How do central banks manage exchange rates?
By P. Samarasiri, Assistant Governor, Central Bank of Sri Lanka

Foreign exchange market and management of exchange rate of a country’s currency are two key areas that influence the economic well-being of the general public. The exchange rate of a country’s currency is the value of its money for international trade in goods, services and finance and, therefore, it is part and parcel of the monetary condition of a country. Therefore, the central banks being the monetary authorities have been given discretionary powers under the relevant statutes to decide appropriate foreign exchange policies along with its monetary, financial and economic development policies. In macroeconomic perspective, foreign exchange policies are instrumental in mobilization of foreign savings and capital to fill the domestic resource gap and expand investments. Various public views are often expressed as to how the central banks should decide exchange rate policies and what factors should be taken into consideration. Therefore, this article is intended to educate the public on the background how the central banks manage or regulate exchange rates and foreign exchange markets.

1. Why exchange rates?

An exchange rate is a price of a currency stated in units of another currency, i.e., Rs 108 a US Dollar (US $), US$ 1.5 a Euro or Chinese Yuan 7 a US$. The exchange rate between two currencies can be stated in two ways, domestic currency price of foreign currency or foreign currency price of domestic currency, i.e., Rs. 108 a US$ or US$ 0.01 a Rupee. Exchange rates exist because countries have to exchange their national currencies with foreign currencies to engage in trade and financial transactions with other countries. For example, when a Sri Lankan garment manufacturer exports garments to a buyer in US, Sri Lankan exporter receives the payment for his export in US$. Therefore, if the Sri Lankan exporter is to use his US$ income in Sri Lanka, he has to sell his US$ proceeds to a bank for Sri Lanka Rupees. Similarly, Sri Lankan importers have to buy currencies of the exporting countries for payments to suppliers in those countries. Accordingly, any foreign receipts to a country involve supply of foreign currencies (or foreign exchange) in exchange for domestic currency. On the other hand, any payments to foreign countries involve purchase (demand for) of foreign currencies by paying in the domestic currency. In addition, certain authorized
parties undertake dealings (buying and selling) in foreign currencies seeking various kinds of financial gain. Since international transactions are conducted in major foreign currencies such as US$, Sterling Pounds, Yen and Euro, market participants and policymakers are concerned about the exchange rates of such major currencies. In Sri Lanka, the Central Bank (CBSL) monitors mainly the exchange rate for US$ as the base exchange rate in the foreign exchange market. However, CBSL has designated several foreign currencies for international transactions by the public through banks.

2. **What determines the exchange rates?**

Quite similar to prices of goods and services, exchange rates being the prices of the currencies are also determined by demand and supply conditions of the currencies. Any foreign receipts to Sri Lanka, i.e., exports, inward remittances, foreign investments inflow and foreign borrowing, create supply of foreign currencies and demand for Sri Lankan Rupees in the foreign exchange market. Any payments to foreign countries, i.e., imports, foreign travel, foreign investments outflow, foreign loan repayments and other payments, involve purchase (demand for) of foreign currencies and supply of Sri Lankan Rupees. In addition, dealings (buying and selling) in foreign currencies seeking financial gain on account of speculation on changes in exchange rates also influence the market demand and supply and such dealings in globalised foreign exchange markets are a key factor in exchange rate volatility. Accordingly, the interaction between demand for and supply of a particular foreign currency against the domestic currency will determine the exchange rate of the foreign currency in the country. The demand will have an upward pressure on the value of the foreign currency and supply will have a downward pressure. The increase in the value of a currency against another currency is termed as appreciation of the currency whereas a decline in the value is the depreciation of the currency.

The demand for and supply of foreign currencies will change due to various factors relating to economic activities of the countries. The growth of national income of a country is a factor that will increase the demand for foreign currencies because high income will increase the demand for imports. Inflation in a country will increase the demand for foreign currencies due to the tendency to import more, on one hand, and reduce the supply of foreign currencies as a result of the declined demand for exports due to high domestic prices, on the other hand. Expansion in money supply is a factor that will increase the demand for foreign
currencies because increased ability to spend due to increased availability of money will raise imports. There can be various such factors affecting inflow and outflow of foreign exchange. Accordingly, economists have attempted to explain or model how some of such factors cause changes in the external value of a currency (depreciation or appreciation). Inflation differential, economic growth differential, differential in money supply growth and interest rate differential between the trade-partner countries are some of such factors that have been identified in the models. Therefore, it is believed that exchange rates are determined by demand and supply conditions driven by macroeconomic fundamentals that are linked to transactions in international trade, services and finance. However, economists have been able to model only a few of such factors under various assumptions so far.

Some analysts have a habit of comparing the exchange rate of a particular hard currency such as US$ across the countries and make comments on the comparative value of the domestic currency. However, there is no justifiable economic reasoning for direct comparisons of the levels of the values or exchange rates of the currencies. For example, if the exchange rate of US$ is 108 Sri Lankan Rupees, 105 Yens, 1.50 Euros, 40.5 Indian Rupees, 65 Pakistan Rupees, 1,010 Korean Won and 7 Chinese Yuan, there is no economic theory to say that Korean Won is the lowest valued currency or Euro is the most valued currency or Yen is weaker than Chinese Yuan or Indian Rupee is more valued than Yen for international transactions. These exchange rates are in different values due to differences in underlying factors that determine demand and supply conditions and there are no economic techniques to quantify how these differences determine different exchange rates. According to one theory (known as purchasing power parity (PPP) theory or law of one price), a particular exchange rate between two currencies is determined at a rate that makes the prices of a bundle of traded goods in the two countries stated in any of the two currencies equal. For example, if the price of traded goods bundle is US$ 2 in US and Rs. 220 in Sri Lanka, the exchange rate for US$ will be Rs. 110. If not, there will be arbitrage trade of goods between the two countries and exchange rate will fluctuate until the price of the bundle of goods is equal in both countries. According to relative PPP view, the exchange rate will change due to inflation differential between the two countries. For example, if the exchange rate for US$ is Rs.110 and inflation is 4% in US and 30% in Sri Lanka, the exchange rate should increase (or US$ should appreciate) by 26% assuming other things remain constant. Later, some other
theories have been introduced to discuss how factors involved in monetary expansion and capital/financial flows across countries influence the exchange rates.

However, the rates of change in the exchange rates of a currency for other currencies can be compared to understand the change in the external value of those currencies. For example, US$ may depreciate in country A while it may appreciate in country B. And US$ may appreciate in country C at a higher rate than in country D. Such changes in the external value of the currencies can occur due to differences in changes in demand and supply conditions, underlying economic factors and exchange rate policy measures in the countries.

3. Why exchange rates are important?

The changes in exchange rates will have both favourable and unfavourable impacts on economic activities and living standard of the public because of the largely globalised trade and finance involving exchange of currencies. In general, appreciation of a country’s currency will have the following effects whereas depreciation will have the opposite effects.

- Lowering the domestic prices of imports because the cost of imports in domestic currency will be less due to higher value of the domestic currency, i.e., to pay for any given foreign price of imports will require less units of domestic currency. As a result, inflation will be lower depending on the extent of the imports in the domestic consumption and production activities.

- Country’s outstanding foreign debt equivalent of domestic currency will be lower and, therefore, burden on foreign debt repayment will less.

- One unfavourable effect will be that the lower import prices will encourage imports and worsen the country’s trade balance (net position between exports and imports).

- Another unfavourable effect will be that exporters will be discouraged by reduction in their income in domestic currency which will adversely affect the export industries. However, if domestic inflation will be lower due to reduced import prices, there will be higher foreign demand for exports which will off-set the initial reduction in exporters’ income.

However, there is no any acceptable economic model to determine whether appreciation or depreciation is better for a country since each will have both favourable and unfavourable
effects in the short run and in the long run, depending on the economic conditions and priorities prevailing at times. Therefore, the policymakers tend to adopt from time to time certain policies to permit the currency to depreciate or appreciate depending on the economic policy priorities. If the country has a foreign reserves problem and needs to encourage exports while discouraging imports, it is conventional to adopt a policy to permit the currency depreciation. Such policies include exchange rate determination system permitted and specific measures introduced from time to time within the permitted exchange rate system.

4. **What are the exchange rate determination systems?**

The global literature on this subject shows evidence on three broad systems, i.e., the fixed exchange rate system, the floating exchange rate system and the managed floating exchange rate system. Under the fixed exchange rate system, a central bank fixes the exchange rates of the currency against the foreign currencies and market participants have to use these exchange rates for transactions. In some instances, the currency is linked or pegged to a particular foreign currency and the exchange rate is fixed for that currency. The exchange rates for other foreign currencies will be fixed as cross-rates taking the exchange rates between the pegged currency and other foreign currencies. The fixed exchange rate for the pegged currency will be revised by the central bank from time to time in response to changes in demand and supply conditions and other economic policy priorities. The fundamental problem in this system is the central banks’ tendency to fix the value of its currency below the market clearing value, partly because of their inability to figure out the market clearing exchange rate (i.e., the rate that should prevail to make the demand and supply equal), given the current demand and supply conditions. Such a low value is tantamount to over-valued currency (or artificially appreciated value) encouraging more imports. Therefore, there will be an excess demand for foreign currency leading to a balance of payment deficit. In the circumstance, the central banks have to supply foreign currency to meet the excess demand if they are to maintain the fixed exchange rate. When a central bank sells foreign currency in exchange for domestic currency, there will be a contraction of money available in the economy. However, if the central bank does not have sufficient foreign currency reserves at hand, they have to impose exchange controls to restrict the demand for foreign currency to match the current level of supply at low exchange rate (over-
valued domestic currency). As a result, there will be a black market for foreign currency business. Whether the central banks are able to maintain exchange controls and fight the black market and the financial and social cost involved in this mechanism are well-known practical problems. On the other hand, if the exchange rate is fixed above the market clearing exchange rate, the currency will be under-valued, encouraging exports and discouraging imports which will lead to excess supply of foreign currency or balance of payments surplus. Therefore, the central banks have to buy the excess supply of foreign currency by printing money which will expand the money supply. Since a central bank has to intervene and cover the imbalances in demand and supply by in the foreign currency market by allowing changes to money supply in order to maintain the fixed exchange rate, it is pointed out that, under the fixed exchange rate regime, the central banks do not have an independent monetary policy for domestic goals because the monetary policy has to be conducted for intervening in the foreign exchange market to maintain the exchange rate. In the event a central bank cannot maintain the exchange rate at the fixed rate, it will fix a new rate by appreciating or depreciating the currency. Sri Lanka followed the fixed exchange rate system until November 15, 1977. During the period from 1950 to November 15, 1977, the exchange rate for US$ was revised from Rs. 4.76 to Rs. 8.60. Furthermore, the whole world followed fixed exchange rate system until early 1970s under the Bretton Woods system which set up IMF in 1947. Still, there are many countries that follow the fixed exchange rate system or some variants of it.

Floating exchange rate system allows the market forces to determine the exchange rate without direct intervention of the central bank, given any prevailing controls on foreign exchange transactions. Accordingly, the exchange rate is free to fluctuate in response to changes in demand and supply factors. Since the central bank does not have to intervene in the foreign exchange market and it can conduct the monetary policy independently from the balance of payments as long as the exchange rate is free to fluctuate to clear the imbalances in the foreign exchange market. However, if the exchange rate volatility at any time is considered high, the central bank will intervene in the market by buying or selling foreign exchange to maintain greater stability in the exchange rate. Sri Lanka has been following this system since January 23, 2001.

The managed floating exchange rate system allows the market forces to operate within a band of exchange rates. The band is the rate at which the central bank is prepared to buy the
foreign currency from the authorized dealers and the rate at which the central bank is prepared to sell the foreign currency to the authorized dealers. The band width, i.e., the difference between the central bank’s buying rate and selling rate, depends on the level of freedom given to the market to determine the exchange rate. Since the central bank is prepared to buy and sell the foreign currency at those rates, the exchange rate in the market may not move outside the band. However, since destabilising speculation on exchange rate may cause the pressure on the market exchange rate to move beyond the band, the central bank should be prepared to have sufficient intervention at such times. For example, if there is heavy speculation that the market exchange rate would move beyond the central bank’s selling rate, the central bank should have adequate foreign exchange reserves to be sold in the market to maintain the exchange rate below the upper band. If not, the central bank has to revise the selling rate upward giving a wider band to the market. During the period from November 16, 1977 to January 22, 2001, Sri Lanka followed the managed floating exchange rate system. US$ was the foreign currency that the central bank engaged in transactions with banks and the band was fixed for the exchange rate for US$. During this period, the average of buying and selling rates for US$ was gradually revised from Rs. 16.00 to Rs. 81.23. Accordingly, the band was increased from Rs. 15.97 (buying rate) and Rs.16.03 (selling rate) to Rs. 77.40 (buying rate) and Rs.85.13 (selling rate). However, due to heavy speculation toward depreciation of the Rupee during the second half of 2000, the CBSL several times revised the selling rate upward while selling a significant amount of US$ reserves. Finally, the CBSL decided to float the currency with effect from January 23, 2001 and discontinued its buying and selling dollars in the open market. According to some economists, the current exchange rate system is a managed float because the central bank intervenes (buy and sell) in the market to maintain the exchange rate without much volatility. However, the managed float system and the central bank’s intervention under the floating rate system to reduce any unhealthy volatility as may be decided by the central bank in view of the current macroeconomic circumstances are completely two different systems of exchange rate management.

5. **What are real exchange rate and effective exchange rates?**

In addition to the exchange rate determined in the market (nominal exchange rates), the central banks also monitor the movements of the real exchange rate and effective exchange
rate of the country’s currency which are statistically estimated for policy purposes. Real exchange rate is calculated to measure the movements of the competitiveness of the country’s currency vis-à-vis another country’s currency on the basis of inflation differential between the countries. The nominal exchange rate adjusted for the relative price level between the two countries is the real exchange rate. Therefore, the currency of the country whose inflation is higher can have real depreciation although nominal exchange rate may indicate otherwise. Real depreciation indicates a decline in the country’s competitiveness in international trade because its inflation is higher which results in increased imports and reduced demand for exports. Generally, a country trades with several countries and the country’s currency is exchanged with the currencies of those countries. Therefore, there will be diverse movements of the exchange rates of the country’s currency vis-à-vis other countries’ currencies. The effective exchange rates are estimated to measure the movements of a country’s currency value or average exchange rate in a basket of currencies of trade-partner countries. Nominal effective exchange rate and real effective exchange rate are the two estimates of effective exchange rate. Nominal effective exchange rate is the exchange rate index calculated as the weighted average of exchange rates of the country’s currency vis-à-vis the currencies of the trade-partner countries with the weights (importance) given to each trade-partner country’s currency based on that country’s share in the total trade of the country under consideration. The real effective exchange rate is calculated similarly as the trade-weighted average of real exchange rates of a country’s currency vis-à-vis the currencies of the trade-partner countries. These rates are used to assess the movements of the exchange rate of a country’s currency and decide the intervention policy actions.

6. What are the foreign exchange control or regulatory policies?

These are the policies implemented to control or regulate the quantity of foreign exchange traded/available in the market. Such policies are intended to help maintain orderly market transactions and avoid unhealthy market practices and exchange rate volatility. The policies include direct controls, interventions and moral suasion. Direct controls are mainly implemented in terms of the Exchange Control Act. At present, foreign exchange transactions reported in the current account of the balance of payments are largely free (current account convertibility). These transactions are exports, imports, services, remittances, repatriation of investment income, etc. However, capital account transactions, i.e.,
transactions relating to acquisition or disposal of financial and real assets, have been liberalized only to some extent under certain schemes. Such major schemes include inflow of foreign capital to be invested in company shares, non-residents and residents to maintain foreign currency accounts at commercial banks in Sri Lanka, foreigners to invest in Treasury bills and bonds up to 10% of the outstanding Treasury bills and bonds and investments in BOI approved projects. Transactions relating to debt capital inflow and any investments abroad by residents require prior approval of the CBSL and/or Minister of Finance. Commercial banks are required to maintain their net open position in foreign currency (assets in foreign currency less liabilities in foreign currency) at low levels prescribed by the CBSL so that the banks do not have highly speculative currency positions. The restricted and cautious liberalization of capital account is implemented by most countries in order to forestall currency/financial crises that may occur due to sudden capital outflows as have been seen in many countries including Mexican and Asian financial crises. The nature of a currency crisis is that the excessive demand for foreign exchange arising from sudden outflow of capital will lead to excessive depreciation of the local currency, dry up foreign exchange reserves and failures of banks and financial institutions due to liquidity problems. According to the literature on such crises, financial crises are highly detrimental to the countries.

Interventions mean a central bank’s buying and selling of foreign exchange at times to influence the exchange rate or reduce its excessive volatility by enhancing supply of or demand for foreign exchange. For example, if the CBSL is of the view that the rate of depreciation of the currency is at unhealthy level, it may sell foreign exchange, i.e., US $ at present, in the market so that the increased supply of US $ will reduce the depreciation pressure. Since such interventions affect the market liquidity or money supply and thereby interest rates, a central bank sometimes undertakes “sterilized interventions.” Intervention is sterilised when a central bank undertakes open market operations in the domestic market in opposite direction to its dealings in the foreign exchange market so that existing level of liquidity in domestic currency or money supply would remain unchanged. For example, when the CBSL sells foreign exchange to ease the depreciation pressure on the currency, the Rupee liquidity in the market will decline immediately by the Rupee equivalent of the amount of foreign exchange sold since such money flows to the CBSL. Therefore, the CBSL
will offset this by buying domestic securities such as Treasury bills and bonds for the same amount of Rupees to inject money back to the market.

Moral suasion which is the process of providing advice and instructions to commercial banks on monetary and financial operations with a view to promote greater discipline in line with policy priorities is immensely helpful for avoiding unhealthy speculation and volatility in the exchange rate. In this regard, the CBSL monitors all inter-bank foreign exchange dealings on-line basis and examines at times whether such dealings are supported with underlying customer transactions. Any dealings deviating from normal market conditions will be identified and such banks will be advised appropriately. Such moral suasion has not been captured in the exchange rate models.

In view of the above discussion, it is clear that the exchange rate management is another art performed by the professionals of central banks in terms of discretionary powers given to them under the relevant statutes. They are aware of academic economists’ models and theories built on assumptions and scenarios. But the central bank professionals are practicing economists who implement economic and financial policies in the context of information available to them and policy priorities. Therefore, views expressed by academic economists may be different from policies implemented by the central banks.

About the Author
The author holds a BA (Honours) in Economics from the University of Colombo and an MA in Economics from University of Kansas, USA, covering Econometrics, Monetary Economics, International Finance and Macroeconomics as major subjects. He has nearly 25 year career in the Central Bank in the fields of economics, statistics, bank supervision and financial stability and currently is an Assistant Governor. Prior to his current post, he held the post of Director of Bank Supervision. During his career in the Central Bank, he has received extensive training locally and internationally in the fields connected with macro-economic and financial sector policies. He has published a number of articles and serves as a lecturer at the Institute of Bankers of Sri Lanka.