CAUSES OF SUDDEN DECLINES OF CAPITAL FLOWS IN INDIA

The sudden declines of international capital inflows to developing and emerging market economies have become a major disruptive factor in several recent financial crises. Existing studies revealed that there are many factors which can be held responsible for sudden decline of capital flows in any economy. However, these factors vary from country to country. In this chapter an attempt has been made to identify the causes of sudden declines of capital flows into India. To examine the causes of sudden declines, the researcher used regression analysis to explore factors that are significant in making the economy more vulnerable to sudden declines. Specifically, the researcher applied Logit Regression model to investigate the factors, which increases the probability that the economy experiences sudden declines.

INTRODUCTION

Over the last thirty-five years many emerging and developing countries experienced severe financial crises. International financial crises in developing countries have been part of the economic landscape since the early 1980s and have coincided with the increasing integration of these countries to international financial markets. These crises have hit all sorts of countries-fast-growing and slower-growing, countries that have had prudent and not-so-prudent macroeconomic management, countries with different exchange rate regimes. The financial crises of the second half of the 1990s have led to renewed interest in the causes and consequences of International capital flows. When foreign financing available to countries abruptly disappears, a phenomenon that in the economic literature is called “sudden stops”, countries are forced to go through a potentially painful resource transfer to creditor countries. When this happens, any outstanding current account deficit, previously financed with foreign capital inflows, has to be eliminated or be financed with international reserve losses. Experience shows that developing countries in contrast to developed ones are the ones encountering sudden declines (Calvo et al, 2004; Haber, 1997; Chang and Velasco, 1998). The sudden declines of international capital inflows to developing and emerging market economies have become a major disruptive factor in several recent financial crises. The sudden decline problem features an abrupt cessation in foreign capital inflows and/or sharp capital outflows leading to a balance of payments crisis. A growing literature (Kaminsky et al, 2004; Krugman, 1979) suggests that the collapse of investment and financial intermediation resulting from sudden declines is the main component of the very dramatic output collapses that have periodically hit many developing and emerging-market economies. Emerging market economies (EMEs) have entered a period of...
recurrent crises that go far beyond currency crises as experienced in advanced economies. Emerging market crises are characterized by sharp recession, high unemployment, and an alarming rise in the number of people living below the poverty line. A common feature of these episodes is a sudden decline (SD), namely a large reduction in the flow of international capital.

A Sudden declines is defined as a large, unexpected cutback in international credit flows either to a country or to a large sector in a country (such as minerals, or real estate). Assuming that the original inflows had indeed been allowed to boost domestic demand (typically by boosting domestic credit growth), their sudden reversal will represent a significant, unanticipated contraction in credit availability and in final demand. Such a reversal, in turn, is often associated with important second-round effects, generating a wider contagion effect. First, there may be a sharp change in the prices of affected sectors (real estate again comes to mind). These effects can harm the solvency of domestic banks exposed to those sectors, causing them also to retract and aggravating the downturn. Second, as more credit-worthy borrowers lose access to foreign funds they may shift their demand to domestic financial institutions, displacing small and medium-enterprises who traditionally depend on local banks. These mechanisms have been documented and analyzed in a number of emerging market episodes. “Sudden declines” of capital inflows tend to be inverted U-shape: the poorest countries are the least vulnerable more integrated into global financial shocks; middle-income countries are the most; but as the countries get richer and more integrated into global finance, the vulnerability tends to fall again - and that remains true despite the crises in America (Coresetti et al, 1999; Neumeyer, 2005; Edison and Jan, 1988). So, it might still make sense for countries like India and Brazil to carry on liberalizing. Moreover, as the Reinharts shows, a big part of the problem is that capital flows are endemically boom-bust: money floods in and out. They argue that fiscal policy should be used to smooth out such cycles: governments should reduce deficits or run surpluses during bonanzas- the opposite of what they usually do.

These issues are now relevant for India for two reasons. First, over the last decade our financial and corporate sectors have become steadily more exposed to international finance. This has occurred as global liquidity became abundant and the “India story” became more widely accepted. Second, the financial crisis in the advanced economies has revealed the undercapitalization of many institutions in the sector and has forced shrinkage of balance sheets. Therefore, in this chapter the researcher tries to identify the causes behind the sudden declines of capital inflows.
**SUDDEN DECLINES EPISODE IN INDIA**

The concept of “sudden stop” was first introduced by Dornbusch *et al.* (1995) and later Calvo (1998) gave analytical framework to examine the impact of a sudden and largely unexpected cut-back in foreign capital inflows to emerging economies. The US financial meltdown led to a sudden withdrawal of capital flows from emerging markets. This is reminiscent of bankers’ old saying that “it’s not speed that kills, it’s the sudden stop” (Dornbusch, 2001). Calvo (2009) noted the likelihood of India going through a “sudden stop” episode with the onset of the global crisis. But in the Indian context, it is more appropriate to use the term sudden declines of capital inflows as India has experienced sudden declines in capital inflows. It is important to note that even during the times of crisis, capital inflows declined significantly but did not stop actually. The global financial crisis has hit the India through sudden declines of capital inflows. The figure below depicts the channels through which the global financial crisis spread to India:

**Figure 4.1: A “Sudden Declines” Episode in India**

Source: Self illustrated by researcher

The first impact of the global crisis on India was felt in the stock market in January 2008 (stage 1). This came through the reversal of inflows from foreign institutional investors (FIIs) into the country. India had received about US$ 17.7 billion as net equity investment inflows from FIIs during 2007. This turned into a new divestment of US$ 13.3 billion during the period from January 2008 to February 2009. This was the direct result of the massive de-leveraging of US banks after the financial meltdown. The FIIs withdrew funds from all over the emerging markets for meeting the liquidity requirements of their principals in the US. The marked reversal of capital inflows from FIIs in India since December 2007 can be seen from Chart 4.2.
The sudden withdrawal of FII from the Indian stock market brought about a crash in the market in January 2008. The global crisis hits Net FII flows up to February 2009, after that FII again started to increase but in May 2010 and January 2011 FII again decline, it means the impact of global crisis is still in existence in India.

In stage 2, Capital inflows under external commercial borrowings, short-term trade credit and external borrowing by banks dropped sharply from April 2008. Short term trade finance and bank borrowings from abroad swung to outflows of US$ 9.5 billion and US$ 11.4 billion respectively in the second half of 2008-09. The crisis then moved to foreign exchange market (stage3). The rupee began to tumble from end-April 2008 to November 2008 by about 20%. The Reserve Bank of India intervened heavily to support the rupee by selling dollars, leading to some depletion of the stock of reserves. By mid-September 2008, the crisis gripped India’s money market (stage 4). The drying up of funds in the foreign credit markets led to a virtual cessation of external commercial borrowing for India, including the access to short-term trade finance. The collapse of the stock market ruled out the possibility of the companies raising fund in the domestic stock market. Indian banks also lost access to funds from abroad, as inter-bank borrowing seized up in the US and Europe and banks had to send funds to their branches abroad in those countries. All these put heavy pressure on domestic banks, leading to a liquidity crisis from mid-September to end-October 2008. This was reflected in the inter-bank call money markets where the call money rates rose to 20% or so. From September 2008, the trade sector collapsed (stage 5). In the second half of 2008-09, merchandise exports declined by 18% against a growth of 35% in the first half and imports fell by 11% against a growth of 45% in the first half. The growth of software exports dropped to less than 4% in the second half of 2008-09 (38% growth in the first half) and remittances declined in absolute terms by about 20% in the second half (growth of 41% in the first half of 2008-09).

In the next stage (stage 6), the crisis spread to the domestic credit markets. The real economy deteriorated from September 2008 shown first by the sharp fall in export
growth to 10% in that month from about 35% during April-August 2008, negative growth thereafter; virtually negligible or negative growth in industrial output from October 2008. Business and consumer confidence began to ebb leading to a decline in overall demand. By November 2008, the situation had fundamentally transformed. Expansion of bank finance to the commercial sector slumped to Rs.609 billion during the four-month period, November 2008 to February 2009, just about a quarter in comparison with the expansion of Rs.2,362 billion during the same period a year ago. This is due to a sharp fall in demand for funds as investment and consumption dropped. As indicated above sudden declines may have severe consequences for the economy as the abrupt reversal in foreign credit inflows in conjunction with a realignment of exchange rate may cause a sharp drop in domestic investment, domestic production and employment.

CAUSES OF SUDDEN DECLINES IN INDIA
The first natural step in studying sudden declines of capital inflows’ is to examine why they happen. In particular, the main challenge is to identify the factors that make an economy vulnerable to sudden decline. The examination of causes of sudden declines then leads to other interesting issues. For instance, is a sudden decline of capital inflows’ likely to happen through self-fulfilling mechanisms or results from potential solvency problems with external debt? What is the relationship between sudden declines of capital inflows and domestic financial crises? Are sudden declines of capital inflows different from typical currency crisis? How does a sudden decline vary across time? All of these investigations should help clarify issues emerging from a variety of financial crises over the past few decades. Moreover, the study of causes of sudden declines of capital inflows provides the required background for examining the microeconomic consequences of sudden declines.

There has been only one empirical analysis that studied causes of sudden declines or slowdown of capital inflows. Calvo et al.(2004) used a panel regression approach to do so, and concluded that the degree of financial dollarization and the sensitivity of real exchange rate to capital flows reversals are important factors that can induce sudden declines. There data covered 32 countries (15 emerging market economies and 17 developed economies) during the period 1990-2001. Their analysis in fact attempted to test the model explaining sudden declines in Calvo (1998). While the empirical work done by calvo et al. (2004) provides a good starting point to investigate the causes of sudden declines, there remains room for improvement. First, their definition of sudden declines did not completely address how to differentiate sudden declines from large reversals of capital flows. Such reversals can results from either demand or supply shifts, while sudden declines should be events in which some unusual factors (i.e., panic) causes supply for foreign funds to decline drastically. Second, their data covered only developed
economies and emerging economies during the period of 1990-2001. It is interesting to investigate how sudden declines occur in an economy like India. The present study is only confined to one country i.e. India (period 2007-10). Third, their study only focused on variables that play significant roles in self-fulfilling mechanisms. However, there are other factors that might also be important according to other frameworks. For instance, in contrast to self-fulfilling mechanisms, potential solvency problems with external debt and prospects of financial crisis can trigger sudden declines as well (Rothenberg and Warnock, 2007; Aguiar and Gopinath, 2007). Therefore, the researcher consider a broader set of variables that might induce sudden declines in order to attain a more complete picture of the causes of sudden declines of an economy.

**METHODOLOGY**

To examine causes of sudden declines, the researcher used regression analysis to explore factors that are significant in making the economy more vulnerable to sudden declines. Specifically, the researcher used Logit model of regression to investigate which factors increases the probability that the economy experiences sudden declines. Illustrated by equation (1), the regression specification is as follow:

\[
SD = \alpha + \sum \beta_i X_i + \epsilon
\]

Where, SD is incidences of sudden decline, Xi’s are factors that determine sudden declines, \(\alpha\) is a constant and \(\beta_i\) is the coefficient and \(\epsilon\) is the error term.

The value of SD is equal to one if a sudden decline happens, and zero otherwise. The explanatory variables \(X_i\) include all factors that determine sudden declines as suggested by the review of literature. All variables \(X_i\) are lagged by one period in order to prevent endogeneity, since sudden declines can affect almost all explanatory variables \(X_i\). The summary of explanatory variables is shown in the Table 4.1.

**Table 4.1: Summary of Explanatory Variables**

<table>
<thead>
<tr>
<th>Explanatory Variable</th>
<th>Variable Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of Currency (Exchange Rate)</td>
<td>CURRV</td>
</tr>
<tr>
<td>Trade Balance of India (- sign represent trade deficit, and +sign trade surplus)</td>
<td>TRADEBAL</td>
</tr>
<tr>
<td>Foreign Exchange Reserves</td>
<td>FOREXR</td>
</tr>
<tr>
<td>Industrial production (Index of Industrial Production)</td>
<td>IIP</td>
</tr>
<tr>
<td>Foreign Liability of Banking Institutions</td>
<td>FORLIABILITY</td>
</tr>
<tr>
<td>Output (Index number of seventeen major industry groups of manufacturing sector)</td>
<td>OUTPUT</td>
</tr>
<tr>
<td>Inflation Rate</td>
<td>INFLATION</td>
</tr>
<tr>
<td>Interest Rate</td>
<td>INTERESTRATE</td>
</tr>
<tr>
<td>Capital market movement (BSE-SENSEX)</td>
<td>BSE</td>
</tr>
</tbody>
</table>
Money market movement through weighted Average call money rate | MONEYRATE
---|---
Export based real effective exchange rate | REER
Bank deposits with commercial banks | BANDEP
High powered money | HIGHPM
Fiscal deficit of India | FISCALDEF

**RESULTS AND EXPLANATION**

Before going to use Logit regression one should test the stationary properties of the variables in case of time series data. As our data is time series in nature, the study first of all test stationarity of the variables using different unit root tests, namely Dicky-Fuller (DF), Augmented-Dickey Fuller (ADF) and Phillips-Perron (PP) (1988) test. These tests are shown in table 4.2:

| Table 4.2: Results of Various Unit Root Tests |
|---|---|---|---|---|---|---|
| Variables | At level | | | | | |
| | DF | ADF | PP | DF | ADF | PP |
| BANKDEP | 0.474026 | -0.364994 | -0.357905 | -4.679533* | -5.424049* | -5.423581* |
| BSE | -1.139087 | -1.210883 | 1.378982 | -4.744845* | -4.656448* | -4.642069* |
| CURRV | -2.0209*** | -5.56637* | -1.787847 | -3.90939** | -3.654923* | -7.453348* |
| FISCALDEF | -3.204871* | -3.55907** | -3.25678** | -4.416807* | -4.533907* | -4.63383* |
| FOREXR | -1.8796*** | -3.16849** | -3.18918** | -4.106024* | -4.651934* | -4.64665* |
| FORLIABILITY | 0.287409 | -0.480058 | -0.476343 | -4.547120* | -4.490705* | -4.41342* |
| HIGHPM | -0.006742 | -0.342108 | -0.162559 | -6.049393* | -5.936807* | -5.94029* |
| IIP | -2.25643** | -1.211236 | -2.224688 | -8.986388* | -6.198516* | -10.2018* |
| INFLATION | -0.762247 | -1.499497 | -1.501459 | -4.967912* | -4.958456* | -4.962246* |
| INTERESTRATE | -1.296737 | -1.604698 | -1.148368 | -2.14488** | -2.12448** | -2.298251 |
| MONEYRATE | -1.7764*** | -1.79302 | -1.324618 | -2.775389* | -2.8128*** | -2.8128*** |
| REER | -1.188520 | -1.161224 | 0.48240 | -1.585538 | -1.641531 | -6.93237* |

Note: *Significant at 1% level; **Significant at 5% level; ***Significant at 10% level

The results given above (Table 4.2) indicate that the values of various unit root tests namely DF, ADF, and PP tests of all explanatory variables. All the three tests suggest that most of the variables are non-stationary at level according to ADF and PP test but DF test indicates that CURRV, FISCALDEF, FOREXR, IIP, MONEYRATE, OUTPUT and TRADEBAL are stationary at level. At their first difference, most of the variables are stationary at 1% level of significance and all the tests provide the same results. But CURRV, INTERESTRATE and TRADEBAL are significant at their first difference at 5%
level of significance. As the tests of stationarity shows that all the variables are stationary at their first difference, the study uses first difference of these variables for logit regression. And results of logit regression are shown in the table 4.3.

**RESULTS OF LOGIT REGRESSION**

Table 4.3 represents the results of Logit regression in which each factor is the only explanatory variable. Although the regression is subject to the problem of omitted important variables, they provide some clues on how each factor performs in determining sudden declines.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>Z-Statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BANKDEP</td>
<td>-0.0000518</td>
<td>0.0000359</td>
<td>-1.44541</td>
<td>0.074</td>
</tr>
<tr>
<td>BSE</td>
<td>-0.0035300</td>
<td>0.002441</td>
<td>-1.44801</td>
<td>0.074</td>
</tr>
<tr>
<td>CURRV</td>
<td>1.0779010</td>
<td>1.263004</td>
<td>0.853443</td>
<td>0.197</td>
</tr>
<tr>
<td>FISCALDEF</td>
<td>0.0000897</td>
<td>0.0000702</td>
<td>1.276911</td>
<td>0.101</td>
</tr>
<tr>
<td>FOREXR</td>
<td>0.0000461</td>
<td>0.0000303</td>
<td>1.523581</td>
<td>0.064</td>
</tr>
<tr>
<td>FORLIABILITY</td>
<td>0.0000370</td>
<td>0.0000374</td>
<td>0.988936</td>
<td>0.161</td>
</tr>
<tr>
<td>HIGHPM</td>
<td>-0.0001200</td>
<td>0.0000873</td>
<td>-1.42522</td>
<td>0.077</td>
</tr>
<tr>
<td>IIP</td>
<td>-1.770200</td>
<td>1.181578</td>
<td>-1.49816</td>
<td>0.067</td>
</tr>
<tr>
<td>INFLATION</td>
<td>-2.661580</td>
<td>2.07281</td>
<td>-1.28404</td>
<td>0.100</td>
</tr>
<tr>
<td>INTERESTRATE</td>
<td>-25.02490</td>
<td>16.18621</td>
<td>-1.54606</td>
<td>0.061</td>
</tr>
<tr>
<td>MONEYRATE</td>
<td>4.7214450</td>
<td>3.459081</td>
<td>1.364942</td>
<td>0.086</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>1.7512560</td>
<td>1.147957</td>
<td>1.525542</td>
<td>0.064</td>
</tr>
<tr>
<td>REER</td>
<td>0.1671800</td>
<td>0.544178</td>
<td>0.307215</td>
<td>0.379</td>
</tr>
<tr>
<td>TRADEBAL</td>
<td>-0.0001400</td>
<td>0.000111</td>
<td>-1.25148</td>
<td>0.105</td>
</tr>
</tbody>
</table>

R-squared = 0.940

**Note:** The variable in italics represent results with the wrong sign or not significantly contributes to sudden declines. The blue numbers indicates that particular factors are statistically significant at 10% level.

The results presents in table 4.3 indicates that there are nine variables that are statistically significant at the 10% level. These variables tend to represent capital market movement, bank deposits with commercial banks, foreign exchange reserves, growth of high powered money, inflation rate and interest rate prevailing in India and the growth of output. These variables contribute significantly to sudden declines and other variables not significantly contribute to the sudden declines. The numeric of R-squared at 0.94 shows the high explanatory power of the model. In other words, there is a statistical evidence that the above nine blue variables significantly causes sudden declines in India. In other words, there is a statistical evidence that the above nine blue variables i.e. BANKDEP,
BSE, FOREX, HIGHPM, IIP, INFLATION, INTERESTRATE, MONEYRATE, OUTPUT significantly causes sudden declines in India.

CONCLUSION
This chapter has provided theory and evidences on causes of sudden declines in India. The theoretical section illustrates the concept of sudden declines and sudden decline episode in India; while the evidence section examines the factors which are significant to sudden declines of capital inflows in India. First of all, stationary properties of variables is checked and found that the all the variables are non-stationary at level except some variables but becomes stationary at their first difference. After that Logit regression is used to find out the important significant causes of sudden declines in India on the first difference of all the explanatory variables. The result of Logit regression suggests that there are nine important causes of sudden declines in India. In other words the probability of sudden declines increases if 1) increase in Bank deposits with commercial banks; 2) volatility in capital market movement; 3) decrease in foreign exchange reserves; 4) increase in inflation rate; 5) decrease in Interest rate; 6) volatility in money market movements; 7) domestic output growth declines; 8) industrial production declines and 9) decline in foreign exchange reserves.

END NOTES
1 Almost all of the countries affected by the financial turmoil of the last few years had one thing in common: large ratios of short-term foreign debt, whether public or private, to international reserves. In Mexico in 1995, Russia in 1998 and Brazil in 1999, the debt was the governments; in Indonesia, Korea and Thailand in 1997, the debt was primarily owed by private banks and …rms. But in each case the combination of large short-term liabilities and relatively scarce internationally liquid assets resulted in extreme vulnerability to a confidence crisis and a reversal of capital flows.
2 Since the 1980s, the march of globalization and concomitant increases in flows of capital and trade have led to high volatility in international financial markets. Some of these have erupted into crises, in the form of runs on banks - both national and multinational - as well as attacks on currencies. Resultant effects have included the significant increase in contagion and the collapse of both venerable private banks as well as national institutions
3 The expression “Sudden Stops” was first used by Dornbusch, Goldfajn and Valdes (1995) and has since become increasingly popular. The first analytic approach to the problem of sudden stops is Calvo (1998).
4 A sudden stop in capital flows is defined as a sudden slowdown in private capital inflows into emerging market economies, and a corresponding sharp reversal from large current account deficits into smaller deficits or small surpluses. Sudden stops are usually followed by a sharp decrease in output, private spending and credit to the private sector, and real exchange rate appreciation. The term “sudden stop” was inspired by a banker’s comment on a paper by Dornbusch and Werner about Mexico, that “it is not speed that kills, it is the sudden stop”.
5 The model highlights that sudden stops can occur through self-fulfilling mechanisms based on prospects of bankruptcy as results of an inevitable decline in the relative price of nontradables with respect to tradables. In addition, the role of debt maturity structure seems crucial, since short-term liabilities require refinancing, which can be difficult as sudden stops look eminent.
REFERENCES


The study of causes of sudden declines of capital flows suggests that various factors can induce sudden Declines. Moreover, sudden declines look different across different groups of countries as well as types of financial crises (Calvo, 2000). Stylized facts of sudden declines also illustrate that sudden declines are associated with output costs, but adverse output performance varies substantially. The variation in output performance seems to depend on the degree of financial turmoil reflected by different forms of financial crises. Hence, different factors appear to induce different kinds of sudden declines, which in turn cause different output performance in the aftermath of sudden declines. Therefore, the study of output consequences of sudden declines of capital inflows seems necessary in order to understand the complete story of sudden declines.

Sudden declines may have severe consequences for the economy, as the abrupt reversal in foreign credit inflows in conjunction with a realignment of the exchange rate may cause a sharp drop in domestic investment, domestic production and employment. The adverse consequences of a sharp reversal in foreign capital inflows could be the reason that only a subset of currency/balance-of-payments crises in emerging market economies are found to be associated with recessions (Hutchison and Noy, 2002; Gupta et al., 2003).

Sudden declines of capital flows have a harmful effect on the economy in both the terms i.e. qualitative as well as quantitative terms. In quantitative terms, sudden declines of capital flows increase the current account deficit and reduce the accumulation of foreign reserves. In qualitative terms, sudden declines reduces the growth rate of the economy and affect a wide range of macroeconomic variables such as real exchange rate, inflation rate, interest rates and others.

**EFFECT OF SUDDEN DECLINES IN QUANTITATIVE (MONETARY) TERMS**

The effect of sudden declines of capital inflows can be measured through the following equation:

\[ CI = \text{CAD} + \text{AR} \]

Where, CI stands for capital inflows slowdown, CAD stands for current account deficit and AR stands for accumulation reserves. Effect of sudden declines can be measured through the increase in current account deficit and decrease in accumulation of foreign reserves. The Current Account deficit is the country’s trade deficit plus interest payments on what the country borrows from foreigners to finance the trade deficit. Or in simply,
\[ \text{CAD} = M - X + I \]

i.e. the trade deficit equals to the imports minus exports and current account deficit equals to the trade deficit plus interest payments on the borrowings to finance trade deficit. Post the 1991 BoP crisis, policymakers in the country have ensured that the current account deficit does not rise above 2% of GDP, a kind of self-imposed prudential limit. However, the dynamics of current account have changed over the past two years. In 2008-09, for the first time since the 1991 BoP crisis, India’s current account deficit widened to more than 2% of GDP (2.4%). In the first half of 2008-09, a large spike in crude oil prices in mid-2008 to $145/bbl pushed oil imports up suddenly. Oil balance (imports less exports) deteriorated to -5.4% of GDP in 2008-09 from -4.3% of GDP in 2007-08. In 2009-10, the current account deficit has widened further to 2.9% of GDP, even though oil prices were moderate at an average of $70/bbl. If we look at the quarterly trend, it appears that the current account deficit has only deteriorated further to 3.5-4% of GDP ($45-50 billion). The movement of current account deficit is shown in the figure 4 (B).1:

**Figure 4 (B).1: India’s Current Account Balance (in US $ Billions)**

Source: Handbook of Statistics, Reserve Bank of India

Figure 4 (B).1 indicates that the movement of current account balance during and after the time of sudden declines of capital inflows (Crises). The above figure clearly indicates that the current account deficit has widened with the intensity of the crisis. However, it resumed in the beginning of 2009. But since then the current account deficit has widened historically which clearly indicates that the impact of sudden declines is not yet over.

To measure the impact of sudden declines of capital inflows quantitatively, the researcher uses the above equation and results of the above equation is shown in the table 4 (B).1:

**Table 4 (B).1: Impact of Sudden Declines of Capital Inflows (in US $ million)**

<table>
<thead>
<tr>
<th>Year/Quarter</th>
<th>CAD</th>
<th>AR</th>
<th>CI (impact of SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q2nd 2007</td>
<td>4532</td>
<td>213362</td>
<td>-</td>
</tr>
<tr>
<td>Q3rd 2007</td>
<td>4257</td>
<td>247762</td>
<td>Nil</td>
</tr>
<tr>
<td>Q4th 2007</td>
<td>3511</td>
<td>275316</td>
<td>Nil</td>
</tr>
<tr>
<td>Q1st 2008</td>
<td>3438</td>
<td>309723</td>
<td>Nil</td>
</tr>
<tr>
<td>Q2nd 2008</td>
<td>3274</td>
<td>312087</td>
<td>Nil</td>
</tr>
<tr>
<td>Q3rd 2008</td>
<td>12575</td>
<td>286336</td>
<td>35052</td>
</tr>
<tr>
<td>Quarter</td>
<td>SD Capital Inflows</td>
<td>SS Capital Inflows</td>
<td>Source</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------</td>
<td>--------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Q4th 2008</td>
<td>11668</td>
<td>255968</td>
<td>Nil</td>
</tr>
<tr>
<td>Q1st 2009</td>
<td>1212</td>
<td>251985</td>
<td>Nil</td>
</tr>
<tr>
<td>Q2nd 2009</td>
<td>4454</td>
<td>265142</td>
<td>Nil</td>
</tr>
<tr>
<td>Q3rd 2009</td>
<td>8773</td>
<td>281278</td>
<td>20455</td>
</tr>
<tr>
<td>Q4th 2009</td>
<td>12187</td>
<td>283470</td>
<td>5606</td>
</tr>
<tr>
<td>Q1st 2010</td>
<td>12998</td>
<td>279057</td>
<td>-3602</td>
</tr>
</tbody>
</table>

Table 4 (B).1 indicates the impact of sudden declines of capital flows in quantitative terms. The results presented in the above table show that the amount of SD of capital inflows increases in the times of crises but up to the last quarter of 2009 the value of SS did not decrease so much. Therefore, the table shows that the impact of SD of capital flows are US $ 35052 million in the third quarter of 2008 and in the 3rd quarter of 2009 the amount of sudden declines of capital inflows amounts to US $ 20455 million. Sudden declines may also have severe consequences like collapse in output, employment reduction, and decline in the value of domestic currency etc.

**QUALITATIVE EFFECT OF SUDDEN DECLINES OF CAPITAL INFLOWS**

Sudden declines of capital inflows have a harmful effect in an economy. When there is a sudden declines of capital inflows then it will lead an economy into insolvency and affect many macroeconomic variables like exchange rates, interest rates, foreign exchange reserves and domestic monetary conditions etc. When there is sudden reversal of capital inflows then it reduces the growth rate of an economy, increases the interest rates and depreciates the currency and others. Effect of sudden declines of capital inflows in qualitative terms can be explained through the following points:

**Impact on Exchange Rate:**

Sudden declines of capital inflows affect the value of currency i.e. it depreciates the value of currency. Due to flight of foreign funds, Indian currency depreciated more than 21% in 2008-09, and demand for rupee has simultaneously, dipped because capital inflows were down. Added to this depreciation of currency will lead to higher cost of imported goods and make some of the capital intensive projects more expensive to execute. The impact of sudden declines of capital inflows on Value of currency can also be shown from the following figure:
Figure 4 (B).2: Exchange rate of Indian Rupee in terms of US$

Source: Montly Report on Indian Economy, CMIE

Figure 4 (B).2 shows that the movement of foreign capital and Indian rupee in terms of Dollar. It shows that the sudden Declines of capital inflows hit the exchange rate. The figure also shows that the value of Indian rupee moves with the movement of FDI mainly. The liquidity crisis along with FII sell off has forced the Indian Rupee to devaluate (Sumanjeet, 2009b) like never before and in a span of 9 months the Indian Rupee has slipped from around Rs 40/US $ to Rs 47/ US $. And up to December 2010, the value of Indian rupee not strengthening so much; it shows that the impact of SD is not yet over.

Fall in Forex Reserves:
There are number of studies exploring the relation of surging capital inflows with the forex reserves. Most of the studies revealed that there is a direct relationship between capital inflows and forex reserves. However forex reserves are also affected by number of other factors such as international trade and most importantly exchange rate. Figure 4 (B).3 shows the relationship of capital inflows with forex reserves.

Figure 4 (B).3: Capital Inflows and Forex Reserves

Data Source: Reserve Bank of India Bulletin (RBI) and Monthly Report of Indian Economy, CMIE

The above figure clearly shows that forex reserves moves with the movement of total capital flows. If there is sudden decline in capital inflows, it leads to decline in forex reserves. India’s foreign exchange reserves have grown significantly since 1991. The reserves, which stood at US$ 5.8 billion at end-March 1991, increased gradually to US$
25.2 billion by end-March 1995. The growth continued in the second half of the 1990s with the reserves touching the level of US$ 38.0 billion by end-March 2000. Subsequently, the reserves rose to US$ 113.0 billion by end-March 2004, US$ 141.5 billion by end-March 2005, US $ 151.6 billion by end March 2006, US$ 199.2 billion by end-March 2007 and further to US$ 309.7 billion by end-March 2008. Thereafter, the reserves declined to US $ 286.3 billion by end September 2008 (Sumanjeet, 2010). Thereafter the reserves declined to US$ 252.0 billion by end March 2009.

**Fall in GDP Growth rate:**
Second, the sudden declines of capital inflows and liquidity crises have slowed India’s economic growth. GDP started decelerating in the first quarter of 2007-08, nearly six months before the outbreak of US financial crises and considerable ahead of the surge of recessionary tendencies in all developed countries from August-September 2008. That was just the beginning of slowdown impact on “India’s GDP growth. GDP growth for 2008-09 was estimated at 6.7% as compared to the growth of 9.0% posted in the previous year. Growth rate of India i.e. growth in GDP dropped to 5.8 per cent (year-on-year) during the second half of 2008-09 from 7.8 per cent in the first half. But till now in the first quarter of 2011 GDP growth is 8.2%, whereas in the second quarter of 2007, was 9.6%. It means the impact of decline of capital inflows is still not over. This can also be shown from the figure 4 (B).4:

**Figure 4(B).4:** Relationship between Foreign Capital and GDP Growth of India

Data Source: IndiaBudget.com

Figure 4(B).4 shows the relationship between the components of foreign capital and GDP growth rate of India. The above figure clearly shows that the GDP growth rate of India mainly affected by the movement of FDI. But at the time of crises GDP growth of India is affected by the movement of FPI mainly.

**Fall in Industrial Output and Rise in Inflation**
Sudden declines are events in which domestic economies lose their access to international capital markets. Hence, any activities financed by foreign funds must undergo certain adjustments such as cutting down these activities (e.g. reductions in investment). Further, India’s industrial output fell at its fastest annualized rate in 14 years, despite tax cuts and
fresh spending programme announced by the government of India in December and January to boost domestic demand. Data released by CSO showed that the factory output shrank by 1.2 per cent in February, on a weak global and domestic demand. This is against growth rate of 9.5 per cent during the same month a year ago. Industrial output thus grew 2.8 per cent during April-February, against 8.8 per cent in the same period a year ago. Manufacturing, which constitutes 80 per cent IIP (Index of Industrial Production), contracted by 1.4 per cent in February, as production of basis, intermediates and consumer goods shrank compared to a year ago. Now Industrial Production in India expanded 7.3 percent in March of 2011. Industrial production measures changes in output for the industrial sector of the economy which includes manufacturing, mining, and utilities. Industrial Production is an important indicator for economic forecasting and is often used to measure inflation pressures as high levels of industrial production can lead to sudden changes in prices. From 1994 until 2010, India's industrial production averaged 7.49 percent reaching an historical high of 17.70 percent in December of 2009 and a record low of -0.20 percent in December of 2008 (Figure 4 (B).5).

**Figure 4(B).5: Falling Industrial Production in India (% change year on year)**

![Falling Industrial Production in India](Figure 4.(B).5)

Source: Tradingeconomics.com

Similarly, for a little over a year after the outbreak of sudden declines of capital flows, the global economy experienced, between September 2007 and October 2008, a pronounced stagflationary phase, with the growth slowdown on the one hand and rising inflation on the other hand (Figure 4(B).6).

**Figure 4 (B).6: Total Capital Flows and Inflation Rate of India**

![Total Capital Flows and Inflation Rate of India](Figure 4.(B).6)

Source: Economic Survey (Various Issues and Handbook of Statistics, RBI.)
As a general rule, sudden decline of capital flows reduces the industrial production. Reduced industrial production leads to shortage of goods and services in the market, which basically affects the prices of commodities in the markets. Further, inflationary pressure depletes consumer’s sentiments in the market. Depleted consumer sentiment leads to a fall in consumer spending consequently leading to lower demand in the economy.

**Figure 4 (B).7: Short Term and Long Term Impact of Inflation**

If people are not buying more then why would companies produce more? This leads to lower growth or sometimes even de-growth in IIP. Thus, usually the immediate impact of poor IIP figures is falling stock prices. Over the long term, continuous lower consumption leads to lower producer confidence. Negative sentiment about future demand further leads to reduction in investment activity & hence slows down the capital spending. This has an adverse impact on future sales & profits of the companies. Thus, the negative sentiment leads to an adverse investment atmosphere for both institutional and retail investors.

**Figure: 4 (B).8: How Industrial Production Affects the Stock Market**

Lower supply coupled with lower demand can have catastrophic impact on stock market and was one of the main reasons for drop in Sensex from 20000 to 8000 in 2008. Thus, lower IIP is bad news for the Stock Market as well as for the growth of the economy.

Source: Indian Economy Survey (Various Issues) and SEBI Bulletin
Industrial production has an inverse relationship with unemployment, rising industrial production usually leads to falling unemployment and falling industrial production means rising unemployment. When companies reduce production shifts or shut down factories because of falling demand, they lay off staff, which increases unemployment. When demand increases, companies increase production and hire more staff, which lowers unemployment.

Further, industrial production has an inverse relationship with unemployment, rising industrial production usually leads to falling unemployment and falling industrial production means rising unemployment. When companies reduce production shifts or shut down factories because of falling demand, they lay off staff, which increases unemployment. When demand increases, companies increase production and hire more staff, which lowers unemployment. But, it is very difficult to generalize the impact of capital flows on employment. As a general rule, increase in capital flows will lead to increase in industrial production and rise in industrial production will lead to increase in employment opportunities. But, sudden increase in capital inflows will appreciate the value of currency and exports will go down. If exports will go down, unemployment will increase. On the other hand, sudden decline of capital flows depreciate the value of currency and increase the exports. Again important point of discussion is that, as a general rule exports should increase during the sudden declines of capital inflows. But, in India, the story is different, as India has major share of re-exports items in total exports. Imports will go down because of fall in the value of currency.

**Capital Markets**

The stock market started declining from January 2008, and till September 2008, just prior to Lehmann filing for bankruptcy; Bombay Stock Exchange (BSE) Index lost 33% of its peak January 2008 value. However, post-September 2008, the Bombay Stock Exchange (BSE) index went down by a further 40%, following a sharp decline in stock markets across the world, shift in international investors’ preferences, and resultant withdrawal of portfolio investments (Sumanjeet and Paliwal, 2010). The capital market has however started recovering since March 2009. The years prior to the crisis had been particularly good for the primary capital market. However, during FY 2008-09, resources mobilized through the primary market came down substantially. Therefore, the movement of BSE SENSEX can be shown as (Figure 4(B).9):
The chart (4 (B).9) plotted above shows that there is a positive elation between FII investment and the Sensex. Also look at the encircled region on the chart. It shows that the rise of Sensex in 2007 was largely fuelled by the money pumped in by the FIIs which led to the market touching 20,000, but in 2008, with the global economy in doldrums, the FIIs were net sellers and took the market down.

Other Implications
As the external (foreign) sources of credit for companies were drying up in the wake of the global financial crisis, there was a sharp increase in domestic credit during April–October 2008. The increase seems to be due to the substitution effect. However, towards the later part of FY 2008-09, credit growth declined due to a slowdown in the economy in general and the industrial sector in particular. On a full year basis, bank credit growth fell from 22.3% in FY 2007-08 to about 17.5% during FY 2008-09. Further, India’s balance of payments underwent major shifts in 2008-09 that resulted from the transmission of the direct impact of sudden declines of capital flows to India. The current account deficit shot up to 2.6 per cent of GDP in 2008-09 from 1.5 per cent of GDP in 2007-08. And this is the highest level of current account deficit for India since 1990-91. The impact on the capital account was more pronounced as the capital account surplus dropped from a record high of 9.2 per cent of GDP in 2007-08 to a meager 0.8 per cent of GDP in 2008-09. And this is the lowest level of capital account surplus for India since 1981-82. The year ended with a decline in reserves of US$20.1 billion (inclusive of valuation changes) against a record rise in reserves of US$ 92.2 billion for 2007-08.

CONCLUSION
This chapter provides an overview of consequences of sudden declines of capital flows into India. Sudden declines of capital flows have a harmful effect on an economy in both the terms i.e. qualitative as well as quantitative terms. In qualitative terms, the amount of sudden declines of capital flow amounts to US $ 35052 million in the third quarter of 2008. Similarly, in the 3rd quarter of 2009, it amounts to US $ 20455 million,
which is not very less as compared to the 2008. It means the impact of sudden declines of capital inflows is not yet over. The researcher also observes some qualitative effect of capital inflows on some macroeconomic variables such as exchange rate, forex reserves, capital market, industrial production etc. Reduced industrial production leads to shortage of goods and services in the market, which basically affects the prices of commodities in the markets. Further, inflationary pressure depletes consumer’s sentiments in the market. Depleted consumer sentiment leads to a fall in consumer spending consequently leading to lower demand in the economy. It was also found that sudden declines of capital inflows in India lead to depreciation of Indian currency and leads to the decline in the value of forex reserves.

REFERENCES


