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Hot Money in Emerging Markets

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Abstract

Economic globalization has made national economies susceptible to unpredictable and rapid short-term capital inflows and outflows. This phenomenon, called *Hot Money*, is the major subject of the paper.

The paper focuses on the development of a theoretical model pertinent to the phenomenon. Chapter 1 provides an overview of the topic and the motivation behind the investigation. In Chapter 2, we review the existent literature regarding Hot Money and continue further to review the literature related specifically to the model. Chapter 3 focuses in the effects of financial liberalization on developing countries including the risks and proven benefits. Chapter 4 reviews the literature about Hot Money issues in China while Chapter 5 continues the discussion through the analysis of strategies used in controlling hot money influx in the country. Chapter 6 analyzes the historical crises in Mexico, Thailand, and Russia. Chapter 7, which is the major focus on the paper, entails the derivation of the theoretical model. The model developed supports the proposition that financial liberalization in the presence of fixed foreign exchange regime and weak monetary/fiscal policies culminates in a crises instigated by the draining of foreign reserves. We conclude in Chapter 8. Chapters 9 and 10 include an appendix to calculating hot money and bibliography, respectively.

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Chapter 1

Introduction

“ All these countries have spent 40 years trying to build up their economies and a moron like Soros comes along with a lot of money to speculate and ruins things. ”

Mahathir Mohamad, Prime Minister of Malaysia, *January 1998*

For the past 40+ years, international finance has gone through an unprecedented era of globalization, in which capital mobility across nations has become a catalyst for economic progress. That is, a nation with limited savings would benefit from international financing to fund new projects and build infrastructure, among other things, in the ultimate objective to increase standards of living for said nation. Lending nations, in turn, would benefit by smoothing their consumption when lending out their savings now to reap the upside of returns in the future. And it is evident that there is a tendency towards financial liberalization across nations. On one hand, globalization (and more specifically, trade) seems to benefit all parties involved, given that there are heterogeneous preferences and resources. In particular, we invoke David Ricardo's theory of comparative advantage in the context of international trade. On the other hand, globalization brings with it an unavoidable spillover risk. For the latter reason, I discuss one form of risk — *Hot Money*.

Hot money is an investment activity defined as short-term foreign capital inflows and outflows

of a given country. It is also characterized as flows which cannot be explained by foreign direct investments (will be abbreviated as “FDI”) or a trade surpluses. Usually, the magnitude of hot money increases for emerging market economies (EMs), and it exists when foreign investors believe that there would exist short-term gains in investing in said economies. Profits come in the form of interest rates differentials and/or expected changes in exchange rates. Using strategies such as a *carry trades*, international investors (or, domestic investors but who have investments abroad) can gain substantially from small discrepancies from interest- and/or exchange-rate differentials. As such, such investments are one form of international arbitrage.

Hot money can be problematic for a multitude of reasons. First, hot money flows can create excess liquidity in the market, leading to an inflationary situation and, in particular, nurturing an asset bubble. Second, hot money is prone to sharp reversals or, worse, capital-flight, as was experienced first in Thailand then propagated to other South East Asian countries.

As we are at the cusp of entering a revolution of digitization, we suspect that activities in the financial account would not only increase, but also become more intertwined globally. In fact, Ferretti and Tille (2011) show that capital reversals for foreign flows have been more significant than trade reversals. Indeed, data for the largest two economies, the United States and China, corroborate with the aforementioned assumption. In particular, if we look at data provided by the U.S. Bureau of Economic Analysis of the trade balance between the U.S. and China in the past decade (2006 - 2015), we see that the net percentage change of imports and exports experienced an increase of 43%, while the net percentage change of outward investments and inward investments has increased by 133%! Indeed, in the same period, investments from China flowing into the U.S. have increased by almost 18 folds, from US\$785 million in 2006 to US\$14.83 billion

The above motivation, while eye-catching by its sheer size, it does not present a full picture of this historical increase in financial/capital accounts; that is, notwithstanding the added benefit to international investments, it does carry with it a number of pitfalls. Before addressing the potential pitfalls, we first have to distinguish between the financial account from the capital account as well

as the composition of the balance of payments account (BOP).

The BOP accounts is a double-entry bookkeeping system that records transactions between a country's factors (people, private businesses, and the government) and the rest of the world. Flow of funds entering and exiting a given country are recorded positively as *credit* and negatively as *debit*, respectively. A country's BOP comprises of the following:

$$\text{Current Account (CA)} \triangleq NX + NFP + NIT, \quad (1)$$

$$\begin{aligned} \text{Financial Account (FA)} \triangleq & \text{Foreign Direct Investment (FDI)} \\ & + \underbrace{\text{Bonds} + \text{Shares} + \text{Derivatives}}_{\text{Portfolio Investment}} + \underbrace{\text{Foreign-Owned Assets}}_{\text{Official and private}}, \end{aligned} \quad (2)$$

$$\text{Capital Account} \triangleq \text{Unilateral Transfers of Assets, and} \quad (3)$$

$$\text{Net Errors and Omissions.} \quad (4)$$

where NX is net exports of goods and services, NFP is net income from abroad, and NIT is net unilateral transfers, which are payments from one country to another but without goods or services in-return (e.g. official foreign aid).

Given the nature of its double-entry, in which transactions enter the account twice (once as debit and other as credit), the BOP account *must* balance. The connection between the current account and the financial account is known as the “*Fundamental Balance of Payments Identity*,” formally:

$$\text{Current Account} + \text{Financial Account} + \text{Capital Account} + \text{Errors \& Omissions} = 0.$$

The current account and financial account capture most of the BOP activity, as the capital account is considered insignificant in size. For the financial account, purchases of assets abroad enters with a minus sign (debit), and sales of local assets to foreigner enters with a plus sign (credit). The

rationale of the sign of the transaction is best explained in terms of an example: When a Japanese resident buys a Tesla stock with Japanese Yen, the transaction is recorded as a credit for Japan, since the U.S. resident has imported Yen, while the Japanese resident exported Yen. However, the offsetting transaction, which shows a debit to Japan and credit to the U.S., is the exchange of investment in the form of a stock. That is, the Japanese resident has imported a U.S. asset, while the U.S. resident exported said asset (namely, the Tesla stock). Both transactions occur under the financial account, given that the underlying asset is *not* tangible as, say, a car, or a service.

In order to capture signs of the hot money phenomenon, we will focus primarily on portfolio investments, *PI*, as it represents short-term investments for a multitude of securities, as well as long-term investments by forefingers that have less than 10% ownership in any given domestic business (Central Bank of New Zealand, 2004).

The phrase “hot money” is commonly used in two subtly different, but intertwined, lights. First, it comes up when discussing tax-avoidance centers, money laundering, drug trafficking; essentially, the nature of the illegal side of untraceable capital.¹ The second area that hot money addresses is the activity of fast-moving, short-term, cross-border capital flows and its impact on international financing. The former is politically-oriented, while the latter is economically-focused. This paper will focus on the latter. Although, it is imperative to note that sources of the capital itself are *not* restrictive to only illegal practices; to the contrary, it is estimated that the majority of hot money stems from legally-sound investments. Both definitions share the attribute of anonymity as well as being *homeless money*, as R. T. Naylor puts it in his book, *Hot Money and the Politics of Debt*.

¹ See *Hot Money and the Politics of Debt*, by R. T. Naylor for an in-depth discussion of the political side of hot money

1.1 Motivation for Studying *Hot Money*

The Chinese word for “risk,” is composed of two Chinese characters: *danger*, and *opportunity*. We cannot have one without the other. As such, hot money presents itself as both an opportunity as well as a danger.

It is interesting to study hot money for multiple reasons: (1) The fierce expansion of capital mobility globally propagates hot money. Fuertes and Phylaktis (2016) showed that hot money can be a channel of crisis transmission internationally, particularly from industrialized nations to emerging markets. Thus, by studying hot money, we can better understand potential global pitfalls in economic activities as well as design more appropriate monetary policies whenever hot money exists. Indeed, channels of cross-country transmission of financial turmoil are: (a) Conventional linkages of trade through the current account or, alternatively, through portfolio investments in the financial accounts; and (b) market-sentiments through self-fulfilling panics. (Fuertes, Phylaktis, and Yan, 2014); (2) One of the fastest-growing economies in the world and the second-largest economy, China, has been facing serious hot money problems since 2002, which is when the country had liberalized its economy to short-term foreign investments by implementing the Qualified Foreign Institutional Investors (QFIIs) program.² Therefore, given hot money flows can create excess liquidity, fueling an asset boom and creating more long-term problems, any challenges China faces will ultimately have spillovers to the rest of the world.³ In other words, China’s position as a powerhouse-economy poses an amplifying risk if it ever experiences hot-money reversals; and (3) Hot money is mixed blessing for any economy. Small doses of it would lower borrowing costs for a country, which would potentially imply economic growth through higher output. On the flip side, hot money can be devastating, as mentioned in (1). Studying the dichotomy, then, is crucial to understanding economic booms and busts.

While the focus will be on hot money (more generally, portfolio investments), *FDI* transaction

² The QFIIs program allowed short-term capital investors to invest in Chinese stock markets

³ It is analogous to what had happened in the U.S. with the subprime crisis, which then turned into a global crisis.

can result in more volatile economic cycles. For example, Clark and Berko (1997) showed that a 1% increase in FDI inflow caused a 13% rise in the Mexican stock market (adjusted for market capitalization) per month. Similarly, in Richards (2005), a 1% increase in net *FDI* inflows (in terms of market capitalization) results in a 38% increase in equity prices in six Asian-Pacific stock exchanges —namely, Indonesia’s JSX, Thailand’s SET, Taiwan’s TWSE, and South Korea’s KSE and Kosdaq.

One of the reasons policymakers employ capital controls is to achieve increased monetary independence of the domestic currency. Although, according to Yi-Lin Forrest and Yirong (2015), results of capital controls have insignificant effects on actual deviations from interest parities, even after controlling for the political risks associated with capital controls.

While there are many types of equilibria, we focus on Nash theoretical game equilibrium. A Nash theoretical game equilibrium focuses on the balance of interests in different economic agents. In particular, this paper addresses how a policymaker can minimize a certain behavior (hot money), while investors (foreign and domestic alike) maximize said behavior.

Chapter 2

Literature Review

2.1 Literature on Hot Money

Feng, Lin and Wang (2016) show that hot money inflows have spillover effects on the local stock market as well as real estate prices, though the effect on stock prices is larger than that on house prices. Also, the impact of the net hot money inflow is immediate, unlike FDI where there exists a lag in the effect. Some studies, however, show that hot money might be a by-product of activities not related to expected changes in exchange rate and/or interest rate differentials; rather, it could stem from accounting discrepancies in reporting trades. According to Guo and Huang (2010):

More than half of the speculative funds or capitals flown into China take the form of over-reported or forged FDI. An additional 11% of the hot money is generated by underreporting the value of imports, and another 10% comes from the overvalued exports. About 5% of the hot money enters China via 'underground money exchanges.'

Additionally, Chan, Fung and Thapa (2007) show that discrepancies exist for tax benefits, as there seems to exist preferential tax-treatments between foreign and domestic businesses. Han,

Gan, Hu, and Li (2012) present a particular example of a strategy in exploiting the difference in taxation, dubbed *round-tripping* between Mainland China and Hong Kong. As the name would suggest, round-tripping is defined as a strategy that two counterparts enter in which one party ‘sells’ its asset to the counterpart, only to have the same asset ‘bought’ back in a future time-period. Han et al (2012) estimate that the round-tripping phenomenon between Hong Kong and Mainland China accounts for as much as one-third of China’s *total* recorded foreign direct investment (FDI) from Hong Kong and more than *half* of Hong Kong’s reported FDI to China. The main reason that round-tripping strategies occur is traced back to China’s tax treatment of its foreign investors. Therefore, Han et al (2012) argue, China’s financial account has been exaggerated and hot money is not really as widespread as it has been reported. Although, in reality the Shanghai Stock Exchange A-Share Index managed to skyrocket from close to 1,000 points in the summer of 2005 to as high as 6,000 points in October of 2007. Minimizing the intractable reality of hot money on tax-strategies would not fully incorporate this trend. Bouvatier (2010) studies whether rapid build-ups in international reserves was a source of monetary instability. asserts that pre-Global Financial Crisis (GFC), non-FDI inflows to China were primarily driven by interest rate differentials, relative to the U.S., in addition to expected revaluation of the renminbi.

When the International Monetary Fund (IMF) added the Chinese Yuan to the Special Drawing Rights (SDR) —SDRs are international reserve assets created by the IMF to finance 189 member countries’ reserves. The market value of SDRs are based on a basket of currencies, namely the U.S. dollar, euro, the Japanese yen, pound sterling, and most recently the Chinese yuan— in November 2015, it was a form of validation to the enormity of the Chinese economy. That is, China is now recognized as a major powerhouse in the world economy, a move that Chinese policymakers have long-sought to achieve (IMF, 2016). Although the move might have been primarily political, it does show the influence that China will now have. Also, because the renminbi is now included in the basket, international usage of the currency is likely to increase. The renminbi officially joined the SDR basket on October 2016.

Given the double-entry setup of the BOP, Korenack (2011) suggests that current account deficits

form a good approximation for capital inflows, since deficits need to be financed internationally. In his paper, Korenicky (2011) analyzes how one country's crisis can make another more prone to crises in future periods, hence the phenomenon of *serial financial crises*. Further, in times of economic distress, a country experiences a downward movement in interest rates, ideally expanding credit and fueling economic activity to offset the recessionary-pressure.

Conventional wisdom suggests that capital should flow from rich countries to poor countries; that is, due to the *Law of Diminishing Returns*, return differentials should induce investments to be deployed into poorer economies. However, Lucas (1990) tried to explain that, contrary to the wisdom belief, capital does not flow from rich to poor countries. The finding has since been known as *Lucas's Paradox*. Dadush and Stancil (2011) showed that correlation between income and capital outflows is positive and statistically significant, challenging Lucas's Paradox. However, Dadush et al (2011) proceeded to show that the relation has weakened in every successive year, and that income only explained a small fraction of the variation in net change of balance of payments. Other factors, in particular macroeconomic fundamentals and capital controls explain an overwhelming portion of the variations.

Sienaert (2012) argues that it is misleading to categorize foreign investments as one, homogeneous source of investment, especially when discussing emerging markets (EMs). For example, As of Q2 2012, EM debt-dedicated hedge funds were estimated to have US\$203 billion of assets under management (AUS). An individual dedicated hedge fund can cause a sizable capital flight if it is bearish on one economy. For that reason, Sienaert (2012) argues, that EMs should not be treated homogeneously; rather, one must take into account various critically important variables of a given EM country, such as: macroeconomic fundamentals, political resilience, social unrest, and fluctuations in exchange rates.

Gonzales-Rozada and Levy-Yeyati (2008), Braasch (2010) show that investor risk-appetite have driven at least 50% of the variance in spreads (as referenced in Sienaert, 2012). Burger and Warnock (2010) point out that, in EMs, there exists a strong positive feedback loop, a virtuous

cycle. Granted, Burger et al (2010) focused only on the bond market in each emerging market; however, the rationale can be applied to equity assets as well.

When addressing volatility in emerging markets, which by definition have relatively weak macroeconomic fundamentals, and particularly the ones that exhibit hot money activities, Chari and Kehoe (2003) argue that the following two reasons explain why EM-concentrated volatilities exist: (1) informational frictions, and (2) debt default problems. Chari et. al (2003) have articulated that government income levels have an effect on capital inflows and capital outflows. In particular, in terms of the risk of sovereign debt defaults, hot money activities are particularly apparent in middle-income countries. That is, high-income countries have strong economic fundamentals, therefore capital outflows are less likely to materialize; on the other hand, low-income countries have weak economic fundamentals, thus investors have no confidence in such countries, resulting in relatively scant investment being deployed into them. Middle-income countries, though, are the ones that fall prey to herd behavior. Additionally, Chari et al (2003) noticed that sizable randomness existed in their model. One apparent remark, though, is that the paper was published in 2003. Accordingly, informational frictions could be less of a problem today than they were 13 years ago. Similarly, what was perceived as randomness in 2003 might have actually been data that only became public with the technological advancements.

Straetmans and Long (2013) show that it would be counterproductive for emerging-market economies to pursue exchange-rate stabilization policies. The Value at Risk (VAR)^I estimates for fixed exchange rate regimes were significantly higher than in floating developed markets. Although, when comparing between emerging and developed economies, there might be omitted variables that cause the volatility, irrespective of exchange rate regimes.

^IVAR is a measure of risk associated with a portfolio in any given day. For example if a portfolio of assets has a one-day 5% VaR of US\$1 million, it implies that said portfolio has a 5% chance of losing US\$1 million.

2.2 Literature on the Model

The classical models regarding currency crises originated from the works by Salant and Henderson in the late 70s (Krugman, 1996). The scholars showed that government attempts to peg prices using government-held stock led to speculative attacks, which would wipe all the stock. Since then, currency crises have attracted significant scholarly research by economists at the theoretical and empirical levels. The theoretical models can be categorized into first-generation, second-generation, and third-generation models.

First-generation models, for instance, in Krugman (1979), focus in using stock reserves in pegging the foreign exchange rate. Krugman (1979) concentrated on the inconsistencies between an obstinate budget deficit that should be monetized eventually and domestic macroeconomic policies including exchange rate commitment. The existence of a deficit means that the government must deplete its foreign reserves or engage in extensive external borrowing to finance the imbalance (Glick, Guo, & Hitchison, 2006). Nevertheless, it is untenable for the government to borrow indefinitely or deplete its reserves. As such, in the absence of fiscal reforms, the government has to finance its deficit through seigniorage. However, seigniorage leads to increased inflation, which is inconsistent with the efforts of maintaining the exchange rate fixed. As such, the first-generation models suggest that the regime collapses ultimately because of the ways that a government seeks to finance its deficit (Glick et al., 2006).

The second-generation models include the works by Obstfeld (1986; 1994). The models focus on the balance between the costs and benefits of defending a currency and the willingness to sacrifice the exchange rate targets when the costs exceed the benefits (Glick et al., 2006). Essentially, the models suggest that doubts about the governments' willingness to maintain the exchange rate target could result in multiple equilibriums. Consequently, a speculative attack on the currency could successfully occur, despite the policy being consistent with the governments' exchange rate commitment. Essentially, policies such as raising interest rates that aim at defending the exchange rate increase the costs incurred in the defense of the peg. In turn, this leads to the retardation of

economic activity and increase in the costs for funding banking activities. Actors within the private sector understand the dilemma that the administrations face regarding the commitment to defending the fixed peg because of the likely effect on other economic goals of the country. As such, a speculative attack would succeed because the high interest rates increase the vulnerability of the already weak banking system. The explanations regarding currency crises explained are not mutually exclusive. In other words, the imbalances explained by the first-generation models increase a country's vulnerability to changes in investor sentiment. The second-generation models explain the self-reinforcing features of the currency crisis once it occurs.

The third-generation models offer different explanations about the mechanisms through which the distortions result in currency crisis. For instance, some models emphasize on the occurrence of distortions due to credit constraints. For instance, Aghion, Bachetta, and Banerjee (2001) reveal that the initial depreciation of a currency increases the cost of foreign currency debt obligations and leads to a decline in profits. In turn, this reduces the borrowing capacity of the government and private firms because of the credit constraints that arise. Limited levels output and credible investment and output due to constrained bank borrowing constrain the demand for the domestic currency among the local and foreign agents.

Other scholars have developed models that emphasize the importance of financial liberalization and government guarantees to private sector in triggering a crisis. Such actions from the government tend to cause unsustainable deficits, which when combined with the resultant moral hazard, create a currency and financial crisis. Explicit guarantees on deposit guarantees as provided by the government, alongside financial liberalization lead to the expansion of foreign and domestic credit. In turn, this creates conditions that can easily lead to banking and currency crisis. Similarly, Chang and Velasco (2002) deliberated on the possibility of a self-fulfilling crisis occurring within an open economy because of the existence of unrestricted capital markets. In such situations, banks engage in irresponsible behaviors where they deposit in foreign and domestic involving illiquid long-term investments that are hard to convert to liquid cash in the event of a bank run. Similarly, several studies have argued that explicit and implicit government guarantees to the banking sector incen-

tivizes the banks to take foreign debt, which increases the vulnerability of the banks to attacks. The vulnerable banking sector makes the defense of the currency exchange peg through increasing domestic interest rates untenable. Consequently, this could result in the ultimate collapse of the domestic currency.

Capital mobility and the integration of financial systems across the globe have made the commitment of governments to fixed exchange rates indefensible. Essentially, the *monetary trilemma* implies that a government faces insurmountable challenges in defending a currency peg while using an independent monetary policy at the same time because of the mobility of capital. Under high capital mobility a fixed currency exchange rate, the domestic interest rates are intricately connected with the foreign interest rates. Consequently, this reduces the country's ability to follow an independent domestic monetary policy. For example, the strengthening the domestic monetary policy through increasing the domestic interest rates above the foreign interest rates leads to increased inflow of capital into a country because of the cross-border differences. In turn, this inhibits the initial increase in domestic interest rates and lowers the domestic demand for imports, which limits the contractionary effects of the high interest rates further.

While the historical crises will be discussed later in Section 6, it is worth highlighting some of the observable relationships between the crises and the model. In the financial crisis that occurred in Mexico, the differences between the country's interest rates and the interest rates in the U.S. led to massive capital flight. The government efforts to avoid increasing the domestic rates while preventing currency depreciation became unsustainable and contributed to the currency crisis. Similarly, the financial crisis in East Asian had a strong relationship with the differences between the countries' currency and the dollar that was appreciating rapidly pertinent to the Chinese renminbi and the Japanese yen. The appreciation of many of the currencies, for instance, the Thai baht created challenges for the company because their products became more expensive when compared to products from other countries. As such, the decline in the competitiveness of these countries triggered the depreciation of the currencies.

The examples provided above indicate that any emerging market could experience significant challenges in defending its commitments to a currency peg. While a country can maintain the pegged rate so long as the central bank has access to adequate foreign exchange reserves for response to speculative attacks, the central bank must also show willingness to subordinate the other goals of the monetary policy (Glick et al., 2006). In essence, this implies that the central bank must raise the domestic interest rates to a high-enough level to maintain the attractiveness of its domestic currency. However, the crises reveal that the pegged exchange rate is often a price too high for the emerging markets to maintain, especially when the interest rates affect the stability of the financial sector and rates of unemployment.

Chapter 3

Effects of Financial Liberalization on Developing Countries

3.1 Inescapable Risks

Financial liberalization can produce considerable social and economic risks. Studies have shown that liberalization in developing countries increases financial fragility and the likelihood of a financial and currency crisis. The fragility relates to the internal banking crises and currency crises that emanate from open capital accounts (Ghosh, 2005). Wyplosz (2002) finds that current account liberalization after short-lived inflows leads to heightened foreign exchange risk that may not vanish in the long-term. Liberalization provides freedom for investment including in the sensitive sectors such as stock markets and real estate markets. As such, the increased exposure of the sectors and regulatory forbearance result in increased probability for financial failure

Financial liberalization means that the financial markets are left to themselves with minimal government interventions. However, Ghosh (2005) suggests that such an arrangement increases the vulnerability to failure because of the characteristics of information that agents should acquire

and process. A liberalized financial market involves insufficient monitoring, which could lead to risky decisions or the use of “herd instincts” in lending. As such, this could create conditions appropriate for over-lending to specific entities while limiting access to capital to some entities. The problems associated with informational externalities could create various problems, for instance, malpractices that lead to failure to cause fear among depositors leading to a run on deposits in the other banks.

Differences between social returns and private return could also lead to disruptions that motivate unnecessary risks as investors seek high returns. For instance, loans to the real estate and stock markets attract high interest rates because of the volatility of the returns in the sector. Borrowing to finance highly speculative investments in these sectors could spiral because banks often take securities or real estate as collateral. The activities thrive because of the notion that the investors could transfer the losses to the lenders by default or that the government would support them in case of a financial crisis.

Conventionally, financial liberalization does not encourage diversified forms of financial savings. Indeed, studies have shown that domestic savings increase because of increased inflow of foreign capital. Financial liberalization may not lead to the intermediation of financial assets because deposits and loans with maturity of 6-12 months dominate. Moreover, such liberalization is associated with minimal mobilization of new capital, despite the boom experienced in the stock markets. Indeed, many small investors withdraw from the market with allegations of fraud and manipulation, which reduces the prospects of long-term investments. Evidence on capital inflows and financial crises suggest that once investors select an emerging market as an attractive destination, the processes that follow set the conditions that culminate to a financial or currency crisis.

The appreciation of foreign exchange rates encourages investors to focus on non-tradable sectors. The upward movement discourages a focus on tradable sectors, which contributes to the deterioration of real economic sectors. Therefore, it is not a coincidence that most of the emerging or developing countries that have engaged in massive financial liberalization have faced a financial

crisis thereafter. Studies have suggested that the emerging markets face such problems because they allow their current-account deficits to grow through allowing private investment with minimal private savings. As such, countries may be unable to control capital inflows and outflows when they start experiencing unbridled capital flows.

According to Patnaik (2003), much of the criticism leveled against financial liberalization entails the apparent bias towards deflationary macroeconomic policies. The desire to attract foreign mobile capital implies that governments eliminate limits to the possibility of enhancing taxation on capital. As such, this creates the possibility for countercyclical macroeconomic policies that reduce growth-oriented activities. Deficit financing increases the liquidity of the system, which can be considered as potentially inflationary. Moreover, the autonomous nature of government spending implies that the use of debt financing introduced an arbitrary player in the financial markets who is not profit-driven. The possibility of substantial increase in government debt and interest burden could motivate the authorities to intervene through lowering interest rates in the financial markets. The above tendencies often squeeze liquidity and increase the costs of current transactions, which, in turn, results in panic sale of assets.

As such, consensus exists that financial liberalization generates significant risks because of the volatility of the international capital flows. Essentially, this implies that distortions permeate the global financial markets, which inhibits the investment of foreign capital in profitable sectors (Saoussen & Plihon, 2010; Stiglitz, 2000). Moreover, opening up the markets to the international market motivates banks to borrow excessively, which increases the vulnerability of the economy to a crisis (McKinnon & Pill, 1997).

3.2 Proven Benefits

China joined the World Trade Organization (WTO) in late-2001. With it, came the assertion that China would make considerable reforms to play the “economic game by the rules,” accord-

ing to IMF Managing Director Christine Lagarde. Since then, China has decreased its weighted average tariff rates on all products from 14% in 2001 to 6.5% and then lowered again to 4% in 2002 and 2012, respectively (Jayanthakumaran, 2016). As such, liberalizing corresponds to lower tariffs, which positively serves the ultimate consumer.

On the short-term, financial liberalization could lead to increased economic growth and mobilization of savings, which creates appropriate conditions for economic growth. An increase in interest rates affects the cost of financing. Moreover, the removal of ceiling on deposits leads to increased competition among commercial banks, which, in turn, increases the interest rates on loans and deposits (Causevic, 2003). While financial liberalization is associated with many risks, studies have not established many benefits in the developing countries. Kose et al. (2006) suggest that while liberalization has significant growth benefits, the benefits depend on the level of economic development and the quality of financial and political institutions in the country. Similarly, Edwards (2001) revealed that positive relationships between economic performance and financial liberalization manifests only in countries that have attained a specific level of economic development. Arteta et al. (2001) also finds a strong association between financial liberalization and economic growth only in countries with developed institutions. Therefore, there are a few proven benefits of financial liberalization in developing countries because they often have poorly developed political and financial institutions.

The benefits of financial liberalization are demonstrable at the level of specific markets and financial institutions. Identifiable benefits of financial liberalization are often found in economies with new financial products emanating from foreign institution competition or investment. In some countries, financial liberalization could generate employment opportunities or reduce the loss in employment, especially when the investments are made in appropriate sectors (Dietrich, 2010).

Chapter 4

Hot Money in China

Interest rates in China and the U.S. have traditionally moved in opposite directions. For instance, after the U.S. Federal Reserve reduced the federal funds rate from 5.25% to 2.0% in 2007, the People's Bank of China increased its interest rates from 2.52% to 4.14%. Consequently, the interest rate differential has been creating an incentive for investors to move from the U.S. to China to earn higher rates. Moreover, speculators have also been moving hot money into the country because of the expectations that the Renminbi will appreciate continually against the dollar. The Renminbi appreciated by 21.6% by 2008 after the country opted out from a fixed exchange policy to a "managed float" policy in 2005 (Martin & Morrison, 2008).

The robust limitations that the central bank has placed to intermediate foreign capital inflows have created mechanisms for controlling the entry of hot money into the country. Nevertheless, some analysts have revealed a multiplicity of ways through which speculators circumvent the restrictions to pump hot money into the country. For instance, the Deutsche Bank reported over-reporting of FDI was among the major ways through which international corporations used to pump hot money into the country. Moreover, the report reveals that roughly 11% and 10% of the hot money enters the country through underreporting the value of imports and overvaluation of

exports, respectively. Moreover, underground money exchangers account for 5% of the hot money entering the country (Martin & Morrison, 2008).

The increase in hot money has had an impact on money supply, which has been blamed for inflation in the past. However, the government has taken diverse steps to dampen the foreign exchange through selling bonds. The strategy led to increasing of interest rates, which, in turn, created an avenue for more hot money inflow. Other means the government has taken to nullify the inflationary impact including the imposition of quotas on bank lending, increasing ration of reserve requirement for commercial banks, implementation of controls to limit investments in the real estate industry, and imposition of price controls in some sectors (Martin & Morrison, 2008). A crucial concern among analysts is the likelihood of hot money creating bubbles in the real estate and stock markets. However, much of the hot money inflows enter into bank accounts because of the controls established against investment in overheated sectors (Wright, 2008).

In August of 2015, the Chinese central bank devalued the renminbi by nearly 2% in order to make it more market-driven. By the end of that year, it was estimated that as much as US\$150 billion a month was fleeing the country, a clear sign of capital flight (Vaishampayan & Wei, 2016). It is estimated that, starting from 2003 (that is when Chinese policymakers initiated the QFIIs program), China has experienced large inflows of foreign money. In particular, Martin and Morrison (2008) approximate that between 2003 and the first quarter of 2008, about US\$1.75 trillion dollars has flowed into China. The following are reasons why hot money inflows have been pouring into China:

1. Prolonged and historically low interest rates in the U.S. (due to the U.S.'s Federal Reserve Quantitative Easing programs), which pushed investors to seek for higher-return investments;
2. Renminbi appreciation against the U.S. dollar since 2002. The second reason might not be accurate, as China has recently experienced depreciation, even under the tight monitoring of the PBC, in the recent years; and

3. Tax-treatment differentials, which spurred underground private-money houses.

Chapter 5

Controlling the Influx of Hot Money

*“More than US\$8 billion in short-term investment had exited the country after the central bank cut rates and took steps to slow credit growth. The markets have got the message that Turkey does not want **hot money** inflows”*

— Mehmet Simsek, Turkish Finance Minister, February 2011

Chinn and Ito (2008), conduct a survey of 182 countries and found that, of all countries below the median capital-account openness, only one is considered an advanced economy, namely Iceland (as referenced in Dadush and Stancil, 2011). The study defined capital-account openness as “the aggregate of capital controls, taxes on inflows, discriminatory tax policies, etc. for a particular country.” Therefore, the survey indicates that, for a given country, capital-controls could be indicative of income-levels in said country.

There have long been speculations that the People’s Bank of China (PBC), China’s central bank, has been engaging in international financial transitions to influence exchange rates with respect to its currency, the Renminbi, through foreign-exchange interventions. In particular, it has been shown that the Chinese central bank has been superficially suppressing the renmbinbi from fluctuating. Mechanically, a central bank intervenes by buying (selling) the domestic currency and

selling (buying) a foreign currency, thus creating an artificial demand (supply). In this chapter, I show that PBC's interventions to influence its currency is a result of trying to curb hot money inflows, a scenario that has been largely overlooked, relative to the more sound-bite scenario of currency manipulation to fuel exports. While the latter scenario has direct negative externalities to the rest of international players (through having to compete with relatively cheaper Chinese goods), the former scenario is domestically-oriented. Although, the former scenario might nonetheless have intractable, but indirect, externalities to the international community.

When the PBC intervenes in the currency-exchange market (to manage the renminbi from appreciating), it leads it to acquire larger sums of international reserves in its balance sheet, which leads to an expansion in the monetary base. The result of the added liquidity could be an increase in domestic credit and output. Then, according to Bouvatier (2010), the added domestic credit would lessen the central bank's control. Therefore, in theory, international reserves and domestic credit are *negatively* related; that is, in a stable money supply, an increase in international reserves would be met with a decrease in domestic credit.

The first question that a policymaker would ask, when considering regulating or controlling capital inflows is: *“Is it possible for China to experience a balance of payments crisis, in which a significant change in the expected exchange rate would lead to a sharp change in the Chinese official foreign reserves?”*

It is highly unlikely for a BOP crises to happen, as China is the world's largest foreign-exchange (FX) reserve-holder, with approximately US\$3.09 trillion (CIA, The World Factbook) as of 12/31/2016. Additionally, China's FX reserves are not only the largest in the world, but are larger than the collective reserves of the European Union, Switzerland, Saudi Arabia, Russia, India, and Brazil.

Macprudential Took Kit

In his book, *Free to Choose*, (co-authored by Rose Friedman), the Nobel-awarded Economist Milton Friedman connects between inflation and unemployment. A strong advocate of free markets, Mr. Friedman argued for, among other things, freely floating exchange rates. To that end, one tool that the Chinese central bank has is to shift from a managed-floating exchange rate to freely-floating one. Of course, in the short-run, such policy would be viewed negatively, as the initial consequences would be an deep devaluation of the renminbi and, worse, would cause capital-flight. However, in the long-run, according to Mr. Friedman, the benefits would outweigh the costs. Given the conservative economic as well as political views in China, a bold, one-off policy seems highly unlikely.

When discussing monetary-policy with respect to international trade, we often introduce the *monetary trilemma*, or the *impossible trinity*. The Trilemma asserts that a given country is restricted to using only two of three policies. That is, it cannot pursue the following three policies simultaneously, and that it must forego at least one to maintain the other two: (1) free capital mobility, (2) fixed exchange rate regimes; and (3) autonomous monetary policy through influences in interest rates.

In light of the Trilemma, the PBC can accommodate capital outflows in three areas:

1. With respect to free-moving capital, the PBC can tighten outflow in the form of limiting FDI outflows by taxation, or tighter quota on Chinese residents' foreign-exchange purchases; or, similar to what Brazil did in October 2009, introducing a percentage tax on all capital inflows except FDI;
2. With respect to exchange rates, the PBC can contain the depreciation of the renminbi through tightening the trading band with respect to the U.S. dollar. This option is considered a reversed-policy. Historically, when the PBC first switched from fixed to managed-floating exchange rate, it started with a trading band of $\pm 0.3\%$, to $\pm 1.5\%$, to present-day $\pm 2\%$;

3. Maintaining the interest rate differential with respect to the historically-low U.S. interest rates. If the PBC were to consider *increasing* interest rates, to entice more investment, that would carry an opposite risk of bringing in hot money inflows once again into the Chinese economy.

Regulating the flow of capital into the country has been one of the most lauded ways through which China could control hot money inflow. Strong supervision of capital flows has increased the levels to which the central bank monitors bank accounts owned by non-residents to prevent the inflow of hot money. According to some analysts, the country could also control the influx of hot money through reducing inflation by way of its foreign reserves. However, this could create cross-border concerns because it would involve large-scale investment in strategic economic sectors.

The argument for controlling the depreciation of the currency has also attracted some attention in literature. An appreciation of the renminbi could help the country in controlling the inflation emanating from hot money influx. The appreciation of the Renminbi against other major currencies through revaluation or accelerated appreciation based on the managed float regime could eradicate the inducements that motivate speculators (Martin & Morrison, 2008). However, the move should be accompanied by appropriate measures to maintain the attractiveness of the country for FDI. Some policymakers suggest that a strong renminbi could lessen the levels of inflation. However, this could be disadvantageous because it could increase the price of exports and reduce the attractiveness of the country as a destination for FDI.

Chapter 6

Historical Crises

6.1 Mexico December 1994

The Mexican financial crisis between 1994 and 1995 started following the devaluation of the country's currency in December 1994. Before exploring the crisis, it is worth reviewing the positive aspects of the economy between 1989 and 1993. The reforms focused significantly on budget correction and privatization. The overarching objectives included reduction of government spending, privatization of state-owned enterprises, and tax reforms aimed at increasing tax base, compliance, and efficiency. The reforms had a significant impact on the country's internal and external debt as illustrated in Figure [6.1](#).

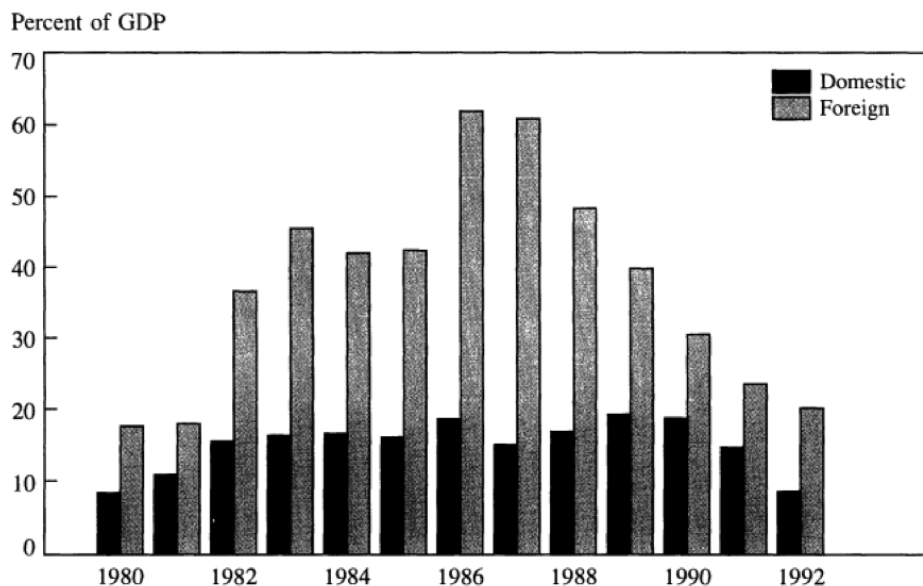


Figure 6.1: Mexican Public Debt, 1980-92
Source: Dornbusch, Werner, Calco, & Fisher (1994)

The decline in operational deficits to approximately 9% of the GDP improved confidence in the Peso and motivated the reduction in interest rates. The debt-to-GDP ratio declined following the surplus that averaged 5.3% between 1983 and 1992. Privatization served as a crucial component of the reforms in public finance. The government believed that it could control the large public deficits through closing or privatizing the state-owned firms. Moreover, privatization contributed to the increased attention of foreign investors to the investment opportunities in the country, which fueled external financing.

Trade reforms were specific macroeconomic measures in the reform period. As illustrated in Table 6.1, trade liberalization fueled a significant decline in the average tariff rates.

<i>Tariff statistic (%)</i>	1982	1986	1992
<i>Average tariff</i>	27.0	22.6	13.1
<i>Trade-weighted average</i>	16.4	13.1	11.1
<i>Tariff dispersion</i>	24.8	14.1	4.5
<i>Import quota cover rate</i>	100.0	28.0	11.0

Table 6.1: Tariff Levels in Mexico, 1982-92
Source: Dornbusch et al. (1994)

Several factors contributed towards the appreciation of the real exchange rates in the country. The expansion of trade following trade liberalization increased the relative price of Mexican goods that led to a large external deficit. Demand shifted to foreign goods. Modernization, reform, and the expansion of capital markets changed the equilibrium of the price of assets and labor. Consequently, this led to the appreciation of the peso against the dollar.

The *hot money* issue had a significant role in the emergence and progression of the Mexican financial crisis. The country had undergone financial liberalization of the trade sector in 1985 after a long period of economic stagnation. The reforms resulted in a resumption of economic growth at an average of 3.1% between 1989 and 1994. For instance, in 1993, inflation rates had dropped to a single-digit level for the first time in more than twenty years (Gil-Diaz, 1997). The improved economic environment coupled with limited restrictions on capital inflows attracted foreign investment. The problems were exacerbated by the signing of the North American Free Trade Agreement (Dornbusch et al., 1994.) However, such issues contributed largely to what was to become the worst financial crisis in the country.

Financial analysts have identified regulatory failures and credit growth as major factors contributing towards the crisis. The financial sector has undergone substantial liberalization, which encouraged the supply of credit that overwhelmed the borrowers, scant capital in the banks, and the weak supervisors (Bordo & Schwartz, 1996). Several factors can be attributed to the abundance of credit: remarkable availability of securitized debt, improved economic expectations, strong response from private investors, substantial reduction in public debt, and a boom in the stock and

real estate markets (Calvo, 1996).

Immoderations of credit volume, ineffective screening of mortgagors, and the declining growth of the economy in 1993 increased the burden of nonperforming loans. Calvo and Mendoza (1996) identify four major factors contributed to the increase in debt:

1. Liberalization of the financial sector freed borrowing and lending rates, abolishment of credit channeling, and elimination of bank reserve requirements;
2. The privatization of banks failed to respect the fit and proper criteria, although most banks remained under the government during the expansionary period;
3. Many banks that were purchased during this period did not conduct appropriate capitalization in which the shareholders leveraged their stock acquisitions;
4. Significant loss of human capital emerged after the expropriation of commercial banks in 1982, which led to the flight of institutional memory;
5. Unlimited support for bank liabilities increased moral hazards; and
6. The inexistence of market risk rules on capitalization encouraged asset-liability mismatches.

According to Lingdren, Garcia, and Saal (1996), the experiences are not unique because formerly regulated banks lack adequate credit evaluation skills to enable effective utilization of the newly available resources.

The above-mentioned factors contributed to perceptions towards short-term and long-term prospects that the conditions could lead to a financial crisis (Gil-Diaz & Carstens, 1997). The forces illustrate an example of the ways through which financial liberalization could lead to crisis, irrespective of critical economic achievements. Indeed, poor capitalization of some banks contributed significantly to the emergence of the crisis. However, studies have shown that the credit growth is not a unique feature. For instance, in a review of crisis in 20 different countries,

Kaminsky and Reinhart (1999) found that banking crisis started before the emergence of balance of payment crisis. Similarly, the experience in Venezuela shows that a sharper expansion of credit in the private sector occurred before the crisis (Lindgren et al., 1996). Therefore, it could be inferred that the soundness of banks has a negative effect on the external balance and exchange rates.

The macroeconomic feedback to the credit expansion contributed to the crisis, too. Between 1988 and 1994, the flow of credit from the local commercial banks into the private sector rose by approximately 25% per year (277% in real terms) (Gil Diaz, 1997). Similarly the credit flows to the private sector increased from -\$193 million to \$23.2 billion between 1988 and 1993. While the figure dropped to \$8.9 billion in 1994, the decline in international reserves of the central bank compensated for the decreased credit flow (Gil Diaz, 1997). In 1994, the overall use of external resources amounted to \$27.8 billion. The liquidation of government debt, the attraction of foreign resources, and moral hazard contributed to the increased aggregate demand that contributed to the current-account deficit. Moreover, short-term capital was used to finance the deficit (Gil Diaz, 1997).

Exchange rates during the reform period appreciated significantly. Similarly, domestic interest rates led to short-term capital as foreign capital flowed into the stock market. The government sterilized the flow of foreign exchange to accommodate the increasing demand for currency. Consequently, this increased the amount of reserves following the excess supply of dollars. The balance-of-trade deficit increased to 5.83% as a percentage of the GDP because of the increase in private investment. However, a significant proportion of the private investment was directed towards unprofitable ventures, which made the current account deficit unsustainable.

The overindulgence in credit, short-term debt, and frenzy of spending, alongside the fixed exchange rate regime exacerbated the negative aspects of the crisis (Gil Diaz & Carstens, 1997). According to Trigueros (1997), the destabilizing effects of short-term debt should be emphasized because other factors such as foreign deposits at commercial banks and foreign currency securities remained remarkably stable. This reflects the vulnerabilities of the fixed exchange rate existing in

the absence of automatic stabilizers.

High interest rates in the U.S., depreciation of the Peso before December 1994, and the unprecedented political turmoil increased the speculative attacks on the markets. Similar to the collapse of European currencies in 1992, the speculative attacks led to a drain in the country's international reserves until the abandonment of exchange rate limits in December 1994 (Calvo, 1996). The devaluation motivated several damaging effects including increase in interest rates, inflation, collapse of economic activity, challenges in servicing of debts dominated by foreign and domestic currency, and decline in bank capitalization (Gil Diaz, 1996). While the crisis did not contribute significantly to the low saving rates, it had a significant effect on credit expansion (Calvo & Mendoza, 1995; McKinnon & Pill, 1995; Trigueros, 1997). Moreover, the crisis did not affect the overvaluation of the exchange rates significantly (Gil Diaz & Carstens, 1997).

The fixing of the Peso against the U.S. dollar played a significant role in these events. The Mexican peg under the reforms was aimed at serving three roles: guaranteeing foreign investments that their investments would not lose value, facilitate external borrowing in the international markets, and enable the government in fighting inflation (Mustacchio, 2012). However, a fixed exchange rate regime requires a developing country to have the capability to enlist and trust foreign investors with the domestic currency. Based on previous experiences, for instance, the depreciation in 1982, the administration at that time aimed at avoiding the recurrence of such events through ensuring macroeconomic stability. According to Dornbusch et al. (1994), a pegged exchange rate can significantly help in stabilization efforts because it helps in rallying expectations and organization of income policy. However, a crawling peg as such as that in Mexico avoids the accumulation of appreciation, which risks the success of the accumulation efforts.

Gil Diaz (1996) draws several points related to the impact of unsustainable policies on the crisis. Credit expansion emanating from misaligned fundamentals leads to the loss of international reserves, which leads to a crisis in the balance of payments. Similarly, Sargent and Wallace (1984) support the view in their closed-economy model. According to them, an obstinate deficit coupled

with real estate rates that are above the economic growth result in debt saturation. Consequently, this motivates private agents to avoid purchasing debt, monetization of deficit, and occurrence of inflation. Similarly, Krugman (1979) suggests that speculative attacks force the abandonment of exchange rate, which propitiates inflation. In all these cases, excessive credit expansion leads to the avoidance of purchasing debt by national, foreign, and public agents (Gil Diaz, 1996).

The expansion of credit and the process of privatization reveal several underlying issues. According to Haber (2005), privatization failed because the incentives offered by the government paid for the maximization of price investors were used in the payment for the privatized banks. Fundamentally, the government sought high bids for the banks during the privatization via unusual rights for the bid winners. Consequently, this reduced the competitiveness of the process, which limited the number of foreign banks that entered the country. For instance, the entire process saw four banks controlling up to 70% of the banking assets in the country. Foreign banks were provided limited rights in which they could only own limited equity in the financial sector. Moreover, the privatization failed to consider the levels of experience among the bidders or their knowledge in the banking sector. Consequently, this led to the acquisition of the banks by individuals or corporations with limited knowledge about the operations of the sector. The delays in the adoption of international accounting standards in the banking sector by the Mexican government allowed the banks to buy and sell securities, despite having inadequate reserves

According to Musacchio (2012), the weak regulations on the banking sector created handicaps for the system, for instance, through allowing misreporting of the riskiness of the portfolios. As suggested by Haber (2005), the leniency of bank accounting rules in Mexico led to the consideration of interest arrears on loans past due as non-performing. Consequently, the banks tended to overstate their soundness in their balance sheets.

The Mexican bank regulator was inefficient in monitoring the behavior of the banks because the officials were inexperienced. The officials had precarious instruments for gauging the financial health of the commercial banks. The implementation of weak accounting standards inadequate

autonomy and authority in supervising commercial banks led to challenges in calculating the riskiness of the sector. In essence, the incentives provided by the government during the privatization of banks resulted in excessive risk taking. In many cases, the commercial banks would underreport their non-performing loans, borrow in foreign currency to finance their expansionary activities, and expand into consumer and mortgage loans without adequate information.

The conditions created by the reforms led to increased investor enthusiasm, which has a significant part in the emergence of the crisis. The enthusiasm created a bubble-like dynamic as investors moved towards the investment in Mexican assets. The value of the assets increased tremendously because of the returns expected for the investors. The rate of economic growth was not justifiable considering the resultant hype about investments. For example, while the growth rate was lower than 3% in 1993, investors continued investing in the hope that the boom in the assets would continue. The flight of capital would trigger a fall in the value of the assets.

The discussion above provides a platform for the identification of the exact causes of the crisis. While all the factors above played a part in the crises, it can be concluded that the combination of the rapid credit expansion and the exchange rate regime had the greatest impact (Bordo & Schwartz, 1996). The poor capitalization of banks and the ineffective regulation of the sector explain the increase in bad credits (Gil Diaz, 1996). The government bore the shocks from the low risk speculations under the foreign exchange regime. Mexico had insufficient reserves before December 1994 because of the challenges that the financial sector was facing. Some authors, for example, Calvo (1996) have explained the virulence of the crisis by identifying vulnerabilities the country faced because of the ineffective policies.

The liquidity problem was not new or unique to Mexico. Approximately 70% of all bank liabilities was payable in 24 hours while the rest involved short-term payments. The new thing about the crisis was the coexistence of the growth in speed and volume of international capital inflows and the fixed exchange rate. The expansion of the central bank credit has also been invoked as a major cause of the crisis. The vision of the government failed to consider that fractional

reserves require a lender of last resort. Banks cannot liquidate their loans during a run. Therefore, this made the expansion of the central bank credit irrational and the logic of the exchange rate regime implacable.

6.2 Thailand, And Subsequently East Asia 1997

The East Asia financial crisis in 1997 was unprecedented and characterized a sharp in the value of the currencies and asset prices across several countries. According to Corsetti, Presenti, and Roubini (2001), the countries that were significantly affected including Indonesia, Korea, Thailand, and Malaysia had intermingled interests among the financial institutions and the corporate elite. Thailand, a country formerly described as a model for economic development, was among the countries worst hit by the crisis. According to Lauridsen (1998), this was ironic considering the orthodoxy of the country's financial system and its macroeconomic stability. The crisis that started mildly became contagious affecting many other East Asian countries. Similar to the Mexican crisis, the reliance on hot money was a significant factor in the emergence of the crisis.

The financial crisis can be associated with the excessive investments most of which were excessively optimistic or unproductive. According to Lauridsen (1998), the investments were based on hot money or money borrowed from abroad. Foreign investors expressed their appetite to invest in the country because of the high interest rates and the fixed exchange rate regime. The caution observed by the investors led to an overemphasis on lending on short-term basis with interests rates of 10-11%. Similarly, domestic investors were enthusiastic in exploiting the opportunity through increasing their borrowing from the international markets because the money was cheaper under the fixed exchange rate regime. For instance, corporate borrowers could borrow at interest rates ranging between 5% and 8% rather than 13% for domestic borrowing. Moreover, individuals could borrow from the international markets in foreign currency and lend the money in the local currency to earn profits.

The financial crisis follows a path similar to the one taken by many other countries that have experienced such devastating crisis. For instance, the country engaged in broad financial liberalization in 1992 through the deregulation of the foreign exchange. The creation of the Bangkok International Banking Facility aimed at attracting foreign funds and reducing the current account deficits. The overarching goal was to turn Thailand into a regional financial center through increas-

ing competition in the financial sector. After the creation of the Bangkok International Banking Facility (BIBF), commercial banks increased their appetite to borrow in foreign currencies and lending the money back to investors in Thailand.

The increased appetite for investment motivated excessive offshore borrowing, which contributed to the increasing debt. For instance, the country's external debt rose dramatically from US\$40 billion in 1992 to US\$ 80 billion in 1997, which implied that the outstanding external debt rose from 34% in 1990 to 51% in 1996 when expressed as a fraction of the GDP. Notably, the private sector played significant role in exacerbating the crisis. Private debt accounted for approximately 80% of the total debt stock with almost 36% being short-term. In 1997, the central bank in Thailand stated that the foreign debt had hit US\$90 billion, of which the private sector accounted for US\$73 billion. In 1998, it was revealed that the short-term debt was 10% higher than the figure posted in 1990 after reaching a record 46% of the total external debt. The ratio of short-term debt had increased from 0.6 to 1.0 between 1990 and 1995. The private sector had acquired large amounts of foreign credit because of the accessibility provided by the Eurobond market and the BIBF (Laudrisem, 1998).

The dramatic inflow of foreign inflow tripled the volume of loans in the financial sector, irrespective of inadequate sectors in which the investors could put their capital reasonably. Consequently, this resulted in the misallocation of capital in the non-tradable sector, which, in turn, created an investment bubble. Indeed, most of the capital was channeled to the inflated assets in the real estate market leading to the construction of more than 750,000 unplanned-for housing units between 1992 and 1996. The appetite among investors to pump their capital into the real estate sector led to a dramatic expansion of loans that commercial banks gave to property developers. For instance, the loans to private investors increased from 264 billion baht to 767 billion baht between 1993 and 1996 where 54% was from commercial banks and 45% from finance companies (Lauridsen, 1998).

By December 1996, the share of short-term foreign liabilities across the East Asia region was

more than 50%. In Thailand, the ratio between M2 and foreign reserves was excessively high. BIS banks were unwilling to roll over short-term loans because Thailand had insufficient foreign reserves to cover the liabilities or service interest payments that were coming to maturity (Corsetti et al., 2001). The start of the economic recession in 1996 created a property bubble that left many of the companies that had been financed by the commercial banks through the foreign currency in limbo. For example, in 1997, Samprasong Land could not repay its euro-convertible debenture of US\$80 million. The Bank of Thailand classified more than [Bt]10 billion of the loans owned by real estate investors as nonperforming.

Other than the misallocation of the loans, the country suffered from several vulnerabilities inherent in countries relying on foreign borrowing. The companies within the industrial sector hedged the loans against the currency. Additionally, the mismatch between the domestic and foreign emerged because the investors went largely into the non-tradable sectors. The utilization of short-term borrowing in financing long-term projects contributed further to the vulnerabilities. Lastly, the failure to take foreign exchange risk in financing equities through loans was an additional vulnerability. This shows that the economic meltdown in the country emanated from both currency and financial crisis (Lauridsen, 1998).

By the end of 1996, it was evident that the Thai economy had lost its earlier momentum. Indeed, the country experienced the lowest growth rate in GDP in more than a decade with a sharp decline in export growth, which signaled a declining balance of trade and balance of payments. The increase in imports increased the country's current account deficit. The stock market lost almost 20% of its value in the last eight months of 1996, which implies that the stock market had collapsed before the currency crisis started.

The government interventions during this period signal the incompetence and inefficiency of policies taken to contain the problem. The administrations between 1995 and 1997 undermined the confidence of investors significantly. According to Lauridsen (1998), the poor economic performance reinforced the belief that Thailand was losing its competitiveness to China and other East

Asian giants in the labor-intensive industries. The appreciation of the U.S. dollar (in which the baht was pegged) is a factor to consider in the analysis of the historical trend in the Thai crisis. The U.S. dollar, alongside the yen and other currencies were experiencing sharp appreciation. Consequently, Thai Baht followed a similar trend in 1995. Rumors and speculations in 1996 indicated that the baht would be devalued. However, the Bank of Thailand maintained the tight monetary policy introduced earlier. Nevertheless, the policy was ineffectual due to the free flow of foreign capital and high domestic interest rates that had been implemented earlier. Consequently, the Bank of Thailand enforced requirements for financial institutions including banks to hold higher reserves on short-term deposits from foreign investors. Indeed, investment-rating companies had downgraded the country's rating on short-term debt and predicted a Mexico-style financial crisis (Lauriden, 1998).

A speculative attack on the baht precipitated the currency crisis in 1997 because of the increased interbank rates and liquidity that followed (Corsetti et al., 2001). According to the speculators view, a speculative attack on the currency would trigger a drop in the value of the baht, which was believed to be overvalued. Moreover, many domestic investors had started selling baht for dollars to hedge against probable devalues. Similarly, exporters were reluctant to convert their export earnings to baht because of the speculations. Consequently, this led to an oversupply of the baht in the market. High interest rates affected the crisis pertinent to the financial sector. While the central bank argued that no financial institution under its supervision was experiencing a liquidity problem, it emerged that the financial companies had indulged excessively in the hire purchase and property sectors.

In their model, Corsetti et al. (2001) suggest that private investors presume that the government has established guarantees on financial and corporate investment. Consequently, they expect that the returns on their domestic assets should be insured against from adverse circumstances. Cash shortfalls and unprofitable projects would be refinanced through external borrowing to the extent that foreign credit lend against future bailout revenue. However, the process leads to the unsustainability of the current account deficits.

While deficits should naturally be high before a crisis hits, the administration has to take measures that guarantee the stock of external liabilities. The implementation of sound fiscal reforms including are required to satisfy the solvency. However, speculation regarding the foreign exchange rates emanating from inflationary financing and expectations lead to the collapse of currency, which, in turn, contributes to the financial crisis as experienced in Thailand. Therefore, as argued by Corsetti et al. (2001), financial and currency crises are intricately tied in the case of Thailand. The Thai crisis had immediate and long-term effects on the economy. Currency depreciation, closing down of institutions, capital flight, and budgetary cuts led to economic recession and a decline in imports. While the interventions made Thai exports more competitive, the devaluation of baht meant that the manufacturing sector faced high costs of raw materials and importation of components (Lauridsen, 1998).

The Thai crisis has been studied based on the contagion model because of it flowed to other countries. The pegged exchange rate regimes posed a significant problem not only to Thailand but also to the other affected East Asian countries. As the foreign reserves declined, vulnerability increased leading to a financial panic. The pegged currency in Thailand and East Asia as a whole created three problems. First, the pegged currency led to overconfidence among investors who largely ignored the exchange rate risks in their foreign borrowing in their belief that the currency would be pegged indefinitely. Second, the pegged regime allowed the growth of overvaluation, which squeezes exporters and draws investors towards non-tradeable sectors as observed in the Thai case. Third, the pegged foreign exchange regime creates financial panic. The East Asian administrations in the respective countries affected had the commitment to use their reserves in defending their countries' currency (Radelet & Sachs, 1999).

The combination of the fixed exchange rates and the investment boom resulted in over-investment in specific sectors such as the real estate sector and decreased investment quality. Indeed, this can be portrayed by the declined capital-output ratios across the region. Each of the East Asian countries affected portrays an increase in the share of bank loans directed towards real estate, construction, and financial services sectors. For instance, in Thailand, equity share prices and property

prices increased significantly after the liberalization reforms but started declining rapidly in 1996. Consequently, this put pressure on the financial institutions that had given loan to the investors, which, in turn, exacerbated the rate at which the crisis occurred. However, this pattern was less noticeable in other countries including Indonesia because they were not the first to experience the crisis. For instance, property prices in Jakarta, Indonesia, did not experience a significant change during this period. Similarly, over-investment in Korea focused largely on the manufacturing sector.

The emergence of the crisis in Thailand and East Asia reveals several weaknesses inherent in many developing countries that have experienced crisis in the past. The economies had several weaknesses such as the growing and under-supervised financial systems, sharp decline in export potential, and large short-term capital inflows. Moreover, moral hazard emerges as a significant reason for the emergence of the crisis. Creditors had a belief that the government would bail them out in case of an adverse event. Experience from other countries contributed significantly to this moral hazard. For instance, the IMF-U.S. bailout of Mexico from its crisis reassured the investors they could acquire such assistance in the case of a crisis. Consequently, investors acknowledged the problem in Asia, but ignored the probable effects in the belief that they would be rescued (Radelet & Sachs, 1999).

The creditors also believed that they would be compensated for lending investors in specific sectors that had a significant government presence. According to Akerlof and Romer (1996), banks develop a moral hazard when they believe that they can borrow funds based on implicit or explicit public guarantees. The under-regulation of the banking sector implies that the banks could use their funds in risky ways, as experienced in East Asia. There exists little doubt that the banking institutions across the region expected their respective government to offer adequate support in ensuring profitability and ability to repay the creditors.

It should be noted that the crisis affected the countries that had vulnerabilities. For instance, none of the emerging markets with low levels of short-term debt against reserves was affected by

the crisis, despite weaknesses in the banking systems and high levels of corruption. Moreover, the crisis affected specific countries with difference economic fundamentals and structures within a short time. For instance, Indonesia and Korea had fe commonalities other than the short-term debts.

6.3 Russia 1998

Background of the Crisis

Russia's financial crisis in 1998 is another exemplifier of the link between financial globalization/liberalization to crisis in emerging markets. The financial crisis led to the collapse of many private banks, although the government gave depositors an alternative of transferring their funds to Sberbank, the state-owned savings bank. The Russian crisis bears similarities with the financial crises that have faced other emerging markets across the world. The sequence of events in the crisis shows that financial liberalization exacerbated the country's vulnerability that emanated from the combination of adverse government debt dynamics and a fixed exchange rate. The Russian crisis was preceded by the crisis in East Asia that had started following the collapse of the Thai baht. The contagion effect that affected the East Asian countries played a role in the occurrence of the Russian crisis because of the spreads on sovereign bonds that had emerged.

The Russian financial crisis can be traced six years before it occurred. Six years earlier, the Russian government had engaged in significant reforms through macroeconomic stabilization and privatization that had limited success. Despite recording positive economic growth for the first time since the reforms started, Russia experienced one of the worst crises to hit emerging markets. The crisis instigated the government to devalue the ruble, default its sovereign debt, and suspend all payments to foreign creditors by commercial banks. The sequence of events can reveal the factors that led to the crisis and their link with the hot money concerns in emerging markets. The sweeping changes in the country did not occur as quickly but through a gradual process after the end of the Soviet rule. The gradual development of the crisis was because of the complex politico-ideological reality existing in the country because most of the leaders were former leaders in communist Soviet. The country lacked consensus regarding the past evils because the elites were the same ones in power. Therefore, the desire to reform the country and a radical overhaul was problematized through the ambivalence of the country towards the revolution (Granville &

Oppenheimer, 2001).

The lack of mass purging of power or elite turnover left the government drifting without an ideological force to unify the elites and the leaders. While the mandate to change the systems existed, the reform process proved problematic because of the inadequacy of institutionalized structures to guide the reform process. As such, the leaders engaged in a project aimed at altering the economic system and restructuring wealth creation in the absence of requisite political systems that would ensure fairness, freedom, and justice from the revolution (Granville & Oppenheimer, 2001). Under the presidency of Boris Yeltsin, the former Soviet Union experienced rapid disintegration of the economic structures started occurring. For instance, the GDP shrunk radically because of the discontinuation of the relationship between systems of supply, distribution, labor, and production. Similarly, inflation increased uncontrollably because of the lifting of price and wage controls as a way of dismantling central planning of the economy. The GDP of the country shrunk by 40% between 1990 and 1993 and inflation reached 800% in 1993.

Amid the chaos, a political deal was made to ensure that Yeltsin remained as the president because of his role in scuttling the coup that aimed at restoring the USSR. The drafting of a new constitution provided the required support for the economic reforms. In 1993, the elections characterized a range of political interests that saw the empowerment of Yeltsin in steering the country towards the implementation of the reforms. the assurance of political control returned the focus of the leadership to economic reforms and the transformation of the economy to capitalism. Mass privatization of state-owned companies was among the priorities as the leaders sought to create a private market that would steer the growth of the country. Moreover, the government required funds through divestments to balance the budget because the collapse of the Soviet Union had led to significant deficits.

Nevertheless, the actual process of privatization characterized deep corruption because of adequate political reforms checking the power of the communist elites, despite the commitment of the government to create a free market. For instance, the process involves *loans of shares* in the

mid-90s, despite the need for competitive bidding that would allow the nationals to compete for ownership equally. Moreover, the leadership aimed at providing the workforce of the industrial enterprises partial ownership to enable public participation in the management of the companies. However, the authorities removed the bidding process from public evaluation leading to the sale of the companies to private interests. The government officials and proposed buyers engaged in rampant corruption because of the lack of public scrutiny to ensure fast turnover of ownership (Pinto, Drebenstov, & Morosov, 2000).

Other than the industrial sector, the financing and banking industries underwent massive privatization. Theoretically, the privatization of credit allocation would ensure proper functioning of the free market because the banks would provide adequate credit. Nevertheless, the process of privatization in this sector also faced significant backlash from rampant corruption. The politically connected individuals had a concentration of wealth and created financial-industrial groups (FIGs). The FIGs consisted of large conglomerates that combined their interests across different sectors. The groups started financing their operations, which reaped the industrial sector off significant profits. Moreover, the market ceased being free because only a few firms controlled the market for goods and services.

The aforementioned background factors limited the creation of a competitive industry and destroyed the conditions for the functioning of capitalism. The concentration of wealth among few oligarchs insulated the systems from experiencing the reforms. Moreover, the country suffered from massive layoffs, which increased the rate of unemployment. The profitable FIGs financed the losses that the companies faced. Continued collision between business interests and government officials created many systematic pervasions in the marketplace that undermined the performance of the economic system.

The actions of the government entailed the collusion between the interests of the state and the interests of the oligarchs. The stabilization plans in the mid-90s aimed at reducing inflation and stabilizing the economy exemplifies this problem. The stabilization process focused on the

reduction of money supply and increase of interest rates with the aim of lowering the inflation rates to manageable levels. The government took steps to peg the currency against the dollar at a fixed rate within this stabilization process.

The process relied on the financial sector and foreign capital to support the implementation of the policies and finance the government debt. The Central Bank of Russia (CBR) had explicit powers to increase interest rates at will to enable the country achieve the goals. Nevertheless, it utilized several private banks as the tool to sell government bonds, as well as regulate the market transactions in a sophisticated effort of manipulating the monetary policy (Medvedev, 2001). As such, the banks received disproportionately high profits because they underwrote most of the government bond issues.

Moreover, the government issued short-term bonds because this allowed savings at low interest rates. The short-term issues required rolling over of the debt and reissuance of the bonds to finance government operation continually. Moreover, the government became increasingly dependent on foreign investors who would purchase large volumes of government bonds that generated money to finance the debt. The reliance on foreign investors related to the inadequacies of the domestic securities market and inadequate support of the ruble.

The Start of the Crisis

The reforms adopted in 1996 created a wave of optimism among domestic and foreign investors in the country. In 1996, the Russian government initiated negotiations to postpone the payment of its foreign debt that had been inherited after the collapse of the Soviet Union. The step aimed at improving investor confidence and attracting capital inflow into the country. Superficially, the reforms seemed to be a turning point for the country in 1997. For instance, the trade surplus was edging towards a point of equilibrium between exports and imports as illustrated in Figure 6.2. Similarly, inflation had reduced from 131% in 1995 to almost 11% in 1997 as shown in Figure

6.3. The diplomatic and trade relationship with the West had significantly improved with the World Bank offering up to US\$3 billion per year as aid to the country (Chiodo & Owyang, 2002).

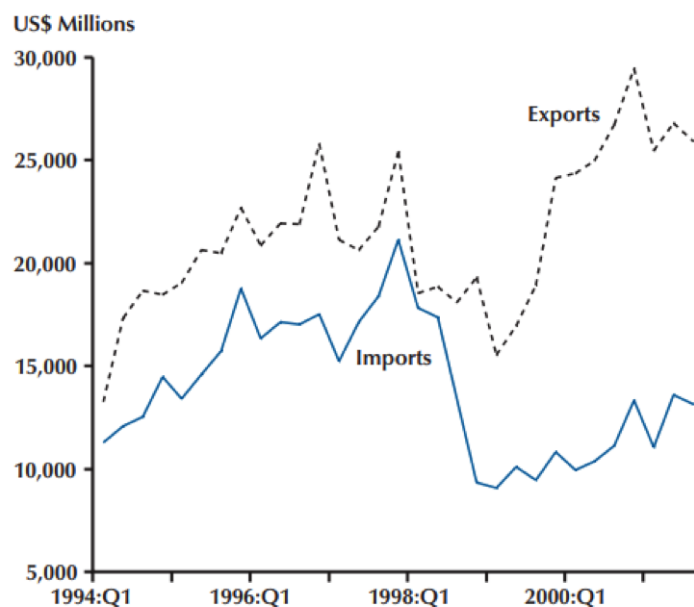


Figure 6.2: Russian Trade Balance, 1994-2000
Source: Chiodo & Owyang, 2002

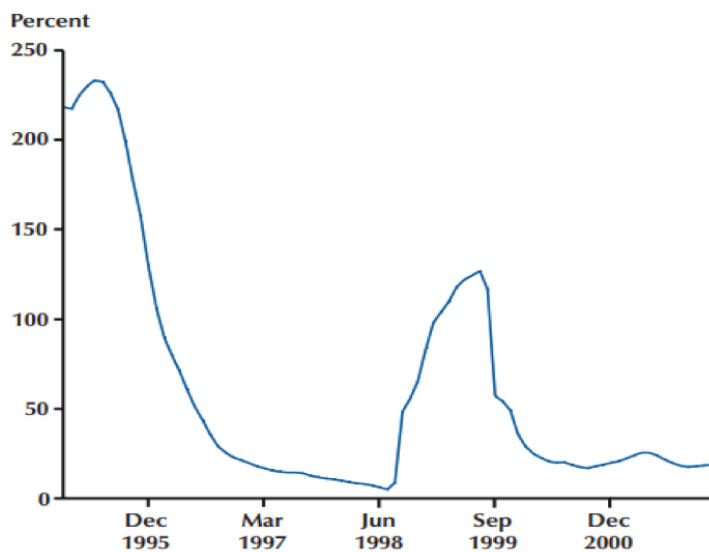


Figure 6.3: Russian CPI Inflation, 1994-2001
Source: Chiodo & Owyang, 2002

Other indicators of economic stability included the recovery of output, increase in oil exports,

and a narrow exchange rate band. The exchange rate band was between 5 and 6 rubles for a dollar as illustrated in Figure 6.4.

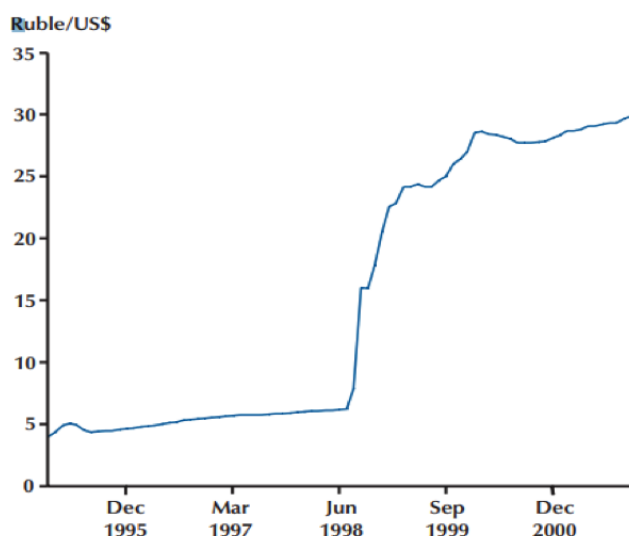


Figure 6.4: Ruble/USD Exchange Rate, 1994-2001
Source: Chiodo & Owyang, 2002

The new sense of confidence and optimism motivated the government to launch its first Eurobond offering in 1996, which was a sign of the ascendance of the country in the global financial community. However, this only provided a new source of capital but also acted as a turning point in the overreliance on dollar-dominated debt (Buchs, 1999). Subsequently, the government opened capital account restrictions and deregulation drive that would remove capital controls from domestic and foreign flows. Consequently, this resulted in large inflows of foreign capital and the appreciation of the currency that led to its pegging against the dollar at an overvalued rate.

In 1997, the country was accommodated in the Paris Club of creditors after rescheduling more than US\$60 billion of debt to other nations. In the same year, the government agreed a 23-year period for the payment of US\$33 billion that was signed with the London Club. Such indicators made analysts believe that the country's credit ratings would improve significantly, which would allow the country to borrow in the international markets at lower rates. The removal of limitations on the purchase of government bonds and securities attracted foreign investments in the country steadily.

By the end of 1997, nonresidents accounted for approximately 30% of the GKO. Consequently, this created optimism among investors who believed that economic growth would continue to the following year (Chiodo & Owyang, 2002).

In essence, the economy appeared stabled and moving towards the right direction. The strength of the currency combined with the increasing oil exports created complacency because the fixed exchange rate seemed justifiable. The government became exceedingly confident that the deficits would gradually decline because the country did not have a shortage of buyers. Nevertheless, external factors such as the East Asian economic crisis created shockwaves in the country because it marked the end of a major source of economic growth. Combined with the vulnerabilities the country faced, the external factors increased the strain on the market as will be discussed in the following paragraphs.

Problems persisted, despite the optimism that had emerged from the improved economic conditions. For instance, the real wages had declined by almost 50% of the amount in 1991 with only 40% of the workforce receiving payment for full-time work. This implied that the rate of unemployment was on the rise. Similarly, the country was facing low per capita foreign direct investment because of the challenges in regulating the domestic monopolies in the country. Challenges in the collection of tax also created challenges in reducing public sector deficit (Chiodo & Owyang, 2002).

Disputed criteria and qualifications were used in recognizing Russia as a creditor state during its admission in the Paris Club. For instance, approximately 25% of Russian assets were in the form of debt owed by other countries including Vietnam, Cuba, and Mongolia (Chiodo & Owyang, 2002). The recognition relied on the old exchange rate that was much different from the existing rate at that time. The elimination of restrictions prompted Russian banks to increase their appetite for foreign moneys, which increased the country's foreign liabilities from 7% to 17% between 1994 and 1997.

In dichotomizing the crisis and explaining its causes, several factors have been found to pre-

dominate the discussion. The first and immediate cause of the crises was government fiscal imbalances in the presence of a fixed exchange rate. After the ruble came under speculative attack, the government tried to defend it rather than float it. The initial efforts bore fruits in that the exchange rate did not vary significantly in 1997. Many economic models suggest that the willingness of a central bank to defend an exchange rate peg can determine the outcomes of a looming crisis. Before August 1998, the country's currency came under two speculative attacks with the defense in 1997 being the only successful response. The defense of the ruble depleted the country's foreign reserves, which obliged the government to devalue the ruble on August 1998. The government maintained high budget deficits, despite the decline in government expenditures. While borrowing allowed the government to curb the high levels of hyperinflation from 2500% in 1992 to 11% in 1997, the effect was absorbed in part by the high levels of unemployment.

The government offered high yields on its bills and bonds to attract the required capital. Consequently, the heavy levels of borrowing increased the debt service burden on the country further. Indeed, debt expenditures accounted for approximately 30% of the government expenditures (Cooper, 1999). Much of the domestic debt was short-term whose maturity averaged 11 months, which meant constant rolling over of the debts and increasing the vulnerability of the government to short-term changes in the capital markets (Buchs, 1999).

The tax regime and the emergence of a "virtual economy" in the country increased its vulnerability to a financial crisis. Analysts have suggested that the tax regime used at that time was inefficient, which deprived the government of the much-required revenues. The unduly burdensome tax administration system, constant changes on the regulations associated with the implementation of the regime, and tax exemptions on the favored sectors of the economy reduced the potential revenue (Cooper, 1999). Moreover, the cooperation in the maintenance and financing of the government debt between the government and FIGs led to a steady reduction of tax obligations of the major businesses owned by the oligarchs. The division of authority in the collection of tax among the federal, regional, and local authorities created conflicts and ambiguity in tax administration, which made compliance a challenge.

Some analysts suggested that the fundamental problems in the structure of the economy would have prevented the government from reducing its fiscal deficit, despite reforms on the tax regime. For instance, some experts have discussed the issue of a “virtual economy” in the country. The emergence of a virtual economy meant that many people relied on barter and other non-monetary forms of exchange in place of currency (Gaddy & Ickes, 1998). For instance, more than 50% of payments in the industrial sector involved barter while the government received approximately 40% of its tax revenues through non-monetary payment in 1997. Consequently, this virtual economy made tax collection a problem and increased the reliance on unrealistic projections of revenues and expenditures owing to the inefficient tax collection regime. As such, the high government debt and a failed system in tax collection increased the susceptibility of the country to a financial crisis. The fact that some of the government debt was maturing in 1998 exacerbated the seriousness of the problem.

According to Krugman’s first-generation model, governments finance their deficits through seigniorage (printing of money) or through depletion of their reserves in foreign currency (Krugman, 1979). However, Russia faced challenges in financing its deficit through printing money because it relied on a fixed currency peg. Low revenues, high deficit, and increasing interest payments increased the pressure on the exchange rate. Therefore, seigniorage would have increased the pressure because the private sector would still trade rubles for foreign currency under the fixed rate. Therefore, Russia had only one option (depletion of its reserves) because it could not cover its deficit through printing rubles.

Fiscal markets, monetary policy and interest rates also played a crucial role in the emergence of the crisis. Indeed, Goyal and Sarkar (2014) suggest that the Russian economy was primed for the currency crises during the summer of 1998. The central bank intervened through decreasing the supply of money and increasing the lending rates for banks from 30% to 150%. The increment occurred in May when the stock market had lost approximately 39% of its value. First, the increase in interest rates exacerbated the revenue shortage problem the government was facing leading to fears about currency devaluation. Second, firms were dissuaded from acquiring loans to fund

their activities by the high interest rates that had been imposed to cover the increasing government deficit. The increase in interest rates did not provide additional capital available for lending to the private sector. Concurrently, the government had extremely low foreign reserves to continue defending the currency through the purchase of rubles.

The three factors discussed above motivated the expectations of an impending currency devaluation and default. Investors had become more conscious about the likelihood of a crisis in Russia after the occurrence of the financial crisis in East Asia. Moreover, public relation errors fueled perceptions of a looming political crisis within the government. The revenue shortages motioned a possible reduction of the debt burden through increasing the supply of money. The monetization of debt can be linked to the depreciation through an increase in the anticipated inflation or reduction of the burden of the ruble-dominated debt. As such, the three factors discussed above pushed the economy from the stable equilibrium it was achieving to a vulnerable speculative attack that culminated in the financial crisis.

The value of GKO debt held by non-residents created a fragile situation. Moreover, it is evident that short-term foreign debt plays a critical role in the emergence of financial crises. The lack of limitations on outward capital flight meant that Russia faced significant vulnerability to a turnaround in investor confidence (Sutela, 2000). While the debt stock involved short-term loans, the need to maintain pace with maturity issues and meeting interest payments that kept surging implied a net financing had to decrease. In this case, the net financing declined to less than 10% in 1997 and 0% in 1998 up from 85% in 1993. While the country required more than 50% of its revenues to service the debts, it did not have adequate mechanisms to ensure the collection of adequate revenue to sustain this deficit.

The appetite for borrowing among Russian banks played a mediation role in the emergence of the crisis. For instance, 30% of the revenues in the banking sector emanated from government sector in 1997 but declined to 15% in 1998 (Dmitriyev & Surkov, 1999). The market characterized high domination by the large Moscow-based banks. Therefore, more than 60% of the small banks

held less than 2% of the assets in GKO. The state-owned Sberbank owned up to 40% of the GKO assets. However, the bank did not direct most of the savings to investment but channeled them to the financing of the deficit in the public sector.

While currency mismatches appeared on the banks' balance sheets, the government maintained little link with the banks and allowed them to collapse rather than offer bailout packages. The Russian commercial banks were relatively smaller than the Mexican and East Asian commercial banks. Sberbank held more than 75% of the household deposits under an implicit deposit guarantee. However, the banks seem to have played a marginal role in the emergence of the crisis from a financial liberalization perspective. The banks acted as a sovereign risk because they acted as a funnel to the sovereign debt market. The exposures of the banks includes panics and run on deposits, exchange rate and devaluation risk, rollover from maturing syndicated loans, and default risk on the dollar-dominated debt (Pinot & Ulatov, 2010).

The domination of the debt by foreign currency exacerbated the issues. The net inflow of foreign currency increased from BUSD 2 in 1996 to approximately BUSD 7 in 1998. Local banks, companies, and governments had unlimited access to the international markets. Consequently, the non-sovereign debt had increased to BUSD 31.7 in 1998 with most of the corporations financing their activities through dollar-dominated liabilities. Often, the banks borrowed and lend in foreign currency because the quality of domestic currency loans was extremely low (Sutela, 2000).

Similar to crises that have occurred in other emerging markets, the Russian crisis also indicates the role of capital inflows in financial crises. The reforms adopted before 1998 had led to significant success in the privatization of government-owned firms and economic stabilization. Nevertheless, projections did not indicate signs of sustainable growth rates from the efforts. Capital continued flowing into the country because of asset play in the country, despite the macro-micro misalignment. Figure 6.2 illustrates the capital inflows in relation to foreign exchange reserves and stock market value between 1996 and 1998.

	1996	1997				1998			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current account, \$ mln	10847	2823	-714	-1503	-687	-2957	-3637	775	6038
Net portfolio inflows, \$ mln ^{a/}	4411	6089	8020	2042	1338	4238	3900	928	-448
<i>of which:</i>									
GKO/OFZ	1613	4013	4789	1859	220	3098	-331	-2267	-862
Eurobonds	1004	1229	1987	98	369	689	4097	2318	-140
Equity	2035	424	307	372	194	25	33	-20	666
Other portfolio inflows, net	-241	422	936	-287	555	425	101	898	-112
Other capital flows, net, \$ mln ^{b/}	-19292	-7117	494	-2829	-7891	-2375	-882	-4569	-7426
Reserves, \$ bn ^{c/}	15.3	16.5	24.5	23.1	17.8	16.9	16.2	12.7	12.2
RTS index ^{d/}	201	301	419	498	396	326	151	44	59

Source: CBR, authors' calculation

^{a/} Includes both private and public sector.

^{b/} Includes errors & omissions, “-“ equals outflow.

^{c/} CBR gross reserves, including gold.

^{d/} Official index of the Russian stock exchange, end of period, dollar-based.

Table 6.2: Capital Inflows, Foreign Exchange Reserves and the Stock market, 1996-98

Source: IMF; Pinto, B., & Ulatov, S., 2010

The table reveals evidence regarding the effect of improved market sentiment and financial liberalization. The GKO market experienced more than 300% growth in portfolio inflows between 1996 and 1997. Consequently, this led to the growth in reserves, which was followed by a boom in the stock market as illustrated by the RTS index in Table 6.2. For the first two quarters of 1997, capital flight and purchase of dollars decreased for the first time. However, the spillover of the East Asian crisis had reversed the situation dramatically in the last quarter of 1997. The sharp decline in capital inflows into the GKO market meant increasing capital flight and decline in reserves and stock market value.

Chapter 7

Model

We start by creating an optimization model of currency substitution can be derived applying the set up by Obstfield (1996) model. From a definitional perspective, a domestic agent's total money for purposes of asset holding, M , comprises of the domestic currency and foreign currency, M_1 and M_F respectively,

$$M_t = M_{1t} + \epsilon M_{Ft},$$

in which ϵ represents the nominal exchange rate for time t . The optimal allocation of money holding can be computed as the dynamic optimization issue. Based on Obstfield (1996) model, a money-in-the-utility-function model with a log-linear utility component of the balance can be used in this case. With the assumption of a small open economy, the representative agent maximizes the following utility:

$$U_t = \sum_{s=t}^{\infty} \rho^{s-t} \left[\theta u(C_s) + \gamma \log \left(\frac{M_{1s}}{P_s} \right) + (1 - \gamma) \log \left(\frac{\epsilon M_{Fs}}{P_s} \right) \right], \quad (7.1)$$

where $u(C)$ is instantaneous utility derived from consumption while ρ is the discount factor.

θ and γ represent utility parameters while P_t represents the price levels. Therefore, the agent can accumulate foreign bonds and two forms of monetary assets. The optimal consumption and demand for money could be determined through maximization of Equation 9 subject to the following budget constraint.

$$B_{t+1} + \frac{M_{1t}}{P_t} + \frac{\epsilon_t M_{Ft}}{P_t} = (1+r)B_t + \frac{M_{1t-1}}{P_t} + Y_t - C_t - T_t,$$

where B represents the assets or foreign bonds. Y and T are exogenous income and lump-sum tax, respectively. For the derivation of a tractable solution, we can assume that no consumption titling effect $(1+r)\rho = 1$. As such, the following first-order condition pertinent to C , M_1 and M_F are obtained as shown below.

$$u'(C_t) = u'(C_{t+1}) \quad (7.2a)$$

$$\frac{1}{P_t} \theta u'(C_t) = \frac{1}{P_t} (1-\theta) \gamma \frac{P_t}{M_u} + \frac{1}{P_{t+1}} \rho u'(C_{t+1}) \quad (7.2b)$$

$$\frac{\epsilon_t}{P_t} \theta u'(C_t) = \frac{\epsilon_t}{P_t} (1-\theta) \gamma \frac{P_t}{\epsilon_t M_{Ft}} + \frac{\epsilon_{t+1}}{P_{t+1}} \rho u'(C_{t+1}) \quad (7.2c)$$

The combination of Equation 7.2b and Equation 7.2c eliminates the marginal utility as illustrated as follows:

$$\frac{\epsilon_t M_{Ft}}{M_{1t}} = \Omega_t, \quad (7.3)$$

in which Ω_t is defined as follows:

$$\Omega_t = \left(\frac{1 - \gamma}{\gamma} \right) \left[\frac{\frac{P_{t+1}}{P_t} - \rho}{\frac{P_{t+1}}{P_t} - \rho \left(\frac{\epsilon_{t+1}}{\epsilon_t} \right)} \right]$$

Under the assumption of sticky prices, the devaluation of a currency will lead an agent to switch from the domestic currency holding to the foreign currency holding. Let us consider the preference for foreign currency as a variable, α , in the following manner:

$$M_{1t} = (1 - \alpha_t)M_t, \quad (7.4a)$$

$$\epsilon M_{Ft} = \alpha_t M_t. \quad (7.4b)$$

The preference for foreign currency among the agents is a key variable that ranges from 0 to 1 and activates currency substitution. If $\alpha = 0$, currency substitution would not occur and the agents would hold stock in the domestic currency. Moreover, $\alpha = 0$ can be satisfied by strict capital control and the non-convertibility of the domestic currency. In this case, foreign currency holding would be at 0. Conversely, in case $\alpha = 1$, the agents would be forced of holding assets in the form of foreign currency, which would mean increased reliance on foreign currency. Based on Equations [7.3](#), Equation [7.4a](#), and [7.4b](#), the optimal preference for foreign currency would be derived as follows:

$$\alpha_t = \frac{\Omega_t}{1 + \Omega_t}. \quad (7.5a)$$

Recalling that $\frac{\delta \Omega_t}{\delta \left(\frac{\epsilon_{t+1}}{\epsilon_t} \right)} > 0$, then we can demonstrate that exchange rate devaluation indices currency substitution to a significant extent. However, we should also consider the outcomes of instantaneous price adjustments. Then, let us assume that purchasing power parity (PPP) remains unchanged based on the price adjustments. In this case, we would have $P_t = \epsilon_t P^*$ in which P^*

represents the foreign price level, which could be assumed to be constant. As such, Equation 7.5a yields the following:

$$\alpha_t = \frac{\Omega_t^*}{1 + \Omega_t^*}, \quad (7.5b)$$

where

$$\Omega_t^* \equiv \left(\frac{1 - \gamma}{\gamma} \right) \left[\frac{\frac{\epsilon_{t+1}}{\epsilon_t} - \rho}{(1 - \rho)^{\frac{\epsilon_{t+1}}{\epsilon_t}}} \right].$$

We can denote $\frac{\epsilon_{t+1}}{\epsilon_t}$ as $1 + \lambda_t$, where λ_t represents the devaluation rate. As such, we could illustrate Equation 7.5b as follows:

$$\frac{\delta \alpha_t}{\delta \lambda_t} \equiv \frac{(1 - \gamma)(1 - \rho)\rho\gamma}{[\lambda_t(1 - \gamma\rho) + (1 - \rho)]^2} > 0$$

Faced with depreciation, agents will optimally switch to the foreign currency to maximize their utility, despite the speed of price adjustment. Therefore, a strong preference for the domestic currency would decrease currency substitution and stifle response to devaluation. Conversely, a strong preference for the foreign currency exacerbates the challenges that come along with currency substitution and devaluation of the domestic currency.

Next, we can develop a model for currency crises based on the understanding from previous studies. Employing the conventional money demand, the following equation can be derived.

$$\frac{M_t}{P_t} = L(Y_t, i_{t+1}), \quad (7.6a)$$

in which Y_t represents income and i_t represents the nominal interest rate. A dynamic optimization model of households (Feenstra, 1986; Lucas & Stokey, 1985) can be used to create a

real money demand function. The combination of Equation 4(a) derived earlier and Equation 7.6a yields the following equation:

$$\frac{M_{1t}}{P_t} = (1 - \alpha_t) \frac{M_t}{P_t} = (1 - \alpha_t) L(Y_t, i_{t+1}). \quad (7.6b)$$

We assume that the time α_t is given exogenously. We proceed to log-linearize the first-generation models (Krugman, 1979) using Obstfeld (1996) model to account for an open economy with a currency exchange rate complying with PPP. The model would assume capital mobility and perfect goods market as illustrated in Equation 7.7a and Equation 7.7b as follows:

$$p_t = e_t + p_t^*, \quad (7.7a)$$

$$i_{t+1} = i_{t+1}^* + E_t e_{t+1} - e_t, \quad (7.7b)$$

in which e represents the logarithm of the nominal exchange rate while p denotes the log of price level, P_t , and i denote the interest rate. We then assume that the money demand function follows the continuous-time Cagan Model. Basing on Equation 7.6b, the money market equilibrium condition would take the following form:

$$m_{1t} - p_t = \log(1 - \alpha_t) + \phi y_t - \eta i_{t+1}, \quad (7.8)$$

in which ϕ represents elasticity, while η represents semi-elasticity in the demand for money. The combination of Equation 7.7a, Equation 7.7b, and Equation 7.8 yields the following condition:

$$m_{1t} - \phi y_t - e_t + \eta i_{t+1}^* - p_t^* = \log(1 - \alpha_t) - \eta(E_t e_{t+1} - e_t). \quad (7.9a)$$

Assuming an open economy, the foreign variables would be given exogenously. For simplification of the argument, we could assume that $\phi y_t - e_t + \eta_{t+1}^* = 0$. Consequently, this yields a continuous version of the dynamics for the exchange rates given perfect foresight, as follows:

$$m_{1t} - e_t = \log(1 - \alpha_t) - \eta e_t. \quad (7.9b)$$

The Central Bank plays a crucial role in determining the money market equilibrium, which implies that its role cannot be underestimated in this case. We assume that the government offers domestic bonds to maintain its fiscal deficit as illustrated. Therefore, Equation 7.10 below represents the balance sheet of the Central Bank, which depicts the Bank's monetary base.

$$B_H + \epsilon A_F = MB, \quad (7.10)$$

where B_H is the domestic government bond ownership while A_F is the foreign asset holding. The monetary base of the Central Bank would be $M_1 = \mu MB$, where $\mu > 1$ is the money multiplier. As such, Equation 7.10 yields the following function:

$$M_1 = \mu(B_H + \epsilon A_F). \quad (7.11)$$

The function implies that the monetary base at any one time is equivalent to the sum of the Bank's domestic bond ownership and foreign asset holding multiplied by the money multiplier. The money multiplier plays a role in determining the timing of currency collapse in that if $\mu < 1$ or negative, the Bank would have a negative monetary base or it will have run out of the domestic currency.

Next, we can derive the equations for the collapse of a fixed exchange regime based on the previous equations. Based on Equation 7.9a, we can determine that the fixed exchange rate generates

the following result, since the nominal exchange rate is replaced by the fixed exchange rate leading to the loss of the function ηe_t .

$$m_{1t} - e_t = \log(1 - \alpha_t). \quad (7.12)$$

Let us assume that the Central Bank has to finance an increasing fiscal deficit through the purchase of government bonds, which, in turn, increases its nominal holdings in the domestic debt, B_H . In case the domestic bond stock has a constant growth rate at λ , then we would have the following condition. In this case, $\dot{B}_H$ represents the cumulative domestic government bonds. In this case, the government would experience a shortage in the foreign reserves if the condition $\mu < 1$ is fulfilled.

$$\dot{B}_H = B_H \lambda. \quad (7.13)$$

Using the first-generation model by Krugman (1979), we can deduce the shadow exchange rate assuming a flexible regime and non-existence of foreign reserves ($A_F = 0$). The balance sheet for the Central Bank as deduced in Equation 7.11 would imply the following:

$$m_{1t} = \log \mu + b_{Ht}, \quad (7.14)$$

where b_H represents the logarithm of the bank's bond holding. The combination of Equation 7.13 and Equation 7.14 reveals that the money supply would increase at a constant rate λ following the collapse of the fixed exchange rate. Moreover, based on Equations 7.9a and 7.9b, it could be suggested that the collapse of the fixed exchange rate leads to a balanced growth path. As such,

the combination of Equation 7.9a and Equation 7.14 yields the following:

$$b_{Ht} - e_t = \log(1 - \alpha_t) - \log \mu - \eta\lambda. \quad (7.15)$$

Subsequently, we can deduce the log of the exchange rate, which represents the floating exchange rate that prevails after the collapse of the fixed exchange rate regime as follows:

$$e_t = b_{Ht} + \log \mu - \log(1 - \alpha_t) + \eta\lambda. \quad (7.16)$$

As such, $\frac{\delta e_t}{\delta \alpha} > 0$. This indicates that currency substitution emanating from increased appetite for borrowing in the form of foreign currency induces the devaluation of the domestic currency over time. Consequently, this would lead to the collapse of the fixed peg, even after we control for the macroeconomic fundamentals. Based on Equation 7.12, the path to the collapse of the fixed exchange rate could be derived as follows:

$$b_{Ht} = B_{H0} + \lambda t, \quad (7.17)$$

where b_{H0} represents the initial value of bond holding by the Central Bank. Combining Equation 7.16 and Equation 7.17, we derive the time that elapses for the collapse of the fixed exchange rate after controlling for the fundamentals:

$$T = \frac{e - b_{H0} - \log(1 - \alpha_t)}{\lambda} - \eta. \quad (7.18)$$

Consequently, $\frac{\delta T}{\delta \alpha} < 0$. In this case, the equation reveals that the vulnerability of the currency relates to the timing of the crisis occurrence.

A high degree of currency substitution leads to the shrinkage of the domestic currency demand

as revealed in Equation 7.6b. A decline in the demand for the local currency raises the equilibrium price level when we consider the rise in the money flow into the economy. Based on Equation 7.6a, it can be shown that the increase in price levels causes an ultimate devaluation of the local currency, which precipitates a currency crisis. While the devaluation would lead to the growth in the supply of the domestic currency, it would also trigger capital flight because of the associated low levels of interests that the agents would acquire when investing using the domestic currency. In this case, highly vulnerable that function under a fixed peg tend to depreciate systematically because of the currency substitution effects that occur after financial liberalization, which often leads to a currency crisis.

Speculative attacks in the absence of strong policies could be derived theoretically based on the previous literature. The implication of the model derived is that strong currency substitution because of increased capital inflows in the form of foreign currency leads to the devaluation of the domestic currency and, ultimately, a financial crisis. Essentially, this would occur even in the presence of a judicious fiscal policy and economic fundamentals. The analysis is founded on the premise that currency is an asset with a utility function, despite the motive for holding the currency. A speculative attack on the currency leads to financial capital flows (hot money), which is a special case of currency substitution.

In a free market in which devaluation could occur offers a one-way option for the holders of soft currency. In this case, they substitute the soft or vulnerable currency with the hard currency to gain in case devaluation of the soft currency occurs. For instance, it could offer a way for fund managers to borrow the soft currency by leveraging dollar-based assets into the domestic currency loan and converting the loans into dollars. In turn, this drains the foreign reserves held by the central bank, which creates a self-fulfilling currency crisis. In case of devaluation of the domestic currency, the foreign investor can easily withdraw the capital and invest it in another attractive country, which leads to massive capital flight. The process depends on the advantages offered by a free currency market that allows easy conversion of the vulnerable currency to a harder currency (dollar), which increases the asset-demand for the dollar asymmetrically, and motivates the devaluation of the

former.

As illustrated in the literature discussed earlier, most of the hot-money-associated capital inflows involve short-term deposits. Therefore, the reversal of the inflows results in bank insolvencies and failures. The government could choose to avert an overheated credit increase in the financial system through insulating it from short-term inflows of hot money. However, this would require high foreign currency reserves, which would have been depleted by the high demand from the investors. While this inflicts a liability on the system and leads to the dis-intermediation of the flow of capital, it benefits the system through reducing its exposure to the risks associated with a sudden shift in capital flows.

Moreover, a conservative monetary and fiscal policy would enable the vulnerable currency to evade devaluation motivated by currency substitution. For instance, the tightening of the monetary policy through targeting reserve requirements would play a significant role in preventing a currency crisis. The verification of the argument depends on the lower money multiplier that tends to delay the collapse of the fixed exchange rate regime because $\frac{\delta T}{\delta \alpha} < 0$. In the backdrop, we are reminded that the money multiplier is expressed as follows:

$$\mu = \frac{c + 1}{c + r_D + d},$$

where c , d , and r_D represent the currency-deposit ratio, the excess reserve-deposit ratio, and the required reserve ratio, respectively. Consequently, this implies that increasing the reserve requirements for commercial banks would delay the crises associated with a balance of payment.

Indeed, reserve requirements have been found as an effective reform and adjustment device to avoid hot money (Cole & Slade, 1998). In most of the historical crises discussed earlier, the countries experienced problems in the financial sector partly because of the low reserve requirements that motivated engagement in risky projects in non-tradable sectors. Imposing high capital-to-risk-asset ratios would lead to banks and investors holding relatively low-risk assets.

Chapter 8

Concluding Remarks

Following the East Asian Crisis in 1997, it was observed that close ties between the financial sector and the political elites create bailout expectations, which motivate overvaluation in asset pricing and excessive borrowing. Moreover, the other crises in Mexico and Russia reveal that financial liberalization exposes the economy to increased inflow of hot money, especially in the absence of effective fiscal and monetary policies. The macroprudential perspective posits that risks are endogenous in that they emanate from the behavior of the financial system. On the other hand, the microprudential perspective assumes that the risks are exogenous, involving a multiplicity of players and actors.

The discussion and analysis in the paper through the theoretical model created suggests the importance of both macroprudential and microprudential perspectives. From the macroprudential perspective, it would be argued that the actions of individual institutions could mitigate the risks that the economy would face. For instance, financial soundness of the activities of the banking sector could shield the economy from the risks that emanate from financial liberalization. The use of the macroprudential perspective would help in the identification of the vulnerabilities the economy faces and trigger policy responses. Essentially, this indicates the role of financial instability

and risk perceptions of the financial system. However, considering risk as exogenous from the microprudential perspective, the rational actions of individual institutions may have undesirable aggregate outcomes. For instance, even if a firm tightens the risk limits and credit standards, the existing economic fundamentals could lead to the liquidation of the assets because of the precipitation of business, which creates an additional burden for the firm.

The analysis, alongside the discussion of the historical crises, reflects the importance of the microprudential approach in understanding the occurrence of crises. The first issue that springs entails the role played by incentives in risk perceptions. Essentially, government guarantees create a low level of risk perception among investors. Indeed, this was perceived as the case in Thailand and Russia because many investors believed that the government would bail them out in case of a crisis as it happened in Mexico. Essentially, these perceptions have an amplification effect because they disregard the importance of the initial shocks that precipitate to the crisis. While the financial system is highly vulnerable in a newly liberalized economy, it is likely that the disregard for the initial shocks among investors, for instance, changes in interest rates, blind them from considering the outcomes of their activities. As illustrated in the model, the structure of illiquid portfolios associated with hot money creates a threat of deposit runs and depletion of foreign reserves.

However, the common exposures based on the macroeconomic fundamentals surpass the effects of risks posed by individual institutions. Essentially, macroeconomic fundamentals include the policy instruments implemented to attract capital. The financial crisis that arises based on the macroeconomic fundamentals or risk factors involve the combined roles of the private and public sectors. Essentially, this reflects the importance of mismatches between the foreign and domestic currencies, as illustrated in the case of the Russian crisis in 1998. The failure to tighten credit standards, alongside political issues such as corruption and lack of a clear policy direction after financial liberalization, leads to increased risk because of the mismatch between the investor expectations and the government's actions.

The model derived in this paper reveals that the vulnerability of the domestic currency increases

the rate of currency substitution. Consequently, this leads to the conversion of the domestic currency to foreign currency, which depletes the foreign reserves held by the Central Bank. In such a situation, increased appetite for the foreign currency creates excessive supply of the domestic currency and shortage of the foreign reserves, which leads to inflation. Consequently, the response of the Central Bank would be through seigniorage, which is untenable in case of a fixed currency exchange regime. As such, this imbalance created condition for the devaluation of the domestic currency, which precipitates a currency and financial crisis.

Chapter 9

Appendix

There are two approaches to calculating hot money: a direct method and an indirect method. The direct method uses data for specific variables that define hot money, namely net errors and omissions and the net flows of non-FDI, non-portfolio investment assets and liabilities; while the indirect method calculates hot money as a residual of changes in foreign reserves and net flow of FDI and trade balance. (Zhaoa, de Haan, Scholtens, and Yang (2013))

Guo and Huang (2010) follow Martin and Morrison (2008) and Zhang and Fung (2006) in measuring hot money, using the indirect method. In particular,

$$\text{Hot Money}_{\text{Indirect}} = \Delta \text{Foreign Exchange Reserves} - \text{Trade Balance} - \text{Net FDI}.$$

Rzepkowski (2004), Tung and Baker (2004), Genberg et al., (2005), Prasad and Wei (2007), and Bouvatier (2010) incorporate the direct method in their papers. Formally:

$$\text{Hot Money}_{\text{Direct}} = \text{Portfolio investment} + \text{Other investment} + \text{Errors and omissions}.$$

The argument for including ‘Other investment (OI)’ is that Chinese depositors and banks alike manage foreign assets, and the respective transactions get recorded under *OI*. Although, as Bouvatier (2010) notes, official figures with respect to *OI* can be misrepresentative. In one example, in December 2003, the PBC had used US\$45 billion of its international reserves to recapitalize two state-owned commercial banks. Due to the double-entry bookkeeping, the transaction was debited in the subsection *OI*. As a result of similar activities in 2003, the net *OI* inflows recorded US\$5.89 billion in 2003, when in fact it represented US\$39.11 billion in the same year. (Bouvatier, 2010).

As for the variable ‘Errors and omissions (*EO*)’, it is included because some hot money inflows escape regulatory controls. For example, between 2003 and 2004 (which is the first year after China had initiated the QFIIs program)¹, *EO* increased from US\$18.42 billion to US\$27.05 billion in 2003 and 2004, respectively.

¹check Chapter 1 for a discussion on the pivotal year of 2002-2003

Chapter 10

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