Chapter II
REVIEW OF LITERATURE

This chapter surveys the relevant studies conducted by the scholars and experts in this field, so as to identify the research gap. Further, literature on the theories along with a review of national and international practices of foreign exchange management and NRB's publications and the available reports/ have been referred. IMF's publications, such as staff papers, working papers and newsletters also form a part of the literature review. Other books, journals, periodicals, reports and office bulletins as required for the study have been reviewed. The literature reviewed has been discussed under the heads of exchange rate, dynamics of international trade and payments, foreign exchange market intervention, foreign exchange reserves management and legal and institutional mechanism of foreign exchange management in Nepal.

2.1 Exchange Rate

The international literature on exchange rate regimes in emerging market has been vast and still growing. However, the availability of literature that deals with exchange rate regimes and management in a developing country like Nepal is limited. As a member of the IMF, information on Nepal's exchange rate arrangement is found in publications like the Annual Report on Exchange Arrangements and Exchange Restrictions [AREAER] and International Financial Statistics [IFS]. Publications of the NRB like the Forty Years of NRB, NRB in Fifty years and other regular publications like Annual Report, Quarterly Economic Bulletin and Current Macroeconomic and Financial Situation of Nepal (monthly) include information on Nepal's exchange rate regime and management. Other publications of NRB like the Economic Review, Anniversary Issue of *Samachar* and Economic Issues of *Mirmire* as well as Economic Journal published by Tribhuvan

University incorporate some articles on the area of exchange rate system of Nepal.[7]

Maskay (1998)'s study is based on a model of a small developing economy, also called the model of impossible trinity as propounded by Mundell (1961). It states that it is impossible to have all three of the following at the same time: a fixed foreign exchange rate, free capital movement (absence of capital controls) and an independent monetary policy. In other words, we can only choose two among the three variables. From this, it can be inferred that when there is no capital openness, there can be a fixed exchange rate and the central bank can adopt independent monetary policy. The Central Bank in Nepal (NRB) has pursued a similar policy. According to Maskay, the peg has allowed flexibility to maintain some level of long term balance of payments equilibrium vis-à-vis India while reducing the associated short run instability (pp. 144-455). But, while concluding the causes and consequences of the Mundell model with reference to Nepal, Maskay implies that there is capital openness in Nepal, which is contestable. Hence, the conclusions arrived and policy outcomes recommended may be inconsistent with the assumptions of the Mundell model. However, the two conditions of the Mundell model will be satisfied to an extent even if the exchange rate is changed into a flexible one from the peg, namely, (a) free capital movement and (b) an independent monetary policy. Inevitably, exploring the prospect of a flexible exchange regime for Nepal comprises a research gap.

As for the capital account, there is no capital openness in Nepal. Prohibiting Investment in Foreign Countries Act, 1964 is still in operation today as in 1964, when it was promulgated. Without floating the exchange rate, we cannot venture to consider opening the capital account. Hence, the recommendation that exchange rate should first be made market-determined before capital account convertibility could be initiated (Basyal, 2015a).

[7] Economic Issue of *Mirmire,* which contains a collection of articles on management,

Another opportune research gap is analysing how Nepal has been successful in maintaining and sustaining the peg since 1960. According to Maskay, this is also a subject to be looked into in future research endeavours. Besides, the exchange rate has remained at the same level without any adjustment since 1993 till today, for a period spanning more than 24 years. While merchandise trade deficit has remained the perennial feature of Nepal's external trade balance, the deficit with India was financed especially by tourism earnings, worker remittances, investment income, pension refunds to ex-Gorkha soldiers and FDI from India, especially. In the New Millennium, imports started surging and the widening deficits, were financed by massive purchases of INR by the sale of USD remitted by Nepalese workers working in overseas destinations. Purchases of INR against the sale of USD started from FY 2003/04 and went on increasing every year since then. Such purchases of INR represented 16.5 percent of GDP in FY 2014/15. Likewise, industrial raw materials and other intermediate goods (now numbering 161) were allowed to be imported against the payment of USD from 1993, which constituted an average of 17.3 percent of total imports from India during the 12-year period (2003/04-2014/15). These developments also helped in continuing the peg without any adjustment for a long period.

2.1.1 Classification of Exchange Rate Arrangements

The classification system of the exchange rate arrangements is based on the IMF members' actual, de facto, regimes, which may differ from officially announced, de jure arrangements. The arrangements are classified among 10 types under four categories (Table 2.1). Short descriptions of these arrangements are given below (IMF, 2014).

Table 2.1
Classification of Exchange Rate Arrangements

finance and economics is published twice a year by the Office of Governor, NRB.

Category	Types of Arrangements	No. of Countries*	Percent of Total
a. Hard pegs	1. No separate legal tender	13	6.8
	2. Currency board arrangement	12	6.3
b. Soft pegs	3. Conventional peg	44	23.0
	4. Stabilized arrangement	21	11.0
	5. Pegged exchange rate within horizontal bands	1	0.5
	6. Crawling peg	2	1.0
	7. Crawling-like arrangement	15	7.9
c. Floating regimes	8. Floating	36	18.8
	9. Free floating	29	15.2
d. Managed Floating (Residual category)	10. Managed floating with no pre-determined path for the exchange rate	18	9.4
	Total	191	100.0

* As at end-October 2014.
Note: The names of the countries following these exchange rate regimes have been presented in Appendix 2.1
Source: AREAER, IMF (2014), pp. 6-7

Exchange Arrangement with No Separate Legal Tender: In this type of arrangement, the currency of another country is adopted as the sole legal tender which implies the complete surrender of the monetary authorities' control over domestic monetary policy. Among the 13 countries, eight have adopted the USD, three have adopted Euro [EUR] and two have adopted the Australian dollar [AUD] as their currency.

Currency Board Arrangement: This is a monetary regime based on an explicit legislative commitment to exchange domestic currency for a specified foreign currency at a fixed exchange rate. Hence, domestic currency will be issued only against the foreign exchange and that it remains fully backed by foreign assets.

Conventional Pegged Arrangement: The currency is formally or de facto pegged at a fixed rate to another currency or a basket of currencies, where the basket is formed from the currencies of major trading or financial partners, and weights reflect the geographic distribution of trade, services, or capital flows. The

exchange rate may fluctuate within narrow margins of less than +/- 1 percent around a central rate or the maximum and minimum value of the exchange rate may remain within a narrow margin of 2 percent for at least three months. The monetary authority stands ready to maintain the fixed parity through direct intervention (i.e., by sale or purchase of foreign exchange in the market) or indirect intervention (i.e., by aggressive use of interest rate policy, imposition of foreign exchange regulations, exercise of moral suasion that constrains foreign exchange activity or intervention by other public institutions). Out of 44 countries adopting the fixed peg against a single currency, 16 have pegged to the USD, 17 to the EUR, 5 to the Composite and 6 to other currencies including Bhutan and Nepal, the currencies of which are pegged to the INR.

Stabilized Arrangement: Stabilized arrangement involves a spot market exchange rate that is maintained within a margin of two percent for a six-month period or longer and is not floating.

Crawling Peg: In a crawling peg arrangement, the currency is adjusted periodically in small amounts at a fixed rate or in response to changes in selective quantitative indicators, such as past inflation differentials vis-à-vis major trading partners or differentials between the inflation target and expected inflation in major trading partners.

Crawl-like Arrangements: A crawl-like arrangement requires the exchange rate to remain within a narrow margin of two percent relative to a statistically identified trend for six months or more, and the exchange rate arrangement cannot be considered as floating.

Pegged Exchange Rate within Horizontal Bands: In this type of arrangement, the value of the currency is maintained within certain margins of fluctuation of at least +/- 1 percent around a fixed central rate.

Floating: A floating exchange rate arrangement is market determined, without a predictable path for the rate. Floating arrangements may exhibit more or less exchange rate volatility, depending on the size of the shocks affecting the economy.

Free Floating: A floating exchange rate can be classified as free floating if intervention occurs only exceptionally and aims to address disorderly market conditions. Intervention is limited to at most three instances in the previous six months, each lasting no more than three business days.

Other Managed Arrangements: Residual arrangements are used when the exchange rate arrangement does not meet the criteria for any of the other categories. Arrangements characterized by frequent shifts in policy may fall in this category. Indicators for managing the rate are broadly judgemental (e.g., BOP position, international reserves and informal market development) and adjustments may not be automatic. Intervention may be direct or indirect. The managed floating exchange rate system was adopted by many countries after the Bretton Woods System cracked in 1973.

2.1.2 Chilean Peg Experience-Lessons for Nepal

In Chile, financial sector reforms tended to precede capital account liberalization. Chile liberalized capital inflows as part of its program of economic restructuring, and liberalized outflows in response to balance of payments considerations. Chile actively sought to discourage capital inflows into the banking system because of the fears that sudden reversals of such flows could destabilize the banking system. Chile's successful management of capital account liberalization may be partly attributed to its more flexible management of the exchange rate within a preannounced crawling band (Johnston, Darbar, & Echeverria, 1997, p. 34).

As for Thailand, her policy of promoting short term capital inflows through the international banking facility at the pegged rate could not become sustainable in

1997-98 as evident by the sharp reversal of capital flows following the change in market sentiments. So, adopting more flexible exchange rate arrangements could bolster capacity for better management of capital inflows, thereby avoiding situations of instability or crisis (Ibid, p. 38).

Chile experienced virtually all the menu of options of exchange rate policies, from hard pegging in the early 60s and 80s, to the crawling peg, and finally to the current clean floating. The fixed rate episode of 1979-82 of USD 1 = Pesos 39, which occurred at a time of heavy capital inflows, was associated with a substantial real peso appreciation and an unsustainable current account deficit. More than that, after a sudden reduction in capital inflows, the episode ended up in the biggest recession (15 percent drop in GDP in 1982-83), a very high external debt, and an upsurge in inflation. Fair or not, the nominal anchor role of the exchange rate was in part blamed for the disaster by the general public and many economists (Morande, 2001, pp. 1-2).

Contrary to what one could have expected a priori, the adoption of a free floating exchange rate regime in Chile in September 1999 has not brought a significant increase in exchange rate volatility. There does not seem to exist any ground as of today to fear an 'excessive' volatility of the nominal exchange rate in Chile because of a free floating regime. When the band was in place, there was always the possibility of a change in its parameters and then a sudden change in the market exchange rate. Perhaps this is a factor explaining why a more transparent floating does not bring more volatility (Ibid, pp. 14-15).

A key implementation problem is that, in a world of floating rates, pegging to one currency means floating vis-à-vis most others. This is not a problem for countries whose trade is geographically very concentrated, and which peg to the currency of that large trading partner. But otherwise cross-rate fluctuations can do serious damage, as East Asian economies whose currencies were pegged to the dollar revealed in 1997. The sharp appreciation of the dollar vis-à-vis the yen caused

substantial appreciation in the real effective exchange rate of several East Asian countries, thus paving the way for the crisis that followed. Of course, a part of the problem followed from the fact that these countries pegged, *de facto* or *de jure*, to the dollar, while their trade was quite diversified (Velasco, 2000, p. 9).

Lessons for Nepal

In Chile, there was capital account openness in the external transactions even before the free floating regime was in place. Nepal has not so far adopted capital account convertibility, resulting in the sustainability of the peg since its adoption in 1960. But one Chilean hard lesson is quite pertinent for Nepal—that the capital account should be cautiously opened only after the exchange rate is freely floated. India being the biggest trading partner which is also geographically proximate, pegging to the INR seems a plausibly appropriate decision for Nepal as long as the capital account is not open. Moreover, pegging does not mean failing to make timely adjustments to the peg so as to make it as aligned to the market as possible. But, the current peg rate has remained the same for 24 years, which needs to be adjusted as per market fundamentals. In the world of floating regimes, inflexible pegging cannot be a permanent or sustainable solution. When India adopts full-fledged capital account convertibility, Nepal also needs to float its currency and sequence the exploratory steps for the implementation of capital openness. So, preparing the economy like readying the legal, regulatory and institutional structure and process for soundly and sustainably implementing the free floating regime and capital account convertibility constitute the significant macroeconomic agenda for the medium term.

2.2 Foreign Exchange Market Intervention

Foreign exchange intervention is broadly defined as the official purchases and sales of foreign currencies that the monetary authorities of a country undertake to influence future currency movements (Ballie, Humpage & Osterberg, 2000). It

is the process by which the monetary authorities attempt to influence market conditions and the relative value of the domestic currency on the foreign exchange market (Eun & Resnick, 2008). Foreign exchange interventions are conducted to achieve various objectives like (a) to influence the level of exchange rate as in the case of fixed exchange rate regimes, (b) to dampen exchange rate volatility, and (c) to influence the level of the foreign exchange reserves (BIS, 2005).

The question of how Central Bank interventions may impact nominal exchange rates in developing economies has triggered a large body of literature especially after the Bretton-Woods period. Sarno and Taylor (2001) conclude that what emerges from studies focusing on the 1990s is that interventions tend to impact the exchange rates, "especially if the intervention is publicly announced and concerted and provided it is consistent with the underlying stance of monetary and fiscal policy."

In a study carried out by Sundararajan (2015), it was reported that the Reserve Bank of India [RBI] conducted interventions of purchase/sale of USD during 56 months (Jan. 2009-Aug. 2013). Because a regression result in his study suggested that intervention may in fact exacerbate volatility, Sundararajan concluded that "intervention ought to be very selective, that is, when a runaway rise or fall in the Rupee seems imminent, or on occasions when there is clear anticipation or observation of significant volatility, which also will not die down by itself soon". Further, he added "it is critical to estimate as accurately as possible, the magnitude and duration of the flood of foreign exchange inflow, so that the quantum and timing of intervention can be appropriately calibrated. Thus, a very high degree of alertness and market intelligence are called for, especially during significant exchange rate changes or interest rate changes which can trigger capital flows".

It is well documented fact that a large number of emerging market economies has moved recently from fixed exchange rate regimes towards more flexible exchange rate regimes. Nevertheless, extensive foreign exchange interventions might have been undertaken in these countries mainly driven by a fear of floating (Calvo & Reinhard, 2000) or by a dread of depreciation, as suggested by Dutta and Leon (2002). In this context, Canales-Kriljenko (2003) suggest that foreign exchange interventions may be more effective in emerging market economies as compared to well established industrialized countries because of the following reasons: (a) Central Bank interventions are not always fully sterilized, (b) the volume of interventions is always bulky relative to market turnover in narrow foreign exchange markets, (c) the market participants and the regulatory framework may be more conducive to interventions, (d) moral suasion may play a bigger role, and (e) informational advantage of the Central Banks vis-à-vis market participants.

There is little empirical research conducted to investigate the effectiveness of Central Bank interventions in developing countries and in particular in case of Nepal. Central Banks intervene on the foreign exchange markets either to reverse the trend of the exchange rate, or to slow down the pace of the appreciation and depreciation (exchange rate smoothing). The Central Bank may also accentuate trends on foreign exchange markets by causing the exchange rate to appreciate or depreciate more than it appreciated or depreciated prior to the intervention.

Foreign exchange market intervention usually aims to promote stability by countering disorderly markets, or in response to special circumstances. Williams (2005) observes that intervention in developed countries, if and when intervention takes place, is often limited to ensuring orderly conditions for the movement in exchange rates. But, there is widespread suspicion that in recent years, some developed countries have implemented loose monetary policy, i.e., quantitative easing, with the secret motive of depreciating their currency, in

order to encourage exports and discourage imports, which is equivalent to a form of intervention. Indeed, increasingly, intervention is seen as having little lasting power to influence the real exchange rate and thus competitive conditions for the tradable sector (pp. 3-4). Canales-Krilijenko, Guimaraes and Karacadag (2003) state that the reserves accumulation is particularly important for countries for building confidence and strengthening their debt-repayment capacity and external liquidity positions (p. 3). Hence, intervention can be used to supply liquidity to the foreign exchange markets or to influence the level of foreign exchange reserves.

Previous literature (for instance, Sarno & Taylor, 2001; Evans & Lyons, 2002; Galati & Melick, 2002; Taylor, 2005; Disyatat & Galati, 2005) refers to five channels through which the Central Bank's foreign exchange interventions might influence the exchange rates; (i) monetary policy channel, (ii) portfolio balance channel, (iii) signaling or expectations channel, (iv) order flow channel, and (v) coordination channel.

It is often suggested that the major objective of foreign exchange intervention in the 21st century is to calm disorderly markets (Mihaljek, 2005; Moreno, 2005). However, there is little evidence that even massive intervention can materially affect the exchange rates (Eun & Resnick, 2008, p. 110). Central Banks intervene in the foreign exchange market because "…financial markets are not to be trusted ; they can drive exchange rates far away from a sensible value, doing real harm in the process" (Krugman, 2000). Besides this, other considerations like maintaining export competitiveness and guarding currency against speculation often outweigh this objective and require official intervention (Manandhar, 2001).

Foreign exchange market interventions aimed at preventing currency depreciation require a high level of foreign exchange reserves. Authorities, following floating exchange rate regimes, often worry that a steep depreciation

of the currency could have political and credit risks. Therefore, they intervene in order to support the rate or to slow its depreciation. Foreign exchange market intervention is defined as any operation that has the effect of altering the net foreign assets position of the public sector. Moser-Boehm (2005) states the limitations to intervention. If the exchange rate is depreciating as a result of weak fundamentals, intervention would not help to stabilize it for long unless the Central Bank raises interest rates, and even then stabilization is not assured. Moreover, a hike in interest rates can hurt domestic industry and accelerate capital flight, as was the case during the Southeast Asian crisis. Likewise, trying to reverse depreciation by intervening in the foreign exchange markets can be ineffective in the face of chronically large fiscal deficits.

2.3 Dynamics of Nepal's Integration with the Outside World in terms of Trade and Payments

2.3.1 Features of Nepalese International Trade

There are several distinct features of Nepalese foreign trade. First, the commodity pattern of imports and exports indicate that Nepal's foreign trade conforms to the comparative advantage theory of international trade. The country's comparative advantage lies in labour intensive manufacturing and agricultural products (Ministry of Industry, Commerce and Supplies, 2004). This type of trade illustrates the traditional theory of trade also known as 'inter-industry trade'. Second, Nepal's international trade is dependent on India; about two-thirds of Nepal's trade occurs with India. Third, there is a continual deficit in Nepal's international trade. Notably, the volume of trade deficit is continuously increasing. Fourth, Nepal's share in global trade is declining. Fifth, Nepal remains dependent on a relatively small basket of exports and a few destination markets (Karmacharya, 2005). Sixth, in terms of composition, merchandise trade constitutes the largest portion of international trade of Nepal (Thapa, 2012).

2.3.2 Exchange Rate Policy and the Trade Deficit

There is a simplistic consensus that the devaluation of home currency results in improvement of the trade deficit by encouraging exports. Many developing economies devalue their currencies to rectify their worsening trade deficit by improving exports growth. For example, Williams (2003) and some other economists claim that China and Japan engaged for many years in a program of buying massive volume of USD in order to keep the Chinese Yuan [CNY]/USD or Japanese Yen [JPY]/USD exchange rate lower, so as to make their exports more competitive in the US market (p. 7)

Nepal had devalued the peg rate with the INR four times up to 1993, with an intention of export promotion, ultimately targeting to reduce the trade deficit particularly with India. But the results never were encouraging, as all of the devaluations could not improve the trade deficit for a sustained period. Chaulagain (2015) attempted to examine whether the devaluation of NPR can be taken as policy tool for improving the trade deficit with rest of the world economies. He also observed the relation between the nominal effective exchange rate [NEER] and the real effective exchange rate [REER] with trade balance. Contrary to conventional thinking, he found that there is no room for improving Nepal's trade deficit through currency devaluation (pp. 18-26). So, the nominal depreciation of the exchange rate cannot be any effective tool to improve Nepalese trade imbalance. But devaluations are occasional events, which may lag macroeconomic changes. Hence infrequent one-time events may not provide the needed boost to exports; secondly, there can be other obstacles, e.g., inadequacy of power availability, inadequate shipping and transportation infrastructure and bottlenecks and unsupportive government policies, which could significantly choke the expected spike in exports consequent to a devaluation. In any case, his study implies the need to explore other measures

than devaluation. The indicated direction points to a research gap. Thus, a flexible exchange rate policy could be one such relevant area for the study.

2.4 Foreign Exchange Reserves Management

2.4.1 Definition, Features and Importance

Foreign exchange reserves are liquid foreign assets available to the Central Bank to intervene in the foreign exchange market to support its monetary and foreign exchange policies. According to IMF (2003), reserve assets consist of those external assets that are readily available to and controlled by monetary authorities for direct financing of payments imbalances, for indirectly regulating the magnitude of such imbalances through intervention in exchange markets to affect the currency exchange rate, and/or for other purposes.

Nugee (2000) mentions three common features of reserves management. First, the reserve assets are public assets. Second, the reserve assets are to be used as a tool for exchange rate policy or monetary policy as and when required. And third, the reserves are relatively large. Therefore, returns on the reserves are also important (p. 13). It has been well recognized that foreign exchange reserves serve as an important policy tool for exchange rate management, external debt management and monetary policy management. Therefore, it is vital for the Central Banks to manage them in an efficient way. If conducted properly, openly and successfully it will greatly strengthen the macroeconomic management (Ibid, p. 5). However, poor management of the reserves may put exchange rate policy at risk which can cause severe economic damage and financial loss on the assets themselves (Ibid, p. 6).

2.4.2 Need and Motives of Holding Foreign Exchange Reserves

Aizenman and Lee (2005) dealt with (i) transaction, (ii) speculative and (iii) precautionary motives of reserves accumulation, whereas Cruz and Walters

(2008) described the same in four categories i.e., (i) precautionary (financial stability), (ii) policy sovereignty, (iii) exchange rate stability and (iv) mercantilism. There is, however, no conscious view on the motives of holding reserves for financial stability, Dooley, Folkerts-Landau and Gabrel (2005) and Stiglitz and Greenwald (2010) describe motives for accumulation of reserves as a by-product of a deliberate development strategy of maintaining an undervalued real exchange rate for export promotion. According to Blackman (1981), under the Bretton Woods Agreement, an adequate holding of foreign exchange was necessary for intervention in the foreign exchange market so as to maintain the national currency within the range permitted by the IMF rules. With the advent of general floating, there is, theoretically, no need for reserves at all except for maintaining orderly market conditions, unless a country wants to indulge in "dirty" floating (p. 1).

The experience of the Southeast Asian crisis in the mid-1990s showed that even when foreign exchange levels are huge, they can be eroded rapidly, if there is loss of confidence. In this context, Williams (2006) observes, in Asia and more recently in a number of Latin American countries, Central Banks have embarked on deliberate policies of reserves accumulation. Indeed, some Asian countries like China and Japan have kept their currencies undervalued in an effort to maintain external competitiveness, attract FDI and boost exports and growth (p. 2). Dooley et. al. (2005) argue that the resulting accumulation of foreign reserves can be seen as collateral, which is being used for attracting FDI.

2.4.3 Reserves Accumulation in Full Convertibility

Williams (2006) observes that the level of foreign exchange reserves is heavily influenced by the extent to which the capital account is convertible. In strong competitive economies where capital inflows are vibrant, the liberalization of the capital account can lead to continued inflows of foreign exchange. In less competitive economies, particularly where there is the expectation that the

exchange rate cannot be maintained, liberalization of the capital account can lead to outflows of foreign exchange (p. 4). Similarly, in the case of hard currencies, the value of the currency is less dependent on the volume of foreign exchange reserves and more on the economic strength of the country (Ibid, p. 2).

2.4.4 Costs of Holding Reserves

Reserves yield benefits, but entail costs as well. Park and Estrada (2009) mention three major costs of reserves accumulation, namely, (i) inflation, (ii) fiscal costs, and (iii) higher interest rate. When the Central Bank purchases foreign currency against local currency, the monetary base will automatically increase, which in turn, could lead to inflation. In order to sterilize the inflationary impact of reserves accumulation, a Central Bank typically issues bonds, i.e., domestic liabilities against currency in circulation to withdrawing domestic liquidity. However, sterilization may entail a fiscal burden, the second major cost, if the interest rate a Central Bank pays on its outstanding bonds exceeds the interest rate it earns on its foreign reserve assets. The third major cost viz., higher interest rate, is also associated with sterilization. Sustained accumulation will eventually lead to a higher interest rate since there is a limit to the general public's appetite for sterilization bonds. Holding reserves entails some additional costs besides the three main costs (Park & Estrada, 2009).

The opportunity cost of holding reserves is another important element that the Central Banks have to take into consideration while managing reserves. It becomes more sensitive and an issue when holdings reach a significant level. The opportunity cost of holding reserves is the foregone investment of resources. Thus, any attempt to quantify costs and benefits of reserves is challenging (Williams, 2006, p. 6). Most Central Banks do not explicitly calculate such costs and benefits, but instead use several indicators of foreign exchange adequacy, none of which by itself is sufficient.

2.4.5 Impact of Holding Surplus Reserves

The cost of holding additional reserves may exceed the benefits. The argument against holding an excessive level of reserves has another dimension. Williams (2006) argues that struggling economies with high levels of reserves are indirectly financing the development of other large economies by holding their government securities (p. 5). Mohanty and Turner (2006) analyze the domestic implications of reserves accumulation in the economy and conclude that high intervention costs, monetary imbalances, overheated credit and assets markets, and liquid and distorted banking system are the implications of reserves augmentation. Moreover, a very high level of reserves can affect countries' willingness to adjust to changing circumstances leading to a laxity in macroeconomic policies with prolonged overvaluation of the exchange rate. Wijnholds and Kapteyn (2001) argue that an excessive build up of reserves needs to be avoided because it can impose considerable cost and implications in the economy.

2.4.6 Reserves Adequacy

The optimal level of reserves is neither infinite since reserves entail costs, nor zero since reserves yield benefits. The issue of reserves adequacy was first raised in the 1960s; however, it is yet to be resolved. Heller (1966) defines reserves adequacy as that point where the marginal utility of reserves equals the marginal cost. In his view, the optimality is determined not by total benefits and costs of reserves but by their marginal benefits and costs. Park and Estrada (2009) state that beyond a certain level, the marginal benefit of reserves is likely to diminish with the level of reserves. Likewise, beyond a certain level, the marginal cost of reserves is likely to increase with the level of reserves (p. 6). In addition, the optimal reserves level differs from country to country and changes over time even for a particular country given the various circumstances.

A traditional standard of reserves adequacy is whether they are enough to cover three months of imports; another is whether they are enough to cover all short-term external debt (Dadush & Stancil, 2011). Triffin (1960) states that a country's optimal foreign exchange reserve balances should be between 20 to 50 percent of its annual gross imports. In other words, the optimal reserve balances should generally satisfy gross imports of five months and no less than two months and a half at the least.

Wijnholds and Kapteyn (2001) have proposed a criterion of adding 20 percent of M2 to the benchmarks. Recently, the IMF (2011) also proposed a measure that combines exports, short-term debt and other portfolio liabilities [OPL], and M2 as indicators.[8] Wijnholds and Kapteyn further argue that the old rule of thumb of maintaining reserves equivalent to three months of imports has lost its relevance, especially after looking at the impact of the Asian financial crisis of mid-1990s. They claim that the crude rule of thumb ignores the liberalization process and external vulnerability and shocks (Ibid, p. 9). Now, they recommend focusing on the capital flows. They have identified the factors affecting reserves as external payment vulnerability, the trend of imports and opportunity cost. Once a country gets an access to credit from IMF, it can keep a relatively modest level of reserves (Ibid.).

2.4.7 Measuring Reserves Adequacy

Several attempts have been made by various economists to draw up general rules regarding reserves adequacy. Most of these are just informal *rules of thumb* based on general economic perception rather than rigorously derived theoretical concepts. Heller (1966) initially developed the optimal reserve theory

[8] The authors derived a formula to calculate the appropriate level of reserves: in fixed exchange rate regime, reserves should be equal to 1 to 1.5 times the sum of 30 percent of short-term debt [STD], 15 percent of OPL, 10 percent of M2, and 10 percent of exports; in floating exchange rate regime, reserves should equal 1 to 1.5 times the sum of 30 percent of STD, 10 percent of OPL, 5 percent of M2, and 5 percent of exports.

in consideration of costs and benefits. The costs were termed as the reserves' opportunity cost and the benefits were mainly generated from direct investment yield (p. 298). Economists further developed Heller's theory introducing more parameters. For example, interest rate change, exchange rate change and the time factors were put into Heller's model by Sellekaertas, Kreinin and Frankel.

One significant determinant of an economy's vulnerability to financial crisis is the ratio of reserves to short-term external debt. According to the Greenspan-Guidotti rule, the critical value of this ratio is one, with a value above one signaling safety and a value below one signaling danger. The underlying idea here is that the country with reserves equal to or more than all external debt falling within one year should be able to service its immediate external obligations even during a financial crisis (Park & Estrada, 2009, p. 7).

Although financial globalization has pushed the capital account to the forefront and the current account to the backdrop in most discussions of reserves adequacy, one measure of adequacy pertaining to the current account, namely, the months of imports that reserves can pay for, is still widely used. The basic idea is that a large stock of reserves will reduce the vulnerability of a country subject to adverse current account shocks and without significant access to international capital markets. There is general agreement that 3–4 months of imports is the benchmark (Ibid. p. 8).

Edison (2003) tries to explain reserves as a function of economic size, current account vulnerability and exchange rate flexibility. Spontaneously, since a country's international commercial transactions increase with its economic size, Park and Estrada (2009) expect reserves to have a positive relationship with population, per capita real GDP, imports–GDP ratio, and export volatility, and a negative relationship with exchange rate volatility (p. 11). There are also other factors affecting reserves adequacy, as for example, a higher level of reserves would be preferable in countries with weak macroeconomic fundamentals,

fragile banking system, volatility of capital flows, and development of the domestic foreign exchange market (Khatiwada, 2014).

Months of Imports Coverage

The most common method of measuring reserves adequacy is the equivalent number of months imports. A measure based on imports, it was felt, could determine how long a country could continue to import if all other inflows of foreign exchange dried up. For many years the guideline of reserves equivalent to 12 weeks of imports was used as the accepted measure by the IMF, but particularly after the South East Asian crisis, this has been questioned (Williams, 2006, p. 10).

The Guidotti Rule on Reserves Adequacy

After the East Asian crisis, on the matter of reserves adequacy, Pablo Guidotti (1999), a former Deputy Finance Minister of Argentina, developed a simple rule for policymakers, that usable foreign exchange should exceed scheduled amortizations of foreign currency debts (assuming no roll-overs during the following year).[9] The Calvo rule which states that the government's external debt repayments falling due in the next 12 months should not exceed its foreign exchange reserves, is quite similar to this.

Tests of reserves adequacy based on simple rules of thumb indicate a substantial gap between actual and optimal reserves. Indeed, policymakers often rely on those simple rules instead of more rigorous econometric models to assess reserves adequacy (Park & Estrada, 2009, p.10). However, for small developing countries, this rule is highly risky and is not likely to encourage confidence in fixed exchange rate regime. Musau (2009) states that foreign exchange reserves equivalent to debt repayments in the 12 months ahead would be inadequate in small developing countries with fixed exchange rates and possibly even in small

countries with floating exchange rates, too (p. 36). The IMF has proposed that in addition to the benchmarking of foreign reserves to short-term debt, countries should undertake stress testing of the BOP (Ibid, p. 40).

Debt Based Indicators

Debt based indicators have been developed as a means of measuring reserves adequacy. One measure, the level of reserves to short-term debt by remaining maturity, is deemed to be a useful indicator. The level of debt service repayment obligations in relation to export revenues from goods and services is another ratio which attempts to link earnings to payments. Traditionally, government debt service obligations have been the major consideration, but with increasing globalization, Central Banks can indirectly be put under pressure to provide foreign exchange for the servicing of private sector foreign debts as well. In fixed exchange rate systems it puts pressure on foreign exchange reserves directly if the Central Bank intervenes to protect the peg. The ratio of debt service to GDP is probably the most heavily used (Ibid, pp. 34-35).

New Metrics

It is suggested that new metrics for reserves adequacy will need to include not only some of the traditional factors, such as equivalent of months of imports and debt service ratio, reserves relative to debt amortization, stress testing, and estimates of current and capital account balances but also the size, nature and volatility of international transactions relative to reserves. This suggests also that future formulae will not be as simple, either as the 3-months import rule or the Guidotti/Calvo rule but will become increasingly complex (Musau, 2009, p. 16).

[9] This visionary suggestion was made by Pablo Guidotti, former Deputy Minister of Finance of Argentina, at a seminar of the Group of 33 in Bonn in the spring of 1999.

2.4.8 IMF's Revised Guidelines for Effective Reserves Management

The 2013 guidelines define reserves management as a process which ensures that adequate official public sector foreign assets are readily available to and controlled by the authorities for meeting a defined range of objectives for a country. According to the guidelines, foreign exchange reserves are held in support of a range of objectives, including to:

- support and maintain confidence in the policies for monetary and exchange rate management, including the capacity to intervene in support of the national or union currency,
- limit external vulnerability by maintaining foreign currency liquidity to absorb shocks during times of crisis or when access to borrowing is curtailed, and in doing so,
- provide a level of confidence to markets that a country can meet its external obligations,
- demonstrate the backing of domestic currency by external assets,
- assist the government in meeting its foreign exchange needs and external debt obligations, and
- maintain reserves for national disasters or emergencies.

The Guidelines are basically focused on core areas of reserves management, which includes: (i) reserves management objectives, scope and coordination, (ii) transparency and accountability, (iii) institutional framework, (iv) risk management framework, and (v) role of efficient market. The Guidelines state that reserves management should seek to ensure (a) adequate foreign exchange reserves are available for meeting pre-defined objectives, (b) liquidity, market, and credit risks are controlled in a prudent manner, and (c) subject to liquidity and other risk constraints, reasonable earnings are generated over the medium

to long term on the funds invested. Further, evaluation of alternative reserves management strategies and their respective implications for reserves adequacy are likely to be facilitated by a cost-benefit analysis of holding reserves. Reserves management strategies may also need to take into account strategies for the management of external debt for purposes of reducing external vulnerability (IMF, 2013).

Sound institutional and governance arrangements should be established through a legislative framework that clearly establishes the reserves management entity's responsibilities and authority. The internal governance structure of the reserves management entity should be guided by and reflect the principles of clear allocation and separation of responsibilities. Sound management of internal operations and risks requires appropriately qualified and well-trained staff, following sound business practices. Staff involved in reserves management should be subject to a code of conduct and conflict of interest guidelines regarding the management of their personal affairs. Reserves management, and any related policy operations, should be conducted in markets that have sufficient depth and liquidity, and can process transactions in a sound and efficient manner (IMF, 2001).

2.4.9 Some Strategic Issues on Reserves Management

Gold as a Reserve Asset

Gold is a highly liquid asset, convenient to store and exchange, and generally accepted as a means of payment for international trade. Since it is not issued by a country, gold is not subject to national crises, as distinct from money issued by a country or economic community (Manchev, 2009). However, Edison (2003) recommends excluding gold for analytical purpose mainly because it is not a major asset in reserve holdings and is normally valued at market price. He further

recommends that the gold valuation should be changed to constant price, if it is to be considered as a part of reserves (pp. 78-91).

Harmston (1998) shows that gold has retained its real purchasing power over very long terms in the USA, Britain, France, Germany, and Japan. Regardless of any price fluctuations, the purchasing power of gold swings back to parity with other commodities such as petroleum, sugar, grain, and metals. This determines one of gold's major functions as a hedge against inflation. The same study shows that gold may be used to diversify an asset portfolio (Ibid.).

Central Banks are positive on gold reserves in recent years. Some Central Banks manage their gold reserves more actively. Doran (1997) shows lending in gold growing dynamically, with developing countries' Central Banks playing the major role, though they only hold some 17 percent of world public sector gold. Intermediaries in this business are banks with a very high international rating (AA or better), since they tend to be the only private banks with whom Central Banks work. The most common financial instruments are deposits with interest paid in gold. Other important factors in gold reserves are foreign factors and legal requirements (Manchev, 2009, p. 20-21).

For the tradable standard in the international market, the IMF has assigned a purity of 995/1000 (IMF, 1993, p. 99). Similarly, the London Bullion Market Association [LBMA] has set an approximate weight of 12.5 kilogram [kg.] per exchange standard gold bullion bar and specifies a minimum purity similar to that of IMF.

Attributes of an International Currency

Foreign exchange reserves are held for facilitating international trade and conducting international financial transactions. A currency should command acceptability, stability and confidence among international community of nations in order to be categorized as international. In short, an international currency

and the country which issues it are broadly characterized with the following attributes (Ibid., 2009):

- The country which issues 'international currency' needs to have a stable financial and political system, which would impart confidence in the currency.
- The issuing country's financial markets need to be well-developed and integrated into the world financial markets.
- The currency must be recognized as internationally stable and suitable for use as a means of storing value.
- The issuing country must have a large share of world trade, or the currency must be widely used as a means of exchange in international transactions.

Currency Composition of Total World Reserves

The currency composition of total world reserves provides us with the information which guides us towards developing an ideal mix of reserves composition. The currency composition of official foreign currency reserves [COFER] in the compiled form of 147 IMF member countries from 1995 to 2014 is presented in Table 2.2 below.

Table 2.2
Share of Major Currencies in Total World Reserves

In Percent of Total Allocated Reserves

Years	USD	JPY	GBP	CHF	EUR	Others
1995	59.0	6.8	2.1	0.3	-	31.8
1996	62.0	6.7	2.7	0.3	-	28.3
1997	65.1	5.8	2.6	0.3	-	26.2
1998	69.3	6.2	2.7	0.3	-	21.5
1999	71.0	6.4	2.9	0.2	17.9	1.6
2000	71.1	6.1	2.8	0.3	18.3	1.5
2001	71.5	5.0	2.7	0.2	19.2	1.3
2002	66.5	4.9	2.9	0.4	23.7	1.6
2003	65.4	4.4	2.9	0.2	25.0	2.0
2004	65.5	4.3	3.5	0.2	24.7	1.9
2005	66.5	4.0	3.7	0.1	23.9	1.7
2006	65.1	3.5	4.5	0.2	25.0	1.8
2007	63.9	3.2	4.8	0.2	26.1	1.8
2008	63.8	3.5	4.2	0.1	26.2	2.2
2009	62.0	2.9	4.2	0.1	27.7	3.0
2010	61.8	3.7	3.9	0.1	26.0	4.4
2011	62.4	3.6	3.8	0.1	24.7	5.5
2012	61.3	4.1	4.0	0.2	24.2	6.1
2013	60.9	3.9	4.0	0.3	24.5	6.5
2014	63.1	3.9	3.8	0.3	22.1	6.8

Note: Allocated reserves refer to data on foreign exchange reserves reported under COFER.

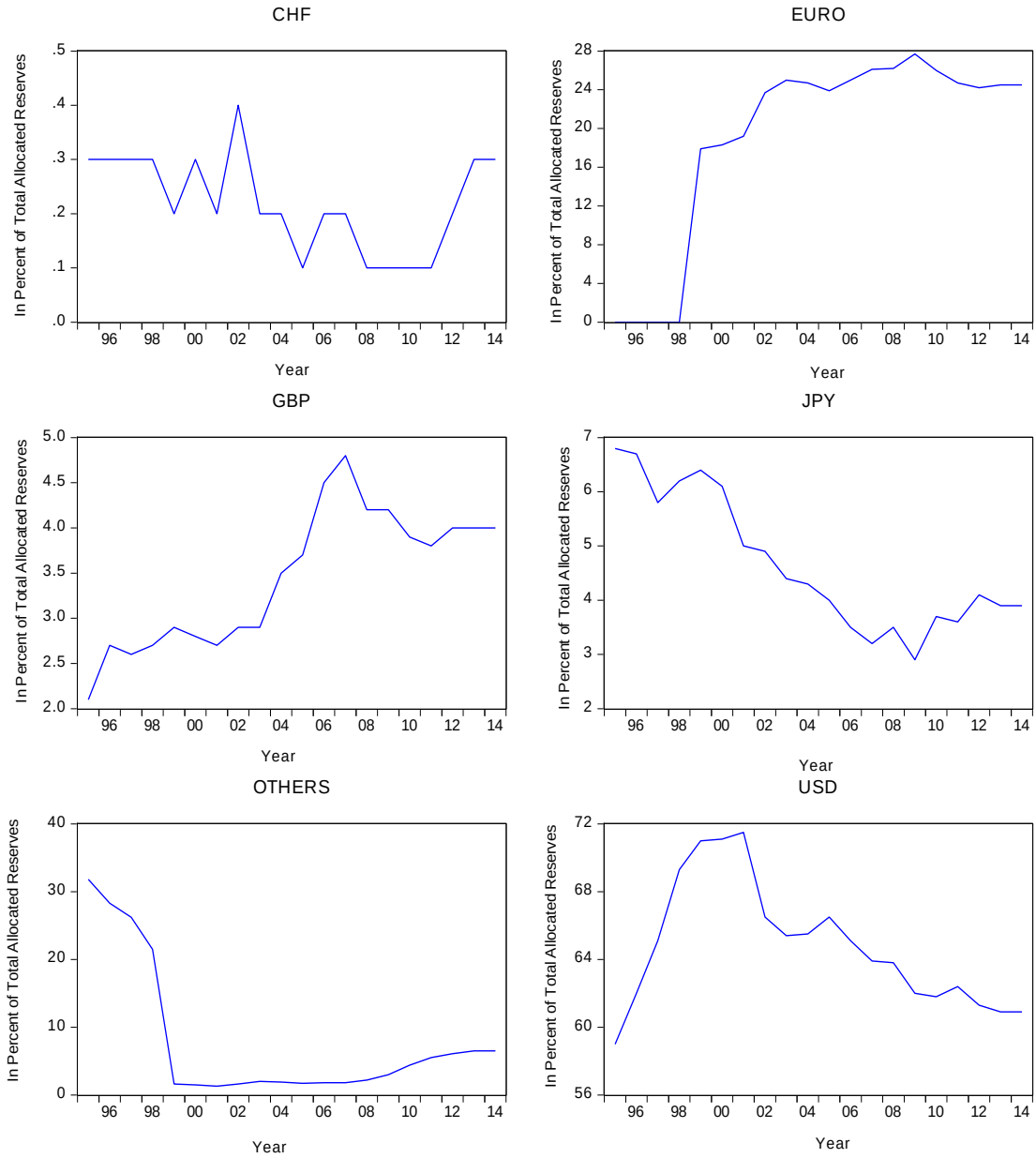
Source: World Economic Outlook, Sept 2011, Appendix Table 1 and e-Library Data 2015, IMF (Online available at http://www.imf.org/external/data.htm)

The above figures on major currencies used in the COFER database show that after the launch of the EUR in 1999, the relative share of EUR grew at the expense of 'Other Currencies'. The highest USD component (71.5 percent) in world reserves occurred in 2001 when the EUR component had been 19.2 percent, with the share of JPY at 5.0 percent and Great Britain Pound Sterling [GBP] at 2.7 percent. The highest EUR component (27.7 percent) in world reserves occurred in 2009 when the USD component had been 62.0 percent. Since the introduction of the EUR in 1999, the USD and JPY component in world reserves declined by 7.9 percent and 2.5 percentage points respectively (total

10.4 percentage points) which was made up by increments of EUR by 4.2, GBP by 0.9, Swiss Franc [CHF] by 0.1 and other currencies by 5.2 percentage points. Hence, since the introduction of the EUR, the USD and JPY recorded negative changes in their shares of the world reserves while other currencies witnessed positive changes in their shares (Figure 2.1).

Figure 2.1

Share of Major Currencies in Total World Reserves



Source: Calculated from IMF World Economic Outlook, Sep. 2015, Appendix Table 1 and e-Library Data, 2015.

Dilemma on Reserve Ownership

The question of whether the government or the Central Bank should own the foreign exchange reserves is a dilemma to which there is no single right answer. In most countries, the reserves are owned by the Central Bank, i.e., it is on the Central Bank's balance sheet and the ultimate decision on reserves management is taken within the Central Bank's management structure. But there are several counter-examples to this, e.g., USA, UK and Japan, where the reserves are formally owned by the government, and the ultimate decisions on their management are thus taken by the respective governments, usually through the Finance Ministry (Nugee, 2000, pp. 11-13). Nugee (2000) suggests the following factors for considerations:

- If the reserves are utilized in backing the domestic currency then it is more logical to keep them under Central Bank's ownership.
- If the reserves are used primarily for domestic monetary policy management, then it is more logical to keep them under Central Bank's ownership.
- If the reserves are primarily used to hedge foreign currency liabilities of the government, then it is logical to keep them in Government's ownership as an option.

Whoever formally owns the reserves, they are almost always managed by the Central Bank and are treated identically by the international authorities like IMF, WB, ADB, etc. as 'national foreign exchange reserves'. Even in the fully independent Central Bank, the ultimate decisions on a country's currency (exchange rate policy, intervention, union with another currency, dollarization, etc.) are usually taken by the government, and these decisions will have consequences for the reserves management. In such cases, the precise legal

ownership of the reserves would be of lesser importance than the need for coordinated policy-making between the government and the Central Bank (Ibid.)

2.5 Regulatory and Institutional Mechanism of Foreign Exchange Management in Nepal

2.5.1 Regulatory Mechanism

The phenomenon of foreign exchange management in Nepal is historically unique and interesting. Before the establishment of the Central Bank in Nepal, the RBI was the custodian of Nepal's convertible currency holdings. All the convertible currencies of Nepal used to be deposited with the Indian banks. As a result, there used to be no separate convertible currency reserves of Nepal. Nepal had to obtain permission from the RBI to use its own reserves. "This practice continued till the execution of the first Trade and Transit Treaty between Nepal and India on November 12, 1960. It was only after that treaty that the convertible currency earnings of Nepal started to be deposited in the NRB's account (Adhikary, 2005, pp. 309-310)". This could be categorized as an important milestone in making NRB the total controller of foreign exchange in Nepal. With the enactment of the Foreign Exchange (Regulation) Act, 1962, the important functions with respect to the receipt, control, expenditure and management of the foreign exchange systematically lies with the Central Bank. So, the NRB is the sole legal custodian of foreign exchange reserves of Nepal. The Bank has full authority to formulate, implement and cause to implement the foreign exchange policy of Nepal.[10] The NRB's responsibility to manage and operate Nepal's reserves is also conferred by the NRB Act 2002.[11] The responsibilities of NRB are not shared with any other government or private agency. NRB is independent in its management and operational decisions. NRB maintains international reserves at a level adequate for Nepal's international

[10] Section 5, Sub-sections (1) (c) and 1(j) of Nepal Rastra Bank Act, 2002
[11] Section 4, Sub-section (1) (e) of Nepal Rastra Bank Act, 2002

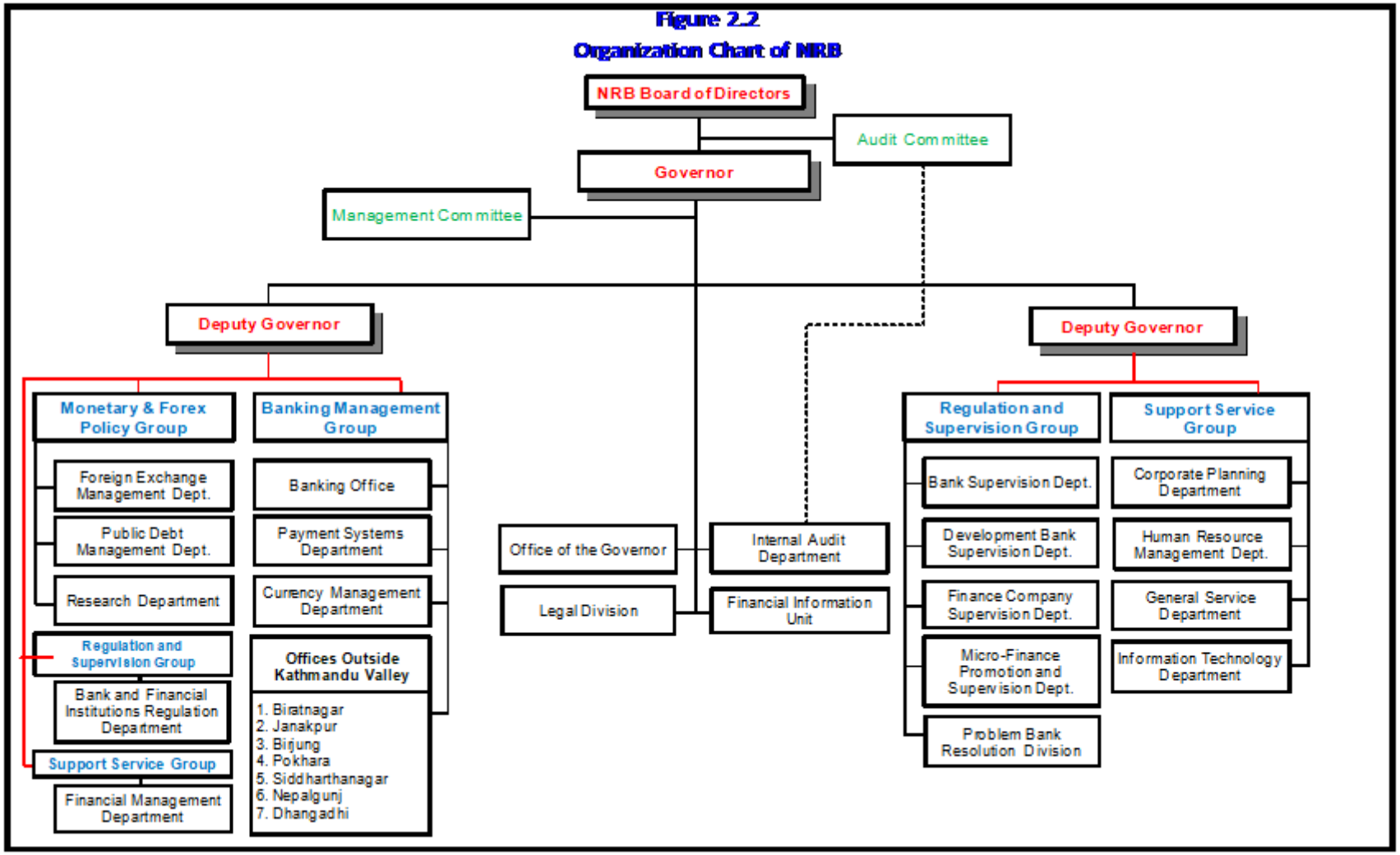
transactions. The regulatory arrangements with respect to foreign exchange management are summarized in Appendix 2.2 to Appendix 2.6.

2.5.2 Institutional Mechanism

As per the regulatory mechanism discussed above, NRB has been entrusted with the responsibility of direction, licensing, operation, investment, inspection and follow-up of the foreign exchange system in Nepal. Sections 62-68 of NRB Act, 2002 and the entire FERA (having 24 sections) have been dedicated to the management of foreign exchange. Hence, NRB is at the centre of the entire foreign exchange system. In addition, a whole network of NRB-licensed market participants for dealing in foreign exchange (numbering 4,783 as of mid-July 2015), namely, 127 BFIs, 48 remittance companies, 431 money changers, 329 hotels, 1,744 travel agencies, 1,660 trek organisers, 305 cargo operators, 59 airlines, 79 organisations, namely, insurance companies, hospitals and colleges are also engaged in this work. The NRB's institutional mechanism, with special reference to foreign exchange management, has been presented in Figure 2.2:

Figure 2.2

Organization Chart of NRB



The Executive Director of the FEMD reports to the Deputy Governor looking after the departments falling under the Monetary and Foreign Exchange Policy Group and Banking Management Group who then reports to the Governor, as shown in the organizational structure. Finally, Governor as Chairman briefs the NRB Board of Directors.

2.6 Concluding Note

Among the categories of the various foreign exchange regimes in operation in the IMF member countries, Nepal's exchange rate system is classified as conventional pegged arrangement. Nepal's international trade and payments is based on OGL system and fixed exchange rate system as the nominal anchor has remained the major plank of Nepal's monetary and trade mechanism. Nepal's international trading and financial accounts is comprised under current account convertibility, which means that capital account convertibility is not yet permitted.

Reserves management is crucial to all economies, especially for avoiding disruptive effects of inflows and outflows of transactions. Various regulatory arrangements and guidelines have been in operation in Nepal. The institutional mechanism comprises the Central Bank at the core of the foreign exchange system with various other institutional networks working at the periphery.