

Base multiplier approach to money supply



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Traditionally, it has been shown controversially that money supply is determined using the base multiplier approach. ' The multiplier model of the money supply, originally developed by Brunner (1961) and Brunner and Meltzer (1964) has become the standard model to explain how the policy actions of the Central Bank influence the money stock'[1]. However, there is more than sufficient evidence to suggest that monetary authorities do not determine the money supply and that the flow of funds approach makes more sense.

Consequently, I will compare and contrast the base multiplier and the flow of funds approaches to the determination of money supply and determine which occurs in reality in view of the present economic climate.

Under the base multiplier approach, the monetary authority (Bank of England) ' sets the size of the monetary base, which in turn determines the stock of broad money as a multiple of the base'.[2]This process is described below:

$$M_s = C_p + D_c \text{ (Equation 1)}$$

In the equation above, M_s refers to the broad money supply, C_p refers to private sector (excluding banks) notes and coins and D_c refers to bank deposits.

The next equation is for the monetary base (B) is as follows:

$$B = C_b + D_b + C_p \text{ (Equation 2)}$$

In Equation 2, C_b refers to banks' notes and coins while D_b refers to deposits with the Bank of England. Both combined they can be called reserves R and can be substituted into the equation above to form Equation 3.

$$B = R + C_p \text{ (Equation 3)}$$

The quantity of money can now be expressed as a multiple of the base as follows:[3]

(Equation 4)

The next stage is to divide through by bank deposits to obtain the Equation 5 as follows:

If $\hat{C}_p = \hat{C}_p$ and $\hat{R} = \hat{R}$, then the equation above becomes Equation 6 below:

The symbol \hat{C}_p is the private sector's cash ratio, while \hat{R} represents bank reserves.

Under the multiplier approach the money supply equation is then obtained by multiplying both sides of the equation with the monetary base B .

Therefore, Equation 7 becomes:

The rationale behind this is that assuming \hat{C}_p and \hat{R} are fixed or stable, the money supply is ' a multiple of the monetary base and can change only at the discretion of the authorities since the base consists entirely of central bank liabilities.

The Flow of Funds approach says that money supplied is determined by open market operations. It presents the opposite view to the multiplier approach

as those in favor believe that other factors determine the supply of money, not monetary authorities or policymakers, it looks at the demand for money not just the supply side. They also believe that banks are able to obtain reserves from central banks as required and are not a constraint. Under this approach credit or loans credit by the private sector create deposits and not the other way round as put forward by the base multiplier approach. The flow of funds model of money supply determination is as follows:

$M_s = C_p + D_c$, the same definition of broad money supply as was used in the base multiplier approach (Equation 8)

The next equation focuses on the changes in money supply, i. e.:

$$\hat{M}_s = \hat{C}_p + \hat{D}_c \text{ (Equation 9)}$$

A change in deposit is matched by a corresponding change in loans, which can be further divided into loans to the private sector (L_p) and loans to the UK government (L_g):

$$\hat{D}_p = \hat{\text{Loans}} = \hat{L}_p + \hat{L}_g \text{ (Equation 10)}$$

Equation 9 could therefore be re-written as Equation 11 as follows:

$$\hat{M}_s = \hat{C}_p + \hat{L}_p + \hat{L}_g$$

The flow of funds approach was developed at a time when the UK government needed to borrow from banks to meet its requirements as issuing bonds was not sufficient. This had stopped being the case for a while, as the UK government was able to meet its requirements solely through the

issue of bonds. Consequently, \hat{L}_g can be further broken down to take into effect ' the monetary implications of the public sector deficit':[4]

$$\hat{L}_g = \text{PSNCR} - \hat{C}_p - \hat{G}_p + \hat{\text{ext}} \text{ (Equation 12)}$$

PSNCR stands for public sector net cash requirement; \hat{G}_p represents sale of government bonds to the general public and $\hat{\text{ext}}$ represents ' the monetary effect of official transactions in foreign exchange by the central bank (and this is equal to zero in a floating exchange rate regime)[5]

Consequently, by substituting Equation 12 into Equation 11, obtains:

$\hat{M}_s = \hat{C}_p + \hat{L}_p + \text{PSNCR} - \hat{C}_p - \hat{G}_p + \hat{\text{ext}}$, which becomes Equation 13 as follows:

$$\hat{M}_s = \text{PSNCR} - \hat{G}_p + \hat{\text{ext}} + \hat{L}_p$$

Equation 13 shows a link between loan demand and the state of the economy.[6]As the total amount of goods and services produced within an economy grows, the demand for credit and a corresponding will also increase to finance the growth according to the flow of funds model. Deposits will also grow to match the increase demand.

The differences of opinion between those in favor of the base multiplier approach and the flow of funds approach comes from how they view how money supply is determined. The base multiplier approach believes that money supply is exogenously determined while the flow of fund approach believes it is endogenously determined.

Despite the differences, they do agree on the concept of the Quantity Theory of Money (QTM). QTM ' states that there is a direct relationship between the quantity of money in an economy and the level of prices of goods and services sold'.[7]Heakal explains that if the amount of money in an economy doubles, price levels also doubles causing inflation. The consumer therefore pays twice as much for the same amount of the good or service.[8]

The theory is denoted by the Fisher Equation: $MV = PT$; where M is the money supply, V is the velocity of circulation (i. e. the number of times money changes hands in an economy)[9]; P is the average price level and T the volume of transactions of goods and services.

Both approaches agree on the formula but disagree on the assumptions. In the case of the base multiplier approach, Friedman believes that V is constant (<http://www.risklatte.com/BraveEconomist/02.php>), and T is constant in the short term, while the flow of funds approach believes that V is a variable, with their rationale being that since consumer and businesses spending needs determine the number of times money changes hands in the economy, then V cannot be constant.

While there is agreement that there is a direct relationship between the money supply and the level of prices of goods and services sold, the nature of that relationship is disputed. The base multiplier approach goes on the assumption that a change in money supply directly influences price levels and/or a change in supply of goods and services'.[10]The endogenous argument believes the relationship works the other way round, i. e. that

changes in price levels or in supply of goods and services results in changes in the money supply.

So instead of the money supply being determined by the monetary authorities as the base multiplier approach believe, the flow of funds approach believe that it is actually interest rates that determine the money supply. Consequently, the role central banks or monetary authorities have played is only to set interest rates and let the commercial banks and consumers do the rest through demand and supply.

In reality, it is clear that the endogenous view is more viable. In terms of velocity of circulation, statistical analysis shows that ' v rises during booms and deregulation and falls during slumps and reregulation'[11], therefore, making redundant the argument of people like Friedman that v is constant. Furthermore, the role of the central bank as a lender of last resort makes their ability to control the money supply almost impossible.[12] This is because they are guaranteed to provide funds to commercial banks as appropriate. This was seen in numerous instances during the recent global recession. For example, at the start of the economic crisis in 2007, the Chancellor of the Exchequer ' authorised the Bank of England to provide a liquidity support facility to Northern Rock against appropriate collateral and at an interest rate premium. This liquidity facility will be available to help Northern Rock to fund its operations during the current period of turbulence in financial markets while Northern Rock works to secure an orderly resolution to its current liquidity problems'[13].

We have seen that the two approaches to money supply determination are influenced by the exogenous and endogenous views. The exogenous view lends credibility to the base multiplier approach and asserts that an external agent – monetary authorities or the policymaker determines the supply of money, while the endogenous approach believes this is done through open market operations. The only way the policymaker intervenes, according to endogenous views is by setting interest rates. Thereafter, the commercial banks and their customers take over the process which of demanding and supplying credit which ultimately determines the money supply in an economy. The base multiplier approach will never and has never been used, the flow of funds model is thought of as being a better model for the money supply as it takes account of demand and supply.

In reality the endogenous approach of the flow of funds is at work. Contrary to the exogenous approach insinuating that the money supply is independent of interest rates, the endogenous approach believes that the higher the demand for loans the higher the interest rates which encourages banks to lend more. Therefore modern economies recognise that the policymaker sets short-term interest rates and the quantities of money and credit are demand-determined.