The Interaction between the Local Economy and the External Economy CONT'D

ANALYSIS OF MONEY MARKET

EVOLUTION OF MONEY:

Commodity Money - overcame the inconveniences that went with barter system by using uncoined metals like gold, silver or copper. It had the advantage of ease of transport and durability. New set of problems came up with the use of uncoined metals such as adulteration (impurities in content) and short weighing by unscrupulous traders.

Coinage solved the problem of adulteration and short weighing, with the king's seal being stamped on the metals for authentication. However, some more problems came up like storage, theft, costly and risky transport, and so on.

IOU's tend to minimize risk in transport since coins were left to a reputable person with *"vault* or *safekeeping"* means. IOU's *("I owe you")* were simply written on paper/receipt instead of going to the safe keeper to transact.

Bank note involves the promise to pay a debt (IOU) which is evidenced by a piece of paper backed by specie.

Specialized Bankers evolved because it was observed that not all people who *"deposited"* their money were demanding payment at the same time. Hence, there was no need to hold all the gold/silver pieces all the time. The idea of lending out a portion of the entrusted money for a fee while holding on to the rest for safe-keeping paved the way for fractional reserve

banking.

Electronic Funds Transfer System (EFTS)- Electronic money make use of computer terminals for transactions and automated computer clearing house that does away with a physical medium of exchange.

DEFINITION OF MONEY

Money serves as means of payment or temporary store of value.

Money is an ***asset*** which is anything that serves as a means to store value over a period of time.

Economists have not really agreed on a single definition but they agree that money supply refers to all things *generally acceptable* in payment of debt (store of value) and as payment for goods and services (medium of exchange) whatever its legal status may be.

FUNCTIONS OF MONEY

- ***Unit of account:***

Money represents an item with which the values of all other goods and services are expressed or quoted.

- ***Medium of exchange:***

This means that money is an accepted means of payment for goods and services.

- ***Store of value*** (and a ***standard of delayed payment:***

Money can be kept today (i.e., stored) and spent at a later period. It also implies that goods can be bought today and paid for at a later date (deferred payment).

However *inflation,* may decreases the ability of money to act as a store of value and deferred payment.

DEMAND FOR MONEY – Why to people hold money?

Transactions Demand for Money –

Arises from the need of households and firms to have money for the regular payments of goods and services

Precautionary Demand for Money –

Households want extra money for **emergency** like paying bills for the unexpected hospitalization of a family member.

Firms, likewise, will desire to extra cash to prepare themselves for untoward events like labor strikes.

Speculative or Portfolio Allocation Motive –

The speculative demand stems from the preference of households and firms to hold other assets that are "perfectly liquid and perfectly free from risk of depreciation in terms of money" in order to "take advantage of market movements."

Demand for money is primarily determined by *the level of income* and the *interest rate.*

Other factors:

(a) Credit availability and affordability;

(b) Expectations on future income;

(c) Expectations on prices;

(d) Risk and expected returns on alternative assets; and

(e) Financial innovations that allow easy movement of funds from less liquid to more liquid forms.

The Demand for Money by Individuals

Three factors influence money demand:

- Expected Return

The interest rate measures the opportunity cost of holding money rather than interest-bearing bonds. A rise in the interest rate raises the cost of holding money and causes money demand to fall.

- Risk

Holding money is risky. An unexpected increase in the prices of goods and services could reduce the value of money in terms of the commodities consumed. Changes in the risk of holding money need not cause individuals to reduce their demand for money. Any change in the riskiness of money causes an equal change in the riskiness of bonds.

- Liquidity

The main benefit of holding money comes from its liquidity.

Households and firms hold money because it is the easiest way of financing their everyday purchases. A rise in the average value of transactions carried out by household or firm causes its demand for money to rise.

Supply of Money: How the Money Supply Is Determined

An economy's money supply is controlled by its central bank.

The central bank: Directly regulates the amount of currency in existence

Indirectly controls the amount of checking deposits issued by private banks

M1 consists of items used as medium of exchange such as currency or coins in circulation and demand deposits.

M2 consists of *M1*, plus savings and small time deposits.

M3 refers to money supply, savings, and negotiable order of withdrawals (NOW accounts), time deposits and deposit substitutes of money-generating banks.

RM or *reserve money* represents liabilities of the Central Bank to the public sector in the form of currency in circulation and to the banking sector in the form of cash reserves.

Instruments of Monetary Control

Its primary objective is to maintain price stability and the convertibility of the rupee.

It makes use of monetary instruments

Reserve requirement *(rr),*

Rediscount rate *(i_{DR}),* and

Open market operations *(OMO),* among others, to control the supply of money.

1. Reserve Requirement (rr) – what banks are required to keep in reserve (in their vaults) the Central Bank(CB) *lowers* the reserve requirement if it wants to engage in an *expansionary* monetary policy, that is, if it wants to increase money supply in circulation. This is so because a decrease in reserve requirement means that banks shall have more deposits available

for lending. On the other hand, if the CB wants to contract money supply, perhaps to "mop out excess liquidity" in the economy, it will have to increase the reserve requirement so that more deposits are kept in the banks' vaults.

2. Rediscount rate is the rate of interest that the CB lends to banks.

The CB increases the rediscount rate if it wants to contract money supply and decreases it if it wants to increase money supply. When there is an increase in the rediscount rate, banks are discouraged from borrowing funds from the CB since it is more expensive to borrow. Banks will therefore have the tendency to increase their excess reserves to refrain from having to make loans with CB.

3. Open market operations (OMO) – means the buying and selling of government securities to the public by open market *purchase,* we refer to the CB's *buying* of government securities (e.g., bonds) from private individuals.

By open market *sale,* we mean the CB's *selling* of government securities (e.g., bonds) to private individuals.

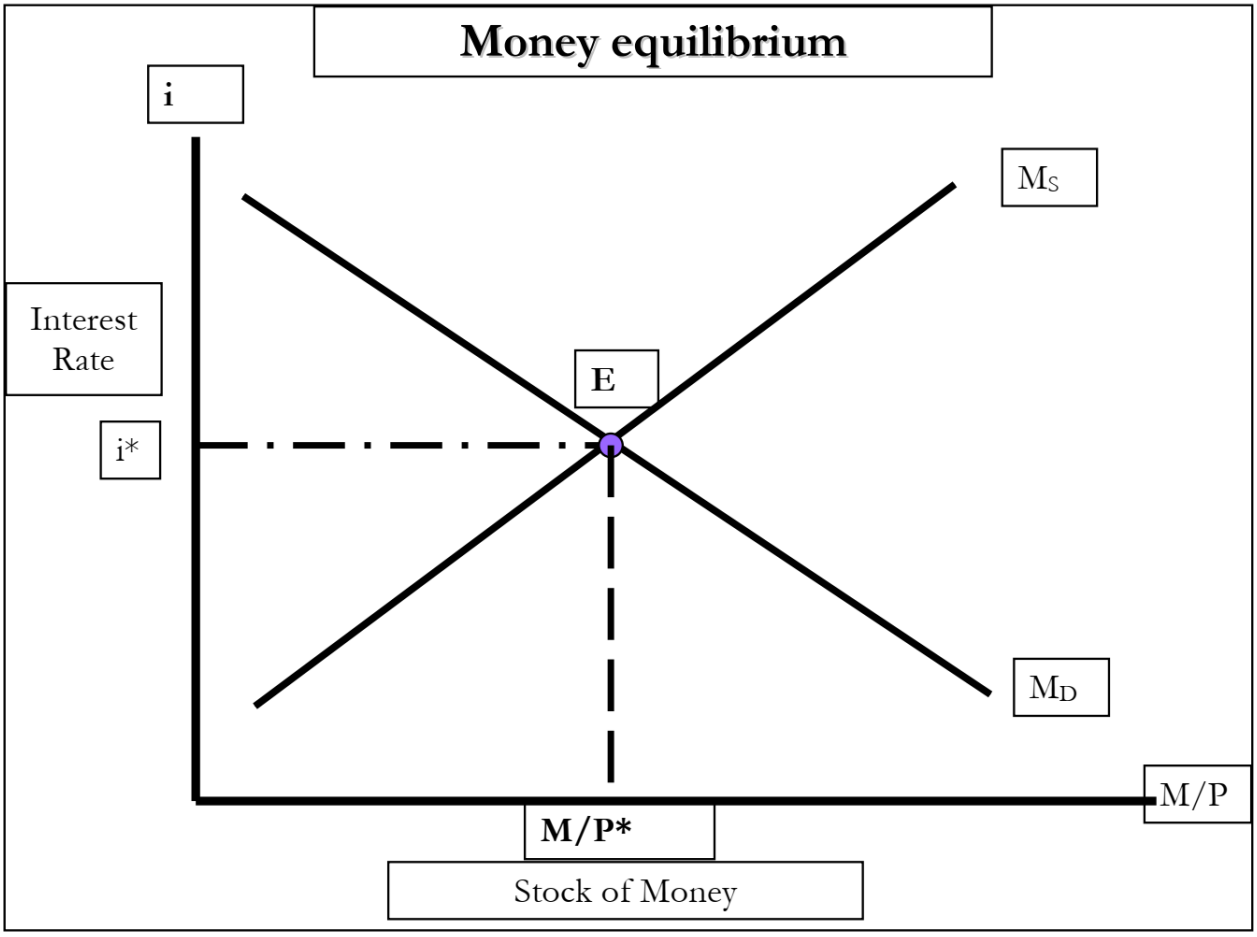
Thus, if the CB wants to *expand* money supply, it will engage in open market *purchase* of bonds. This way, the CB releases money into the economy in exchange for government securities.

On the other hand, if the CB thinks that there is too much money circulating in the economy, and therefore needs to contract it, then the CB will engage in an open market *sale* of government securities.

Monetary Equilibrium

Simplifying assumptions: that the price level (P) and the level of real income (*Y*) are given or fixed.

This assumption will imply that the demand for money will be just a function of the interest rate.



Demand for real money balances increases as the interest rate decreases since the opportunity cost of holding money is lower. Supply of money is upward sloping which implies that as the interest rate increases, banks will hold less reserves, thus increasing the money multiplier and consequently raising money supply.

Demand for money (M_D) is shown as a downward sloping curve that is inversely proportional to the interest rate *i*. This means that as the interest

rate increases, the demand for real money balances decreases since the opportunity cost of holding money is lower. The supply of money (M_S) is assumed to be an increasing function of the interest rate. In equilibrium, $M_D = M_S$ and the equilibrium interest rate (i^*) and the stock of money (M^*/P) are determined at the point of intersection, E.

How do Banks "Create" Money?

It takes a system of banks and not just a single bank to create money.

"**Money Creation**"refers to the multiple expansions of deposits.

Simplifying assumptions:

- Depository institutions (e.g., banks) issue only transaction accounts;
- All banks face the *same* reserve requirement of eg. 10 percent
- Banks have no desire to hold excess reserves
- The public currency-deposit ratio is zero
- Initial amount of P1000 is deposited in bank A.

The Money Creation Process (figures in rupees)

Bank	**Additional transaction Deposits received**	**Additional Loans Made**	**Additional Required Reserves (rr = 10%)**
A	1,000	900	100
B	900	810	90
C	810	729	81
-	-	-	-
-	-	-	-
Total, first 3 banks	2,710	2,439	271

Other banks' turn	7,290	6,561	729
Grand Total	10,000	9,000	1,000

Banks' role in the money supply

The money supply equals currency plus demand (checking account) deposits:

$$M = C + D$$

Since the money supply includes demand deposits, the banking system plays an important role.

A few preliminaries

Reserves (*R*): the portion of deposits that banks have not lent.

To a bank, liabilities include deposits; assets include reserves and outstanding loans

100-percent-reserve banking: a system in which banks hold all deposits as reserves.

Fractional-reserve banking: A system in which banks hold a fraction of their deposits as reserves.

THE QUANTITY THEORY OF MONEY

A. Represents the basic theory behind macroeconomics prior to the Keynesian Revolution

B. Believed that changes in the money supply would only affect price and not economic activity.

C. **The equation of exchange**

MV = PT

Money Supply X Velocity of Money = Average Price Level X Number of

Transactions

1. **. Velocity** of money is how often the money supply is spent.
2. . **Number of transactions** is real economic activity
3. . The equation is an identity

    a. Dollars spent = dollars received

    b. MV = Aggregate Demand and PT = Nominal GDP = **C + I + G + X_N = GDP**

4. . Classical theory stated that V was basically stable and that there existed some natural level of growth for T.

    a. This natural level was a function of individual and business interaction.

    b. V and T were essentially unalterable which meant changes in M would change P and not the natural level of T.

    c. Government should therefore refrain from interfering with market activity by adjusting the money supply.

    d. Came into disfavor in the 1930's with the popularity of Keynesian economics which stated that real output could be changed by affecting aggregate demand.

Monetarism

A. Monetarists believe that changes in the money supply are both a necessary and sufficient condition to cause inflation.

B. If AD was low; increasing the money supply would only increase short-run economic activity.

1. Eventually short-term expansion stops and increasing M only adds to inflation.

2. Public anticipation stops the process from being repeated.

3. Monetarists believe that government involvement in the economy, especially monetary intervention, increases the magnitude of the business cycle.

C. Keynes believed changing the money supply would affect interest rates which would affect investment which in turn would affect Real GDP

D. To some degree monetarism is an extension of classical economics. Its advocates believe that a competitive market, free from government interference, results in economic stability and a reasonable growth rate.

New classical economists

A. Lead by **Milton Friedman**, these economists revived the quantity theory of money.

B. They rely on market forces and not government manipulation of aggregate demand and the money supply to control economic activity.

C. This economic school of thought has much in common with those who believe in **rational expectations**.

1. This recently formed school does not assume market participants have perfect knowledge.

2. Instead, it assumes market participants will learn from experience and use current information to predict and adjust to the expected future.

3. The result is not the disequilibrium of Keynesian economics with its inflationary and deflationary gaps but a constant equilibrium with economic behavior adjusting to be compatible with different levels of economic activity.

4. As with the classical school, the new classical school, monetarist, and those believing in rationalist expectation feel government involvement in economic activity is not beneficial.

MONETARY POLICY

Monetary policy is the process by which the government, central bank, or monetary authority of a country controls (i) the supply of money, (ii) availability of money, and (iii) cost of money or rate of interest, in order to attain a set of objectives oriented towards the growth and stability of the economy. Monetary theory provides insight into how to craft optimal monetary policy.

Monetary policy is referred to as either being an expansionary policy, or a contractionary policy, where an expansionary policy increases the total supply of money in the economy, and a contractionary policy decreases the total money supply. Expansionary policy is traditionally used to combat unemployment in a recession by lowering interest rates, while contractionary policy involves raising interest rates in order to combat inflation. Monetary policy should be contrasted with fiscal policy, which refers to government borrowing, spending and taxation.

Overview

Monetary policy rests on the relationship between the rates of interest in an economy, that is the price at which money can be borrowed, and the total supply of money. Monetary policy uses a variety of tools to control one or both of these, to influence outcomes like economic growth, inflation, exchange rates with other currencies and unemployment. Where

currency is under a monopoly of issuance, or where there is a regulated system of issuing currency through banks which are tied to a central bank, the monetary authority has the ability to alter the money supply and thus influence the interest rate (in order to achieve policy goals). The beginning of monetary policy as such comes from the late 19th century, where it was used to maintain the gold standard.

There are several monetary policy tools available to achieve these ends: increasing interest rates by fiat; reducing the monetary base; and increasing reserve requirements. All have the effect of contracting the money supply; and, if reversed, expand the money supply.

The primary tool of monetary policy is **open market operations**. This entails managing the quantity of money in circulation through the buying and selling of various credit instruments, foreign currencies or commodities. All of these purchases or sales result in more or less base currency entering or leaving market circulation.

The other primary means of conducting monetary policy include: (i) Discount window lending (i.e. lender of last resort); (ii) Fractional deposit lending (i.e. changes in the reserve requirement); (iii) Moral suasion (i.e. cajoling certain market players to achieve specified outcomes); (iv) "Open mouth operations" (i.e. talking monetary policy with the market).

The advancement of monetary policy as a pseudo scientific discipline has been quite rapid in the last 150 years, and it has increased especially rapidly in the last 50 years. Monetary policy has grown from simply increasing the monetary supply enough to keep up with both population growth and economic activity. It must now take into account such diverse factors as:

Short term interest rates;

Long term interest rates;

Velocity of money through the economy;

Exchange rates;

Credit quality;

Bonds and equities (corporate ownership and debt);

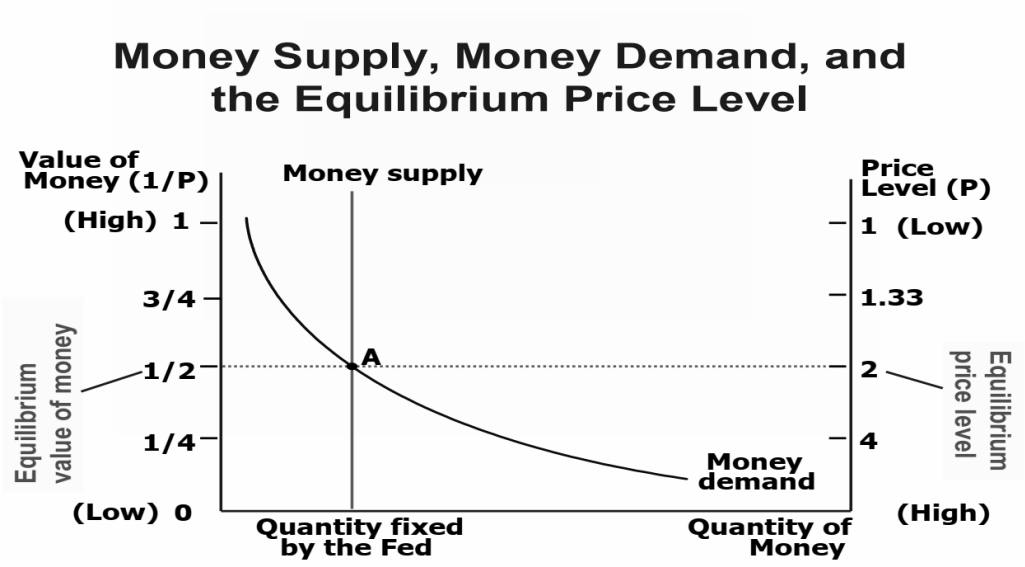
Government versus private sector spending/savings;

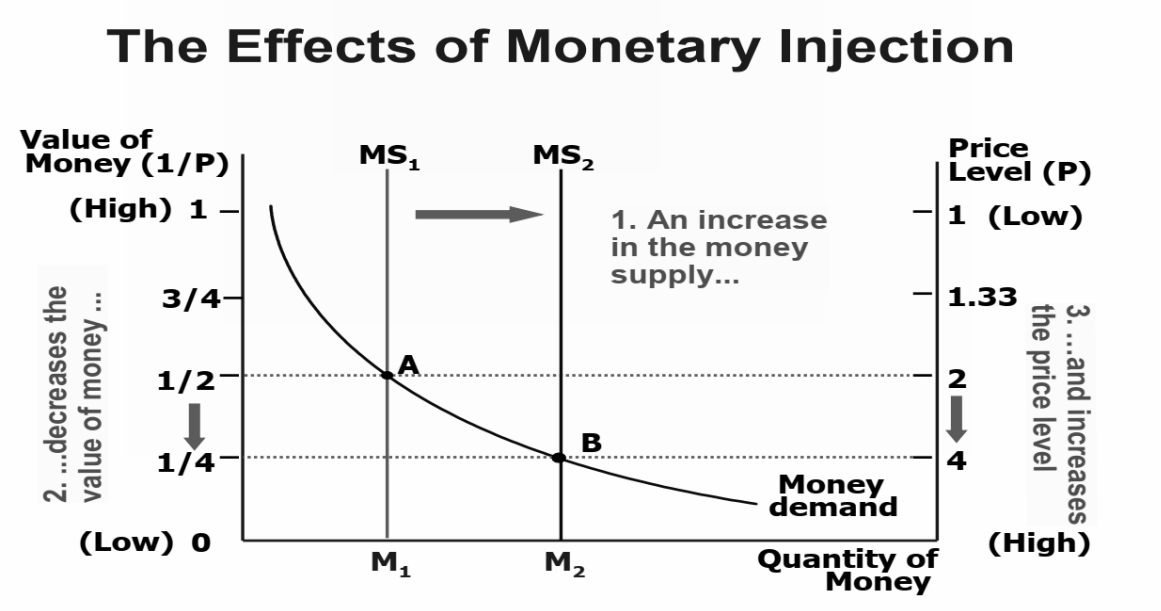
International capital flows of money on large scales;

Financial derivatives such as options, swaps, futures contracts, etc.

MONEY SUPPLY, MONEY DEMAND, AND MONETARY EQUILIBRIUM:

In the long run, the overall level of prices adjusts to the level at which the demand for money equals the supply.





Trends in central banking:

The central bank influences interest rates by expanding or contracting the monetary base, which consists of currency in circulation and banks' reserves on deposit at the central bank. The primary way that the central bank can affect the monetary base is by open market operations or sales and purchases of second hand government debt, or by changing the reserve requirements. If the central bank wishes to lower interest rates, it purchases government debt, thereby increasing the amount of cash in circulation or crediting banks' reserve accounts. Alternatively, it can lower the interest rate on discounts or overdrafts (loans to banks secured by suitable collateral, specified by the central bank). If the interest rate on such transactions is sufficiently low, commercial banks can borrow from the central bank to meet reserve requirements and use the additional liquidity to expand their balance sheets, increasing the credit available to the economy. Lowering reserve requirements has a similar effect, freeing up funds for banks to increase loans or buy other profitable assets.

A central bank can only operate a truly independent monetary policy when the exchange rate is floating. If the exchange rate is pegged or managed in any way, the central bank will have to purchase or sell foreign exchange. These transactions in foreign exchange will have an effect on the monetary base analogous to open market purchases and sales of government debt; if the central bank buys foreign exchange, the monetary base expands, and vice versa. But even in the case of a pure floating exchange rate, central banks and monetary authorities can at best "lean against the wind" in a world where capital is mobile.

Accordingly, the management of the exchange rate will influence domestic monetary conditions. In order to maintain its monetary policy target, the central bank will have to sterilize or offset its foreign exchange operations. For example, if a central bank buys foreign exchange (to counteract appreciation of the exchange rate), base money will increase. Therefore, to sterilize that increase, the central bank must also sell government debt to contract the monetary base by an equal amount. It follows that turbulent activity in foreign exchange markets can cause a central bank to lose control of domestic monetary policy when it is also managing the exchange rate.

In the 1990s, central banks began adopting formal, public inflation targets with the goal of making the outcomes, if not the process, of monetary policy more transparent. In other words, a central bank may have an inflation target of 2% for a given year, and if inflation turns out to be 5%, then the central bank will typically have to submit an explanation.

Types of monetary policy:

In practice, all types of monetary policy involve modifying the amount of base currency (M0) in circulation. This process of changing the liquidity of base currency through the open sales and purchases of (government-issued) debt and credit instruments is called open market operations.

Constant market transactions by the monetary authority modify the supply of currency and this impacts other market variables such as short term interest rates and the exchange rate.

The distinction between the various types of monetary policy lies primarily with the set of instruments and target variables that are used by the monetary authority to achieve their goals.

Monetary Policy:	Target Market Variable:	Long Term Objective:
Inflation Targeting	Interest rate on overnight debt	A given rate of change in the CPI
Price Level Targeting	Interest rate on overnight debt	A specific CPI number
Monetary Aggregates	The growth in money supply	A given rate of change in the CPI
Fixed Exchange Rate	The spot price of the currency	The spot price of the currency
Gold Standard	The spot price of gold	Low inflation as measured by the gold price
Mixed Policy	Usually interest rates	Usually unemployment + CPI change

The different types of policy are also called **monetary regimes**, in parallel to exchange rate regimes. A fixed exchange rate is also an exchange rate regime; The Gold standard results in a relatively fixed regime towards the

currency of other countries on the gold standard and a floating regime towards those that are not. Targeting inflation, the price level or other monetary aggregates implies floating exchange rate unless the management of the relevant foreign currencies is tracking the exact same variables.

Monetary aggregates:

In the 1980s, several countries used an approach based on a constant growth in the money supply. This approach was refined to include different classes of money and credit (M0, M1 etc). This approach is also sometimes called monetarism.

While most monetary policy focuses on a price signal of one form or another, this approach is focused on monetary quantities.

Fixed exchange rate:

This policy is based on maintaining a fixed exchange rate with a foreign currency. There are varying degrees of fixed exchange rates, which can be ranked in relation to how rigid the fixed exchange rate is with the anchor nation.

Under a system of fiat fixed rates, the local government or monetary authority declares a fixed exchange rate but does not actively buy or sell currency to maintain the rate. Instead, the rate is enforced by non-convertibility measures (e.g. capital controls, import/export licenses, etc.). In this case there is a black market exchange rate where the currency trades at its market/unofficial rate.

Under a system of fixed-convertibility, currency is bought and sold by the central bank or monetary authority on a daily basis to achieve the target exchange rate. This target rate may be a fixed level or a fixed band within which the exchange rate may fluctuate until the monetary authority intervenes to buy or sell as necessary to maintain the exchange rate within the band. (In this case, the fixed exchange rate with a fixed level can be seen as a special case of the fixed exchange rate with bands where the bands are set to zero.)

Under a system of fixed exchange rates maintained by a currency board every unit of local currency must be backed by a unit of foreign currency (correcting for the exchange rate). This ensures that the local monetary base does not inflate without being backed by hard currency and eliminates any worries about a run on the local currency by those wishing to convert the local currency to the hard (anchor) currency.

Under dollarization, foreign currency (usually the US dollar, hence the term "dollarisation") is used freely as the medium of exchange either exclusively or in parallel with local currency. This outcome can come about because the local population has lost all faith in the local currency, or it may also be a policy of the government (usually to rein in inflation and import credible monetary policy).

These policies often abdicate monetary policy to the foreign monetary authority or government as monetary policy in the pegging nation must align with monetary policy in the anchor nation to maintain the exchange

rate. The degree to which local monetary policy becomes dependent on the anchor nation depends on factors such as capital mobility, openness, credit channels and other economic factors.

Monetary policy tools:

Monetary base

Monetary policy can be implemented by changing the size of the monetary base. This *directly* changes the total amount of money circulating in the economy. A central bank can use open market operations to change the monetary base. The central bank would buy/sell bonds in exchange for hard currency. When the central bank disburses/collects this hard currency payment, it alters the amount of currency in the economy, thus altering the monetary base.

Reserve requirements

The monetary authority exerts regulatory control over banks. Monetary policy can be implemented by changing the proportion of total assets that banks must hold in reserve with the central bank. Banks only maintain a small portion of their assets as cash available for immediate withdrawal; the rest is invested in illiquid assets like mortgages and loans. By changing the proportion of total assets to be held as liquid cash, the Federal Reserve changes the availability of loanable funds. This acts as a change in the money supply.

Discount window lending

Many central banks or finance ministries have the authority to lend funds to financial institutions within their country. By calling in existing loans or extending new loans, the monetary authority can directly change the size of the money supply.

Interest rates

The contraction of the monetary supply can be achieved *indirectly* by increasing the nominal interest rates. Monetary authorities in different nations have differing levels of control of economy-wide interest rates. In the United States, the Federal Reserve can set the discount rate, as well as achieve the desired Federal funds rate by open market operations. This rate has significant effect on other market interest rates, but there is no perfect relationship. In the United States open market operations are a relatively small part of the total volume in the bond market.

In other nations, the monetary authority may be able to mandate specific interest rates on loans, savings accounts or other financial assets. By raising the interest rate(s) under its control, a monetary authority can contract the money supply, because higher interest rates encourage savings and discourage borrowing. Both of these effects reduce the size of the money supply.

Currency board

A currency board is a monetary arrangement which pegs the monetary base of a country to that of an anchor nation. As such, it essentially operates as a hard fixed exchange rate, whereby local currency in circulation is backed by foreign currency from the anchor nation at a fixed rate. Thus, to grow the local monetary base an equivalent amount of

foreign currency must be held in reserves with the currency board. This limits the possibility for the local monetary authority to inflate or pursue other objectives. The principal rationales behind a currency board are three-fold:

(i) To import monetary credibility of the anchor nation;

(ii) To maintain a fixed exchange rate with the anchor nation;

(iii) To establish credibility with the exchange rate (the currency board arrangement is the hardest form of fixed exchange rates outside of dollarisation).

In theory, it is possible that a country may peg the local currency to more than one foreign currency; although, in practice this has never happened (and it would be a more complicated to run than a simple single-currency currency board).

Monetary policy theory

It is important for policymakers to make credible announcements and degrade interest rates as they are non- important and irrelevant in regarding to monetary policies. If private agents (consumers and firms) believe that policymakers are committed to lowering inflation, they will anticipate future prices to be lower than otherwise (how those expectations are formed is an entirely different matter; compare for instance rational expectations with adaptive expectations). If an employee expects prices to be high in the future, he or she will draw up a wage contract with a high wage to match these prices. Hence, the expectation of lower wages is reflected in wage-setting behaviour between employees and employers

(lower wages since prices are expected to be lower) and since wages are in fact lower there is no demand pull inflation because employees are receiving a smaller wage and there is no cost push inflation because employers are paying out less in wages.

In order to achieve this low level of inflation, policymakers must have *credible* announcements; that is, private agents must believe that these announcements will reflect actual future policy. If an announcement about low-level inflation targets is made but not believed by private agents, wage-setting will anticipate high-level inflation and so wages will be higher and inflation will rise. A high wage will increase a consumer's demand (demand pull inflation) and a firm's costs (cost push inflation), so inflation rises. Hence, if a policymaker's announcements regarding monetary policy are not credible, policy will not have the desired effect.

If policymakers believe that private agents anticipate low inflation, they have an incentive to adopt an expansionist monetary policy (where the marginal benefit of increasing economic output outweighs the marginal cost of inflation); however, assuming private agents have rational expectations, they know that policymakers have this incentive. Hence, private agents know that if they anticipate low inflation, an expansionist policy will be adopted that causes a rise in inflation.

Consequently, (unless policymakers can make their announcement of low inflation *credible*), private agents expect high inflation. This anticipation is fulfilled through adaptive expectation (wage-setting behaviour); so, there is higher inflation (without the benefit of increased output). Hence, unless credible announcements can be made, expansionary monetary policy will fail.

Announcements can be made credible in various ways. One is to establish an independent central bank with low inflation targets (but no output targets). Hence, private agents know that inflation will be low because it is set by an independent body. Central banks can be given incentives to meet their targets (for example, larger budgets, a wage bonus for the head of the bank) in order to increase their reputation and signal a strong commitment to a policy goal. Reputation is an important element in monetary policy implementation. But the idea of reputation should not be confused with commitment. While a central bank might have a favorable reputation due to good performance in conducting monetary policy, the same central bank might not have chosen any particular form of commitment (such as targeting a certain range for inflation).

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