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QUANTITY THEORY OF MONEY

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ABSTRACT

In monetary economics, the quantity theory of money (QTM) states that the general price level of goods and services is directly proportional to the amount of money in circulation, or money supply. The concept of the quantity theory of money (QTM) began in the 16th century. As gold and silver inflows from the Americas into Europe were being minted into coins, there was a resulting rise in inflation. In fact, Quantity theory of money states that money supply and price level in an economy are in direct proportion to one another. When there is a change in the supply of money, there is a proportional change in the price level and vice-versa. Most economists accept the theory per se. However, Keynesian economists and economists from the Monetarist School of Economics have criticized the theory. According to them, the theory fails in the short run when the prices are sticky. Moreover, it has been proved that velocity of money does not remain constant over time. Despite all this, the theory is very well respected and is heavily used to control inflation in the market. However, Henry Thornton in 1802 assumed that more money equals more inflation and that an increase in money supply does not necessarily mean an increase in economic output. Here we look at the assumptions and calculations underlying the QTM, as well as its relationship to monetarism and ways the theory has been challenged.

KEYWORDS: Deflation, Depression, Inflation, Interest. Monetary, Money, Price Level, Quantity Theory.

1.0 INTRODUCTION

1.1 What Is Quantity Theory?

Let us begin our analysis of money and inflation by introducing one of the oldest economic theories around: the Quantity Theory of Money (QTM). To begin, I should point out that the Quantity Theory of Money is a misnomer. In particular, the QTM is not a theory about money at all. Instead, it is a theory of the price-level (or inflation) which happens to emphasize the role played by the quantity of money. The quantity theory of money is a hypothesis about the main cause of changes in the value or purchasing power of money. According to the theory, changes in value of money are determined mainly by the changes in the quantity in circulation. When money becomes abundant, its value or purchasing power falls and consequently the average of commodity prices rises. Conversely if money becomes scarce, its purchasing power rises and general prices fall. In short, the quantity theory

states that the stock of money (M) is the main determinant of the price level (P). In monetary economics, the quantity theory of money (QTM) states that the general price level of goods and services is directly proportional to the amount of money in circulation, or money supply.

The quantity theory descends from Nicolaus Copernicus, followers of the School of Salamanca like Martín de Azpilicueta, Jean Bodin, Henry Thornton, and various others who noted the increase in prices following the import of gold and silver, used in the coinage of money, from the New World. The "equation of exchange" relating John Stuart Mill who expanded on the ideas of David Hume stated the supply of money to the value of money transactions. Simon Newcomb, Alfred de Foville, Irving Fisher and Ludwig von Mises developed the quantity theory in the late 19th and early 20th century.

The quantity theory of money 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. According to QTM, if the amount of money in an economy doubles, price levels also double, causing inflation (the percentage rate at which the level of prices is rising in an economy). The consumer, therefore, pays twice as much for the same amount of the good or service.

Another way to understand this theory is to recognize that money is like any other commodity: increases in its supply decrease marginal value (the buying capacity of one unit of currency). Therefore, an increase in money supply causes prices to rise (inflation) as they compensate for the decrease in money's marginal value.

2.0 LITERATURE REVIEW

2.1 Theoretical Framework

Irving Fisher's encounter with the Quantity Theory of Money began in the 1890s, during the debate about bimetallism, and reached its high point in 1911 with the publication of *The Purchasing Power of Money*. The traditional quantity theory analysis found its origins in the violent price fluctuations of the fifteenth, sixteenth and seventeenth centuries. This period was characterized by debasement of the currency in the form of official devaluations and fraudulent clipping by individuals combined with a considerable influx of American gold and silver. His most important refinement of the theory, derived from his recognition of bank deposits as means of exchange, was to treat their out of equilibrium recursive interaction with inflation as integral to it.

This treatment underlay both his 1920s work on the business cycle as a "dance of the dollar" and his advocacy of subjecting monetary policy to a legislated price stability rule, initially to be based on his "compensated dollar" scheme. Fisher's failure to recognize the onset of the Great Depression even as it was happening was directly related to his faith in the quantity theory's seeming implication that price level stability in and of it guaranteed the continuation of prosperity. While his subsequent work on the debt, deflation theory of great depressions initially failed to repair the damage that this failure did to his reputation, and to that of the quantity theory. The quantity theory of money (QTM) asserts that aggregate prices (P) and total money supply (M) are related according to the equation $P = VM/Y$, where Y is real output and V is velocity of money. With lower-case letters denoting percentage changes (growth rates), the QTM can be expressed as $p = v + m - y$, with p as the rate of inflation and y, v, and m as growth rates of output, velocity, and money stock, respectively. A central implication of the QTM is that a given change in the rate of money growth induces an equal change in the inflation rate, prompting Milton Friedman to claim, "Inflation is always and everywhere a monetary phenomenon".

In the 1930s Fisher nevertheless remained an active supporter of various schemes to reflate and then stabilize the price level. His subsequent

influence on the quantity theory based Monetarist counter-revolution that began in the 1950s lay, directly, in its deployment of his analysis of expected inflation on nominal interest rates, and, indirectly, in its espousal of the case for subjecting monetary policy to a legislated rule. The historical foundations of the quantity theory broadly consisted of a hypothesis that the stock of money equals price time's real income to be combined with a concept of velocity. However, these components can each be given a number of different meanings, which must be made to correspond. Various definitions of the money supply arise involving considerations such as whether or not to include demand deposits. Similarly real income may include all transactions. Only the - transactions incident to production and distribution. or only transactions consisting of income payments and income expenditure on consumer goods.

2.2 The Theory's Calculations

The quantity theory of money argues that the size of the money supply influences the price of goods.

The quantity theory of money (sometimes called QTM) says that prices rise when there is more money in an economy and they fall when there is less money in an economy. The following formula expresses the theory:

$$M \times V = P \times T$$

Where M = the money supply

V = the velocity of money

P = average prices

T = number of transactions in the economy

Economist Henry Thornton is credited with developing the theory in 1802 after noticing that the more gold and silver Europe imported in the 16th century, the more things cost.

In its simplest form, the theory is expressed as:

$$MV = PT \text{ (the Fisher Equation)}$$

Each variable denotes the following:

M = Money Supply

V = Velocity of Circulation (the number of times money changes hands)

P = Average Price Level

T = Volume of Transactions of Goods and Services

The original theory was considered orthodox among 17th century classical economists and was overhauled by 20th-century economists Irving Fisher, who formulated the above equation, and Milton Friedman. (For more on this important economist, see *Free Market Maven: Milton Friedman*.)

It is built on the principle of "equation of exchange":

$$\text{Amount of Money} \times \text{Velocity of Circulation} = \text{Total Spending}$$

Thus, if an economy has US\$300, and that \$300 was spent five times in a month, total spending for the month would be \$1,500.

The quantity theory of money revolves around the basic idea that the more money people have, the more they spend, and when more people

are competing for the same goods and services, they essentially bid the prices up for those things. This is the core of monetary theory. Accordingly, when employment rates increase or the government cuts tax rates, people suddenly have more money to spend. This, when not done in moderation, can create runaway inflation.

Thus, it may seem that having more money to spend means people are "richer," it is important to note that the increase in money supply means rent, groceries, gas, cars, and college tuitions increase in price too, offsetting the effects of having more money. In short, the amount of money in an economy determines the value of the money in the economy.

2.3 Fisher's Equation of Exchange

The American economist Irving Fisher in his book- *The Purchasing Power of Money* (1911) provided the transactions version of the quantity theory of money. According to Fisher, "Other things remaining unchanged, as the quantity of money in circulation increases, the price level also increases in direct proportion and the value of money decreases and vice versa".

- Fisher's Quantity Theory Is Best Explained With The Help Of His Famous Equation Of Exchange

$$MV = PT \text{ or } P = MV/T$$

Like other commodities, the value of money or the price level is also determined by the demand and supply of money.

i. Supply of Money:

The supply of money consists of the quantity of money in existence (M) multiplied by the number of times this money changes hands, i.e., the velocity of money (V). In Fisher's equation, V is the transactions velocity of money, which means the average number of times a unit of money turns over or changes hands to effect transactions during a period of time. Thus, MV refers to the total volume of money in circulation during a period. Since money is only to be used for transaction purposes, total supply of money also forms the total value of money expenditures in all transactions in the economy during a period.

ii. Demand for Money:

Money is demanded not for its own sake (i.e., for hoarding it), but for transaction purposes. The demand for money is equal to the total market value of all goods and services transacted. It is obtained by multiplying total amount of things (T) by average price level (P). Thus, Fisher's equation of exchange represents equality between the supply of money or the total value of money expenditures in all transactions and the demand for money or the total value of all items transacted.

$$\text{Supply of money} = \text{Demand for Money}$$

Or

$$\text{Total value of money expenditures in all transactions} = \text{Total value of all items transacted}$$

$$MV = PT$$

Or

$$P = MV/T$$

Where,

M is the quantity of money

V is the transaction velocity

P is the price level.

2.4 Assumptions of Fisher's Quantity Theory

Fisher's transactions approach to the quantity theory of money is based on the following assumptions:

- Constant Velocity of Money: According to Fisher, the velocity of money (V) is constant and is not influenced by the changes in the quantity of money. The velocity of money depends upon exogenous factors like population, trade activities, habits of the people, interest rate, etc. These factors are relatively stable and change very slowly over time. Thus, V tends to remain constant so that any change in supply of money (M) will have no effect on the velocity of money (V).
- Constant Volume of Trade or Transactions: Total volume of trade or transactions (T) is also assumed constant and is not affected by changes in the quantity of money. T is viewed as independently determined by factors like natural resources, technological development, population, etc., which are outside the equation and change slowly over time. Thus, any change in the supply of money (M) will have no effect on T. Constancy of T also means full employment of resources in the economy.
- Price Level is a Passive Factor: According to Fisher, the price level (P) is a passive factor, which means that the price level is affected by other factors of equation, but it does not affect them. P is the effect and not the cause in Fisher's equation. An increase in M and V will raise the price level. Similarly, an increase in T will reduce the price level.
- Money is a Medium of Exchange: The quantity theory of money assumed money only as a medium of exchange. Money facilitates the transactions. It is not hoarded or held for speculative purposes.
- Constant Relation between M and M': Fisher assumes a proportional relationship between currency money (M) and bank money (M'). Bank money depends upon the credit creation by the commercial banks, which, in turn, are a function of the currency money (M). Thus, the ratio of M' to M remains constant and the inclusion of M' in the equation does not disturb the quantitative relation between quantity of money (M) and the price level (P).
- Long Period: The theory is based on the assumption of long period. Over a long period of time, V and T are considered constant.

Thus, when M', V, V' and T in the equation $MV + M'V' = PT$ are constant over time and P is a passive

factor, it becomes clear, that a change in the money supply (M) will lead to a direct and proportionate change in the price level (P).

2.5 Criticisms Of The Quantity Theory

Economists have subjected the Fisherian quantity theory to severe criticisms.

- **Truism:** According to Keynes, “The quantity theory of money is a truism.” Fisher’s equation of exchange is a simple truism because it states that the total quantity of money ($MV+M'V'$) paid for goods and services must equal their value (PT). However, it cannot be accepted today that a certain percentage change in the quantity of money leads to the same percentage change in the price level.
- **Other things not equal:** The direct and proportionate relation between quantity of money and price level in Fisher’s equation is based on the assumption that “other things remain unchanged”. But in real life, V, V and T are not constant. Moreover, they are not independent of M, M’ and P. Rather, all elements in Fisher’s equation are interrelated and interdependent. For instance, a change in M may cause a change in V. Consequently, the price level may change more in proportion to a change in the quantity of money. Similarly, a change in P may cause a change in M. Rise in the price level may necessitate the issue of more money. Moreover, the volume of transactions T is also affected by changes in P. When prices rise or fall, the volume of business transactions also rises or falls. Further, the assumptions that the proportion M’ to M is constant, has not been borne out by facts. Not only this, M and M’ are not independent of T. An increase in the volume of business transactions requires an increase in the supply of money (M and M’).
- **Constants Relate to Different Time:** Prof. Halm criticises Fisher for multiplying M and V because M relates to a point of time and V to a period of time. The former is a static concept and the latter a dynamic. It is therefore, technically inconsistent to multiply two non-comparable factors.
- **Fails to Measure Value of Money:** Fisher’s equation does not measure the purchasing power of money but only cash transactions, that is, the volume of business transactions of all kinds or what Fisher calls the volume of trade in the community during a year. But the purchasing power of money (or value of money) relates to transactions for the purchase of goods and services for consumption. Thus the quantity theory fails to measure the value of money.
- **Weak Theory:** According to Crowther, the quantity theory is weak in many respects. First, it cannot explain ‘why’ there are fluctuations in the price level in the short run. Second, it gives undue importance to the price level as if changes in prices were the most critical and important phenomenon of the economic system. Third, it places a misleading emphasis on the quantity of money as the principal cause of changes in the price level during the trade cycle. Prices may not rise despite increase in the quantity of money during depression; and they may not decline with reduction in the quantity of money during boom. Further, low prices during depression are not caused by shortage of quantity of money, and high prices during prosperity are not caused by abundance of quantity of money. Thus, “the quantity theory is at best an imperfect guide to the causes of the trade cycle in the short period” according to Crowther.
- **Neglects Interest Rate:** One of the main weaknesses of Fisher’s quantity theory of money is that it neglects the role of the rate of interest as one of the causative factors between money and prices. Fisher’s equation of exchange is related to an equilibrium situation in which rate of interest is independent of the quantity of money.
- **Unrealistic Assumptions:** Keynes in his General Theory severely criticised the Fisherian quantity theory of money for its unrealistic assumptions. First, the quantity theory of money for its unrealistic assumptions. First, the quantity theory of money is unrealistic because it analyses the relation between M and P in the long run. Thus it neglects the short run factors which influence this relationship. Second, Fisher’s equation holds good under the assumption of full employment. But Keynes regards full employment as a special situation. The general situation is one of the under-employment equilibrium. Third, Keynes does not believe that the relationship between the quantity of money and the price level is direct and proportional. Rather, it is an indirect one via the rate of interest and the level of output. According to Keynes, “So long as there is unemployment, output and employment will change in the same proportion as the quantity of money, and when there is full employment, prices will change in the same proportion as the quantity of money.” Thus Keynes integrated the theory of output with value theory and monetary theory and criticised Fisher for dividing economics “into two compartments with no doors and windows between the theory of value and theory of money and prices.”
- **V not Constant:** Further, Keynes pointed out that when there is underemployment equilibrium, the velocity of circulation of money V is highly unstable and would change with changes in the stock of money or money income. Thus it was unrealistic for Fisher to assume V to be constant and independent of M.
- **Neglects Store of Value Function:** Another weakness of the quantity theory of money is that it concentrates on the supply of money and

assumes the demand for money to be constant. In other words, it neglects the store-of-value function of money and considers only the medium-of-exchange function of money. Thus the theory is one-sided.

- Neglects Real Balance Effect: Don Patinkin has criticised Fisher for failure to make use of the real balance effect, that is, the real value of cash balances. A fall in the price level raises the real value of cash balances which leads to increased spending and hence to rise in income, output and employment in the economy. According to Patinkin, Fisher gives undue importance to the quantity of money and neglects the role of real money balances.
- Static: Fisher's theory is static in nature because of its such unrealistic assumptions as long run, full employment, etc. It is, therefore, not applicable to a modern dynamic economy.

2.6 Role Of The Quantity Theory In Classical Policy Debates

- The Quantity Theory and the Price-Specie-Flow: Mechanism It was only natural that the quantity theory was applied to these problems of international finance. After all, the theory had long played a strategic role in the classical theory of international trade. The quantity theory was the key ingredient in the classical explanation of the operation of the price-specie-flow mechanism.
- Control of the Money Supply: In the main, the theory employed by the Bullionists in locating the source of inflation was the same quantity theory that they had inherited from their pre-classical predecessors. It would be wrong, however, to assume that the Bullionists did not add anything to the theory. Their specific contribution related to the question of the control of the money supply. They were the first to develop the idea that the stock of money, or at least the currency component, could be effectively regulated via the control of a narrowly defined monetary base.
- The Currency-Banking Debate: The second great 19th century debate in which the quantity theory played a leading role was the Currency-Banking controversy over the question of the regulation of the bank note issue. This debate took place in the 30- year period following Britain's return to the gold standard in 1821. The main policy objectives of this period included maintenance of fixed exchange rates and the automatic gold convertibility of the pound.
- Safeguards to Note Over issue: Convertibility vs. Regulation The Bullionists had argued earlier that convertibility as such would be sufficient to insure that banknotes would respond automatically to gold flows in conformity with the principle that the mixed currency should behave like a metallic one.

Convertibility alone, Bullionists thought, would be an adequate safeguard against over issue.

- Money Substitutes and the Effectiveness of Monetary Control: The Currency School also contributed to the quantity theory doctrine that money substitutes cannot impair the effectiveness of monetary regulation. This proposition is based on two underlying presumptions :
 - That money, the specific control instrument, can be clearly identified and unambiguously distinguished from money substitutes and
 - That money and near-money are related via a stable link so that variations in the former will be accompanied by predictable variations in the latter.
- Time lags and destabilizing policy responses: The apprehensions of the Currency School stemmed from its belief that the past actions of the Bank of England had been perverse and destabilizing. This destabilization argument stressed the adverse effects of time lags on the bank's policy response to gold outflows and to exchange rate movements.

3.0 CONCLUSION

Conclusions of Fisher's Quantity Theory are quite apparent. The general price level in a country is determined by the supply of and the demand for money and given the demand for money, changes in money supply lead to proportional changes in the price level.

Since money is only a medium of exchange, changes in the money supply change absolute (nominal), and not relative (real), prices and thus leave the real variables such as employment and output unaltered. Money is neutral. Under the equilibrium conditions of full employment, the role of monetary (or fiscal) policy is limited.

During the temporary disequilibrium period of adjustment, an appropriate monetary policy can stabilise the economy and the monetary authorities, by changing the supply of money, can influence and control the price level and the level of economic activity of the country.

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