Chapter III

Chapter III

Money-Prices Relationship & Tests of Causality.

III-1 MONEY - PRICE : THEORETICAL SURVEY.

The notion that changes in money stock affect the country's price level has been around in one form or another form atleast a couple of hundred years. But, there has been less universal agreement on precisely what in the economy affects, how affects are transmitted the strength of the effects, the length of time before the effects observed and the stabiltiy of the relationships. The linkage of argument can be traced atleast as far back as Jean Bodin in the sixteen century who used the Quantity Theory of Money to explain the price inflation in Spain and other countries in Europe that started with the inflow of gold and continued for 150 years from 1500 to 1650 through John Locke, David Hume, Ricardo, Mill.J.S, upto Fisher Irving in 1920s and 1030s and in recent past and now M.Friedman. Historically they used to be concerned with the relationship between the quantity of money and prices viewing money stock as the main determinant of price level and hence these economists used to know as "Quantity Theorists" and their theory as Quantity Theory of Money which provides persistent theoretical explantion of the macroeconomic role of money in economy. The basic monetarist theory provides critical importance to money in determining the level of economic ativity. For example ,restatement of the Quantity Theory of Money and return to the notion that "money matters much" or, as professor Samuelson pointed out critically that "money alone matters". [1] However in this chapter we

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1. See. Emmonn Butler. Milton Friedman, A Guide to his economic thought.Chapt.2.pp 35-37 Published by Gower Publishing Company.U K

have included various theories and view points of old classical. school, Fisher equation,Cambridge version of Quantity Theory, Keynes on money and prices. view points of the Stockholm school, Keynesianism, Monetarist and Neo-Monetarsit on money and price association.

Old classical school includes economists who wrote about various social sciences including economics were Adam Smith, Malthus, Ricardo, Nassau Senior James Mill, John Stuart Mill, Say,Benthan David Hume,who stayed during period of 1750-1850. They formulated systematic body of economics principles. About Quantity Theory of Money they had given two different versions. One is known as 'strict version' and another is know as" not so strict version. However, strict version reflect mathematical relationship between the quantity of money and price level. According to old classical strict version, any change in the quantity of money brings about directly proportionate change in price level and so inversely proportionate change in value of money. The second, not so strict version merely states that if supply of money (M) increases price level (P) will also rise. Thus , second version emphasizes on positive relationship between money and price level.

M.Friedman mentioned the contribution of David Hume, whose 1752 essay, of money can be still be read "with pleasure and profit", it outlined classical QTM with "few if any errors of commissions.[2] Yet Hume's statement is an elegant and intelligent

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2. See Friedman M.Money : quantity theory p. 433

rendition of what is an old theme of John Locke in 1692 had already analyzed the problems of debasement of the coinage" and same understanding was undoubtedly known less systematically to the ancients.[3]

However classical attempt to give QTM a mathematical base flourished, particularly in Britain. But the modern renaissance in monetary theory began with American economist Irving Fisher and his famous work, "The purchasing power of money" in 1911,[4] Fisher theme is that total volume of transaction can also be viwed from another angle not just as in form of payment made. But it can be considered in terms of money used to effectuate them. The total quantity of money in economy, multiplied by number of times each unit of that money is used to make a purchase will once again provide us the total volume of transaction. And thus,if we put two togather, we get well-known 'Fisher equation'

$$MV = PT$$

In this Fisher's equation,

(1) M = Total quantity of money in economy

(2) V = Transaction velocity of money

(V also indicates, in other words, average number of times each

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3. See. Emmonn Butler. Milton Friedman Guide to his economic thought chap: 2 p. 25

4. See Modern reprint, Fisher Irving "The purchasing power of money" by Kelley Augustus 1965.

unit of money is used in given economy)

(3) P = Suitable chosen average price

(4) T = Suitable chosen aggregate of quantity traded during period under examination.

As Fisher noted, his equation is vindication of old classical QT, if two assumptions are granted. If 'T' is supposed to be constant (This is reasonable because in a full employment economy, physical volume of transaction remains unchanged owing to no possibility of additional production.

Secondly, Fisher assumes V is supposed to be constant. Because, 'v' by and large depends upon traditional practice, habits and banking institution. In this manner Fisher justify his assumptions about T and V. And therefore change in M can bring directly proportionate change in P. Therfore, in this case 'strict version' of QTM will hold. However Fisher's equations is regarded as theory,a theory which says that a change in quantity of money will result into equiproportionate change in price level in same direction. This unique work of Fisher is also known as equation of exchange or transaction equation. The reason is he believed that community hold money for exchange or transaction purpose only.

One step ahead comes well-known "The Cambridge cash balance approach" Some of noteworthy members have been Mrs. J.Robinson,N.Kaldor, Lord Khan, L.Pasinetti and P.Sraffa. The influence is also to Italy where P.Greguani, D.M.Nut, and

L.S.Spavanta have been associated with work of Cambridge school. The Cambridge version of quantity theory was engineered by Marshall, Pigou, Robertson and early Keynes. They, viewed that demand for money is arising from people's desire to keep a certain amount of cash balance with them. They viewed that larger incomes are likely to mean that larger cash balances will be demanded. Cambridge school, made a point that people would desire to keep with them cash balance which are sufficient to purchase certain fraction of the real goods and services available for purchase during given period of time Cambridge scholars thought, therefore money value of fraction or real income over which people want to have command in terms of money constitutes demand for money. Now, according to marshall people desire to keep certain fraction of their real income in the form of money. If people hold cash-balance only to have command over part or real income their money holding then will be equal to money value of that fraction of real income over which they want to have command in terms of money. Thus the total money holdings of people will be equal to the average price of the real income multiplied by fractional value, multiplied by total real income in any given period of time. Marshallian equation is as under.

$$M = P.K.R. \quad (i)$$

By transfering K on the left hand side, we get

$$M - \frac{1}{K} = PR \quad (ii)$$

In this equation,

M, stands for the total money holding of people

P, stands for the average price of the goods included in real income

K, stands for value of the fraction of the real income and,

R, to stands for the real income. Thus equation (ii) shows that price level (p) vary directly as M,if K and are remains constant.It also shows that if K changes it will also bring about changes in P. However following points must be noted which reflect the importance of K in the equations given by Marshall.

(1) K shows desire of the people to holding cash as compare to desire to spend it on goods. Therefor, rise in K leads to larger cash balance holding and decrease their holding of goods.

(2) Obviously prices of goods decreases due to decreased demand for goods.

(3) Fall in demand for goods will induce producers to revise their production plan in downward direction.

(4) This result into fall in employment and income.

But, if K decreases, effect will be felt in opposite direction on economy. This shift in K is likely to be more important factor governing the price level. It also shows that K is important factor governing value of money than changes in quantity of money.This is how cash-balance equation emphasized the role played by liquidity preference as factor governing prices.

However the Marshallian analysis of QT tells sudden shifts in K affect the prices rather than changes in supply of money,

However, Fisher's approach and Marshallian approach both attempt to relate the quantity of money (MS) to the price level (P). Thus, both approaches reflects causal relationship between money and price.

But, however, John Maynard Keynes looked at supply of money and price level from entirely different angle. He was born in Cambridge, England on June 1883 and died April 1946, In 1936, Keynes published his famous "General Theory of Employment Interest and Money".Its publication created almost a sensation in the world of the professional economist. Keynes theory of employment is often reffered to as "New Economics" . Some economist are so deeply impressed with radical and far reaching character of Kynes economics that the endearingly refer to it as the Keynesian Revolution.[5]

However in our discussion regarding Keynesian money and prices relationship ; Keynes General Theory, chapters 20 and 21 are useful and as a matter of fact following discussion by and large based on those chapters of Keynesian general theory. Keynesian analysis runs in terms of supply and demand function; and it takes cognizance of the changing elasticities of these function at different points in the schedules[6] The way in which change in

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5. See. Klein.L.R. 'Keynesian Revolution'.

6. See. The General Theory of Employment, Interest and Money capt 20 by Keynes.J.M. Harcourt, Brace and Company, Inc, New York 1936

quantity of money exert their effect on prices is traced through a complicated set of inter-relationships. The amount of influence depends upon the elasticities of the functions at every point. The classicists held the view that increase in the quantity of money directly raise price level in the proportion. Keynes viewed the effect of changes in quantity of money on prices is as indirect. First there is the effect of changes in Aggregate Demand on output on the one side and on prices on the other side. Here we encounter elasticities supply price at different output levels. Account is also taken of changes in wage rates, whether induced by changes in Demand or independently determined by trade union action and collective bargaining.

Keynes's theory of money and prices concentrates and emphasizes behaviour of community, which behaviour is analysed in terms of Keynesian functions and various elasticities.

Chapter 21 of general theory of kynes starts with argument that economics has been divided into two compartments with no doors or windows between the theory of value and theory of money and prices. In case of vlaue theory, the classical analysis deals with elasticities of Supply and Demand. But in theory of money, elasticity of Supply has in simpler Quantity Theory of Money discussion become zero, and Demand has been thought to be proportional to the quantity of money. Keynes, thought to introduce the concept elasticity to theory of money. So he concentrated and concerned with (1) the elasticities of prices in response to change in Aggregate Demand and (2) The elasticity

of Aggregate demand in response to change in quantity of money. This is how, theory of money and theory of value would thus become integrated into one theory.

Keynes suggested that economics might perhaps usefully be divided into (1) theory of stationary (Static) equilibrium and (2) the theory of shifting equilibrium. The shifting equilibrium involves changing view about the future which influence the present situation. Here money enters, for it is the all important "link between the present and future".[7]

The theory of shifting equilibrium involves the problems of real world in which our previous expectations are liable to disappointment and in which "expectations concerning the future affect what we do today"[8] Here the peculiar properties of money as a link between the present and future must enter in to our calculations.[9] The theory of shifting equilibrium which it must be pursued in terms of money, still "remains theory of value and distribution"[10] and not merely a theory of money.

Keynes thought, general price level depends upon,[11]

(1) wage rates, to which must be added the rates of remuneration of other factors which enter in the marginal cost, and (2) the scale of output as whole.

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7. See Kynes- General Theory p 293
8. See Keynes General Theory pp 293-94
9. See Keynes General Theory pp 293-94
10. See Keynes General Theory pp 294-95
11. See Keynes General Theory pp 294-96

Since wage rates by far the important part of total factor costs and since remuneration of other factors tends to change in more or less the same proportion as wage rates, we may say that general price level is basically (in ths short run where equipments and technique are taken as given) a function of

(1) level of wage rates and (2) the scale of output.[12]

According to Keynes, changes in quantity of money operate on prices through the effect of such change on wage rates and on output.He pointed out that, more complete statement would be that changes in quantity of money may affect Aggregate Demand and changes in Aggregate Demand will affect wage rates and output according to prevailing elasticities of wage rates and output with respect to change in Demand. Thus changes in the price level can in the first instance be explained in terms of changes in the scale of output; but these in turn are affected by changes in Demand.To simplify money price relationship, Keynes suggested assumptions accordance with Quantity Theory Tradition.[13] These Assumptions are,

(1) Suppose that supply curve of labour is perfectly elastic, so long as there is any unemployment.

(2) Workers are content with the existing money wage,so long as there is unemployment.

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12. See Keynes General Theory pp 294-95

13. See Keynes General Theory p 294

(3) Nonwage factors are available in sufficient supply at constant rates of remuneration (or else that "all unemployed resources are homogeneous and interchangeable)[14]

Taking these assumptions, output will vary in the equal proportion as Aggregate Demand , which is here assumed to vary in the equal proportion as quantity of money. As result prices would remain constant. But if, economy operates at full employment, making supply curve of labour perfectly inelastic then "price will change in the same proportion as quantity of money".This is how Quantity Theory of Money is formulated by Keynes given the assumptions now, one can very-well establish functional relationships between money and prices. Obviously two important outcome should be noted from Keynesian apporach to money and prices realtionship.

(1) During under employment, assuming supply curve of labour perfectly inelastic money does not affect prices.

(2) But, at full employment, money and prices have positive relationship. In other words" price will change in the same proportion as the quantity of money".

However, Keynes does not satisfy himself with theoretical presentation of money and price relationship. He pointed out that real world is different, without the assumptions If the assumptions of perfectly inelastic and perfectly elastic supply of labour are ignored, then outcome would be something else.

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14. See Keynes' General Theory p 295

Further, he emphasized that extent to which price level (interms of wage unit) will rise i.e. extent to which wage fall when money expenditure is increased, depends upon elasticity of output.[15] If output elasticity is low, the price elasticity will be high. The sum of two elasticities is equal the unity. "Effective Demand spends itself, partly in affecting output and partly in affecting price, according to this law.[16] Keynes suggested that better to measure above values in money term instead of wage units. This is how one can get elasticity of money price and money wage in response to changes in Effective Demand measured in terms of money. Then the elasticity of price will depend upon elasticities of output and wage rates. Now, since the QT held that wages stand in certain relation to money, this begins to look like Quantity Theory of money. Thus if the elasticity of output is zero and the elesticity of wages is 1, prices will rise in the same proportion as Effective Demand in terms of money.[17] However, here he pointed out that relative prices will change, when there is change in general price level.

As we know, Keynes was dynamic in his approach about various economic issues. He also pointed out that, in so far as changes in the quantity of money affect the prices, possible via the change in rate of interest. Stated in broader way, the effect could conveniently be derived from the liquidity preference and

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15. See. Keynes General Theory p. 284

16. See. Keynes General Theory p. 285

17. See. Keynes General Theory p. 285

the propensity to consume schedule. However,Keynes quite agrees with classical economists that rise in supply of money will lead increase in the price level. But differs from them on the causal process by which increase in money supply bring about increase in the price level. As we know, classicists held the view that that increase in the supply of money directly raise the price level,Keynes viewed that the price level increases in response to increase in money supply not directly but via rate of interest,income,output and employment. The first impact of an increase in money supply,according to Keynes,is to lower the rate of interest. This is invitable because now more money is available to satisfy liquidity preference of community for speculative motive. A lower rate of interest tends to promote investment. The businessmen expand their investment,when money becomes cheaper,Increased investment leads to increased income. As this process goes on,output and employment increases,costs cannot remain unaffected.The price of raw materials and other accessories and even wages may go up. Increasing costs thus lead to rising prices. it shall thus be observed that increased money supply, in keynes view does not directly raise the price level. It raises it in a more round about manner. The classical version of the quantity theory of money ignores the influence of the rate of interest in causing changes in response to changes in the supply of money.

If one takes pain to conclude Keynes contribution toward

Quantity Theory of Money,then following points should be noted,that 1) keynes has related Quantity Theory with the employment situation. An expansion in money supply in conditions of unemployment,according to keynes,does not lead to rise in price level. It leads rather to an increase in output,though in the later stage of expansion,even the price level may increase due to cause explained in the preceding paragraphs,2) the major advantage of the keynesian version of Quantity Theory of Money is that,enables to look at inflation in its right perspective. According to classicists,every rise in the supply of money leads to inflation. According to keynes,only that expansion of money supply leads to inflation which takes place at or beyond the point of the full employment . The keynesian version thus enables us to distinguish between an inflationary and a non inflationary expansion of money supply. 3) keynes has,first time integrated the theory of money with the theory of value and the theory of output. Before 1930,Keynes considered the monetary theory (or QTM as theory of price alone. It was in 1930 that his old conception of monetary theory under went change 4) Another important contribution of keynes lies in disapproving the old classical notion that prices are directly determined by the quantity of money. 5) To keynes unemployment was rule and full employment an exception. It was on account of the existance of under employment that expansion of money supply in the intital stages did not result in a rise in price level.

Keynes General Theroy was published in February 1936. A year later there appeared in the Economic Journal (of which keynes was then editor)Bertil Ohlin celeberated two part article " some notes on the Stockholm Theory of Saving and Investment"(1937)[18] Bertil Ohlin pointed out that there are surprising similarities as well as striking differences between that appratus and the conclusions reached in Sweden (Stockholm School) on the one hand and keynes "General Theory" on the other hand,However economists who belongs to Stockholm school provided explicable work on money price association. Economists who dominated thoughts of Stockholm School includes names of Knut Wicksell, Erik Lindahl, Gunnar Myrdal, and Bertil Ohlin. Almost all of them emphasized on indirect process to link money and prices. Kunt Wicksell was leader of Swedish economics from whom Lindhal, Myrdal and Ohlin all claimed intellectual descent. Wicksell was basically a quantity theorist.[19]

His theory is concerned only for an economy in which money which

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18. See Patinkin Don Anticipations of the General theory and other Essays on Keynes part I p.36.First published in United Kingdom 1982 by Basil Blackwell publisher Oxford England.

19. See Jonung Lars (1979) "Knut Wicksell;s Norm of price stabilization and Swedish Monetary policy in the 1930's "Journal of monetary Economics 5 (october):pp 459-60

he defined as gold or other metallic currency circulated as the main medium of exchange and was held by individuals. In this type of economy increase in quantity of money generated a direct upward trend in prices what we today call the real balance effect. But Wicksell was not satisfied with this and thought,how was such upward trend in prices generated in economy in which most of the money (so defined)accrued not to individuals but to banks to held as a reserve against their deposits,in which case there was no real balance effect? However,Wicksell answered the question presenting well known" Cumulative process" which operate as follows;[20] . The increased quantity of money (i.e.gold) flows into the reserves of the banking system. The banks,finding themselves with excess reserves,decide to expand their loans and therfore reduce their lending rate. Market rate falls below the "natural"or "real rate" as determined by the marginal productivity of capital. This induces enterpreneurs to borrow and use the proceeds to increase their demand for investment goods, it also cause a decrease in. saving or,what is the same thing an increase in the demand for consumption goods. Thus expansion of bank credit and the resulting expansion of demand deposits,which for Wicksell was an integral part of the process will generate an

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20. See Anticipations of the General Theory and other Essays on Keynes part I p41 Patinkin Don Basil Blackwell Oxford.

increase in"General Demand". On the other hand,supply will remain unchanged for as first approximation we are entitled to assume that all production forces are already fully employed". Thus "General Demand'becomes greater than supply causing a general rise in both prices and wages. This type of rise in prices and wages constitutes a "cumulative process " in the sense that it will continue as long as the "bank rate" lies below the "natural rate" a further rise in prices does not require a further fall in the interest rate. Ultimately,the prices rise is brought to an end because of the internal drain of bank reserves which it generate. Which in turn causes the bank to raise their rate of interest once again to equality with natural rate. Thus,it is by means of convergent cumulative process that Wicksell extents the quantity theory to economy with banking system :that he explained how an increase in quantity of money in such an economy too,ultimately brings it to a new equilibrium position at a higher price level.Wicksell's a famous cumulative process is concerned with such a change in prices;indeed as we have seen,his analysis of process was carried out on the explicit assumption that output remains constant at its full employment level. Erik Lindahl educated at the University of Lund where he studied under Wicksell and received his Phd degree in 1919. Lindahl regarded as the "more important sections of his 1930 monograph on penning politikens medel (Method of monteary policy) were translated in the English (under his direction) in his studies in the Theory of

Money and Capital 1937.[21] . Translation of these sections appeared under the title"the rate of interest and price level"Under this title he made an attempt to explain factors determining change in price level. He begins his analysis with follwing paragraph "In explaining the factors determining changes in price level. It is convenient to start from the fact that in each period the portion of the total nominal income that is not saved is equal to total quantities of goods and services consumed during the period, multiplied by their prices. This is explained by Erik Lindahl[22] in following form

$$E(1-s)=PQ$$

Where E = total national income

S = the proportion of this normal income which is saved.

P = price level for such consumtpion goods and

Q = Quantity of such consumption goods in a certain period.

Lindahl uses this equation to analyze the determination of price. Similarly,he does examine the effect of change in the quantity of consumption goods Q on prices,In most of his analysis

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21) See Anticipations of General Theory? and other Essays on Keynes part I p.9 by Patinkin Don Basil Blackwell Oxford.

22) See Lindahl Erik,"Possible Anticipations of General Theory" pp 46-47

this change in Q occurs as result of changed consumption of a given output shift from consumption to investment goods caused by a change in rate of investment not as a result of change in total output. At one stage,however,Lindahl does assume that there are initially unemployed resources but does not analyze,how the level of unemployment is determined and just indicates that these unemployed resources make it possible for some rise in output to take place before price begin to increase.This shows that Lindahl recognises the feedback effect of changes in output. However,Lindahl prefaces his two chapters on "The Rate of Interest"as an investment to maintenance of an unchanged price level.

Myrdal Gunnar educated in Stockholm university,. He too, expressed his own idea within wicksell's old framework.[23] .Wicksell related equilibrium position by specifying the level of the "money rate of interest " which bring about monetary equilibrium and this interest rate is called by Wicksell as "normal rate of interest". Myrdal pointed out that normal rate of interest explained by Wicksell must be related to (1) equal marginal technical productivity of real capital. (i.e. the "real" or natural rate of interest") (2)equate the supply of and the demand for savings; and (3) guarantee a stable price level,primarily of consumption goods. Myrdal objects the idea that, this three

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23. See. Stedman R.S. "On the Concepts and Methods of the "Stockholm School." International Economic papers 3 (1953) : 5-57.

criteria for normal rate of interest are never mutually inconsistent,as stated Wicksell's formulations are indeed ,too loose and contradictory says the Myrdal. Myrdal strongly believed that fulfillment of 1st and 2nd conditions with respect to commodity market means something quite, different from an unchanged price level. However, Myrdal agreed that, equiproportionate changes in all prices and wages will leave Wicksell's first two conditions unaffected. Myrdal analysis, also based on assumptions of price flexibility and full employment. He explained disturbance of a monetary equilibrium by increased savings. Rise in saving, immediately brings about the rupture of monetary equilibrium in the capital market; for free capital disposal has increased, but not real investment. Thus downward Wicksellian process (Which in present context means a downward movement of the price level generated by the fact that the money rate has fallen below the real rate of interest) has thus been started. He believed that the real investment not only do not rise but even fall. For increased savings, defined to mean decreased demand for consumption goods, necessarily bring about some decrease in price of consumption goods, This fall in price must itself tend to lower capital values by influencing anticipations, with the consequence that the profit margin will move in negative direction, which naturally means that real investments will decline. Equilibrium on the capital market is therefore disturbed not only by an increase in free capital disposal but also by a simultaneous decrease of real investment.

A downward Wicksellian process has, thus been brought about by increased savings, where paradoxically enough, the rise in savings continuously result in a decrease of real capital formation.[24] Myrdal pointed out that downward process does not end except on the three conditions. Either savings is reduced so much that it corresponds to the level of real investment which means that savings must be reduced to as much below its initial level as investment has been reduced by the primary rise in savings or the rate of interest is reduced and credit conditions are eased to raise capital values and the profit margin enough to induce real investment to regain the level of free capital disposal. Thus "parodox of saving" exists but not because of feedback effect of money income on (money) savings but due to increased savings lowers the profitability of investment and; downward Wicksellian process" might stop due to reduction in savings; and such reduction is presented not as the necessary feedback effect of the downward movement in (money) income, but as chance of exogenous event. Myrdal also considered Wicksell's third condition price stability , wage rigidities and hence unemployment. In this context he discussed some aspects of the equilibriating role of the changes in output.Myrdal describes as

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24. See. Introduction to English Translation of Wicksell, Interest and Prices London, Macmillan

follows that dowanwards Wicksellian movement that is generated in this case, by tightening of credit.

Myrdal pointed out that total purchasing power of society; which form demand for consumption goods decrease less than decrease in total income. This obviously means the savings is reduced not only due to reduction in incomes but also on account of small fraction saved. Further, during depressive process the unemployed also live on their past savings and those of their relatives, which likewise reduces the gross savings (w) Consuming habits of the middle and upper classes are fairly stabilized and resist considerably any change, especially reduction of their standard of living. These classes above all, which are able to save, and which can now reduce their saving considerably or even live on their capital if their incomes fall.Thus, all this brings about fall in W. This is how, after credit contraction the business situation can under certain conditions achieve a fair stability, so that the relations fulfil even the equilibrium criterion W = R ' 2 (Gross savings = Gross investment)The new equilibrium stage would be characterized by the following: A largely stabel price level for consumption goods, capital values which will be sufficiently lower to correspond to the higher interest rate or more generally to the tighter credit conditions, some what lower wages, particularly, in capital goods industries and unemployment in capital goods industries, Production volume restricted generally but particularly in capital goods industries, savings sufficiently reduced to make free capital

disposal correspond to real investment, which, according to what has been said, is restricted on the whole and has less roundabout arrangement of production to maintain. Myrdal "immanent criticism" of Wicksell's contention that the equating of money and real interest will also achieve equality between saving and investment as well as stability of the price level. More specifically, the passage appears in a chapter- entitled" The Indifference Field of Monetary Equilibrium, by which Myrdal means, that, there is more than one interest rate at which these two additional conditions can be met. This is main thrust of passage, and it is noteworthy that the first characteristic of"new equilibrium position" enumerated in its last paragraph is "a largely unchanged price level for consumption goods." This is Myrdal's central message : not the fact that equilibrium position is one of unemployment.

Bertil Ohlin educated at university of Lund and the Stockholm school of Economics and Business Administration,taking his B.A. in 1919. Further studies at Harvard University and Stockholm University (Phd 1924). He worked as professor of Economics at Stockholm school of Economics and Business Administration Ohlin's 1933 article 'Till fragan om penningteoriens recently translated in History of Political Economy (1978) as " On the Formulation of Monetary Theory"-to be similar to General Theory.[25] Similar to central message of Keynes 'Treatise'Ohlin's

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25. See Anticipation of General Theory? And Other Essays on Keynes by. Patinkin Don p.35 Basil Blackwell Oxford.

article is the analysis of changes in output being derivative from it. At several points in his article(1933a) Ohlin compares his analysis of price movement with that of Keynes in the 'Treatise',which Ohlin included in what he denoted as the 'neo-Wicksellian theory'.[26] However Ohlin idea reflects that,if one imagine people decide to reduce their savings sharply, obviously demand for consumer goods will go up. It is quite possible that decision to reduce saving may not be accompained by a tightening of credit. If so, investment demand will first be allowed to go on as usual expecting rising money supply or an increasing velocity of circulation, and the rising investment demand of the consumers' goods industries will atlast bring about an increase in total investment. Total savings then is not reduced but on the contrary increased despite consumption is increased. Ohlin believed that, it makes this possible is expanding output.[27] However ,his own Stockholm economists were not totally agree with his hypothesis.

One may conclude that, "Stockholm's" fruitfull innovation is the important step which Wicksell took to bridge the gap

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26. See. Keynesian Economics and Stockholm School. A comment on Patinkin's paper. "Scandinavian Journal of Economics 80 (No.2) pp 144-47

27. See. Brems Hans (1978) "What Was New in Ohlins 1933-34 Macroeconomics ? History of Political Economy 10(Fall) 398-412

between price theory and monetary theory.[28] Following up the idea that a rise in general price level is due to a rise in total demand in relation to total supply.Further he divided total supply into supply of consumer goods and supply of capital goods , income to be spend and income to be saved. This study gave Wicksell deeper insight into the character of price movements. Briefly expressed, Wicksell's docterine: is if more money is lent to investors and used by them for real investments instead of saving then total purchasing power of people will increase and prices will rise.But if equilibrium is maintained between savings and investment,purchasing power is kept constant and prices cannot rise, at least not more than in proportion to any reduction in the available of commodities.

Monetarists believed in real theory of interest and a monetary theory of price level; just opposite to Keynesians belief.[29] As we have noted earlier in this chapter, Keynes pointed out that, when money supply is expanded the rate of interest falls and lower rate intrest is maintained even in long run period. But, logically it is clear and empirically it has

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28. See William p.Yohe "The Stockholm School Versus the Quantity Theory." International Economic papers 10(1960) pp 132-46.

29. See Dennis Geoffrey EJ. "Monetary Economics" .chap.VI pp 111-37 Published in the United States of America by Longman Inc, New York.

been varified that, increase in money supply per unit of output leads to rise in general price level and nominal income,which increases the demand for nominal quantity of money leading to rise in the rate of interest.[30] (M.Friedman (1969).Thus, it becomes evident that the rate of interest is real phenomenon and not monetary phenomenon.When general price level rise the price of almost every real commodity rises, it shows that it also changes a price of the some commodity which is the saving. The monetarists (Quantity Theory Approach) has even less of value to say on the question whether expansion in money supply will go into output or prices. Friedman pointed out that in the short - term which may last for some years, there may be some changes in output following monetary disturbance but in the long-term, the effect will be principally nominal rather than real. "The monetary authority controls nominal quantities the price level, the nominal level of national income the quantity of money by one or another definition, the rate of inflation or deflation,the growth rate or decline in nominal national income, the rate or quantity of money.It cannot use its control over nominal quantities to peg a real quantity - the real rate of interest, the rate of unemployment ,the level of real national income , the real quantity of money,[31] M. Friedman has pointed out in "Monetary

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30. See. Friedman M. (1969) The Optimum Quantity of Money, Macmillan. London.

31. See. Friedman M "The supply of Money and changes in prices output" in The Relationship of Prices to Economic Stability and Growth P.24

Framework" that Keynes assumed the price level to be given in his model of six equations in which there are seven unknowns, Keynes has explained the changes in price level through cost changes.[32] (cost push Inflation). However, money supply can affect employment, output ,interest rate saving and investment. But in the long run money supply variation are neutral and alter only the price level.[33] This is the main notion,about money and price relation believed by monetarists.

Some of the known followers of Keynes like K.K.Kurihara ,[34] Mrs Joan Robinson,[35] and other formulated, independently their Keynsian model of economics growth suited to their requirements related mainly to developing countries. For example Macro dynamic general equilibrium analysis of the capitalist economy requiring inevitable intervention by the Government in the market mechanism through fiscal policy for maintaining economic stability in advanced countries and acclerating economic development in

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32. See. Friedman M (1970a)'A theoretical framework for monetary analysis, Journal of political economy 78, March/April pp 193-200.

33. See.Crouch Robert.L. "Macroeconomics" pp 367-68. University of California.

34. See Kurihara.K.K. "The Keynerian Theory of Economic Growth."

35. See. "Mrs Robinson "Mr Dynamics", Economic Journal March 1949

developing countries,that was regarded as Keynesianism, reigned the world during and after the IInd world war period. The Keynesian policies, like cheap money policy, public borrowing at low rates of interest and deficit financing followed in developed as well as developing countries were doomed to failure and liable to generate inflation, because goverments needed continuous injection of money stock to the economy.[36] It generated a political bias toward deficit inflation and expanded Government expenditure which led to sluggish economic performance and a vicious circle to more deficit spending and economic controls endangering the existence of democracy[37] Obviously, these were in contrast the results promised by Keynesianism. On the contrary, Keynesianism aggravated the problems of inflation, unemployment and balance of payments difficulties in the global economy, in general and especially in developing countries in the post-war period. But Keynesians pointed out that these problems were not the results of Keynesian policies but resulted due to non-Keynesian policies followed in post-war period.[38] Even if we concede that Keynesian policies are

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36. Friedman M "The role of monetary policy", The American Economic Review, March 1986, Represented in The Optimum quantity of money, Macmillan, London.

37. Buchanan.J.M. and Wagner.R.E.Democracy in Deficit, Political Lagacy of Lord Keynes. Virginia. political Institue, Blacksburg virginia 1977.

38. Harroda.R.F."Encounter" 1964. and "Is the money supply important"? (1949) Westminster Bank Review, November, pp.3-7

not followed in the world to the desired extend, which gave rise to the above mentioned problems in the workd economy, in general and in developing countries in particular, for whcih Keynesianism cannot be made fully responsible, none can deny the fact that Keynesianism failed to solve the contemporary problems of the stageflation,[39] co-existance of stagnation and inflation found in existance since 1971 J.R.Hicks has analysed that main cause of unemployment and inflation is the shortages of primary commodities or deficiency in aggregate monetary demand rather than deficiency in aggregate monetary supply.[40] In developing countries, per capital real income is very much low and marginal propensity to save is too low due to high propensity to consume . Thus there is over consumption - low savings low income. Keynesian fiscal measures like public borrowing and deficit financing for financing the public work programmes,were meant for raising marginal propensity to consume and reducing marginal propensity to save during depression in developed countries, are ineffective in developing countries. As a matter

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39. Hicks.J.R, "Economic Perspective", Further Essays on money and growth clarendon. Oxford, 1977.p.86.

40. See. Hicks J.R.(1937)'Mr Keynes and classics'; A suggested Interpretation "Econometrica 5 (April): 147-59.

of fact such programmes facilitate the working of price multiplier rather than investment multiplier and therefore these programmes create demand for goods without a sufficient supply of the same resulting the scarcity of investible capital goods, industrial raw materials, skilled labour in developing countries.[41] This is how in the developing countries "The money income multiplier works fully,the real income multiplier works haltingly and in limited fashion.[42] However, owing to already stated limitations of Keynes; and Keynesianism in developing and developed countries and emergence of chronic inflation in the face of growing unemployment and stagnation in the world economy during the post-war period, there was revival of Monetarism which has been termed as "neo-monetarism" .The neo-monetarism emphasised the necessity of maintaining price stability by regulating the supply of money through monetary policy without unnecessary intervention in the market mechanism by the Government through fiscal policy. The revival of monetarism was

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41. Rao.V.KR.V. "Investment,Income, and multiplier in underdeveloped Economy," Indian Economic Review, Fel 1952.p.p.216-17.

42. Khusro .A.H "General and sectoral price Instability" working paper Institute of Economic growth Delhi.

advocated by neo-monetarists namely Don Patinkin,[43] P.Cagan,[44] F.Modigliani,[45] A.W.Angells, M.Friedman,[46] who tried to regain reputation of old quantity theory of money.neo-monetarists, accepted an indirect relationship between quantity of money and price level via changes in demand for money (different from Keyne's liquidity preference),investment, employment and national income, yet, they, did not recognize the key role of rate of interest in affecting the volume of capitalist investment and thereby, employment, output prices in the economy. Milton Friedman found that,in U.S.A. it was the rapid rate of growth in money supply and not in the state budget that gave rise to the problem of severe infaltion[47] Hence for maintaining a

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43. See. Patinkin.Don, money interest and prices, Harper and Row, New-york,1956

44. See Cagan.Phillip. 'The Deteminants and effect of changes in the stock of money 1875 to 1960, Chicago University press Chicago 1965, p.p 235-249

45. See.Ando.A.Modligliani F "The Relative stability of monetary velocity and Investment multiplier", The American Economic Review,Sept 1965.

46. See. Friedman,M "The quantity theory of money" studies in QTM Chicago 1956 pp 3-11

47. See Friedman.M.and Schwartz A.J.'Monetary History of the U.S.A. "National Bureau of Economic Research."

reasonable price stability, he suggested 3 to 5 per-cent per year growth in money supply, in step with growth in population and national income. Further, there is a substantial and growing body of evidence that agreed the view, that for every economy a necessary condition for economic and financial stability is that rate of expansion of money supply should be fairly limited"[48] D.E.W. Laidler[49] and G.R.Fisher[50] and D.K.Sheppard have already surveyed this evidence,"P.R.Brahmananada thinks that M.Friedman is not basically different from Keynesianism in kind but in degree and asserts,"If Keynesian policy instrument can do the trick, Friedmanian policy measures too will do the same,but perhaps more effectively and reliably, If Keynesianism gets rejected, Friedman too should be"[51]. Friedman suggested a steady expansion in money stock (3 to 5 per cent per year) for supporting investment in private sector for achieving price stability in economy. It is

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48. Duke.N.W.and Sheppard.D.K. "A proposal for the control of the U.K. Money supply". The Economic Journal,March 1978,pp 1-17

49. Laidler,D.E.W. "The Infulence of money on Economics Activity. A survey of some current problems" In monetary Theory and Monetary Policy in the 1970's Clayton Oxford university press. pp 75-135

50. Fisher.G.R. and Sheppard.DK. "Interrelationship between real and money variables some evidence from recent U.S.Empirical studies In issues in monetary Economics

51. Brhmananada.P.R. "The Falling Economy and How to Review."

true that theoretically neo-monetarism is more suitable than Keynesiansim during time of inflation, as inflation can be controlled relatively quickly by reducing the money stock than by reducing the demand for goods through fiscal policy. But, in practice, neo-monetarism failed to produce the expected effects on the economy because of lags inherent in the adoption of monetary policy and its effects on the economy,M. Friedman pointed out that the frequent descretionary changes in monetary policy produced 'destabilising effect[52]

However the basic problems in underdeveloped countries is neither the deficiency in aggregate monetary demand nor the deficiency in money stock but the deficiency in aggregate supply of real goods and services, aspecially investible goods and services, Hence monetary policy which may work well in developed countries badly fails in developing countries. Under the circumtances the governments of developing countries are left no other way out but to intervence in the market mechanism through fiscal policy in combination with monetary policy for initiating and accelerating the process of economic development in planned manner in developing countries.

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52. Friedman .M.'The lags and effects of Monetary policy" Journal of political Economy october 1961. pp 437-466.

III.2. Empirical Tests of causality between Money Stock (M 1 and M 3) and Wholesale Price Index (WPI) in India.

In this chapter our concentration is on investigating empirically causal link between above mentioned macroeconomic variables W.J.Granger and C.A.Sims tests are already explained and utilized in preceding chapter II.2 in order to investigate empirical causal link between money stock (M 1 and M 3)and money income (GNP). On similar line, in this chapter ,similar tests are to be utilized to investigate empirically causal link between money stock (M1 and M3)and wholesale price index (WPI). For this purpose , we have estimated,first,Granger's regression equations and then Sims regression equations are estimated. We report estimated equations

(Estimated equations in the context of Granger Test)

(I) M1t = f(3 past M1t WPIt and 3past WPIt)

M1t = f(M1t-1,M1t-2,M1t-3,WPIt,WPIt-1,WPIt- 2,WPIt-3)

M1t = f(44.47 + 0.135M1t-1 + 0.491M1t-2 + 0.125M1t-3 -1.68 WPIt

(0.322) (1.24) (5.91) (1.04) (-0.136)

+ 12.32 WPIt-1 + 13.19 WPIt-2 + 39.86 WPIt-3)

(1.09) (1.10) (3.19)

$R=0.921$

$R^2=0.850$

$\bar{R}=0.800$

D.W =1.67

(II)

M1t = f(3past M1t)

M1t = f(M1t-1 , M1t-2 , M1t-3)

M1t = f(291.17 + 0.299M1t-1 + 0.601M1t-2 + 0.555M1t-3)

(1.70) (2.31) (5.81) (0.465)

$R=0.818$

$R^2=0.669$

$\bar{R}=0.629$

D.W=1.22

(III) WPIt = f(M1t , 3pastM1t and 3past WPIt)

WPIt = f(M1t ,M1t-1,M1t-2,M1t-3,WPIt-1,WPIt-2,WPIt-3)

WPIt = f(1.66 - 0.52M1t - 0.530M1t-1 + 0.125M1t-2 + 0.577M1t-3

(0.688) (-0.136) (-0.267) (0.526) (3.023)

+ 0.344WPIt-1 , -0.196WPIt-2 + 0.217WPIt-3)

(1.81) (-0.919) (0.821)

$R=0.749$

$R^2=0.561$

$\bar{R}=0.415$

D.W=1.99

(IV)

WPIt = f (3past WPIt)

WPIt = f(WPIt-1, WPIt-2 , WPIt-3)

WPIt = f(4.61 + 0.572WPIt-1 - 0.206WPIt-2 + 0.949WPIt-3

(1.77) (2.85) (-0.920) (0.403)

$R=0.508$

$R^2=0.258$

$\bar{R}=0.169$

D.W=1.90

(V)

M3t = f (3past M3t , WPIt and 3past WPIt)

M3t = f (M3t-1,M3t-2,M3t-3,WPIt,WPIt-1,WPIt-2,WPIt-3)

M3t = f (122.28 + 0.415M3t-1 + 1.09M3t-2 - 0.363M3t-3 - 9.79WPIt

(0.899) (2.52) (4.59) (-1.08) (-0.824)

-32.02 WPIt-1+13.75 WPIt-2+41.68WPIt-3

(-2.64) (0.824) (3.53)

$R=0.990$

$R^2=0.980$

$\bar{R}=0.974$

D.W=2.24

(VI)

M3t = f(3past M3t)

M3t = f(M3t-1,M3t-2,M3t-3)

M3 = f(157.95 + 0.472M3t-1 + 0.998M3t-2 - 0.350M3t-3)

(0.908) (2.26) (3.19) (-1.07)

$R = 0.973$

$R^2 = 0.947$

$\bar{R} = 0.941$

D.W.= 1.76

(VII)

WPIt = f (M3t,3 past M3t and 3 past WPIt)

WPIt = f (M3t,M3t-1,M3t-2,M3t-3,WPIt-1,WPIt-2,WPIt-3)

WPIt = f (3.97 - 0.320M3t + 0.360M3t-1 - 0.322M3t-2

(1.69) (-0.824) (1.09) (0.53)

+0.818M3t-3+0.144WPIt-1-0.538WPIt-2+0.127WPIt-3)

(1.37) (0.577) (-1.90) (0.477)

$R = 0.755$

$R^2 = 0.571$

$\bar{R} = 0.428$

D.W. = 1.75

(VIII)

$$WPIt = f\ (\ 3past\ WPIt\ )$$

$$WPIt = f\ (WPIt-1, WPITt-2, WPIt-3\ )$$

$$WPIt = f\ (\ 4.61+0.572WPIt-1-0.206WPIt-2+0.949WPIt-3\ )$$

(1.77) (2.85) (-0.920) (0.403)

$R = 0.508$

$R^2 = 0.258$

$\bar{R} = 0.169$

D.W. = 1.90

(Estimated equation in context of Sims test)

(I)

M1t = f (WPIt,3 past WPIt and 3 Future WPIt)

M1t = f (WPIt,WPIt-1,WPIt-2,WPIt-3,WPIt+1,WPIt+2,WPIt+3)

M1t = f (-206-9.27WPIt+24.07WPIt-1+0.570WPIt-2

(1.94) (-1.13) (2.86) (0.695)

+40.59WPIt-3+50.70WPIt+1+9.14WPIt+2+30.60 WPIt+3)

(4.38) (6.50) (1.18) (4.04)

$R = 0.960$

$R^2 = 0.923$

$\bar{R} = 0.897$

D.W. = 2.03

(II)

M1t = f (WPIt,3past WPIt)

M1t = f (WPIt,WPIt-1,WPIt-2,WPIt-3)

M1t = f (279.41 + 23.73WPIt +14.07 WPIt-1+ 15.44WPIt-2

(1.31) (1.53) (0.786) (0.870)

+58.44WPIt-3)

(3.190)

$R = 0.736$

$R^2 = 0.542$

$\bar{R} = 0.466$

D.W. = 1.45

(III)

WPIt = f (M1t,3 past M1t and 3 Future M1t)

WPIt = f (M1t,M1t-1,M1t-2,M1t-3,M1t+1 ,

M1t+2 , M1t+3)

WPIt = f (1.84-0.183 M1t-0.216,M1t-1+ 0.219 M1t-2

(0.825) (-0.545) (-1.21) (0.950)

+ 0.464M1t-3 +0.105M1t+1 + 0.189M1t+2 +0.270M1t+3

(2.86) (0.582) (0.145) (1.98)

$R = 0.781$

$R^2 = 0.610$

$\bar{R} = 0.480$

D.W. = 2.21

(IV)

WPIt = f(M1t,3 past M1t)

WPIt = f(M1t,M1t-1,M1t-2,M1t-3)

WPIt = f(2.71+0.204M1t-0.166M1t-1+0.647M1t-2

(1.14) (0.777) (-0.887) (0.310)

+ 0.627M1t-3)

(3.98)

$R = 0.698$

$R^2 = 0.487$

$\bar{R} = 0.402$

D.W. = 1.66

(V)

M3t = f (WPIt,3pastWPIt and 3 Future WPIt)

M3t = f (WPIt,WPIt-1,WPIt-2,WPIt-3,WPIt+WPIt+2,WPIt+3)

M3t = f (-1032.08+23.41WPIt+63.58WPIt-1+ 43.09WPIt-2

(-3.20) (0.944) (2.48) (1.73)

+ 71.96WPIt-3+103.77WPIt+1+40.03WPIt+2 + 59.88WPIt+3)

(2.56) (4.38) (1.70) (2.60)

$R = 0.950$

$R^2 = 0.902$

$\bar{R} = 0.870$

D.W. = 0.352

(VI)

M3t = f (WPIt,3past WPIt)

M3t = f (WPIt,WPIt-1,WPIt-2,WPIt-3)

M3t = f (101.97+91.10WPIt+47.35WPIt-1+72.96WPIt-2

(0.196) (2.41) (1.08) (1.69)

+ 111.96WPIt-3)

(1.69)

$R = 0.792$

$R^2 = 0.628$

$\bar{R} = 0.566$

D.W. = 0.826

(VII)

WPIt = f (M3t,3 past M3t and 3Future M3t)

WPIt = f (M3t,M3t-1,M3t-2,M3t-3,M3t+1,M3t+2,M3t+3)

WPIt = f (3.13+0.353M3t+0.460M3t-1+0.231M3t-2

(1.92) (0.154) (1.88) (0.620)

- 0.512M3t-3-0.682M3t+1-0.305M3t+2+0.537M3t+3

(-0.125) (-3.29) (-1.44) (2.60)

$R = 0.896$

$R^2 = 0.756$

$\bar{R} = 0.675$

D.W. = 2.25

(VIII)

WPIt = f (M3t,3 past M3t)

WPIt = f (M3t,M3t-1,M3t-2,M3t-3)

WPIt = f (3.46-0.517M3t+0.652M3t-1+0.190M3t-2

(1.61) (-2.13) (2.35) (0.424)

+ 0.303M3t-3)

(0.750)

$R = 0.703$

$R^2 = 0.494$

$\bar{R} = 0.410$

D.W. = 1.85

TABLE:-III.1

Regression Result for Causality Tests Between Money and Prices in India

Granger Test

Equation NO	Sample Period	Dependent Variable	Independent veriables	ESS	RSS
1.	1956-57 to 1984-85	M1t	3 past M1tWPIt 3 Past WPIt	2879300	5079690
2.	1956-57 to 1984-85	M1t	3 Past M1t	22684000	1192000
3.	1956-57 to 1984-85	WPIt	M1t 3 past M1t 3 Past WPIt	3032.3	1585.2
4.	1956-57 to 1984-85	WPIt	3 Past WPIt	9344.4	2683.1
5.	1956-57 to 1984-85	M3t	3 Past M3t WPIt,3 Past WPIt	241560000	4747700
6.	1956-57 to 1984-85	M3t	3 Past M3t	233339000	129698500
7.	1956-57 to 1984-85	WPI	M3t 3past M3t, 3 Past WPIt	2066.5	1551
8.	1956-57 to 1984-85	WPIt	3 Past WPIt	934.4	2683.1

Table III.2

Sims Test

Equation No.	Sample Period	Dependent variable	Independent Variables	ESS	RSS
1.	1956-57 to 1984-85	M1t	WPIt,3 Past WPIt , 3 Future WPIt	31269800	2606150
2.	1956-57 to 1984-85	M1t	WPIt,3 Past WPIt	18393800	15482200
3.	1956-57 to 1984-85	WPIt	M1t,3 Past M1t 3 Future M1t	2207.5	1409.9
4.	1956-57 to 1984-85	WPIt	M1t, 3 Past M1t	1763.5	1854
5.	1956-57 to 1984-85	M3t	WPIt,3 Past WPIt, 3 Future WPIt	222319000	23988100
6.	1956-57 to 1984-85	M3t	WPIt,3 Past WPIt	154873000	91434300
7.	1956-57 to 1984-85	WPIt	M3t,3 Past M3t 3 Future M3t	2737.8	879.7
8.	1956-57 to 1984-85	WPIt	M3t,3 Past M3t	1789.6	1827.9

Table No III.3

F Statistics for Causality Test

Granger Test

M1t and WPIt (1956-57 To 1984-85)

Table No	Equation No	F.Value	Degrees of Freedom (Numerator , Denominator)		Result
III.1	1 and 2	8.02	3	20	WPIt causes M1t
III.1	3 and 4	4.61	3	20	WPIt is caused by M1t
III.1	5 and 6	11.54	3	20	WPIt is siginifncant in causing M3t
III.1	7 and 8	4.86	3	20	M3t causes WPIt

Sims Test

III.2	1 and 2	24.7	4	20	M1t causes WPIt
III.2	3 and 4	1.57	4	20	WPIt IS not significant in causing M1t
III.2	5 and 6	18.74	3	20	M3t causes WPIt
III.2	7 and 8	7.18	3	20	WPIt causes M3t

AS already indicated,our objective has been to test the direction of causality between Aggregate money Stock (both M1 and M3) and prices. Our empirical work indicates the existence of bidirectional causality between money stock and prices. More specifically, using criteria following C.W.J.Granger, the results unambiguously point towards two way causation between money and prices. On the basis of Sims test also, we find that both money Stock and prices are found statistically significant in causing each other except in one case, where wholesale price

index has been found insignificant in causing variations in M1.T he causal role of money could easily be traced to tne imbalances in the money market with excess money balances spilled over into the commodity market causing positive excess demand in that market; without output capacity being low,this could cause increase in prices. However , our results indicate that the process does not stop there. The rise in prices could inflate investment in the public as well as private sector which would result in higher demand for bank credit and money supply thereafter. There is one more mechanism which could also be used to justify and rationalise our results of bidirectional causality between money and prices .This could be attributed to the link between money,deficits and prices; It is no gain saying the fact that Government's expendititure commitments in nominal as well as real terms far exceed its revenue receipts; this is partly due to the fact that government, revenues are collected with a lag of one or two years and also that income elasticity of tax revenues is also low. This only means that with higher and higher prices,the gap between expenditure and revenues widens and when this gap is matched by corresponding central bank credit, money supply increases further . Hence, on this count also,feedback from money to prices and Vice Versa could easily be established.

Milton Friedman, the leading exponent of the modern QTM who has said that "Inflation is always and everywhere a monetary phenomenon ---- and can be produced only by more rapid increase in the quantity of money than in output Though it is true,it is

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53. See, Friedman M.The Counter Revolution in Monetary Theory .London IFA Occasional Paper .NO. 3 P.24

not the only reason for rising prices in India.There are also other causes which are responsible for rapid rise in prices in our country . These causes are related with 'structural theory of inflation' [54] It is found in work of Mydral and Streeten [55] .The socio-economic-political structure of our country determines the source and character of inflation by determining the particular kind of sectoral demand-supply gaps or bottlenecks that emerge in the process of devlopment.The gaps or bottlenecks in our country are:

(1) Resources Gap

(2) Food Bottlenecks

(3) Foreign Exchange Bottlenecks

(4) Infrastructural (Physical) Bottlenecks and.

(5) Other Structural Factors, like unproductive private investment,lack of spirit of enterprise,adventure and innovation.

Over and above inflation in our country is caused by an increase in supply of money. Rise in stock of money work on price level is supported by our empirical findings. However, in India, increased money supply leads to increase in aggregate demand. Higher the growth rate of nominal money supply, the higher is the growth rate in price level. Similarly, as mentioned earlier, increase in public-expenditure,Government activities have been expanding much with the result that government expenditure

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54. Mydral G.1968 Asian Drama;An inquirey in to poverty of Nations 1968, Harmondaworth, Penguin Books.

55. Streeten P. 1972. The Frontiers of Development studies. London : Macmillan.

has also been increasing at a phenomenal rate, thereby, raising aggregate demand for goods and services. Government of India and various state governments are providing more facilities under public utilities and social services. With the result that they help in raising aggregate demand. The expansion of private sector also tends to raise the aggregate demand. For huge investments increase employment and income, thereby creating more demand for goods and services. But it takes time for the output to enter the market. In India existence of black money is also responsible to raise the price level further. Whenever the government repays its past internal debt to the public, it leads to increase in the money supply with the public. This tends to raise aggregate demand for goods and services and in turn raises the price level further. Thus, rise in money supply leads to increase in aggregate demand and this in turn raises price level in India.

There are also certain factors which operate on the opposite side and tend to reduce aggregate supply. For example shortage of capital,rawmaterials,drought,flood,artificial scarcities of goods created by hoarder etc.

Our empirical results keeps no doubt in our minds that, whatever may be cause of rise in stock of money in India, it definitly leads to rise in price level. And rise in price level in turn raise the money supply. Therefore suitable monetary policy and fiscal policy are indespensible to create stability in price level and in economy as whole. Because, economic policy, whether fiscal,monetary or combination of the two, has traditionally aimed at high employment, stable prices and rapid growth. There is widespread agreement on the virtue of these goals,but less on the degree to which one should be sacrificed to achieve another,

and even less on the question of which policy instruments are best suited to achieve which results in India.

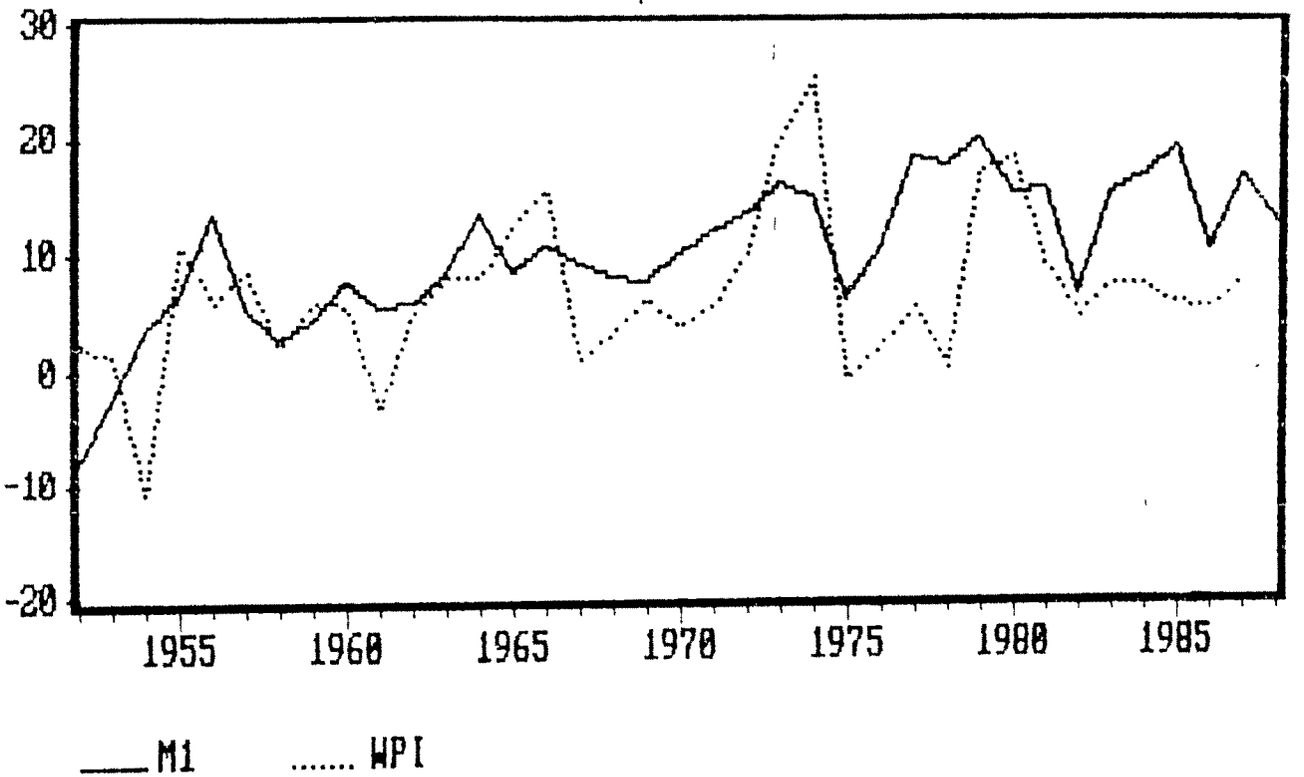
Our empirical investigation through Granger test and Sims test indicate that price act on money stock , in other words there is bidirectionl causality exist between GNP and WPI in India. When the rise in prices is taking place the momey stock is also usually increasing . As a matter of fact , increase in momey stock (M 1 and M 3) without any increase in the volume of transaction would raise prices, given the velocity of circulation-. But however as a result of persistance price rise for some time, the rate of rising prices is likely to be accelerated due to the increasa profitability of hoarding goods. As a result of rising rate of prices in India , a situation of uncontrolable price rise has emerged. In this situation in long run people lose faith in the use of money as a store wealth and this as happened to people in India . Therefore there is general shift from money and near money assets into the real durable goods. Obviously this shift indicate that there is general decline in the liquidity preference of people and a general rise in the velocity of circulation of money . Therefore in India not only the rise in money supply but also the rise in velocity is associated in accelerating the rate of rising prices .Due to this reason worst inflationary situation come in to existance in India . Under the circumstances mainly due to decline in the liquidilty preference of people and rise in the velocity, the money supply in India goes on rising . Similarly , under worst inflationary situation wage earners and others demands greater amount of cash to maintain there real consumption or real purchases. Therefore , central bank is bound

to provide much needed liquidity to system. This shows rising price level also causes the nominal policy variable like money stock (M 1 and M 3) to rise in India . Therefore in order to obtain economic stability the Government has to concentrate in control of money supply as well as price level . No doubt that control of money supply is necessary to have economic stability but at the same time it is not sufficient policy instrument. Therefore to formulate comprehensive economic policy one must concentrate on controlling stock of money as well as general price level, simultaneously. Thus our study, reflect that there is a bidirectional causal relationship between money stock (M1,M3) and wholesale price index, which demand wider and comprehensive package of economic policy to ensure economic stability in India.

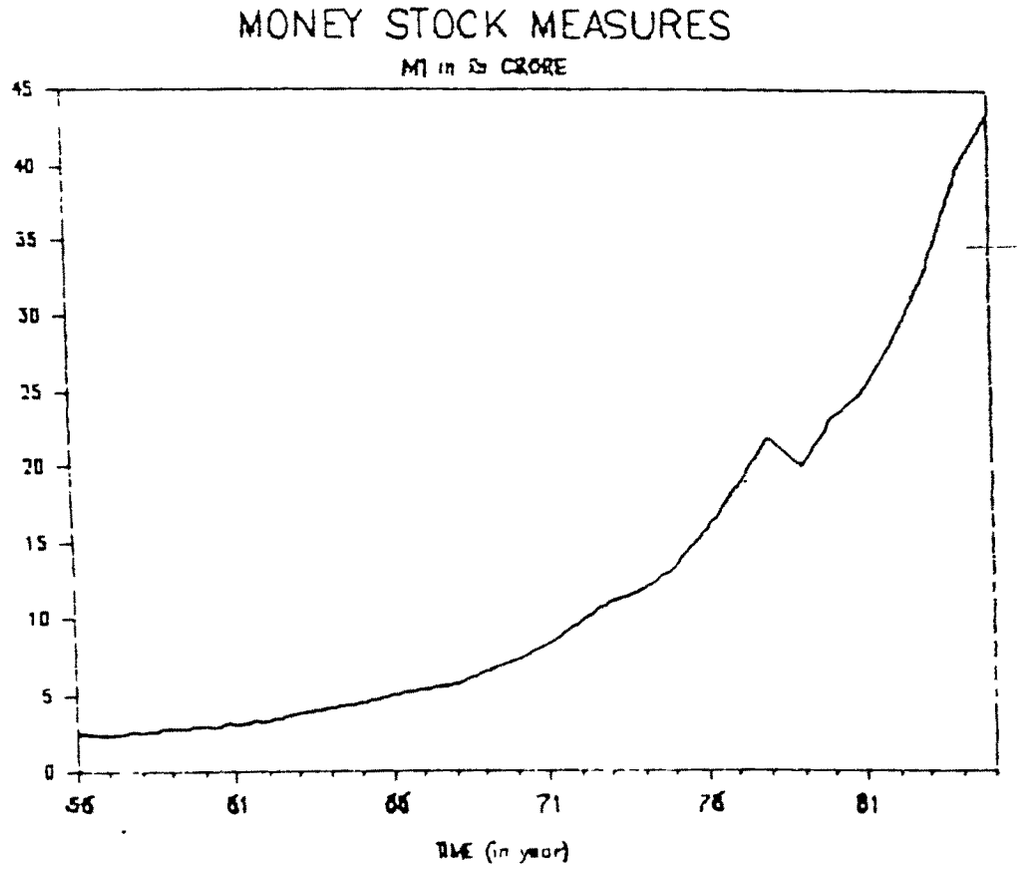
The graphs III.1 to III.6 depict the growth rates of money supply (M1 & M3) and wholesale price index (WPI). The positive relationship between M1,M3 and WPI is very well demonstrated in these graphs.

Graph no : III. 1

% Growth Rate of M_1 and WPI (1952-1985)



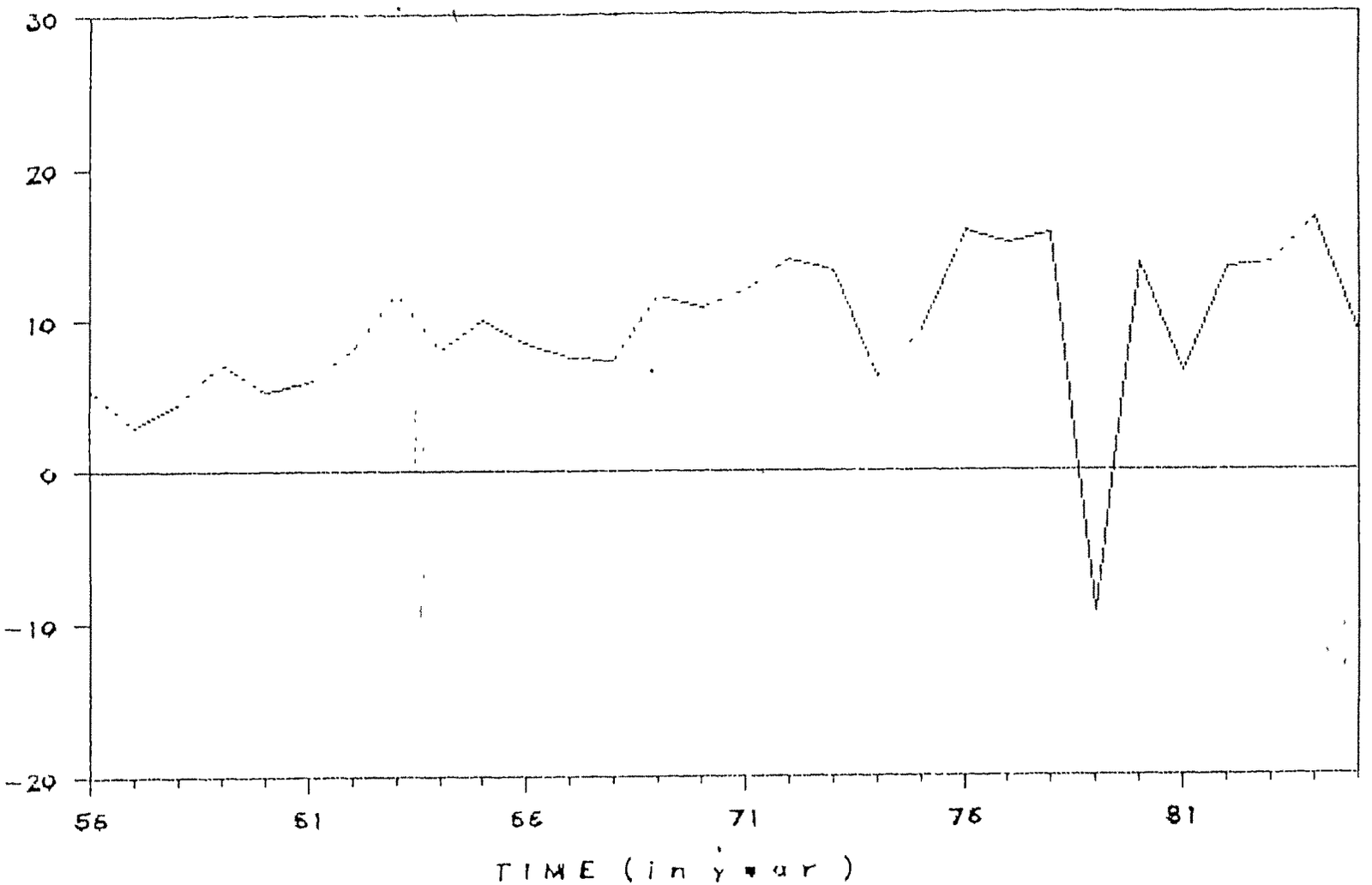
Graph no : III.2



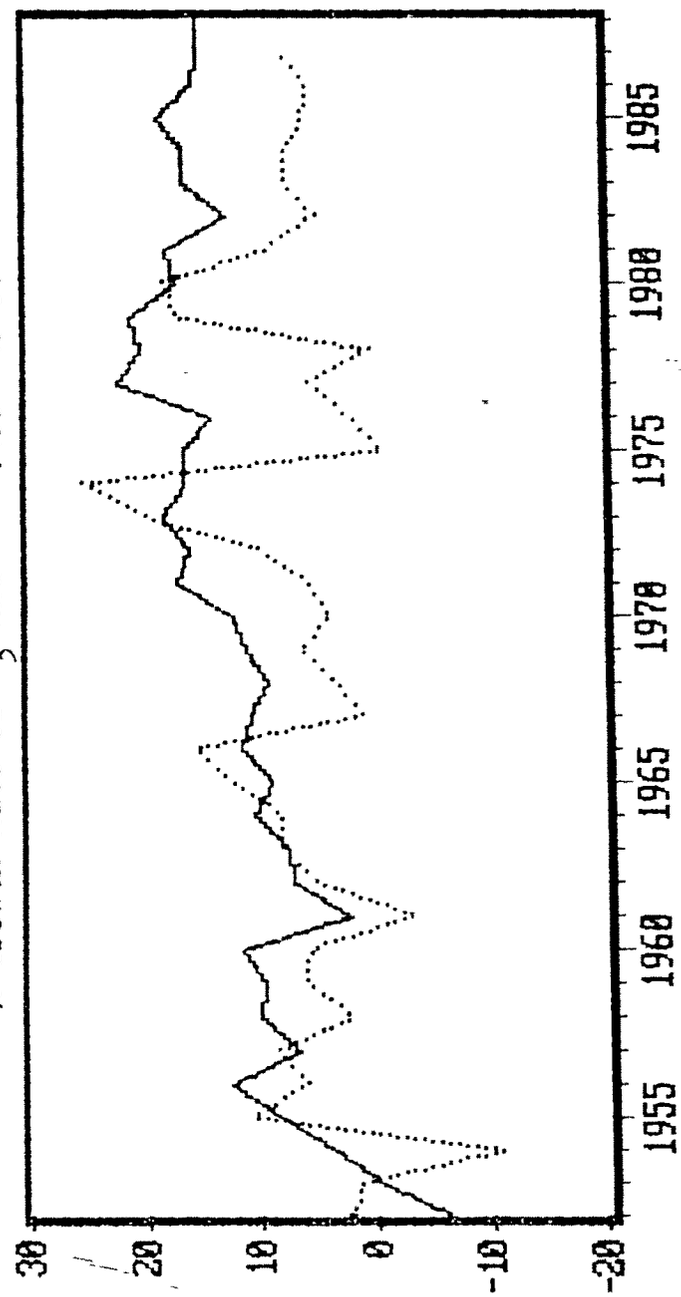
GRAPH NO : III·3

% GROWTH RATE OF M1

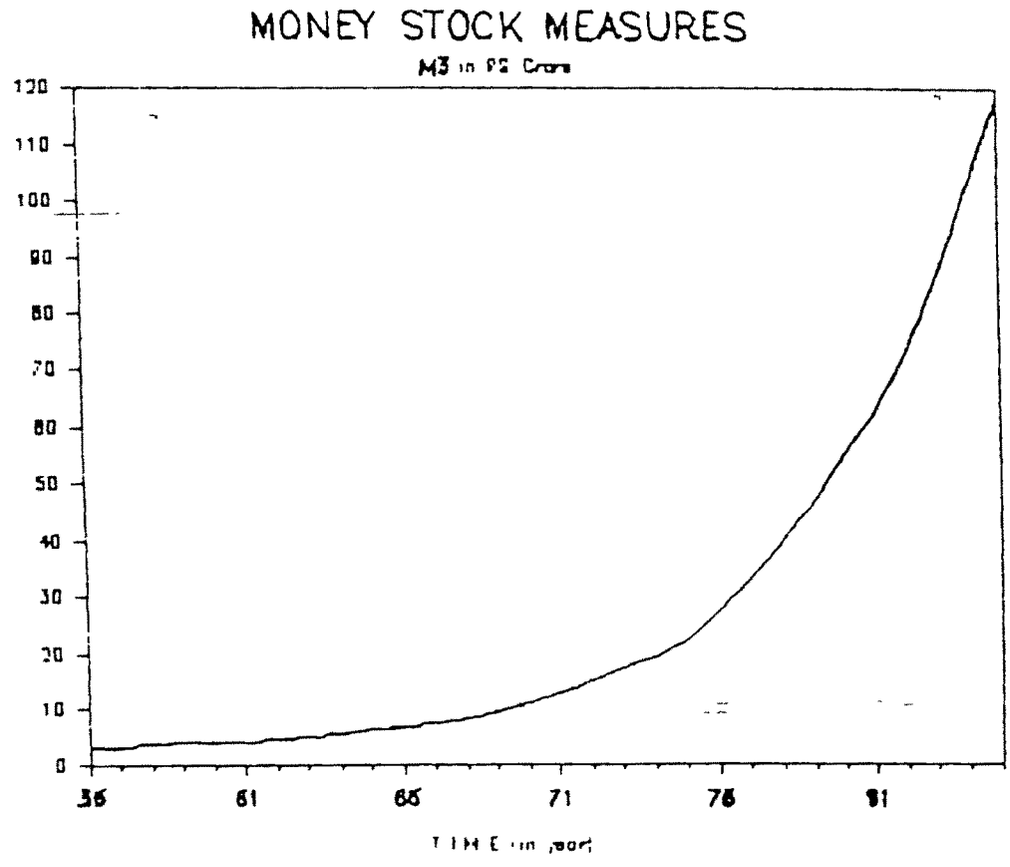
1956-85



Graph no : III.4



Graph no : III·5



Graph no : III. 6