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I. Introduction

Economies have been rapidly integrating with the international financial system since the early 1990s. The process of financial integration has been promoted by the belief that it encourages efficient allocation of resources with diversified risks, ultimately stimulating higher economic growth. Financial integration, however, increases international financial contagion risks that impose huge negative externalities on the rest of the economy. Financial contagion, the source of the volatile financial capital flows[4] is a key factor of international shock transmission. For instance, the US mortgage crisis was strongly and rapidly transmitted to the rest of the world through cross-country and cross-institutional financial linkages. In addition, the recent financial crisis has shown that the international interbank market is one of the main channels of international contagion.

International financial contagion tends to increase the volatility of financial flows in emerging as well as developing economies. The deepening of the subprime crisis reduced the volume of volatile portfolio capital into Asian emerging economies. However, capital flows to emerging Asia have recovered with the fading of the global financial crises. Compared to previous waves of inflows, the current episode is characterized by a predominance of volatile portfolio inflows. Improved fundamentals and growth prospects in emerging markets and loose monetary policy in advanced economies are among the pull and push factors behind the recent acceleration of capital flows from advanced to emerging economies. From the structural perspective, the global crises and the latest debt-related debacles in Europe have exposed many countries to the risks of balance sheet vulnerabilities from advanced economies and have triggered a gradual shift in the portfolio allocation by the institutional investors toward emerging markets.

In the current interconnected financial markets, Asian economies, highly vulnerable to external shocks, need to ensure both macroeconomic and financial stability by enhancing their resilience to those shocks. While capital flows are commonly useful for receiving countries, volatile capital flows can lead to challenges for macroeconomic and financial stability, including exchange rate overshooting, boom-bust cycle of credit/asset prices, financial fragility and credit risk. The recent global crisis has reignited the need for policies to hedge against the risks stemming from volatile capital flows while retaining the access to international finance.

Designing coherent and comprehensive policy responses to deal with volatile financial capital flows require a better understanding of the phenomena of volatility in those flows, financial contagion and the transmission of financial shocks across economies. It is also important to address the debates regarding the optimal responses including macroeconomic policies, capital controls and prudential measures to safely and efficiently manage volatile capital flows and reforms for regional cooperation on effective financial architecture. Hence, policy discussions on the

[4] FDI is more resilient during financial crises, whereas portfolio flows and bank inflows are considered to be highly volatile (Broto, Díaz-Cassou and Erce-Domínguez 2008).

appropriate management of financial contagion and volatile financial capital are undoubtedly one of the major international policy concerns.

This background paper reviews the fundamental policy issues on financial contagion and volatile capital flows and is focused in particular on how to handle volatile capital flows effectively. The conclusion of this discussion paper points to the premise that priorities need to be given to conventional macro policies and their associated instruments whereas the newly-introduced alternatives could be deployed in the event that the capability of priority policies are deemed ineffective or exhausted. A proper mix of policy frameworks can also be carefully formulated on the case-by-case basis of a given economy.

The structure of this paper is as follows: Section II presents stylized facts on the notions of financial contagion and financial capital flows along with the selected literatures. The historical and the potential consequences of financial contagion and its interrelationship with volatile capital flows are described in Section III, followed by Section IV which explores a set of feasible policy options to tackle the risks and repercussions from these two factors. Section V concludes with a few open questions for discussion.

II. Stylized Facts of International Financial Contagion and Financial Capital Flows

2.1 Financial Contagion and the International Transmission of Shocks

Prior to the Asian crisis, the term “contagion" was mostly understood as clinical jargon, that is the spread of a medical disease[5], but this definition quickly evolved to include the spread of financial crisis as the impact of the crisis which originated in Thailand in 1997, quickly spread throughout the entire East Asia with pronounced externalities in Russia and Brazil. Since then, scholars have deepened their interests in exploring international financial contagion to better understand the nature of such phenomenon.

In its broadest sense, contagion can be a situation where the instability in one financial market, institution or country is transmitted to other markets. With its distinctive characteristics, the effect of contagion is different from those of spillovers or common shocks in terms of the level of market failure and transmission rates. For instance, Claessens et al. (2001) argue that strong linkages between countries are not necessarily contagion, and contagion should be defined by the significant increase in cross-market linkages after a shock to an individual country had occurred (or group of countries), whereas Moser (2003) proposed that certain pre-conditions need to be satisfied for the event to be considered as pure financial contagion.

First of all, contagion should be distinguished from common shocks by its influences on several countries at the same time, tagged as the “monsoonal effect” by Masson (1998). Contagion should be confined to describe situations where a crisis in one country or market is transmitted to other

[5] By English definition, contagion is a “disease” and also refers to the “transmission” of a disease by direct or indirect contact (Claessens and Forbes 2001).

countries, or at least make them more likely to suffer from the crisis. Although both common shocks and contagion can be a source of systematic risk, they are actually different phenomena (Moser 2003). Secondly, the cause of financial contagion usually goes beyond the perspective of the real economy and while it rarely happens through fundamentals of the balance of payment, it is generally labeled as 'fundamentals-based contagion' (Kaminsky, Reinhardt and Vegh 2003). In addition to (Moser 2003), contagion is a specified market failure situation, where private costs of the initial financial market failure, that is the costs to the actor of the trigger of the contagion, are lower than that of the social costs (González-Páramo 2011).

The theoretical literature on how shocks are spread internationally can be broadly divided into two categories: *crises-contingent* and *non-crisis-contingent theories*. The crisis-contingent theories explain the change in transmission mechanism during a crisis along with the increased number of cross-market linkages after the shock is triggered. Three main channels are involved: *multiple equilibria based on investor psychology* (Masson 1998); *endogenous liquidity shocks* that lead to a portfolio re-composition (Valdés 1997); and *political economy* affecting the exchange rate regime (Drazen 1999). On the other hand, the non-crisis-contingent theories suggest that there are four different channels through which shocks could be transmitted internationally: *trade, policy coordination, country reevaluation* and *random aggregate shocks*. These channels are often called real linkages because most of them are based on economic fundamentals. The theories argue that random aggregate or global shocks could simultaneously affect various fundamentals of economies (Forbes and Rigobon 2001).

While there is extensive literature on financial contagion, there are effectively only three major channels of transmission mechanism. As opposed to the *information channel* where only the information on the shocks occurring in certain countries are sent to other agents and countries as a signal to information update, for the other two channels, when a crisis occurs in a given economy, the impact of the crises is through financial connectivity (Moser 2003) and(Longstaff 2010). Brief descriptions of each channel are provided below.

With the *information channel*, a shock to the financial market signals information either directly or indirectly related to the security prices in other markets. Hence, contagion via this channel can be seen as the transmission of information from more liquid markets to other markets. For instance, while Dornbusch, Park and Claessens (2010) find that direct effects from shock-originating economy usually takes place through fundamentals such as trade linkages, Kyotaki and Moore (2002), Kaminsky, Reinhart and Vegh (2003) show that channels through which information received from the shocks in a certain financial market, directly influence the collateral values or cash flows in other markets. Also, Masson (1998) shows how a crisis in one country could realign investors' psychology, shifting them from one of good equilibrium to the one of a bad in another economy, possibly triggering a subsequent crash in the second economy. A crisis in an individual country could activate the recall of past crises which would lead investors to re-assess their portfolios losses and assign a higher probability to a bad state. Thus, the move from a good to a bad equilibrium and the transmission of the initial shock, without any real linkages, can be

reinforced by a change in investors' expectations or beliefs. The model, presented by King and Wadhwani (1989) describes how contagion occurs as rational agents attempt to understand information from price changes in other market, whereas Goldstein (1998) states a situation where one country's crisis leads other countries to look at similar aspects of the said crisis, thus leading to a contagion by revealing and unveiling the existing problem –the notion often called the "wake up call". Perhaps, one of the most important types of contagion is the so-called "mental contagion" where the arrival of economic news directly affects collateral values, stocks, exchange rates and consequently cash flows.

In the *liquidity channel*, a shock on one financial market causes an overall liquidity reduction in other financial markets. This reduction may influence investors' behavior and their asset prices (Longstaff 2010). For instance, Allen and Gale (2004), Brunnermeier and Pedersen(2009) show how investors who experience losses in one market may find their ability to obtain funding impaired, which could potentially result in a downward spiral in liquidity-shortage of the overall market and other asset prices through "flight to quality". A model, presented by (Valdés 1997) delineates the influence of a crisis in one country on the market participants in terms of liquidity reduction. In order to continue operating in the market or to meet regulatory requirements, investors could be forced to recompose their portfolios and sell assets to other countries and if the liquidity shock is substantial, a crisis in one country raises the degree of credit deterioration and forces investors to sell their holdings of assets in countries not affected by the initial crises. According to Calvo's model (1999) of endogenous liquidity based on asymmetric information among investors, there are two types of investors, namely informed or uninformed. While informed investors extract signals about a country's fundamentals which enable them to recognize liquidity shocks in order to sell their holdings in timely manner, uninformed investors, on the other hand, cannot differentiate a liquidity shock from a bad signal thus leaving them the choice of charging a premium when the informed investors are the net seller. In both models, the liquidity shock leads to a strong correlation in asset prices.

As for the *risk-premium channel*, a shock on the financial market may influence the willingness of market participants to tolerate risk in any market. Contagion is revealed as negative returns in the affected market impact on the subsequent returns in other markets through a time-varying risk premium (Longstaff 2010). To this end, Vayanos (2004), Acharya and Pedersen (2005), Longstaff (2008) show that a negative shock in one market may cause an increase in the risk premium in other markets. The implication of this time variation in the risk premium is that the return shock on the affected security may be a leading indicator for the subsequent returns of other assets.

Longstaff (2010) find strong evidence of contagion in the financial market using data for ABX subprime indexes. In particular, his results show that financial contagion occurs mainly through *liquidity and risk premium channels* rather than *the information channel*.

2.2 Causes of Volatile Financial Capital Flows: Push and Pull Factors

A better understanding of the nature of capital flows could help policy makers to design appropriate policy responses to these flows. Hence, it is important to establish stylized facts about the determinants of capital flows during a crisis and its subsequent recovery. Since the combination of the causes varies from country to country, it is a difficult to distinguish between temporary and sustainable flows.

In broad sense, causes of capital flows can be grouped into three major categories: autonomy of changes in the domestic money demand function; variation in the domestic productivity of capital; and external factors such as fluctuation in international interest rates. The first two are usually referred to as pull (internal or country-specific) factors and the third as push (external or common) factors (Haque, Mathieson and Sharma 1997). In addition, the pull factors include financial liberalization, structural reforms including external debt restructuring, political environment, internal security and macroeconomic stabilization (Bachetta and Wincoop 2000), (Khan 1998), (Siregar, Pontines and Hussain 2010).

In recent years, an increasing number of scholars have become interested in determining the push and pull factors for capital flows during the global financial crisis. For instance, Fratzscher (2011) find that push factors, including changes to specific crisis events, global liquidity and risk conditions are the overall main drivers of capital flows during the crises while pull factors such as countries' macroeconomic fundamentals, institutions and policies have been dominant in accounting for dynamics of global capital flows in 2009 and 2010, in particular for emerging markets.

In addition, several studies have been conducted at the SEACEN Centre to determine fundamental factors of capital flows in SEACEN economies. Shrestha & Lim (2009) find that both pull factors such as high economic growth, attractive interest rates and large current account deficits and push factors such as low world interest rates were responsible for increase in capital inflows in the SEACEN region for the period 1977-2007. Siregar et al. (2011) highlight that a number of pull and push factors have played a role in recent surges of capital flows into SEACEN economies during 2010 and early 2011. The pull factors include higher relative yields, booming housing markets and expectation of domestic currencies appreciation, and domestic macroeconomic fundamentals with strong growth prospects. In addition, Pontines and Siregar (2010) show a number of fundamental determinants of international bank lending to SEACEN economies from advanced economies such as Japan, UK and US. For instance, GDP growth and economic conditions of home (Japan, UK and US) and host (SEACEN) economies have been important factors to explain pro-cyclicality of bank lending flows into the SEACEN region. Whereas, external factors, reflected by S&P 100 volatility index of Chicago Board Options Exchange, has adversely affected the international bank lending flows into SEACEN economies.

2.3. Nexus between Financial Contagion and Volatility of Financial Capital Flows

With the repercussion of the latest global financial crisis still ongoing, policymakers had to revisit their former approach towards exceptionally large capital flows both in net and gross terms together with the promulgation of adequate sets of measures in the form of policy instruments to diagnose, prevent or even abate the magnitude of next episodes of market disruption. Before the crisis, the increasing rate of capital flows[6] were widely viewed as a favorable condition for boosting credits that would promote economic growth in industrialized nations. However in the aftermath of the previous financial crises, it is almost unanimously agreed that carefully planned and appropriate management policies to counter the volatility of both inbound and outbound capital flows are essential for abating further contagion on the financial market.

Indeed, the interconnectedness between economies has become increasingly complex over the years that - on the one hand, it had acted as the facilitating tool for the flow of funding from the economy with surplus to that with deficit. However, on the other hand, the transfer of funding rate had become intensely fast and intertwined. The disruption occurring at one end of the cross-country system would pose a greater risk of exerting negative ripple effects on its counterparts in the system - the episodes of which were largely evident during the latest financial crises.

For that reason, the phenomenon of financial contagion has been deemed as one of the factors that influence the volatility of capital flows and related analyses had been carried out to explore the underlying facts and context in which one seems to trigger the other. Although thus far, the notion of financial contagion has not been formally or universally coined, in broad terms it refers to an event in which the transmission of influence of a certain event which occurred in one financial unit to the entire financial system or even at the cross-country level. The IMF (Gelos 2011), having summarized the behavioral analyses of fund managers and investors in the relevant literatures, came to the conclusion that financial contagion is the result of investors' portfolio rebalancing effort to the deviation from the general status quo in the market, meaning that, even in the absence of general macro-economic variables that affect the general economic conditions, the change in the behavior of the investors in efforts to mimic the general market expectation may inherently be connected to the financial contagion.

Based on the studies conducted on the past behaviors of capital flows volatilities in response to the occurrence of financial contagion by the IMF (IMF 2011, 11-29) and others, numerous stylized facts regarding the interrelationship were formulated. For instance, Broner et al. (Rigobon and Broner 2005) view the event of financial contagion along with crisis, persistence or momentum trading as the exogenous shock to the volatility of capital flows and the type of co-movement of flows across countries which cannot be explained by the macroeconomic fundamentals. While the impacts of the contagion on international capital flows fluctuations as demonstrated by the

[6] In global terms, the international gross capital flows as the share of global GDP has risen from 5% to 17% during 2002 to 2007 and 3% to 6% percent for net capital flows respectively. For details see Bank of England, (2011), "Future of International Capital Flows", Financial Stability Paper, Speller, Thwaites and Wright.

research, could not be statistically quantified or fully explained, they infer that contagion precedes or signals the volatility of capital flows to receiving economies with varying degrees of influences contingent on the certain preconditions.

The same extensive study by the IMF (2011) on the behavior of the global capital flows across different nations, by classifying the latest observed global financial contagions of greater magnitude into three waves - *Asian financial crisis (Wave 1), Lehman crisis (Wave 2) and Current ongoing crisis (Wave 3)* – had established sets of stylized facts. In addition, from numerous literatures (Gelos 2011), (Rigobon and Broner 2005) on the capital flows, one can find that some fundamental characteristics are deemed to have significant influence on the direction, speed and the intensity between the financial contagion and volatility of the capital flows. These include the following:

The status of economic advancement in the capital receiving countries – the emerging markets are more exposed to financial distress relative to the advanced economies

The prospect of how well the country manages its risks with the sudden capital outflows and inflows would greatly depend on its status of economic development and financial infrastructure. A nation with credible international country credit rating with sophisticated financial infrastructure would fare much better in event of a sudden outflow or deficit by attracting alternative funding at lower costs than emerging countries with underdeveloped financial framework that may have to endure high funding cost if capital outflows were to occur (Rigobon and Broner 2005). Due to the growing concern of developing countries lacking the means to withstand the volatility of their inbound capital investment, they have been trying to implement measures, in recent years, by accumulating savings, restricting investments and consumption. As a result, these countries managed to amass excessive amounts of reserves in the form of savings as precautionary, self-insuring measures whereas the developed countries conversely have become the ones with fund deficits in constant need for additional funds to sustain their high consumption rates, subsequently leading to the global imbalance. In the case where the inflows are invested for financing the credit booms of developing countries with high leverage levels of investors, sudden outflows can translate into serious macroeconomic shocks on the real economy.

Financial globalization, the scale (size) and the scope of the market

The studies conducted by the IMF (Gelos 2011) and Calvo et al.(2000) recognize that while the recent development in financial globalization had engendered some key benefits for economies in the facilitation of investment transactions with impressively high efficiency gain in terms of lower borrowing costs for mutual funds, institutional investors and nations alike; the degree of high volatilities in capital flow movements across participants in the system is becoming increasingly frequent, raising the solvency and funding risks for the parties involved in the transactions. Although other factors, some of which are described below, play significant

roles in blocking capital flows, the enormity of the connectedness across the system that had become extremely fungible, coupled with the large-volume in- and outflows of capital certainly add to the perceived risks associated with financial contagion.

Degree of information asymmetry or friction among market participants

The level of clarity and the transparency of information and its availability regarding the potential market of the country in question are one of the core deciding factors for future investors whether to invest or not and in what capacity (Gelos 2011). Additionally, the global imbalance commonly referred to as the precursor of the latest financial crisis, may have been the result of asymmetric information distribution on the opaque markets, prompting institutional investors in those markets to withdraw funds abruptly should confidence plummet. Conventional wisdom tells us that the information regarding the market tends to be more uncertain and less credible in emerging markets with less developed financial infrastructure and typically institutional investors as well as the mutual funds are reluctant to invest in those markets considering the heightened risks of their investments not being redeemable or are impoundable. Thus, the same analysis by the IMF (Gelos 2011) and the Financial Stability Report by Bank of England (Speller, Thwaites and Wright 2011) assert that intense information friction between investors and investing countries is an important aspect in explaining the correlation and causality between capital flows volatility and financial contagion.

Psychology of investors' behavior – herding and momentum trading

Perhaps the fear of the "unknown" and opaqueness of market condition act as one of the major drivers for the change in investors' and countries' behaviors which lead to the abrupt withdrawal or influx of capital. Most analyzes point to *herding* and *momentum trading* as the primary cause for financial contagion, where herding causes investors or fund managers to imitate the general behavior in the market (status quo) while momentum trading refers to the following of the past performance pattern of the portfolio for which the investment with the history of higher returns were deemed successful and the one with incurred loss deemed risky. (Gelos 2011)

The above stated features are all collectively regarded as important observables for tracking or spotting the next contagion event in a timely manner since in the past they have exhibited albeit different but identifiable trends for both surplus and deficit economies preceding the financial contagion. It is, therefore imperative to understand that contagion can occur as the byproduct of all or some of the abovementioned features and thus makes each incident case-specific.

III. Consequences of Financial Contagion and Volatile Financial Capital Flows

3.1. Consequences on Financial Sector, Including Financial Safety Net

As mentioned earlier, the causal relationship between financial contagion and volatility in capital flows can be reflected differently in countries based on their reserve accumulation status: *surplus* countries or *deficit* countries (Pontines & Lim, 2012).

In the first category, surplus countries are mostly emerging markets which most SEACEN members are comprised of. The reason they accumulated unusually high rates of foreign and domestic reserves dates back to the 1997 Asian crisis when foreign investors abruptly withdrew their investments at a staggering rate leaving some of these countries to resort to IMF's assistance to shore up liquidity to sustain their economies. The shift to the accumulating behavior was justifiable since the magnitude of the Asian crisis was big enough to incentivize SEACEN economies to accumulate reserves to insure against similar incidents in the future. Thus, even though the total net capital flows of SEACEN economies, except China, decreased dramatically during the Lehman crisis, in aggregate terms they still managed to maintain the high-volume of accumulated reserves over the years (IMF 2011).

On the other side of the spectrum, the deficit countries, United States in particular, due to its qualified rating power, still managed to attract high volumes of cheaper funds from surplus countries after the Asian crisis (LTCM) to support its burgeoning credit growth, by sustaining high rates of internal consumption and investment (Pontines & Lim, 2012).

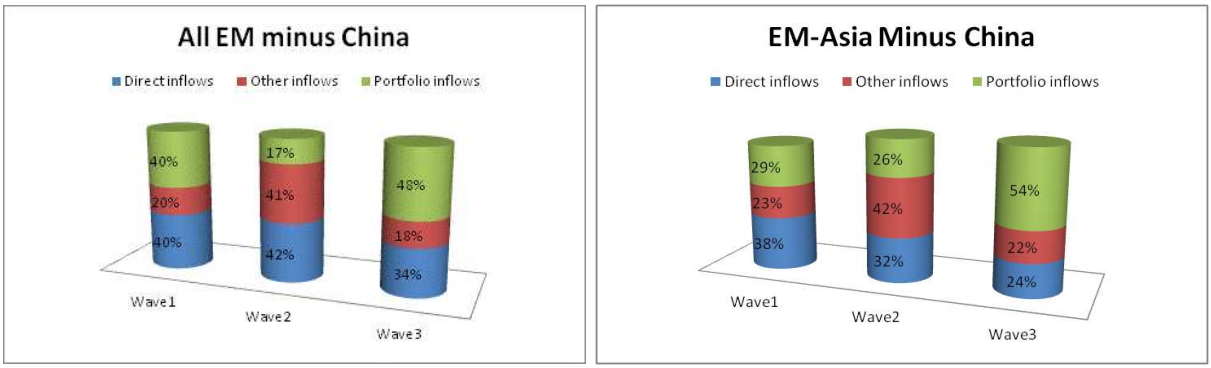
The two distinct yet complementary features of deficit and surplus economies resulted in the steady widening of the global imbalance. However, as each of the three waves of crisis hit the US followed by the continuous episodes of credit and liquidity crunch and sharp decline in the consumption, this led to the decrease in surplus economies' exports and the capital inflows (Pontines & Lim, 2012). The study also shows that with each wave, the magnitude and duration of the inflows to the emerging markets had been intensifying. The ramification on the crisis has been further exacerbated with the surplus countries' reluctance to appreciate their domestic currency to discourage exports. On the other side, the deficit countries, due to their domestic currencies' relative safe-haven status and the higher sovereign rating by the rating agencies along with the states' willingness to bail-out systemically important institutions, had thus far managed to attract funds with lower costs from investors. Because of their status as being financially stable, the deficit or developed countries tend to fare better during the crisis particularly where investors' expectations are relatively solid compared to those of developing or emerging economies which often result in the abrupt withdrawal of funds should uncertainties be unveiled. Thus, the negative effect of capital outflows were much pronounced on the developing countries with devastating effects on their financial safety net.

The recent and ongoing financial crisis differ from their predecessor in that for the Asian crisis, the regional surplus countries ended up taking the brunt of the crisis while developed countries

were relatively unscathed. The repercussions of the latest and ongoing crisis are more evenly spread throughout for both emerging and developed countries due to the increasing complexity of interconnectedness. This can be evidenced by the increasing rate of cross-country exposures in the form of several types of capital inflows during the three specified waves as shown in the figure below (IMF 2011).

The figure clearly illustrates that the rates, duration and share (magnitude) of capital inflows into the emerging markets, particularly Asia, during the three crisis periods, have been higher. Also while the major share of total capital inflows were constituted by banking institutions during the previous episodes, in case of the latest wave, the share of portfolio inflows both in terms of total inflows and total GDP, have dramatically increased to the point where they account for the majority, giving rise to the aggressive phase-in roles of the capital markets relative to the banking sector (IMF 2011).

Figure 1. Share of capital inflows types and their magnitude across emerging markets during three waves



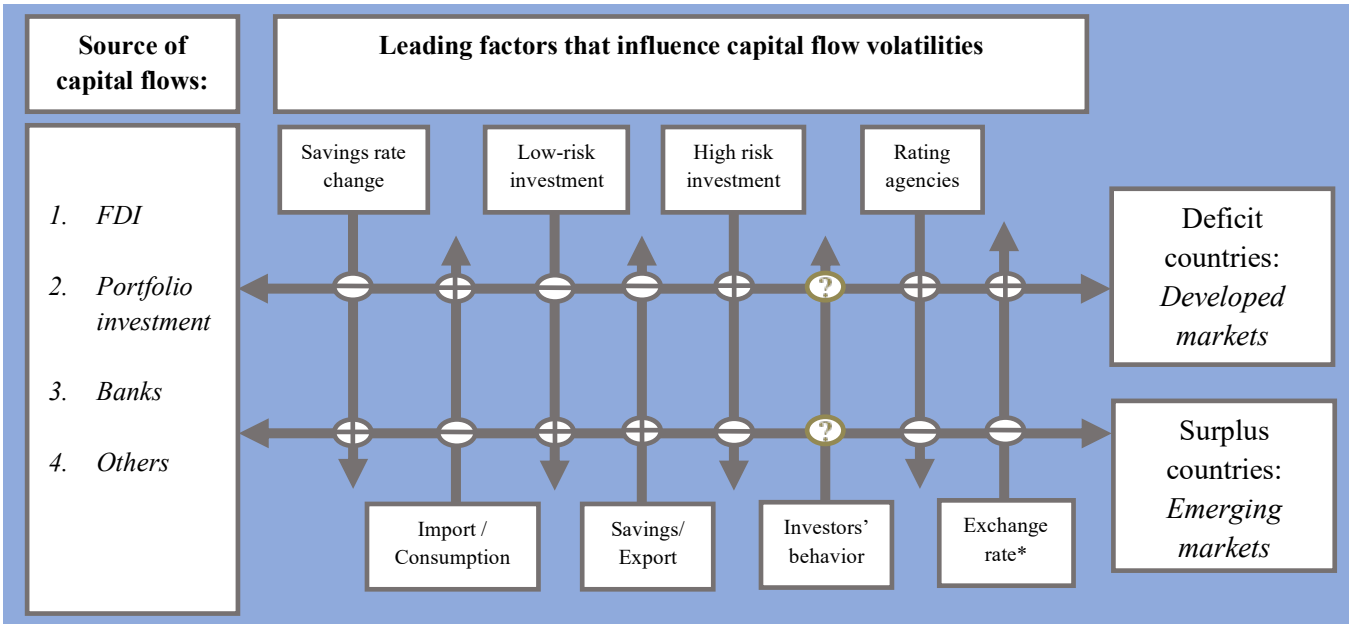
	Wave 1	Wave 2	Wave 3
Number of episodes	30	37	26
Of which:	15 in Latin America	15 in Europe	9 in Latin America
Average duration (no. of quarters)	20.1	20.5	Na
Average magnitude (percent of GDP)	43.5	67.8	32.3
Of which portfolio inflows	**6.3**	**6.9**	**12.4**
Of which bank inflows	**17.3**	**28.3**	**10.6**
Average pace (percent of GDP)	2.17	3.3	3.2

Source: (IMF 2011).

The past episodes of financial crisis and the latest crisis with its ongoing repercussions have increased the awareness of risks posed by the large, mercurial influx of foreign capital and its sudden outflows, thus requiring policymakers, particularly those in developing nations, to come up with a better policy toolkit that could act as a timely and credible anchor for potential abnormality rather than the reserve accumulation. Kose et al (2010) concludes that since the cross-border capital inflows and outflows are proliferated by the increasing financial integration, it is difficult for countries with stricter capital regimes to stay within the regime longer. The better

alternative may be to develop policies in terms of engineering new "synergized" instruments from previously separate and independent policies. Thus, as the various literatures and the real life experience in the global arena has displayed, the level of impact from the financial contagion differ to a considerable extent between emerging i.e. surplus and developed i.e. deficit countries which is summarized in the diagram below. To elaborate, the macro-economic fundamentals such as interest rates, exchange rates fluctuations in the crisis period tend to adversely affect surplus countries than deficit countries and the other exogenous factors such as investors behaviors change, risk aversion or the appetite to the investments which cannot be predicted in stressed situations also reinforces the general characteristics of countries. For instance, with crisis the surplus countries are due to their precautionary and self-insuring behaviors are often forced to invest their accumulated excess capital funds in lower yield, lower-risk assets to stay on the safe sides, while the deficit countries with their still high-ranking credit rating and relative safe-haven status of their currency continue to attract cheaper funds all of which can further stimulate the tendency to invest in high-risk and high-return assets. Also tendency to save more, consume less and thus export their production and services are more pronounced in the surplus countries where as the deficit countries with higher credit ratings almost follow the opposite pattern. That is, one plays the consumer role of the production made by the other which makes the global financial lubrication process afloat in normal times.

Figure 2. The interrelationship between the selected fundamentals, other factors and the capital inflows in the aftermath of Asian crisis



Note that the ⊕ (plus) sign indicates the generally positive (reinforcing) feedback loops between the factor of interest and the selected types of countries whereas the ⊖ (minus) sign indicates the opposite (generally negative/balancing feedback loops). Also '?' sign indicates the inconclusive interrelationship and '*' describes the case of countries with free floating or hybrid exchange rate regime.

Source: Summarized from (IMF 2011, 11-29), (Pontines, Pontines and Lim 2012) and (Balakrishnan, et al. 2012)

Just by analyzing the dynamics of the capital flows and in their forms to the emerging markets described earlier, it suggests that the dominant share of the portfolio inflows in both total inflows and national GDP may entail greater risks in the event of dire financial contagion across the system or a region of countries with similar economic features which could signal abrupt outflows of capital from countries.

Perhaps, that might be the reason the developing countries in recent years have been joining efforts to cooperate across the region to take adequate set of measures and build the cross-country safety net facility to withstand potential shocks in the futures as well as formulating the policies to sustain the economies across region going forward. (Pontines, Pontines, & Lim, 2012) For instance, in the aftermath of the Asian crisis, the reserve accumulation had become the commonplace across most SEACEN economies so that in the event when other such crises of these magnitude or greater were to occur, the nations would have the adequate facility at hand to tackle them. However, with the recent and ongoing crises there is an increased and renewed awareness for collective efforts for cooperation and coordination of policies to potentially fare well against the impending shocks that have gotten ever more unpredictable and the magnitude, scale and transmission effects of which could hit regional economies fast and hard. As the Pontines et.al (2012) emphasizes, the recent measures to build liquidity facility with the portions of accumulated reserves from several ASEAN+3 countries known as Chiang-Mai initiative (CMI) and the establishment of Macroeconomic research office have been major steps for robust regional safety net.

3.2 Macroeconomic Implications

The process of capital account liberalization and market opening has led to greater integration of emerging economies into the international financial markets. Asian emerging markets are experiencing a surge in capital inflows that is expected to remain strong and persistent going forward.

Capital inflows are generally beneficial for receiving developing and emerging market economies by filling the gap between the saving and investment and providing lower funding cost which leads to confidence in the fundamentals of the economy. For instance, large capital flows have resulted in the lower cost of capital funding of investment needs and stimulating economic growth over the medium term. Furthermore, capital flows promote the development of financial market infrastructure by the introduction of new investment instruments and increasing absorption capacity, and reducing a country's income volatility (IMF 2011, 89-124). In addition, capital flows can be most effective if the flows are steady and comprise the investments which meet the development needs of the particular economy (Dodd 2004). Also, Khan et.al (1995) highlight that many Asian economies have been utilizing capital inflows to finance productive investment to achieve higher growth.

However, capital account liberalization has not always contributed to economic growth since volatile capital flows can lead to instability across financial systems, having adverse effects on

growth (Stiglitz 2000). Stylized evidence show that capital flows may trigger volatile business cycles in emerging economies (G. L. Kaminsky 2005). Volatile capital flows can expose previously well-functioning markets of economies to disruptions, leading to distortions in the global economies which could in turn, subject them to either inflow surges or massive capital flight. Mody et.al (Mody and Murshid 2005) demonstrate that countries with sound policy environment or viable institutions garner more benefit from capital account openness than economies with weak policies.

In reality, capital flows are inherently pro-cyclical and much more volatile in that during economic expansion, inflows are often excessively large whereas in a recession, there could be either a stoppage of inflows or even signal the sudden outflows of the accumulated capital. Such episodes of volatile and pro-cyclical capital flow fluctuations in both directions, mostly bearing no linkages to the economic fundamentals of the country, are typically observed in private capital flows compared to other components of inflows.

In boom periods, sudden surges in capital flows can trigger macroeconomic and financial stability risks and complicate macroeconomic management. Volatile capital flows particularly, could also potentially have adverse macroeconomic consequences. Inflows can possibly complicate monetary management by lowering long-term bond yields, making interest rate policy less effective, in particular when the monetary transmission mechanism is essentially weak. Furthermore, lower government borrowing costs can possibly lead to looser fiscal discipline.

Standard open-economy theories imply that capital flow surges may result in internal imbalances by driving an excessive expansion of aggregate demand or economic overheating, resulting in inflationary pressures. In addition, inflow surges also may lead to external imbalances by causing upward pressure on exchange rates, causing the currency to be overvalued which could lead to a loss of competiveness and widen current account deficits. The undermining of the competitiveness of the tradable sector can potentially cause lasting damage even when the inflows are abated or reversed. The generalized deterioration in the current account balance is the consequence of the increase in investment and consumption ratios to GDP. Real exchange rate appreciation is more likely to occur when capital inflows are used to finance consumption rather than investment. In addition, consumption will also have an effect on the real exchange rate if government consumption is more biased toward non-traded goods than private consumption(Khan 1998). However, the effects on inflation and the real exchange rate will largely depend on a nominal anchor for monetary policy or the exchange rate regime adopted by the country as well as the amount of international reserves accumulation.

The monetary effect of capital inflows will be crucially determined by the exchange rate regime. For a free floating regime, a positive shock to the capital account causes no change in international reserves and monetary aggregates but would however, induce a nominal exchange rate appreciation (exchange rate overshooting), resulting in a current account deficit. Under fixed exchange rate, the intervention of the monetary authorities will lead to reserve accumulation and

increases in the money supply, lowering domestic interest rates and raising domestic asset prices. In this scenario, inflow surges could possibly fuel credit booms, in particular foreign exchange denominated lending (or even create loss of monetary control), asset bubbles and financial instability. As a result, an excess aggregate demand causes a rise in domestic inflation and appreciation in real exchange rate, leading to the worsening of the current account deficit. In the intermediate regimes under imperfect mobility, the authorities defend a predetermined nominal exchange rate, while pursuing a target for monetary aggregates. In such a case, affair amount of reserve accumulation is a policy choice. However, since the aggressive accumulation may induce higher pressures on inflation, it is recommended that further reserve accumulation is undesirable beyond the optimal threshold.

In an economic downturn, foreign capital often flows out rapidly followed by the quick depreciation of the domestic currency, causing a sudden shrinkage in international reserves due to their inevitable release to temper the volatility. In particular, if a flexible exchange rate is not well anchored by expectations and a well-established history of mean reversion around the given longer-term trend, a 'sudden stop' or capital reversal is a potential danger. As capital leaves in response to a plunge in confidence, it would drive down the exchange rate, causing a vicious cycle as more capital leaves in response to this fall (Grenville 2008) and (Kawai and Lamberte 2010). In addition, the sudden reversal in capital flows can be triggered mainly by global factors rather than domestic ones. The turmoil could rapidly slow down real sector activities through deteriorating balance sheets and the draining of liquidity in both the domestic financial and foreign exchange market. Although moderating the capital flight along with its costs is a difficult challenge, it can be dealt with by capital controls (G. L. Kaminsky 2005).

The boom-bust cycles of capital flows as well as the volatility induced by financial contagion have an adverse impact on overall macroeconomic stability. Volatile financial flows, typically concentrated in short-term maturity portfolio flows can cause sharp asset price movements and other macroeconomic variables in a way that is inconsistent or incompatible with immediate domestic policy objectives (Kawai and Takagi 2008). In addition, the volatility of capital flows is closely related to volatility of GDP growth and the undermining of long-run economic growth (Easterly, Islam and Stiglitz 2000) and (Ramey and Ramey 1995).

IV. Managing Financial Contagion and Volatile Financial Capital Flows

4.1 Macroeconomic Policy Responses to Manage Capital Flows

As countries are getting financially integrated at an increasing rate, the volatility of capital flows is expected to rise. Therefore, authorities must be concerned about not only the right policy response to inflows, but also the possibility of abrupt reversals of these flows.

The rationale for policy intervention emerges from macroeconomic concerns that inflow surges can cause inflationary pressures, real exchange rate appreciation, loss of competiveness and a deterioration of the current account. The financial fragility concern is that surge in capital inflows

may cause excessive foreign borrowings and foreign currency exposure, potentially leading to domestic credit booms and asset bubbles. An appropriate macroeconomic response to the risks of inflow surges depends on the composition of the inflows, effectiveness of a variety policy measures and features of financial markets (Khan and Reinhart 1995).

Policy makers often face the challenge of policy Trilemma-commonly known as "Impossible trinity" that includes managing the volatile capital flows, responding to the exchange rate overshooting and containing domestic liquidity expansion. As the "Impossible trinity" suggests, the capital market opening also poses a policy dilemma to authorities for making a choice between a country's internal (or monetary policy autonomy) and external objectives (or exchange rate stability). Ostry et.al. (2010) argue that appropriate policy actions to manage capital inflows can be taken as shown in the flowchart in Figure 3. The first question is whether the exchange rate undervalued. If the exchange rate is undervalued from the multilateral respective, the optimal response would be to allow the nominal exchange rate to appreciate passively in response to the capital inflows.

However, when the exchange rate is already overvalued or roughly in equilibrium, appreciation may damage the competiveness of the tradable sector, prompting a more proactive policy response. The second question is whether to continue with the further reserve accumulation. When accumulation is needed, the inflows would provide a timely opportunity to increase the central bank's reserve holdings. If there are inflation concerns or increase in the money supply resulting from intervention, these can be sterilized through open-market operations or a decrease in domestic credit. However, there are limits to sterilization. For instance, domestic financial markets may not be sufficiently deep to absorb a significant increase in sterilization bonds, and the fiscal cost related to the differential between interests paid on domestic bonds and interest earned on reserves. In addition, as a result of the sterilization, domestic interest rates will remain at relatively high levels, prompting continuing inflows if markets expect that the exchange rate will be allowed to appreciate. If the central bank does not want to accumulate further reserves, macroeconomic policies such as monetary and fiscal policies or more direct measures, including controls on capital flows have to be employed to reduce inflow surges (Ostry, Ghosh, et al. 2010).

Figure 3. Coping with Capital Inflow Surges: Macroeconomic and Prudential Consideration

Source: (Ostry, Ghosh, et al. 2011)

Generally, policy makers have used four broad categories of macroeconomic measures to manage inflow surges, particularly for "hot money" when they are not willing to allow the appreciation of

nominal exchange rate: (i) greater exchange rate flexibility, (ii) sterilized intervention (sterilization), (iii) easier monetary policy (lower interest rate), and (iv) fiscal tightening (preferably through an expenditure reduction)(Ostry, Ghosh, et al. 2010) and (Kawai and Takagi 2008). It may have to be noted that these measures need to be utilized in a comprehensive and coherent manner.

For volatile capital flows, authorities may choose a combination of the first, third and fourth policy measures to achieve internal policy goals by allowing monetary policy autonomy. Also, the accurate balance of sterilized intervention may help policy-makers to reach macroeconomic objectives during the boom-bust cycle of capital flows.

Greater exchange rate flexibility is a possible response to volatile capital flows. Greater exchange rate flexibility does not necessarily imply nominal exchange rate appreciation, which is the outcome that policy makers try to avoid. The flexibility entails two-way risks and allows for more direct and less costly adjustment of the exchange rate. Thus, a floating regime dampens speculative capital inflows and prevents excessive inflows by diminishing appreciation expectations. In addition, flexible exchange rate regime is instrumental in absorbing shocks as well as enhancing monetary autonomy and thus allowing authorities to have greater freedom to manage fluctuations in monetary aggregates arising from surges in capital flows. However, the effectiveness of the measure depends to what extent the authorities are willing to allow the exchange rate to move as exchange rate volatility may adversely affect the real economy within a short time frame (Kawai and Takagi 2008). The adequacy of exchange rate flexibility is often called into question, mainly from interest groups including politicians of developing countries since the in the event of a local currency appreciation, the terms of trade and external sectors would suffer greatly. In the case of volatile capital, intervention may protect against exchange rate overshooting in a well functioning economy. However, the key objective for the authorities is to allow the exchange rate to move a significant distance before attempting to release foreign exchange reserves. Rather than using its foreign exchange reserves in the market, the government can issue debt denominated in dollars, providing the currency cover for demand of dollars in the foreign exchange market. As the government is taking on currency risk, it should do this only when the currency overshoots and is likely to appreciate (Bevilaqua and Azevedo 2005).

Sterilization has been the most commonly applied measure for inflow surges. Since the measure is most suitable for managing the temporary capital flows, policy makers first and foremost should ferret out if the episode is of temporary nature or more in the neighborhood of disequilibrium flows which can last for a long time. Using sterilized intervention, countries facing capital flows volatility can prevent nominal exchange rate fluctuations while neutralizing the growth of base money. Generally, sterilization is effective as long as two conditions are satisfied. First, domestic and foreign assets have to be imperfect substitutes as lower substitutability allows the sterilized intervention to be more effective. Second, the interest cost of the sterilization that arises from the exchange of high-yielding domestic debt for low yielding foreign assets must be manageable (Calvo 1991). However, in either case, sterilization can be self-defeating if the domestic interest

rates are allowed to increase (or quasi fiscal cost),thus promoting further capital inflows, mostly of the "hot money" type as observed in Indonesia and Malaysia during the 1990s (Kawai and Takagi 2008). For instance, monetary tightening can create the incentive to borrow from abroad, adding pressures on liquidity expansion when an actual demand for credit exists in the economy. The increase in reserve requirements to tighten monetary policy may end up increasing the cost of financial intermediation and induce distortions in the allocation of reserves. Sterilized intervention is also less effective for averting real appreciation over the medium term when the inflation rate picks up. Sterilization only has short-run effects in the emerging market (Reinhart and Smith 1998).

For policy makers of capital recipient countries or regions, it is essential for them to ensure that their macroeconomic policy, in particular monetary policy is in line with the global economic situation. Generally, *easier monetary policy (lower interest rate)* responses would be an option to dampen incentives for inflows, and thereby diminishing the pressures on currency appreciation. However, when the economy is facing the risk of overheating and inflation pressures, lowering the interest rate may be an inappropriate policy choice. Thus, monetary policy needs to find a balance between internal and external objectives whereas in the case of sudden outflows, the adjustment in an economy has to be made through falls in income when capital flows are inelastic in response to exchange rate depreciation. In addition, responding to the exchange rate depreciation may adversely impact the real economy. For instance, while higher interest rates could prevent capital outflows, it is not always the case when the exchange rate falls it is complemented by a financial crisis (Goldfajn and Gupta 2003). If there is a pronounced disparity between domestic interest rates and the global interest rates, policy makers can turn to other monetary policy instruments such as reserve ratio requirements or open market operations to manage their domestic liquidity position.

Fiscal tightening can be an appropriate response to inflow surges since it reduces utilization of resources by the public sector to compensate for the expansionary impact of resource inflows. Fiscal tightening can also side step inflationary pressure, thereby preventing a real appreciation of the currency. Thus, a genuine response can dampen interest rate pressures, diminishing incentives for interest rate induced inflows and reducing pressures on real appreciation by restricting the inflation of the relative price of non-tradable goods[7](Schadler 2008). Furthermore, sustainable and sound fiscal policy can encourage inflows which are stable and committed for the longer term. Fiscal responses such as tax policies can also be helpful in dealing with speculative problems in the asset market. However, fiscal tightening has three broad weaknesses as a response to capital inflows (Kawai and Takagi 2008). First, fiscal policy is less flexible since it usually requires political or parliamentary action and involves implementation lags. Second, it is difficult to assess how much fiscal tightening can be done, particularly in a democratic society. Third, fiscal tightening may invite additional inflows by giving a signal that the authorities are carrying out

[7] Because government consumption is mostly spent on the use of non-tradable goods, fiscal tightening could lead to domestic demand being transferred from tradable to non-tradable goods. As a result, domestic production could move from non-tradable to tradable goods (Kawai and Takagi 2008).

sound macroeconomic policy. Overall, due to the long decision lags, fiscal policy play a limited role in managing volatile and unpredictable capital flows.

In general, for economies having overvalued currencies, with adequate reserves and easier monetary policy, overheating concerns and consistent fiscal balance; capital controls can be a useful policy toolkit to deal with capital inflow surges. In addition, beyond macroeconomic measures, capital controls could also help to sustain financial stability when prudential tools are considered insufficient or could not be used effectively in a timely manner (Ostry, Ghosh, et al. 2011).

While a single policy would not reduce volatility for all types of flows, financial and trade openness along with effective institutional frameworks can allow for more stable inflows, particularly portfolio and banking flows into emerging economies. However, domestic policy makers may face some challenges to overcome the risks stemming from volatile capital inflows. For instance, (Broto, Díaz-Cassou and Erce-Domínguez 2008) find that global drivers have played an important role in the volatility of capital flows, whereas the significance of country-specific factors, including policy measures have decreased in recent years.

4.2. Financial Sector and Macro-prudential Policies

Despite its relative newness, the concept of macro-prudential policies and instruments are gaining momentum and popularity among policymakers and is the subject of increasing discussions. The rationale for macro-prudential policy instruments stems from the demonstrated limitations of conventional macroeconomic policies in tackling the challenges from the latest financial crisis, thus justifying an alternative set of measures or instruments that could overcome these limitations.

Macro-prudential policy and its instruments are largely a combination of separate policies previously conducted independently by different authorities and thus can be viewed as the effective synergy of different sets of macro- and micro-policies to detect the potential distortion in the economy *ex-ante* along with procedures that have the capability to abate, if not entirely resolve the magnitude of the crisis. In retrospect, the instruments and the set of policies that had been deployed by the developing and emerging countries are now being considered as frontline candidates for macro-prudential policy instruments since they were the main counterbalances to the repercussions of the recent crisis. The design and types of these instruments, depending on their objective and capability, range from specific to all-inclusive. Thus macro-prudential instruments for managing the volatility of the capital flows, like other general prudential policy instruments, remains largely country-specific and customized.

As for the macro-prudential policies specifically designed for managing the volatility of capital flows, the extensive studies conducted by IMF(IMF 2011)**,** (Lim, et al. 2011) on member economies conclude that the efficacy of these instruments proved inconclusive and difficult to validate as they have been implemented in different economies and contexts with varying results. With the major focus on the capital flows volatility, the Fund coined the term “capital flows

management" (CFM) which encapsulates the set of macro-prudential measures for which the economies can implement when they are faced with the risks or circumstances of large scale capital inflows, with the provision that the internal economic environment satisfies three general pre-conditions. Those are, (i) adequate or excess level of international reserves, (ii) exchange rate is not undervalued and (iii) the economy is overheating. As long as the domestic economy has the capacity to absorb "hot money" without being detrimental to the financial system, aggressive countermeasures to prohibit capital inflows are not recommended (IMF 2011).

As mentioned above, the effectiveness of the selected tools that the emerging economies had been deploying is somewhat ambiguous. Studies have concluded that the conventional policies including macro- and micro-economic as well as fiscal policies should be given priority first with the implementation of prudential measures only after the capacity of the earlier measures has been exhausted. CFM has a wide range of options for managing large influx of capital ranging from a broader approach such as general levy or taxation on foreign purchase of domestic debt or equity instruments, raising reserve requirements on foreign liabilities, higher risk-weights or loan-to-value ratios on foreign assets to more granular approaches focused on the particular foreign asset/liabilities types (Lim, et al. 2011). The majority of these measures are implemented in tandem with other policies and aimed at limiting or decreasing the influx of further capital by directly or indirectly introducing sanctions on major investors, discouraging them from transferring the assets. The use of CFM measures targeted at non-resident investors are considered relatively common by the receiving countries, albeit strongly discouraged by the Fund as they consider such steps to be discriminatory (Balakrishnan, et al. 2012).

Having an explicit and clear mandate for financial stability could complement the common mandate of price stability for many central banks in emerging economies and is a major step forward for better squaring macro-prudential policies with micro-prudential supervision (Dheerasinghe 2011).

Past experiences of some economies, in particular Thailand, Indonesia, Brazil and Peru, which had implemented CFM, show that prudential policy instruments are successful for only a short period just immediately after the launch of the policy in the slowing of inflows or capital outflows. However, once the novelty wears off or uncertainty surrounding the policy announcement becomes evident to investors, capital inflows could again start to surge (Balakrishnan, et al. 2012). Thus, it is questionable as to whether the short-lived relief of capital surges is the effect of the uncertainty of the impact of the measures on investors or indeed, the true impact of the macro-prudential measures. This would require further analysis to reach a more definite conclusion.

The current aim of the CFM for inflow receiving economies is to design measures or instruments so that short term volatile capital inflows of mainly non-core deposits and other derivative instruments are tempered and by the same token, allow room for more stable and long-term capital inflows to stimulate growth of the real economy. The challenges of understanding "macro-prudential policies" and combining them adequately with micro-prudential supervision can be

better served by consistent cooperation between different countries to determine the best combination of instruments to manage capital flow fluctuations. To this end, numerous efforts between different nations in the form of joint studies, researches and conferences are well underway, where a variety of both are tested and where newly designed, yet-to-be implemented policies and instruments are actively being proposed and studied (BIS 2011).

4.3 Capital Controls

Capital controls play a role in coping with volatile capital flows and in reducing vulnerability to external and domestic shocks. According to the 'impossible trinity' theory, capital controls allow for monetary policy autonomy, resolving conflicting policy objectives when the exchange rate is fixed or heavily managed. Some level of restriction on the capital account improves economic welfare by compensating for financial imperfections. An additional incentive for capital controls has been to safeguard monetary and financial stability in the face of volatile capital flows. Capital controls have also been employed to provide cheap financing for government budget and priority sectors (Ariyoshi, et al. 2000).

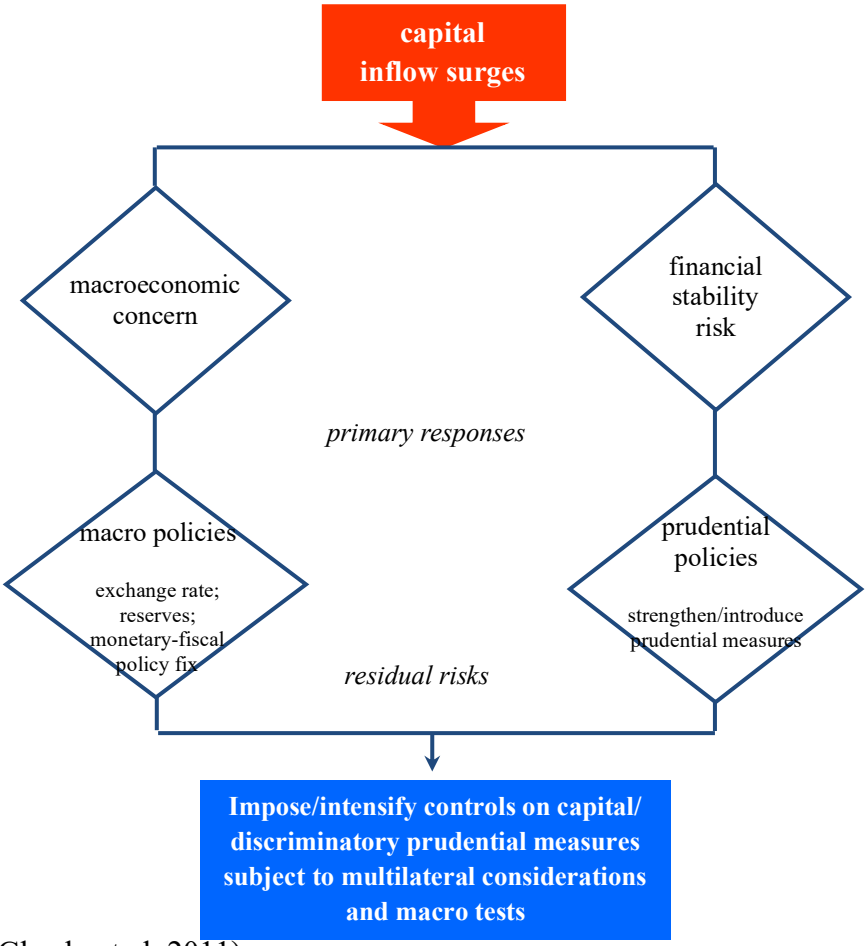
Capital controls are applied to serve as the wedge between domestic and financial external market. There is a distinction between capital control policy and macro-prudential policies where the former is more focused on limiting non-residents' ability to invest to or pull out their funds from the domestic markets, while the latter is deployed on a general level without discriminating the investors by their residence status. If the controls are effective, capital flows would become less sensitive to domestic interest rate, so that the national authority can achieve domestic economic objectives. However, the effectiveness of such controls is a much debated one, depending on the types of controls, country specific characteristics and policy objectives. Controls on capital inflows reduce countries' precautionary demand for international reserves by limiting inflows of "hot money" and in particular, risky forms of liabilities. As a result, these controls may contribute to reducing global imbalances and enhancing systemic stability (Ariyoshi, et al. 2000).

However, despite the effectiveness of capital controls, their benefits do not come without a price. Greater use of such controls for countries that do not necessarily warrant these distortionary policy measures for managing inflows could lead to even greater risks of financial contagion. Defending domestic financial markets by such controls may delay necessary policy adjustments or hinder private sector restructuring to the changing global environment. In addition, controls may hinder financial market development leading to a loss in efficiency and difficulty in accessing foreign funds(Bakker 1996) and(Ariyoshi, et al. 2000). Ostry et al.(2010) show in Figure 4 that capital controls can be a part of the policy toolkit to manage the risks of inflow surges.

As discussed in the previous section, the main policy responses to address macroeconomic and financial stability risks are macroeconomic and prudential policies. In other words, capital control is not a substitute for good macroeconomic and macro-prudential policies. However, under certain macroeconomic conditions, capital controls can be an effective measure in addressing both

macroeconomic and financial stability concerns in the face of inflow surges. In case of substantial inflowing capital, a pure macroeconomic policy as well as prudential measures may prove insufficient to manage macroeconomic and financial risks. Controls on capital inflows can therefore be an effective alternative policy toolkit (Ostry, Ghosh, et al. 2011). While this may be true for temporary inflow surges since the currency appreciation is likely to be transitory, if implemented inadequately, the potential damage to the tradable sector can be permanent through hysteresis effects. If the increase in capital flows is expected to be persistent, the economy should adjust to the real exchange rate appreciation, in particular since controls lose their effectiveness over time. They need to be continually strengthened to prevent increasing distortions. Prior to imposing capital controls, countries first need to exhaust the available macro policy measures and permit the exchange rate to appreciate to an appropriate degree, as well as strengthen unbiased prudential tools (Ostry, Ghosh, et al. 2011). It is also of importance for policy makers ensure that before choosing to deploy capital control, a prior thought should be given if the country has the effective instruments, the mandate and adequately developed capital market or the cultures for the people to accept such measures are in place since these factors greatly dictate the effectiveness of capital controls.

Figure 4. Using Capital Controls for Macroeconomic and Financial-Stability Risks



Source: (Ostry, Ghosh, et al. 2011)

The potential benefit of controls on capital outflows could include the reduction of pressures on the exchange rate, to side step a possible currency or banking crises. Imposing controls on capital outflows have been mainly used to counter volatile speculative flows that endanger the stability of the exchange rate and give rise to the risk of foreign exchange reserves exhaustion and ultimately protect the domestic economy from volatile financial markets (Bakker 1996), (Ariyoshi, et al. 2000). Controls on outflows may have an influence on net inflows, although the direction of that impact is unclear. For instance, liberalizing capital outflows can reduce net inflows as some of the inflows are offset by outflows, making the country an even more attractive destination for foreign investors (Ostry, Ghosh, et al. 2010).

Several empirical evidences support the effectiveness of controls on capital inflows. Controls on capital inflows reduce the volume of the flows and restrict the appreciation of the exchange rate, diminish financial fragility and allow for monetary policy independence. Although the main macroeconomic motivation for short-term inflow control is to attain an appropriate wedge between domestic and foreign interest rates while reducing pressures on the exchange rate, a number of studies show that controls have little effect on aggregate inflows as well as exchange rate appreciation (Gallego and Butelmann 2000) and (Clements and Kamil 2009). In addition, capital controls have a much greater impact on the composition of inflows than on aggregate volume (De Gregorio, Edwards and Valdes 2000). Experience shows that comprehensive capital control can enable a country to protect itself from external shocks, although the degree of effectiveness of capital controls in shielding a country from global shocks is still in question. Regardless of whether capital controls are effective, these measures cannot be deemed as the ultimate substitute for sound macroeconomic policies.

The design of capital controls has to be comprehensive and modified to suit country circumstances to be effective. Generally, controls on capital flows can take two main forms namely "administrative" or direct controls and "market-based" or indirect controls. The administrative controls mainly imply the prohibition or an approval of procedures for cross border transactions. The market-based controls, on the other hand, attempts to affect the price or both the price and the volume and thus discourage capital flows by making them more costly (Ariyoshi, et al. 2000). If capital inflows lead to macro challenges, controls may have to be broad, based mainly on price for a temporary period. Price-based measures may be more easily adjustable for cyclicality. When the inflow surges cause financial stability concerns, controls should be focused on the riskiest flows and then used against more persistent inflows. In this case, controls should be based on the quantity and applied to temporary or persistent flows (Ostry, Ghosh, et al. 2011). A choice of controls on capital inflows or capital outflows may lead to different consequences for the economy. For instance, controls on capital inflows generally allow for a higher interest rate to avoid abrupt money growth and accelerating inflation. In contrast, controls on capital outflows allow for the lowering of interest rates and the expansion of money supply(Neely 1999). Empirical studies, including (Reinhart and Smith 1998) and (Eichengreen, Mussa and Dell'Ariccia 1998) find that

controls on inflows are more effective than controls on outflows since there is less incentive to shun controls on inflows.

In general, a decision to use capital controls should be made by weighing the benefits between retaining macro policy control and financial fragility reduction against their potential costs of distortions. Thus, it is also of importance to ensure that a reassessment on the effectiveness of capital controls be carried out on a regular basis following their imposition on capital inflows.

4.4 International Liquidity-Provision Arrangements and Strengthening International Cooperation

The level of inter-linkages among economies is getting stronger than ever in a financially globalized world today. Hence, with the demonstrated effects of quicker and stronger financial shocks due to increased interconnectedness, it's necessary to formulate optimal liquidity arrangements. Thus, in response to sudden swings in international capital flows observed during the latest crisis, measures such as higher foreign reserve requirements, expansion and institutionalization of inter-central banks' currency swap deals and international cooperation between macro-prudential policies are considered important.

Maintaining high levels of international reserves is beneficial for a country coping with volatile capital flows. The accumulation of foreign reserves plays a significant role as a buffer against external shocks. In particular, during a crisis period, accumulated reserves are used for repayment of short-term external liabilities and moderate the abrupt fall in dollar prices for a range of domestic assets, including the exchange rate. However, under a free capital mobility regime, the volume of reserves required to maintain the level of foreign currency price of domestic assets may amount to more than the current M2 if speculators borrow in domestic currency from domestic banks (Jeanne 2010). The lack of a clear benchmark for reserve adequacy and the appropriate allocation and release of reserves are problematic both in terms of the country and the global levels.

The recent global financial crises have demonstrated that adequate international liquidity-provision arrangements are important for dealing with volatile capital flows. For instance, for most emerging-market economies, including South Korea which had accumulated a substantial level of international reserves accounting for 30 percent of GDP, the reserves were insufficient to avoid a crisis. Typically, countries with high international reserves to support external liquidity facility are also better off restoring confidence in their respective economies. Thus, many central banks have in response, employed currency swap arrangements with other central banks instead of relying on existing international crises lending arrangements with the IMF in response to liquidity shocks during latest crisis (Jeanne 2010).

Asian economies which are vulnerable to external shocks need to undertake collaborative efforts to strengthen the regional financial safety net. As Asian countries are increasingly becoming interconnected to each other as well as with the rest of the world through their trade and the

financial sectors, the respective roles of their central banks have expanded to explicitly including the financial stability as their mandate – the measure which proved effective for maintaining resilient domestic economy from the risks of decline in external demand due to economic fundamentals.

Strong economic and financial interdependence in Asia is the main rationale for financial cooperation at the regional level. Due to increasing financial integration, policies and measures of any individual country cannot fully evade the systemic risks stemming from global financial integration. Thus, there is the renewed need among Asian countries to develop stronger regional financial architecture to deal with future contagions by encouraging the collaborative learning and understanding of regional and global issues. In addition, the effective arrangement for the policy coordination at the regional level is the way to move forward since no single monetary agency can handle the potential crisis. The networking among regional central banks is necessary to strengthen an efficient cooperative framework specifically on policies and measures to mitigate financial contagion and potential volatility of capital flows. In the recent years, regional cooperation organizations such as SEACEN, AMRO and EMEAP have intensified their cooperation in advancing regional financial stability and development (Kim 2010).

A regional financial facility can play a helpful role in crises prevention. Efforts to establish formal regional liquidity arrangements in Asia have been widely observed. For instance, under the Chiang Mai Initiative (CMI), the ASEAN swap arrangement has been strengthened and bilateral swap arrangements for the ASEAN+3 members, including China, Japan and South Korea, have been introduced (Guerrero 2010). However, it is also worth emphasizing that the further regional liquidity facility arrangements of such nature should be more tailored to a particular region so that the potential market disruptions are dealt with measures and instruments unique to the region parallel to the ones by the multi-layered global financial system network arrangement.

International and regional cooperation can encourage and improve the effectiveness of policies at the national level. International cooperation in the area of possible macro-prudential policies can diminish the opportunities for international arbitrage among cross-border firms which may undermine the effectiveness of national policies such as stricter requirements on domestic banks' provision on foreign lending. In addition, cooperation also helps the better comprehension of spillover effects of risk-taking and financial cycles across borders, and the governance of national macro-prudential policy implementation by minimum standards and guidance issued by international standard setters(Brockmeijer, et al. 2011).

V. Conclusions and Issues for Discussion

5.1 Conclusions

Liberalized capital accounts and financial integration can enrich a country's welfare as long as they are appropriately coordinated with the adequate strengthening of policy frameworks. Otherwise, volatile capital flows and financial contagion, promulgated by capital account

liberalization and financial integration may lead to domestic macroeconomic and financial challenges via the transmission of international shocks into an economy that is highly vulnerable to external shocks. Thus, economies face a key challenge as to how to reap the maximum benefits from using capital inflows to enhance economic growth while minimizing their associated risks. Obviously, both financial contagion and volatile capital flows should not be seen as primary reasons for countries to de-liberalize their capital accounts. Instead, policy frameworks should be strengthened to mitigate contagion and better manage volatile capital flows.

Although there are no magic solutions to effectively manage capital flow surges, countries need a conceptual framework to manage volatile capital flows to enhance their resilience to external shocks. The "capital flow management" framework may include a package of available policy options including macroeconomic policies, prudential measures and capital controls. It is really important that such policies should be well coordinated and appropriately sequenced through multilateral collaboration. Each policy option has its pros and cons. Thus, a proper mix of policy measures should be carefully formulated on the case-by-case basis of a given economy. In addition, an appropriate policy response choices to large swings in capital flows may depend on the channels of capital flows, specific risks and country's circumstances, including the dominance of macroeconomic or prudential concerns, exchange rate misalignment, reserve adequacy, inflationary concerns, fiscal and macro-prudential stances. However, the crucial principle is to choose tools that best achieve the policy objectives at minimum national and multilateral cost. At the same time, national authorities need to weigh the benefits of policy responses against their potential distortion costs and resist the temptation to overreact to capital flows which have the tendency to be temporary, to minimize unintended distortions in domestic markets.

Macroeconomic policies have to be the primary response to volatile capital flows. Since capital flows are commonly pro-cyclical and much more volatile, counter cyclical macro policies can essentially smooth out the business cycle. The specific combination of appropriate macro policies vary with the economic circumstances facing the country. Other measures, including prudential tools and capital controls are only supplements rather than substitutes for the appropriate macroeconomic policies.

Beyond macroeconomic policies, authorities have available conventional prudential regulations and capital controls to manage the risks from volatile capital flows. When financial sector supervision is efficient and effective, prudential measures are the obvious choice. Prudential regulations, intended to strengthen the resilience of the financial system, can help to reduce the risks in financial sector, including external liability structure, currency and credit risk, and broader risks from lending/asset price booms by directly limiting capital inflows.

Capital controls are an essential component of the policy toolkit in dealing with capital flows in certain circumstances. In particular, capital controls may be more useful in addressing both macroeconomic and financial stability concerns when certain pre-conditions for imposing capital controls are met and when prudential measures are insufficient or ineffective for mitigating the

risks related to capital flow surges. In addition, capital controls should be employed on a case by case basis, during appropriate circumstances when the economy is operating near its full potential, the level of reserves is adequate, exchange rate is not undervalued, and when the flows are likely to be transitory.

In all circumstances, structural reforms to improve the capability of the economy to absorb capital inflows by deepening domestic financial markets are always to be encouraged. Maintaining high levels of international reserves, expansion and institutionalization of central banks' foreign currency liquidity swap arrangements are considered important steps for intensifying domestic economic resilience to external shocks during global crises. Regional collaborative efforts and joint financial facility could play instrumental roles in strengthening the regional financial safety net and crises prevention.

5.2 Issues for Discussion

- Financial Integration: A blessing or curse?
- How have countries dealt with capital flows volatility in the global crises?
- What is the role of macro-prudential policy framework aimed at managing financial contagion and volatile capital flows?
- What are the main challenges for ensuring effectiveness of macro-prudential policy?
- How have countries' reserves been released and deployed during the current crisis, and did international liquidity arrangements prove to be effective in dealing with capital flow volatility?
- What could be the right level of foreign exchange reserves for self-insurance in a world of unanchored exchange rates and volatile flows?
- How could lending and liquidity provision arrangements during the international crisis be improved? Can such improvements significantly reduce emerging market countries' demand for reserves?
- Looking forward, what role can prudential regulation and capital controls play in dealing with volatile capital flows?
- How to strengthen and intensify international and regional cooperation of policies across the region and institutionalize inter-central bank currency swaps arrangements to deal with financial contagion and volatile capital flows?

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