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|Research Article|

The Effect of Episodes of Net Capital Flows on Real and Financial Sectors of the Developing Economies

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ABSTRACT

This study classifies episodes into four types, namely surge, stop, flight, and retrenchment, and investigates investigate the impact of surge, stop, flight, and retrenchment on real sector indicators (GDP growth rate, employment, and savings) and financial sector indicators (inflation, the interest rate, and domestic credit). This study adopted local projections regression to investigate the impact of episodes on the real and financial sectors of 47 developing economies over the period 1980–2018.We find that episodes have significant impacts on the real and financial sectors of the developing economies, and our findings support the notion that episodes of capital flows bring imbalances to the developing economies. We also conclude that both the liability flow-driven episode surges and the asset flow-driven flight have a stronger influence on the real and financial sectors of the developing economies as compared to stop and retrenchment. The development of the financial sector can also facilitate enhancing the strength and resilience of the developing economy in order to efficiently deal with episodes of capital inflows and outflows. This study also helps policymakers, academicians, researchers, and practitioners lift the debate to the next level on how episodes are managed for the host economy to reap the maximum benefits. To the best of the authors' knowledge, this is the first comprehensive empirical study on the impact of episodes on real and financial sectors based on net capital flows in the context of developing economies.

JEL Classifications: C21; F21; O43

Keywords: Capital flows; Episodes; Local Projections

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INTRODUCTION

A rise in net capital flows (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 (Eichengreen & Gupta, 2016). Second, in contrast, large capital flows may be followed by current account deficits (Cardarelli et al., 2010), appreciation of exchange rates, currency crises, and inflationary pressures in the host economy (Rashid et al., 2019). In addition to that, the latter in turn can cause a decrease in the trading sector (Ibarra et al., 2020). As a result, the current account may become more susceptible to the global financial cycle, and reversals of NCF (De Vita & Kyaw, 2008).

NCF affects the real sector of the economy in terms of growth, inflation, asset prices, and exchange rates (Zhang & Ward, 2015; Davis et al., 2021). Moreover, a lack of required absorptive capacity in the DEs, inapt supervision, and ineffective sterilisation 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 is often known for the transmission of real and financial shocks across 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 from which they inflow or outflow. Further, the macroeconomic impacts of capital flows on the real and financial sectors of the economy also depend on 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 burst when NCFs are reversed. These arguments have by and large been supported by the pertinent literature (Reinhart & Reinhart, 2009; Agosin & Huaita, 2010; Ghosh et al., 2016). In a similar vein, Gunter (2017) argues that overvaluation of the local currency and higher costs of financial transactions are 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.

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, leading to exchange rate appreciation and asset booms, and improper supervision can also deteriorate the fragile banking system of the country (Furceri et al., 2012; Rashid & Hussain, 2013). Further, large episodes of NCF posed a severe risk to the financial stability of the host countries (Tillman, 2013). In the literature, many

researchers attempted to examine the effects of normal capital flows mostly on macroeconomic variables (Combes et al., 2019; Ben-Salha & Zmami, 2020; Inoguchi, 2021).

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 raise concerns for policymakers; for example, they may disrupt inflationary dynamics and raise exchange rate instability and currency crises in DEs. 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 a macroeconomic policy perspective, an important question emerges: how episodes of NCF (surge, stop, flight, and retrenchments) affect the real and financial sectors of the DEs needs to be investigated in order to adopt appropriate policies to sterilize the impact of NCF and its episodes.

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 consider only extreme falls in capital outflows. Sahu (2020b) finds the impact of surge episodes on episodes of GDP growth. However, there is no such research work that 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 the private sector).

In addition to that, 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, interest rates, and domestic credit) sector indicators. Thus, our four types of episodes provide a detailed classification of NCF episodes and their potential effects on the real and financial sector variables in DEs.

The study offers new empirical evidence in the presently unsettled discussion on the pros and cons of extreme episodes of NCF and whether these extreme episodes are favourable 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.

The rest of the study is planned as follows: The next section reviews the relevant literature, followed by the empirical methodology. Subsequently, we discuss the empirical findings and present the conclusions and recommendations.

LITERATURE REVIEW

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

Capital inflows may have positive impacts in developing 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. The empirical findings on the impact of NCF on the financial and real sectors are limited and present mixed results. For example, Adams (2009) report a positive association between capital inflows and GDP growth, whereas others such as Ullah 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 the financial and real sectors is silent.

Broadly speaking, empirical work on foreign capital inflows and GDP growth is divided into different streams. Many researchers advocate that inflows are essential for economic growth, for example, Pegkas (2015) and Chigbu et al. (2015). However, Alfaro et al. (2008) found a negative effect of NCF on productivity growth. Aizenman et al. (2013) suggest that the NCF-growth relationship depends on the structure of the economy and also on global growth patterns. Agbloyor et al. (2016) report no relationship between foreign capital, institutions, and economic growth.

NCF may be considered a transfer of funds across countries, crucial for capital accumulation and creating employment opportunities for many countries. In the empirical literature, the effect of NCF on employment levels presents mixed results. We find that most of the studies reveal a positive association between capital inflows and employment, such as Vacaflores (2011) and Jude & Silaghi (2016). However, some researchers report negative effects, for example (Jenkins, 2006; Mucuk & Demirsel, 2013; Inekwe, 2013).

Similarly, many authors document the insignificant impact of foreign capital on employment levels in the host nations (Rizvi & Nishat, 2009; Brincikova & Darmo, 2014).

According to Amadou (2011), in developing countries where domestic financial capital is comparatively inadequate, NCF may be utilised as domestic investment. Feldstein (1983) examined the relationship between NCF and local savings. According to the author, restrictions imposed by the government on the perfect mobility of capital affect domestic savings, which can also significantly affect domestic capital formation. Further, Haiyue (2013) finds that capital flows significantly affect the inflation rate in China.

After reviewing the existing literature, we conclude that NCF plays an important role in filling the saving and investment gap and easing domestic saving constraints. Therefore, NCF influences domestic savings and, thus, economic growth. However, the impact of episodes on domestic savings has yet to be explored. In addition to that, NCF may cause monetary expansion and a surge in domestic demand; consequently, it may increase inflation, disrupt the financial system, and create bubbles. The existing literature on the effects of NCF on economic and financial indicators documents 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, 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.

DATA DESCRIPTION AND EMPIRICAL FRAMEWORK

DATA DESCRIPTION and VARIABLES

We use unbalanced annual panel data over the period 1980–2018 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. A list of sample countries is provided in Appendix A(Table A1). The primary sources of our data are the IMF's International Financial Statistics (IFS) database, the World Bank's World Development Indicators (WDI), the Penn World Table (PWT), and the International Country Risk Guide (ICRG) published by Political Risk Services (PRS).

In this study, our dependent variables are NCF, GDP per capita, gross savings, employment, inflation, the market interest rate, and domestic credit to the private sector as a percentage of GDP (hereafter DCP). Moreover, NCF is comprised of three different components, namely FDI, FPI, and OI. The data on NCF is obtained from World Development Indicators (WDI). Following the relevant literature, we use several

macroeconomic indicators as control variables in our empirical analysis. These variables are IQ, age dependency ratio, exports, imports, nominal effective exchange rate (NEER), real effective exchange rate (REER), broad money percentage of GDP, gross capital formation, human capital index, capital account openness (KAOPEN), and trade openness (Furceri et al., 2012; Hwang et al., 2017). The complete description of the variables is given in Appendix A(Table A4).

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; Baek & Song, 2016; Ghosh et al., 2016; Efremidze et al., 2018; Sahu, 2020b; Dhar, 2021). However, there is no consensus among the researchers on a single methodology to identify episodes (Crystallin et al., 2015). Nevertheless, two important criteria that are common among the researchers to identify the episodes are that the magnitude of NCF for the given time period be large both in relative as well as in absolute terms. According to Crystallin et al. (2015), the first criterion is "relative magnitude," in which NCF are measured by comparing with previous periods using measures such as means and percentile values of a sample and also standard deviation from 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, there is no clear theoretical foundation for choosing a suitable threshold (Sahu, 2020b; Dhar, 2021). Therefore, choosing values for thresholds and estimation parameters depends on the decision of the practitioners and researchers and the requirements of the study (Rashid et al., 2019; Sahu, 2020a).

Following Forbes and Warnock (2012), Hwang et al. (2017), and Imran and Rashid (2022), we consider the complete cycle of NCF (surge, stop, flight, and retrenchment). In the following sub-sections, we discuss the criteria through which we identify each episode of NCF. The episodes of NCF are detrended using the Hodrick Prescott (HP) filter with a smoothing parameter of 100. The following sub-sections discuss the criteria used to identify each episode.

Surge and Stop Episodes

We identify surge and stop episodes based on the deviation of the 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, the extremely large movements of NCF are relative not only to their own trend in each specific country during that period but also to the volatility of episodes that particular country experiences 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:

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

$$D_{it}^{stop} = \begin{cases} 1 & TDev_t < +\sigma_{TDev} and \frac{NCF_t}{GDP_t} > 1\% \\ 0 & otherwise \end{cases} \quad (2)$$

In equations (1) and (2), 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, σ_{TDev} describes the standard deviation of detrended NCF. Further, each episode is linked to the sequence of years in which the criterion is met. We identify a surge episode if NCF are more than one standard deviation above the historical average. Similarly, stop episode is defined as NCF that are above the historical average and below one standard deviation above the historical average.

Flight and Retrenchment Episodes

Episode flight is defined as a sharp increase in outflows (Hwang et al., 2017; Imran & Rashid, 2022). Similarly, a retrenchment episode is defined as a sharp decrease in outflows (Forbes & Warnock, 2021). We identify a flight episode if NCF are less than one standard deviation below the historical average. In addition to that, a retrenchment episode is defined as NCF that are below the historical average and above one standard deviation below their 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:

$$D_{it}^{flight} = \begin{cases} 1 & \text{TDev}_t < -\sigma_{\text{TDev}} \text{ and } \frac{NCF}{\text{GDP}_t} < -1\% \\ 0 & otherwise \end{cases} \quad (3)$$

$$D_{it}^{retr} = \begin{cases} 1 & TDev_t > -\sigma_{TDev} \text{ and } \frac{NCF_t}{GDP_t} < -1\% \\ 0 & otherwise \end{cases} \quad (4)$$

In Equations (3) and (4), NCF_t represents NCF and $TDev_t = \left(\frac{NCF_t}{GDP_t}\right) - trend$ is the deviation from the historical trend. Further, σ_{TDev} describe the standard deviation of detrended NCF. Moreover, each episode is related to the sequence of years in which the criterion is met.

Using the underlying procedure, we identified the episodes in the sample. Specifically, 204 surges, 1047 stops, 101 flights, and 183 retrenchment episodes identified in the sample are presented in Appendix A(Table A2). Further, the national distribution of each episode is also provided in the Appendix A(Table A3).

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

The impulse response function (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 in DEs through IRF. It enables us to draw the influence of a one-time shock on an innovation on both 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 is primarily intended for the vector autoregressive (hereafter VAR) model. However, afterward, Chong et al. (2012) augment 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 that do 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 the real and financial indicators in the panel framework. The LPs method is a more flexible technique for modelling dynamic responses relative to the standard VAR approach. LPs are easier to use in panel settings and allow us to estimate IRF for non-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 than forecasting for increasingly distant horizons from a given model (Rashid et al., 2019).

The Empirical Model (Local Projections Framework)

Following Jorda (2005), Furceri et al. (2012), Teullings and Zubanove (2014), Teimouri 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:

$$Z_{i,t+k} - Z_{i,t} = \delta_i + \delta_t + \sum_{j=1}^{R} \delta_{jk} Z_{i,t-r} + \beta_k NCF_{i,t} + \gamma_k Control_{i,t} + \epsilon_{i,t} \quad (5)$$

$$Z_{i,t+k} - Z_{i,t} = \delta_i + \delta_t + \sum_{j=1}^{R} \delta_{jk} Z_{i,t-r} + \beta_k Surge\ Dummy_{i,t} + \gamma_k Control_{i,t} + \epsilon_{i,t} \quad (6)$$

$$Z_{i,t+k} - Z_{i,t} = \delta_i + \delta_t + \sum_{j=1}^{R} \delta_{jk} Z_{i,t-r} + \beta_k Stop\ Dummy_{i,t} + \gamma_k Control_{i,t} + \epsilon_{i,t} \quad (7)$$

$$Z_{i,t+k} - Z_{i,t} = \delta_i + \delta_t + \sum_{r=1}^{R} \delta_{jk} Z_{i,t-r} + \beta_k Flight\ Dummy_{i,t} + \gamma_k Control_{i,t} + \epsilon_{i,t} \quad (8)$$

$$Z_{i,t+k} - Z_{i,t} = \delta_i + \delta_t + \sum_{j=1}^{R} \delta_{jk} Z_{i,t-r} + \beta_k Retr\ Dummy_{i,t} + \gamma_k Control_{i,t} + \epsilon_{i,t} \quad (9)$$

The empirical models presented in the equations (5), (6), (7), (8) and (9) access the impact of NCF and its episodes surge, stop, flight, and retrenchment on the 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} represents a 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, $k = 1, \dots 10$, 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, δ_i and δ_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 that bias 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, $k = 1, \dots, 10$. 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, $\beta_k$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 $\beta_k$against the each horizon for k.

Following Furceri et al. (2012) and Bernardini and Forni (2020) we consider different control variables in order to take into account 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.

RESULTS AND DISCUSSION

Descriptive Statistics

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 1, shows the following the information of the underlying variables such as, total number of observations, mean, standard deviation, minimum and maximum value.

Table1: 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
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

The Impact of NCF and Episodes on Real Sector

The Impact on Economic Growth

We obtained LPIRFs estimating Equations 5 to 9 real GDP growth (RGDP) for RGDP. In the literature, Romer (1990) and Grossman and Helpman (1990), document a positive and

significant long-run impact of trade on economic growth. Similarly, Agbloyor et al. (2016) 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 1[5]. LPIRFs are obtained for NCF as well as the response of RGDP to each episode separately. Figure 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 the shaded area reflects the 90% confidence interval. Initially, the impact of NCF on growth remained constant. However, in the second year, it shows a slight decrease in growth, followed by a little upward movement. However, particularly in 4th grade, the growth starts decreasing and the impact becomes bigger. This trend will continue for the rest of the year.

Figure 1 (b) presents the impact of the surge on growth. Initially, RGDP showed no response to the surge. However, after the 2nd period, RGDP starts decreasing and continues until the 10th period. LPIRFs remain smooth, as shown in Figure 1(b) with a bold line. On the contrary, the impact of stop (Figure 1 (c)) on RGDP for the initial period is constant and starts increasing after the first period. The impact of the stop on RGDP reaches its maximum in the 6th period and then starts decreasing. However, the impact of the stop on RGDP remains positive. The possible explanation of the negative impact of NCF and 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 from the almost 1st year until the 2nd year, followed by a gradual decrease until the 4th year. After the 4th period, once again, RGDP increases up to 0.4 points and becomes smooth after the 6th period, as shown in Figure 1 (d). Similarly, LPIRFs for the retrenchment show a positive trend from the 1st period to the 10th period. Historically, the trend of capital inflows and outflows in DEs shows a rise in capital flows followed by a decrease in capital outflows. However, these findings are attributed to a less diverse domestic economy, less absorptive capacity, and less developed financial markets in the DEs (Alfaro et al., 2008).

According to the neoclassical growth model, NCF has a 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 the cost of capital, which generates more economic activity and thus improves economic growth (Gehringer, 2013). In principle, NCF are by and large recognised as useful for economic growth in DEs because these economies are

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

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

However, the theoretical benefits of NCF to DEs often cannot be automatically converted into advantages without any particular and appropriate setting, such as market diversification and technological capabilities. Findings suggest that the NCF/episodes growth nexus mainly depends on the absorptive capacities, for instance, IQ, trade openness, and financial depth of the host economy. Because the absorptive capacity of the host economy plays an important role not only in reaping the benefits but also in minimising the cost of capital. As observed in Figure 1, the negative impact of a surge in capital inflows is relatively stronger as compared to normal flows on DEs.

Moreover, these negative impacts of NCF and the surge on economic growth in the long run can be associated with 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 markets. It is argued that a rise in RGDP reflects the existence of striking investment opportunities at home, which persuade investors to undertake investment in the 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 creates a deficit of funds and leads to foreign exchange shortages, which eventually restrains economic growth.

The Impact on Employment

Based on Equation (5), NCF, which is a variable of interest, is augmented into the cross-country LP regression model to capture the dynamic response of 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, infrastructure, and trade openness serve as the control variables in our LP regression. Based on the existing literature, these control variables are used as key determinants of employment that are frequently used in cross-country empirical analysis (Li & Zhang, 2012; Benigno et al., 2015; Teimouri & Zietz, 2018). Figure 2 (a) shows the impact of NCF on employment. LPIRFs show that an increase in NCF leads to a temporary increase in employment in the DEs. However, in the medium term, the impact becomes muted. In the long run, the impact of NCF on employment dies out. The behaviour of employment in the DEs suggests that surges in NCF initially harm employment, particularly in the short and medium run. It is also observed that it recovers in the long run.

Generally, the DEs are considered cheap destinations for foreign firms due to cheap labour and raw materials as compared to advanced economies. However, DEs usually suffer from poor infrastructure and unskilled labour, so they cannot reap the potential benefits of the rise in NCF. The impact of the surge on employment shows a negative impact until the 4th

period. However, it starts rising and becomes positive in the 8th period. Conversely, the impact of the stop on employment initially shows an increasing trend until the 6th period. However, after the 6th period, the impact of the stop on employment becomes weaker, and eventually shock dies out, as shown in Figure 2(c). Figure 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 the graph of the response of employment to retrenchment, as shown in Figure 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 of decline in employment (Teimouri & Zietz, 2018). Moreover, Li and Zhang (2012) also come to the similar conclusion that capital inflows will augment the average wage level, and capital outflows will remarkably decrease the level of domestic wages.

Figure 1: The Impact of NCF/Episodes on Growth

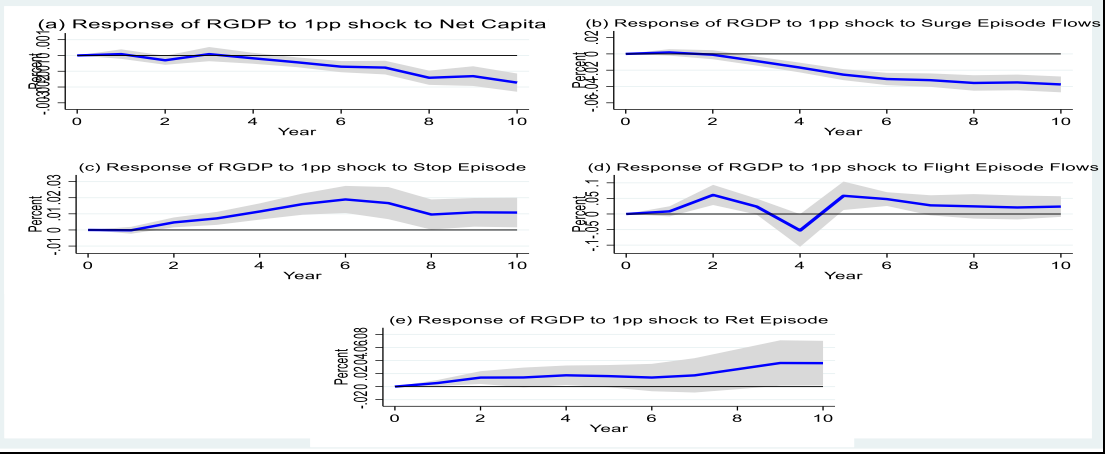
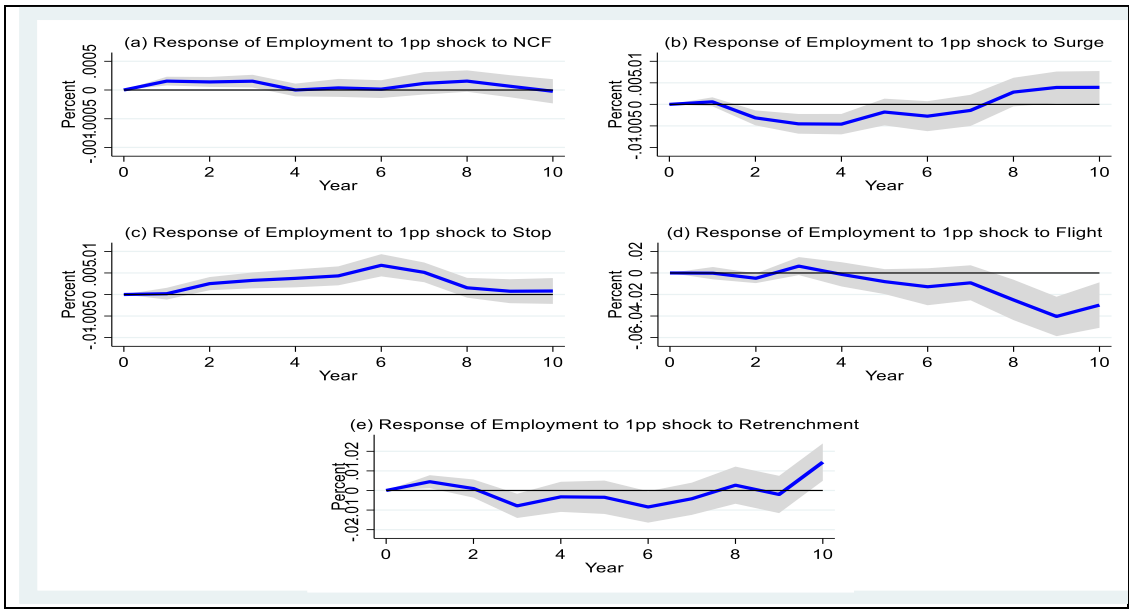


Figure 2: The Impact of NCF/Episodes on Employment



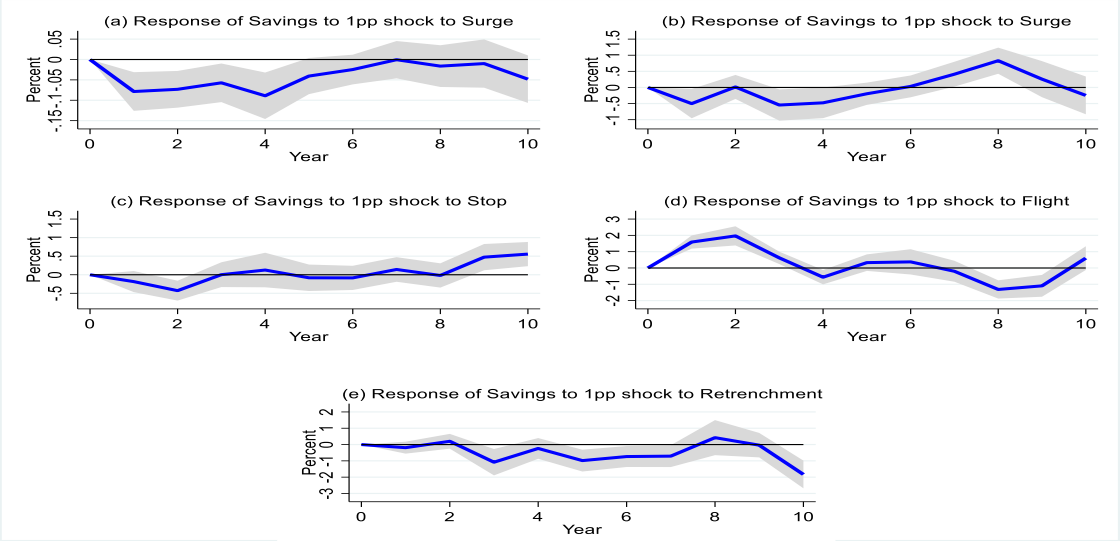
The impact on Savings

Based on the equations (5), (6), (7), (8), and (9), we explore the impact of surge, stop, flight, and retrenchment, respectively, on gross savings as a percentage 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 (Teimouri & Zietz, 2018; Pata, 2018), these control variables are frequently used in the literature.

NCF were negatively correlated with domestic savings for the first four periods, as shown in Figure 3(a). Similarly, the impact of the surge in NCF on savings is negative in the first period, and in the second period, it becomes almost zero. Later on, from the 3rd to the 6th year, the said impact remains negative with a decreasing trend. Ultimately, it becomes positive in the 7th and 8th periods. 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 third period, it becomes negative; however, in the 4th and 5th years, it becomes negative. However, after the 5th period, the said impact becomes positive, as shown in Figure 3(c). The impact of capital flight on savings is positive in the short run. However, it causes huge fluctuations in the medium run, while in the long run it becomes positive. The visual inspection of the response of savings to retrenchment shows sharp fluctuations in the response of savings to retrenchment, as shown in Figure 3 (e).

Figure 3: The Impact of NCF/Episodes on Savings



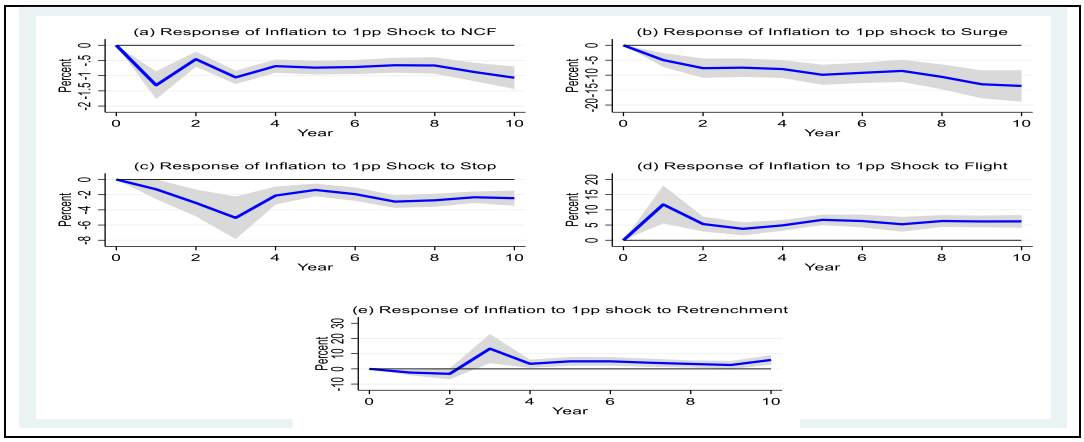
The Impact of NCF/Episodes on Financial Sector

The Response of Inflation to Episodes

We examine the impact of NCF and episodes of inflation on the sample countries. LPIRFs are presented in Figure 4. IRF are obtained using the LP method. We obtain LPIRFs for each financial indicator as presented in Figure 4. The solid line in Figure 4 presents LPIRFs. The shaded area reflects the confidence interval. We report the influence of NCF on inflation in Figure 4 (a). However, with the passage of time, the negative impact of the surge on inflation becomes stronger and stronger.

In contrast, the impact of a stop is initially negative for the first three periods. However, it shows a positive trend after the 3rd period until the 5th period, and it becomes smooth. The impact of flight (large capital outflows) is initially positive. It shows a negative trend in the second year. However, the impact of flight on inflation becomes smooth and consistent over the years, as shown in Figure 4(d). Moreover, the impact of retrenchment on inflation is initially negative for the first period and becomes smooth for the second period, while it shows an increasing trend for only the third period and becomes smooth after the fourth period.

Figure 4: The Impact of NCF/Episodes on Inflation



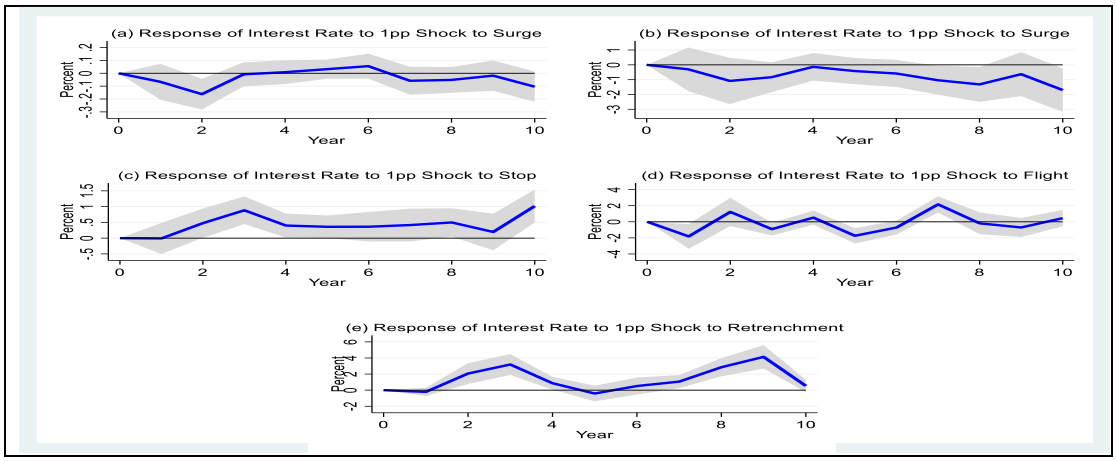
The Response of Interest Rate to Episodes

We estimate Equations (5) to (9) and obtain IRFs to examine the response of the interest rate on normal flows as well as on episodes based on the LP framework. Figure 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 a gradual upward trend in the response of the interest rate. However, the impact turns negative in the intermediate and long run. Similarly, in Figure 5(b), we report the impact of a 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 throughout the period. However, the stop episode initially shows no response and remains almost zero for the first year.

However, the response becomes positive after the first year and reaches its maximum only after one year. In the 4th period, the response of the interest rate becomes smooth and shows no fluctuations, as shown in Figure 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(d). Initially, the response is negative, followed by a little rise and then a drop. This trend is almost observed from the short-term to the 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 first year, as shown in Figure 5 (e). However, the impact shows an upward trend and persists only for the third year. It is observed that the response of the interest rate becomes negative during the fifth period and becomes zero. In the 7th period, the response of the interest rate to retrenchment gradually rises and almost reaches zero in the 10th period, as shown in Figure 5 (e).

Figure 5: The Impact of NCF/Episodes on Interest Rates



The Response of Domestic Credit to Episodes

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 the 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 6 (a). We find that LPIRF for the response of the DCP to surge episodes remains positive from periods 1 to 9, with few fluctuations. However, it becomes negative after the 9th period, as shown in Figure 6 (b). The impact of the stop episode on credit takes a lag of 3 years. In the third year, the impact becomes positive. However, in the 4th year, the influence of stop on DCP becomes negative. After the 4th year, the impact of the stop on DCP once again becomes positive; see Figure 6 (c).

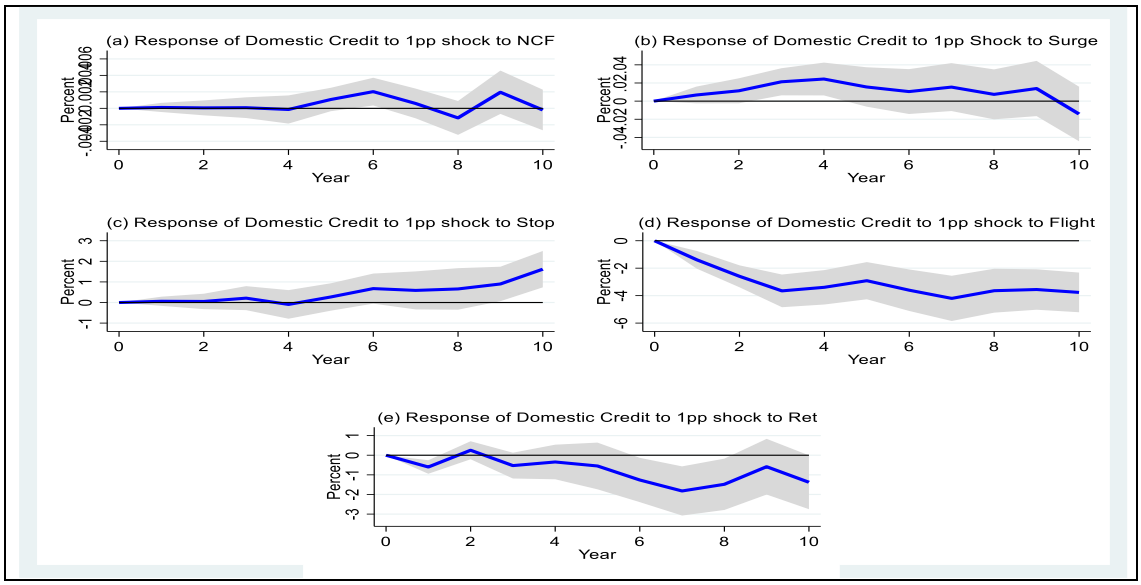
These findings are in line with the open-economy theory that the surge in inflows would amplify lendable funds in the host economies and ultimately speed up DCP. The results substantiate a common idea, as acknowledged in the pertinent literature, that NCF are a vital factor in DCP (Hegerty, 2009; Gozgor, 2014). Many researchers also show that NCF causes "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 than the impact of flight on DCP in the long run, as shown in Figure 6(d). The graphical presentation of the impact of retrenchment on DCP shows a negative trend from the short-run to the longer period. As shown in Figure 6(e), the impact is negative for the first period, shows a positive trend in the second period, and sharply becomes negative for the rest of the years. The findings are consistent with the existing

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

The opening up of financial systems and the rise in NCF across borders influence the DCP. Thus, in this situation, it is important to understand that both the direct relationship between NCF and DCP through the international funding activities of domestic banks and the indirect relationship, such as the impact of NCF on domestic macroeconomic variables (output growth, level of domestic spending, inflation, exchange rates, and asset prices), can affect DCP. Thus, NCF also causes credit booms. Understanding the macroeconomic and financial effects of episodes is important from a macroeconomic policy point of view. For example, if surges raise the risk of financial distress, countries may have incentives to establish administrative controls on certain types of inflows (Ostry, 2012). Thus, in such a situation, it is more important to identify the mechanism through which episodes raise financial vulnerabilities and the role macroeconomic policies can play in moderately reducing associated vulnerabilities, which would help economies decide on suitable policy options.

Figure 6: The Impact of NCF/Episodes on Domestic Credit



CONCLUSION AND POLICY RECOMMENDATIONS

Findings

We use the LPs regression proposed by Jorda (2005) and explore the impact of NCF, surge, stop, flight, and retrenchment on real sector indicators (the GDP growth rate, employment, and the savings rate) and financial sector variables (inflation, the interest rate, and DCP). Using the 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 the surge on growth rate is negative and persistent. The impact of the stop on the growth rate is positive over the medium- to long-term period.

We conclude that episodes have significant impacts on the real and financial sectors of DEs, and our findings support the notion that large capital flows bring imbalances to DEs. We also conclude that surges and flight have a stronger influence on the real and financial sectors of the DEs as compared to stoppages and retrenchments.

Policy Implications

Usually, the DEs are capital scares; therefore, consistent inflows of capital are beneficial for the DEs. However, episodes are found to be 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 policies that may counter the adverse effects of large

capital inflows and outflows. In this era of globalisation, where the economies are highly interconnected, the NCF has acquired a more important position on the policy front. Rather than focusing on whether to more or less restrict NCF, policymakers and practitioners focus on how to manage the extreme episodes to not only make the most of the benefits but also minimise the risks associated with them.

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

REFERENCES

Adams, S. (2009). Foreign direct investment, domestic investment, and economic growth in Sub-Saharan Africa. *Journal of Policy Modeling*, *31*(6), 939-949.

Agbloyor, E. K., Gyeke-Dako, A., Kuipo, R., & Abor, J. Y. (2016). Foreign direct investment and economic growth in SSA: The role of institutions. *Thunderbird International Business Review*, *58*(5), 479-497.

Agosin, M. R., & Huaita, F. (2010). Capital flows to emerging economies: Minsky in the tropics. *Cambridge Journal of Economics*, *35*(4), 663-683.

Aizenman, J., Jinjarak, Y., & Park, D. (2013). Capital flows and economic growth in the era of financial integration and crisis, 1990–2010. *Open Economies Review*, *24*(3), 371-396.

Alfaro, L., Kalemli-Ozcan, S., & Volosovych, V. (2008). Why doesn't capital flow from rich to poor countries? An empirical investigation. *The Review of Economics and Statistics*, *90*(2), 347-368.

Amadou, A. (2011). The effect of foreign capital on domestic investment in Togo. *International journal of Economics and Finance*, *3*(5), 223-226.

Avdjiev, S., Koch, C., McGuire, P., & Von Peter, G. (2018). Transmission of monetary policy through global banks: Whose policy matters?. *Journal of International Money and Finance*, *89* (c), 67-82.

Baek, S. G., & Song, C. Y. (2016). On the determinants of surges and stops in foreign loans: An empirical investigation. *Open Economies Review*, *27*(3), 405-445.

Benigno, G., Converse, N., & Fornaro, L. (2015). Large capital inflows, sectoral allocation, and economic performance. *Journal of International Money and Finance*, *55*(c), 60-87.

Ben-Salha, O., & Zmami, M. (2020). The impact of private capital flows on economic growth in the MENA region. *Economics and Business Review*, *6*(3), 45-67.

Bernardini, M., & Forni, L. (2020).Private and public debt interlinkages in bad times. *Journal of International Money and Finance*, *109*(c), 102239.

Blanchard, O., Ostry, J. D., Ghosh, A. R., & Chamon, M. (2016). Capital flows: Expansionary or contractionary?. *American Economic Review*, *106*(5), 565-69.

Brincikova, Z., & Darmo, L. (2014).The impact of FDI inflow on employment in V4 countries. *European Scientific Journal, ESJ*, *10*(7).

Bruno, V., & Shin, H. S. (2013). Global factors in capital flows and credit growth. *Griswold Center for Economic Policy Studies, Working Paper*, (237).

Cardarelli, R., Elekdag, S., & Kose, M. A. (2010). Capital inflows: Macroeconomic implications and policy responses. *Economic Systems*, *34*(4), 333-356.

Cavallo, E., Powell, A., Pedemonte, M., & Tavella, P. (2015). A new taxonomy of Sudden Stops: Which Sudden Stops should countries be most concerned about?.*Journal of International Money and Finance*, *51*(c), 47-70.

Chigbu Ezeji, E., & Promise, U. C. (2015).Impact of capital inflows on economic growth of developing countries. *International Journal of Management Science and Business Administration*, *1*(7), 7-21.

Chong, Y., Jordà, Ò., & Taylor, A. M. (2012). The Harrod–Balassa–Samuelson hypothesis: Real exchange rates and their long-run equilibrium. *International Economic Review*, *53*(2), 609-634.

Combes, J. L., Kinda, T., Ouedraogo, R., & Plane, P. (2019). Financial flows and economic growth in developing countries. *Economic Modelling*, *83*(c), 195-209.

Crystallin, M., Efremidze, L., Kim, S., Nugroho, W., Sula, O., & Willett, T. (2015). How common are capital flows surges? How they are measured matters a lot. *Open Economies Review*, *26*(4), 663-682.

Davis, J. S., Valente, G., & Van Wincoop, E. (2021). Global drivers of gross and net capital flows. *Journal of International Economics*, *128*(c),1-21.

De Vita, G., & Kyaw, K. S. (2008). Determinants of capital flows to developing countries: A structural VAR analysis. *Journal of Economic Studies*, *35*(4), 304-322.

Dhar, A. (2021). Identification of extreme capital flows in emerging markets. *International Review of Economics & Finance*, *71*(c), 359-384.

Eichengreen, B., & Gupta, P. (2016). Managing sudden stops. *The World Bank*, *WP(7639)*, 1-37.

Feldstein M. (1983). Domestic saving and international capital movements in the long-run and the short run. *European Economic Review*, 21 (1-2): 129 – 151

Fendoğlu, S. (2017). Credit cycles and capital flows: Effectiveness of the macroprudential policy framework in emerging market economies. *Journal of Banking & Finance*, *79*(c), 110-128.

Forbes, K. J., & Warnock, F. E. (2012). Capital flow waves: Surges, stops, flight, and retrenchment. *Journal of International Economics*, *88*(2), 235-251.

Forbes, K. J., & Warnock, F. E. (2021). Capital flow waves—or ripples? Extreme capital flow movements since the crisis. *Journal of International Money and Finance*, *116*, 102394.

Furceri, D., Guichard, S., & Rusticelli, E. (2012). Episodes of large capital inflows, banking and currency crises, and sudden stops. *International Finance*, *15*(1), 1-35.

Gehringer, A. (2013). Growth, productivity and capital accumulation: The effects of financial liberalization in the case of European integration. *International Review of Economics & Finance*, *25*(c), 291-309.

Ghosh, A. R., Ostry, J. D., & Qureshi, M. S. (2016). When do capital inflow surges end in tears?. *American Economic Review*, *106*(5), 581-85.

Ghosh, A. R., Qureshi, M. S., Kim, J. I., & Zalduendo, J. (2014). Surges. *Journal of International Economics*, *92*(2), 266-285.

Gozgor, G. (2014). Determinants of domestic credit levels in emerging markets: The role of external factors. *Emerging Markets Review*, *18*(c), 1-18.

Grossman, G. M., & Helpman, E. (1990). Trade, innovation, and growth. *The American Economic Review*, *80*(2), 86-91.

Gruben, W. C., & McLeod, D. (1998). Capital flows, savings, and growth in the 1990s. *The Quarterly Review of Economics and Finance*, *38*(3), 287-301.

Gunter, F. R. (2017). Corruption, costs, and family: Chinese capital flight, 1984–2014. *China Economic Review*, *43*(c), 105-117.

Haiyue, L. (2013). The empirical study of the impact of capital inflow on China's inflation. *Economics World*, *1*(1), 1-13.

Hegerty, S. W. (2009). Capital inflows, exchange market pressure, and credit growth in four transition economies with fixed exchange rates. *Economic Systems, 33*(2), 155-167.

Honig, A. (2008). Addressing causality in the effect of capital account liberalization on growth. *Journal of Macroeconomics*, *30*(4), 1602-1616.

Hwang, I., Jeong, D., Park, H., & Park, S. (2017). Which net capital flows matter?. *Emerging Markets Finance and Trade*, *53*(2), 289-305.

Ibarra, R., & Tellez-Leon, I. E. (2020). Are all types of capital flows driven by the same factors? Evidence from Mexico. *Empirical Economics*, *59*(1), 461-502.

Inekwe, J. N. (2013). FDI, employment and economic growth in Nigeria. *African Development Review*, *25*(4), 421-433.

Inoguchi, M. (2021). The impact of foreign capital flows on long-term interest rates in emerging and advanced economies. *Review of International Economics*, *29*(2), 268-295.

Janus, T., & Riera-Crichton, D. (2016). Banking crises, external crises and gross capital flows. *Globalization and Monetary Policy Institute, WP* (273), 1-56.

Jenkins, R. (2006). Globalization, FDI and employment in Vietnam. *Transnational Corporations*, *15*(1), 115.

Jordà, Ò. (2005). Estimation and inference of impulse responses by local projections. *American Economic Review*, *95*(1), 161-182.

Jude, C., & Silaghi, M. I. P. (2016). Employment effects of foreign direct investment: New evidence from Central and Eastern European countries. *International Economics*, *145*(c), 32-49.

Kose, M. A., Prasad, E. S., & Terrones, M. E. (2009). Does openness to international financial flows raise productivity growth?. *Journal of International Money and Finance*, *28*(4), 554-580.

Li, W., & Zhang, Z. (2012). International capital flows, the domestic employment and wages: Perspective from China's different provinces. *China Finance Review International*, *2*(3), 286-310.

Mendoza, E. G., & Terrones, M. E. (2008). An anatomy of credit booms: evidence from macro aggregates and micro data. *National Bureau of Economic Research, 08*(226), 1-50.

Mucuk, M., & Demirsel, M. T. (2013). The effect of foreign direct investments on unemployment: Evidence from panel data for seven developing countries. *Journal of Business Economics and Finance*, *2*(3), 53-66.

Ostry, J. D. (2012). Managing capital flows: What tools to use?. *Asian Development Review*, *29*(1), 82-88.

Pata, U. K. (2018). The Feldstein Horioka puzzle in E7 countries: Evidence from panel cointegration and asymmetric causality analysis. *The Journal of International Trade & Economic Development*, *27*(8), 968-984.

Pegkas, P. (2015). The impact of FDI on economic growth in Eurozone countries. *The Journal of Economic Asymmetries*, *12*(2), 124-132.

Rashid, A., & Husain, F. (2013). Capital inflows, inflation, and the exchange rate volatility: An investigation for linear and nonlinear causal linkages. *Pakistan Development Review*, *52*(3), 183-207.

Rashid, A., Jehan, Z., Khan, M., & Saeed, M. (2019). The influence of capital flow bonanzas on real and financial sectors: A comparative study of South Asia and China. *Journal for Economic Forecasting*, *22*(4), 124-147.

Reinhart, C. M., & Reinhart, V. R. (2009). Capital flow bonanzas: An encompassing view of the past and present. *The University of Chicago Press*, *5*(1), 9-62.

Rizvi, S. Z. A., & Nishat, M. (2009). The impact of foreign direct investment on employment opportunities: Panel data analysis: Empirical evidence from Pakistan, India and China. *Pakistan Development Review*, *48*(4), 841-851.

Romer, P. M. (1990). Are Nonconvexities important for understanding growth?. *The American Economic Review*, *80*(2), 97-103.

Sahu, J. P. (2020a). Does inflow of foreign direct investment stimulate economic growth? Evidence from developing countries. *Transnational Corporations Review*, *13*(4) 376-393.

Sahu, J. P. (2020b). Do surges in foreign direct investment inflows lead to surges in economic growth? Evidence from developing countries. *Studies in Economics and Finance*, *38*(2), 317-338.

Shiller, R. J. (2014). Speculative asset prices. *American Economic Review*, *104*(6), 1486-1517.

Teimouri, S., & Zietz, J. (2018).The impact of surges in net private capital inflows on manufacturing, investment, and unemployment. *Journal of International Money and Finance*, *88*(c), 158-170.

Teulings, C. N., & Zubanov, N. (2014). Is economic recovery a myth? Robust estimation of impulse responses. *Journal of Applied Econometrics*, *29*(3), 497-514.

Tillmann, P. (2013). Capital inflows and asset prices: Evidence from emerging Asia. *Journal of Banking & Finance*, *37*(3), 717-729.

Ullah, S., Haider, S. Z., & Azim, P. (2012). Impact of exchange rate volatility on foreign direct investment: A case study of Pakistan. *Pakistan Economic and Social Review*, *50*(2)121-138.

Vacaflores, D. E. (2011). Was Latin America correct in relying in foreign direct investment to improve employment rates?. *Applied Econometrics and International Development*, *11*(2), 101-122.

Zhang, J., & Ward, T. (2015). Assessing the impacts of capital inflows on domestic economy across the Sub-Saharan Africa countries. *International Economic Journal*, *29*(3), 375-397.

APPENDIX - A

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: 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 A3: 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 A4: 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