

**Exchange rate policies in developing countries: the cases of  
Vietnam and Mozambique.**

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# **I Introduction**

In literature, it is acknowledged that different type of exchange rate arrangements are appropriate for different countries depending on their size of market, structural characteristics, high trade exposure, economic dependence on a small number of industries, geographic concentration of trade, etc. For a developing and open country, issues related to exchange rate play an important role in managing the economy. Especially for economies that are in transition, in process of establishing market institutions, striving for trade liberalization, and gradually opening of the capital account, setting appropriate exchange rate regime at various stages of development is crucial.

Vietnam and Mozambique are developing economies in transition to market-oriented ones. The managing exchange rate in the environment of getting integrated into international economy is new and complicated for both economies. Therefore, studies on essence of choice of exchange rate regime, the dynamics of these choices in the course of development, and the impact of each regime on the effectiveness of other economic policies such as monetary policy and fiscal policy, are necessary for managing exchange rate and guiding towards future appropriate exchange rate strategies.

In this paper, we first explore deeply literature on theories on exchange rate for developing countries. These theories give us necessary understandings on exchange rates and managing exchange rate: the determined factors in a developing country's choice of exchange rate regime; the convergence of these choices in long-run; why developing countries prefer a sticky exchange rate to a floating one; interaction between exchange rate policy and monetary policy and fiscal policy. In the section III we consider the experience of Vietnam in managing exchange rate over the period of renovation 1989-2010. Vietnam adapts the approach of learning-by-doing in managing exchange rate. Over the twenty years, Vietnam economy and its institutions have changed fast from a central-planning economy to a market economy. The State Bank of Vietnam has learned and adapted successfully market institutions and measurement in managing of exchange rate in Vietnam. The successes and failures of Vietnam in managing exchange rate during the course of development should be a good lessons for other developing economies.

Mozambique, adopt a flexible exchange rate regime since 1994 and exchange rate has been quite volatile. While some years have witnessed huge currency appreciation, others have been characterized by huge depreciation episodes. These fluctuation was regarded by Mozambican government as being caused by external factors and, therefore, out of its control. This argument entails at least the idea that, the exchange rate volatility in Mozambique is driven mostly by external factors, as if domestic policies had no significant role in stabilizing the value of the currency. While this may be true, it was not yet confirmed by solid evidence. So the following questions still need to be answered. Are

the Mozambican exchange rates volatility mostly driven by internal or external shocks? How is the role of such shocks evolving over time? Do domestic policies have a role in stabilizing the exchange rate? We explore these questions in section IV.

## **II Theories on exchange rate for developing countries**

### **II.1 Mundell-Fleming Model**

The **Mundell-Fleming model** is an economic model first set forth by Robert Mundell and Marcus Fleming. The model characterizes the relationship between nominal exchange rate and economy's output in the short run. In essence, theories on exchange rate regime (ERR) choice based mostly on this fundamental model. The model states that, given rigid prices in the short-run states cannot sustain the conditions of high capital mobility, fixed exchange rate, and monetary-policy autonomy simultaneously. This principle is frequently called the "impossible trinity". In this section we briefly describe the model for small economy.

#### **II.1.1 General setting**

The model assumes that prices are rigid in the short-run in domestic and in international market. Domestic output is demand-determined, and thus increases in the money supply produce increases in the nation's output. In financial market, securities in different countries are assumed to be perfect substitutes. The investors will try to engage in financial arbitrage, selling securities with lower interest rates to buy securities with higher interest rates for maximizing profit. These activities, on the one hand, push down the price of securities of lower interest rates, on the other hand raise price of securities of higher interest rates. The movement in prices reduces return (interest rate) of securities with higher interest rate and increases return of those with lower ones. Arbitrage ceases when interest rates become equivalent given existing exchange rates and investors cannot exploit interest rate differentials.

##### **a. Goods market**

The equilibrium on the goods market give:

$$Y = C + I + G + X - Z \quad (1)$$

Where X is real value of exports, Z is real value of imports. Exports and imports are functions of exchange rate, relative domestic prices to international prices. Further more exports depend on foreign income and imports depend on domestic income. Specifically:

$$\begin{aligned} X &= X\left(e \frac{P^*}{P}, Y_w\right) = X(e^r, Y_w) \\ Z &= Z\left(e \frac{P^*}{P}, Y\right) = Z(e^r, Y) \end{aligned} \quad (2)$$

Where  $P^*, P$  are international and domestic price level respectively.  $e^r = e \frac{P^*}{P}$  is real exchange rate or domestic competitiveness.  $Y_w, Y$  are real world income and domestic income respectively. Economic theories give:  $\frac{\partial X}{\partial e^*} > 0, \frac{\partial Z}{\partial e^*} < 0, \frac{\partial X}{\partial Y_w} > 0, 1 > \frac{\partial Z}{\partial Y} > 0$

$G$  is exogenous variable,  $G = \bar{G}$ . Consumption determined by disposable income  $Y - T$  and expected real interest rate  $i - E(\pi)$ . Investment is determined by expected real interest rate and output in previous year:

$$C = C(Y - T, i - E(\pi)) \quad (3)$$

$$I = I(i - E(\pi), Y_{-1}) \quad (4)$$

The relationship between interest rate, income with consumption and investment can be described as:  $\frac{\partial C}{\partial i} < 0, \frac{\partial I}{\partial i} < 0, \frac{\partial C}{\partial (Y - T)} > 0, \frac{\partial I}{\partial Y_{-1}} > 0$

Where  $T$  is taxes,  $E(\pi)$  is expected inflation,  $Y_{-1}$  is GDP in the previous year, and  $i$  is interest rate.

The equilibrium in the goods market gives the equation of IS curve:

$$Y = C(Y - T, i - E(\pi)) + I(i - E(\pi), Y_{-1}) + G + X(e^*, Y_w) - Z(e^*, Y) \quad (5)$$

Notice that IS curve is downward sloping and  $\frac{\partial Y}{\partial e^*} > 0$ .

### ***b. Monetary market***

On the monetary market, denote  $M$  as nominal money supply, the real money balances is:

$$\frac{M}{P} = L(i, Y)$$

and real money supply  $\frac{M^s}{P} = \frac{\bar{M}}{P}$ . The equilibrium in monetary market gives the equation for LM curve:

$$\frac{\bar{M}}{P} = L(i, Y) \text{ and } \frac{\partial L}{\partial i} < 0, \frac{\partial L}{\partial Y} > 0 \quad (6)$$

### ***c. Balance of Payment***

The overall balance of payment:

$$BP = CA + KA \quad (7)$$

Where  $CA$  is current account;  $KA$  is capital account;  $BP$  = balance of payment surplus.

$$CA = X(e^*, Y_w) - Z(e^*, Y) \quad (8)$$

Capital flows are assumed to respond to interest rate differentials between domestic and foreign currency dominated assets.

$$KA = \begin{cases} z(i - i^*) + k, & \text{if } |i - i^*| \geq \Delta \\ k, & \text{if } |i - i^*| < \Delta \end{cases} \quad (9)$$

Where  $z \geq 0$  is sensitivity of international capital flows or level of capital mobility<sup>1</sup>;  $i^*$  is the world interest rate,  $k$  is capital investments which is exogenous and not related to  $i$ .  $\Delta$  is the threshold for capital mobility. If the differential of interest rates is below this level it cannot trigger the capital flow.

The overall equilibrium of BoP requires:

$$\begin{cases} X(e^*, Y_w) - Z(e^*, Y) + z(i - i^*) + k = 0, & \text{if } |i - i^*| \geq \Delta \\ X(e^*, Y_w) - Z(e^*, Y) + k = 0, & \text{if } |i - i^*| < \Delta \end{cases} \quad (10)$$

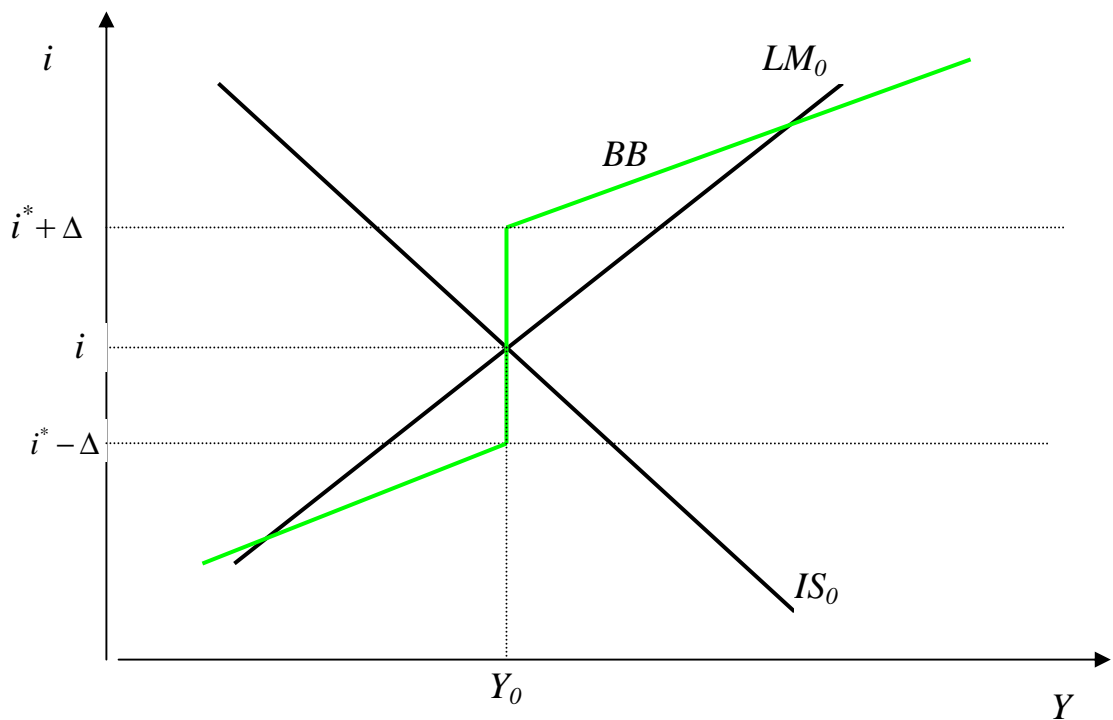
$$i = i^* + \frac{Z(e^*, Y) - X(e^*, Y_w) - k}{z} \quad \text{if } |i - i^*| \geq \Delta$$

This equation defines BB (Balance of payment equilibrium) schedule and  $\frac{\partial i}{\partial e^*} < 0$ .

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<sup>1</sup> When investors face legal or practical obstacle to financial trading the capital is immobile.

**Figure 1: The equilibriums in goods and monetary markets and Balance of payment**



The intersection of the IS-LM curves establishes internal equilibrium while the BB curve establishes external equilibrium. Normally the external equilibrium and internal equilibrium should be coincided (



Figure 1). If they are not then either the currency must appreciate or depreciate; or central bank must intervene to stabilize the currency.

Notice that, if  $z \rightarrow 0$ , the capital mobility almost zero, domestic interest rate is independent on changes in international interest rate. The state of that economy can use interest rate as a policy tool to intervene in the economy. The intervention mechanism is described under IS-LM model. If the exchange rate is floating, it will be determined by the flows of imports and exports. An increase in interest rate reduces money supply which shift LM curve backward. In short-run imports decline while exports are intact, then result in appreciation in exchange rate ( $e^* \downarrow$ ). In this case if the state would like to fix exchange rate, central bank has to buy surplus of foreign currency, whereby money supply increases. Consequently, the effectiveness of increasing interest rate is cut down.

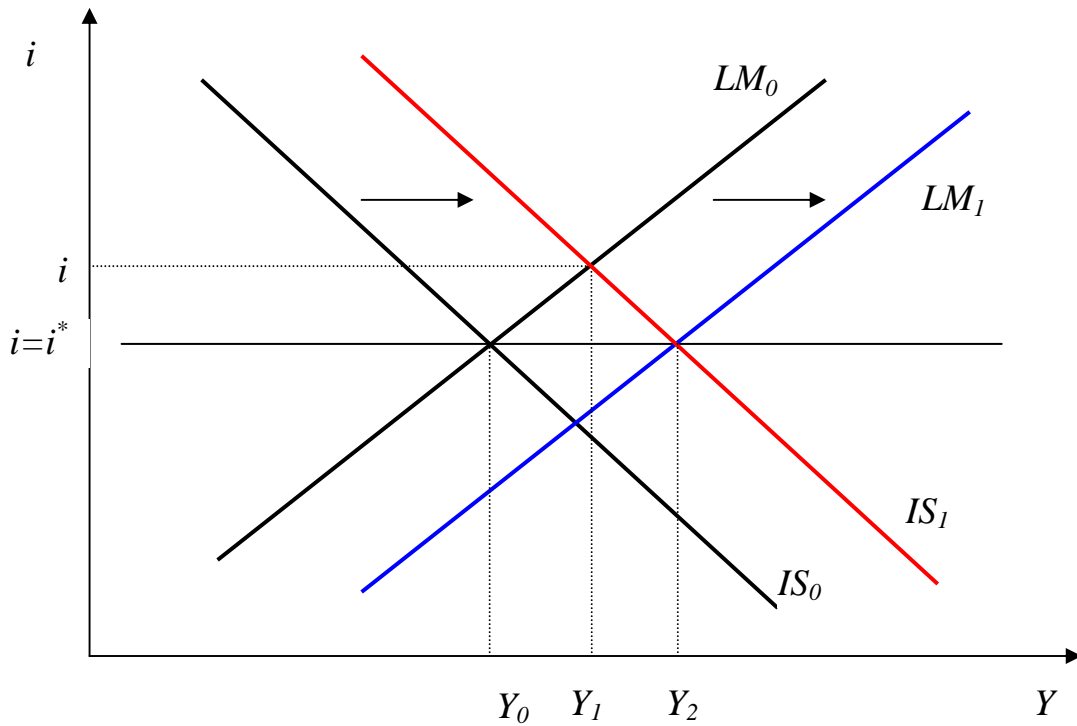
### **II.1.2 Capital mobility is perfect**

If  $z \rightarrow \infty$ , and  $\Delta = 0$  the capital mobility is perfect, the BB line is horizontal  $i = i^*$ , the state cannot use interest rate as a policy tool to intervene in the economy. In the following we consider the effects of fiscal policy and monetary policy under perfect capital mobility.

#### *Fixed exchange rate and expansionary fiscal policy.*

The expansion of fiscal policy shifts IS right (equation 5), output and interest rate increase. Higher interest rate induces capital inflow, creates balance of payment surplus (equation 9) and upward pressure on currency. In order to keep exchange rate fixed, central bank intervenes in foreign exchange market by buying excess foreign currency. This activity piles up foreign exchange reserves and increase domestic currency supply (equation 6) which pushes interest rate down. As a result, output increases further and interest rate declines back to its original level (Figure 2). By contrast, a tightening fiscal policy effectively reduces output in opposite direction.

#### **Figure 2: Expansionary fiscal policy under fixed exchange rates**



Hence, fiscal policy under fixed exchange rates and perfect capital mobility is very powerful because it forces monetary policy to be fully accommodating.

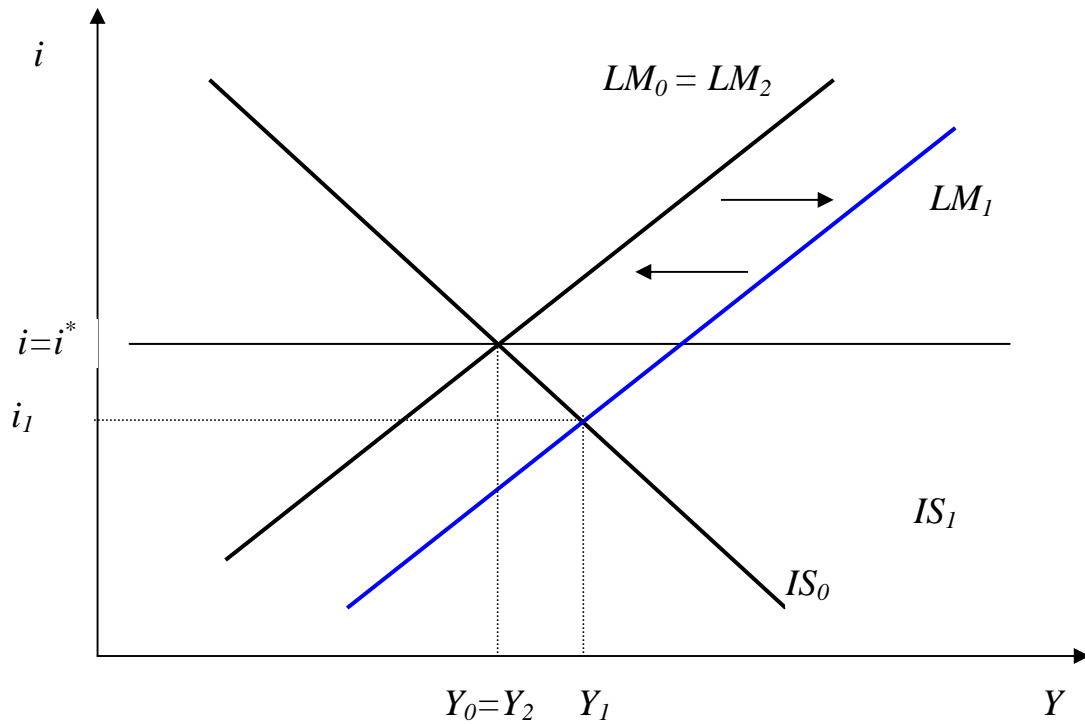
#### *Fixed exchange rate and expansionary monetary policy*

Expansionary monetary policy<sup>2</sup> shifts LM curve to the right (equation 6) which reduces the interest rate and increase output. Lower interest rate induces capital outflow, hence creates balance of payment deficit and downward pressure on currency. The central bank has to intervene into the foreign exchange market by selling foreign exchange and results in cutting back money supply. Finally, money supply gets back to its original positions. The expansionary monetary policy under fixed exchange rates and perfect capital mobility is completely ineffective (Figure 3). The similar result if the state tightens monetary policy, it is completely ineffective. It means that one state cannot maintain free capital mobility, fixed exchange rate and autonomy<sup>3</sup> of monetary policy simultaneously. This is called “impossible trinity” in economic literature.

**Figure 3: Expansionary monetary policy under fixed exchange rate.**

<sup>2</sup> Expansionary monetary means the state intentionally increase money supply either directly or indirectly by decreasing interest rate.

<sup>3</sup> When a state can raise or lower interest rates without corrections from financial markets, that state has “autonomy” or control over its monetary policy.



#### *Flexible exchange rate and expansionary fiscal policy*

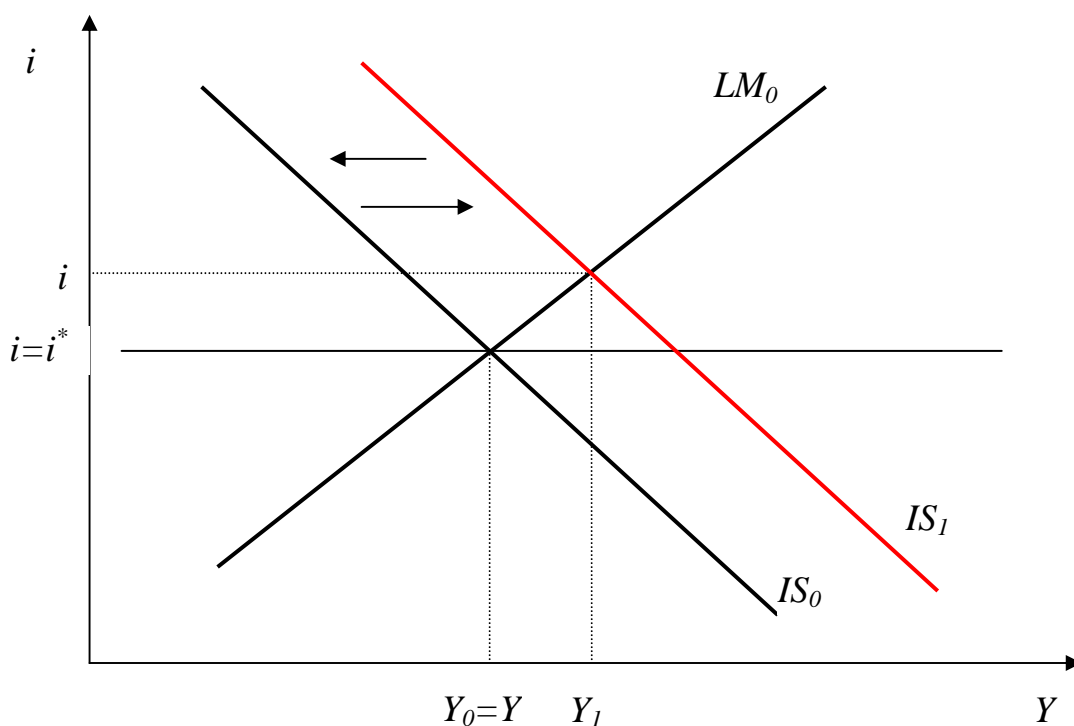
The expansion of fiscal policy shifts IS rightward; output and interest rate increase. Higher interest rate induces capital inflow, creates balance of payment surplus (equation 9) and currency appreciates. Stronger currency reduces exports and increase imports, hence deteriorates current account (equation 8). Consequently, output declines and IS shift backward to its original position and the result is same output and interest rate (

Figure 4). We have the same result for tightening fiscal policy. The expansionary fiscal policy with flexible exchange rates is completely ineffective; exchange rate affects completely offset fiscal policy changes.

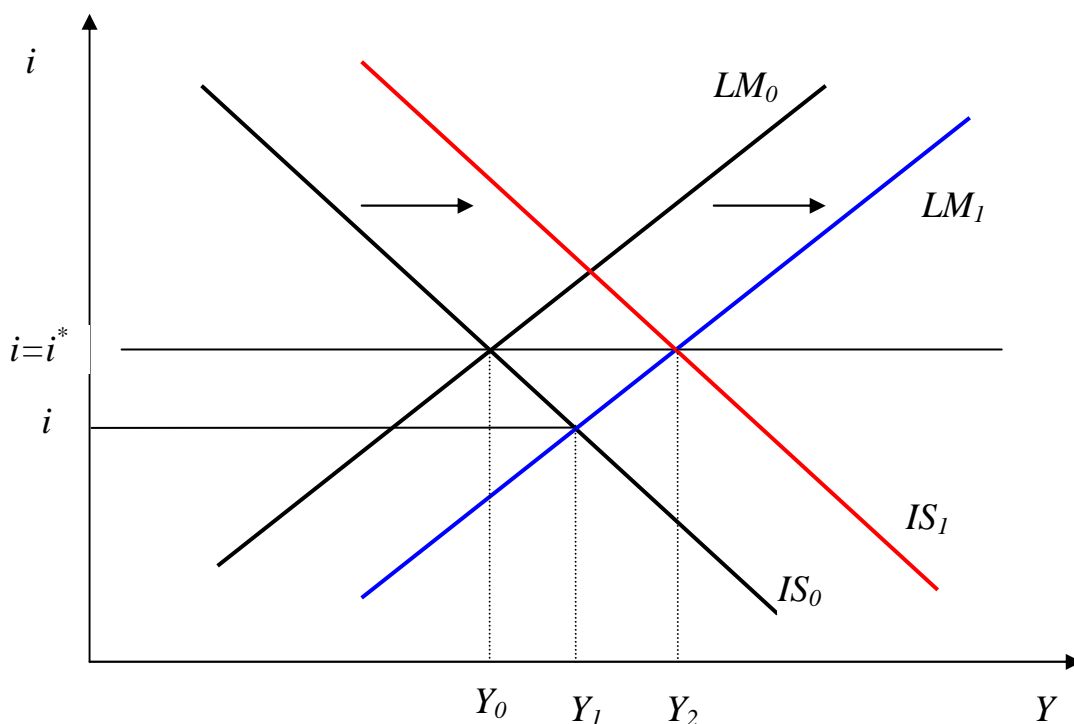
By contrast, the expansionary monetary policy under flexible exchange rates is highly effective. Expansionary monetary policy shifts LM curve to the right (equation 6) which reduces the interest rate and increase output. Lower interest rate induces capital outflow, creates balance of payment deficit (equation 9) and currency depreciates. Weaker currency augments exports and brings down imports. Subsequently, the IS curve shifts rightward. Interest rate gets back to its original level and output increases further (

Figure 5).

**Figure 4: Expansionary fiscal policy under flexible exchange rates.**



**Figure 5: Expansionary monetary policy under flexible exchange rates.**



### **II.1.3 Capital mobility is imperfect.**

In developing countries, the capital mobility is majorly imperfect or capital is partially mobile. If the internal equilibrium lies in inside the band  $(i^* - \Delta, i^* + \Delta)$ , changes in monetary policy or fiscal policy do not cause capital fully flow. Hence exchange rate is unaffected and central bank does not have to intervene. Subsequently if exchange rate is

fixed the expansion of monetary policy is not completely ineffective and the effectiveness of expansionary fiscal policy is not as high as in perfect capital mobility. By the same reason, if exchange rate is flexible the expansion of fiscal policy is not completely ineffective and the effectiveness of expansionary monetary policy is not as high as in perfect capital mobility (More details in Appendix).

The Mundell-Fleming model does not deal with the problem of choice of exchange rate regime (ERR). It clearly describes the role of ERR in macroeconomic policy and the dynamic movement of macroeconomic indicators under different ERR. It also argues that each choice of ERR comes at costs and benefits. The choice of ERR depends on the preference of the state over the set of costs and benefits.

## **II.2 Optimum currency area theory.**

Optimum currency area (OCA) defines the conditions that a group of countries for whom the benefits of price stability associated with fixed exchange rates outweigh any macroeconomic costs such as inflation, unemployment, and trade imbalances. If one country meets these conditions it would have an interest in maintaining some form of fixed exchange rates. If the costs of price of stability is too costly, floating exchange rates is preferable.

Theoretical models (Edison and Melvin, 1990; Tavlas, 1993) identified a number of different variables that underpin the fixed exchange rate regime. Variables such as high trade exposure, economic dependence on a small number of industries, geographic concentration of trade, a small economy, are identified as preferable conditions for fixed or stable exchange rates. By contrast, low trade exposure, a large economy, and diversity in foreign economic partners or economic sectors would make floating preferable.

Empirical studies show the mixed results. Robert Heller (1978), Jacob Dreyer (1978), Gordon Weil (1984) generally confirm the theoretical predictions, especially the trade exposure and geographical concentration of trade correlated with fixed exchange rates. Seppo Honkapohja and Pentti Pikkarainen (1994) employ logit and probit models to predict the ERR of countries as of December 31, 1991. They test models with both binomial (0 or 1) and multinomial (0, 1, or 2) categorization of ERR. Of all independent variables (GDP, GDP per capita, openness to trade, the degree of foreign assets to the money supply, diversification of trade, and terms of trade) only the diversification of commodities traded consistently matter to EER choice. Some evidence indicated that the size of GDP also matters. They concluded that the country characteristics do not matter much for ERR choice at all. The opposite results are presented by Jean-Marc Rizzo (1998) when he focuses on only developing countries. Country characteristics, such as GDP, GDP per capita, geographic diversity of trade, and the rate of inflation consistently demonstrate statistical significance.

It is worth noting that these studies have been claimed as being biased by the difference between the de jure exchange rate regime and the de facto one. The study by IMF (Rogoff and other, 2003) shows that among so-called “floating” regimes only 20 percent were de facto free floats, while 60 percent were either intermediate or pegged regimes, and another 20 percent had freely falling currencies<sup>4</sup>.

### II.3 *Bipolar thesis*

Fixed or floating regime is only two polar of the spectrum of ERR. In between, there are various kinds of regime that presented in Table 1 below:

**Table 1: Exchange rate regime**

Fixed arrangements	a. Currency Unions
	b. Currency Board (dollarization)
	c. Truly fixed exchange rates
Intermediate arrangements	a. Adjustable pegs
	b. Crawling pegs
	c. Basket pegs
	d. Target zone or bands
Floats	a. Managed floats
	b. Free floats

Source: Frankel (1999)

Exchange rate regimes in Table 1 are arranged by degree of flexibility from the top to the bottom. The fixed arrangement includes three classes: currency union, currency board and truly fixed exchange rates. In *currency union* all member economies adopt the one common currency and monetary policy. In the *currency board* the monetary authority is required to maintain a fixed exchange rate with a foreign currency. It maintains absolute, unlimited convertibility between its notes and coins and the currency against which they are pegged (the anchor currency), at a fixed rate of exchange, with no restrictions on current-account or capital-account transactions. In order to ensure that mandate the foreign currency reserves must be high enough (usually 110–115% of the monetary base  $M_0$ ). This policy objective requires the conventional objectives of a central bank to be subordinated to the exchange rate target. The money supply expands or contracts automatically with the state of balance of payment, and there is no role for discretionary monetary policy

<sup>4</sup> Freely falling is defined as countries with inflation rates and depreciation rates are above 40 percent.

including lender of last resort. This policy usually moves up to dollarization and the national currency is finally eliminated and replaced by foreign currency. The truly fixed exchange rate regime is a non-market-driven exchange rate regime, whereby the central bank is committed to buy and sell foreign exchange to maintain a given exchange rate.

The intermediate arrangements or pegs include: adjustable peg under which countries can periodically realign their pegs; crawling pegs in which the peg is regularly reset in a series of devaluation; basket pegs which the domestic currency is fixed in terms of weighted basket of foreign currencies; target zone or band regime in which the authorities take action when the exchange rate hits pre-announced margins on their side of central parity.

Floating exchange rates are divided into: freely floating where authorities do not intervene and allow the exchange rate to be determined by market forces; and managed float where actions is taken to lean against the adverse circumstances.

The demarcating line between fixed and peg arrangements is if the commitment of fixing exchange rate is institutionalized. The line between peg and floating is if there is an explicit target zone around which the authority intervenes (Frankel 2002).

With a rigid fix, a state does not have the option of altering the exchange rate. A current account deficit induces a loss in foreign exchange reserves, the money supply decreases, the economy deflates and interest rate increases. Consequently, the economy imports less. With floating exchange rate, market forces take the role. A current account deficit, the exchange rate would be depreciated which encourages exports and depresses imports. With a peg regime, however, monetary authority can adjust through devaluation or appreciation.

The crucial requirement for implementing peg policy is credibility in management. The central bank's ability to intervene is limited by the amount of foreign reserve and the stability of exchange rate depends on investors' confidence in domestic currency. Lack of investors' confidence, limited central bank's ability could provoke a currency crisis and force the state to abandon the peg. As shown in Mundell-Flemming model, in the context of high capital mobility monetary authority has to make a trade-off between degree of monetary policy autonomy and stability of exchange rate. Since there are limits to the amount of monetary policy autonomy that states are willing to forgo, pegs have limited credibility in the time of capital mobility (Obstfeld and Rogoff, 1995). Furthermore, Goldstein (1995) argues that nowadays, capital control and sterilized intervention have increasingly restricted effectiveness, and there is no effective mechanism to coordinate fiscal policies among states. Subsequently, the problems of price stability, exchange-rate stability, and business cycle increasingly put more pressure on monetary policy. The monetary policy is caught between competing objectives; hence, the commitment to maintaining stable exchange rate is less and less credible.

Eichengreen (1994) argues that governments rely on three policy instruments to contain adverse market pressures: capital controls, interest rate, and international borrowing. Investors can circumvent capital controls, high interest rates can exacerbate unemployment, and foreign borrowing may come with intolerable conditions. This means that as capital mobility grows, maintaining pegged exchange rates becomes more costly. Maintaining peg regime eventually pushes governments into dilemma: adherence to the peg results in bearing down on reserves and interest rates, while adjusting the pegs reduces their credibility. As maintaining the pegs becomes increasingly costly, the states' promise to defend the pegs becomes less credible and the domestic currency is more prone to speculative attack. This eventually increases the risk of currency crisis in economy that peg their currency.

These arguments conclude that pegs are simply unsustainable under increasing capital mobility. This conclusion is also supported by the fact that recent financial crises provoked mostly in emerging economies with pegs: Mexico at the end 1994; Thailand, Indonesia, and South Korea in 1997; Russia and Brazil in 1998; Argentina and Turkey in 2000; and Turkey again in 2001; while emerging economies without pegged rates such as South Africa, Israel, Mexico, and Turkey in 1998 seem immune to crises. The exchange rate regimes are predicted to converge to either the polar of the spectrum: fixed or floating. This is called bipolar thesis or corner solution.

The bipolar view incites policy makers to warn against the use of pegged exchange rate regime. Since early 1990s a growing number of countries that announce to accept it. However these observations do not indicate the real situation. In practice, exchange rate regime often differed from what they were officially announced to be. Consequently, observations on de jure exchange rate regime inaccurately characterized the distribution of operative currency regimes across the world and over time. Being aware of the inaccuracy of classification that based on de jure regime, a number of new "de facto" classification systems have been proposed.(Ghosh, Gulde, Ostry, and Wolf, 1997; IMF, 1999 and 2003; Levy-Yeyati and Sturzenegger, 2005). The IMF de facto classification (IMF, 1999 and 2003) combines available information on the exchange rate, monetary policy framework, and authorities' informal and formal policy intentions with data on actual exchange rate and reserve movements to reach a judgment about the actual exchange rate regime. The new "de facto" classification is more advantageous than the "de jure" one. However this classification does not take into account the macroeconomic disturbances. Rogoff and other (2003) argue that countries experiencing episodes of macroeconomic instability often have very high inflation rates, which may reflected in high and frequent exchange rate depreciation. Classification of such regimes as floating, intermediate or pegged is problematic. Reinhart and Rogoff (2004) develop the natural classification which addresses these shortcomings by separating episodes of severe macroeconomic disturbances and incorporating information on parallel market exchange



rates. Based on this “Natural” classification, among de jure floating regimes, only 20 percent were de facto free floats, while 60 percent were either intermediate or pegged regimes, and other 20 percent had freely falling currencies.<sup>5</sup>

Calvo and Reinhart (2002) argue that “fear of floating” is the crucial reason for the differences in de jure and de facto exchange rate regime. The “fear of floating” arises because: dollarization liabilities; lack of credibility and loss of access to international capital market; there is an output cost associated with exchange rate fluctuations (Lahiri and Vegh, 2001); the fear of exchange rate overshooting at times of crises due to inelasticity of supply of external funds (Caballero and Krishnamurthy, 2001). They conclude that even pegged rate regimes are not sustainable, fear of floating is pervasive, particularly among emerging economies, and hence pegged regimes have not disappeared. In addition, monetary authorities in emerging economies are increasingly replacing intervention in foreign exchange market by interest rate policy to smooth exchange rate fluctuation.

## **II.4 Political theories on ERR**

The aforementioned theories are systematic-level ones which assume that state is a unit without internal mechanism and the behavior of states are led by external environment. The external environment (international system) determines the consequences of state’s behavior will be, and these consequences, in turn are assumed to condition what the state can and cannot do. These arguments do not deal with the question how states decide policy. The political theories look inside states and discuss the policy making process on choice of exchange rate regime. Political economy theories on exchange rates mainly discuss on variables that influence on the value of exchange rate such as political stability (Edwards, 1996), central independence (Henning, 1994), the partisan character of governments (Simmons, 1994). Discussion on political variable that influence on choice of ERR is only found in Hall (2005). Hall (2005) indicates four variables that affect on ERR choice: elections, the transparency of the government, the size of the manufacturing sector, and pattern of financial intermediation.

### **II.4.1 Elections**

Under capital mobility, in order to manipulate monetary policy for electoral or partisan advantages, the politicians in power need pegged or floating exchange rate regime. Hence Bernard and Leblang (1999) argue that in democratic economies (developed economies) the politicians in power prefer floating exchange rate regime to the fixed one.

For developing economies, when an election approaches, politicians are loath to devalue currency or break exchange rate commitment because it raise costs of imports

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<sup>5</sup> The natural classification covers period 1973-1999.

and inflation, then hurts electoral chances. Frieden *et al.* (2001) perform cross-sectional ordered logit tests on ERR choices on Latin American data and find that devaluations are delayed in the run-up to an election, while devaluation often occur immediately after a new government takes office.

#### ***II.4.2* Transparency and Democracy**

In countries that states seriously concern with anti-inflation problem the governments face with problem of credibility and time-inconsistency. In developing economies, governments with anti-inflation tasks are also tempted by getting extra output and inflation tax by generating inflation surprise. This temptation causes time-inconsistency and erodes governments' credibility to their commitments to fight inflation. Calvo and Reinhart (2002) argues that overreliance on the inflation tax (and other easy-to-implement taxed such as tariffs) may be due to the fact that in many developing countries tax collection is inefficient and evasion is rampant.

To dispose of the problem of credibility and time-inconsistency, Broz (2002) argues that governments in developing countries have two alternative choices, either central bank independence or some form of fixed exchange rate (rigid or peg) with a low inflation currency. However, Broz argues further, the independence of central bank is rarely feasible and credible in developing countries. Central bank normally operates behind closed doors, hence public hardly monitor the commitments to the independence of central bank. Furthermore, the credible independence of central bank requires a transparent decision-making process which maybe not the case in developing countries. As a result, developing countries that seriously concern with inflation fighting usually choose a fixed or pegged exchange rate regime. If a country has an independent central bank it will have no reason to fix the exchange rate.

#### ***II.4.3* Vested Interests**

The conventional theories on choice of ERR assume that the choice of exchange rate regime reveals the preferences of benevolent social planner. However, in the reality the state's choice of ERR usually expose the preferences of interest groups that are the most influential on the monetary authority.

Exporters prefer stable or crawling pegged exchange rate, while importers prefer stable or appreciating exchange rate. Producers for domestic market concern more about macroeconomic stability which require autonomy of monetary policy. The volatility or stability of exchange rate is not their first care. For developing countries the export sector increasingly plays crucial role for economic growth. Fixed exchange rates cause appreciation in the real exchange rate, which hurts the competitiveness of tradable commodities producers. Consequently, as Freiden *et al.* (2001) argues "the more powerful tradables producers are, the more likely the government will employ a float that allows the exchange rate to depreciate". Using share of manufacturing to GDP as a proxy of the

strength of tradables producers in Latin American countries, Freiden *et al.* (2001) run cross-country time series test and find the positive relationship between strength of manufacturing sector and exchange rate regime. The larger share of manufacturing in the GDP of a country, the more likely it is the country to use a float or backward-looking crawling peg.

## **II.5 The role of financial intermediation**

The interest groups mentioned above overlook the role of financial sector. Henning (1994) argues that in countries with bank-based financial system, banks and industries forms close ties since banks are the dominant financiers for industries. Subsequently, banks and industries in such countries form a coalition to influence on government's monetary policies. If capital markets are primary financiers of industries, such coalition is difficult to form due investors in capital market are largely diverse and ill-organized. In developing economies with strong banking sectors, the banking sector has a concentrated structure, with most of the assets and activity concentrated in a few large banks. This allows banks to organize and articulate their interests for political action than a mass of diverse investors in capital markets or diverse business owners.

Hall (2005) presents hypothesis of political role of banking sector in choosing ERR. It states that the more a middle-income economy relies on bank credit for the financing of firms, the more likely the state of that economy is to maintain pegged ERR. The hypothesis follows from three propositions:

*First*, most commercial firms in middle-income countries have aversion to rigidly fixed exchange rates, except in case of hyperinflation. The reason is that without exchange rate flexibility, monetary policy is ineffective hence domestic goods markets have to bear all the pain of macroeconomic adjustment during every recession. In fact, recessions are often deeper and longer for countries with rigidly fixed exchange rates because they cannot use monetary policy to stimulate the economy.

*Second*, nature of financial system determines the interests of the financial sector. Banks' preferences for ERRs are largely indeterminate in a capital-market system or a private-saving system<sup>6</sup>. In "bank-credit" system, the preference of banks plays an important role in decision- making process of ERR. The most universal preferences of banks are: low inflation, stable monetary policy, and for fewer restrictions on their activities. Low inflation protects monetary assets. Stable monetary policy guarantee the stability of interest rates which is necessary conditions for maintaining long term

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<sup>6</sup> According to Hall (2005), financial system is divided into three broad types: capital-market system, bank-credit-system, and private-saving system. In the first one, enterprises acquire most of their financing through organized markets for bonds, stocks, and commercial paper. In the bank-credit system enterprises acquire most of their financing through bank loans. The "private-saving" system is popular in developing countries where financial sector is less developed to provide enough financial intermediation between savers and borrowers, so most of investment is financed out of private savings of investors.

relationship with customers. No particular ERR necessarily provide a more favorable conditions for these preferences than the others.

In the bank-credit system and capital is mobile, on the one hand, the predominance of loans for the financing of commercial firms tightens the banks' performance with performance of commercial firms. Consequently, banks develop interest in avoiding rigidly fixed exchange rates and the prolonged recessions they may exacerbate. On the other hand, dominant bank-credit countries have to face the problem of "liability dollarization" as mentioned in Calvo and Reinhart (2002). That is, banks often acquire unhedged dollar-denominated debts from foreign banks and then issue domestic currency loans to commercial firms. These debts are more risky and difficult to service with exchange rate volatility. Moreover, if the banking sector infected with large a mount of non-performing loans (NPLs), then a devaluation of the currency could trigger a banking crisis. Hence, banks have an interest in opposing floatation or devaluations. A peg helps avoid the increased exchange-rate risk of a float while also overcome the lack of flexibility in a rigid fix. Thus pegs are preferred alternatives by banks.

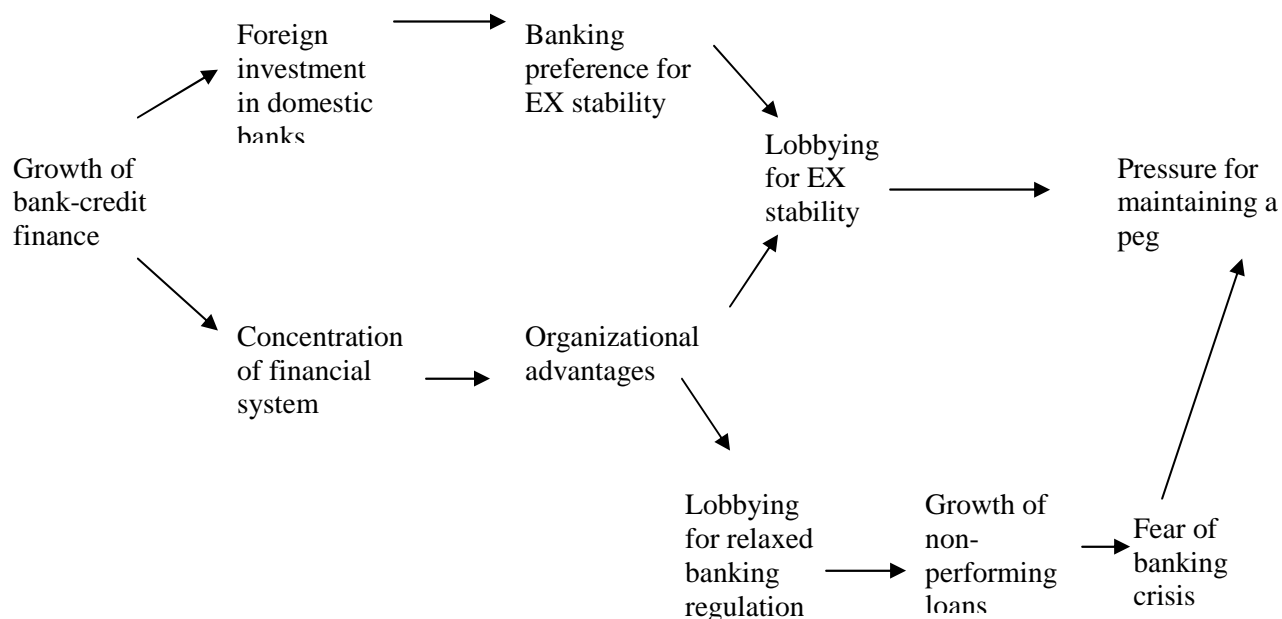
It is worth noting that in countries that foreign portfolio investment plays an important role in economic growth, governments are likely to prefer floating exchange rate. The autonomy of monetary policy associated with floating provides developing countries less vulnerability to sudden capital flight from portfolio investors (Shambaugh, 2004).

*Third*, banks in banking-dominant countries often have strong political advantages in political system due to high concentration, well-organized structure, and their critical role in economic development.

In developing countries with strong bank-credit systems, the banking sector tends to be concentrated among few large bankers. It is much easier for these bankers to organize in a coalition to defend for their interest than diverse financiers in a capital-market system. Furthermore, these bankers also have two more advantages over the governments. First, they hold the critical role in economic development; any problem in the banking sector induces multiple effects on the rest of the economy. Second, banks posses their own private information on the health of the financial sector. The governments never know exactly the consequences of exchange rate policy could be for the banks because of asymmetric information on the health of financial sector. Governments need to base on the information provided by banks. This practice surely gives banks power over the government.

Hall (2005), argues further that with powerful position in the economy banks in developing countries are able to lobby for looser banking regulations and less government oversight. As a result, non-performance may accumulate, then risk of banking crisis increases. To minimize this risk, banks need to lobby the governments to maintain a peg.

**Figure 6: Influence of banks in bank-credit system on ERR**



Source: Hall (2005), p. 34.

The mechanism that banks in bank-credit economies influence on ERR is illustrated in Figure 6.

### III Exchange rate policy in Vietnam

#### III.1 Vietnam's exchange rate regime

Vietnam is a transitional economy, in the process of transition to market economy Vietnam has to shift whole economic structure and institutions to a new one. At the same time Vietnam has cautiously learned and adapted economic policies in managing the economy that are compatible with market mechanism. Changes in exchange rate regime and exchange rate policy have been conducted with this line.

At the beginning of *Doimoi* process Vietnam suffered hyperinflation in 1989-1991. Being obsessed by bad experience from the fight against inflation, policy-makers in Vietnam put macroeconomic stability at the highest priority. The exchange rate has been cautiously managed for this primary objective. However, as the economy getting integrated further into the international economy international trade, foreign capital becomes indispensable factors to economic growth. The stability of exchange rate, on the one hand would help reduce exchange risks for investors and traders. Exports would lose competitiveness if the exchange rate was fixed for long time, on the other hand. Under such conditions, an ER peg relative to a major foreign currency could serve as a suitable anchor. In addition, in process of transition to market economy the role monetary economy is getting more and more important. In order to give more room for monetary policy the

exchange rate should be more flexible or the band for central bank's interference should be expanding.

### **III.1.1 Evolvement of ER arrangements and foreign exchange control<sup>7</sup>**

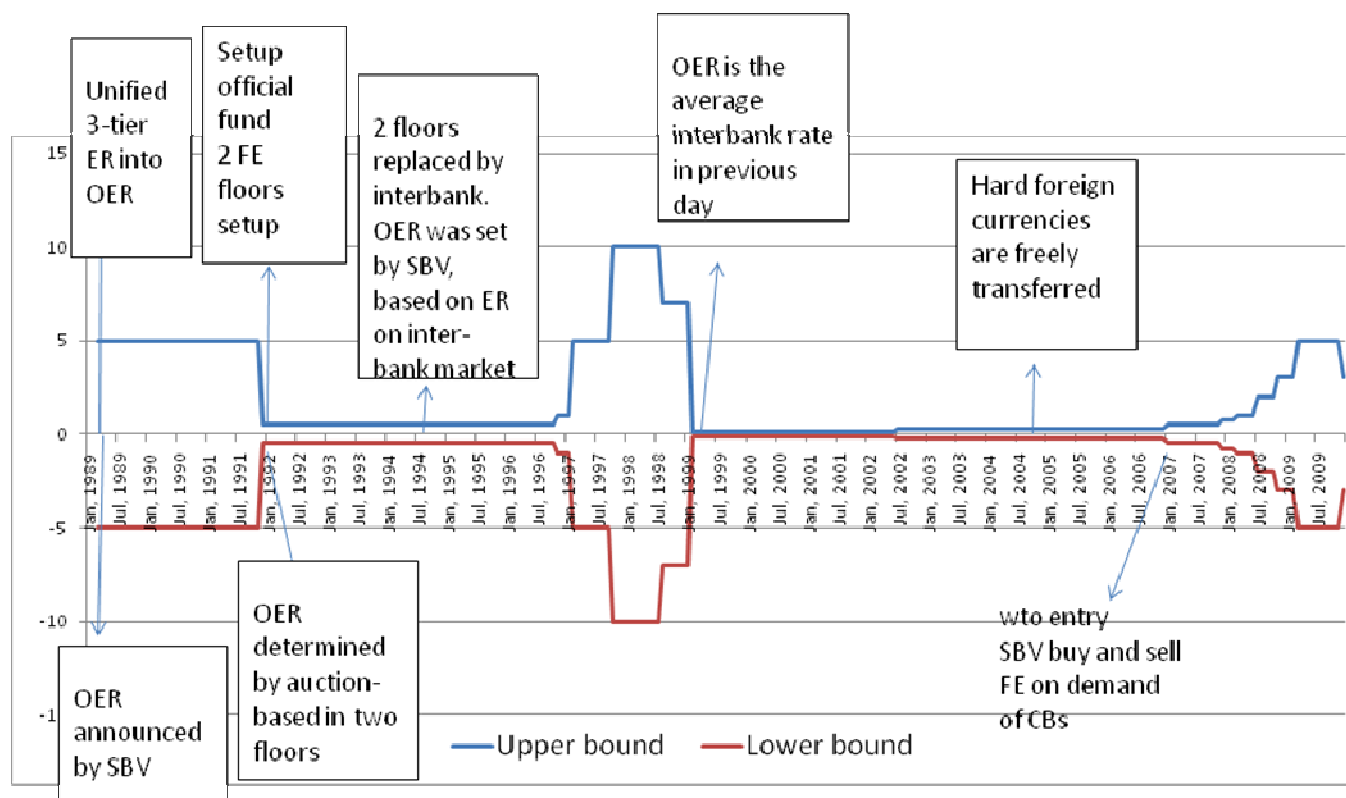
#### **Before 1989: exchange rate regime in central planning economy**

Vietnam applied three-tier exchange rate (ER) system: official ER for foreign trading; non-trading ER; and internal ER used in business relations between banks and other domestic business entities. These rates were also used in state budgeting in regard to foreign aid mainly coming from the former Council for Mutual Economic Assistance (CMEA) and the former Soviet Union using the Transfer Ruble.

Exchange rates were set by the government at fixed levels based on economic and granting agreements between the government of Vietnam and other related countries.

The rates in parallel foreign exchange market (informal market) are usually higher than those set by the government.

**Figure 7: Chronicle of ER arrangements and foreign exchange control**



#### **1989 – 1993: Preparing initial institutions for managing exchange rate under market economy**

<sup>7</sup> In this section facts and figures up to 1999 are used from Vo Tri Thanh *et al.* (2000), Box 2, page xxii.

In years 1989-1992 the economy suffered from hyper inflation with the culmination of more than 700 percent in 1989. The three-tier exchange rate system with large gap between fixed official exchange rate and the unofficial rate proved to be caused of economic instability. On March 1989, the multi-tier ER system was unified into a single official exchange rate (OER). The OER was set by the State Bank of Vietnam (SBV) and, in principle, adjustable<sup>8</sup>. The SBV would adjust OER conditionally on the situation of inflation, interest rates, balance of payment (BOP) stance and the ER in the parallel foreign exchange market. Based on the OER announced by SBV, commercial banks were allowed to set ERs for their own transactions within a band of 5% around the OER (Figure 7). On October regulation on foreign exchange management was issued and reinforced later by a series of implementation documents such as Circular 33-NH/TT (15 March 1990) giving guidance to Regulation implementation, Direction 330-CT (13 Sept. 1990) expediting control over the use of foreign exchange, and Decision 96-NH/QD to regulate NOSTRO ACCOUNT (5 Nov. 1990).

In 1991 an official fund was established for SBV to streamline foreign exchange flows and stabilize the ER. The existence of parallel market and large differences between OER and rate on the parallel market<sup>9</sup> indicate that the OER was set too high (VND was appreciated). An initial step towards a market-based mechanism for determining ER was moved in this year. Two foreign exchange transaction floors were founded in Ho Chi Minh City (August), and in Hanoi (November) to open formal market for exchange transaction. OERs were determined by auction-based rates at the foreign exchange floors where the SBV played a dominant role, by buying or selling large amounts of foreign exchange. However, with the “fear” of too much fluctuation the exchange rate band within which Commercial banks set their own ERs was dropped down sharply from 5% to 0.5% by the end of 1991.

In parallel, the control over use of foreign exchange was tightened by a series of regulations: Decision 337/HDBT dated 25 Oct. 1991; regulations on foreign exchange deposits in January; on interest rate ranges for foreign exchange deposits and lending in June; on foreign exchange dealing in December; restriction of foreign exchange transfers through border (Decision 175-QD-NH7 dated 9 Sept. 1992); and borrowing from abroad and lending to domestic businesses (Decision 192-NH/QD dated 7 Sept. 1992, Direction 08/CT-NH1 dated 9 Oct. 1992).

These measures seem effective in fact: the exchange rate was stable for a long period 1992-1996; the premium in parallel market to nearly zero at the same time. In the year 1997 the OER was kept stable around 11000VND/USD, however the premium in the parallel market started increasing.

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<sup>8</sup> SBV Decree Law, 1990

<sup>9</sup> From January 1991 the premium in parallel exchange market increased steadily from around 8% to more than 23% in August 1991.

### **1994 - 1996: move further towards market-based mechanisms**

Replacement of the two foreign exchange transaction floors with an inter-bank foreign exchange market in which the SBVN still remained influential role as the “last seller and buyer” of foreign exchange (Decision 203//QD-NH3 dated 20 Sep. 1994). OERs were stabilized and set by the SBV based on inter-bank ER rates. The ER band within which Commercial banks set their own ERs remained narrow at (+/-) 0.5% around the OER. This band was somewhat widened, from 0.5% to 1% on November 1996. Although the exchange rate was still controlled dominantly by SBV who could buy and sell large amounts of FE. The mere shift from administrative setting of the OER to a system where the ER was determined through government intervention in FE supply and demand, nevertheless, was a remarkable step towards market-based mechanisms.

Foreign exchange transactions by domestic sectors were limited (Decision 396/QD-TTg, Oct. 1994). Interest rates on VND were gradually lowered to reduce conversion of USD into VND.

### **1997-1999: response to Asian financial crisis**

The first response to the Asian financial crisis was to give commercial banks more flexibility in determining exchange rate. The ER band was widened continuously, from 1% to 5% (February 1997), and then to 10% (13 October 1997).

However, this policy did not stop foreign exchange reserves from falling and BOP deficits from increasing. State Bank of Vietnam on 16 February 1998 had to devalue VND 5,6% (from VND 11,175/USD to VND 11,800/USD), and 10,15% more on August 1998 (to VND 12,998/USD). Furthermore, foreign exchange surrender requirements<sup>10</sup> of up to 80% of available balances were introduced (Decree 173/QD-TTg, Sep. 1998). At the same time the band for exchange rate to fluctuate around OER was narrowed down to 7%. These measures aimed to three goals: mobilizing foreign exchange for the needs of enterprises (mainly SOEs at that time); containing imports of consumer goods; and encouraging foreign invested enterprises sourcing domestic inputs in producing exported goods.

Escaping from crisis, the exchange rate regime was reformed further by Decision 65/1999/QD-NHNN7. Instead of declaring an OER, since 26 Feb. 1999 the SBV began announcing average inter-bank ERs of the previous working day. Once again the reform was implemented in a cautious manner. On the one hand, SBV tighten remarkably the

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<sup>10</sup> The foreign exchange control (FEC) was initiated by Government Decree 161/HDBT, dated 18/10/1988, mandates that all entities, institutions and individuals place all of their foreign exchanges (FE) in bank accounts. All unused FE remaining following the purchase of imports must be sold to the government and all FE transfers to abroad must have permission of the SBVN. The later Government Decree 63/1998/ND-CP, dated 17/8/1998, maintains FECs stipulated in the Decree 161/HDBT, except legalization of some issues such as specification of terms and requirements, like residency and origin of FE. Following the recent regional crisis that affected FE reserves, the surrender requirement was imposed. All economic entities were required to deposit all FE in a single onshore account to facilitate enforcement of FECs.



band for ER fluctuation to 0.1%. On the other hand the foreign exchange surrender requirements were reduced to 50% (Aug. 1999). At the same time the government issued Decision 170/1999/QD-TTg to encourage private foreign exchange transfers from abroad.

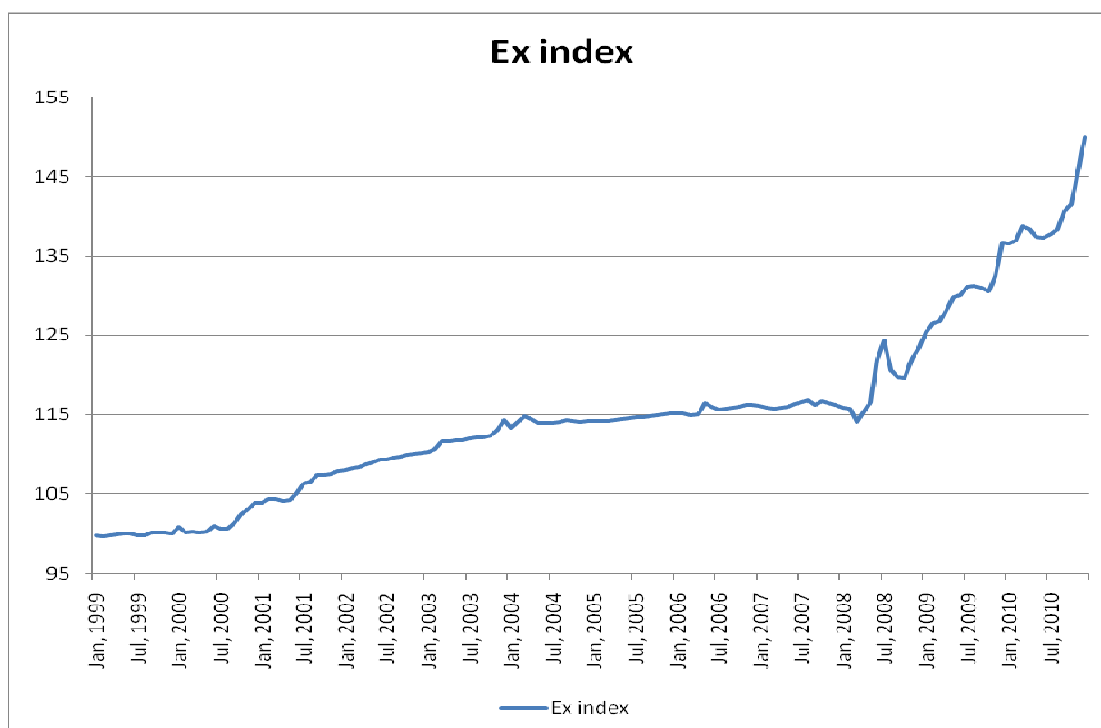
### 2000-2006

In this period mild external environment helped Vietnam maintain macroeconomic stability. The exchange rate was almost unchanged. July 2002 in response to the increasing inflow of foreign capital after the BTA with USA, the band for exchange rate was raised to 0.25% and this band remained until 2007. In addition, foreign exchange other than USD can be traded without constraint. In November 2004 the control on foreign exchange was furthered liberalized by allowing hard foreign currencies being exchanged freely. In 2006 Vietnam started piloting the floating regime.

### 2007-2008

Vietnam's full membership to WTO has great impact on the foreign capital inflows. The implemented FDI inflow jumps from USD 2400 thousand in 2006 to USD 6700 thousand in 2007. At the same time the portfolio investment also shoots from USD 1313 thousand in 2006 to USD 7414 thousand in 2007.

**Figure 8: movement of exchange rate index**



Source: GSO

In response to this huge capital inflow Vietnam adjusted slightly down exchange rate and accumulate foreign reserves. Consequently money supply increased strongly and inflation boosted up. In the end of 2007 the total credit increased by 53.9% in comparison with 2006. In August 2007 price level started to bound up sharply and Vietnam had to

implement tightening policies to curb inflation. The recession of global economy on the one hand caused negative effects on exports and investment, on the other hand helped Vietnam cool down inflation in 2009. However, Vietnam had to use foreign reserves to implement expensive stimulus package to keep the economy from falling into deep recession. As a results, foreign reserves has been drained out and Vietnam has consecutively devalued exchange rate 5 times in 2009-2010 and the gap between official exchange rate and the rate in black market keep on widening. As we can see in (Figure 7 and Figure 8), when the economy encounters difficulties, the exchange rate was devalued and the bands of fluctuation of the exchange rate were also enlarged. Having escaped from difficulties the exchanged rate then pegged again with USD. This implies that in “good times” Vietnam is willing to sacrifice the autonomy of the monetary policy and in the “bad times” Vietnam needs to use monetary policy then has to expand the flexibility of exchange rate.

In short, since Doimoi Vietnam gradually applies market mechanism in managing exchange rate. The rate has been managed cautiously around a referred rate. The referred rate firstly was determined by the state bank, then by market force in interbank market. In general the exchange rate was pegged with USD and in 10 years (1999-2008) VND was devaluated about 15% in nominal term.

One characteristic of exchange rate management in Vietnam is the existence of unofficial rate or “free market rate”. Although the state bank regulates only one official exchange rate which applied for all commercial and investment transaction throughtout the economy, the unofficial exchange market exists in parallel with the official one. One reason for this existence is that individuals are constrained from access to official exchange in banking system. In 1990s and early of 2000s private enterprises have been discriminated in accessing to foreign exchanges in banking system for their importation and exportations. Recently this discrimination is occasionally used by banks against enterprises or individuals who “are not encouraged” to use foreign exchanges such as outbound tourists, impoters of luxuries or commodities that can be domestically produced. This discrimination is the main reason for the existence of unofficial foreign exchange market in Vietnam.

The evolution of exchange rate management in Vietnam is along with the development of banking system. Vietnam has successfully transitted from mono-banking system to the two-tier banks system. The development of banking system plays an important role in evolution of management of exchange rate in Vietnam.

### ***III.1.2* Development of banking system**

Until 1988, Viet Nam maintained a mono-banking system in which the State Bank of Vietnam (SBV), the country’s Central Bank, functioned both central and commercial banking role. Since 1988, the banking system transformed in two-tier one, with four state-

owned commercial banks (SOCBs) and SBV performs only the central banking functions. In the course of economic development and transformation, the private sector in Vietnam builds up rapidly and actively. The SOBCs, in turns, have to change themselves from lending mostly for state-owned enterprises (SOEs) under political pressure from the authorities to lending mainly for non-state enterprises under market mechanism.

**Table 2: Credit institution system (2008)**

Type of Credit Institutions	Quantity
State-owned commercial Banks (SOCB)	5
Vietnam Social Policy Bank (VSPB)	1
Joint Stock Commercial Banks (JSCB)	40
Joint Venture Bank (JVB)	5
Foreign Bank Branches	39
Fully Foreign-Owned Banks	5
Finance Company	17
Finance Leasing Company	13
People's Credit Fund (PCFs)	- 1 Central PCF -1016 local credit funds

Source: State Bank's Annual Reports 2008.

So far there are 56 banks and 39 foreign bank branches operating in Viet Nam. In which there are five SOCBs, one policy bank (VSPB), 40 JSCBs, 5 joint venture banks, and 5 fully foreign-owned banks. Besides there are more than 1000 people's credit funds (PCFs) in provinces (Table 2).

**Table 3: Market share in capital mobilization**

	2000	2001	2002	2003	2004	2005	2006	2007	2008
SOCBs + VSPB	77	80.1	79.3	78.1	75.2	74.7	68.8	59.3	56.06
Foreign Bank Branches + JVBs	10.3	10	9.4	9.3	9.7	8	8.1	8.8	8.08
Joint Stock Commercial Banks	11.3	9.1	10.1	11.2	13.3	15.7	21.8	30.4	35.86
PCFs	1	0.8	1.1	1.1	1	1	1	1	
Other	0.4	0	0.1	0.3	0.8	0.6	0.3	0.5	

Source: Vo and Pham (2008) and State Bank "Annual Report 2008"

**Table 4: Market share in lending**

	2000	2001	2002	2003	2004	2005	2006	2007	2008
SOCBs + VSPB	76.7	79	79.9	78.6	76.9	73	64.5	55.1	55.66
Foreign Bank Branches + JVBs	12.4	10.4	8.8	8.9	9.5	9.6	9.3	9	10.53
Joint Stock Commercial Banks	9.2	9.3	9.5	10.8	11.6	15	21.2	28.6	33.81
PCFs	1.4	1.2	1.7	1.5	1.4	1.5	1.4	1.3	
Other	0.3	0.1	0.1	0.2	0.6	0.9	3.6	6	

Source: Vo and Pham (2008) and State Bank “Annual Report 2008”

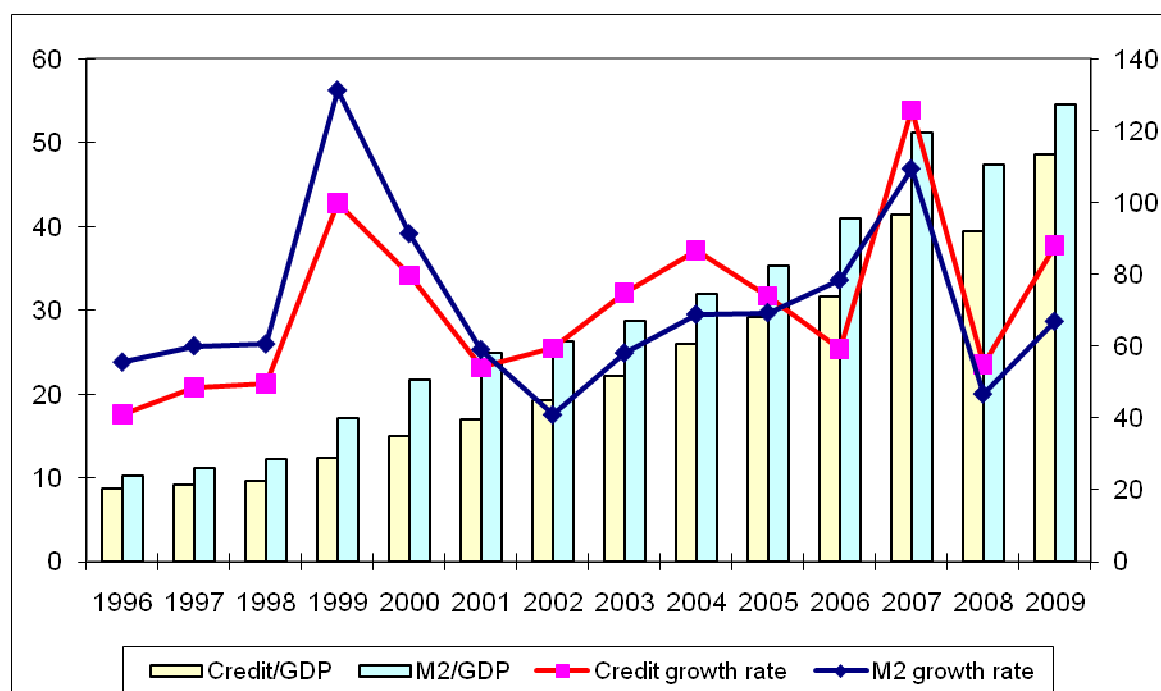
Vietnam’s banking system initially dominated by 4 big state-owned commercial banks: Bank for Foreign Trade of Vietnam (Vietcombank), Bank for Agriculture and Rural Development (Agribank), The Industrial and Commercial Bank of Vietnam (Vietinbank), Bank for Investment and Development of Vietnam (BIDV). In 1997 one more SOCB was established: Mekong Housing Bank (MHB). However, the last ten years have seen a rapid growth of Joint Stock of Commercial Banks. The market share in capital mobilization and in lending of JSCBs increased more than three and half times in 9 years (Table 3 and

Table 4). So far the market shares of SOCBs is still more than 50%, however an obviously decreasing trend seems irrevocable. Based on available data, our estimation of Herfindahl index in Vietnam’s banking sector in 2008 is less than 0.16. It is worth noting that according to US Justice Department guidelines, a merger is likely to be challenged if the post-merger Herfindahl index is estimated to be greater than 18. The banking sector in Vietnam has moved from concentrated sector to a diversified one.

Financial depth has also deepened rapidly. In 1996 financial depth in Vietnam is quite shallow: ratio of credit to GDP is only 20.3 percent and broad money (M2) to GDP is 23.8 percent. These ratios sturdily increased since then and reached 113.36 percent for credit to GDP and 127.23 percent for M2 to GDP in 2009 (

Figure 9). These figures are far higher than that in Singapore, S. Korea, PRC, Thailand, Indonesia and Malaysia by the end of 1997 (Table 5). Although financial depth in Vietnam is similar those market economies in 1997, the currency in circulation in Vietnam remains at high level.

**Figure 9: Movement of Broad Money and Credit in 1996-2009**



*Note: Ratios of credit and M2 to GDP are presented by columns and referred to left axis. The annual growth rates of these two variables are presented by lines and referred to right axis.*

*Source: IMF (2007, 2009)*

**Table 5: Financial Deepening in Vietnam (end of 2008) and Asian Countries (end of 1997)**

Item	Vietnam	Singapore	S.Korea	PRC	Thailand	Indonesia
M2/GDP	110.42	93.1	48.3	119.6	89.9	57.0
Deposit/GDP	85.4	85.0	46.8	88.5	82.8	40.8
Currency/Deposit	14.6	9.5	7.8	15.1	8.4	12.1

*Source: SBV Annual Report 2008, Soo-Nam Oh (1999)*

Vietnam's financial system is still bank-credit one. In this system, as mentioned in section II.5, peg regime is preferable that's why Vietnam peg VND to USD for a long period. The banking system in Vietnam was concentrated highly in state owned commercial banks, however the development of private banks and joint stock commercial banks have gradually made the banking system more competitive and less concentrated. The pressure from banks to keep exchange rate stable, therefore is getting lowered.

Furthermore, the economic growth in Vietnam bases crucially on international integration (in trade and investment). The foreign capital flow is increasingly brisk, the

management of exchange rate needs more flexible and prompt to flows of foreign capital. The sluggish adjustment of exchange rate in 2007 -2008 caused high inflation and macroeconomic instability. In the recession period 2009-2010 when foreign reserves drained out, elevated pressure of inflation, and sluggish adjustment of exchange rate induced the high expectation of devaluation then dollarization in Vietnam. This reduces the effectiveness of monetary policy and causes inflation soaring.

### **III.2      *Monetary and exchange rate policy in recession time*** **2008-2010**

#### ***III.2.1    Purpose and tools***

In this period the main purpose of the monetary policy, in the statement by the Government is curbing inflation. However, in the reality the economic growth and stability of financial sector have not less been emphasized. The state bank of Vietnam (SBV) uses interest rate as a crucial tool in implementing monetary policy. The main purpose is to keep long-term interest rate stable, since the long-term interest rate directly affects on value of assets, decision of investments and consumption. If the state bank can affect on the expectation of interest rate in short-run then SBV can play an important role in economic performance.

In order to do that the SBV tries to affect the daily interest rate and imposes policy interest rate (or basic interest rate). The basic interest rate is a signal for the expected interest rate in short-run that SBV wants to be. Furthermore, SBV also uses public announcements to guide the public about the direction of change in the future.

In addition, SBV also uses other measurements such as required reserves ratios, targeted growth of credit, capital asset ratio, and other security criteria in implementing monetary policy. However, these measurements are not very effective because they are of expensive transaction costs, miss-allocation of credit, less transparent and then may cause more instability.

In relation to the exchange rate policy, VND still peg to USD but with a larger band. Exchange rate has more room for fluctuation and monetary policy becomes more effective.

#### ***III.2.2    Monetary policy***

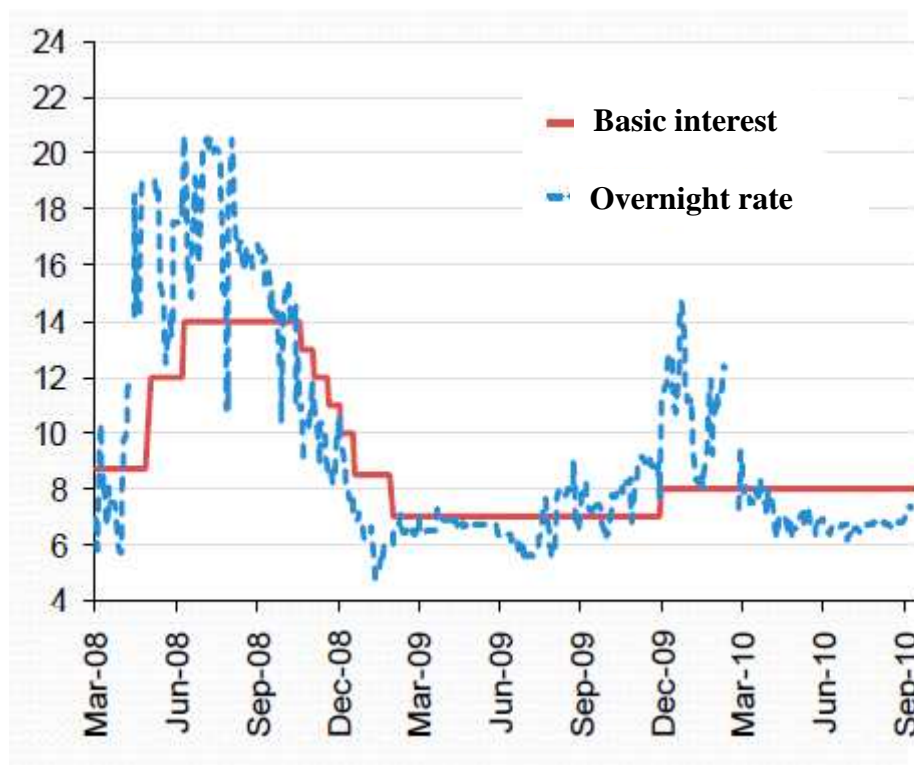
In period 2007-2010 Vietnam had to face with two opposite events. First, Vietnam's entry to WTO in 2007 induced huge inflow of foreign capital. Second, the global crisis severely hit Vietnam through investment and trade in 2008, which caused a large number of foreign capital flow out.

In the first event, Vietnam seems perplex in handling a large number of foreign capital flowing in. The government increase money supply and credit by building up foreign reserves without any changes in interest rate and exchange rate policy.

Consequently, inflation boosted and VND appreciated (Figure 11). From March to June 2008 under the pressure of high inflation, basic interest rate is consecutively adjusted up. When inflation is gradually controlled, basic interest rate stayed at high level of around 14 percent in 6 months.

In November 2008 when signals of negative impact of global crisis were clear, foreign capital started flowing out, basic interest rate was consecutively adjusted down (Figure 10). At the same time, the government implemented stimulus package of interest subsidies of 4 percent for enterprises borrowed from commercial banks.

**Figure 10: Basic interest rate and Overnight interest rate in interbank market.**



Source: Nguyen Thu Hang, at el., 2010

The monetary policy at this time was conducted rather flexibly. The open market operation response more promptly with market signals and sometimes the interest rate in inter-bank market deflected far away from basic interest rate. Those measures which were used in the first event to bring inflation down, proved effectively. From early 2009 to the July 2010, high inflation of 22% in 2008 was lowered to one digit level. Measurements used to stimulate the economy helped to keep the economy from falling into crisis.

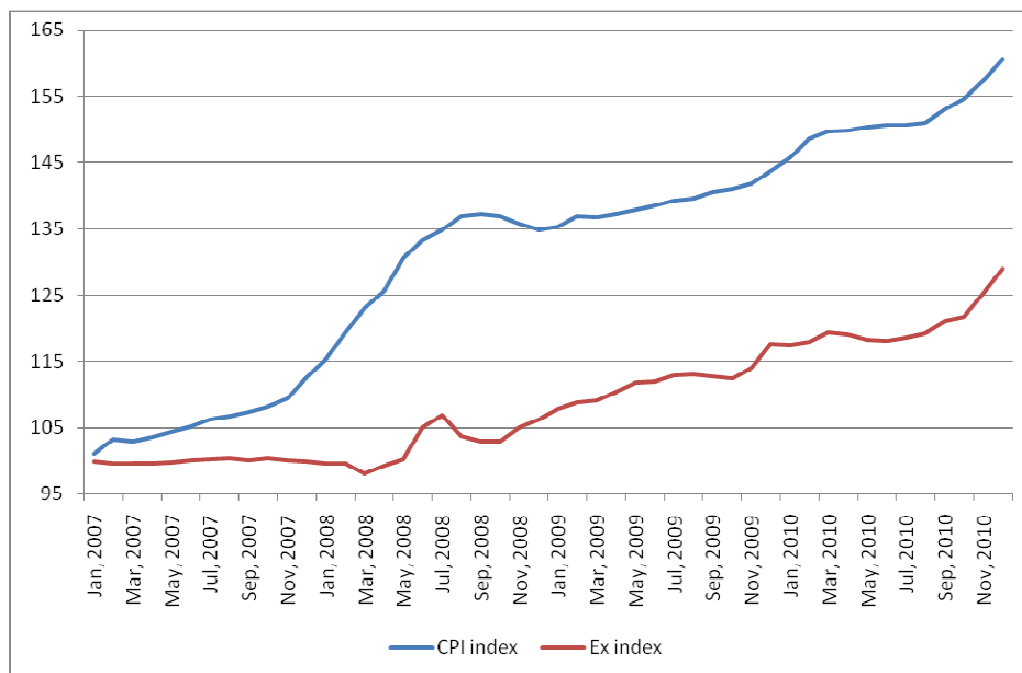
### **III.2.3 Exchange rate policy**

Since 2007, a huge inflow of foreign capital increased USD supply sharply. From March 2007 to March 2008, exchange rate announced by commercial banks was always at the bottom line of the band set by the SBV. The pressure to appreciate the VND was getting higher. However, the SBV remained the referred rate unchanged and then bought in foreign exchange and increased money supply. As a result, inflation boosted. From



March 2008 inflation kept on increasing but foreign capital started flying out. The commercial banks announced the upper band rate and by the end of April 2008 SBV devaluated VND to encourage exports and to prevent capital flying out. These actions boost inflation increasing steeply (Figure 11).

**Figure 11: Movement of exchange rate and CPI 2007-2010**



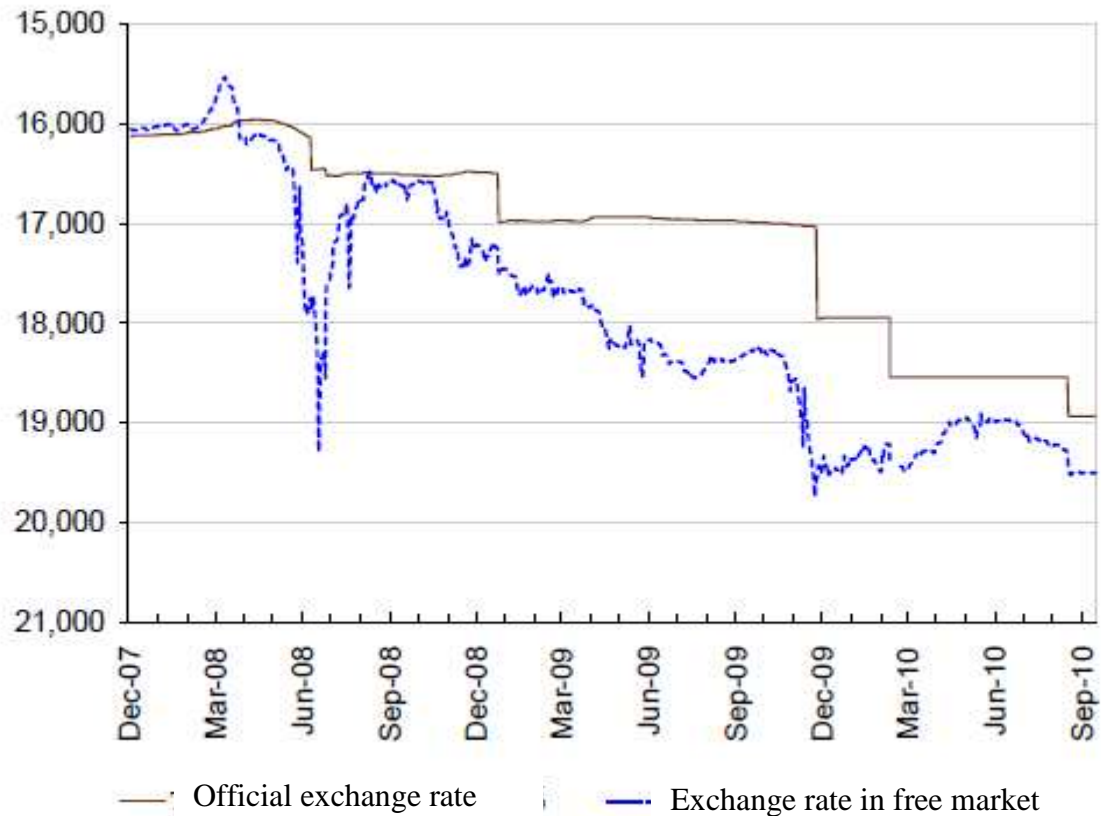
Source: GSO

From May 2008, the global crisis decreased imported prices (fuels, materials for production, ...etc.) helped cool down the inflation in Vietnam. However, the crisis also caused the demand for Vietnam's exports declining sharply; and indirect foreign capital flying out. The demand for foreign exchange increased over the supply. The exchange rate announced by commercial banks shot up to the highest point of the upper line of the band set by the SBV. From 2008 to the end of 2010 although the VND was devaluated 10 times and SBV expanded the band to  $\pm 5\%$ , the largest band in the last 10 years, the exchanged rate was always announced at the highest level of the band. In Figure 12, up to October 2008, the exchange rate announced by SBV seemed keeping pace with the movement of exchange rate in free market. However, in 2009 the official rate was fixed while the rate in free market kept on increasing. This pushes more pressure on exchange rate and by the end of 2009 when the foreign reserves declined from 23 billion USD in 2008 to 16 billion USD by the end of 2009, SBV had to devalue VND again by 5.88%.

It can be seen that in 2009 monetary policy and exchange rate policy were inactive (Figure 10 and Figure 12). The basic interest rate and the referred exchanged rate were unchanged in this years. This reflexes the SBV's perplexity in managing these policies. In this year, although the pressure of devaluation was high, SBV tried to maintain a fixed

official exchange rate because a devaluation could trigger off a boom of inflation in recession time. In addition, SBV could not increase interest rate to curb inflation because it could cut down investment and consumption, then put the economy into real recession.

**Figure 12 : Official exchange rate and Exchange rate in free market**



Source: Nguyen Thu Hang et al., (2010)

The inactiveness of monetary and exchange rate policy reduced the investors' credibility in the government's economic policies. The drained foreign reserves piled up expectation of devaluation of VND. Package stimulus increased money supply too much and then caused inflation expectation. People lost their credibility in VND and accumulated USD and Gold to reserve their assets. Commercial banks lost their liquidity as people shift their deposit in VND into foreign currencies (USD). Consequently, in 2010 commercial banks had to raise interest rate sharply. SBV finally had to devalue VND to stimulate exports and to reduce dollarization. The private sector responded with these movements by cutting down investment and in 2010 the investment by private sector increased only 3%. However, in Vietnam the state sector remain dominated and the government raised state investment in this sector to offset the declination of private investment. The investment by state sector increase more than 20% in 2010. Increasing investment in the context of high interest rate, high price of imported inputs finally boost inflation up. Higher inflation induce higher expectation of devaluation, then people keep on accumulating foreign exchange regardless of SBV's policies. Commercial banks has to increase interest rate further and the circle of interest rate – inflation- exchange rate

continue. In fact, in 2010 SBV had to devalue VND six times but the gap between official rate and free market rate kept on widening and inflation is elevating.

### **III.3 Conclusion**

Vietnam has gradually and successfully transited her financial and banking system to the ones that are compatible with market mechanism. In the course of transition, the exchange regime in Vietnam is gradually determined and managed by market forces.

In a bank-credit based financial system, Vietnam prefers a stable exchange rate. In addition, as a transitional economy Vietnam is in process of building up necessary market institutions. Insufficiency of market institutions in managing the economy with market mechanism has not allowed Vietnam to choose floating exchange rate regime. Therefore, at the very early of *Doimoi* process, Vietnam chose a pegged regime with the referred rate determined by SBV and the exchange rate has been managed in manner of learning-by-doing. The referred rate has gradually been determined by market forces first in two floor of exchange, then in inter-bank market in which SBV play an adjusting role. This approach gives SBV an opportunity to learn the way to manage monetary and exchange rate policy and to build up necessary institutions.

The pegged exchange rate with small band of fluctuation worked well when the economy had not deeply integrated into international economy and foreign capital irresponsive to domestic conditions. Recent when Vietnam fully enter WTO, foreign capital become active with Vietnam market the pegged regime proved to make monetary policy ineffective. Managing monetary and exchange rate policy under this new environment has become more complicated and requires more flexible. High inflation in 2008 due to huge capital inflow in 2007, drained foreign reserve with high inflation in recession time in 2009-2010 are evidences for that. The new environment requires close coordination between the exchange rate policy and monetary policy. The band of fluctuation of exchange rate should be enlarged to give more room for monetary policy.

The period 2007-2010 is a difficult time for SBV. The domestic markets, especially financial market are underdeveloped and very sensitive to changes in external environment. The speculation behavior is still dominant among investors. The banking system is still developing and lack of necessary infrastructure and institutions. High inflation and heavy pressure from the government on economic growth target under adverse external conditions narrowed down the choices that SBV can be made. The policies implemented by SBV in period (2007-2010) reflected the efforts by SBV to equalize these two objectives: curbing inflation and promote economic growth in recession time. Under such difficult conditions, SBV gained positives results: high inflation in 2008 was brought down by the end of 2009 and economic growth is more than 5% at the trough of the recession.

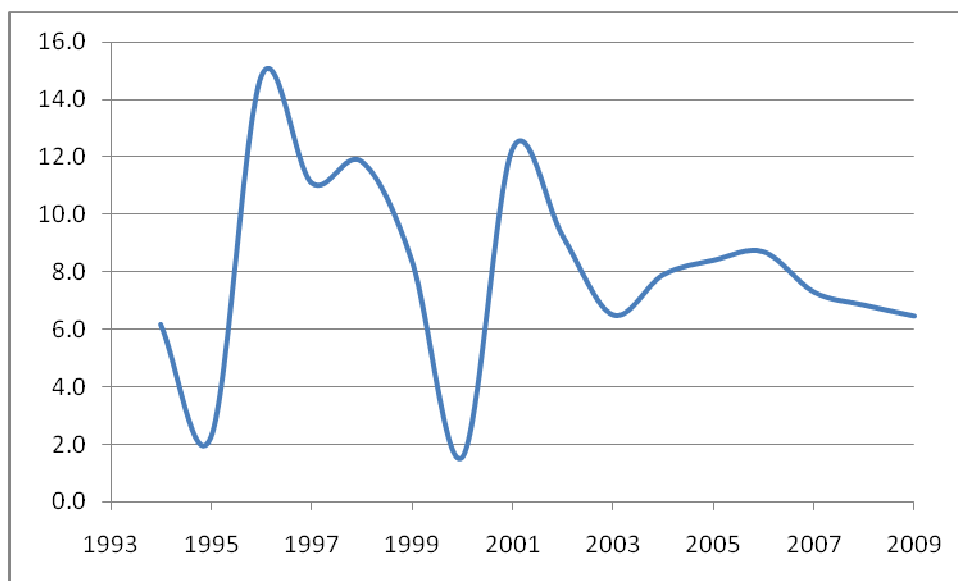
However, the responses from SBV to changes in economic conditions were usually late and in a passive manner. Consequently, SBV's policies seem ineffective to lessen the expectation on devaluation and inflation.

## **IV Exchange rate volatility accounting for Mozambique: External Vs. Domestic sources**

### **IV.1 *Introduction***

Historically, Mozambique was a former colony of Portugal for almost 500 years until it achieved independence in 1975. Shortly thereafter, Mozambique's civil war began which impaired the country greatly until the Peace Accord was signed in October 1992 returning the nation to stability after 16 years of civil war. Mozambique is considered to be a relatively poor nation as measured by GDP, with approximately 69 percent of the population living below the poverty line. Household survey data indicate that that national poverty headcount fell from 69% to 54.% during 1997 -2003.

**Figure 13: Real GDP growth in Mozambique, 1994-2009**



Source: Ministry of Development and Planning, Mozambique

The latest household survey assessment shows that poverty headcount still remain 54.7% in 2009 due to low agricultural production affected by floods in central region of the country, (Sofala end Zambezia) increase of international food price and others. The country is heated by floods and drought and HIV disease. Although the country is hampered by these challenges, Mozambique today currently has one of the world's highest GDP growth rates averaging 7 percent over the last past 5 years, although these gains similar to other countries, Mozambique is more vulnerable to external and chocks that bring down the income level.

However, those recent dramatic increases in world agricultural fuel prices and financial crises may set back at least some of these gains. Rise on world price can represent a negative impact on the economy since Mozambique is food net importer.

With uncertainty around the world, all economy is subject to the shocks some of the more than other. Theoretically when the economy is more diversified it is less vulnerable to the shocks and international prices than small economy with specialization.

#### ***IV.1.1 Banking system:***

Monetary policy is governed by the nation's central bank, Bank of Mozambique 'BM'. The nation's largest commercial bank was privatized in the 1990's. Broad money growth is forecasted to decline to 15 percent for year 2004 down from 19 percent in 2003. Consequently, commercial lending rates have fallen to the 25 percent range. International foreign exchange reserves at year-end 2003 were measured at 797 million USD or equivalent to 7 months imports which is quite good. Both credit cards and travelers cheques are not accepted coupled with limited ATM availability.

**Currency: Mozambican metical, meticals (plural).** At time of review on December 21, 2004, the metical had an exchange value of 18,750 MZM to the US-dollar 'USD'. Now days the exchange rate metical again US dollar is around 36,00 MZM which represent huge depreciation of metical in the first semester of 2010. However, the performance for the metical against South Africa Rand is not favorable as well it impact with higher inflation levels.

Exchange rate is amongst the most volatile macroeconomic variables in a flexible exchange rate regime economy. Standing for the price of foreign currency in terms of domestic currency, exchange rate responds to both domestic and external factors. A straightforward implication of this is that exchange rate volatility can be decomposed amongst its internal and external components, with the identification of domestic and external components depending on the underlying model of exchange rate determination. When the internal component is substantially higher, domestic policies are more relevant to minimize volatility. On the other hand, structural policies aimed at reducing vulnerability to external shocks may become more relevant when external shocks account for a substantially larger component of exchange rate volatility.

In Mozambican economy, exchange rate has been quite volatile since the adoption of flexible exchange rate regime in 1994. While some years have witnessed huge currency appreciation, others have been characterized by huge depreciation episodes. For instance, starting from late 2008, the Metical-Dollar exchange rate has dramatically depreciated. The average annual depreciation rate reached 21.64% in 2009 and 19.6% from January 2010 to June 2010, and then reached 19.43% by the end of August. This huge depreciation was regarded by Mozambican government as being caused by external

factors and, therefore, out of its control. Indeed, in its recent attempt (in 2010) to increase the price ceiling of some administered goods, the Government argued that adverse external factors, through their impact on the exchange rate depreciation, were leading to inflationary pressures in Mozambique.

This argument entails at least the idea that exchange rate volatility in Mozambique is driven mostly by external factors, as if domestic policies had no significant role in stabilizing the value of the currency. While this may be true, it was not yet confirmed by solid evidence. So the following questions still need to be answered. Are the Mozambican exchange rates volatility mostly driven by internal or external shocks? How is the role of such shocks evolving over time? Do domestic policies have a role in stabilizing the exchange rate? We answer these questions using a simple, but effective, method of exchange rate volatility decomposition amongst its internal and external components. The remainder of this paper flows as follows. Section 2 presents the theoretical framework on which our exchange rate determination model is based on. This section also presents the method for decomposing exchange rate volatility. Section 3 presents the data for the model. Section 4 presents and discusses results. Sections 5 concludes and draw some policy implications.

## **IV.2      *Analytical Framework***

Financial system in developed and emerging economies is relatively big and highly developed, so currencies are heavily traded. This high trade of currency mainly results from microeconomic aspects, such as speculative and hedging demand from market agents (Lyons, 2001). Unlike in developed and emerging countries, financial system in developing countries is infant and the economy is weakly integrated into the world financial market, so currency demand is mainly impelled by macroeconomic factors such as trade in goods and services. The implication is that exchange rate movements in Mozambique are most likely to be explained by macroeconomic factors (Hassan and Simione, 2009). Therefore, the exchange rate model adopted in this work attempts to address Mozambican exchange rates movements from a macroeconomic perspective.

### ***IV.2.1    The Model***

We adopt the framework developed in Hassan and Simione (2009) for the determination of exchange rate. This framework is a variation of the standard monetary model of exchange, modified to account for specific characteristics of Mozambican economy. These specifics include: (i) trade in goods being a major determinant of currency transactions than international capital flows, (ii) purchasing power parity (PPP) as the international parity condition and (ii) domestic central bank exerting an active role to set benchmark interest rates. The model consists of three macro building blocks: money

market equilibrium, international parity condition and monetary policy rule. Specifically, the model assumes money market equilibrium given as

$$\frac{M_t}{P_t} = L(\mathcal{Y}_t, I_t), \quad (1)$$

where  $M_t$  is the nominal money supply,  $P_t$  is the price level,  $Y_t$  is real income and  $r_t$  is the nominal interest rate, all at time  $t$ .  $L$  is the demand for real money function. Assuming a log-linear money demand and letting  $m \equiv \log M$ ,  $p \equiv \log P$ ,  $y \equiv \log Y$  and  $I = (1 + i)$ , leads to

$$m_t - p_t = \phi y_t - \eta i_t. \quad (1)$$

where  $\phi$  and  $\eta$  are elasticities of demand for real money with respect to income and interest rates, respectively. Assuming that the same relationship holds in the foreign country, with identical money demand elasticity parameters, letting  $*$  represent foreign quantities, the money equilibrium in foreign country is given as

$$m_t^* - p_t^* = \phi y_t^* - \eta i_t^*, \quad (2)$$

The model assumes the purchasing power parity (PPP) as the only international parity condition. Then,

$$P_t = \varepsilon_t P_t^*. \quad (3)$$

where  $P_t^*$  and  $\varepsilon_t$  are, respectively, foreign country prices and the nominal exchange rate, all at  $t$ , with the exchange rate defined in units of domestic currency per unit of foreign currency. Taking logs of (3) gives

$$p_t = e_t + p_t^*, \quad (4)$$

where  $p \equiv \log P$  and  $e \equiv \log \varepsilon$ .

The model also assumes that, instead of letting the interest rates being determined in the money market, domestic and foreign central banks determine the short-run benchmark interest rates as a function of macroeconomic factors. The central bank's reaction function is captured by a standard Taylor rule, that is,

$$i_t = \alpha + \xi(p_t - \rho) + \delta(y_t - \gamma), \quad (5)$$

meaning that the central bank sets the interest rate in response to the deviation of the price level from a target,  $\rho$ , and the deviation of output from a target  $\gamma$ . Assuming the same rule for the foreign central bank, with equal responsiveness parameters  $\xi$  and  $\delta$ , we have

$$i_t^* = \alpha^* + \xi(p_t^* - \rho^*) + \delta(y_t^* - \gamma^*), \quad (6)$$

As Hassan and Simione note, this interest rate rule is a valid assumption for South Africa and The United States (foreign countries considered in this study), according to the empirical research. They also note that, although it is arguable that Mozambican central bank only targets price stability and not the output gap (i.e.  $\delta=0$ ), letting  $\delta=0$  in (6) would not affect the functional form of the resulting exchange rate model.

Subtracting (6) from (5), letting  $\alpha = \alpha^*$  and assuming for simplicity that foreign targets of price and output are equal to domestic targets (i.e.  $\rho = \rho^*$  and  $\gamma = \gamma^*$ ), leads to

$$(i_t - i_t^*) = \xi(p_t - p_t^*) + \delta(y_t - y_t^*). \quad (7)$$

Now subtracting equation (2) from (1) and solving for  $(pt - pt^*)$ , we get

$$(p_t - p_t^*) = (m_t - m_t^*) - \phi(y_t - y_t^*) + \eta(i_t - i_t^*). \quad (8)$$

Using equation (4), PPP, for  $(pt - pt^*)$  in (8) gives

$$et = (m_t - m_t^*) - \phi(y_t - y_t^*) + \eta(i_t - i_t^*). \quad (9).$$

Now substituting equation (7) into (9) for  $(it-it^*)$ , gives the exchange rate as

$$e_t = (m_t - m_t^*) - (\phi + \eta\delta)(y_t - y_t^*) + \eta\xi(p_t - p_t^*). \quad (10)$$

According to equation (10), nominal exchange rate is determined by macroeconomic monetary fundamentals. Everything else constant, it appreciates when domestic money supply falls relative to foreign; if domestic income growth exceeds the foreign; and if domestic inflation falls relative to foreign. As noted earlier, this is the model derived by Hassan and Simione (2009). As they note “it is, by construction, a model for the medium to long term value of the currency, since each assumption can only realistically describe low frequency behavior.”

### ***Volatility Decomposition***

We use a simple, but effective, approach to account for the role of internal vs. external shocks in determining exchange rate volatility. The approach is twofold. We first estimate a regression model of the exchange rate (equation 10 above). We then use the estimated model to estimate exchange rate volatility, accounting for its internal and external components.

It is straightforward to show that, using equation (10), the variance of the exchange rate is a linear combination of the variances of the explanatory shocks, that is,

$$\sigma_e^2 = \theta_1 \sigma_m^2 + \theta_2 \sigma_y^2 + \theta_2 \sigma_p^2 + \theta_2 \sigma_m^2 + \theta_1 \sigma_y^2 + \theta_2 \sigma_p^2 \quad (11)$$



In this framework, we define external shocks as shocks to variables out of a country's control. Thus, they comprise foreign GDP, foreign money supply and foreign price level. Internal shocks comprise the same variables, but for the domestic economy. From expression (11), one can decompose total variance amongst its external and internal components.

#### ***IV.2.2* Data**

We use the same data used in Hassan and Simione (2009). Mozambican data were obtained from *Banco de Moçambique* (Mozambique's central bank) and *Instituto Nacional de Estatística*; South African data from the South African Reserve Bank and Statistics South Africa; US data from the Federal Reserve System (esp., Federal Reserve Bank of St. Louis), the Bureau of Economic Analysis, and the Bureau for Labor Statistics. Quarterly GDP data for Mozambique are only available from the first quarter of 2000. Therefore, we have estimated the quarterly GDP for the period 1994q1-1999q4. The method used is described in *Appendix D*. The sample consists of 56 observations, extending from the first quarter of 1994 (coinciding with the liberalization of Mozambique's currency market) to the fourth quarter of 2007.

We consider South African and US data because the rand and the dollar are the most important exchange rates in Mozambique. (The rand due to close trade links with South Africa, particularly imports; and the dollar is the main reference currency for most currency transactions.) Exchange rates are in units of metical per unit of foreign currency. The monetary variable is M2. Price levels are measured by Consumer Price Indices (CPI). Output is measured by real Gross Domestic Product (GDP). Following Meese and Rogoff (1983), the data are not adjusted for seasonality. The data series are non-stationary (i.e. either the mean or the auto-covariances depend on the date – see Hamilton (1994, chapter 3)). We also run the Dickey-Fuller unit root test for stationarity and the statistical tests confirm that all series are  $I(1)$  – i.e. they are non-stationary, and become stationary on first differencing.

#### ***IV.2.3* Results**

Table 6 presents the results for the estimated exchange rate model. The results support the existence of a long-term relationship between the exchange rate and the macro fundamentals. The coefficient signs are consistent with our theoretical expectations: faster output growth relative to foreign appreciates the domestic currency; faster money supply growth relative to foreign depreciates the currency; higher inflation relative to foreign depreciates the currency. These results apply for both the Metical-Dollar and Metical-Rand exchange rates.

**Table 6: Cointegration and Error Correction Model - Regression Results**

	Cointegrating Regression				Error Correction Regression <sup>1</sup>			
	et=MT/USD		et=MT/ZAR		et=MT/USD		et=MT/ZAR	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
$y_t - y_{t-1}^*$	-1.14***	0.000	-0.78***	0.000	-0.60***	0.000	-0.64***	0.000
$m_t - m_{t-1}^*$	0.32***	0.001	0.17**	0.028	-0.36***	0.000	-0.30***	0.000
$p_t - p_{t-1}^*$	0.19*	0.062	0.58***	0.000	0.07	0.269	0.16**	0.035
$v_{t-1}$	-----	-----	-----	-----	-0.18***	0.001	-0.13***	0.004
Constant	-3.94	0.014	0.66	0.266	0.02	0.000	0.01	0.000
Adj-R <sup>2</sup>	0.98		0.92		0.88		0.92	
F Test	973***	0.000	217***	0.000	100***	0.000	167***	0.000
Observations	56		56		55		55	

1 - variables from cointegrating regression enter in first differences and cointegrating residuals enter with one lag.

, \*\* and \* denote statistical significance at 1, 5% and 10%, respectively.

We test the residuals for stationarity using the augmented Dickey-Fuller test, from where we conclude that there is long-term relationship between the exchange rate and macro fundamentals, i.e., the variables in the model are cointegrated.

Table 6 also presents regression results for the ECM model. Except for the money supply differentials, all the coefficients in the ECM model have the expected sign. The ECM term, which is the key element in ECM models behaves as expected and is statistically significant at 1% level for both the Metical-Dollar and Metical-Rand rates. According to the estimated ECM coefficients, if the Metical-Dollar exchange rate deviates from its equilibrium level in a given quarter, 18% of such deviation will be corrected in the following quarter. For the case of the Metical-Rand rate the adjustment speed will be smaller (13%), as implied by its ECM coefficient.

Table 7 presents the model estimated variance of the exchange rate and its components. Column (1) shows the variance of exchange rate predicted by the model. Columns (2) and (3) decompose the predicted variance into the components associated with external and internal shocks, respectively.

**Table 7: Volatility decomposition**

		(1)	(2)	(3)
		Model-predicted variance	External component	Domestic component
<b>MT/USD</b>	<b>Value</b>	0.72	0.47	0.25
	<b>% of total variance</b>	100	65.3	34.7
<b>MT/ZAR</b>	<b>Value</b>	0.29	0.12	0.18
	<b>% of total variance</b>	100	39.6	60.4

Columns (2) and (3) illustrate that, while the volatility in the Metical-Dollar exchange rate is mostly driven by external shocks, the volatility in the Metical-Rand rate is mostly driven by domestic shocks. This is clear from the model-estimated variance components, which suggest that about 65% of volatility in the Metical-Dollar rate is caused by external shocks, while for the Metical-Rand rate external shocks account for about 40% of total volatility. These figures suggest that both external and domestic shocks are important in driving exchange rate fluctuations in Mozambique.

The findings above contradict the views that Mozambican exchange rates fluctuations are fundamentally caused by external shocks, as if domestic policies had no role at all in minimizing exchange rate volatility. Although most of the volatility in the Metical-Dollar exchange rate is caused by external shocks, domestic policies matter in stabilizing the exchange rate, since domestic shocks account for about 35% of total volatility. Domestic policies matter even more for the case of Metical-Rand exchange rate, as domestic shocks account for about 60% of total volatility. Then, ensuring stability of Mozambican price level and money supply as well as minimizing fluctuations in the real sector activity can help reducing exchange rate fluctuations.

### **IV.3      *Concluding remarks***

We attempted to decompose exchange rate volatility in Mozambique into its external and domestic components. We did so by examining the volatility of the model-estimated exchange rate for the Metical-Dollar and Metical-Rand rates. Our results suggest that, historically at least, the volatility of the Metical-Dollar exchange rate is mostly driven by external shocks. However, this does not imply that domestic policies are negligible in addressing exchange rate stability, since domestic shocks account for 35% of total volatility of the Metical-Dollar exchange rate. For the case of the Metical-Rand exchange rate, domestic shocks are more influential than external shocks, since internal shocks account for a higher proportion of volatility (60%). The bottom line is that domestic policies matter in stabilizing the exchange rates in Mozambique, as opposed to the views that exchange rate fluctuations in Mozambique are fundamentally driven by external

shocks and domestic policies are irrelevant. Then, ensuring stability of Mozambican price level and money supply as well as minimizing fluctuations in the real sector activity can help reducing exchange rate volatility.

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