

M0, M1, M2 and the control of Central Bank

M0, M1, M2, each M represents' the coefficient for each definition of money'—briefly explained, M0 represents currency plus bank reserves; M1, money easily used in transactions and M2, money easily used in or converted into use for transactions.

M0 or another name called Money Base/Monetary base(MB) is a monetary aggregate that is not widely observed and differs from the money supply but is nonetheless very important. It includes the total supply of currency in circulation in addition to the stored portion of commercial bank reserves within the central bank. This is sometimes known as high-powered money (HPM) since it can be multiplied through the process of Fractional reserve banking.

M1 is a narrow measure of the money supply that includes physical currency, demand deposits, traveler's checks, and other checkable deposits.

M2 is a calculation of the money supply that includes all elements of M1 as well as "near money," which refers to savings deposits, money market securities, mutual funds, and other time deposits. These assets are less liquid than M1 and not as suitable as exchange mediums, but they can be quickly converted into cash or checking deposits.

However, these variables can be controlled by the central bank through policy and etc. The central bank is capable of controlling many factors depending on the situation the economy is facing. On this topic, we focus on how the central bank controls money supply.

Firstly the central bank can simply print out money, in fact, they can print out as much as they want. Though this doesn't affect the economic output or production levels but it can cause the money itself becomes less valuable. And since this can cause inflation, simply printing more money isn't the first choice of central banks. Printing money is part of increasing the monetary base[M0] and also physical currency[M1].

Secondly, the central bank has authority to set the reserve requirement. As a rule, central banks mandate depository institutions (i.e.commercial banks) to keep a certain amount of funds in reserve (stored in vaults or at the central bank; usually assumed 10%) against the amount of deposits in their clients' accounts. When the central bank wants more money circulating into the economy, it can reduce the reserve requirement, which is in M0. This means the bank can lend out more money. If it wants to reduce the amount of money in the economy, it can increase the reserve requirement. This means that banks have less money to lend out and will thus be more selective about issuing loans.

Thirdly, the central bank most of the time cannot directly set the desired level of interest rate. However, there is a tool the central bank used to push the interest rate to the desired levels. For example, the central bank holds the key to the policy rate—the rate at which commercial banks get to borrow from the central bank. When banks get to borrow from the central bank at a lower rate, they pass these savings on by reducing the cost of

loans to their customers. Lower interest rates tend to increase borrowing, and this means the quantity of money in circulation increases[M0].

And lastly, 'currency intervention', There are many reasons a country's monetary and/or fiscal authority may want to intervene in the foreign exchange market. Central banks generally agree that the primary objective of foreign exchange market intervention is to manage the volatility and/or influence the level of the exchange rate. When there is inordinate instability, exchange rate uncertainty generates extra costs and reduces profits for firms. As a result, investors are unwilling to make investment in foreign financial assets. Firms are reluctant to engage in international trade. Moreover, the exchange rate fluctuation would spill over into the other financial markets. If the exchange rate volatility increases the risk of holding domestic assets, then prices of these assets would also become more volatile. The increased volatility of financial markets would threaten the stability of the financial system and make monetary policy goals more difficult to attain. Therefore, authorities conduct currency intervention.

For example, Direct currency intervention is generally defined as foreign exchange transactions that are conducted by the monetary authority and aimed at influencing the exchange rate. Depending on whether it changes the monetary base or not, currency intervention can be distinguished between non-sterilized intervention¹ and sterilized intervention², respectively.

Another way is indirect intervention, Indirect currency intervention is a policy that influences the exchange rate indirectly. Some examples are capital controls (taxes or restrictions on international transactions in assets), and exchange controls (the restriction of trade in currencies). Those policies may lead to inefficiencies or reduce market confidence, or in the case of exchange controls may lead to the creation of a black market, but can be used as an emergency damage control.

Non-sterilized intervention¹ is a policy that alters the monetary base[M0]. Specifically, authorities affect the exchange rate through **purchasing or selling foreign money or bonds**[M2] with domestic currency.

Sterilized intervention² is a policy that attempts to influence the exchange rate without changing the monetary base. The procedure is a combination of two transactions. First, the central bank conducts a non-sterilized intervention by **buying (selling) foreign currency bonds** using domestic currency that it issues. Then the central bank "sterilizes" the effects on the monetary base by selling (buying) a corresponding quantity of domestic-currency-denominated bonds to soak up the initial increase (decrease) of the domestic currency.

With sterilization, any purchase of foreign exchange is accompanied by an equal-valued sale of domestic bonds.

References

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