CHAPTER - II

SURVEY OF LITERATURE

2.1 Introduction :- Literature Survey of Price-money relationship :

This chapter deals with the survey of literature of the research thesis : Money Supply and its effects on price and output level in an economy with special reference to India. The importance of the study springs from the influences of inflation rate and the growth of output on the daily lives of the people. These two macro-economic variables dominate the research agenda in macro-economics.

The rapid and persistence rise in the general price level has unfavourable consequences[1] on the social, political and economic lives of the people in an economy. Inflation is a discriminatory process and it creates an imbalance among the consumers and producers. The real income of the low and fixed income group falls. While major portion of the population faces great hardship and sufferings, income, wealth and consumption of the minority of the previledged and propertied class increase conspicuously at the same time.Moreover, inflation is connected with the general atmosphere of persiveness which simultaneously produces explosions of student unrest, growing crime etc[2]. U.S presidents Ford and Carter call inflation " Public Enemy Number One[3]. Hence the task of contaning inflation is brought to the fore front of the government's stabilization programmes.

It is, therefore, pertinent on the part of economists to identify the main factor behind such inflation. It is assumed that increase in money supply is the major cause of inflation. The realization of the notion is not of recent origin but of past, nearly of two thousand years[4].This notion rings well in the statement of Bryan and others while criticising the U.S. government's policy from Hamilton's (1789) time until 1933 to maintain the value of dollar[5]. Explanation of this sort is also found in the quantity Theory of money.

---

1. S.Mukherjee , "Financial Stability and Planning" Finance and Development , Vol 9 No.1 March 1972, P - 5

2. R.Harrod " The Issue : Five Views" In : Inflation as a Global Problem,edited by R. Hinshaw John Hopkins University Press, Baltimore 1972

3. W. Wilson : Inflation Causes Consequeses and Cures, Indiana University Press Bloomington . First Midland Book Edition 1982. P- 1

4. Harry G. Johnson : Inflation and the Monetarist Controversy, North Holland Publishing Company, Amsterdam, - London, 1972, P-36. According to Johnson "For well over two thousand years, at least men at least sometimes and in some places have realized that inflation is the consequences of or at least associated with, the excessive issue of money".

5. R.S. Morrison: Inflation Can Be Stopped, Western Reserve Press INC First Edition Nov.1973,cleveland -P-8

The quantity theory of money is usuallyquoted for demonstrating relationship between money supply, price and output level. The Theory has passed through many refinement and reformulation over time .Jean Bodin is generally regarded the orignator of the quantity theory of money .Bodin states that the principal reason which raises price of every thing, where ever one may be, is the abundance of that which governs the appraisal and price of things[6] .It seems to us that his statement of the theory is simple and rudimentary.

In the two centuries following Bodin, many writers embraced the quantity theory and devoloped it in their own way .William Petty,[7] Sir Dudley North[8], John Locke[9] Jacob Vanderlint[10] David Hume[11] and Richard Cantillion[12] were prominent among them.

It appears that Petty referred to labour theory of value. Yet,it relates money supply with price level. North tacitly speaks of the effect of money on the price level in an economy. Locke holds the view that the value of money in exchange depends on the proportion of the quantity of money to the total volume of goods in the market. His view is based on the demand and supply theory of price. J. Vanderlint states about a positive and proportional relationship between price level on the one hand, and the amount of gold and silver, on the other hand.

---

6. A.E. Monroe , Early Economic Thought , P - 127 Bodin in his Re'ponse aux Paradoxes de Male stroit , Published in 1569, gave the first elaborate explanation of the revolu::tion in prices in the sixteen century. He ascribed this rise in the prices to five causes : the abundance of gold and silver; the the luxury of the king and the great lords ; and the debasement of the coin. He gave main empphasis to money supply to explain the rise in prices.

7. William Petty ; A Treatise of Taxes and Contribution, London , 1667 ,P - 32
Petty states that " if a man can bring to London an ounce of silver out of the earth in peru, in the same time that he can produce a bushel of corn , then the one is the natural price of other, now, if by reason of new or more easie mines a man can produce two ounces of silver as easily as formerly did one , the corn will be as cheap at ten shilling the bushel as it was before at five shillings Ceteris - paribus "

8. In Dudley North " Discourses Upon Trade"
London , 1691, PP - 11 -15
North writes " Money being - - - the common measure of buying and selling , every body who hath any thing to sell and can not procure chapman for it is presently apt to think that want of money in the kingdom, or country, is the cause why his goods do not go off and so want of money is the common cry. The farmer complains - - - he thinks that were more money in the country, he should have a price for his goods".

9. Eric Roll , A History of Economic Thought, Oxford University Press, Farday House Calcutta 13, Fourth Edition,Revised and Enlarged PP - 13-16

10. Jacob Vanderlint , "Money Answers All Things" London , 1734 , P - 5
Relating quantity of money with price level he states that " the Prices of things will certainly rise in every nation as the gold and silver increase amongst the people, and consequently, where the gold and silver decrease in any nation, the prices of all things must fall proportionately to such decrease of money".

David Hume expressed price level to be a function of the quantity of money. That is $P=\phi(M)$. He says that money represents commodities and its value is determined in the process of exchange by the relation between its own quantity and the quantity of goods for which it is to be exchanged. It follows from this that changes in the quantity of money affects the prices of goods. He, again, assumes that changes in the quantity of money are not immediately, attended with proportionable alteration in prices of commodities. Some time is needed before to match the price level proportionate to the money supply. His version dominated economic thinking throughout most of the the nineteenth century.

Richard Cantillion maintains that increase in the money stock leads to increase in the prices because the larger money stock leads people to increase the rate of their spending.
Other early expositions of the quantity theory which make it clear that an increase in the quantity of money raises prices through its prior effect in increasing demand are provided by Henry Thornton[13], David Ricardo[14] and J.S. Mill [15]

---

11. Hume, D, "Political Discourses"
In : Hansen A.V. "Monetary Theory and Fiscal Policy", International Student Edition 1949, Appendix - A, PP-215-16 & In : John Hicks, "Critical Essays in Monetary Theory, Oxtord Clarendon Press, 1967, PP - 160-61

Hume writes, "Money is nothing but the representation of labour and commodities and serves only as a method of rating or estimating them. When coin is in greater plenty - as a greater quantity of it is required to represent the same quantity of goods - it can have no effect either good or bad taking nation within itself; any more than it would make an alteration in merchant's books. We must condiser that though the high price of commodities be a necessary consequence of the increase of gold and silver , yet it follows not immediately upon that increase ; but sometime is required before the money circulates through the whole state ; and makes its people be felt on all ranks of people . At first no alteration is percieived; by degrees the prices rise first on one commodity , then another, til the whole atl .ast reaches a just proportion with the new quantity of specie which is in the kingdom.

12. Essay on the Nature of Trade (1755) translated and edited by H. Higgs, London, 1931 , Part II, Chapter VI - VII, PP - 161 and 179.

13. Thornton, H : An Enquiry into the Nature and Effects of the Paper Credit of Great Britain. London , Hatchard , 1802 PP - 195 , 259 -67

14. Laurence Harris , Monetary Theory International Student Edition, MacGrow Hill Book Company 1985 , P - 111
Ricardo writes " When any particular country excels in manufacturers, so as to occasion an influx of money towards it, the value of money will be lower and prices of corn and labour will be relatively higher in that country, than in any other.

15. J.S. Mill, Principles of Political Economy, ed W.J. Ashley, London 1909, PP - 491 - 93, 496 and 524.Mill writes " Money acts upon prices in no other way than by being tendered in exchange for commodities".

In a nut shell , the views of the classical economits about the price money relationship are summed up in the quantity theory of money.The non rigid version of the transaction approach , states an inverse relationship between the quantity of money and the price level. It mere states the tendency of the relationship. It does not tell us by how much price will alter as money supply alters .It seems to us that its efficacy regarding accurate policy making is less.

The quantity theory in its strictest form uses Fisher's equation of exchange[16] and states that price always changes in exact proportion with the changes in the quantity of money. The equation of exchange is :

$$MV = PT \quad \text{-------------} \; 2.1$$

Where M = amount of money
V = velocity of circulation of a unit of money
P = Price level
and T = Volume of trade

According to Fisher , factors such as institutional arrangement of the banking and payment system affecting velocity may change from time to time, they are sufficiently stable for velocity to be treated as a constant at any point of time. With the assumption of full employment of resources and constant velocity, the theory leads to a proportionate change in the price level; since

$$P = MV/T \quad \text{---------------} \; 2.2$$

Equation 2.2 states that the price level varies directly as the quantity of money (M) and the velocity of its circulation (V) and inversely as the volume of trade (T) done by it.

The classical econmoists, therfore, conclude that the price level rises with the rise in money supply and relative price remains the same . Consequently, enterpreneurs find no reason to change their output level. Money is , therefore, neutral and works like a veil over the real sector of the economy. Almost all economists writing before keynes put some stress on the price money relationship

Keynes criticises the quantity theory on the ground that it is a truism which holds in all circumstances though without significance[17] Crowther also states[18] that it is only another way of writing the obvious fact that money given in exchange for any thing equals the price paid for it.

To avoid such criticism, Marshall and other Cambridge economists formulate another approach, namely cash balance approach to explain price money relationship. This approach takes into account the fact that mere creation of money by the government without there being a willing ness in the public to spend it, result only the new money standing idle having no effect on the price level. Every prudent person strikes a balance in his mind between the convenience and security of having a stock of money and sacrifice of real consummption for holding money. The Cambridge. equation brings the economic behaviour into the analaysis.The cash balance approach, or cambridge equation is

---

16. Fisher , Irving , Purchasing Power of Money, Macmillian 1922 PP - 17 -21
17. J.M. Keynes ,The General Theory of Employment Interest and Money , Macmillan & Co Ltd. New York, St. Martin's press, 1957 P - 209
18. G.Crowther, An Out Line of Money Thomas Nelson and Sons Ltd. Reprinted 1977 , Chapter IV P - 112

$$M^d = k P_1 y \text{ - - - - } 2.3$$

Where M^d = Money demand , k = Proportion of income held by the people in terms of money. P_1 = Price of final goods and services and Y = real national income.

In equilibrium , the exogeneous stock of money is equal to the quantity of money demanded

Hence $M = M^d = k P_1 Y$ - - - - - 2.4

The price equation from 2.4 is

$P_1 = M^d/kY$ - - - - - - - - - - - - 2.5

The equation states that price level is positively related with the money demand and inversely with k and y. Under the assumption of full employment of resources, the higher the proportion of real income that the people decide to keep in money form, the lower will be the effect in the price level. The Cambridge equation is related with the income velocity of circulation in the following way :

Where $V_1 = 1/k$ - - - - - 2.6

The Cambridge equation represents a step towards more modern monentary theories. It focuses on the quantity theory as a theory of the demand for money. The proportional relationship between quantity of money and the price level results from the fact that the proportion of nominal income people wish to hold in the form of money (k) is constant and the level of real output is fixed by the supply condition.

Keynes criticises that "the income velocity of money" is in itself merely a name which explains nothing. There is no reason to expect that it will be constant. Keynes thinks that the use of this term obscures the real character of causation and has led to nothing but confusion[19].Alvin H.Hansen[20] supports the view of Keynes on velocity. Again, the inability of the quantity theory as it existed in the 1920[21] to explain the great depression offers the Keynesians the point of attack on orthodoxy and the opportunity for the success of the Keynesian revolution. Keynesian theory developed during the great depression of the 1930_s and shows way out of such depressions.

---

19. J.M. Keynes, The General theory of Employment Interest and Money. Macmillan & Co Ltd.New York , ST. Martine's press 1957 , P - 299

20. Alvin H.Hansen , The American Economy , MacGraw Hill Book company New York, 1957, P -50Hansen Write " I think we should do well to eliminate once and for all the phrase velocity circulation from our vocabulary because the actual role of this parameter remains unclarifed.

21. Harry G. Johnson, Inflation and the Monetary Controversy : North Halland Publishing Company . Amsterdam , London 1972 , P - 43

At that time, it was found that money supply affected output and employment rather than prices. With the publication of "The General Theory of Employment, Interest and Money (1936), the Keynesian theory gained ground before 1950s.

Keynes enuniciated [22] the quantity theory in the way that "an increase in the quantity of money will have no effect whatever on prices, so long as there is any unemployment, and that employment will increase in exact proportion to any increase in effective demand brought about by the increase in the quantity of money; whilst as soon as full employment is reached, it will thence forward be the wage-unit and prices which will increase in exact proportion to the increase in effective demand". He thought that money supply affects price level through a complicated set of interrelationship. In symbolic form, the generalized statement of the quantity Theory of Money is,

$e = e_d(1 - e_e.e_o + e_e.e_o.e_w)$ - - - - 2.7

Where e = elasticity of price with respect to money supply.

e_d = elasticity of price with respect to effective demand.

e_p = elasticity of price with respect to demand., $1 - e_e.e_o(1 - e_w)$ - - - - 2.8

e_e = elasticity of employment with respect demand.

e_o = elasticity of output with respect to effective demand.

and e_w = elasticity of wage with respect to affective demand in terms of money.

Equation 2.7 states that prices depend on demand and effective demand . Again 2.8 states that e_p depends on e_e, e_o and e_w.

From this, it appears that the effect of money supply on price level is not direct and simple one as the classical and others propounded it, it is an indirect relationship. In a nutshell, the Keynesian theory of inflation is based on inflationary gap between aggregate effective demand and aggregate supply. Before full employment of resources in the economy, any change in money supply will affect output through employment and money supply affects prices after full employment is reached creating aggregate demand larger than aggregate supply. After full employment of resources, any change in money supply will increase price level proportionately with the increase in money supply. The Keynesian and the Monetarist agree on the view that as long as full employment is reached prices rise by the excessive growth of money supply. The subsequent development of the process, according to Keynes, fully corresponds to the quantity theory of money, for output does not alter and prices rise in exact proportion to MV[22] .It is to be noted that Keynes' work went unchallenged until the mid 1960s.

---

22. J. M. Keynes The General Theory of Employment, Interest and Money, Macmillan & Co. Ltd. New York, ST. Martin's Press, 1957, PP - 295-296 and 304-306.

However, in the post war period, western economists[23] came out with serious and extensive opposition to Keynesian theory. In course of the debate concerning the real importance of Keynesian theory, there was a rapid revival of the neoclassical theory of money. Concern over inflation led to a growing popularity of the quantity theory of money which after many years of decline and stagnation once again came on the scene as a rival of Keynesian theory. Monetarism developed during the 1960s, promising a way for solving the inflation poblem.

Friedman starts with the restatement of the Quantity Theory of Money as a capital theory of demand for money.

He uses the Cambridge version of the quantity theory to explain price-money relationship. He concentrates his attention on money balance which is a stable[24]proportion on money supply and income. People increase their spending when their money balances are above the required level; and reduce their spending when they feel that the money balances are below that level. Stability of income velocity of money ,k is a necessary condition for the conclusion concerning equi-proportional change in prices following monetary change i.e money supply.

On the contrary, Radcliffe committee holds[25] (1959) the view that instead of the demand for money balance being a stable function of the price level and interest rate ,it is highly volatile function. This volatility is supposed to be due to the private sector's unstable propensity to replace money to credit as a medium of exchange, so that the volocity of money at any interest rate is unstable. If people , instead of relying on money to faciliate exchanges, increasingly exchange goods on the basis of credit, the ve. locity of money - the value of transaction that can be made with a stock of money in society-will increase accordingly.If the inflation and money supply do not keep pace with it, the private sector will finance its high level of expenditure, by extending credit within the sector or through financial intermediaries. The committee holds the view that changes in the aggregate demand is unpredictable.

Again,Gurley and Shaw criticise the functioning of the monetary economy in accordance with the real balance effect by dividing money into Inside money and Outside money
The evolution of monetary system creates a situation is which credit money (inside money)is most typical and wide-spread element of money supply and the chief instrument of the payment turn-over.

---

23. S. Slichter, " The Passing of Keynesian Economy In: the Mean to Prosperity,Economica-Book,Buffalo, 1959, P-79

24. Milton Friedman " The Quantity Theory of Money A Restatement, In: Studies in the Quantity Theory of Money, The University of Chicago Press Chicago , 1956, P - 21

    Friedman states " There is an extra ordinary emperical stability and regularity to such magnitude as in come velocity that can not but impress any one who works extensively with monetary data"

25. Laurence Harris " Monetary Theory, ISE Macgraw Hill Book Company 1985, P - 107

This type of money, being the evidence of debt, is not netwealth, and consequently does not provide a basis for the emergence of the real balance effect[26] The credit money, issued by the private banks, simultaneously serves as asset for the non financial sector and liabilities for the banks themselves. Changes in the purchasing power of money has opposite effect for the creditors and for debtors, the total effect, being equal to zero, so the change in the real value of cash balances consisting of credit money does not alter aggregate demand in the private sector and hence can not produce equi proportional effect[27] on the price level following variation money supply.

However, Gurley and Shaw's view that inside money is not a net asset of the private sector has been criticized by Pesek and Saving (1967). Pesek and Saving take a diametrically opposite view : that "all money is a net asset." They argue that the distinction between inside money and outside money is irrelevant.Again, the morden quantity theory approach to inflation is strong opposition to the Radcliffe version for it emphasizes the stability of the demand for money.

Friedman stresses upon the proportional relationship[28] between s ubstantial rise in the stock of money and that in the prices. This becomes tenable in view of the statisticcal work of Friedman and Meiselman which establishes monetary velocity to be is more stable and predictable than the simple Keynesian investment multiplier[29].

---

26. Laurence. Harris " Monetary Theory " ISE Macgraw Hill Book Company, 1985, P - 67 Patinkin states that the real balance effect is the sine qua non of monetary theory for an exchange economy ; without it monetary theory can not exit.It states the demands for goods (and for real money balances) are not only functions of relative prices and the endowment of goods; it is also function of the realvalue of money balances.According to Patinkin economic agents are forceto respond to any deviation of the actual money balances from the desired level.Here is the main channel through which money influences the functioning of the economic mechanism.A disruption of the normal of habitual relation between the real stock of money and the amount of payments disturb the equilibrium and produces a response on the part of the consumers which is eventually expressed on the commodity market.In the event of excess money balances over the normal level there arises and additional demand for commodities so leading to a rise in prices This process continues unt ill prices rise in exact proportion to change in the real value of money balances.

27. John G. Gurley and Edward S.Shaw, Money in a Theory of Finance , The Brooking Institution , Washington, D.C. 1960, Chapter - 3

& Inside Money and Outside Money , In : Monetary Theory by Laurnce Harris, ISE., MacGraw Hill Book Company, 1985, PP - 44

28. M.Friedman " Inflation its Causes and Consequences in : The Council For Economic Education,Bombay, 1963 P - 10. Friedman says , " I know of no exception to the proposition that there has been one to one relation between substantial rise in the prices and substantial rise in the stock of money".

Subsequently, of course, the monetarists assert that velocity is a behavioural functional relationship of a few variables such as GNP or NNP and interest rate.This paves the way of the monetarist to deal with inflation in a better way then before.It allows the monetary velocity in certain conditions may change and monetarist say that such changes are one of the key aspects of inflationry process.In the new situation monetarists prefer to take a more flexible approach,although some western economists and government official documents frequently assert that monetary velocity remain constant over fairly a long period.There is still a gradual shift of emphasis in the theoretical constructs that stability of monetary velocity is derived from the stability of the relations between the indicators and other parameters of economy developments.

Friedman rejects other concept and believes that purely monetary considerations can explain the growth of prices over a period of nearly two centuries, so that this provides an adequate explanation of the inflation that gather momentum during the 1960s[30].

According to Friedman inflation occurs only when the quantity of money increases faster than the quantity of product[31]

The role of money supply on inflation also gets supports from the statement of Jacques Rueff [32] that *"there can be no inflation without the existence of surplus cash and no* surplus cash without inflation."

In the late 1960s and early 1970s[33] the Monetarists embodied their theoretical principle in the monetarist econometric models. In those models, monetarists show that the growing money supply is the only cause of steady growth of prices. These models incorporate the impact of expectation for analysing inflation. However, the monetarist use clementary adaptive process to describe the shaping of inflation[34] The Andersen - Kasnosky model relating the period 1964-1973 shows that the growth of money supply from 3% to 6% a year led to an additional price growth of 2.3% a year[35] thus shows almost proportional increase in price level following an increase in money supply.

The monetarists assert that growing money supply accompanies with it a growth of nominal income. This may be due to an expansion of output and rise of price. In this way the impact of money supply is split between nominal magnitude and real economic variables and thus leads to the inadequacy of the monetarist models. In order to find a way out of this difficult without jeopardising the idea of the crucial role of monetary factor, some western economists[*36] suggest a distinction between the impact of a growth in the absolute money supply and the velocity, rather, the acceleration or deceleration in the movement of the total monetary instruments.

---

29. Milton Friedman-David Meiselman, " The Relative Stability of Money Velocity and the Investment Multiplier in The United States 1897-1958" In: Stabilization policies,Engle Woodcliff, 1963, P - 174.

30. Industrial Relation Research Association, Proceedings of the 11th Annual Meeting, New York 1958, pp- 212 - 213

31. M.Friedman, " The Counter Revolution in Monetary Theory" In: IFA, Occational paper No. 33 . London, 1970. P - 24

Thisimplies that the economic activity and the level of prices crucially depend on the changes in money supply**[37]

However, our study could not reveal any invariable proposition regarding the short term effect of money supply on price level and it is found to be obscure.***[38] This obscurity[39] in the price level are due to changes in the output and changes in the amount of money that public desires to hold relative to their income.A more general view[40] on this aspect is that "there are several factors which affectprice level in the short run.The short run impact of a change in money growth may differ depending on the state of inflation expectations.The immediateeffect ofgiven change in money growth also depends on whether it is perceived as permanent or just a temporary deviation from along term policy path.Factors affecting aggregate demand and supply are attributed to be the other factors behind the short term price change.

On the contrary, long run effect of money supply on price level is supported by many economists. There is a well established causal link between money supply and inflation over long run that has been supported by emperical evidence for the United States as well as many other countries.The exact nature of this relationship varies with time and institutions, but the long run relationship between appropriately defined money growth and inflation is difficult to refute[41]

In a nut shell ,the views of the monetarists are that while short term price changes can be caused by various factors,protracted inflation is always and every where a monetary phenomenon.

---

32. D.C.Hauque " The Control of Inflation by Monetary and Credit Policy In: Inflation proceedings of a conference held by IFA, Macmillan & Co. Ltd. London 1962, P - 162
33 L.Andersen, K. Carlson " a Monetarist - Model for Economic Stabilization " In: Review of Federal Reserve Bank of ST. Louis , April , 1970, PP - 7 - 25.,D. Karnosky, " The Link Between Money and Prices 1971-1976' In: Review of Federal Reserve Bank of St. Louis, June , 1976, PP - 17-23
34. M. Friedman, A Monetary Theory of Nominal Income In: The Journal of Political Economy, March April , 1971 Ph. Cagn , " The Monetary Dynamics of Hyper Inflation "In: Studies in the Quantity Theory of Money, Ed by M. Friedman, The University of Chicago Press, Chicago, 1956, PP- 25-117,
35 L.Andersen, D.Karnosky, " A Monetary Interpretation of Inflation " In: Analysis of Inflation 1965-1974, Cambridge Massachusetts , 1977, PP - 22-25.
36*. Karl Brunner, " the Monetarist View of Keynesian Ideas" In: Lloyds Bank Review Oct. 1971 , No. 102, P - 39
Brunner says:" The Pressure of monetary growth is dominant on the price level. Monetary accelerations or decelerations on the other hand, dominantly influence the pace of economic activity".
37. Karl Brunner " The Role of Money and Monetary Policy" In: Reserve Bank of ST. Louis Review, Vol. 50 July.
38. Cagan. Ph. " Determination and Effect of Changes in the stock of Money 1875-1960.NBER distributed by Columbia University Press, New York and London, 1965. Ph. Cagn Considering long term statistical series concludes that "In the short run one can establish a fairly clear connection between changes in money supply and price level only in a few cases.
39. Friedman, M. " The Optimum Quantity of Money and Other Essays " Macmillan and Co. Ltd. Reprinted, 1970, P - 174

2.2 **Quantity theory and Indian Economy** :

Very few studies have been made by Indian economists over the issue of price money relationship. Sushil Kumar[42] found the relevancy of the quantity theory of money in Indian Prof. Gyan Chand studies it and opines that the validity of the quantity theory is taken to be subject to certain refinements and even reservation, but the theory, in broad terms is taken to hold good and explains the changes in price level and the degree and the rate of inflation[43] studies[44] made by Saxena and Srivastava show a very high degree of correlation between the indices of money supply and price level during the period 1951-52 to 1967-68 in Indian. Guru[45] opines that there exists a board trend showing a close relationship between changes in money supply and changes in the price level in India. Relating proportional relationship between money supply and price level Mehta[46] states that he has not found any single year out of eighteen years 1950-69 holding the proportional relationship between money supply and price level. In the first 8 ytears the percentage increase in money supply is greater than in the price level and in the later 6 years, the percentage increase in peice level is greater than that in money supply. However, during all those 14 years both money supply and price level more in the same direction. Shah's study[47] reveals that money supply does not affect price level directly but through the income earned and expenditure made there from i.e.

$$e_{PM} = (1 - e_{OY}) e_{YM} \quad \text{-----------} \; 2.8$$

Nagpal calculated the co-efficient of correlation[48] between raw data of money supply indices and price indices as 0.9 for the period 1950-51 to 1974-75. Ojha reports that increase in the state of inflation can fully be explained ever with a lag by the rate of monetary expansion. It only indicates that factors neither of pure monetary nor of keynesian nature operate in the inflation process. Probably in Indian condition the inflation is not only a combination of the keynesian and monetary varities but is complex in nature[49].

---

40. Dornbusch and Fischer , Macro Economics, 5th Edition P- 647

41. The Economic Report of the President 1986, In: Macro Economics by Dorn busch and Fischer ., 5th Edition. MacGraw Hill Publishing Company, 1990 P - 646

42. Kumar, Sushil, Price Behaviour in India during 1901 to 1960 an unpublished doctoral desseration submitted to Delhi University.

43. Chand, Gyan, " The Menance of Inflation. Maniktala Bombay, First Publication, 1967

44. Srivastava and Saxena A note on the Quantity Theory of Money " In; Indian Economic Journal, Oct. Dec. 1968

45. Guru, D.D. " Study of the Quantity Theory of Money in a Developing Economy ed by Ojha, P.D. Indian Economic Association, Popular Prakashan, Bombay , 1971, P - 29

46. Meh. ta, S.B. Quantity Theory and Developing Economy of Indian a paper in a collection of paper by Ojha P.D. Quantity Theory and Developing Economies, , Popular Prakashan, Bombay, 1971 PP - 33-38

47. Shah, V.C. Unpublished doctoral dissertation submitted to Columbia University, New York, p-265
48. Nagpal , C.S. "Monetary Policy and Inflation in India"BR Publishing Corporation, Delhi, 1982, P - 158
49. Ojha P.D. " Inflation Control and Price Regulation" In: Mongia ed.Indian's Economic Development Strategies 1951 to 2000 A.D. New Delhi, 1985, P - 254

2.3 Literature survey of output money relationship:- Fluctuating and low growth rate of real GNP per person poses a macro-economic problem in an economy. It leads people to have a lower standard of life. People's welbeing to a great extent depends on the high growth rate of real GNP per person. It is the target and hope of most societies[50]. That is why,in recent period the macro economists renewed their interest in the issue of economic growth. Economists have attributed several factors to the growth of output. Our study concerns with one of the factors i.e. money supply to the growth of output in an economy.

The realization that money affects output is not a new idea to the people. From a very early period, people accord a very active role to money affecting output in an economy. Mercantilists[51] view is note worthy in this case

"Money,[52] acco rding to Mercantilists was— to use the terminology of to-day — a factor of production on the same footing as land". They held the view that unduly high rate of interest is the main obstable to the growth of wealth ; and knew that the rate of interest depends on the quantity of money. This view of the mercantilsts is found in the statements of Locke[53], Gerard Malyness[54]and Edward Meisselden[55] etc.It is to be noted that they emphasized on the indirect effect of money supply via interest rate on out-put level .

---

50. Dorn busch and Fischer, Macro-Economics, Fifth edition, MacGrow Hill International edition Economic series P - 12

51. J.M.Keynes, The General Theory of Employment, Interes and Money, Macmillan & co Ltd. New York, ST. Martin's Press, 1957, P- 347
Mercantilists' view reflected in the British House of common concerning the serious depession of 1921, Sir Edwin Sandys stated that " the Farmer and artificer had to suffer almost every where, that looms were standing idle for want of money in the country, and that peasants were forced to repudiate their contracts not for want of fruits of the earth, but for want of money".

52. Ibid 341
53. Ibid 344
1n " A Letter to a Friend Concerning Usury" Locke wrote (Printed in 1621)"High Interest dacays Trade. The advantage from Interest is greater than profit from Trade, which makes the the rich Merchants give over, and put out their stock to Interest and the lesser Merchants Break".

54. Ibid 342
Gerard Malynes asserts that "Plenty of money decreaseth usury in price or rate ".

55. Ibid 342
Edward Meisselden states that " The remedy for Usury may be plenty of money".

David Hume also states[56] about the stimulating effects of money supply on output.The role of money on output level is als o found in the writings of R.G. Hatrey[57] , Kunt Wicksell[58] , F.A. Hayek[59] Mitchell[60] and Irving Fisher[61] etc.

The classical economists upto 1930 held the view that money is neutral and works like a veil over the real sector of the economy. Under the impact of the unprecedented crisis of 1929-33 Keynes criticized the monetary theory as " Money does not matter " for economic growth and proposed a new view of the reproduction mechanism. The keynesan model emphasised on non-monetary factors for the growth of output. Vigorous use of counter cyclical fiscal policy was the preferred method for reducing cyclical fluctuation.

---

56. D.Hume " Of Money "
In : David Hume , Writing on Economics ed by Eugen Routhwen, London, Nelson 1955, PP-37- 38
Hume states " In the short run , we find that in every kingdom into which money begins to flow in greater abundance than formerly, everthing takes a new face, labour and industry gain life, the merchant becomes more enterprising, the manufacturer more diligent and skillful and even the farmer follows his plough with greater alacrity and attention. In my opinion, it is only this interval or intermediate situation between acquisition of money and rise of prices that the increasing quantity of gold and silver is favourable to industry ".

57. Hatrey, R.G. " Trade and Credit "
London, Longman, 1982, P- 76 Hatrey asserts that " the trade cycle is a monetary phenomenon because gereral demand is it-self a monetary phenomenon".

58. Wicksell , K. (1934 -35) Lecture on political Economy ed by L.Robbins. Translated by E Classen, London, Routledge and K. Paul, In his lecture Wicksell discusses economic fluctuation as being caused by changing credit conditions which cause deviation of money rate of interest from its natural rate.

59. Hayek , F.A. Monetary Theory and the Trade Cycle " 1933 Jonathan cape London
Hayek in his exposition of the monetary theory of trade cycle, holds that changes in the money supply is primarily responsible for cyclical fluctuation.

60. Wesley C. Mitchell " Business Cycle ; the Problem and its Setting" New York NBER (1927) chapter II P - 62, Mitchell says, that busin ess cycle occurs only in an ecomomy in which economic activities are - - - carried on mainly by making and spending money".

61. Irving Fisher, "The Business Cycle Largely—a Dance of the Dollar,"
In : Journal of the American Statistical Association, December, 1923.

However, Keynes does not accord much importance to monetary policy[62] for increasing outout and employment in the economy. According to Keynes, full or even approximately full employment is of rare and short lived occurance[63]. In other words, the economy does not always remain at full employment level. The economy works normally under the condition of under employment equilibrium.In such a situation, there is possibility of pushing the output level further towards full employment level. Whether money supply will promote investment is not certain.

Money supply affects rate of interest. If marginal efficiency of capital (MEC) exceeds the rate of interest, there may be a spurt in investment. The stimulus[64] to output depends on the marginal efficiency of a given stock of capital rising relatively to the rate of interest. Referring the case of liquidity trap, when entire additional money supply goes to match the additional demand for money . As a result, money supply, can not affect investment, as a result,output remains unchanged in such situation.

Following the idea of Keynes' depressed economy, Harris and Hansen predicated a parmanent stagnation after the second world war equal in scale to the 1929-33 crisis. Their prediction failed and in 1950s and 1960s despite painful recessions, the capitalist economy entered the period of revival which was characterised by a relative excess demand instead of a shortage as the keynesian had predictated.

M.Friedman and his Co-workers challenge the Keynesian emphasis on fiscal policy and emphasise on the role of money and monetary policy during the 1950s.and 1960s. The renaissance of the quantity theory is most explicit in the theoritical conception of a collection of essays[65] where monetarist claim that "**money does matter**" in the process of production. In the introduction, Friedman formulated a special version of the monetary view of the performance of the capitalist economy.In the 1930s, criticism of the postulates of the quantity theory had been a necessary prerequisite for the Keynesian break up of the whole structure of neoclassical economies. The very opposite situation developed during the 1960s. The refurbished quantity theory was used as a weapon for counter attack against Keynesian doctrine and the standard macro-model of income formation,dominant in present day theoretic literature in the capitalist countries comes into view. The present day monetarists emphasise the historical continuity of the works of the monetary theorists of trade cycle,with special reference to Fisher's article in which he identified the cycle with the dance of the dollar. This was followed by a series of emperical statistical studies to develop and polish upto the new theory[66].

The idea that monetary factors have a decisive influence on the general economic process is the main subject matter of the Monetary History. The Monetary History traces the changes in the stock of money - - - - examines the factors that accounted for the changes and analysis the reflex influence that the stock of money exerted on the courseof events[67]. Their argument is based on historical evidences.

---

62. J.M.Keynes, The General Theory of Employment , Interest and Money. Macmillan & Co Ltd: New York, ST. Martin's Press, 1957, P- 164

63. Ibid PP - 249 - 250
64. Ibid P - 143

In almost 100 years under review, there were six cases of deep economic depression each of which was preceded by a considerable reduction in money supply. From these instances they draw the conclusion that there is a close connection between cyclical fluctuation of money supply and changes in real income.However, they do not agree on one to one relation between economic change and monetary change on the ground that out of variety of factors attributed to monetary change, many of which are connected directly neither with contemporary business development. This is true for both short and long period.

Friedman and Schwartz give a more detailed analysis of the correlation between U.S. money supply and nominal income in the article Money and Business Cycle[68] using formal statistical method. They give emphasis on the turning point of business cycle in their analysis. From this they draw the conclusion that "appreciable changes in the rate of growth of the stock of money are a necessary and sufficient condition for appreciable change in the rate of growth of money income[69]".

This sort of notion is also echoed in the writings of Leonal C. Andersen and Keith M. Carlson[70] and Leland B. Yeager[71] etc.

As regards to the direction of causation, the monetarists[72] view that the monetary stimulus is spread from the financial market to the market for goods and services. On the contrary J. Tobin criticized the monetarist, on the ground that cyclical leads of money over money income say virtually nothing about direction of causation[73]. Stil, Friedman insists on his version of the causes behind the cycle, claiming that the major direction of influence is from money to business and this is the key element in monetary theory of cyclical fluctuation[74].

---

65. M.Friedman, Studies in the Quantity Theory of Money, Chicago : University of Chicago press,1956.

66. M.Friedman, Anna J.Schwartz A. Monetary History of the United States, 1867 - 1960, Princeton University Press Princeton , 1963.

67. Lbid, P - 3
M.Friedman, The Optimum Quantity of Money and Other Essays Macmillan, Reprinted 1970 London and Basingstoke, PP - 264 - 265

68. M.Friedman Anna J. Schwartz, Money and Business Cycle In : The State of Monetary Economics NBER , New York, 1963

69. I bid P - 53

70. Leonal C. Andersen and Keith M.Carlson, "A Monetarist Model for Economic Stabilzation . In: Fedesal Resesve Bank of St. Louis April 1970 , Vol. 52 No 4, P - 8
Leonal C. Andersen and Keith M.Carlson write "The Economy is basically stable and not necessarily subject to recurring periods of severe recession and inflation. Major business cycle movemnts that have occurred in the past are attributed primarily to large swings in the rate of growth in the money stock".

However, the monetarists do not provide with any clear transmission mechanism[75] by which money influences the economic system. According to monetarists there are many possible channels through which money may exert its powerful role on GNP through interest rates affecting investment or consumption through direct or indirect wealth effects on consumption through influencing the liquidity of business or personal balance sheets or simply because people receiving money are unable to refrain from immediately spending it on something whether goods, services,poperty or securities.Some monetarist specify one or more of the above channels as more importent then others.Friedman, however , has continued to express his view that money may operated through any one or all of these channels,but how it operates is irrelevant and unimportant. Theemprical fact is that velocity is constant. They apply a black box approach for it. They assign an important place to the stability of the demand function for money in the transmission mechanism model. They hold the Cambridge version of the quantity theory according to whcih there is a stable proportion between money supply and income. A disruption of this proportion by the haphazasd changes in money stock upsets the portfolio balance. According to Friedman[76] whenever the volume of cash balance changes under the impact of some external factors economic agents response to it by a change in their assets and liabilities structure. This, changes the relative prices of different assets and the rate of return they earn. This changes in the consumpition and investment spending which in turn shape the amount of final product.

It is to be noted that the extraordinary importance of money is curiously laced in the works of the monetarists with the traditional conclusion of the quantity theory that money factors are inessential in the long run and that they mainly influence the price veil. This dichotomy gives rise to a real contradiction[77]in assessing the effect of government's stabilization measures : monetary and credit policy are regarded as the most powerful and effective instrument for exerting an influence on the economy and this fails to square with the neoclassical view of money as a veil.

---

71. Leland B.Yeager,Monetary Policy and Economic Performance, American Enterprise Institute, Washington 1972, P - 13. He writes, "Certain unsatisfactoy aspect of the performance of the capitalist economy - inflation, recession , cyclical unemployment, and balance of payments crisis are not characteristic of capitalism itself but result instead from a defective monetary policy and monetary policy is a govt. function".
72. M.Friedman, The Optimum Quantity of Money and Other Essays P - 231
73. Jame Tobin,Money and Income : Post Hoc Ergo Propter Hoc ? In The Quarterly Journal Economics, Vol. LXXXIV, May 1970, No 2, pp - 301 - 17
74. M.Friedman, "Comment on Tobin", In: The Quarterly Journal Economics Vol. LXXXIV, May 1970, No. 2, pp - 321,326
75. Ackley G., Macro Economics : Theory and Policy, Collier Macmillan International Editions Reprinted 1987, New York London P - 402
76. M.Friedman, The Optimum Quantity of Money and Other Essays pp - 229 - 234
77. David I. Fand, "A Monetarist Model of the Monetary Process, In: Journal of Finance vol. XXXV, May 1970, p - 279

To avoid such contradiction the monetarists are forced to formulate a more clear cut model reflecting their notions about the key interrelationship in the economy and Friedman did it in two long articles[78] .

In "A Theoretical Frame Work for Monetary Analysis", Friedman outlines a simple model of six equations in seven variables. It starts with the key point of the quantity theory by dividing variables into nominal and real economic variables. The model consists of

M^D	=	P.l (Y/P,r) - - - - - - - - (1)
M^S	=	h(r) - - - - - - - - - - - - (2)
M^D	=	M^S - - - - - - - - - - - - - - (3)
C/P	=	f(Y/P,r) - - - - - - - - - - (4)
I/P	=	g(r) - - - - - - - - - - - - - - (5)
Y/P	=	C/P+I/P (or S/P = (Y-C)/P = I/P - - - (6)

Where C is consumption; I investment P price level Y nominal income, M^D money demand, M^S money supply and r rate of interest.

Equations 1 to 3 describe monetary sector and 4 to 6 real scetor of the economy. Equation I states that money demand depends on real income, prices and interrest rate. (2) States that money supply depends on interest rate and (3) states the equilibrium condition in the money market. Equation (4) states that real consumption depends on real income and interest rate (5) States that investment depends on rate of interest and (6) states the equilibrium condition in the real market.

To make the model explicitly complete the advocate of the monetory theory adds the equation.

Y/P = y - - - - - - - - - - 7(a)

7(a) states that real income is determined outside the model.

Friedman claims that prices are the chief instrument for correcting the market situation because prices adjust faster than the quantities of commodities exchanged in the market indeed so fast that the price correctives may be regarded as instantaneous. This enables one to determine the three real variables :C/P, I/P and r.

The equation of money demand in the money market sector takes the form of fisher's equation of exchange which detemine the price veil. The monetarists believe that economic agents are not interested in nominal money balance but in the stock of money evaluated in accordance with actual purchasing power.Changes in nominal balance affect the value of money through the mechanism of demand and prices which generate a process of economic correctives which result in a fluctuation of the final product.

Friedman also went on to analyses the Keynesian Income expenditure theory in his article adding the equation $P = P_0$ - - - - - - - - - 7 (b)

7(b) states that price level is determined out side the model. This enables to define the relation between the interest rate and real income (Hick's LM curve and Hick's IS Curve).Their simultaneous solution gives the equilibrium interest and real income. However, this article could not provide a satisfactory answer to real economic development and it is based on some arbitary assumptions. Neither of the two approach can say anything about the factors which determine the proportion in which the short term changes in nominal income are divided between prices and output.

In view of the unfavouable response to his first article, Friedman subsequently proposes another model in which the nominal income is not divided into physical and value component.

On the assumption of the unit elasticity of demand for money with respect to real income Fredman reformulates, the demand for money equation as

$M^D = Y.l(r)$ - - - (1)

Carrying the idea from Keynes, that the current market rate of interest (r) is largely determined by the long run expected rate (r*), he writes

$r = r^*$ - - - (2)

According to Fisher, current market interest rate depends on real interest rate and the expected change in the commodity price

i.e. $r = \rho + (1/P \,.\, dp/dt)$ - - - - - - (3)

Combining the idea of Keynes and Fisher and assigning asterisks to denote parmanent rate to both real and nominal part of the right hand side terms.

Friedman formulates

$r = \rho^* + (1/P.dp/dt$ - - - - - - - - - (4)

Keeping in mind that $y = Y/P$, he writes

$r = \rho^* + (I/Y.dY/dt)^* - (1/y.dy/dt)^*$

or $r = \rho^* - g^* + (1/Y.dY/dt)^*$ - - - -(5)

Where $g^* = [\ (1/y.dy/dt)\ ]^*$ permanent rate of growth of real income.

Again, he put $\rho^* - g^* = k_o$

Friedman assumes that k_o is determined outside the system.

It follows that

$r = k. + (1/Y.dY/dt)$.

---

7 8 M.Friedman A Theoretical Frame Work for Monetary Analysis |In : The Journal of Political Economy vol 78, No. 2 March April 1970 pp - 193 - 238
A Monetary Theory of Nominal Income In: Monetary Theory and Monetary Pilicy in the 1970s procesding of the 1970 Sheffield money semionr Oxford University Press London 1971, pp - 74 - 71

Friedman's second article consists of the following equations

$M^D = Y.l(r)$ - - - - - (1)
$M^S = h(r)$ - - - - - - (2)
$M^D = M^S$ - - - - - - - (3)
$r = k_o + (1/Y.dY/dt)^*$ - - - - (4)

Friedman states that at any point of time[(1/Y.dY/dt)]* is predetermined variable presumably based partly on considerations outside the model. Thus, the model becomes a model of four equations in the four unknowns : M^D, M^S, Y, and r. As price and quantity do not enter seperately in the models, so this is a model of nominal income.

To simplify the model more, Friedman assumes that money supply is exogeneously determined.

He writes $Y_t = M(t)/l(r)$ - - - - - - (5)
or $Y_t = V(r).M(t)$

Where v = stands for velocity of circulation. He states that r = ko +(1/Y.dY/dt)* and Yt = V(r). M (t) constitute a two equation system for determining the level of nominal income at any point of time.

From the two articles, it appears that although Friedman's theoretical model is not adapted for describing and analysing the effects produced by the mechanism of government economic policy which is very important in the economic development, his second article of nominal income model contains all the chief components of monetarist doctrine.:the neoclassical function of demand for money, which established a direct relationship between the demand for cash balances and the maginitude of money income : the exogeneous money supply ; and the specific monetarist version of the mechanism underlying the dynamics of interest rate.

It is to be noted that Rational expectationists like Sargent, Lucus and N. Wallance do not support the Friedman - Phelp hypothesis of importance of money supply on output level in the short run. They, on the other hand, hold the view that changes in money supply, if it is already anticipated by the agents, affects only inflation but fails to affect real output or employment. They assert that any predictable part of money supply has no effect on output, employment or any other real variables in the economy. Only unpredictable part of monry supply can have an effect on output.[79]

---

79 Dornbush and Fischer, Macro Economies, (fifth edition. McGraw Hill Publishing Company, 1990, P-530 531, William H. Branson, Macro Economics Theory and policy Third edition Harper & row, pp - 205-216

2.4 Relevancy of the theory in Indian economy.

The effects of money supply on output level (GNP) have been studied by few economists in India.

Sinha (1971) shows money supply and national income relationship in an article[80] for the year 1951-1968 first without and then with a lag of one year. He calculates the co-efficient of correlation r = 0.98 and 0.97 respectively.

Money supply increased by 20% 30% and 58% respectively in the first, second and third plan and national income rose by 18%, 20% and 20% in the three plans respectively. From this, he concludes that money supply and national income correlated significantly in India.

Adhvarya calculated[81] the coefficient of correlation between money supply and national income for the period 1948-67 based on IFS and IMF data as 0.97 in India .

The two studies, concerning the output money relation made in India recorded very high degree of positive correlation.However V.K.R.V. Rao[82] had long ago theoretically argued that in a country like india continuously increasing money supply could not provide any significant inducement to productive ectivities and now extensive statistical evidence is available to lend support to his view point . In this context statement made by C. Rangarajan is note worthy, he states , " Money has an impact on both out put and price. The process of money creation is a process of credit creation. Money comes into existence because credit is given either to the government or the private sector or foreign sector.Since credit facilitates the production process,it has a favourable impact on output.At the same time the increase money supply raises the demand with and upward pressureon prices" .He states[83] that in India price effect of money supply is greater[84] than the output effect.As regards the trade off between economic growth and inflation, he states[85] " In the short run there is such a trade off .Some of the econometric models for india indicate the existence of a trade off but at a heavy cost. A higher growth rate can be achieved only at the cost of a fairly high inflation rate. Over a longer period, growth can not be bought with the aid of higher prices.On the other hand, it is price stability which provides a better invironment in which growth can occur and social justice can be ensured.

---

80. Sinha, Chakradhar, "Quantity Theory of Money and Developing Ecomony : the Inidan Exprerience ". In Quantity Theory and Developing Economics,ed.by Ojha P.D. Popular Prakashan, Bombay, 1971.
81 Adhvarya, J.H. "Theory of Money in a Developingn Economy : Quantity Theory vs The Keynesian Approach". In: Quantity theory and Developing Economiec,ed.by Ojha P.D. Popular Prakashan, Bombay , 1971.
82. V.K.R.V. Rao " Investment Income and the Multiplier in an Underdeveloped Economy" In A.N. Agarwal and S.P. Singh. (eds) The Economics of Underdevelopment, New York 1963.

83. C.Rangarajan, " Issues in Monetary Policy " In: P.R. Brahmananda and V.R. Panchmukhi (eds) The Development Process of the Indian Economy, Bombay 1987 , P - 842.

84. Misra & Puri, Indian Economy 8th Edition 1990, Himalaya Publishing House , P - 903

85. C.Rangajan " Issue In Monetary Policy In: P.R. Brahmananda and V.R. Panchmukhi (eds) The Development Process Of the Indian Economy, Bombay - 1987 , P - 842