

The Post Keynesian Theory of Endogenous Money Supply as a Development of Keynes's Monetary Thought

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The Post Keynesian Theory of Endogenous Money Supply as a Development of Keynes's Monetary Thought

Yoshio Watanabe

1. Introduction

It is quite strange that the basis of Keynesian revolution in economic theory has not been placed in Keynes's monetary analysis. Neither Neoclassical scholars and Monetarists nor New Keynesians and some of Post Keynesians have suggested that Keynes's monetary analysis was the revolutionary element in *The General Theory* (hereafter referred to as GT). In fact, assessments by most Monetarists have suggested that Keynes minimized the importance of monetary mechanism and the role of monetary policy. Thus, Monetarists have chosen as their motto "Money Matters" to distinguish their version of monetary theory from that of Keynes's. As Leijonhufvud showers abuse upon Keynes, he does not accept Keynes's liquidity preference theory of interest rate because he believes the liquidity preference to be "theoretically unsound, empirically false, and practically dangerous" (Leijonhufvud [20] p. 195.) as the theory of interest rate.

Though in the different context, the Horizontalist Post Keynesians like Kaldor and Moore have accused Keynes of assuming the vertical money supply curve which was determined exogenously through the action of central banks in GT. According to Kaldor, "unfortunately, the way he [Keynes] presented this solution was a *modification* of the quantity theory of money, not its *abandonment*" (Kaldor [11] p. 21.). As a matter of fact, Keynes did consider that the essentials of his monetary theory revolved around the concept of liquidity preference, but the proponents of Horizontalist Post Keynesianism see their theory of endogenous money supply as an inside criticism against Keynes's liquidity preference theory in any sense.

Such conclusions are not quite agreeable when we consider the history of the developments in Keynes's monetary thought. In his *A Tract on Monetary Reform* (hereafter referred to as TMR), Keynes insisted that the quantity theory of money is "fundamental...[and] not open to question. Nevertheless, it is often *misstated* and *misrepresented*" (Keynes [12] p. 30. italic added). Here Keynes argued that the demand functions for goods and money were not entirely independent of the supply of money. It will be argued that, in certain

circumstances, changes in spending propensities should induce changes in the money supply, i.e., the money supply could be endogenous. Starting from this critical assessments of the quantity theory of money on the basis of the early and simple thought of the monetary endogeneity, Keynes went on to develop a monetary framework for the operation of the capitalist economy in his *A Treatise on Money* (hereafter referred to as TM), and ultimately to build the theory of monetary production economy in GT and a number of papers published after GT. The titles of his all major academic books in economics indicate that the nature and role of money in the capitalist economy were always a primary focus of his analytical attention.

Keynes's views on the endogenous money supply developed in TM, however, sets up a kind of tension with those of his arguments of the liquidity preference theory in GT. Keynes did not clearly show what about the money supply was in GT and he treated the money supply as given to a great extent or exogenous to some extent. In the debates after the publication of GT, Keynes introduced the novel and fourth motive to hold money, i.e. the finance motive, into his liquidity preference framework. Since Keynes felt that the finance motive was the coping-stone of his liquidity preference theory, it would be valuable to consider how both the specification of the demand for active money and its implications on the endogeneity of money supply were able to incorporate properly into the liquidity preference framework. It will be apparent from the following arguments on his finance motive that Keynes considered the concepts of the endogenous money supply as compatible with his liquidity preference theory even in GT.

We will explore a question how did Keynes treat the supply of money in his major works on monetary theory in the next section. We should pay our attention to Keynes's finance motive analysis and its implications on the endogeneity of money supply in some detail. The section 3 will be devoted to examine the Horizontalist's charges against the liquidity preference theory in relation to the assumption of the exogenous money supply. Such Horizontalist interpretation that Keynes believed the money supply to be exogenous led to the conflicts within the Post Keynesian circles. These conflicts would be generated from a misunderstanding of Keynes's treatment of money supply in GT. In the section 4, we will search for the way of reconciliation of the conflicting views in order to make the theory of endogenous money supply and the liquidity preference theory compatible.

2. Keynes on the Endogeneity of the Money Supply

2-1. Keynes's Treatment of the Money Supply in His Trilogy

According to Patinkin, "there are many who see Keynes' trilogy as The Saga of Man's Struggle for Freedom from the Quantity Theory — and I think there can be little doubt that Keynes himself so saw it" (Patinkin [24] p. 18). His interpretation of Keynes was that TMR was a simple expository work of the

quantity theory. It was familiar to us that Keynes used the traditional cash balance equation in the following form;

$$n = p(k + rk') \quad (1)$$

where n is the quantity of cash, p is the price of consumption unit (the index number of the cost of living), k and k' denote respectively a currency ratio and deposit ratio held by the public, r is the cash-reserve ratio held by banks. Therefore, the right hand side of the equation (1) denotes the amount of cash demanded by the non-bank public sector and the banking sector.

Here we should attract our attention that Keynes expressed his doubts towards the view of the quantity theory in which n was treated as an *independent* variable. He argued that “a *mere* change in the quantity of the currency cannot affect k , r , and k' — that is to say, in mathematical parlance, that n is an *independent variable* in relation to these quantities...in actual experience, change of n is liable to have a reaction both on k and k' and on r ” in the short run¹ (Keynes [12] p. 65). As Keynes observed, it was “the error often made by careless adherents of the quantity theory” that n , i.e., the supply of high-powered money was treated as an exogenous variable to be independent of the demand for it (Keynes [12] p. 64).

Keynes's criticism of the Monetarist interpretation of the quantity theory of money was that it relied on assumptions as to what variables were to be taken as independent so as to provide a unidirectional causal relationship running from money to prices. If this equation would read from the right hand side to the left, it would be a valid equation which shows the equality between the supply and the demand for high-powered money. Therefore, roughly speaking, the money supply is determined by the public's demand for money, and is a function of their money incomes and habitual characteristics. It will be valuable to note that Keynes recognized the endogeneity of the money supply as early as in his 1923 version.

In his intellectual adventure to escape from the confusions of the quantity theory, TM can be situated midway between TMR and GT. As was most often quoted, Keynes's fundamental challenge to the quantity theory was;

[The quantity theory of money] do not have the advantage of separating out those factors through which, in a modern economic system, the causal process actually operates during a period of change...The real task of such a [monetary] theory is to treat the problem dynamically, analyzing the different elements involved, in such a manner as to exhibit the causal process by which the price level is determined, and the method of transition from one position of equilibrium to another (Keynes [13] p. 120).

¹ Then Keynes continued: “Now in the long run this is probably true.... But this *long run* is a misleading guide to current affairs. *In the long run* we are all dead. Economists set themselves too easy, too useless a task if in tempestuous seasons they can only tell us that the storm is long past the ocean is flat again.” (Keynes [12], p. 65).

The main theoretical analysis developed in TM was his famous fundamental equations which were designed “to discover the dynamical laws governing the passage of a monetary system from one position of equilibrium to another” (Keynes [13] p. xvii). We should concentrate our attention upon how did he treat the money supply in his 1930 version.

To begin with emphasizing that “Money of account is the primary concept of a theory of money” (Keynes [13] p. 3), Keynes classified money into money proper (state money) and bank money. And then he proceeded on arguments for simplification *as if* all money were bank money, which was created through the lending activities by banks. The demand for bank lending would arise from the entrepreneurs’ working capital needs to finance the wage bills and the purchases of raw materials and inventories. For instance, an increase in the volume of employment would usually require a more or less proportionate increase in the volume of working capital. As Keynes observed;

It is assumed that the banks create just enough additional money for the industrial circulation, after allowing for any fluctuations in the amount of the financial circulation, to allow the absorption of the unemployed factors of production into employment at a steady rate, so that the last unemployed factors will just have been brought into employment when one production period has passed by. This amounts to the banks’ supplying the entrepreneurs with whatever they require, over and above their profits, to pay wages on the gradually increasing scale which is assumed and to increase their business deposits A (Keynes [13] p. 275, italic added).

As long as the money for the industrial circulation (income deposit and business deposit A) is concerned, Keynes’s recognition that the money supply is endogenously determined by the demand for bank credit is perhaps brought out clearly from the above sentences².

These views on the endogenous money supply developed in TM, however, sets up a kind of tension with those of Keynes’s arguments of the liquidity preference theory in GT. It is true that Keynes treated the money supply to be given to a great extent or exogenous to some extent in GT³, since he defined the quan-

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- 2 Keynes also mentioned that “credit is the pavement along which production travels, and the bankers if they knew their duty, would provide the transport facilities to just the extent that is required in order that the productive powers of community can be employed at their full capacity” (Keynes [14], p. 200).
 - 3 There are several passages to indicate that he treated the money supply to be given or exogenous in GT as follows. “It is the ‘price’ which equilibrates the desire to hold wealth in the form of cash with the available quantity of cash” (p. 167.). “For the amount of hoarding must be equal to the quantity of money...and the quantity of money is not determined by the public” (p. 174.). “Corresponding to the quantity of money created by the monetary authority, there will, therefore, be *cet. par.* a determinate rate of interest” (p. 205.). “In the case of money, however — postponing, for the moment, our consideration of the effects of reducing the wage-unit or of a deliberate increase in its supply by the mone-

tity of money as the one of “ultimate independent variables” (Keynes [15], pp. 246-7). As we will examine later the issue in Section 3, so called Horizontalist Post Keynesians who are the radical proponents of the endogeneity of money supply have charged Keynes with assuming the money supply to be exogenously determined by the central banks. They insist that Keynes’s escape from the confusions of the quantity theory was insufficient, mainly because his liquidity preference theory of interest rate would contribute to the revival of modern Monetarism as long as he continued to take the assumption that the money supply was exogenously determined through the policy action of the central banks. The Horizontalist’s view of Keynes’s given money supply assumption in GT is that it was a retrogression from conceptualizing on the endogenous money in TM.

However, Keynes firmly believed that “money enters into the economic scheme in an essential and peculiar manner” (Keynes [15] p. xxii) and he chose to express such an important role of money in capitalist economies in terms of the theory of liquidity preference. The essentials of his monetary theory revolve around the concept of liquidity preference. As “technical monetary detail” (Keynes [15], p. xxii) was not made clear in the 1936 version, this has caused to give rise misunderstanding of Keynes’s simplified monetary analysis. It is apparent that his treatment of money supply is contained in this “technical monetary detail”. We will discuss on this issue in Section 4 in some detail.

2-2. The Finance Motive Analysis and the Endogeneity of Money Supply⁴

In the debates after the publication of GT, some critics quickly spotted the error of Keynes’s simplified treatment of the transaction demand for money. In reply to criticism, he introduces the novel and fourth motive to hold money, i.e. the finance motive into his liquidity preference framework. Except for Davidson [5], Keynes’s finance motive is a much neglected part of his monetary theory.

According to Keynes, the finance is defined as “the credit required in the interval between planning and execution” (Keynes [18], p. 216, n. 1). The essence of the finance motive was expressed clearly in the following passages;

It follows that, if the liquidity preferences of the public (as distinct from the entrepreneurial investors) and of the banks are unchanged, an excess in

tary authority — the supply is fixed” (p. 230.). “Thus we can sometimes regard our ultimate independent variables as consisting of... (3) the quantity of money as determined by the action of the central bank” (p. 247.). “A change of the quantity of money, on the other hand, is already within the power of most governments by open- market policy or analogous measures” (pp. 267-8.).

⁴ A full detail of the arguments on finance motive analysis is given in Watanabe [27] pp. 48-56. The pioneering work on Keynes’s finance motive was developed by Davidson [5] which was reproduced in his [6] and [7].

the finance required by current ex-ante output (it is not necessary to write "investment", since the same is true of *any* output has to be planned ahead) over the finance released by current ex-post output will lead to a rise in the rate of interest; and a decrease will lead to a fall. I should not have previously overlooked this point, since it is the coping-stone of the liquidity theory of the rate of interest. I allowed, it is true, for the effect of an increase in *actual* activity on the demand for money. But I did not allow for the effect on an increase in *planned* activity, which is superimposed on the former...Just as an increase in actual activity must (as I have always explained) raise the rate of interest unless either the banks or the rest of the public become more willing to release cash, so (as I now add) an increase in planned activity must have similar, superimposed influence (Keynes [18], p. 220).

Since Keynes felt that the finance motive was the coping-stone of his liquidity preference theory, it would be valuable to consider how both the specification of the demand for active money and its implications on the endogeneity of money supply were able to incorporate properly in the liquidity preference framework⁵.

The finance demand for active money which is "due to the time-lag between inception and execution of the entrepreneur's decisions" (Keynes [19], p. 230) is related to the *planned* activity. It is contrasted with the transaction demand for active money which is related to the *actual* activity. For the simplicity of an explanation, it is assumed that the transaction demand for active money (L_T) consists of the usual transaction demand plus the finance demand for a *constant* revolving fund which finances the previous level of expenditures. The transaction demand for active money is specified as a stable function of the current income or output (Y).

$$L_T = kY \quad (2)$$

On the other hand, the finance demand for active money (L_F) is specified as the function of planned expenditures (E) which consist of the expected or discretionary expenditures to investment and consumption goods ($E = C + I$). The investment expenditure may be volatile due to the business expectations which will be formed in the face of uncertainty. If decisions to invest are unchanged, then the investment finance required can be supplied from a more or less constant pool of the revolving fund. But, if decisions to invest are increasing, the *extra* financial provision involved will be required in excess of the revolving fund. Thus the finance demand will constitute an *additional* demand for active money. The finance demand for active money can be connected to the excess amount of expected expenditure over the actual output ($[E - Y]$).

⁵ In his defense of liquidity preference, Keynes argued "my analysis is not based...on the assumption that the quantity of money is constant" (Keynes [19], p. 232).

Therefore, the finance demand for active money can be depicted as

$$L_F = b([E - Y]) \quad (3)$$

where b denotes a constant parameter.

For simplicity, if we can assume that the precautionary and speculative demand for money are given, then the total demand for money (L) can be represented as follows;

$$L = L_T(Y) + L_F([E - Y]) + L_{P,S}(r) = M_0 \quad (4)$$

where $L_{P,S}$ represents the composite of precautionary and speculative demand for money, r and M_0 denote the rate of interest and the given quantity of money.

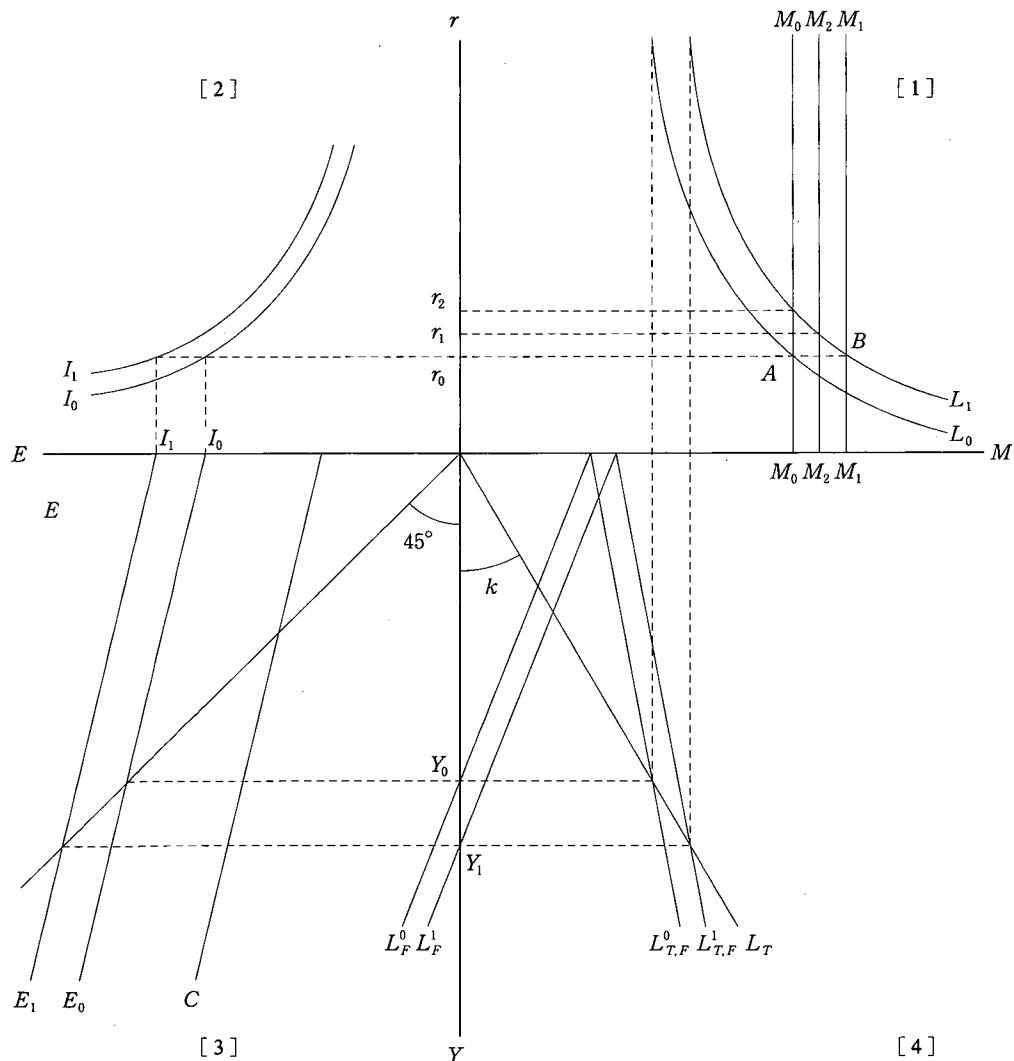


Figure 1

It is assumed here that the psychological and conventional factors due to uncertainty are given.

It will be helpful to make a graphical explanation of the relationship between the finance motive and the endogeneity of money supply. In the quadrant [1] of Figure 1, it is assumed that the equilibrium level of the interest rate is initially determined at r_0 where the total demand for money (L_0) is equal to the given money supply (M_0). In the quadrant [2] of Figure 1, I_0 represents the planned expenditure to the investment goods which will be undertaken by business firms at the initial level of the interest rate. If it is assumed that the consumption function (C) is given, the planned expenditure (E_0) is the sum of given consumption expenditure plus investment expenditure in the quadrant [3]. Thus, the short-period equilibrium output (Y_0) will be determined at the level in correspondence to the intersection of E_0 curve and the 45-degree line. In the quadrant [4], L_T is the schedule of the usual transaction demand plus the finance demand for the *constant* revolving fund. On the other hand, L_F^0 is the schedule of the finance demand for the *extra* revolving fund which is derived from needs to finance the excess amount of expected expenditure over the actual output ($E - Y$). Thus, $L_{T,F}^0$ represents the combined schedule of the transaction demand for money with the total finance demand for money. As shown in the quadrant [4], this total demand for active money schedule differs from the usual transaction demand schedule in not emanating from the origin. At the short period equilibrium level of output, aggregate planned expenditure is equal to output and the finance demand for money is met by the constant revolving fund.

Let us suppose that entrepreneurs would happen to be face of an improvement of the long-term profit expectations due to any exogenous reasons. With the interest rate unchanged at r_0 , this increase in long-term expectations would shift the planned investment schedule form I_0 to I_1 in the quadrant [2], and then it shift the aggregate expenditure schedule leftwards form E_0 to E_1 in the quadrant [3]. This would bring about increases in the finance demand for active money and shift the finance demand schedule rightwards from L_F^0 to L_F^1 in the quadrant [4]. This additional demand for finance can not be met by the previous pools of revolving fund and it will have to finance by the additional sources of revolving fund. Since the shift of the finance demand schedule would be *superimposed* on its former schedule, the total demand for active money schedule which is the combined schedule of the transaction demand for money with the finance demand for money would shift rightwards from $L_{T,F}^0$ to $L_{T,F}^1$ in the quadrant [4]. This rightward shift in the total demand for active money schedule would lead to shift the total money demand schedule from L_0 to L_1 in the quadrant [1]. If the given quantity of money supply was kept unchanged, then the increase in the liquidity preference would raise the level of interest rate from r_0 to r_2 .

Whenever entrepreneurs expect demand to increase due to an improvement of the long-term expectations, they will have a profit incentive to increase

borrowing from the banking system. If the banking system is flexible to meet the additional demand for credit due to the finance motive, then the banking system will increase the supply of credit in response to the increase of credit demand. Therefore, the supply of bank money will expand endogenously with the demand for it and the interest rate will remain unchanged in case of M_1 in the quadrant [1]. On the other hand, if the banking system is unwilling to increase the full amount of credit demand, such as the case of M_2 in the quadrant [1], then the rate of interest will be forced to rise to r_1 due to the superimposed effect of the finance motive on the liquidity preference schedule. In any way, the rate of interest will be determined by the interactions between the forces which affect the demand for money and the forces which affect the money supply process. As Keynes observed;

one could regard the rate of interest as being determined by the interplay of the terms on which the public desires to become more or less liquid and those on which the banking system is ready to become more or less unliquid. This is, I think, an illuminating way of expressing the liquidity theory of the rate of interest; but particularly so within the field of 'finance' (Keynes [18], p.219).

It will be apparent from the above arguments on his finance motive that Keynes considered the endogeneity of money supply as compatible with his liquidity preference theory in GT. When he concluded that "the banks hold the key position in the transition from a lower to higher scale of activity", Keynes put an emphasis on the essential liquidity preference of banks as well as that of the public. "If the liquidity preference of the public (as distinct from the entrepreneurial investors) and of the banks are unchanged" (Keynes [18], p. 220), the increase in the demand for money due to the finance motive would lead to raise the rate of interest. He did not see the banks as, in general, accommodating all of changes in the demand for money. Therefore, as long as the supply of money is independent of the demand for money in some degree, then the liquidity preference theory essentially remains unchanged. The inclusion of endogenous money supply in the liquidity preference theory may not injure his main emphasis on the non-neutrality of money in both the short run and the long run.

3. The Horizontalist's Charges against the Liquidity Preference Theory

According to the Horizontalist Post Keynesians like Kaldor, Moore and others, Keynes's escape from the confusions of the quantity theory was unfortunately incomplete because the liquidity preference theory connected with the assumption of the exogenous money supply placed an obstacle to progress a monetary theory. Kaldor was the first to open a charge against the liquidity preference theory from a point of view on the monetary endogeneity. He

insisted as follows;

Now Keynes's intellectual development, spread over several decades, consisted of a long struggle to escape from this [quantity] theory; he succeeded in doing so in stages — which meant that he never abandoned it altogether. ... This left the rate of interest 'in the air', ...until he thought of the idea of liquidity preference...which provided the mechanism through which monetary variables accommodate themselves to the 'real factors', the underlying relationships which generate the equilibrium level of effective demand. Unfortunately, the way he presented this solution was a *modification* of the quantity theory of money, not its *abandonment*. This implies that *all* the adjustments of monetary to real factors are through changes in the velocity of circulation — since the quantity of money is still shown as an independent variable, determined by the monetary authority (Kaldor [11], pp. 20-21).

What he meant by the solution was, needless to say, Keynes's theory of interest rate determination via liquidity preference mechanism. Kaldor made a judgment that the liquidity preference theory developed under the assumption of the exogenous money supply was in a sense responsible for the revival of the New Monetarism in the 1970s. Keynes considerably succeeded in escaping from the habitual mode of the quantity theoretic thought, but he failed to do so because of assuming the exogeneity of the money supply. Keynes did not fully understand the implications and differences between commodity money and credit money systems. It would be legitimate to assume the stock of money endogenous in credit money economy. It is well known that Kaldor proposed to replace the vertical money supply curve with the horizontal curve in the interest rate-money space. If we treated the stock of credit money as the demand-determined and fully endogenous variable, then the rate of interest should be considered to be an exogenous variable set by the policy action of central banks. Thus Kaldor placed great emphasis on the exogeneity of the interest rate and the lender of last resort function executed by the central banks as well as the endogeneity of the money supply. As Kaldor observed;

in fact, the Bank cannot *refuse* the discounting of 'eligible bills' rendered to it.... If it did, by setting a fixed limit to the amount which the Bank is prepared to discount on daily or a weekly basis...the Bank would fail in its function as lender of last resort to the banking system which is essential to ensure that the clearing banks do not become insolvent as a result of a lack of liquidity. Precisely because the monetary authorities cannot afford the disastrous consequences of the collapse of the banking system, ...the money supply in a credit money economy is *endogenous*, not exogenous — it varies in direct response to changes in the public 'demand' to hold cash and bank deposits and not independently of that demand (Kaldor [11], pp. 46-47).

Moore, another forceful proponent of the Horizontalist Post Keynesianism, has succeeded to Kaldor's seminal ideas on the endogeneity of money and tried to construct the theory of endogenous money supply mainly through adding some new elements of developments in the banking industry and financial markets. His charge against the assumption of the exogenous money in GT will be able to consider almost the same as that of Kaldor's.

Moore also criticizes Keynes's failure to fully recognize the importance of the monetary endogeneity which he had developed in his TM. He conceives GT which contained the assumption of the exogenous money as retrogression from the endogenous money approach in TM to a great extent. As Moore observes;

After reading these passages in his *Treatise*, where the endogeneity of credit money is so clearly recognized, it is difficult to understand how Keynes only six years later could have assumed the money stock to be exogenously determined by the monetary authorities⁶. ...Keynes failed completely to incorporate his *Treatise* insights that an increase in employment would automatically generate an increase in the money supply, as firms applied to their banks for credit to finance their increased working capital needs (Moore [22], pp. 195-197).

Moore concentrates his attention upon a couple of points that even in GT Keynes recognized that central bank direct control was turned not to the quantity of money, but to level of short-term interest rates. He cites the following passages from GT as evidence which reflects Keynes's recognition of the interest rate exogeneity as well as the monetary endogeneity.

If the monetary authority were prepared to deal both ways on specified terms in debts of all maturities, the relationship between the complex of rates of interest and the quantity of money would be direct. ...The complex of rates of interest would simply be an expression of the terms on which the banking system is prepared to acquire or part with debts; and the quantity of money would be the amount which can find a home in the possession of individuals who...prefer the control of liquid cash to parting with it in exchange for a debt on the terms indicated by the market rate of interest. Perhaps a complex offer by the central bank to buy and sell at stated prices gilt-edged bonds of all maturities, in place of the single bank rate for short-term bills, is the most important practical improvement which can be made in the technique of monetary management (Keynes [15], pp. 205-206).

⁶ Contrary to Moore's assertion, in his Michaelmas Term 1933 lectures, Keynes chose to "assume still the quantity of money is constant." He continued further; "Rather than assume that the banks regulate the rate of interest to keep the money supply constant, it is just as reasonable to assume that they fix the rate of interest and allow the money supply to change, 'or it can do a bit of both'" (Rymes [25], pp. 124-125).

Here Moore places great emphasis on the actual practice of monetary management which the central bank set the complex of prices to buy and sell eligible bonds and then accommodated every demand for money at these settled prices. In reliance on these passages, Moore insists that this monetary policy recommendation would imply the exogeneity of short-term interest rate as well as the endogeneity of money supply even in GT.

As we have already examined implications of the finance motive analysis in previous section, it does not seem that there was especially any trouble to introduce the element to ‘endogenize’ the money supply into the liquidity preference framework. Nevertheless, Moore claims that “the finance motive, properly understood, is *really the conclusive argument for the endogeneity of the money stock. This does not seem to have ever been fully perceived, even by Keynes himself*” (Moore [22], p. 199). He tends to regard Keynes’s arguments on the finance motive as a concession to the classical theory of interest rate. As Moore observes;

Less than two years later he was forced under heavy pressure to concede that the banks “hold the key position” in the process of economic expansion. This was a position that he himself had previously developed at some length in the *Treatise*. ...One cannot help but feel confident that with time he would have succeeded in realizing his final and full emancipation from the quantity theory: the recognition that short-term interest rates are determined exogenously by the monetary authorities, and the supply of credit money varies endogenously with the demand for bank credit and bank purchases of securities (Moore [22], p. 204).

Thus, the logic of Moore’s theory of the endogenous money supply would seem require that the rates of interest are determined through the policy actions of monetary authorities, irrespective of the state of liquidity preference of the public and/or the banks.

Moore goes on to propose the mark-up theory of interest rate on the basis of the policy-determined short-term interest rate as a promising substitute for the liquidity preference theory of interest rate. He argues that banks are the price setters and quantity takers in retail financial markets under the conditions of monopolistic competition. The interest rate charged on bank loans is a mark-up over the financing cost of banks in wholesale financial markets which operate in the perfect competitive environment. Moore takes the cost of wholesale liabilities issued by banks as an indication of the bank’s prime cost of financing fund. In order to grant loans on demand in retail markets, banks must be able to meet net deficit and/or surplus of funds in the wholesale markets. The wholesale markets are the marginal source of funds which banks are willing to finance. Therefore the bank’s marginal financing cost will be equal to the wholesale interest rate via the perfect competition in these financial markets. The central bank, as an ultimate provider of liquidity, plays the crucial role of

controlling the price and/or quantity of liquidity in the wholesale markets. The wholesale interest rates are exogenously determined through the policy actions of central bank. As is well known, this policy rate of interest corresponds to the federal fund rate in case of U.S., the euro-overnight-index-average (eonia) interest rate in case of Euro area, ‘gilt’ repo rate in case of U.K. and the overnight call rate in case of Japan. According to Moore, it is able to consider that the prime interest rate of bank loan is a relatively stable mark-up over the wholesale interest rate which is kept under the control of central bank (Moore [22], pp. 54-63).

In short, Moore emphasizes that short-term interest rates are the key exogenous policy variable and the supply of money becomes the credit-driven and demand-determined endogenous variable. He accepts the expectation theory of the term structure of interest rates without hesitation, and insists that long-term interest rates are determined by financial market participant’s expectations of the future short-term interest rates. As a result, the long-term interest rate is determined by the current expectations of the level of future short-term interest rates which will be set exogenously by the central bank. Therefore, in his endogenous credit money system, there is little room for the liquidity preference to affect on the interest rate itself except for influencing on the term structure of interest rates (Moore [22], pp. 243-254).

4. Compatibility of the Endogenous Money Supply and the Liquidity Preference Theory

As we have taken an overview of arguments on the finance motive analysis, we are able to consider that Keynes saw the endogeneity of money supply as compatible with his liquidity preference theory. The Horizontalists claim that Keynes’s arguments on the monetary endogeneity connected to the finance motive would seem to be a concession to the classical theory of interest rate. However, there are many objections to the Horizontalist approach who have proposed to replace the liquidity preference theory with their theory of endogenous money supply.

4-1. Irrelevance of Dualism within the Horizontalist’s Approach

The standard textbooks of macroeconomics have usually treated the money supply as an exogenous variable which was determined by the monetary policy of central banks. They mainly concentrate their attention to the process which the exogenous changes in money supply initiated by the policy actions of central banks would be transmitted to the real side of economies through the portfolio adjustment mechanism. On the other hand, the radical proponents of Horizontalism have treated the interest rates as an exogenous policy variable in their endogenous credit money system. Carvalho [1] and [2], Chick and Dow [3], Dow [8] and [9], Wray [28] criticize such dualism between the interest rate and the money supply as being determined separately each other. They un-

doubtedly make sure of the importance of liquidity preference and try to synthesize the endogenous money with the liquidity preference theory. It will be convenient for us to consider together their theories as the liquidity preference approach to endogenous money supply⁷.

Dow, probably the representative of the liquidity preference approach to endogenous money supply, is the first to open an attack against the dualism which led to the conflicts within the Post Keynesian circles. She is very anxious about an unfortunate separation between the Verticalists and the Horizontalists. As she observes;

His [Keynes's] treatment then of the money supply as being controllable by the monetary authorities...led to apparent bifurcation between Post-Keynesian monetary theory which focused on liquidity preference and that which focused on endogenous money. ...it is misunderstanding of his treatment of money in *The General Theory* which had led a false dichotomy between liquidity preference theory on the one hand and endogenous money theory (in its extreme, horizontalist form) on the other (Dow [9], p. 62).

Dow continues to argue the issue in order to try to obtain a better understanding of Keynes's view on the endogeneity of money in relation to the liquidity preference of banks. She emphasizes that it is important to understand Keynes's economic methodology as follows.

Keynes was not trying to develop a closed, deterministic general equilibrium system in which the selection of variables as being endogenous or exogenous in absolute. Rather, he was constructing partial system, bearing in mind the implications of limited knowledge. Thus the passage should be interpreted as taking the money supply to be *given*, not *exogenous*; the process by which that *particular* supply should have arisen is up for discussion and further analysis (Dow [9], p. 63).

In the context of methodological issue, Joan Robinson also suggested that Keynes's given money supply assumption was adopted purely for *strategic* reasons as follows. As she observed, in the debate with the orthodox in the 1930s,

He had to make every possible concession to this point of view in order to get a hearing. It would have been much simple to start by assuming a constant rate of interest and a perfect elastic supply of money. But then his whole case would have been dismissed as a misunderstanding of the orthodox position. He was obliged to accept the presumptions of his critics in

7 This liquidity preference approach to endogenous money supply includes the Structuralists like Minsky [21], Palley [23] and Wray [27] who emphasize effects of institutional developments and financial instability.

order to explode them from within (Robinson [26], pp. 81-82).

Although Keynes did not clearly show what about the money supply was in GT, it is not appropriate to put him on the prisoner's uniform of assuming the supply of money intrinsically exogenous. If we take into account of the above mentions made by Dow and Robinson and the finance motive analysis, Keynes's given money supply assumption permits us to consider the stock of money as being able to change in response to the variations of money demand. These considerations mean the money supply to be responsive to the changes in the demand for money up to a point, which may be dependent not only on the actions of the monetary authorities but also on the behavior of commercial banks. However, as Dow points out, Keynes placed less emphasis on the role of the monetary authority in determining the quantity of high-powered money. Keynes distinguished the banking system with the monetary authority and saw the money supply as being determined by the latter in conjunction with the former (Dow [9], p. 64). Keynes mentioned that "the amount of cash which the banking system has created...[and] the amount of money which people choose to hold [are] not independent of their incomes or of the prices of the things (primarily securities)" (Keynes [15], p. 84). Therefore it would be clear that the determination of the stock of money and liquidity preference were interdependent in GT.

4-2. Importance of Bank's Liquidity Preference

As already mentioned, Keynes put an emphasis onto what extent the banking system accommodate or refuse the increase in the demand for money in relation to the determination of interest rate. Dow concentrates her attention on the fact that Keynes extended the scope for the theory of liquidity preference by applying it to the banks themselves. As she observes;

He was thinking in terms of the disposition of the asset side of the bank's balance sheet, in the same way as he expressed household's liquidity preference in terms of the disposition of household assets. Banks would express liquidity preference by curtail credit creation (loans being their least liquid asset) and placing any free resources in investments. Just as the expression in aggregate of household liquidity preference pushes down the value of household assets, so the expression in aggregate of *liquidity preference by the banks reduces the volume of credit and thus money in the system as a whole.* (Dow [9], p. 66, italic added)

While it is necessary to take bank's liquidity preference in consideration of the money supply, it is entirely different things how would the bank's liquidity preference approach to endogenous money supply be expressed. For the Horizontalists who believe that central banks fully accommodate the demand for reserve at the interest rate set by their policy decision, it will be a mean-

ingless question that banks care whether they are short of liquidity in the sense of reserve at least.

In the real world of banking practices, most of banks are actively engaging in the asset and liability management (ALM) in order to tackle a variety of tasks because of risks in particular and uncertainty in general. Banks must be especially concerned with liquidity, since their obligations are payable on demand or at very short notice. It should be recalled the arguments on the concept of liquidity in relation with the behavior of banks in TM.

What bankers are ordinarily deciding is, not *how much* they will lend in the aggregate...but in *what forms* they will lend — in what proportions they will divide their resources between the different kinds of investment which are open to them. Broadly there are three categories to choose from — (i) bills of exchange and call loan to the money market, (ii) investments, (iii) advances to customers. As a result, advances to customers are more profitable than investments, and investments are more profitable than bills and call loans; but this order is not invariable. On the other hand, bills and call loans are more ‘liquid’ than investments, i.e. more certainly realisable at short notice without loss, and investments are more ‘liquid’ than advances (Keynes [14], p. 59).

In the above perspective passage, Keynes put stress on the interdependence of the bank’s lending decision and their liquidity preference. According to Carvalho, “bankers are faced with a never-ceasing problem of weighing one thing [profitability] against another [liquidity]” (Carvalho [2], p. 130), that is, they are seeking for the simultaneous attainments to maximize their profit and to secure the liquidity of their portfolios. These weighing will change according to the degree of uncertainty felt by bankers. If uncertainty increases, liquidity preference of both the public’s and the bank’s will rise, and then the demand for assets will shift from less liquid items to more liquid items in their portfolios. Thus changes in bank’s liquidity preference influence the supply of credit and ultimately the stock of money as a whole.

The banks may not be willing to lend an infinite amount to borrowers on given terms of lending. These terms of lending consist of not only interest rates, but also of the creditworthiness of borrowers and the eligibility of the ‘fringe of unsatisfied borrowers’. In an influential paper, Hawkins observes as follows;

In Keynes’s view, it was the existence of this fringe of eligible but excluded borrowers, together with the variability of the eligibility criteria that meant that banks could influence the rate of investment over and above their influence through the mechanism of short-term interest rates. Hence banks could be seen as holding a key position in terms of influencing the rate of investment, by tightening and expanding credit to the fringe. It is suggested here that the variable standards of eligibility can be seen as reflecting

changes in bank's liquidity preference. The attitude of banks to the fringe of unsatisfied borrowers is a function of the view they take of their existing loans (current assets) and of new borrowing (future assets). Hence bank's attitude to the fringe (and hence their evaluation of creditworthiness) appears to change with their liquidity preference (Hawkins [10], p. 110).

To sum up, the proponents of liquidity preference approach to endogenous money supply view that the determination of the stock of money and liquidity preference are *interdependent* and that money is created by the banking system independently of whether the monetary authorities control the base money or the base rate of interest. It should be recalled that Keynes still left the great role for liquidity preference in determining the long-term interest rates although he accepted substantial control over short-term interest rates by the monetary authorities. These proponents seem to have great sympathy with Keynes's conclusion that "the difficulties in the way of maintaining effective demand at a level high enough to provide full employment...ensue from the association of conventional and fairly stable long-term rate of interest with a fickle and highly unstable marginal efficiency of capital" (Keynes [15], p. 204).

5. Concluding Remarks

The rigid interpretations that Keynes saw the money supply as exogenous led to a conflict within Post Keynesians over decades. The Horizontalist Post Keynesians have accused Keynes of assuming the exogenous money supply in GT. Contrary to Horizontalist's charges against liquidity preference, it is evident that the determination of the stock of money and liquidity preference are interdependent and that its compatibility as well as interdependence is derived from Keynes's monetary thought. Keynes put an emphasis on the essential liquidity preference of banks as well as that of the public in determining the stock of money. It is important to take bank's liquidity preference in consideration of the money supply in order to avoid irrelevant dualism which led to the conflicts within Post Keynesian camps. The changes in bank's liquidity preference influence the supply of credit and ultimately the stock of money as a whole⁸. The inclusion of endogenous money supply in the liquidity preference theory may not injure Keynes's main emphasis on the non-neutrality of money in both the short run and the long run.

⁸ Dow further suggested that "the banking system has undergone significant evolution since the 1930s, in a way which has particular implications for the question of money supply endogeneity. Keynes's treatment of the money supply in the 1990s would thus probably have been different. But, in my view, it would have been different in a way which would have *enhanced* rather than detracted from the theory of liquidity preference" (Dow [9], pp. 61-62, italic added).

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