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**THE EVOLUTION OF EXCHANGE RATE REGIMES:  
A REVIEW**

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***Abstract***

The international community has experimented with many exchange rate regimes in the quest for a stable international monetary system. This paper reviews exchange rate regimes followed by countries for centuries. Earlier bimetalism prevailed with only gold and silver sole legal tender. With mutual co-operation of countries the gold standard was established in 1870 as countries pegged their currencies to gold. However, failure to follow the rules of the system led to the fall of the system. With the outbreak of the two World Wars in 1914 and 1939, stable exchange rate regimes had gone completely haywire. The Bretton Woods system was established in 1944 and lasted for around two decades. The IMF was assigned with the responsibility of managing the member countries' economic health. The severe U.S. deficits in the balance of payments led to decline of this system. After the collapse, two parallel international monetary systems came forward *viz.*, joint floating and independent floating. Currently, as per the IMF classification, around eight de facto exchange rate regimes are followed by the member countries ranging from hard peg to floating regimes. India is following a managed floating regime. In spite of stable currency arrangements we are likely to experience some changes in the existing exchange rate regimes.

**Key Words:** International Monetary System, Exchange Rate Regimes, Medium of Exchange, Bimetalism, Gold Standard, Bretton Woods, Hard Peg, Soft Peg, Floating Regimes.

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# THE EVOLUTION OF EXCHANGE RATE REGIMES: A REVIEW\*

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## 1. INTRODUCTION:

Over the years, the international monetary system has evolved tremendously. Countries have shifted their exchange rate regimes for attainment of the primary objective of exchange rate stability. The international monetary system refers to the set of policies, institutions, practices, regulations and mechanisms that determine the rate at which one currency is exchanged for another. The exchange rate regime is a way in which a country manages exchange rate of its currency with foreign currencies and the foreign exchange market. The exchange rate regime of any country is associated with the objectives of the country's monetary policy. Exchange rate policy cannot be judged by the officially declared exchange rate regime or the de facto regime. Countries with flexible exchange rate regimes may have relatively stable exchange rate but it does not necessarily imply that they are breaking any commitment. It could be the result of optimally chosen monetary policy. Countries, using monetary policy instruments actively to stabilize exchange rates may not commit to a fixed exchange rate because of the fear of speculative attack (Genberg, 2004). According to Mundell, a monetary system is an aggregation of diverse entities, united for regular interactions with some form of control. The international monetary system is concerned with mechanisms governing interactions between trading countries (McKinnon, 1993).

International monetary systems are primarily classified according to two criteria:

1. *Exchange Rate Determination*: Exchange rate determination systems consists of fixed peg, adjustable peg, dollarization, crawling peg, crawling band, managed float and independent float.

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2. *International Reserve Classification:* It comprises of the gold standard, a pure fiduciary standard or reserve currency standard and gold exchange standard.

Past lessons from international monetary history are helpful in deciding on foreign exchange rate regimes, implementation of foreign exchange policies and attainment of policy objectives. Knowledge of foreign exchange rate regimes and foreign exchange rate arrangements is essential for better understanding of exchange rate behaviour. The choice of the regime can influence or determine how the exchange rate between currencies fluctuates in the foreign exchange market. The basis for understanding these standards in turn lies in the evolution of the medium of exchange.

Section Two of this paper deals with the evolution of the medium of exchange. Section Three discusses bimetallism, Section Four examines the gold standard, Section Five studies exchange rate arrangement during interwar period. Section Six discusses the Bretton Woods system, while Section Seven deals with different accords. Section Eight examines the current exchange rate arrangements and Section Nine briefly reviews India's exchange rate regime. The last Section concludes the paper.

## **2. EVOLUTION OF THE MEDIUM OF EXCHANGE:**

With the development of human civilization, the need was felt to have some common medium to exchange commodities. The first use of money is as old as human civilization. Recent anthropological and linguistic research indicates that the origin of money is found in social settings of civilized people. Money is anything that is commonly accepted by a group of people for the exchange of goods, services or resources (Bellis, 2011). There are myths about the origin of money. Many people confuse money with coins. However, the origin of money predates the inventions of coins.

The exchange of goods and services has been carried on for thousands of years. When man wanted to fulfil his needs for different commodities, the concept of barter developed. The initial exchange was only between commodities but when man

started travelling he felt the need for some kind of medium of exchange. This necessitated the evolution of money. Barter is the exchange of personal possessions of value for other required goods. This exchange started at the beginning of humankind. However, there were sometimes disagreements as some people wanted some other commodity for exchange of their possessed commodity than the one offered by the other party. To solve this problem of double coincidence of wants, people developed 'Commodity Money' (Bellis, 2011).

Primitive societies used forms of proto-money *i.e.*, various commodities as medium of exchange which were agreed to be accepted for trade. Grains, shells, tobacco, rice, salt, ivory to cattle, sheep, skins and slaves were used for exchange with other commodities. These commodities were in great demand and were easy to exchange. The marketability of a commodity was determined by the general acceptability, quality, divisibility, uniformity and ease of transportation and storage. Thus different societies agreed to use different commodities for exchange. The Aztecs used cacao beans, Norwegians used butter, early U.S. colonists used tobacco leaves and animal hides, people from Paraguay used snails, Roman soldiers were paid 'Salarium' of salt, the Nauru people used Rats. Soon people started exchanging items with no intrinsic value but only agreed to exchange for commodities. In 1200 BC in China, cowry shells were used as a medium of exchange. These shells were widely available in the shallow waters of the Pacific and Indian Ocean. Till recently cowry was used in some part of Africa. It was the most widely and long-used currency in history. From 9000 – 6000 BC livestock were often used as a unit of exchange. Cattle including cows, sheep and camels were exchanged with other commodities. With the advent of agriculture, grains, vegetables or crops were also used as standard forms of exchange. It was difficult to carry these commodities. Persians resolved this problem by depositing their grain in state or church granaries. The receipts of deposits obtained from granaries were then used for payment and people of Ancient Egypt used orders of withdrawal for payments. In 1000 BC China produced mock cowry shells at the end of the Stone Age. Bronze and copper cowries were the earliest form of metal coins. Tools made of metal like knives and spades were also used as money. The Chinese coins had holes so that they could be put together in a chain while carrying (Oracle, 2011).

At around 500 BC, outside China, the first coins were developed from lumps of silver. Later they evolved in round coins with stamps of gods and emperors. The earliest coins appeared in the kingdom of Lydia which was a part of Turkey. For trading purposes, the Lydians used lumps of various metals of different sizes which were stamped with pictures. This process of stamping was called 'minting'. Greeks, Persians, Macedonians and Romans soon adopted these coins as authentic media of exchange and started minting their own series of coins. These new coins were made from precious metals such as silver, bronze and gold. These metals gained popularity because they were easily available, easy to work with and could be recycled. Since coins had a certain value, it was easier to compare the cost of items. Coins soon became common all over Europe, Asia and Africa. Over time, metals and coins became major media of exchange. Though the face value of precious metals was much more than their intrinsic value they were used for acquiring other commodities for consumption. The coins facilitated exchange as the determination of the value of a unit was much easier. Gold and silver were favoured for minting coins. The inconvenience of carrying large amounts of coins and bullion led to the practice of depositing coins and bullion with goldsmiths, money changers and mint masters. They were entrusted with the responsibility of exchanging coins and deposit surplus money among themselves. Goldsmiths in the U.K. started the system of maintaining records of money by book entry. This led to expansion of banking services throughout the world.

Leather currency was invented in China at around 118 BC. One foot square pieces of white deerskin with colourful borders were exchanged for goods. This is the first documented bank note in the form of leather money. This was believed to be the beginning of a kind of paper money. The first paper banknotes appeared in China in 806 AD. From 9<sup>th</sup> century to 15<sup>th</sup> century China had paper money as a medium of exchange. Ghengis Khan conquered China in the 13<sup>th</sup> century and was fascinated by the paper currency. He announced paper money as a uniform legal currency across his empire. He seized gold and silver and forced exchange of paper money with stocks of gold and silver. Rejecting paper money was considered as a capital offence. As a result, production of paper notes rose rapidly and the value of paper money decreased leading to high inflation. From the year 1455, paper money disappeared from China for several hundred years (Oracle, 2011). Paper money reappeared in Europe in the

16<sup>th</sup> century when the European government started printing paper money for official purposes. The Swedish Stockholm Bank in 1661 became the first bank to issue printed paper money (Tong, 2011).

In 1500, North American Indians used 'Potlatch'. Potlatch is a ceremony with exchange of gifts, banquets, dances and various rituals. Exchanging gifts was important as it was a symbol of the community status of the leaders. With time, gifts became lavish. The grand feasts were organized to maintain the status. Later, this practice came to an end. In 1535, North American Indians used 'Wampum' as money which is strings of beads made from clam shells. Wampum means white colour which is the colour of beads and shells (Oracle, 2011). In the U.K. though paper money existed, gold was gaining importance back then as a medium of exchange. In 1816 gold was officially made the standard of value which rooted the gold standard in the U.K.

### **3. BIMETALLISM (Till 1870):**

The international monetary system at the global level before 1870 was known as 'Double Standard' or 'Bimetallism'. Bimetallism is a monetary standard or system in which the value of the monetary unit is based upon two metals, traditionally gold and silver. Bimetallism defined a country's monetary unit in terms of a fixed quantity of gold and silver. This automatically established a rate of exchange between the two metals giving rise to a free and unlimited market for both metals. During that time countries using gold extensively for trading purposes were said to follow the gold standard whereas countries following the silver standard used silver as means of payment. Both gold and silver were used for international payments of imports and exports. Exchange rates between currencies were determined solely by the content of gold or silver. The exchange rate which was fixed to gold automatically followed either the silver or bimetallic Standard (Forex, 2011). The exchange rate between two currencies following different standards was determined by the content of common metal. For instance, in 1870, the exchange rate between pound sterling (as per the gold standard) and French Franc (following the bimetallic standard) was established by the gold content of the two currencies. On the other hand, the exchange rate

between the French Franc (following bimetallism) and the German Mark (following the silver standard) was determined by the silver content of coins.

Bimetallism did not impose any restriction on the use or coinage of either silver or gold. Money in circulation was made redeemable in gold or silver with some fixed exchange rate. However, the rate differed in countries because each country decided the exchange rate between two metals independently. As Gresham's Law suggested, difference in exchange rates led to fear of coins going out of circulation. According to Gresham's Law, if coins containing metal of different value at different places have the same value as legal tender then coins composed of cheaper metal will be used for payment while those made of more expensive metal will be hoarded or exported and thus tend to disappear from circulation, which means bad money drives away good money.

In the U.S., bimetallism began with the Currency Act of 1792. Before this Act each state had different currency notes of different banks, leading to confusion regarding the mode of payment. In the U.S. gold coins were circulated freely with the Spanish doubloons, the Spanish currency. As per the Act, the exchange rate between the two metals was decided as 15 units of silver per unit of gold. These two metals were then considered as a common medium of exchange in the U.S. (Wikipedia, 2011a).

In the U.K., bimetallism prevailed till the war with Napoleon from 1799 to 1815. When the Napoleonic war ended in 1816, the British Parliament passed a law making gold coins the only legal currency in the country and use of silver coins was abandoned.

France stuck to bimetallism since the French Revolution in 1789 up to 1878. France guaranteed to buy and sell silver for gold at the mint ratio of 15.5 units of silver per unit of gold. The French market was large enough to absorb excess demand. In order to establish the bimetallic system on international scale, France, Belgium, Italy and Switzerland formed the Latin Monetary Union in 1865. This union fixed a mint ratio between two metals and provided for use of the same standard units and issuance of coins. The system was undermined by monetary manipulations by Italy



and Greece. The Franco-German war (1870-71) led to the speedy end of the bimetallic standard (Britannica, 2011). However, some other countries such as China, India, Germany and Holland were on the silver standard (Meissner, 2006).

The international monetary system was a complete mess until the 1870s. There were all sorts of problems. Because of various wars and political agitations, the Great Civil war in U.S., Russian war and the war between Austria-Hungary, currencies were irredeemable at one time or another from 1848 to 1879 (Forex, 2011). This meant that currencies had no value in other countries because of political uncertainty resulting from the wars. Again it was practically impossible for a single country to use such a standard without international co-operation. In bimetallism, the exchange rate of the two metals was fixed without considering demand and supply factors. In addition to this, mining, handling and coinage of the two precious metals were costly as compared to any other metal or paper currency. With such problems, at the International Monetary Conference held in Paris in 1867, the bimetallic standard came to an end as most of the countries voted for the gold standard.

#### **4. GOLD STANDARD (1870-1914):**

The gold standard, a monetary system with a unit of value in which prices and wages are customarily expressed and debts are usually contracted, consists of a fixed quantity of gold in an essentially free gold market. The gold standard worked successfully for three major countries; the U.K., the U.S. and France. The monetary authorities in these countries sincerely followed a fixed price of gold. The gold standard originally evolved as a domestic commitment mechanism but eventually as an international rule. The classical gold standard emerged as a true international standard by 1880 following the switch by the majority of countries from monometallism, bimetallism, silver and paper currency to gold as a basis of their currencies. Support for the international gold standard grew because it provided improved access to the international capital markets of major countries. Countries were eager to adhere to the standard because they believed that gold convertibility would be a signal to creditors of sound government finance and ability to service debt in the future (Bordo, 1993).

#### **4.1 Origin:**

The gold standard uses gold coins as a medium of exchange, unit of account and store of value. U.K. followed the gold standard for centuries. The origin of the gold standard is traced back to 1819 when the Bank of England exchanged currency notes for gold on demand at a fixed exchange rate. The gold standard was considered as a U.K. managed standard. London was the centre for the world's principal commodities and capital markets because many countries used sterling as an international reserve currency. The Bank of England could manipulate its bank rate to attract gold and forced other banks to adjust their discount rates accordingly. It had a powerful influence on the money supplies and price levels of other gold standard countries. Other banks were passive because they had the benefit of using sterling as a reserve asset (Bordo, 1993). The Bank of England repealed restrictions on export of gold coins and bullion from U.K. After the Napoleonic war the British government restored its mint parity in 1821. By mid-1870 France also joined the gold standard. In 1871, after the Franco-Prussian war, Germany too adopted this system along with Japan and other countries. After suspension of 17 years during the American Civil War, the U.S. joined the gold standard in 1879 pegging paper 'Greenbacks' to gold at its traditional mint parity. The United States' Gold Standard Act 1900 institutionalized the \$-gold link. However, London became the centre of the international monetary system built on the gold standard.

#### **4.2 Price-Specie-Flow Mechanism:**

The Scottish philosopher David Hume described the price-specie-flow mechanism in 1752. The gold standard had a powerful automatic mechanism of simultaneous achievement of the balance of payments equilibrium in countries under the gold standard. Country facing a balance of payments deficit would have a lower money supply backed by gold. A fall in the money supply would further lower prices as described by the quantity theory of money. Competitiveness of the country would increase by encouraging exports until the balance of payments again came back to equilibrium. On the other hand, a country facing a balance of payments surplus would have more money supply leading to an increase in prices and decrease in

competitiveness through discouraged exports until equilibrium in the balance of payments is again restored.

### **4.3 Mechanics of the Gold Standard:**

Under this system, each country was required to define the gold content of its currency and passively stood ready to buy or sell any amount of gold at that price. The central banks had to maintain official parity between currency and gold. This was called 'mint parity'. Though the exchange rate was fixed it was allowed to fluctuate between mint parity. The exchange rate was determined by demand and supply forces within gold points. The central banks maintained the exchange rate by gold shipments. For this purpose, adequate stock of gold reserve was required. Whenever there was a tendency of the currency to depreciate *i.e.*, at a gold export point, the central banks used to sell gold abroad to maintain the fixed exchange rate. Outflow of gold from national boundaries indicated a balance of payments deficit. Conversely, whenever currency appreciated *i.e.*, at a gold import point, the central banks bought gold. The gold inflow indicated the balance of payments surplus.

All countries were forced to follow some rules in the gold standard system such as (McKinnon, 1993):

1. Fix mint parity and convert freely between domestic money and gold at that rate.
2. Abandon restrictions on export and import of gold and exchange restrictions on current and capital account transactions.
3. National banknotes and coinage should be backed by gold reserves.
4. Restore convertibility at traditional mint parity.

To understand the mechanics of the gold standard, let us consider an example of Country A and Country B. As per the gold standard, each country fixes the gold content of one unit of its currency. So the exchange rate between two countries is also fixed. Suppose that country A and country B have a fixed amount of gold for each unit of their respective currencies. The exchange rate is, thus, the ratio of the gold content of each currency unit of country A to country B. This is called 'mint parity'. Suppose that mint parity between country A and B is 'R'.

$$R = \frac{\text{Gold content of a currency unit of country A}}{\text{Gold content of a currency unit of country B}}$$

When gold is transported from one country to another there is a shipping cost involved denoted by T. According to the gold standard, the exchange rate can never go beyond T above and below mint parity *i.e.*, the exchange rate between country A and B has a permissible upper band of R+T and the lower band of R-T.

Suppose for country A, the market exchange rate is more than R+T. At that rate, traders will purchase gold in country A at the rate 'R', transport that gold to country B at the cost of T and sell it in country B. It is called the gold export point for country A. Country A's supply curve for currency of country B becomes infinitely elastic at R+T. On the contrary, if the market exchange rate is less than R-T in country A then traders will buy gold in country B and transport that gold at the cost of T to country A and will sell there. It is gold import point. The demand curve of country A for country B's currency will be infinitely elastic at R-T. The exchange rate was determined by intersection of supply and demand curves of country A between gold points and the exchange rate is prevented from going out of the gold points by sales and purchases of gold by country A.

The depreciation of country A's currency *i.e.*, exchange rate more than R+T was countered by gold shipments from country A, *viz.*, Gold outflow. Conversely, appreciation of country A's currency, *i.e.*, exchange rate below R-T was countered by gold shipments to country A, *viz.*, Gold inflow.

In figure 1, the X-axis measures the quantity of country B's currency in country A and the Y-axis measures country A's exchange rate *i.e.*, country A's currency units per unit of currency of country B. The mint parity is shown by R on the Y-axis. Country A's supply curve of country B's currency is  $S_A^B AS_A^B$  and country A's demand curve for country B's currency is  $D_A^B BD_A^B$ . The supply curve initially is upward sloping till point A and thereafter it becomes horizontal or perfectly elastic at the gold export point (R+T). The demand curve initially is downward sloping until point B and from the gold import point (R-T) becomes horizontal or perfectly elastic. The  $S_A^B AS_A^B$  and  $D_A^B BD_A^B$  curves intersect each other at point E within gold points

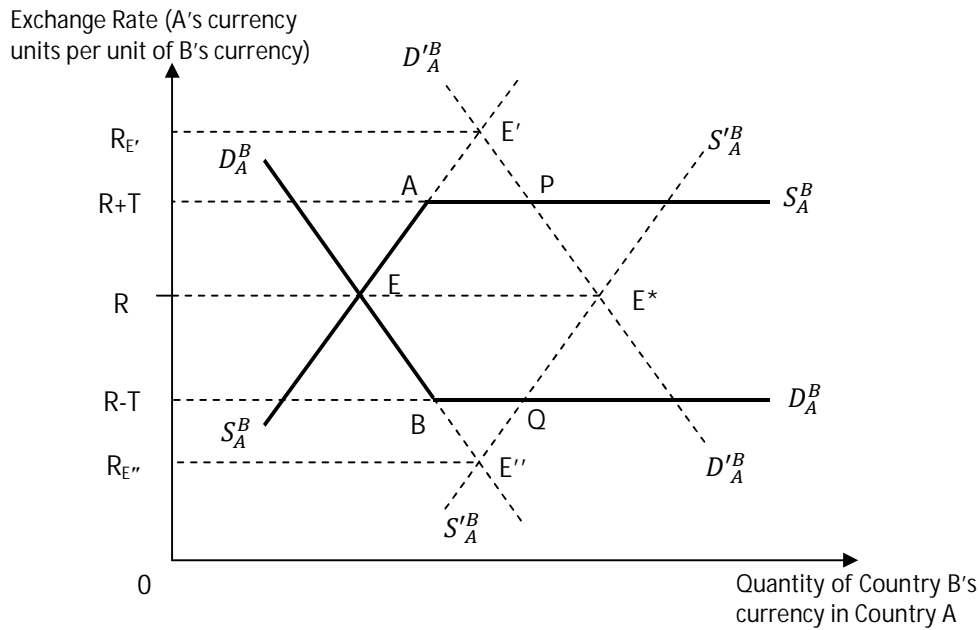


Figure 1: Mechanics of the Gold Standard

without any international gold flows. The equilibrium exchange rate is equal to the mint parity.

If we consider that country A faces a deficit in the balance of payments, then country A's domestic currency would depreciate. To counter depreciation gold outflow will occur and demand for country B's currency in country A will increase. This will shift the demand curve upward from  $D_A^B B D_A^B$  to  $D_A^{B'} P D_A^{B'}$  given the  $S_A^B A S_A^B$ . The equilibrium will be at  $E'$  and the exchange rate  $R_{E'}$  will be above  $R+T$ . Due to outflow of gold, the money supply within the country will fall leading to a fall in internal prices. The international competitiveness of country A will increase and exports would be encouraged. An improvement in the trade balance will take place resulting in an appreciation of the exchange rate and equilibrium will be at point P on the horizontal portion of the  $S_A^B A S_A^B$  curve. On the other hand if country A has a balance of payments surplus, which means country B's demand for country A's currency increases, there is an appreciation of country A's currency. Therefore, according to the gold standard, gold inflow increases money supply and internal prices in country A. As a result supply of country B's currency in country A will increase from  $S_A^B A S_A^B$  to  $S_A^{B'} Q S_A^{B'}$ . Equilibrium will be at  $E''$  which is below  $R-T$ . At this  $R_{E''}$  exchange rate, appreciation of the exchange rate of country A leads to

decrease in the competitiveness of country A which results in a fall in exports or country B's international competitiveness with respect to country A increases and that makes imports for country A from country B cheaper. Decrease in surplus or deficit in the trade balance will depreciate the exchange rate to the point Q on the horizontal portion of the  $D_A^B B D_A^B$  curve. The operation of price-specie-flow mechanism under the gold standard would then cause  $D_A^B P D_A^B$  and  $S_A^B Q S_A^B$  to intersect within the limits of the gold points, R+T and R-T by automatically correcting the balance of payments disequilibrium of both countries ultimately at point E\* which is equal to the mint parity rate R. Between gold export point (R+T) and gold import point (R-T) there is no incentive for shipments of gold as initial equilibrium is again restored at the mint parity.

#### **4.4 Rule of the Game:**

The price-specie-flow mechanism automatically restores equilibrium in the balance of payments and eliminates the possibility of international gold movements. But the reaction of the central banks to gold flows across their borders furnished another potential mechanism to restore the balance of payments equilibrium. The central banks facing a gold outflow were motivated to contract domestic asset holding, pushing domestic interest rates upward and attracting capital inflows. The central bank which was accumulating gold was tempted to purchase domestic assets by increasing capital outflow. These domestic credit measures reinforced the price-specie-flow mechanism in bringing all countries back to the balance of payments equilibrium. The practice of selling domestic assets when in deficit and buying domestic asset when in surplus is known as the gold standard 'Rule of the Game', the phrase coined by Keynes. These movements speeded the mechanics of simultaneous achievement of the balance of payments equilibrium among countries (Krugman, 2000).

However, later it was found that rule of the game was violated frequently by some of the central banks after 1914. The rule of the game did not allow the central banks to sterilize capital flows. In spite of that, the central banks did sterilize part of

their deficits. However, the emergence of the World War I in 1914 led to the fall of the gold standard.

## **5. INTERWAR PERIOD (1918-1939):**

This covers the period of two World Wars and the Great Depression of 1929. This new system is known more as the gold exchange standard because both gold and currencies convertible in gold were used as international reserves. The interwar years were composed of three exchange rate regimes, general floating (1919-1925), gold exchange standard (1926-1931) and managed float (1932-1939) (Bordo, 1993). By the early 20<sup>th</sup> century the supply of gold was limited and the growth of international trade was hampered due to the inadequacy of international liquidity. The gold standard prevented countries from minting more money as a means of paying the expenses of war. Thus, countries suspended the gold standard during World War I (Wang, 2010). Increased military expenses due to war were met by printing money, leading to higher inflation among countries. The exchange rates were also fluctuating due to higher money supplies and increased inflation domestically. There was concern among countries regarding the stability of economies. Thus measures were undertaken to re-establish the gold standard after the World War I. The U.S. returned to the gold standard in 1919 and other countries were also willing to bring back the gold standard era. Thus, in 1922, at the Geneva Conference, a group of countries decided to re-establish the gold standard to attain financial stability. In April 1925, the U.K. re-established the convertibility of the sterling into gold at the pre-war rate. Other countries followed suit.

The U.K.'s attempt to re-establish the gold standard from 1925 to 1931 aggravated the Great Depression. As the U.K. had set the pre-war parity, the sterling appreciated by 10 percent against the U.S. \$ in 1924. Sterling was overvalued due to which the U.K. lost its competitiveness during the World War I. The tight monetary policy of the U.K., to maintain pre-war parity, led to industrial depression in the 1920s. This eventually resulted in deficit in the balance of payments and massive unemployment. Delay in defending official gold parities before devaluation led to deflationary and protectionist pressures on the world economy. Countries faced banking crises, initially in Germany and later in the U.S., collapsing the international

economy. By 1933 foreign trade had fallen to 1/3<sup>rd</sup> of its 1929 level. The depression in the U.K. lost the position of London as the global financial centre. During the Great Depression many countries lost confidence in sterling and started converting sterling into gold. As a result, the U.K. was forced to suspend convertibility of sterling into gold and the sterling was devalued in September 1931. Because of the devaluation of sterling, the gold exchange standard came to an end. The U.S. left the gold standard in 1933 but brought it back in 1934 with a higher \$ price of gold *i.e.*, from \$20.67 to \$35 per ounce. It was with the view that each economy should manage its own macro economy rather than submitting to an international standard and the exchange rate should be made flexible to support targeted inflation and employment objectives of the respective country.

## **6. BRETTON WOODS SYSTEM (1947-1973):**

In 1944 representatives of the U.S., the U.K., and 42 other countries met at Bretton Woods, New Hampshire to decide upon the new international monetary system. Looking at the disastrous economic events during the interwar period, these representatives designed an international monetary system that would lead to full employment, price stability and allow other countries to attain external balance without imposing restrictions on international trade. The system called for establishment of two international institutions, first the International Monetary Fund (IMF) to abide countries to follow agreed rules of international trade and finance and provide borrowing facilities for countries in temporary difficulties in their balance of payments. Second, for long run development assistance the International Bank for Reconstruction and Development (IBRD or World Bank) was established. The IMF started working from March 1, 1947 with 30 member countries which later increased to 187. The IMF was governed by the Board of Governors appointed by the member countries. The operations would be directed by the executive directors. Major changes would require majority vote by the members. The number of votes assigned to the members depended upon each member's quota, which, in turn, was determined by the economic size of the country.

The Bretton Woods system was basically the gold exchange standard. The U.S. maintained the price of gold fixed at \$ 35 per ounce and exchanged \$ for gold



without any limitation. Other countries fixed their exchange rate with the U.S. \$ and countries were to intervene in the foreign exchange market to maintain the exchange rate with allowed deviations of above and below 1 percent. Within the band, the exchange rate was determined by forces of demand and supply. Member countries hold international reserves in the form of gold and \$ and used to sell \$ to the Federal Reserve for gold at the official price. In the early 1960s other currencies became fully convertible in terms of \$, the only intervention currency and principal reserve currency. Thus, the new currency system was called the 'gold-\$ standard'. This system of fixed and adjustable par values aimed to provide exchange rate stability as against the rigidities faced by the gold standard.

Countries financed their balance of payments deficits either through international reserves or borrowing from the IMF. The change in par value was allowed if the IMF agreed upon it. It is a situation of *Fundamental Disequilibrium*. The term is not used anywhere in the Bretton Woods agreement. However, the term refers to large and persistent balance of payments surplus or deficit (Salvatore, 2002). Without devaluation there would be high unemployment. The change of par value would result in improvement in the balance of payments position escaping a long and painful adjustment process. The system, thus, can be called as adjustable peg system.

The countries agreeing to adopt the Bretton Woods system abided by following rules (McKinnon, 1993):

1. Fix the foreign par value for domestic currency by using gold.
2. Keep the exchange rate within  $\pm 1$  percent of its par value but long run par value would be adjusted by the IMF.
3. Free currency convertibility for the current account.
4. Short run imbalances corrected through official exchange reserves and IMF credits.
5. Sterilize domestic monetary impact of exchange market interventions.

### **6.1 Working of the IMF:**

The IMF was assigned with the responsibility of providing borrowing facilities to countries facing balance of payments difficulties. The countries which joined the

IMF were assigned a '*Quota*' based on economic importance and the volume of international trade. The size of a country's quota determined its voting power and its ability to borrow from the IMF. The U.S. was assigned 31 percent of the quota. Every five years quotas were to get revised. On August 30, 2011 the quota of the U.S. was only 17.71 percent. Countries had to maintain 25 percent of quota in gold and the remaining in the country's domestic currency. The quota in gold was called 'Gold Tranche'. The countries could borrow from the IMF upto the gold tranche limit without any restriction. However, the assistance provided over and above the gold tranche is known as 'Credit Tranche' for which the IMF used to charge a higher rate of interest.

For the IMF *conditionality* became an increasingly sensitive issue especially in 1960s and 1970s. The quotas were not raised in line with expansion of world trade. Higher levels of lending in relation to quotas were required with consequently increasing conditionality. The conditionality restricted the availability of capital to the countries. There was a strict view that conditionality should be proportional to extent of the quota. However, completely unanticipated emergence and expansion of Eurocurrency markets during the Bretton Woods era gave an alternative to credit expansion to countries. This led to the failure of one of the objectives of the IMF to keep money supply in control (James, 2004).

## **6.2 Convertibility of Currency:**

To promote hassle-free trade, member countries of the IMF were obliged to make their currency convertible with other foreign currencies. Convertible currency is one that is freely exchanged for any other foreign currency. Countries were not allowed to impose any trade restrictions resulting in the failing of currency convertibility. Existing trade restrictions were removed by countries indulging in multilateral trade negotiations such as the General Agreement on Tariffs and Trade (GATT). This convertibility was on current account of the balance of payments. Countries were allowed to restrict capital flows through restrictions on the capital account. These restrictions were imposed because speculative movements of hot money could endanger economic stability of the member countries. The U.S. made the \$ convertible in 1945, Europe in 1958, Japan in 1964. Early convertibility of the

U.S. \$ in the Bretton Woods system made it a vehicle currency for international transactions.

### **6.3 Operation of the Bretton Woods System:**

Industrial countries were very reluctant to change their par values until they were forced by the resulting destabilizing speculation. Deficit countries were reluctant to devalue their currencies because it could signal their national weakness. Surplus countries resisted revaluation for accumulating international reserves. On the other hand, developing countries devalued their currencies too often. The unwillingness of industrial countries to change their par values reduced Bretton Woods' flexibility and failed automatic adjustment mechanism of the balance of payments. Reluctance over changes in the par values destabilized international capital flows. Destabilized capital flows became more frequent and more disruptive culminating in the collapse of the Bretton Woods system in August 1971. These capital flows were the result of rapid growth of the Eurocurrency market during the 1960s.

### **6.4 Evolution of the Bretton Woods System:**

In 1962, the IMF negotiated the General Arrangements to Borrow (GAB) upto \$6 billion from the G-10 countries. The G-10 or Group of Ten countries included the U.S., the U.K., Germany, Japan, France, Italy, Canada, the Netherlands, Belgium, and Sweden. The GAB was further strengthened by the association of Switzerland which, at that time, was not a member of the IMF. The GAB was to supplement its resources to help countries facing difficulties in the balance of payments. It was renewed and expanded in subsequent years.

Member countries were taking advance permission for future borrowing from the IMF called 'Standby Arrangements'. It was against anticipated destabilizing hot money flows. In 1971, the IMF had \$28.5 billion of resources. The IMF later allowed member countries to borrow upto 50 percent of their quotas. The countries' central banks negotiated swap arrangements to exchange each other's currency to intervene in foreign exchange markets to combat hot money flows. These arrangements were made for a specific time and with an exchange rate guarantee. During the 1960s the

U.S. and European countries negotiated many such swap arrangements. In 1961 the gold pool started under the leadership of the U.S. to sell officially held gold on the London market to prevent the price of gold from going above \$35 per ounce. The London gold pool was the pooling of gold reserves by a group of eight central banks in the U.S. and seven European countries (*viz.*, the U.K., Germany, France, Italy, Belgium, the Netherlands and Switzerland) that agreed to co-operate in maintaining the Bretton Woods System of fixed-rate convertible currencies and defending a gold price of U.S. \$35 per ounce by interventions in the London gold market (Salvatore, 2002).

The Bretton Woods system created Special Drawing Rights (SDRs) in 1969 to supplement international reserves of gold, foreign exchange and reserves in the IMF. The SDRs are also sometimes referred to as paper gold. It was called a ‘drawing right’ to avoid the necessity to decide explicitly whether it is an asset or a credit to be repaid to the IMF. These are accounting entries in the books of the IMF, neither backed by gold nor by any other currency. The SDRs can only be used in dealings among central banks to settle deficit or surplus in the balance of payments and not private commercial dealings. The value of one SDR was originally set equal to one U.S. \$ but following the devaluations of the \$ in 1971 and 1973 it rose above \$1. Since the 1974 value of SDRs was tied to a basket of sixteen currencies. Gradually SDR became the principal reserve asset and the role of gold and reserve currencies was reduced. Currently the value of the SDR is defined by a weighted currency basket of four major currencies *i.e.*, the Euro, the US dollar, the British sterling, and the Japanese yen. SDRs are denoted with the ISO 4217 currency code XDR (Wikipedia, 2011b).

### **6.5 The U.S. Balance of Payments Deficit:**

After World War II many countries were facing the problem of balance of payments deficits due to war expenses. During 1945-1949 the U.S. had a balance of payments surplus and thus helped European countries and Japan to reconstruct their economies. By the 1950s the U.S. started running into deficits in the balance of payments and this helped European countries and Japan to build international reserves. Many countries were willing to accept the U.S. \$ as it was exchanged with gold at a fixed rate of \$35 per ounce and it had truly become an international

currency. In 1958 the U.S. deficit increased sharply upto \$3 billion per year. This was the period of a 'Dollar Shortage'. The severity of the shortage was restrained through the Marshall Plan, the Plan which granted aid in U.S. \$ to European countries to come out of the liquidity crisis since 1948. The Marshall plan advised \$ 13 billion in aid to Western Europe during 1948-52. The Plan required members to co-operate in liberalization of trade and payments. The U.S. aid was to pay for essential imports and building international reserves. Each country had a delegation of U.S. administrators. The Plan encouraged liberalization of intra-European trade and payments by granting aid to countries. Due to the Marshall Plan, European countries could resolve their problems of deficits (Bordo, 1993). In 1960, the U.S. economy entered a recession as foreign central banks converted nearly \$2 billion into gold expecting that the U.S. would devalue \$ against gold. As a result, there was a large capital outflow from the U.S. Thus the U.S. discouraged capital outflows by taxing purchases of foreign assets by U.S. residents. Other measures were undertaken to reduce the deficit instead of devaluing the \$. In order to discourage capital outflows, interventions in the foreign exchange market were scaled up and the short term interest rates were also kept higher. The resources for foreign exchange market intervention were obtained from swap agreements and standby agreements with the IMF (Salvatore, 2002).

The participation of the U.S. in the Vietnam War during 1965 increased military expenses. President Johnson's Great Society Program for public education and urban redevelopment further increased expenses. As a result, the fiscal deficit rose resulting in higher inflation. In the late 1967 speculators began buying gold with anticipation of devaluation of the \$ against gold in the near future. The U.K. sterling's devaluation in 1967 further increased the expectations of speculators. After massive gold sales by the Federal Reserve and the European central banks, the Bank of England closed the gold market on March 15, 1968. This led to failure of the gold pool and the gold crisis began in 1968. A two-tier gold market was created by the central banks as a measure against this crisis. The gold price was allowed to fluctuate as per demand and supply forces in the private tier. However, the central banks continued to transact at the official tier with the gold price of \$35 per ounce. Creation of the two-tier market was considered an important turning point in the Bretton Woods system. Further, to discourage gold flight, the U.S. created Roosa Bonds, a medium term treasury bond with exchange rate guarantee, to discourage \$ holders to

convert the \$s into gold. However, by the 1970s the U.S. \$ reserves rose to \$40 billion from \$11 billion. On the contrary, gold reserves declined from \$25 billion to \$11 billion (Krugman, 2000).

In spite of all these measures, the U.S. \$ continued to remain under pressure. The international capital market had become more integrated with the emergence of Eurocurrency markets leading to huge destabilizing capital movements. On August 15, 1971, President Nixon suspended convertibility of \$ into gold and imposed a 10 percent surcharge on imports with price and wage controls. He announced that then Gold Window was being shut. This led the Bretton Woods to end.

### **6.6 Smithsonian Agreement:**

In spite of increasing pressure on the U.S. \$ to devalue, it was not easy to devalue the \$ because it was an international currency. The U.S. \$ could have been devalued only if foreign governments agreed simultaneously to revalue their currencies against the U.S. \$. Thus extensive multilateral negotiations were required to devalue the \$. Germany and Japan were not ready to revalue their currencies as it would have adversely affected their trade competitiveness.

To resolve this issue, in December 1971, representatives of G-10 countries met at the Smithsonian Institute, Washington DC. At that summit, the price of gold was agreed to increase from \$35 to \$38 per ounce. This meant that the U.S. \$ was devalued by 9 percent. The German Mark was revalued by 17 percent and the Japanese Yen by 14 percent. The band fluctuations were increased from  $\pm 1$  percent to  $\pm 2.25$  percent. The U.S. removed an import surcharge of 10 percent. The world was essentially on the \$ standard as the U.S. \$ was inconvertible into gold. This was known as the famous 'Smithsonian Agreement'. President Nixon called it 'the most significant monetary agreement in the history of the world' (Krugman, 2000).

However, this agreement did not prove to be of great economic significance as the \$ still remained under pressure due to deterioration in the current account of the U.S in 1972 and sharp monetary growth prior to the presidential elections. The year 1972 experienced further speculative outflow of \$ and other countries faced huge

capital inflows. In early February, 1973, the foreign exchange market was closed due to speculative attack. The U.S. announced a 10 percent devaluation of the \$ after opening of the foreign exchange market. The official price of gold with respect to the \$ rose to \$42.22 per ounce. The currencies of Japan and European countries were floated against the U.S. \$. This ended the fixed exchange rate arrangement with the collapse of the Bretton Woods system in March 1973.

### **6.7 Snake in the Tunnel:**

Before the collapse of the Bretton Woods system in March 1973, the original six member countries of the European Common Market *viz.*, Belgium, France, Germany, Italy, Luxembourg, and the Netherlands decided to float their currencies jointly with a band of fluctuation of  $\pm 2.25$  percent on either side of the central rate creating a total band of 4.5 percent (Bordo, 1993). This was named the 'European Snake' or the 'Snake in the Tunnel'. The Snake was with maximum total spread of 4.5 percent between the strongest and weakest currency with respect to the U.S. \$. It lasted till March 1973. With the speculation against the U.S. \$ in March 1973, major industrial countries such as the U.S., the U.K., Japan, Italy, Canada and Switzerland decided to float their currencies independently and the European Common Market floated their currencies jointly. However, France abandoned the snake in 1974, Norway in 1977 and Sweden in 1978. By 1978, the snake turned into a worm with only the German mark, Belgian franc, Dutch guilder, Danish krone. Then, a new effort to achieve monetary co-operation was launched. By March 1979, the EC established the European Monetary System (see Appendix A), and created the European Currency Unit (ECU). With this the present managed floating exchange rate system was born.

### **6.8 Collapse of Bretton Woods:**

Though the Bretton Woods was the most stable monetary regime compared to the gold standard or any other regime it collapsed because of fatal flaws in its design, the adjustable peg in the face of improved capital mobility and the confidence problem associated with the gold-\$ standard and lack of commitment by the U.S. to the gold standard convertibility rule (Bordo, 1993). Most of liquidity under the

Bretton Woods system resulted from the increase in official holdings of foreign exchange to finance the U.S. deficit in the balance of payments. The longer the deficit in the U.S. balance of payments persisted, the more unwanted \$ accumulated in foreign hands reducing confidence in the \$. The \$ shortage of the 1950s had given way to the dollar glut of the 1960s. On the other hand, the Bretton Woods lacked an adequate adjustment mechanism of the balance of payments that countries would be willing and able to utilize as a matter of policy. The fundamental cause for failure of the Bretton Woods system was the problems of adjustment, liquidity and confidence (Salvatore, 2002). The system did not provide a credible commitment mechanism. U.S. monetary policy was inappropriate for a key international currency. The exchange rate regime evolved into a de facto \$ standard which obliged U.S. to maintain price stability. The U.S. was unwilling to absorb domestic considerations for the responsibility of maintaining a nominal anchor. Rather, the U.S. conducted an inflationary policy. As a result, overall world inflation rates were increasing and the other G-7 countries were against U.S.-imposed inflation rates. This ultimately resulted in destruction of the Bretton Woods system into a hope for a more stable international exchange rate system.

## **7. THE QUEST FOR A STABLE SYSTEM:**

After the collapse of the Bretton Woods system, efforts were taken to evolve a more stable international exchange rate system and to deal with the problem of international liquidity through different accords over a period of time.

### **7.1 The Jamaica Accord (1976):**

After the collapse of the Bretton Woods System, the world was facing higher inflation rates due to creation of liquidity through large scale deficits and hikes in oil prices. Developing countries were hit by inflation, recession in industrial countries and a fall in the terms of trade. Thus, all countries were aiming to establish a stable system. The real issue was not restoration of fixed parities but excessive fluctuations in certain key exchange rates. Thus, it was felt that since the world was facing persistent inflation and imbalances in the balance of payments, flexible exchange rates would serve better to attain exchange rate stability. Unfortunately, there were



differences in the views of two leading powers; the U.S. and France. France had the view that the basis for the monetary system should be par values and the U.S. held the view that fixed parities depend upon stable monetary conditions. These differences in views of the U.S. and France on the exchange rate regime were resolved at the Rambouillet meeting held in France in November 1975 when six of the largest industrial countries *viz.*, the U.S., the U.K., Japan, Germany, France, and Italy agreed to work for greater monetary stability. The debate on the appropriate system of international liquidity and exchange rates ended at the Jamaica Agreement. This cleared the way for the meeting of the Interim Committee in Jamaica to amend Article IV of the IMF comprising of exchange rate regime rules. That time the Committee of Twenty initiated the problem of an exchange rate regime which was further taken by the Interim Committee of Governors in 1973. On January 7-8, 1976 the committee requested executive directors to amend Article IV of the IMF (Bernstein, 1976).

The Interim Committee recommended that the exchange rate mechanism will continue to be based on stable but adjustable par values which will ensure greater flexibility provided through wider margins and simplified procedures for making small changes in the par value. The Jamaica meeting was mostly concerned with resource scarcity and price levels. It led to the concrete decision of legitimizing flexible exchange rates by amending Article IV of the IMF. This new Article allows each member country to choose any regime of the exchange rate only if,

- a) It notifies the IMF of its exchange rate arrangements.
- b) It avoids manipulating the exchange rate to prevent balance of payments adjustment (Cooper, 1976).

A member can follow any of the specific exchange rate arrangements. It may have a par value denominated in SDRs, it can participate in cooperative arrangements which stabilize the exchange rate of a group or it may follow another exchange rate arrangement of its choice.

Amendment of Article IV of the IMF abolished the official price of gold and terminated gold transactions between the IMF and its members. The agreement included sale of 1/6<sup>th</sup> of gold holdings of the IMF for the benefit of developing countries. However, the G-10 countries were allowed to buy and sell gold at market-related prices. The decision to abolish gold transactions was to reduce the importance

of gold as an international reserve throughout the world. The amendment increased the credit tranches of the IMF by 45 percent. The Jamaica agreement confirmed 32.5 percent increase in quotas of the IMF. The share of the industrialized countries was reduced from 73 percent to 68 percent of the total quotas, the OPEC members' quota was increased from 5 percent to 10 percent and non-oil producing developing countries quota remained unchanged at 22 percent. The members were granted SDRs of additional 45 percent of existing quotas which meant that members could borrow more from the IMF (Islam, 1976).

## **7.2 The Plaza Accord (1985):**

In the early 1980s the U.S. \$ was appreciating continuously. The U.S. capital inflows and current account deficits rose in tandem. The Plaza Accord was the agreement between G-5 countries *viz.*, France, West Germany, Japan, the U.S. and the U.K., to depreciate the U.S. \$ with respect to other international currencies by intervening in the foreign exchange market. The governments of G-5 signed this Accord on September 22, 1985 at the Plaza Hotel in New York in which the U.S. accepted to intervene in the foreign exchange market to devalue the \$. This was the famous Plaza Accord of 1985 named after the venue for the meeting. The Plaza agreement was later confirmed in 1986 at the Tokyo summit of G-5 countries in which later Canada and Italy joined, known as the G-7 countries (Levi, 2005).

As per the accord, the U.S. \$ was devalued by 51 percent. The rationale for the devaluation of the U.S. \$ was to reduce the current account deficit of the U.S. which was 3.5 percent of GDP and resurrect the U.S. economy from recession in the 1980s (Wikipedia, 2011c). More importantly, European countries and Japan were experiencing huge current account surpluses and negative GDP growth of about -0.7 percent, threatening external trade and GDP growth at home (Twomey, 2011).

The Plaza Accord was successful in reducing the current account deficit of the U.S. as devaluation of the U.S. \$ made U.S. exports cheaper to its trading partners. The outcome of the Plaza Accord was the emergence of Japan as a real player in managing the international monetary system. However, currency speculation depreciated the U.S. \$ further even after the end of co-ordinated interventions. The G-

7 countries again met in 1987 and signed the Louvre Accord to halt continued decline of the U.S. \$.

### **7.3 The Louvre Accord (1987):**

An economic summit of the leaders of the world was organized against the background of exchange rate instability and the quest for a new exchange rate regime. The economic summit held in Paris at the Louvre Museum on February 22, 1987 came to be known as the Louvre Accord. A new compromise exchange rate system between flexible and fixed exchange rate arrangements was agreed by the G-7 countries (the U.S., Japan, the U.K., West Germany, France, Italy and Canada) as the authorities of major industrial countries recognized that further substantial shift in exchange rates could hamper their economic growth. The main agenda of the Louvre accord was to curb excess volatility of the exchange rates, to achieve greater stability with co-operation and co-ordinate macroeconomic policies to stabilize the exchange rates at around current levels. This agreement shifted the exchange rate regime from flexible to dirty or managed floating. The countries who favoured the exchange rate flexibility and thought that intervention of any kind is bad called it dirty floating. Conversely, the countries who agreed to such an arrangement called it managed floating. The countries adopted managed floating because large capital flows were hampering management of stable exchange rates. Therefore, with simultaneous co-operation it was felt that authorities could keep the exchange rate stable in spite of heavy private speculation.

Although details of the agreement were never made public, there were arguments that the major countries adopted a target zone as a way of maintaining exchange rate stability (see Appendix B). Because these countries did not announce any central rates or bands for exchange rates, following unofficial target zones they adopted a band of  $\pm 5$  percent. None of the official statements ever confirmed the adoption of a target zone arrangement (Esaka, 2000). However, the main elements of the Louvre Accord are

- a) Margin of  $\pm 2.5$  percent on either side of the central rate.
- b) Intervention efforts would intensify from the  $\pm 2.5$  percent margin to a  $\pm 5$  percent margin.

- c) Central rates could be rebased by mutual agreement.
- d) The agreements were strictly confidential and the central rates and bands would not be made public.

With collapse of the Bretton Woods System, chaotic foreign exchange markets and huge destabilizing speculation, countries had shifted from fixed exchange rate regimes to limited or more flexible exchange rate arrangements. At the beginning, 87 percent of members of the IMF had a fixed exchange rate system. But by the end of 1973 only 55 percent of the group was pegging to the U.S. \$. Especially developing countries shifted between and within exchange rate regimes. By 1987 the number of countries pegging to the U.S. \$ had fallen to 38 percent. The currency basket peg arrangement was adopted by almost 30 percent of the members of the IMF. At the beginning of 2011, about 2/3 of 187 members of the IMF had some form of exchange rate flexibility. Countries managed their exchange rates either independently or jointly as the European countries. The remaining countries pegged their currencies to the U.S. \$, French Franc, SDRs or a basket of currencies.

## **8. CURRENT EXCHANGE RATE ARRANGEMENTS:**

The earlier classification of the exchange rate regime as per the IMF from 1975 to 1998 was based on the official or the de jure notifications of the member countries to the IMF about their exchange rate policies within thirty days of becoming a member and after making any prompt changes in their exchange rate regime. The de jure classification distinguished between two major categories:

- 1) **Pegged Regimes:** The pegged regime includes no separate legal tender, currency boards and conventional fixed peg arrangement. It also includes regimes with limited flexibility. In 1998, out of 182 member countries of the IMF, 44.5 percent were following pegged regimes out of which 9.3 percent followed regimes with limited flexibility.
- 2) **Flexible Arrangements:** The flexible arrangement includes independent floating and managed floating. In 1998, 55.5 percent of the member countries of the IMF adopted a floating regime in which 24.7 percent of the members followed

independent floating and 30.8 percent followed managed floating exchange rate arrangements (Bubula, 2002).

The de jure classification failed to capture the difference between the claims of the member countries and the exchange rate regime actually adopted by the countries in practice. Thus, in 1999, the IMF adopted a modified system of the classification of exchange rate regime on de facto policies. This new system of the de facto exchange rate regime has distinguished between various types of pegged regimes to reflect varying degrees of monetary autonomy and commitment to the given exchange rate path (Bubula, 2002).

### **8.1 De facto Classification of the IMF:**

The IMF has classified existing exchange rate regimes into the following eight categories.

#### **8.1.1 Hard Peg:**

Establishing a fixed exchange rate between one national currency (small country) and another national currency (industrial power) is called the 'Hard Peg' of a currency. A hard peg establishes a rigidly fixed exchange rate (Wikipedia, 2011d). A hard peg is generally adopted by countries with the history of monetary instability. The U.S. \$ is the most commonly used currency for pegging domestic currency (Salvatore, 2002). As per the de facto classification by the IMF, 48 countries follow a hard peg. A hard peg is further distinguished into two categories:

##### *a) No Separate Legal Tender:*

The currency of the other country circulates as the sole legal tender (formal dollarization), or the member belongs to a monetary or currency union in which the same legal tender is shared by the members of the union. Currently 41 countries are under this arrangement including the euro area (IMF, 2011). There are two types of this arrangement.

1. Formal dollarization: the currency of the other country is circulated as the sole legal tender.

2. Shared legal tender: The members belonging to a monetary currency union share the same legal tender. The members of a currency union also share monetary policy with each other. Smaller countries may benefit from such a union as they have effective control over domestic monetary policy (Wang, 2010).

b) *Currency Board Arrangements:*

A currency board is a monetary authority which is required to maintain a fixed exchange rate with a foreign currency. A country accepting a currency board arrangement gives up its control over the money supply and monetary policy. It is a kind of arrangement experienced during the gold standard. The currency board arrangement is followed by seven countries such as Hong Kong, Bulgaria and five other countries.

**8.1.2 Soft Peg:**

A pegged exchange rate, without a strong commitment by the central bank to allow the money supply to vary as necessary to maintain it, is called a 'soft peg'. A soft peg is followed by 63 countries around the world. (IMF, 2011).

a) *Conventional Fixed Peg Arrangements:*

A country pegs its currency within margins of  $\pm 1$  percent or less *vis-à-vis* another currency or a weighted basket of currencies. The exchange rate may fluctuate within narrow margins of less than  $\pm 1$  percent around a central rate for at least three months. The monetary authority maintains the fixed parity through direct or indirect intervention. The conventional fixed peg is followed by 52 countries including Pakistan and China.

b) *Intermediate Pegs:* It is classified into peg within horizontal band, crawling peg and crawling band systems. It is followed by 11 countries.

1. Peg within Horizontal Band: The value of the currency is maintained within certain margins of fluctuation of not more than  $\pm 1$  percent around a fixed central rate (IMF, 2011). A preference of any country for a fixed exchange rate would allow for a narrow band and, on the other hand, wider band would indicate a country's preference

for more flexible exchange rate system. At present 11 countries are following a peg within horizontal band.

2. Crawling Peg System: A crawling peg allows the exchange rate to fluctuate in a band around a central value, which is adjusted periodically in a controlled way following economic indicators. The currency is adjusted periodically in small amounts at a fixed rate (IMF, 2011). Under this, par values are changed by small pre-announced amounts or percentages and clearly specified intervals until an equilibrium exchange rate is reached. Currently, 5 member countries of the IMF have adopted crawling peg system.

3. Crawling Band System: The currency is maintained within certain fluctuation margins of at least  $\pm 1$  percent around a central rate. A country selects a range or 'band' of values to set their currency and returns to a fixed exchange rate if the value of their currency shifts outside this band.

### **8.1.3 Floating Regime:**

Under this regime, the exchange rate is floated against currencies. It comprises of managed floating and independent floating. At present 76 countries are under the floating exchange rate system.

#### *a) Managed Floating:*

Under a managed floating exchange rate system, the monetary authorities of the countries are entrusted with the responsibility of intervening in the foreign exchange market to smooth out short run fluctuations without affecting the long run trend in the exchange rates. The monetary authorities generally adopt the policy of 'leaning against the wind'. This system is sometimes also referred to as a 'dirty floating' system (Salvatore, 2002). Managed floating with no predetermined exchange rate or path is adopted by 51 countries including India (IMF, 2011).

#### *b) Independent Floating:*

The exchange rate is determined purely through demand and supply forces in the foreign exchange market. Under freely a floating exchange rate regime, the

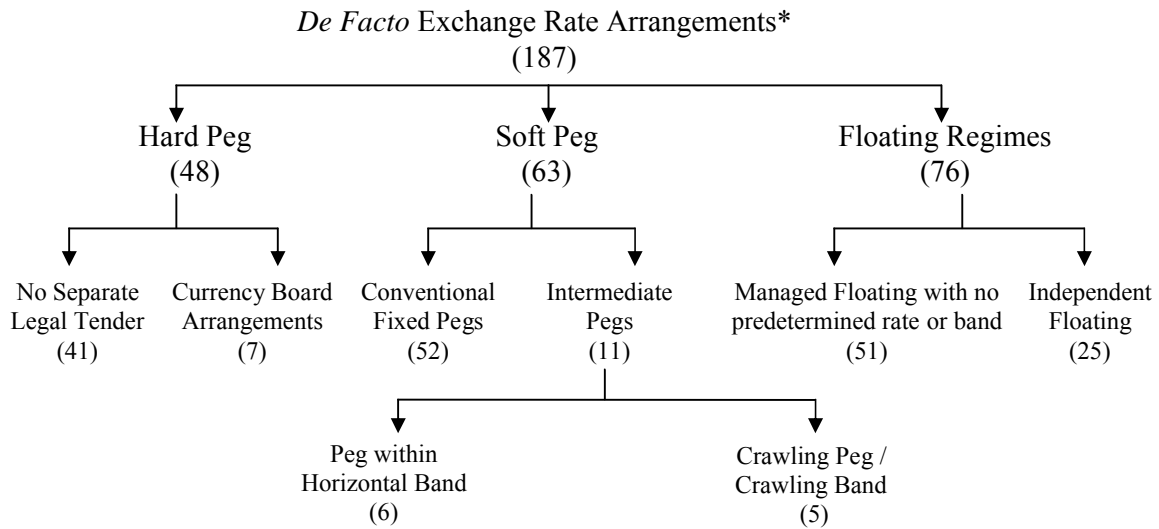


Figure 2: The De facto Exchange Rate Arrangement

\* Figures in parentheses represent the number of countries.

Balance of payments disequilibrium is immediately and automatically corrected by exchange rate changes without any official intervention and need for reserves. The country adopting this regime would experience frequent exchange rate fluctuations and higher exchange rate volatility. 25 countries are independently floating their currencies including the U.K., the U.S. and Japan (IMF, 2011).

## 8.2 Bipolar View:

The decade of the 1990s experienced a series of crisis encountered by the Emerging Market Economies (EMEs) such as the Mexican crisis of 1994, the East Asian Crisis of 1997, the Russia and Brazil crises in 1998 and the crisis of Argentina and Turkey in 2000. These countries espoused some form of fixed or pegged exchange rate regimes. This led to the emergence of the bipolar view or vanishing intermediate regime hypothesis (Jurek, 2010). It is also been referred to as the ‘vanishing or missing middle’ hypothesis or the hollowing out of intermediate regimes or corner solutions (Bubula, 2002). According to the bipolar view, there is a tendency among the countries to move away from a crisis-prone intermediate regime and adopt either a hard peg or floating regimes. This view was first proposed by Fischer (2001) who initially highlighted the fact that especially after the decade of several crises countries were moving away from the intermediate regime. The



rationale for this shift was that the countries open to international capital flows were moving away from an adjustable peg exchange rate system either towards the harder pegs or freely floating regimes because the soft pegs were not viable over a long period of time, especially for those countries who were highly integrated or integrating into the international capital market. It was quite evident from the experience during the 1990s that the popularity of hard pegs and floating regimes gained at the cost of soft pegs because soft pegs were crisis-prone and were not viable over longer periods (Fischer, 2001). He defined the soft version of the bipolar view as, for countries open to the international capital flows;

1. Soft exchange rate pegs are not sustainable, but
2. A wide variety of flexible rate arrangement remain possible, and
3. It is to be expected that the policy in most countries will not be indifferent to exchange rate movements (Fischer, 2001, P. 5).

Many studies have attempted to test the validity of the bipolar view. Fischer (2001) tested this view for 33 EMEs out of which 13 countries had independent floating including Indonesia, Korea, Thailand, Russia, Brazil and Mexico who became floaters after the major crises experienced by them in the 1990s. Other three countries adopted managed floating. The remaining 17 countries had fixed or adjustable pegs. This proved the validity of the bipolar view that within the EMEs the number of intermediate exchange rate arrangements declined especially during 1990s and number of floating and fixed regimes increased substantially. Bubula (2002) analysed the bipolar view based on the de facto classification of the IMF for a monthly data from 1990 to 2001. The study did not find strong support for the bipolar view. However, it revealed that the bipolar view is valid for the developed countries and especially to those emerging markets which were integrated with the international financial market. In the another study by Bubula (2004) she found that pegged regimes were more prone to currency crises than floating regimes if countries were more integrated with the international market. The risk of crisis associated with pegged regime was higher than floating regimes. Eichengreen and Razo-Garcia (2006) supported the bipolar view for a group of developed countries. However, as far as a group of developing countries was concerned, the evidence failed to support the view. They concluded that intermediate regimes were very popular among the relatively closed EMEs and in developing economies than relatively open EMEs and

developed countries. Though there was a declining trend for intermediate regimes it does not suggested that intermediate regimes would disappear. The recent study conducted by Jurek (2010) did not support the bipolar view for the IMF member countries for the years 1999 to 2008. It rather found that the emerging and developing countries adopted intermediate regimes and replaced independent floating by the managed floating.

The distribution of exchange rate regimes remained quite stable during 2001-2006. However, there was some tendency among countries not to shift the entire regime but only to shift within regimes at the end of 2006. During the last 15 years the general tendency among emerging market economies is to adopt more flexible exchange rate regimes. However, a country's actual exchange rate regime can differ from its official notification. Over the past decade number of countries, those officially declared to be floating, were in reality targeting a stable exchange rate.

#### **9. A BRIEF REVIEW OF INDIA'S EXCHANGE RATE REGIME:**

Over the years India has experienced many changes in its exchange rate regime. The colonial rule over India had a strong influence on exchange rate management which was undertaken by the British rulers. Many rules and regulations followed by the U.K. while managing the exchange rate were also applied to the Indian economy. Thus sterling exerted a strong influence on the rupee exchange rate. The uniform currency for India was first introduced by the directors of the East India Company in 1806. The silver rupee of 180 grains troy, 11/12<sup>th</sup> fine was declared as the sole legal tender throughout British ruled India in 1835 when Act XVII was passed. As per this Act, India was put on a monometallic standard *i.e.*, only one metal 'silver' was used as the legal tender. Gold coins which prevailed in the Mughal era were exchanged for Rs. 15 per coin (Jadhav, 2005). The Paper Currency Act of 1861 introduced currency notes in India.

During the 1870s many countries, including U.K., decided to accept the gold standard which eventually led India to follow the gold standard in 1893. This established the gold bullion cum sterling exchange standard in India (RBI, 1970). The exchange rate of 7.53344 grains of fine gold corresponded to 1shilling 4pennies *i.e.*,

1s 6d sterling per rupee. This rate was fixed until 1927 when the Currency Act was passed. The rupee-sterling link was altered to 1s 6d sterling per rupee. After the establishment of the Reserve Bank of India (RBI) in 1935 the management of the exchange rate came under the wings of the RBI. The RBI used to undertake various operations to keep the rupee-sterling link stable. This link obliged India to follow appreciation and depreciation of sterling because it affected the rupee exchange rate. Being a member of sterling area, it was essential for India to adjust the rupee to the changes in the exchange rate of sterling at the international level. Otherwise the unaltered exchange rate could have adversely affected competitiveness of the Indian economy. As a result, India experienced two major devaluations.

In 1949 sterling was devalued from \$4.03 per sterling to \$2.80 per sterling. India also followed suit as other sterling area countries and devalued rupee by 30.5 percent against sterling. The new exchange rate against sterling was fixed at 1 Rs. = 30.2250 cents from 1Rs = 21 cents after devaluation. The new par value in grams of fine gold per rupee was altered to 0.186621. This move kept the rupee-sterling link unchanged. The second major devaluation occurred in 1966 when due to internal and external obstacles the rupee was devalued by 36.5 percent, from 0.186621 gram of fine gold to 0.118489 gram. The rupee exchange rate of U.S. \$ and sterling was altered respectively from Rs. 4.76 to Rs. 7.50 per U.S. \$ and from Rs. 13.33 to Rs. 21 per sterling (Balchandran, 1998).

After the collapse of the Bretton Woods and the Smithsonian Agreement in 1971, India decided to delink from the U.S. \$ and established a central rate in terms of sterling, based on London quotations. India was managing the exchange rate within  $\pm 2.25$  percent around a central rate. On September 24, 1975, continual devaluations of sterling led to delinking of rupee with sterling. After this, the rupee was pegged to an undisclosed basket of currencies with 2.25 percent band on either side. In 1979, this band around the central rate was increased to  $\pm 5$  percent, allowing total variation of 10 percent (RBI, 2005). From 1979 to 1991 the external value of the rupee continued to be fixed in terms of the basket of currencies.

The Gulf crisis of 1990 and the severe balance of payments crisis of 1991 depreciated the rupee by around 18-19 percent *vis-à-vis* a basket of currencies in two

steps. The RBI undertook a two-step adjustment process for devaluing the exchange rate. The rupee was initially devalued by 8-9 percent and then by 10-11 percent in July 1991 with the basket of currencies. In March 1992, Liberalized Exchange Rate Management System (LERMS) was adopted under which a dual exchange rate prevailed. As per LERMS, 40 percent of foreign exchange earnings of exports of goods and services should be surrendered at an official exchange rate. The remaining 60 percent should be sold at a market exchange rate. In March 1993, unified market-determined exchange rate was adopted. The U.S. \$ was adopted as the intervention currency (Jadhav, 2005). India has adopted a managed floating exchange rate regime without any predetermined rate or band. For some period the exchange rate was volatile but the RBI's strategy of intervention stabilized the exchange rate. Till now India has experienced many periods of stability and volatility.

Though India's officially-declared exchange rate regime is managed floating, studies reveal that the de facto exchange rate regime of India is pegged to the U.S. \$. Reinhart and Rogoff (2002) have classified the exchange rate regime of India as peg to the US \$. It is supported by Zeileis et al. (2010), who have also found evidence of de facto pegging of rupee to the US \$ rather than a managed floating exchange rate regime.

## **10. CONCLUSIONS:**

The international monetary system has gone through dramatic changes over many decades from a bimetallic standard to the current exchange rate arrangement. The success of any exchange rate regime lies in the international economic scenario, co-operation and co-ordination among countries. Lack of co-operation and confidence among countries has led to the failure of exchange rate regimes followed by countries. On the international front, there were many attempts to find an exchange rate regime which would be compatible with all major countries. However, these attempts did not provide a successful exchange rate regime. The gold standard was accepted by all countries but it collapsed because of its stringent rules. After that countries followed various regimes lacking synchronization of economic and monetary policies. The Bretton Woods system was adopted by all but the problem of the deficit in the balance of payments of the U.S. and lack of confidence of other countries in the U.S. \$ led to

the failure of Bretton Woods. Thus each country should follow exchange rate regime which is in accordance with its internal as well as external position. The adopted exchange rate arrangement, if not in accordance with the country's monetary position and economic environment, is bound to collapse.

At present, many countries are following various exchange rate regimes ranging from peg to flexible exchange rate. It seems that currently exchange rate regimes adopted by countries are in line with the objectives of their exchange rate and monetary policies. However, the strength of current exchange rate regimes would be gauged by management of economic turbulence in the future. Therefore, we may expect some changes in the exchange rate regimes and occurrence of some other form of monetary system to face new challenges in the international monetary system in the future.

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## APPENDIX A

### European Monetary System

On the eve of the collapse of the Bretton Woods system European countries were worried about their economies. In December 1969 European leaders appointed the Werner Committee to recommend some policy measures to avoid intra-European exchange rate fluctuations. The Werner Committee Report adopted by the European Union (EU) in March 1971 proposed a three-phased programme. Germany, the Netherlands, Belgium and Luxembourg participated in joint float called 'Snake'. This snake served as the base for formation of the European Monetary System (EMS). The EMS extended later with Spain joining in 1989, the U.K. in 1990 and Portugal in early 1992.

In March 1979 EU which was called the European Economic Community (EEC) was formed by eight countries *viz.*, France, Germany, Italy, Belgium, Denmark, Ireland, Luxembourg, and the Netherlands. The aim of formation of the EU was to reduce greater fluctuations among the currencies of the countries and greater monetary integration among member countries with the ultimate goal of creating a common currency and central bank. The countries decided to float their currencies with  $\pm 2.25$  percent band on either side of par value. The countries had to intervene or take some preventive policy measures to manage the exchange rate within this prescribed limit. The main feature of this system was that both countries whose currencies are involved in the exchange rate, were supposed to co-operate with each other and bring back the exchange rate close to its par value.

#### **A.1 European Currency Unit (ECUs):**

Under EMS, the European Currency Unit (ECU), defined as the weighted average of the currencies of member countries, was introduced. Each member country was required to maintain its exchange rate within a specified band around ECU within a specified range *vis-à-vis* other individual EU currencies. It also established the European Monetary Co-operation Fund (EMCF) to provide short and medium term balance of payments assistance to its members. The quota was assigned to each member by EMCF, 20 percent paid in gold and remainder in U.S. \$, in exchange for

ECUs. The amount of ECUs increased as more member countries converted \$ and gold into ECUs. ECUs became an important international asset and intervention currency for EU countries. ECU had greater stability in value with respect to members' currencies. It was expected that EMCF would eventually turn into a European Central Bank (ECB). The value of ECU was \$1.1042 (Salvatore, 2002).

With the background of unstable monetary conditions prevailing globally, wider bands were assigned to countries with high inflation rates and many currencies' par values were realigned with respect to ECU. As stated earlier, member countries were assigned the band of  $\pm 2.25$  percent around a central rate. However, there were some exceptions. Spain's Peseta, Italy's lira and Portugal's escudo were assigned bands of  $\pm 6$  percent. In January 1990 Italy adopted the standard  $\pm 2.25$  percent of the band. The U.K. also decided to choose a wider band of  $\pm 6$  percent for sterling with its entry in the EU. In August 1993 the band of all countries was widened to  $\pm 15$  percent except DM and Dutch Guilder. The EMS went through 11 currency realignments of its member countries from March 1979 to January 1987. Exchange controls played an important role, shielding members' reserves from speculators during those years.

## **A.2 The Maastricht Treaty and Delor Committee:**

In June 1989 a committee headed by Jacques Delors, President of the European Commission, recommended a three-stage transition to monetary union. The goal was to establish an Economic and Monetary Union (EMU), a European union in which currencies of the countries would be replaced by a single EU currency, managed solely by the central bank that operates on behalf of all EU members (Krugman, 2000).

*First Stage:* It started in July 1990 which required convergence of economic performance and co-operation in monetary and fiscal policy. Removal of restrictions to intra-community capital movements was part of this stage.

*Second Stage:* This was approved at a meeting in the Dutch city of Maastricht in December 1991. It recommended creation of a European Monetary Institute to

precede a European Central Bank. It also required centralization of members' macroeconomic policies and to reduce exchange rate margins by January 1994.

*Third Stage:* It involved completion of monetary union by 1999 with establishment of a single currency and European Central Bank that would undertake foreign exchange market interventions and open market operations.

*The Maastricht Treaty:*

On December 10, 1991, leaders of EU countries met at the Dutch city of Maastricht. A 250 page Maastricht treaty had set several conditions for countries before joining the monetary union.

1. Inflation rate should not exceed by more than 1.5 percent than the average rate of three community members with the lowest rate.
2. Budget deficit must not exceed 3 percent of GDP.
3. Government debt should be less than 60 percent of GDP.
4. Long term interest rate must not exceed by more than 2 percent the average interest rate of three countries with the lowest inflation rate.
5. Average exchange rate must not fall by more than 2.25 percent of average of EMS for 2 years before joining EMU.

In addition to the above conditions it also included steps toward harmonizing social policy and centralizing foreign and defence policies. All EU leaders hoped that the treaty's provision would guarantee the political stability of Europe.

In 1997 the Stability and Growth Pact (SGP) was negotiated to tighten fiscal constraints under which countries participating in EMU would operate. The SGP sets the medium term budgetary objectives of the balance of payments positions close to balance or in surplus. The SGP required member countries to keep budget deficits smaller than 3 percent of GDP. Countries violating fiscal indicators would be heavily fined and SGP also sets a time table for imposition of penalties for countries defaulting in managing their balance of payments situations. Such a pact was a condition for proceeding towards EMU and avoided excessive money creation, inflation and a weak common currency (Salvatore, 2002).

### **A.3 European Currency Crisis, 1992:**

The policy conflicts between Germany and other EU countries led to massive speculative attacks in September 1992. By 1991 only France and Luxembourg met these criteria as other countries faced balance of payments problems. The U.K. was facing a recession with high rates of unemployment and inflation. Italy was also experiencing the same problem. Due to Germany's reunification of West and East Germany, it faced a higher fiscal deficit which increased the inflation rate. To curb inflation, the Bundesbank increased the interest rate. This put upward pressure on the DM. The U.K. and Italy had to raise their interest rates as to keep the exchange rate within limits. Germany refused to lower the interest rate fearing domestic inflation. The U.K. and Italy opted to withdraw from EMS in September 1992. France also faced a similar problem. Only the Netherlands decided to keep its currency closely linked to Germany. Other member countries agreed to widen the band to  $\pm 15$  percent on either side of the EMS-agreed par value in August 1993 which was continued until introduction of the euro in 1999.

### **A.4 Creation of Euro:**

At the beginning of 1999, the EMS became EMU introducing 'Euro' (€) as a common currency and common monetary policy by the European Central Bank. The euro came into existence in January 1, 1999 as common currency of 11 member countries of the euro area or euro land. Austria, Belgium, Germany, Finland, France, Ireland, Italy, Luxembourg, Spain, Portugal and the Netherlands were the members of the euro area. The U.K., Sweden and Denmark did not participate in the euro area and Greece could not meet the conditions of the Maastricht treaty. The creation of the euro is the most important event in post-war monetary history. It was decided to circulate euro bank notes and coins by 2002. By that time the euro was only the unit of account and not actual circulating currency. From January 1 to July 2002 Euros circulated also with other currencies. From July 1, 2002, circulation of other currencies was abandoned and the euro was the sole legal tender circulated in all 11 participating members of the euro area. The euro convergence rate for participating countries was rigidly fixed and the euro was allowed to fluctuate with other currencies

such as the U.S. \$, sterling, and Japanese yen. The exchange rate of the euro on January 1, 1999 was \$1.17/€.

#### **A.5 The European Central Bank and Common Monetary Policy:**

In 1998, as per the Delors Committee's recommendation, the European Central Bank was established as the operating element of the European System of Central Banks (ESCB) which is a federal structure of national central banks of EU. In January 1999, ECB took responsibility for monetary policy of all 11 countries. Decisions regarding monetary policy are taken by a majority vote of the governing council comprising of six-member executive board and heads of the central banks of 11 countries. The ECB was politically independent and had the aim of price stability in the euro zone. It regularly informs the European parliament about its activities but the European parliament cannot influence ECB's decisions (Salvatore, 2002).

## APPENDIX B

### **The Theory of Target Zones**

The theory of the target zone was developed by Krugman (1988). According to him, a target zone leads to more stable exchange rate behaviour than the freely floating exchange rate. The stabilization of the exchange rate will depend upon the volatility of fundamentals affecting the exchange rate, sensitivity of the exchange rate to appreciation or depreciation and credibility of the authorities' commitment to defend the target zone. Speculators expect that authorities will intervene in the foreign exchange market to maintain the exchange rate within the upper and lower band of the zone. These expectations stabilize the exchange rate even when the authorities do not actually intervene in the foreign exchange market. The authorities only intervene when the exchange rate is actually going out of either the upper or lower bound of the target zone. Inside the target zone the exchange rates moves freely until it hits either the upper or lower bound. The theory of the target zone became identified with concepts of smooth pasting and marginal intervention.

Commonly, target zones are distinguished in two versions, hard target zones and soft target zones. The version of target zone depends upon the following characteristics of a target zone (Frenkel, 1986):

1. Width of target zone.
2. Frequency of changes in target zones.
3. Degree of publicity given to target zones.
4. Degree of commitment of authorities to maintain the exchange rate within target zone limits.

On the basis of these characteristics, the hard version of a target zone would maintain the exchange rate within narrow bands, infrequently revised and publically-announced target zones. The soft version of a target zone would be characterized by limited attention of the authorities to the exchange rate, wide zones, frequently revised and confidential.

The model is based on the following assumptions:

1. Chosen exchange rate policy is perfectly credible *i.e.*, speculators expect that authorities are willing to defend the target zone.
2. Zone is defended only when exchange rate reaches either upper or lower edges of the zone called marginal interventions.
3. Purchasing power parity and uncovered interest parity holds continuously.

The exchange rate is assumed to be determined by two factors, fundamentals and expected change in exchange rate. The fundamentals are comprised of velocity and money supply. Velocity is exogenous to the central banks. However, money supply is under the control of the central bank and can be altered via interventions. By controlling money supply the central bank can control fundamentals and thus the exchange rate. When the exchange rate is depreciates, the central bank intervenes in the foreign exchange market *i.e.*, sells bonds in open market operations or sells foreign exchange reserves, to bring the exchange rate back to desired levels. In an exchange rate target zone, the central bank controls the money supply to keep the exchange rate within a specified band around a specified central parity (Svensson, 1992).

The exchange rate is determined as

$$s_t = m_t + v_t + \alpha_2 E_t \left[ \frac{ds_t}{dt} \right] \dots\dots\dots (B.1)$$

Equation (B.1) explains that the exchange rate is determined by money supply (m), velocity (v), which combined together are called fundamentals and expected rate of change in exchange rate.  $\alpha_2$  is semi-elasticity of demand for money.

The figure below shows how exchange rate behaves in a target zone. If the exchange rate is freely floating then it would move along the 45 degree line. The target zone is bounded by maximum depreciation ( $S_U$ ) and maximum appreciation ( $S_L$ ). In the lower part of the target zone, expected appreciation in the exchange rate moves exchange rate above the 45 degree line. Conversely in the upper part of the target zone, expected depreciation of the exchange rate brings exchange rate below the 45 degree line.



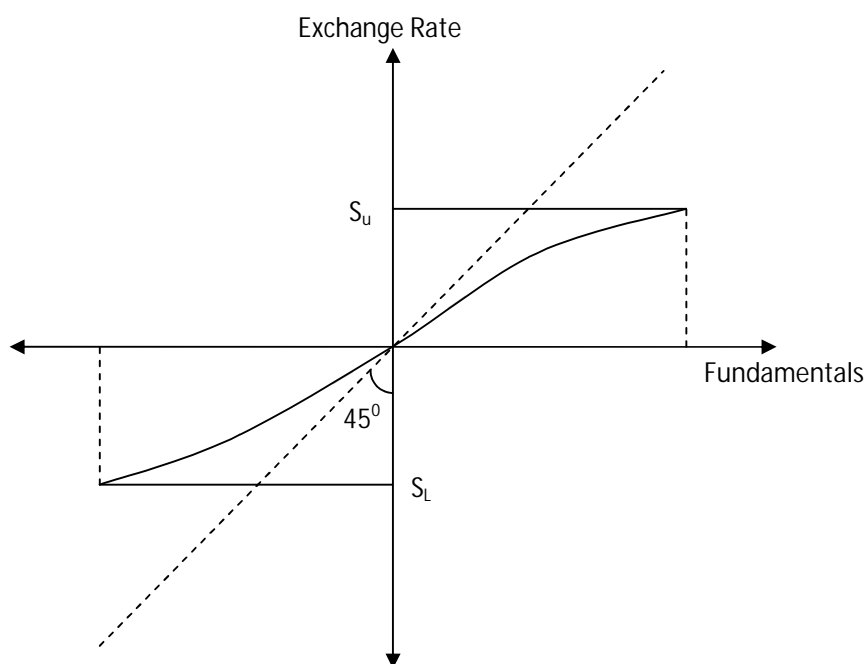


Figure B.1: Target Zones for Exchange Rate

According to the theory of target zones, the S-shaped curve defines the movement of the exchange rate. The S-curve is flatter than the 45 degree line with a tilt as it reaches either side of the band. It implies that fluctuations in the fundamentals are less than fully reflected in the exchange rate. In the figure B.1, the lower half of the figure indicates that the expected appreciation in the exchange rate moves exchange rate above 45 degree line. Conversely in the upper half, expected depreciation of exchange rate brings exchange rate below 45 degree line (Krugman, 1988).

On the basis of the shape of the S-curve two important concepts are developed:

### 1. Honeymoon Effect:

When the exchange rate is higher *i.e.*, the currency is depreciated and closer to the upper edge of the band, the probability of reaching the upper band is higher and thus the probability of intervention increases to reduce money supply and reduce the exchange rate (*i.e.*, currency appreciation). So expectation about future currency appreciation is higher which lowers the exchange rate. In this case the exchange rate

is less than the rate predicted by current fundamentals alone because expected currency appreciation is being taken into account. Thus, the target zone exchange rate is less than the free float exchange rate for a given level of fundamentals. On the contrary, when the exchange rate is stronger and closer to the lower bound future currency depreciation is expected leading to a higher exchange rate than the free float exchange rate for a given level of fundamentals. The honeymoon effect leads to the important insight that a perfectly credible target zone is stabilizing. Expectations about future interventions to stabilize exchange rate makes the exchange rate more stable (Svensson, 1992).

## **2. Smooth Pasting:**

It means that the exchange rate is a non-linear function of its fundamental determinants and is insensitive to the changes in fundamentals at the edges of the exchange rate band. The slope of the S-curve flattens at the edges of the upper and lower bound *i.e.*, at the edges of the zone, the exchange rate function is tangential to the upper and lower horizontal lines of the band. This is called ‘smooth pasting’. It means at the edges of the band the exchange rate is insensitive to fundamentals.

Though target zone theory is well established by Krugman it lacks empirical evidence. It is argued that real world target zones are nothing but managed floats with a targeted exchange rate or band. However, a target zone differs from managed floating at least in two respects:

1. Authorities set targets for the exchange rate for some future date.
2. Authorities are expected to keep vigilance on the exchange rate for the conduct of monetary policy so that they can maintain the exchange rate within target zones (Frenkel, 1986).