of the low IQ. The response of the interest rate to surge is positive in medium term. However, the response becomes almost negative after the $6^{th}$and the remaining forecasted period in case of high IQ. On contrary, the impact of surge in countries having low IQ on interest rate remains negative throughout the forecasted period as shown in Figure 5.11, column (b).

The impact of extreme outflows (flight) on interest rate considering the role of high IQ remains negative over throughout the forecasted period as shown in Figure 5.11, Column (a). In addition, the response of interest rate to large capital outflows in case of low IQ is positive for first period and mostly remains negative over the medium term as presented in Figure 5.11, Column (b). Moreover, the interest rate shows no response to retrenchment episode in first period. However, in medium term it remains negative. In 7^{th}period it starts gradually rise and shows positive impact of retrenchment on interest till almost 10^{th} period as displayed in Figure 5.11, Column (b).

Figure 5.11: The Effects of Episodes on Interest Rate with High and Low Institutional Quality

Column (a)	Column (b)
	
	
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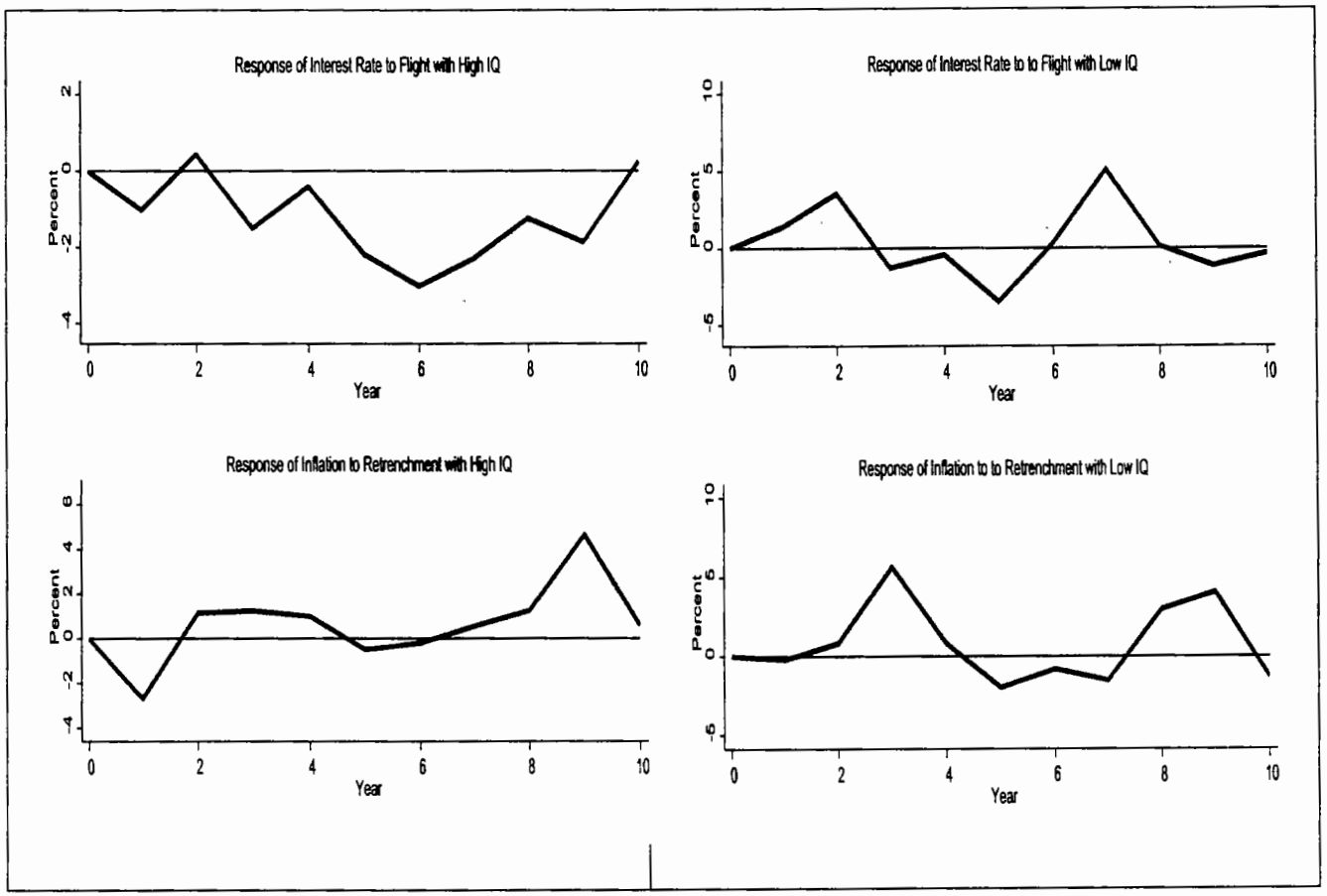

Response of Interest Rate to Flight with High IQ
Percent
2
0
-2
-4
0
2
4
6
8
10
Year
Response of Interest Rate to to Flight with Low IQ
Percent
10
5
0
-5
0
2
4
6
8
10
Year
Response of Inflation to Retrenchment with High IQ
Percent
6
4
2
0
-2
-4
0
2
4
6
8
10
Year
Response of Inflation to to Retrenchment with Low IQ
Percent
10
5
0
-5
0
2
4
6
8
10
Year

5.11.3 The Impact Episodes on Domestic Credit through IQ

In this section, we present LPIRFs for the DCP for the DEs. The response of the DCP to surge episode is displayed in Figure 5.12 considering both high and low IQ in Columns (a) and (b) respectively. In the short-term period (right after the episode occurrence) the DCP does not respond or in other words surge impact is zero in first two years both in high and low IQ. In the medium-term the impact of surge is a negative in case of high IQ. However, the influence of surge on DCP is a positive almost from 6^{th} period to 9^{th} period in case of high IQ as presented in Figure 5.12, column (a).

The stop episode has a positive effect on DCP of DEs having high IQ. In contrast, in case of low IQ is the said response is negative from short-term to medium-term range. Further, the shock die out in 8^{th} period as shown in Figure 5.12, column (b).In addition, the response of the DCP to the flight is negative, all through from short-term period to long-term period in case of high IQ. On the other hand, the response of DCP to flight in case of low IQ is initially remained constant in short-term period, however, in medium-term it becomes positive followed by the sharp decrease in the DCP.

Initially, the effect of the retrenchment on DCP is very small and positive till the end of the 2^{nd} period. However, it gradually decreases and shows negative association over the remaining forecasted period. On the other hand, the response of the DCP to retrenchment shock is a positive in medium to long-term range for the countries having low IQ.

Surge in NCF theoretically leads to higher DCP through numerous channels for example lendable funds, rise in liquidity, decrease in interest-rates and also through growing security prices (Lane & McQuade, 2014). Further, it can also leads to significant DCP due to the decreasing lending standards, particularly in DEs where commercial banking standards, regulations and supervision are fragile. Moreover, this association is dependent on the financial market diversification of the host economy.

Our findings show that IQ play important role in explaining the effects of episodes on the DCP. One of the possible explanations can be that, as corruption which is a fundamental dimension of IQ of a capital-recipient country (developing economy), is considered as a push-factor of the growth of "non-performing loans" in the banking systems of many DEs (Park, 2012). Thus, low IQ for example; higher corruption in the host county may increase DCP expansion due to the large capital inflows.

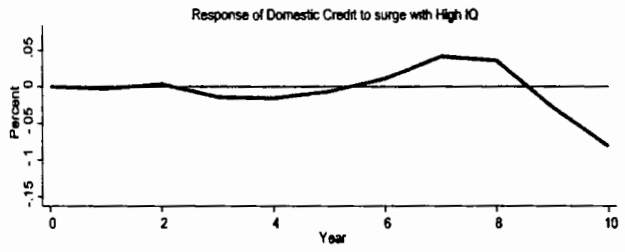
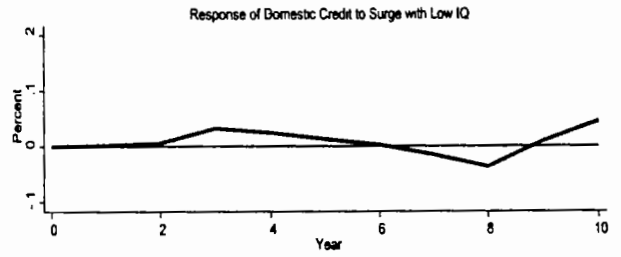
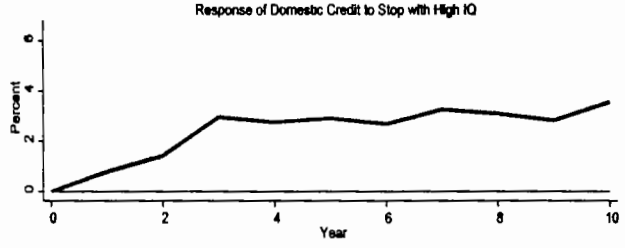
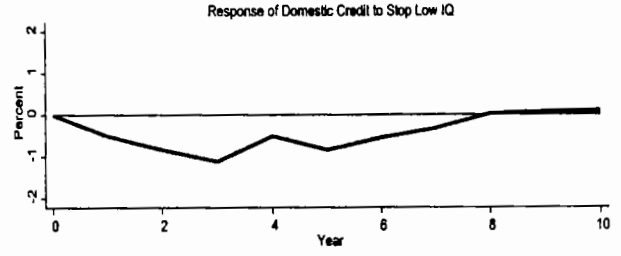
In similar vein, weak property rights, political instability, delicate public governance in the capital-recipient economy are the major distortions that stop the capital-recipient economy to harvest the maximum remuneration of NCF. However, for many DEs, a cause of being not capable to gain from international financial markets arelow governance, weak property rights and corruption (Wei, 2018; Engel & Park, 2018).

On the other hand, low IQ also adversely influence the domestic financial market, which ultimately translated to that the host country fails to gain the benefits of

NCF because the distortions could decrease the returns on NCF. In addition to that, these distortions could be due to the expropriation from foreign investors, by government officials and domestic corporate for their private benefit (Sahay et al., 2015; Wei, 2018).

DCP can be translated as either a positive or negative perspective in an economy. For example, a rise in DCP can be seen as a better future macroeconomic prospect in the economy and also long-run economic growth. However, a rise in DCP, particularly a fast-growing credit supply, can be a signal for an asset price bubble, mounting credit risk, and a financial crisis. Rise in DCP could be a caution of financial risks to the domestic economy. Therefore, institutional development (improving bureaucracy quality, investment profile, and combating corruption) will help to decrease uncertainty and persuade economic activity in the host economy.

Figure 5.12: The Effects of Episodes on Domestic Credit with High and Low Institutional Quality

Column (a)	Column (b)
	
	
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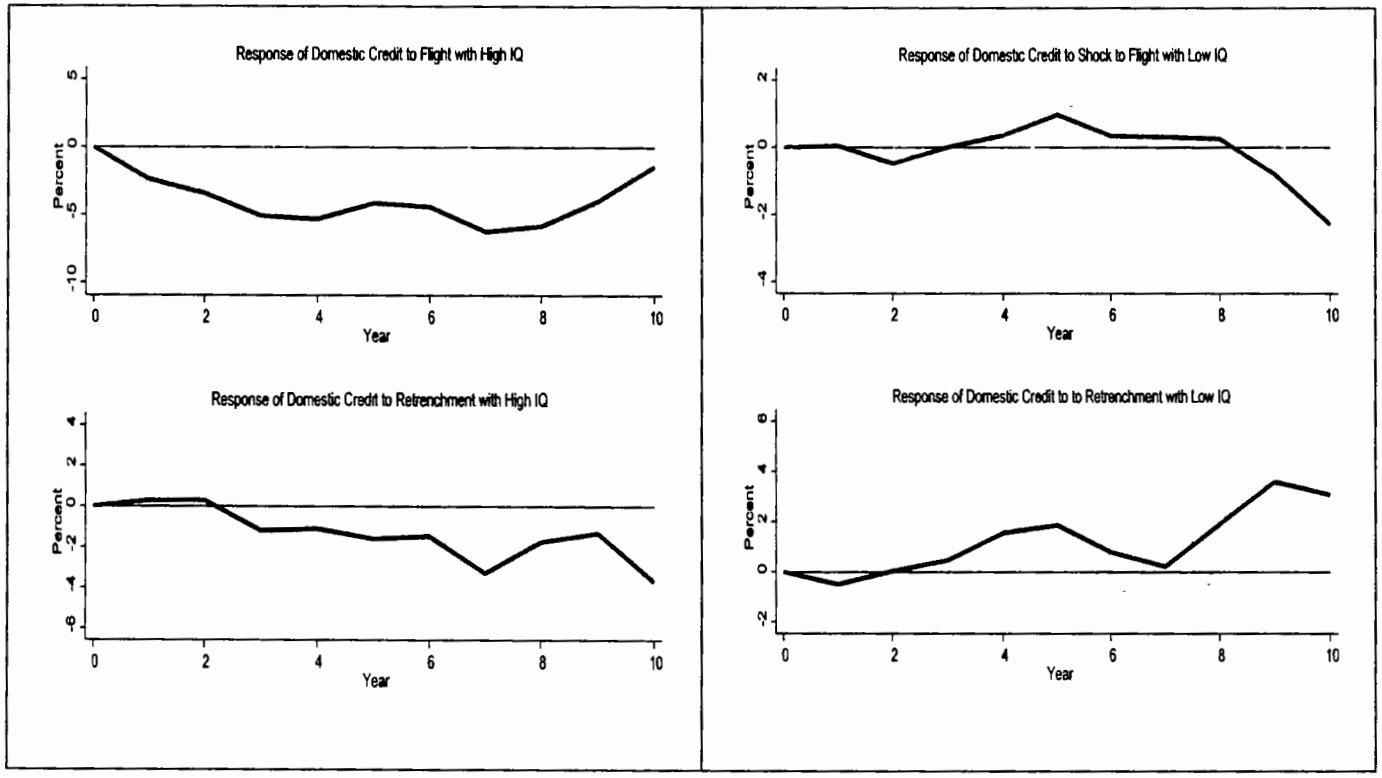
Response of Domestic Credit to Flight with High IQ
Percent
5
0
-5
-10
0
2
4
6
8
10
Year
Response of Domestic Credit to Shock to Flight with Low IQ
Percent
2
0
-2
-4
0
2
4
6
8
10
Year
Response of Domestic Credit to Retrenchment with High IQ
Percent
4
2
0
-2
-4
-6
0
2
4
6
8
10
Year
Response of Domestic Credit to to Retrenchment with Low IQ
Percent
6
4
2
0
-2
0
2
4
6
8
10
Year

CHAPTER 6

CONCLUSION AND POLICY RECOMMENDATIONS

6.1 Introduction

Chapter 6 dedicated to an overview of the study, the empirical findings, policy implications, research limitations and future research guidelines. Section 6.2 gives an overview of the study, including the summary of the major empirical findings. Section 6.3 suggests policy implications based on findings of the study. Finally, Section 6.4 discusses the limitations and future directions of the study.

6.2 Findings

In this study, we empirically investigate the determinants of NCF. The gyration in capital flows has been observed after the GFC (2007-08). Although, in pre-crisis period, the world has observed the gradual rise in capital mobility associated with the increasing globalization between the developing and advanced economies. Thus, we split our sample periods into pre crisis and post crisis periods and investigate the determinants of NCF for each sample period separately. Based on NCF we identify extreme episodes namely surge, stop, flight, and retrenchment and empirically investigate the determinants of each episodes utilizing probit model and complementary log-log regression for 47 DEs over the period 1980-2018.

We use LPs regression proposed by Jorda (2005), and explore the impact of NCF, surge, stop, flight, and retrenchment on the real sector indicators (the GDP growth rate, employment, and savings rate) and financial sector variables (inflation, interest rate, and DCP). We construct an institutional quality index, and examine the moderating role of IQ in establishing the impact of episodes on real and financial sectors by differentiating between high-institutional and low-institutional quality.

The determinants of NCF are divided into two broad categories that are global-push and domestic-pull factors. We consider the push factors, such as global growth rate, global interest rate, world uncertainty index (WUI), world commodity prices index (WCP) and regional contagion. Domestic factors such as the domestic interest rate, REER, current account to GDP, the domestic GDP growth rate, the exchange rate regime, KAOPEN, IQ, and GDP per capita are the major determinants of NCF. We use QR to empirically investigate the determinants of NCF.

We find that both push and pull factors are the important in determining NCF to DEs in full sample period. In particular, push factors such as the global growth rate, the global interest rate, WUI are more associated with NCF in pre-crisis period as compared to the post-crisis period in which the magnitude of the coefficient falls across the quantiles. However, by comparing the per-crisis period with post-crisis period we find that the country-specific characteristics are more important in post-crisis period in driving NCF.

Large inflows often cause appreciations of local currency and cause financial bubbles which deteriorate international competitiveness of the DEs. Analogously, large and sudden capital outflows can also severely damage the domestic economy such as currency crisis and liquidity crunch in the domestic economy. To address this important issue we first, however, identify the episodes such as surge, stop, flight, and retrenchment. Particularly, we identify episodes based on the deviation of NCF to GDP ratio from its historical trend.

We use probit fixed effects model and complementary log-log regression to empirically investigate the determinants of each episodes. Based on probit model we document that global factors such as the global growth rate and the global commodity prices have no significant impact on surges occurrence. However, WUI is a significant and negatively associated with the surge occurrence. Similarly, current account to GDP is a negatively associated and the real GDP growth rate is positively associated with the surge episode. Moreover, the push factor namely the global growth rate and regional contagion are significant and positively associated with flight episode. In addition, the domestic interest rate and the current account are positively associated with flight episode.

Using LPs regression proposed by Jorda (2005), we obtain the impulse response functions to explore the impact of NCF, and episodes on the real and nominal indicators. We find that these episodes have strong impacts on the real and financial indicators of the DEs. For example, we find that the impact of surge on growth rate is a negative and persistent. The impact of stop on the growth rate is a positive over the medium term to long-term period.

Earlier we argue that the capital flows are associated with range of benefits however, large capital flows also carry risk because they have the potential to bring macroeconomic imbalances in the DEs due to low absorptive capacity and less diversified domestic economy. We conclude that episodes have significant impacts on the real and financial sectors of DEs and our findings support this notion that large capital flows bring imbalances in the DEs. We also conclude that surges and flight have more strong influence on the real and financial sectors of the DEs as compare to stop and retrenchment.

We also examine the moderating role of high and low IQ in establishing the impact of episodes on the real and financial sectors of the DEs. We use LPs regression to obtain the impulse response functions. We find that in order to reap the potential benefits of the NCF the level of IQ matters for DEs. In particular, we find that level of IQ act as a gate keeper in the host economy. We conclude that the countries with higher level of IQ are less prone the negative impacts of extreme episodes as compared to the countries with low level of IQ.

6.3 Policy Implications

There are some relevant policy implications that can be drawn from the empirical findings of this study. It is essential for the DEs to design a prudent policy to pull more foreign investments, to promote economic growth and thereby improve the living standards of their citizens.

The pre-crisis period is marked as gradual rise in capital flows. In the pre-crisis period both push and pull factors were important to drive NCF. However, in the

post-crisis period domestic macroeconomic policies, IQ and other country characteristics are the major determinants of episodes. Therefore, in order to tackle the adverse effects of episodes after the GFC required policy shifts considering the role of domestic policies.

Usually the DEs are capital scares therefore consistent inflows of capital are beneficial for the DEs. However, episodes are found harmful for the real and financial sectors of the DEs due to the less developed and diversified domestic market. Therefore, policymakers are advised to form such policies that may counter the adverse effects of large capital inflows and outflows.

The financial sector development can also facilitate to enhance the strength and resilience of the developing economy in order to efficiently deal with episodes of capital inflows and outflows. And it can be possible if the DEs develop an inclusive, robust and diversified financial sector. In reality, the financial system of most of the DEs is currently dominated by banks. It is vital to introduce more financial products and services to the current system to cater for different needs and to expand the coverage to promote inclusive financial access.

Institutional development should also be a policy concern for the policymakers to reap the benefits of NCF and its episodes in a better way. One of the important findings of this study is that IQ plays a significant role in broadening the growth-enhancing impact of capital surge and stop episodes. Therefore, strengthening institutions are crucial for DEs if these economies aim to make the most of the benefits of large capital inflows.

In this era of globalization where the economies are highly interconnected the NCF acquire more important position at policy front. Rather than focusing whether to more restrict or less restrict NCF, the policymakers and practitioners focus on how to manage the extreme episodes to not only to make the most of the benefits but also minimize the risks associated with episodes of NCF.

Finally, study makes a significant contribution to the developing discussion on the pros and cons of the episodes of NCF. This study also the help the policymakers, academicians, researchers, and practitioners to lift the debate to a next level on how NCF and its episodes are managed for the host economy to reap the maximum benefits.

6.4 Limitations and Directions for Future Research

The limitations of any study provide a number of directions for the future research. In a similar manner, this study opened numerous directions for the future research. In this study we considered NCF at more aggregate level, however, for future study researchers can consider at more disaggregated data considering the components of NCF and their episodes. More specifically, the researchers can consider foreign direct investment, portfolio investment, and other investments to identify the drivers of episodes of each component. Moreover, for better understanding, researchers can explore the effects of episodes of the foreign direct investment, portfolio investment and other components of NCF on the real and financial sectors of the DEs.

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APPENDIX

Table A1: List of Countries

Albania	Congo, Rep.	Jamaica	Niger	South Africa
Angola	Costa Rica	Jordan	Nigeria	Sri Lanka
Bangladesh	Dominican Republic	Kenya	Pakistan	Tanzania
Bolivia	Egypt, Arab Rep.	Libya	Papua New Guinea	Thailand
Botswana	Gabon	Madagascar	Paraguay	Togo
Brazil	Guatemala	Malaysia	Peru	Uganda
Bulgaria	Guinea-Bissau	Mali	Philippines	Venezuela, RB
Cameroon	Honduras	Mexico	Romania	
China	India	Mongolia	Russian Federation	
Colombia	Indonesia	Morocco	Senegal	

Table A2: Institutional Quality Results based on PCA

Component	Eigenvalue	Difference	Proportion	Cumulative
GS	3.298821	2.146475	0.5498	0.5498
IP	1.152355	0.517312	0.1921	0.7419
CP	0 .635042	0 .274809	0.1058	0.8477
LO	0.360233	0.053379	0.0600	0.9077
DA	0.306854	0.060163	0.0511	0.9589
BQ	0.246691		0.0411	1.0000

Source: Authors' calculations using Stata 16.0

Table A3: Principal Components (Eigenvectors/Loadings)

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6
GS	0.2495	0.7535	0.2101	0.5226	0.1226	-0.1941
IP	0.4011	0.4249	-0.4172	-0.5105	0.1651	0.4435
CP	0.4206	-0.3864	0.3796	0.2678	0.4808	0.4762
LO	0.4543	-0.0029	0.4737	-0.2095	-0.7218	0.0653
DA	0.4034	-0.2595	-0.6428	0.5065	-0.3158	-0.0204
BQ	0.4805	-0.1871	-0.0014	-0.3069	0.3252	-0.7309

Source: Authors' calculations using Stata 16.0

Figure A1: Scree Plot

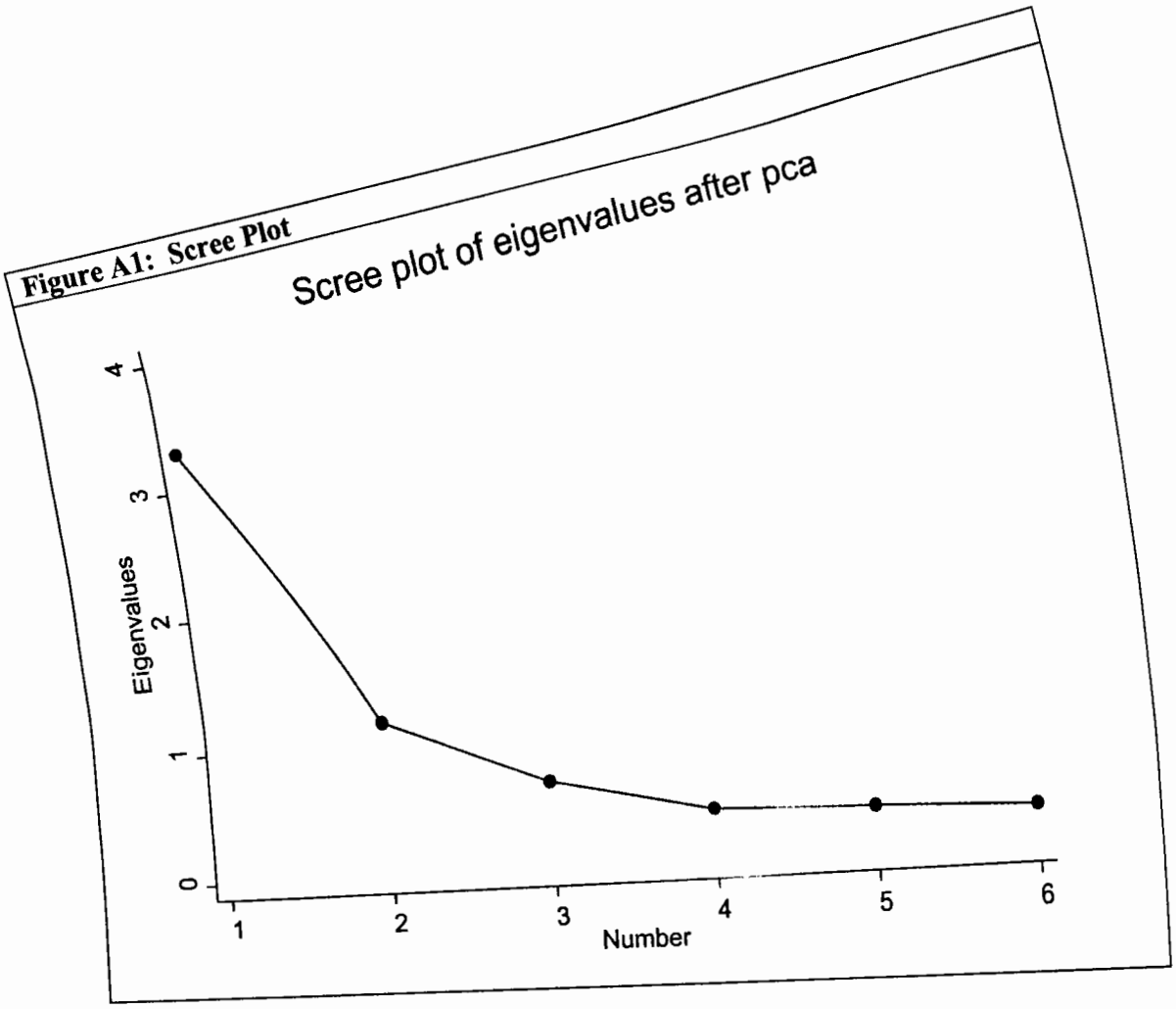

Table A4: Results of Normality Test

	Skewness	Kurtosis	Jarque-Bera		Shapiro-Wilk		Shapiro-Francia	
			Statistics	p-value	Statistics	p-value	Statistics	p-value
NCF	-0.706	33.535	7.0e+04	0.000	0.786	0.000	0.783	0.001

Source: Authors' calculations using Stata 16.0

Table A5: Total Number of Episodes

SR#	Total Surge Observed	Total Stop Observed	Total Flight Observed	Total Retrenchment Observed	Share in Total Observations
1	204				13.29%
2		1047			68.21%
3			101		6.50%
4				183	12.00%

Source: Authors' calculations using Stata 16.0

Table A6: National Distribution of Episodes

Sr#	Country	Surge	Stop	Flight	Retrenchment
1	Albania	2	27	1	2
2	Angola	2	18	1	10
3	Bangladesh	4	22	1	0
4	Bolivia	5	28	3	0
5	Botswana	4	12	3	13
6	Brazil	8	19	0	0
7	Bulgaria	2	21	3	9
8	Cameroon	5	28	2	0
9	China	9	14	2	0
10	Colombia	6	26	1	0
11	Congo, Rep.	7	16	7	6
12	Costa Rica	1	34	0	0
13	Dominican Republic	6	27	1	0
14	Egypt, Arab Rep.	3	24	2	6
15	Gabon	2	4	3	22
16	Guatemala	6	30	0	0
17	Guinea-Bissau	1	20	1	6
18	Honduras	4	32	1	0
19	India	3	31	0	0
20	Indonesia	6	20	4	1
21	Jamaica	5	27	1	0
22	Jordan	4	30	3	0
23	Kenya	7	25	2	0
24	Libya	0	4	3	16
25	Madagascar	4	31	1	0
26	Malaysia	8	10	5	13
27	Mali	2	33	1	0
28	Mexico	4	27	0	0
29	Mongolia	4	29	1	2
30	Morocco	7	24	2	0
31	Niger	3	29	1	3
32	Nigeria	4	6	2	15
33	Pakistan	7	23	2	0
34	Papua New Guinea	3	17	7	9
35	Paraguay	3	22	4	1
36	Peru	9	26	0	0
37	Philippines	4	19	3	2
38	Romania	5	22	2	8
39	Russian Federation	3	1	4	9
40	Senegal	2	32	1	0
41	South Africa	7	14	1	5
42	Sri Lanka	7	31	0	0
43	Tanzania	2	34	1	0
44	Thailand	4	18	4	8
45	Togo	3	29	4	0
46	Uganda	1	31	2	0
47	Venezuela, RB	6	0	8	17
	Total	204	1047	101	183

Source: Authors' calculations using Stata 16.0

Figure A1: Scree Plot

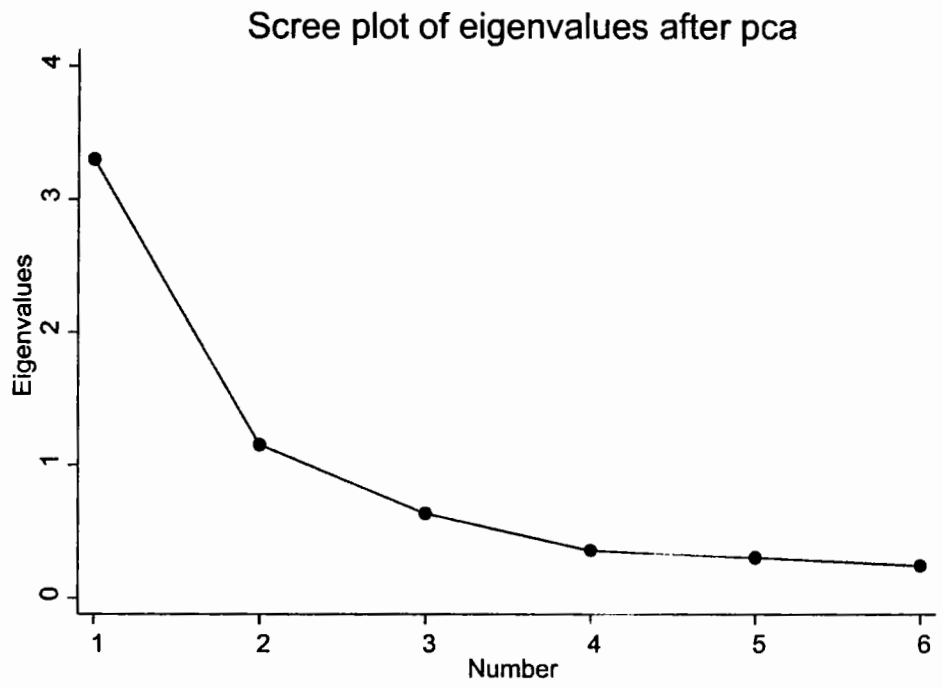

Table A4: Results of Normality Test

	Skewness	Kurtosis	Jarque-Bera		Shapiro-Wilk		Shapiro-Francia	
			Statistics	p-value	Statistics	p-value	Statistics	p-value
NCF	-0.706	33.535	7.0e+04	0.000	0.786	0.000	0.783	0.001

Source: Authors' calculations using Stata 16.0

Table A5: Total Number of Episodes

SR#	Total Surge Observed	Total Stop Observed	Total Flight Observed	Total Retrenchment Observed	Share in Total Observations
1	204				13.29%
2		1047			68.21%
3			101		6.50%
4				183	12.00%

Source: Authors' calculations using Stata 16.0

Table A6: National Distribution of Episodes

Sr#	Country	Surge	Stop	Flight	Retrenchment
1	Albania	2	27	1	2
2	Angola	2	18	1	10
3	Bangladesh	4	22	1	0
4	Bolivia	5	28	3	0
5	Botswana	4	12	3	13
6	Brazil	8	19	0	0
7	Bulgaria	2	21	3	9
8	Cameroon	5	28	2	0
9	China	9	14	2	0
10	Colombia	6	26	1	0
11	Congo, Rep.	7	16	7	6
12	Costa Rica	1	34	0	0
13	Dominican Republic	6	27	1	0
14	Egypt, Arab Rep.	3	24	2	6
15	Gabon	2	4	3	22
16	Guatemala	6	30	0	0
17	Guinea-Bissau	1	20	1	6
18	Honduras	4	32	1	0
19	India	3	31	0	0
20	Indonesia	6	20	4	1
21	Jamaica	5	27	1	0
22	Jordan	4	30	3	0
23	Kenya	7	25	2	0
24	Libya	0	4	3	16
25	Madagascar	4	31	1	0
26	Malaysia	8	10	5	13
27	Mali	2	33	1	0
28	Mexico	4	27	0	0
29	Mongolia	4	29	1	2
30	Morocco	7	24	2	0
31	Niger	3	29	1	3
32	Nigeria	4	6	2	15
33	Pakistan	7	23	2	0
34	Papua New Guinea	3	17	7	9
35	Paraguay	3	22	4	1
36	Peru	9	26	0	0
37	Philippines	4	19	3	2
38	Romania	5	22	2	8
39	Russian Federation	3	1	4	9
40	Senegal	2	32	1	0
41	South Africa	7	14	1	5
42	Sri Lanka	7	31	0	0
43	Tanzania	2	34	1	0
44	Thailand	4	18	4	8
45	Togo	3	29	4	0
46	Uganda	1	31	2	0
47	Venezuela, RB	6	0	8	17
	Total	204	1047	101	183

Source: Authors' calculations using Stata 16.0

Table A7: List of Variables		
Variable	**Definition**	**Source**
Net capital flows	"Net capital flows are equal to the difference capital inflows and capital outflows".	IMF-IFS
Capital Inflows	Capital Inflows by Foreign Agents (Scaled by Trend GDP). "Capital inflows are equal to the net purchases of domestic assets by non- residents; namely, it is the sum of all liability inflows".	IMF-IFS
Capital Outflows	Capital Outflows by Domestic Agents (Scaled by Trend GDP). "Capital outflows are equal to the net purchases of foreign assets by domestic agents; in other words, it is the negative of the sum of all asset inflows including international reserves".	IMF-IFS
Surge	Rapid increase in capital inflows by foreign investors. Dummy equal to "one" if there is a surge episode in NCF.	Author's own calculation
Stop	Rapid decrease in capital inflows by foreign investors Dummy equal to "one" if there is a stop episode in NCF.	Author's own calculation
Flight	Rapid increase in capital outflows by domestic investors. Dummy equal to "one" if there is a flight episode in NCF.	Author's own calculation
Retrenchment	Rapid decrease in capital outflows by domestic investors. Dummy equal to "one" if there is a retrenchment episode NCF.	Author's own calculation
Global Growth Rate	World Real GDP Growth Rate	IMF-IFS
Global Interest Rate	Interest rate on long-term government bonds for US.	Federal Reserve Economic Data (FRED)
World Uncertainty Index (WUI)	WUI stands for World Uncertainty Index (WUI). The index is unbalanced GDP weighted average for 142 countries. This index measures overall uncertainty across the globe.	FRED
World Commodity Prices	Global Price Index of All Commodities, Index.	FRED
Domestic Interest Rate	Deposit interest rate is the rate paid by commercial or similar banks for demand, time, or savings deposits. The terms and conditions attached to these rates differ by country, however, limiting their comparability.	WDI
Real Effective Exchange Rate (REER)	Foreign exchange rate regime data - classification from 1-6.	IMF
GDP Growth rate	GDP Growth rate.	IMF–WEO
Current Account	Current account balance is the sum of net exports of goods and services, net primary income, and net secondary income.	WDI (2019)
Exchange Rate Regime	Exchange rate regime data classification from 1-4.	IMF
Capital Account Openness (KAOPEN)	Capital account openness index (high=liberalized; low=closed).	Chinn and Itto (2008)
Institutional Quality	Institutional Quality Index.	ICRG– Published by the PRS Group
Real GDP Per Capita	GDP per capita is gross domestic product divided by midyear population. 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. Data are in constant 2010 U.S. dollars.	WDI (2019)
		cont

Employment	Number of persons engaged (in millions). Employment can be defined by either the national definition, the ILO harmonized definition, or the OECD harmonized definition. Persons who during a specified brief period such as one week or one day, (a) performed some work for wage or salary in cash or in kind, (b) had a formal attachment to their job but were temporarily not at work during the reference period, (c) performed some work for profit or family gain in cash or in kind, (d) were with an enterprise such as a business, farm or service but who were temporarily not at work during the reference period for any specific reason.	Penn world Table 9.1
Domestic Savings	Gross Domestic Savings (% of GDP). Gross savings are calculated as gross national income less total consumption, plus net transfers. Data are in current local currency.	WDI (2019)
Inflation	Inflation, GDP deflator (annual %) Inflation as measured by the consumer price index 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.	WDI (2019)
Domestic Credit to Private Sector	Domestic credit to private sector (% of GDP). Domestic credit to private sector by banks refers to financial resources provided to the private sector by other depository corporations (deposit taking corporations except central banks), such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries these claims include credit to public enterprises.	WDI (2019)
Age Dependency Ratio	Age dependency ratio is the ratio of dependents--people younger than 15 or older than 64--to the working-age population--those ages 15-64. Data are shown as the proportion of dependents per 100 working-age population.	WDI (2019)
Trade Openness	Trade Openness is defined as sum of exports and imports of goods and services measured as a share of GDP.	WDI (2019)
Real Interest Rate	Real interest rate is the lending interest rate adjusted for inflation as measured by the GDP deflator. The terms and conditions attached to lending rates differ by country, however, limiting their comparability.	WDI (2019)
Broad Money % of GDP	Broad money (IFS line 35L..ZK) 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.	WDI (2019)
Gross Fixed Capital Formation	Gross fixed capital formation (formerly gross domestic fixed investment) includes 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. According to the 1993 SNA, net acquisitions of valuables are also considered capital formation. Data are in constant local currency.	WDI (2019)
Human Capital	Human capital index based on years of schooling and returns to education.	Penn world Table 9.1