SOME QUESTIONS ABOUT IS-LM INTERPRETATION OF THE *GENERAL THEORY*

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I. *Some questions about Hicks = Klein's representation of the Keynesian system*

Since Hicks, Klein (and Hansen) had presented *The General Theory* as IS-LM diagram, it seems to me that essential points of the Keynesian economics had been missing.

In the previous month when Hicks contributed his article "Mr Keynes and the Classics" to *Econometrica*, Keynes wrote a letter to Hicks in which Keynes commented this article. This letter, of course, does not tell us that Hicks' representation of the *General Theory* is wholly unacceptable. Really in the opening sentence of this letter, Keynes appreciated this article. "I found it very interesting and really have next to nothing to say by way of criticism."[1] If we accept this appreciation without reserve on qualification, we can safely conclude from this letter that "Keynes accepted IS-LM diagram as a fair statement of his position."[2] However, after reading this letter thoroughly, it seems to me that Keynes severely criticised Hicks in some essential points. In fact, Moggridge pointed out two important comments from this letter, and cast doubts against Hicks' representation. "Its value, however, as an accurate representation of the Keynesian system is doubtful."[3] Recently Hicks avows himself that "with IS-LM I myself fell into the trap."[4]

In spite of his confession, the fact that IS-LM representation of the Keynesian economics is still now accepted widely in the academic circle, is very distressing. But it is not fair to blame this distress on Hicks. If we read only the *General Theory*, we can not necessarily say that Hicks' representation is wrong. Rather the responsibility lies on Keynes. It is very difficult to know what is the essence of the Keynesian economics, because Keynes wrote a lot of articles before and after the *General Theory* and there were not always consistency among them. If so, the problem is that we have regarded 'The General Theory' as if a bible and understood Keynes by only reading the *General Theory*. That is, if the interpretation of Keynes in the past could not grasp the essence of the Keynesian economics, it must be blamed that we believed IS-LM representation to be a potted version of the Keynesian economics, and regarded only the *General Theory* to be the Keynesian economics. So it is very welcome that *Collected Writings of John Maynard Keynes* have been published by the hands of Royal Economic Society, to reasses the Keynesian economics.

Then, what kind of questions are there about Hicks=Klein's representation? We want to examine Hicks' representation first and Klein's next. Moggridge raises questions about two points against which Keynes criticised Hicks. "(1) that Hicks' implicit theory of interest in the model which implied that a rise in the inducement to invest (i.e. an upward shift in the IS curve) would raise the rate of interest need not necessarily hold true. (2) that using current income in the general formulation of the behavioural relationships over-emphasized its role in the determination of expectations, especially as regards investment."[5] For the first point, we want to supplement the explanation with the comment by Keynes himself. "From my point of view it is important to insist that my remark is to be the effect that an increase in the inducement to invest need not raise the rate of interest. I should agree that, unless the monetary policy is appropriate, it is quite likely to. In this respect I consider that the difference between myself and the classicals lies in the fact that they regard the rate of interest as a non-monetary phenomenon, so that an increase in the inducement to invest would raise the rate of interest irrespective of monetary policy."[6] To understand exactly what he wanted to say with this comment, we must be informed of the finance motive which Keynes added as the fourth motive of the liquidity preference after the *General Theory*. So, we want to discuss about the first question again in the second section of this article.

For the second point, Moggridge explains what Keynes wanted to say as follows: "the second point probably takes us to the heart of the matter. Every IS-LM diagram is in effect drawn for a given state of expectations. If a change in expectations (such as under-lies a rise in the inducement to invest) causes a shift in one curve, it may also cause a shift in the other (by, say, altering liquidity preference). If both curves shift, there is no clear prediction possible from the diagram itself as to what the final outcome will be."[7] But for the second point as well as for the first point, it bears some relations with the finance motive. So we want to examine the second point also in the second section.

Next we want to examine Klein's representation. In Klein's formulation of the *General Theory*, IS-LM system is separated into two parts like Hicks' formulation, and each part forms independent system. In this respect Klein can not be free from the criticism of Keynes against Hicks. However, in the case of Klein's formulation, he misunderstood the essence of the *General Theory* more than Hicks did. The point is that Klein deflated IS-LM system by wage-unit, although Hicks presented the system in money terms.[8] In fact Keynes suggested wage-unit for deflator. Although he proposed this unit for the sake of the choice of unit and the estimation of GNP, he never used this unit for the sake of presenting IS-LM system in real terms. Keynes treated behavioural equations cautiously and divided them into two sets, namely one which economic agency behaves in real terms and the other which he behaves in money terms. For example, in the case of aggregate demand and supply functions, labor supply function and money demand function, he did not deflate them by wage-unit. Conversely in the case of consumption function he deflated it by wage-unit. The fact that Keynes presented aggregate demand and supply functions forming IS system and money demand function forming LM system in money terms, namely he treated those

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[5] Moggridge, *op. cit.*, p. 166.
[6] *JMK*, XIV, p. 80.
[7] Moggridge, *op. cit.*, p. 166.
[8] L. R. Klein, *The Keynesian Revolution*, Macmillan, 1947. pp, 192–213.

functions under the assumption of money illusion, is very important to understand the economics of Keynes. We want to examine what this importance means. The first examination is about the aggregate demand and supply functions. By the way, in an early draft of the *General Theory*, Keynes explained the difference between him and classicals in relation to the determination of employment, quoting Marx's realization problem. "The distinction between a co-operative economy and an enterpreneur economy bears some relation to a pregnant observation made by Karl Marx, —though the subsequent use to which he put this observation was highly illogical. He pointed out that the nature of production in the actual world is not, as economists seem often to suppose, a case of C-M-C', i.e. of exchanging commodity (or effort) for money in order to obtain another commodity (or effort). That may be the standpoint of the private consumer. But it is not the attitude of business, which is a case of M-C-M', i.e. of parting with money for commodity (or effort) in order to obtain more money. This is important for the following reason. The classical theory suppose that the readiness of the entrepreneur to start up a productive process depends on the amount of value in terms of product which he expects to fall to his share: i.e. that only an expectation of more product for himself will induce him to offer more employment. But in an entrepreneur economy this is a wrong analysis of the nature of business calculation. An entrepreneur is interested, not in the amount of product, but in the amount of money which will fall to his share. He will increase his output if by so doing he expects to increase his money profit, even though this profit represents a smaller quantity of product than before."[9] Here we can find that Keynes denied clearly the homogeniety postulate.

On the other hand, about LM system, Keynes suggested his position in his comment to Leontief. Leontief pointed out that the difference between Keynes and the classicals lied in the denial of zero degree of homogeniety of labor supply function. Although Keynes accepted this comment, he rather suggested that the denial of homogeneity postulate had more important meaning in the theory of money. "Mr. Leontief is right, I think, in the distinction he draws between my attitude and that of the 'orthodox' theory to what he calls the 'homogeneity postulate.' I should have thought, however, that there was abundant evidence from experience to contradict this postulate; and that, in any case, it is for those who make a highly special assumption to justify it, rather than for one who dispenses with it, to prove a general negative. I would also suggest that his idea might be applied more fruitfully and with greater theoretical precision in connection with the part played by the quantity of money in determining the rate of interest. For it is here, I think, that the homogeneity postulate primarily enters into the orthodox theoretical scheme."[10] Again Keynes denied the homogeneity postulate here.

II. "*The General Theory*" as '*a Monetary theory of Production*'

As I have explained last time in this journal, the *General Theory* is a natural evolution from the *Treatiese* and a new doctrine of the *General Theory* is 'a monetary

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    [9] *JMK*, XXIX, 1979, pp. 81–82.
    [10] *JMK*, XIV, p. 109.

theory of Production.'[11]   Then what is the content of a monetary theory of production? In the article contributed to Festschrift für Arthur Spiethhoff, Keynes substituted monetary economics for a monetary theory of production and real-exchange economics for classical economics.   Then he explained the difference between monetary economy and the real-exchange economy.   "The distinction which is normally made between a barter economy and a monetary economy depends upon the employment of money as a convenient means of effecting exchanges—as an instrument of great convenience, but transitory and neutral in its effect.   It is regarded as a mere link between cloth and wheat, or between the day's labor spent on building the canoe and the day's labor spent on harvesting the crop.   It is not supposed to affect the essential nature of the transaction from being, in the minds of those making it, one between real things, or to modify the motives and decisions of the parties to it.   Money, that is to say, is employed, but is treated as being in some sense neutral. That, however, is not the distinction which I have in mind when I say that we lack a monetary theory of production.   An economy, which uses money but uses it merely as a neutral link between transactions in real things and real assets and does not allow it to enter into motives or decisions, might be called—for want of a better name—a real-exchange economy.   The theory which I desiderated would deal, in contradiction to this, with an economy in which money plays a part of its own and affects motives and decisions and is, in short, one of the operative factors in the situation, so that the course of events cannot be predicted, either in the long period or in the short, without a knowledge of the behavior of money between the first state and the last.   And it is this which we ought to mean when we speak of a monetary economy."[12]   In brief, Keynes denied the neutrality of money. In the classical economics there is dichotomy in the sense that two separate systems exist: real or relative price system and monetary or absolute price system.   This separation assures neutrality.   "We have all of us become used to finding ourselves sometimes on the one side of the moon and sometimes on the other, without knowing what route or journey connects them, related, apparently, after the fashion of our waking and our dreaming lives."[13]   A monetary theory of production which Keynes developed in the *General Theory*, had an intention "to bring the theory of prices as a whole back to close contact with the theory of value."[14]   So if we can substitute IS system in place of the theory of value and LM system for the theory of prices as a whole, the coordination of the two theories does mean the coordination of the two systems.   How can we coordinate two systems?

The first thing which Keynes did for coordination was to regard IS system as a system of money flow denying the homogeneity postulate.   The second was to escape from the world of classical price theory or quantity theory of money and to build the world of the theory of liquidity preference.   In order to describe the system consistently in absolute price or money terms, money must be held as a stock.   "If no stocks of money being kept, the level of prices (though of course, not the ratios of the prices) is altogether indeterminate."[15]

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[11] Takeo Minoguchi, "The process of Writing the *General Theory* as 'A Monetary Theory of Production," *Hitotsubashi Journal of Economics*, Vol. 21, No. 2, 1981.

[12] *JMK*, XIII, pp. 408–9.

[13] John Maynard Keynes, *The General Theory of Employment, Interest and Money*, Macmillan, 1936, p. 292.

[14] J. M. Keynes, *ibid.*, p. 293.

[15] John Hicks, *op. cit.*, p. 139.

In the coordination of the real sector and money sector Keynes introduced mechanism of endogeneous money supply. In the *General Theory* Keynes treated money as if it can be controlled by the authority. But this does not mean that Keynes denied the endogeneous money supply. Because in the chapter 19, he told us that "the quantity of money is itself a function of the wage and the price level."[16] In addition to this statement of endogenous money supply, we have another evidence. This is the correspondence of Hawtrey to Keynes dated on the 1st of February in 1936. In this letter, Hawtrey wrote about the liquidity preference theory of the interest rate in the *General Theory*. "In the case of the long-term rate of interest it would seem to be the rate of interest in which is a function of the supply of money, that is to say, the latter is cause and former is effect. Even when banks buy securities in the open market, they do not fix the rate of interest and adjust their buying to maintain it at the rate fixed; they create a certain quantity of money by buying securities, and the market determined the rate of interest. But in the case of the short-term rate it seems to be the rate of interest that is cause and the supply of money that is affect; the latter is function of the former."[17]

We can formulate Hawtrey's interpretation of the liquidity preference theory as follows.
$$M(r_1) = L_1(y) + L_2(r_2)$$
Here, r_1 = short term rate (or discount rate), r_2 = long term rate (or security rate) and y = money income, M = money.

In the coordination of IS-LM system, the most important role was played by the introduction of finance motive. Paul Davidson explained the significance of this motive as follows. "That so much controversy about the possible independence of the real and monetary sectors has appeared in the post-Keynes literature is surprising in view of Keynes' warning that the 'division of Economics between the Theory of Value and Distribution of the one hand and the Theory of Money on the other hand is, I think, a false division.' Had the interconnection between the finance motive, the transactions motive, and the aggregate demand function been understood originally, much of this barren controversy could have been avoided."[18]

By the way, this finance motive was originally introduced by Keynes for the purpose to arrange the controversy between liquidity preference theory and loanable funds doctrine. Keynes explained the meaning of this motive in his article 'Alternative Theories of the Rate of Interest.' "I proceed to the third possible source of confusion, due to the fact that an investment decision may sometimes involve a temporary demand for money before it is carried out, quite distinct from the demand for active balances which will arise as a result of the investment activity whilst it is going on. This demand may arise in the following way. Planned investment—i.e. investment ex-ante—may have to secure 'financial provision' before the investment take place; that is to say, before the corresponding saving has taken place."[19] Davidson called this 'financial provision' as finance motive, and included this motive under the transactions motive. "Keynes argued that if contractual commitments to buy new capital goods per period was unchanged in each period, then the money held to 'finance' investment was more or less constant and could therefore be lumped under a

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[16] J. M. Keynes, *op. cit.*, p. 266.
[17] *JMK*, XIV, p. 9.
[18] Paul Davidson, *Money and the Real World*, Macmillan, 2nd edition, 1978, p. 178.
[19] *JMK*, XIV, p. 208.

subcategory of the transactions motive, where capital goods transactions are involved."[20]

So if investment plan is carried in accordance with the increase in the inducement to invest, demand for money will be increased and the liquidity preference curve will shift to right. The increase in the inducement to invest will be due to the increase in the expected sales. If we denote the expected sales as y^*, money demand function can be formulated as follows:

$$L = L_1(y, y^*) + L_2(r_2)$$

"Now, a pressure to secure some finance than usual may easily affect the rate of interest through its influence on the demand for money; and unless the banking system is prepared to augment the supply of money, lack of finance may prove an important obstacle to more than a certain amount of investment decisions being on the tapis at the same time."[21] But on the contrary, "if the banking system chooses to make the finance available and the investment projected by the new issues actually take place, the appropriate level of incomes will be generated out of which there will necessarily remain over an amount of saving exactly sufficient to take care of the new investment."[22] In the latter case, although LM curve will shift leftwards by the increase in the inducement to invest, it will move back to the original position. How much it moves depends on the financial policy. On the other hand if investment plan is carried, IS curve also shift to right because investment is also a function of expected income. Thus we can formulate IS relation as follows:

$$I(r_2, y^*) = S(y)$$

By looking at the diagram, we can now understand the meaning of the comment of Keynes to Hicks in the previous section. Increase in the inducement to invest needs not raise the rate of interest if IS, LM curves take the position shown in the diagram.
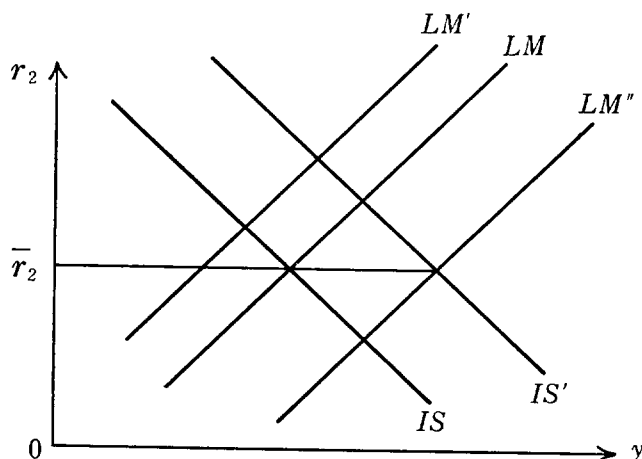
The point here is not the finance motive itself but rather the mutual dependence of real sector and monetary sector. "The inevitable conclusion is that even this neoclassical-Bastard Keynesian system cannot be dichotomised into independent real and monetary

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[20] Paul Davidson, *op. cit.*, p. 164.
[21] *JMK*, XIV, p. 209.
[22] *JMK*, XIV, p. 210.

subsets; consequently, it is not correct to separate monetary economics from real economics as has often been done."[23]

III. *Keynesian System versus Classical System*

While classicals based their system on dichotomisation of the economy, Keynes based his system on the co-ordination of the real sector and the money sector. However, as Hicks=Klein's representation of Keynesian economics, that is, IS-LM system shows, the significance of this co-ordination has been neglected for a long time. This co-ordination means, as we have shown in the previous section, that in a monetary economy, homogeneity postulate must be abandoned. Monetary economics is the economics of absolute prices while real-exchange economics is the economics of relative prices. Are there any other main differences between classical system and Keynesian system? In this section we would like to discuss about following three themes.

(1) Keynes substituted principle of effective demand for Say's law. So it must be explained why Say's law has to be denied in a monetary economy.

(2) In Keynesian macroeconomics, so called 'fallacy of sum' is often emphasised. Is this fallacy essential to monetary economy?

(3) Another characteristics of the Keynesian macroeconomics is the existence of uncertainty. In the world of uncertainty can general equilibrium be established?

According to Keynes the definition of Say's law is as follows: "that supply creates its own demand in the sense that the aggregate demand price is equal to the aggregate supply price for all levels of output and unemployment."[24] Why in a monetary economy the aggregate demand price can not be equal to the aggregate supply price? Keynes gave answer to this question in his draft of the General Theory in 1933. Symbols are defined as follows. "Let us suppose that in current unit of time the firms increase their working capital, i.e. the cost of the unfinished goods on hand, by X_1' and recieve X_2 from sale-proceeds of output which has cost them X_1, which means that their current cost of production are X_1+X_1'."[25] "They can use them to purchase the current output of the firm's finished goods (X_1); they can hoard part of their incomes in cash (H); they can lend the money to the firms either to finance an increase in the latter's working capital or to make good their losses (L)."[26] "Let the net amount of purchases of assets by the public from the banks and paying off of debts to the banks be—M_1."[27] In circular flow of money, current cost of production X_1+X_1' must be equal to the sum of sale proceeds of output X_2 and the public's hoarding (H) and loans to the firms (L) minus the net amount of purchases of assets by the public from the banks and paying off of debts to the banks $(-M_1)$. So that, $X_1+X_1'=X_2+H+L-M_1$

$$\text{or, } X_1-X_2=(H-M_1)+(L-X_1')$$

X_1 (the aggregate supply price) and X_2 (the aggregate demand price) are unequal, if $H+L$ and $X_1'+M_1$ are unqueal. "In other words, if the sum of the public's hoarding and loans

[23] Paul Davidson, *op. cit.*, p. 178.
[24] J. M. Keynes, *op. cit.*, p. 21.
[25] *JMK*, XXIX, p. 92.
[26] *JMK*, XXIX, p. 93.
[27] *JMK*, XXIX, p. 93.

to the firms differ from the sum of any increase in the assets and promises purchased by the banks from the public and in the working capital of the firms."[28]   On the contrary, X_1 and X_2 are equal "if the two conditions are satisfied (1) that any increased hoarding by the public is balanced by increased purchases of assets and promises by the banks, and (2) that the loans of the public to the firms are exactly equal to the increase in the firms' working capital."[29]   Now if the second condition is assumed to be satisfied, Say's law or equality between X_1 and X_2 will be established when hoarding by the public is balanced by purchases of assets and promises by the banks.   So if the banks can not afford enough money to make up for hoarding, Say's law is not effected in a monetary economy.

Next let us discuss about 'fallacy of sum.'   Keynes never used the word 'fallacy of sum.' However, the following two statements in the General Theory comes to the same thing as 'fallacy of sum.'   "It is true, that when an individual saves he also increases aggregate wealth fails to allow for the possibility that an act of individual saving may react on someone else's savings and hence on someone else's wealth."[30]   Then the question is in what case this fallacy of sum is ineffected.   This is the case where savers and investors are identical.   In this case the increase in propensity to consume from S to S' will also increase savings from S_0 to S_1 at the unchanged level of income (Case 1).   But this is essentially a Robinson-Crusoe's world or non-monetary world.   On the contrary if two economic agents are not identical, the increase in the propensity to save from S to S', income will be decreased from Y_0 to Y_1 at the unchanged level of savings (Case 2).
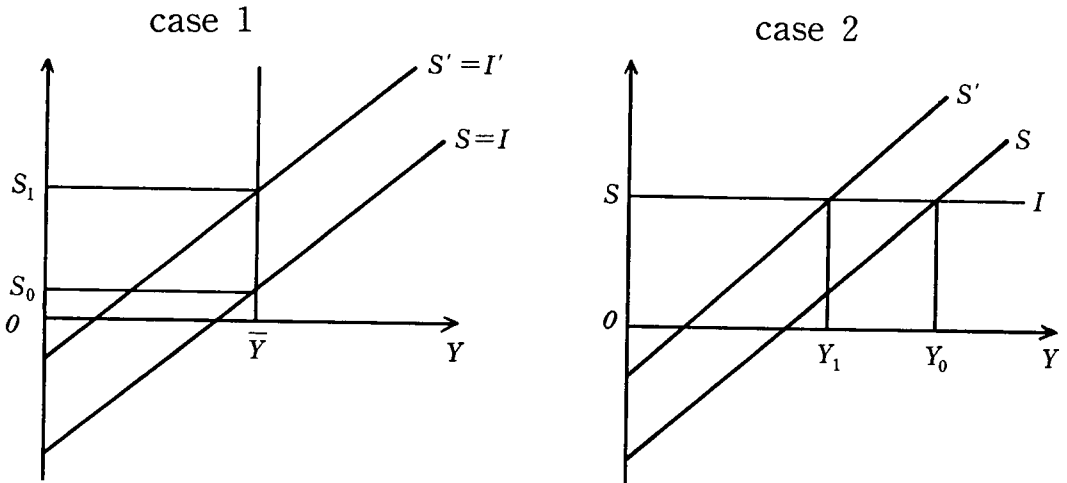
Keynes pointed out the analogy of this fallacy of sum with Say's law.   "The above is closely analogous with the proposition which harmonises the liberty, in which every individual possesses, to change whenever he chooses, the amount of money he holds, with the necessity for the total amount of money, which individual balances add up to, to be exactly equal to

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[28] *JMK*, XXIX, p. 93.
[29] *JMK*, XXIX, p. 94.
[30] John Maynard Keynes, *op. cit.*, p. 83.

the amount of cash which is the banking system has created."[31]

Finally we want to examine about the relation between the existence of uncertainty and the possibility of the general equilibrium. Uncertainty in the monetary economy makes the public to hoard money, so that the existence of uncertainty is the greatest reason for the generation of unemployment. According to Keynes, "Unemployment develops, that is to say, because people want the moon (money)."[32] Keynes accused the classical economic theory of the neglect of uncertainty. "I accuse the classical economic theory of being itself one of these pretty, polite techniques which tries to deal with the present by abstracting from the fact that we know very little about the future."[33] However, as Roy Weintraub pointed out, "this innovation (uncertainty) effectively disappeared from view as Keynes' own work was transformed by others into Keynesianism or Keynesian economics."[34] Nowadays the problem of underemployment is analysed in the context of job-search or dual-decision hypothesis irrespective of money and uncertainty. As Weintraub pointed out appropriately, there must exist forward markets in order to distribute resources effectively. But in the real world, those markets do not always exist, so that future is uncertain. In this situation, "the only way an investment project, then, could be undertaken by a rational entrepreneur would be under the assumption that he could contract in an existing market to sell off that capital asset if its return was less than expected. If uncertainty leads one to hedge, such speculative activity in spot markets may misallocate currrent resources and thus lead to unemployment."[35] And he concluded quoting Arrow=Hahn, that "the Keynesian revolution cannot be understood if proper account is not taken of the powerful influence exerted by the future and past on the present and by the large modifications that must be introduced...if the requisite future markets are missing."[36]

What we have emphasised in above three sections can be summarised as that Keynesian economics is necessarily a monetary economics. And we explained what is the essential feature of monetary economics in the second section. Keynesian economics so far had been transformed into a grafted tree of classical real system (IS) and Keynes' monetary system (LM). It is now a time to be free from the classical world of dichotomy and to go back to the Keynesian world of co-ordination.

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[31] *Ibid.*, p. 84.
[32] *Ibid.*, p. 235.
[33] *JMK*, XIV, p. 115.
[34] Roy Weintraub, "Uncertainty and the Keynesian Revolution," *History of Political Economy*, Vol. 7, No. 4, 1975, p. 530.
[35] *Ibid.*, p. 546.
[36] *Ibid.*, p. 546.