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# Revaluation of Mises' Theory in View of Modern Monetary Economics

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**Abstract**

This paper examines Mises' studies of the cumulative process. We shall show that Mises' analysis contains three noticeable features for modern monetary economics: the subjective valuation of money, his unique transmission mechanism of monetary policy and the origin of the economic disturbance. As a result of these features, Mises's analysis was characterized as unique monetary economics. Despite having the same purpose, the Austrian School adopted equilibrium analysis, while the Stockholm School adopted the disequilibrium analysis. The concept "turnover of the monetary rate of interest" is from the second and third features of Mises' theory as described above, and provided the Austrian School's analysis with the possibility of a business cycle theory. Thus it was not Hayek or Wicksell, but Mises, who directed the studies of the Austrian School. This is why we must elucidate the theoretical structure of Mises' analysis.

## 1. Introduction

This paper examines studies of the cumulative process by Mises, who belongs to the Austrian School in the history of economic thought. We shall show that Mises' analysis contains three notable features for modern

monetary economics, which have not so far been understood accurately. Firstly Mises introduces the subjective valuation of money to Wicksell's cumulative process theory, and his attempt is interpreted as a measure to cope with the problem, called Wicksell's indeterminacy today. Secondly, he completely denies the neoclassical dichotomy and recognizes the effect of monetary policy on real sectors. He suggests the unique transmission mechanism of monetary policy, where a decreased monetary rate of interest finally returns to the natural rate of interest in the long term, which can be changed by fluctuations in the objective exchange-value of money, which originates from short term monetary policy intervention, while Wicksell assumes that the rate is unchanged by such fluctuation. Lastly, Mises constructs a different monetary approach to that of Hayek, taking over Wicksell's innovativeness. He defines his argument in a case where disturbance is brought about by monetary policy intervention, neglecting a change in the real sector, for example a productivity shock, as in Hayek's and Wicksell's analysis. As a result of these features, Mises's analysis became characterized as unique monetary economics in that his theoretical claim was different from those of the Stockholm School and the Keynesians.

Originally the Austrian School was similar to the Stockholm School, inspired by Wicksell, who studied the fluctuation of the objective exchange-value of money, the price level, from an original point of view, as pointed out in Hirase (2015). In detail, Wicksell's analysis is characterized by the assumption of endogenous money supply, which means the monetary rate of interest is assumed to be a control variable for monetary authorities. Both the Stockholm School and the Austrian School seemed to be under the strong influence of Wicksell, but Wicksell's description is so vague that it is not easy to interpret what he wanted to say. As a result, there are two

contrary interpretations of the purpose of Wicksell's analysis, especially the cumulative process, even today. Namely, the Austrian School's understanding of Wicksell's claims is that the decreased monetary rate of interest must automatically rise again as a balancing factor in the cumulative process, while the Stockholm School's understanding is that it is not so.[1] If anything, the Stockholm School regards its failure as a balancing factor in Wicksell's cumulative process, as the greatest contribution to the development of economic theory.[2] In other words, Mises and Hayek believe in the stability of the market, while Lindahl and Myrdal do not. It is clear that this difference impinges on their ways of thinking about monetary policy. Ohlin (1937), whose studies could be classified as belonging to the Stockholm School, points out that:

> [n]o other analysis of trade fluctuations in recent years—with the possible exception of the Mises-Hayek School—follows such conservative lines in this respect. (Ohlin 1937, p.236)

Festré (2006) also says that:

> The only possible reconstruction that remains within Mises' framework is a dynamic scheme based on the concept of equilibrium in which business cycle appear to be the result of a temporary deviation from the "natural" state. (Festré 2006, p.355)

These quotations show that, despite the same purpose, the Austrian

1) Becker and Baumol (1952) believe it is Wicksell who first rejects Say's law of identities, referring to Oscar Lange's comment.

2) Patinkin (1952) describes the literature which support this view and criticizes it.

School adopted the equilibrium analysis, while the Stockholm School adopted the disequilibrium analysis. The concept "turnover of the monetary rate of interest" results from the second and third features of Mises' theory as described above, and provides the Austrian School's analysis with the possibility of a business cycle theory. Of course this is found not only in Wicksell's original theory, but also in the Stockholm School. Thus it is not Hayek or Wicksell, but Mises, who directs the studies of the Austrian School. This is why we must elucidate the theoretical structure of Mises' analysis.

Many previous studies have already been conducted on Wicksell's cumulative process in relation to the Keynesian revolution, because the authors want to find the theoretical factors in Wicksell's one, on which the Keynesian revolution was based. In contrast, his successors, belonging to the Austrian School or the Stockholm School, are less often cited, except for Hayek and Myrdal, who are regarded highly as social theorists for their achievements after WW2. In fact, both Bellofiore (1998) and Festré (2006), who made exceptional studies of Mises, also seem to have interest in the theoretical differences between Mises and Wicksell rather than Mises' theoretical contribution itself.[3] In contrast, we shall show Mises' contribution, especially in view of modern monetary theory. Section 2 explains what Mises attempted to deal with through his studies, his attitude to Wicksell's theory. He regards Wicksell's theory highly, but he is dissatisfied with Wicksell's assumption of stationary state at the same time. Section 3 examines Mises' analysis, which is based on Wicksell's theory. At the same time, the difference between the two is pointed out, referring to

3) According to Mises, Wicksell attributes this rise in the monetary rate of interest to an institutional factor, i.e. bank-liquidity constraints. In contrast, Mises tries to explain this in view of the rational behaviors of economic agents rather than as an institutional factor.

the short-term and long-term effects of monetary policy. Section 4 investigates the adjustment mechanism of the market in Mises' analysis. Surprisingly Mises referred to the possibility that natural rate of interest adjusts to the monetary rate of interest under strict conditions, by chance. Section 5 considers Mises' contributions in relation to Hayek's studies. Hayek refines Mises' theory to such an extent that his analysis could deal with business cycle formally. As a result, the business cycle theory of the Austrian School was widely accepted by the 1930s. Their analysis is characterized by an equilibrium analysis, a high valuation of a market mechanism and their denial of monetary policy intervention. We shall show that these features have their roots in Mises' theory, not in Hayek's.

## 2. Mises' Monetary Analysis Based on Wicksell's Analysis

In this section we shall examine Mises' attitude to Wicksell's theory and analysis, referring to Mises (1924).[4] At first, Mises regarded the quantity theory of money as follows:

> [the quantity theory of money] describes one cause of changes in prices; it is nevertheless inadequate for dealing with the problem exhaustively. By itself it does not comprise a theory of the value of money; it needs the basis of a general value theory. (Mises 1924, p.130)

4) We shall restrict our focus to Mises (1924) without reference to Mises (1949) in this paper. This is because, as pointed out in Festré (2006), the differences between them are not in the propagation mechanism that is our main interest, but the assumption of expectations.( Festré 2006, p.351)

So Mises did not deny the usefulness of the quantity theory of money entirely, but felt that it should be reinforced by theoretical foundations, which were the doctrine of supply and demand, the cost-of-production theory, and the subjective theory of value. This theoretical weakness, in his view, was still true of Wicksell's attempt to improve the quantity theory of money. On the one hand, Mises regarded Wicksell's idea of the monetary rate of interest as the regulator of the objective exchange-value of money highly, so that his theory was based on Wicksell's framework, which means an emphasis on the divergence of the monetary rate of interest from the natural rate of interest. (*Ibid*, p.355) On the other hand, Mises was dissatisfied with Wicksell's analysis in that he discarded the theoretical foundations, especially the subjective theory of value, for an analysis of the fluctuation of the value of money.

> Wicksell considers that the principle which lies at the basis of all modern investigation into the theory of value, viz. the concept of marginal utility, may well be suited to explaining the determination of exchange-ratios between one commodity and another, but that it has practically no significance at all, or at most an entirely secondary significance, in explaining the determination of exchange-ratios between money and other economic goods. (*Ibid*, p.118)

As a result, a change in general price was independent of a change in relative price, that is, the monetary market was independent of the commodity market in Wicksell's analysis. This, however, means the absolute level of money-prices would be unexplained in Wicksell's analysis, at least for Mises. He felt that this should be "determined in the market where money is exchanged for commodities and commodities for money"

and "To explain its determination is the task of the theory of the value of money."(*Ibid*, p.119) So, for this purpose, Mises attempt to formulate a demand function for nominal money, or fiduciary media, with the help of the subjective theory of value.

Naturally this argument reminds us of the problem called 'Wicksell's indeterminacy' today, which is indispensable for endogenous money supply analysis under the assumption of rational expectation. Specifically, in such economics only the real value of money is determined, but a combination of the nominal value of money and price level is not determined uniquely. In fact, Mises described it as follows:

> The objective exchange-value of money which rules in the market today is derived from yesterday's under the influence of the subjective valuations of the individuals frequenting the market, just as yesterday's in its turn was derived under the influence of subjective valuations from the objective exchange-value possessed by the money the day before yesterday. (*Ibid*, p.121)

Mises attempted to introduce an additional assumption of static expectation, for which social demand for nominal money could be determined uniquely and, as a result, actual price level, too.[5] As a result, the subjective theory of value, reinforced by the assumption of static expectation, is regarded as a kind of solution to the problem of the indeterminacy of general price in Mises' analysis. In relation to this, Festré (2006) seems not to understand how important the subjective theory of

5) Today, to avoid this indeterminacy, it is usual to introduce an additional assumption of the feedback rule for monetary policy. For example, Taylor's rule is the most famous.

value is in Mises' analysis.[6] He describes it as follows:

> In such a framework, however, the objective exchange value of money of Mises is no more determined than the absolute level of prices of Wicksell: if quantity of money substitutes can be modified with no limit and is therefore undetermined, so is the value of money. ( Festré 2006, p.339)

Clearly Festré (2006) overlooks the fact that Mises' analysis could avoid criticism of such an indeterminacy problem for his subjective theory of value, reinforced by the assumption of static expectation.[7]

This misunderstanding may be because Festré (2006) does not pay attention to the assumption of money supply in Mises' analysis. As we shall show in Sections 3, 4 and 5, Mises' emphasis is considered to be on the endogenous money supply theory. Festré (2006), however, claims as follow:

> By [Mises'] statement, we are to understand that, in contrast Wicksell, Mises provides a theory of the determination of the rate of interest on loans, which is not to be considered as different *in natura* from the one that determines the ratio between money and other economic goods.

6) Surprisingly Bellofiore (1998) does not refer to Mises' subjective theory of value at all, either.

7) As Festré (2006) claims, Wicksell and Mises do not seem to talk on the same wavelength. This may be because Wicksell didn't understand not only what Mises tried to say, but his own theory. Hirase (2015) shows that Wicksell's theory itself could ironically avoid the problem of Wicksell's indeterminacy in his unconventional assumption, a kind of static expectation formulation, but Wicksell himself seems not to recognize that.

(*Ibid*, p.338)

Festré's statement is clearly misleading because the monetary rate of interest is assumed to be the endogenous variable while the money supply is exogenous here. Festré points out, as the grounds for his claim, that Mises' statement described it as follows:

> In fact, all that [Wicksell] attempts to prove is that forces operate from the loan market on the commodity market which prevent the objective exchange value of money from rising too high or falling too low. [Wicksell] never asserts that rate of interest on loans determines the actual level of [the objective exchange value of money] in any way… (*Op.cit.*, p.119)

After this quotation, however, he noted that "in fact, to assert this would be absurd."(*Ibid*, p.119) What Mises wanted to provide is not a theory of the determination of the rate of interest on loans.[8] In addition, to show Festré's view as wrong, we can point out that Mises, referring to the Banking School, deals with the control of the monetary rate of interest rate. (*Ibid*, pp.353-354) So Mises' statement should not be interpreted to mean that his emphasis was on a determination of the monetary rate of interest rather than a determination of money supply. In spite of Mises' dissatisfaction with Wicksell's view, his analysis is not completely different from that of Wicksell. Mises (1924) should be positioned as a critical

8) As discussed in the next section, there are two kinds of variations of monetary rate of interest, a short-term one and a long-term one in Mises (1924). It is certain that the former is exogenous while the latter is endogenous. Despite that, it is clear our criticism of Festré's view holds true, from Mises' statement, quoted above. In addition, Festré does not take this discrimination of variation of monetary rate of interest into account.

reconstruction of Wicksell's analysis, the endogenous money supply analysis.

## 3 Mises' View of Interest Rates and Connections between Markets

Wicksell, as already explained, tried to find the cause of the fluctuation of the objective exchange-value of money outside the commodity market, and did not recognize the significance of subjective theory in that determination. Mises, on the other hand, believed a determination of the objective exchange-value of money should be explained, based on subjective theory, in the market where money is exchanged for commodities and commodities for money. Thus, despite Mises's agreement about Wicksell's theoretical framework, there are theoretical differences between Mises' and Wicksell's analysis. Another difference is that Mises introduces the two sectors model while Wicksell mainly adopted a one sector model, at least in Chapter 9 of Wicksell (1936), to which Mises (1924) mainly refers. This difference is important because the assumption of the two sectors model brings about a more complex adjustment of the market in Mises' analysis, where attention should be given to, not only the change in general price, but also the change in relative prices.

At first, Mises defines the monetary rate of interest as follows:

> The margin by which the value of capital goods falls short of that of their expected products constitutes interest; its origin lies in the natural difference of value between present goods and future goods. If price-variations due to monetary determinants happened to affect production goods and consumption goods in different degrees - and the

> possibility cannot be dismissed off-hand – then they would lead to a change in the rate of interest. (*Ibid*, pp.339-340)

It is clear that this definition is inadequate for Wicksell's one sector model, where the level of interest rate is assumed simply to be influenced by the variation in the proportion between the quantity of money and the demand for money.[9] As a result, Mises assumed a more advanced transition mechanism than Wicksell, regarding the problem of how the variation in the proportion between the quantity of money and the demand for money could influence the level of interest rates.

> But the new fiduciary media coming on to the loan market have also a *direct* effect on the rate of interest. They are an additional supply of present goods and consequently they tend to cause the rate of interest to fall. (*Ibid* p.352)

We can find a kind of connection between the monetary market and the commodities market in this statement of transition mechanism, which shows Mises' negative attitude to the neoclassical dichotomy, or what is often called 'Say's identities'. It is, however, a fact that Wicksell, who does not define the direct effect formally, also denied Say's identities, assuming that increasing money necessarily brings about a decrease in interest rates. Therefore, at the present moment, despite Mises' elaborate definition, the difference between them in definitions of the interest rate may look

9) Bellofiore explains as follows:
For Mises, as for Wicksell and Böhm-Bawerk, there is no fixed capital and no explicit account is given of the bond market. The capital market is included in, and confused with, the money market. (Bellofiore 1998, p.542 )

interesting but subtle, for it does not bring any change in the theoretical result of analysis.

In fact, there is another and more important difference between Mises's and Wicksell's analysis. Mises claims that the other effect should be taken into consideration, the long-term effect, which he calls an indirect one. Wicksell also referred to long-term effects. Mises, however, claims as follows:

> Nevertheless, it is certain that the money rate of interest must sooner or later come to the level of the natural rate of interest, and the problem is to say in what way this ultimate coincidence is brought about. Up to this point Wicksell commands assent; but his further argument provokes contradiction. (*Ibid*, pp.355)

So we should understand that Mises is dissatisfied with Wicksell's analysis, especially because of his failure to explain the mechanism by which the monetary rate of interest fluctuates in the long term rather than the short term. Of course, this could be because theoretical foundations are not formulated sufficiently in Wicksell's theory. As for the long-term effect and connection between two effects, Mises describes it as follows:

> Variations in the ratio between the stock of money and the demand for money must ultimately exert an influence on the rate of interest also; but this occurs in a different way from that popularly imagined. There is no direct connexion between the rate of interest and the amount of money held by the individuals who participate in the transactions of the market; there is only an indirect connexion operating in a roundabout way thorough the displacements in the social distribution of income and

> wealth which occur as a consequence of variations in the objective exchange-value of money. (*Ibid*, p.346)
>
> The connexion between these two effects on the interest rate is not obvious. Is there a force that brings both into harmony or not? (*Ibid* p.352)

Mises clearly recognizes two kinds of transition mechanisms, a direct one and an indirect one, in his theory.[10] In addition, Mises calls the problem of the comparison of monetary policy's short-term effect with the long-term effect on the rate of interest the gratuitous nature of credit (*Ibid* p.352). Thus Mises formally considers both effects of monetary policy without neglecting the long-term effect while Wicksell considers mainly the naïve relationship, which Mises calls the direct arithmetical relationship. So, in contrast to Wicksell' analysis, we can find the advantage of Mises' analysis in his elaborate examination of the long-term or indirect effect, which is accompanied by fluctuations in the objective exchange-value of money.

Let us examine the long-term variation in the rate of interest in detail. In advance of a long-term variation in the rate of interest, according to Mises, fluctuations in the objective exchange-value of money must occur as a result of the variations in the ratio between the stock of money and the demand for money. In brief, it is assumed that the variations in the ratio between the demand for money and the stock of money have a strong effect on the real sectors through the fluctuations in the objective exchange value of money. Of course, this means that Mises denies a neoclassical

10) According to Mises, a direct and an indirect effect of new fiduciary media correspond to a short-term and long-term effect of monetary policy in modern economic theory, respectively.

dichotomy. In contrast, this long-term effect of the non-neutrality of money is not taken into consideration formally at least in Chapter 9 of Wicksell (1936). For example, Wicksell assumed that the increase in the stock of money would bring about the reduction of the monetary rate of interest. We can regard this relationship in Wicksell's analysis as corresponding to the short-term or direct relationship in Mises' theory. In Wicksell's one sector model, however, the fluctuations in the objective exchange-value of money, brought about by increasing money supply, are, as it were, redundant, so that these could have no effect on real sectors, including the natural rate of interest. In other words, the fluctuations in the objective exchange-value of money, brought about by the divergence of the monetary rate of interest from the natural rate of interest, could not give rise to any change in the natural rate of interest in Wicksell's analysis. Then how does the fluctuation in the objective exchange-value of money bring about the long-term variations in the rate of interest, the natural rate of interest, in Mises' theory? In this respect, he explains as follows:

> If the distribution of income and property is modified in such a way as to increase capacity for saving, then eventually the ratio between the value of present goods and future goods must be modified in favour of the latter. In fact, one of the elements that help to determine the rate of interest, the level of the national subsistence fund, is necessarily altered by the increase of saving. The greater the fund of means of subsistence in a community, the lower the rate of interest. (*Ibid*, p.347)

In this statement, we can see that the monetary market is deeply connected with commodity market in Mises' analysis, but not in Wicksell's

analysis. To understand this statement fully, it is useful to also refer to the following statement:

> So far as these factors enter into consideration, an increase of fiduciary media does cause a diminution of even the natural rate of interest, as we could show if it were necessary. But the case that we have to investigate is different one. (*Ibid*, pp.361-362)

The statements, quoted above, show that what Mises calls a long-term effect of the monetary rate of interest corresponds to the variation of natural rate of interest in Wicksell's analysis. Namely, it is the level of the natural rate of interest that determines the level of the monetary rate of interest in the long-term in Mises' theory. As already pointed out in Section 2, Mises, according to Wicksell's view, assumes that the monetary rate of interest could diverge from the natural rate of interest in the short-term, but he does not agree about Wicksell's assumption of non-neutrality of money in the long term. Consequently, it is possible for variations in the ratio between the stock of money and the demand for money to bring about the change in the level of natural rate of interest in Mises analysis. Thus, we must note that there is no simple contradiction between Mises' and Wicksell's theories, for the theoretical difference between the two analyses comes from the fact that Mises considers not only short-term effect, to which Wicksell mainly referred, but also the long-term effect of monetary policy. Because of that difference, paying attention to the long-term effect of monetary policy, there is a closer connection between the monetary market and the commodities market in Mises' theory than in Wicksell's.

## 4. Stability in the View of the Gratuitous Nature of Credit

In this section, we will specifically discuss the details of the gratuitous nature of credit. Mises claims as follows:

> It follows immediately from this that particular variations in the ratio between the stock of money and the demand for money cannot be always accredited with the same effects on the level of the rate of interest; e.g. it cannot be asserted that an increase in the stock of money causes the rate of interest to fall and a diminution of the stock of money causes it to rise. Whether the one or the other consequence occurs always depends on whether the new distribution of property is more or less favourable to the accumulation of capital. (*Ibid*, pp.347-348)

According to Mises, "without knowledge of the actual data it is impossible to say anything definite about it."(*Ibid*, p.348) So we must examine how each particular factor has an influence on the economic fluctuations in detail. As already examined in the former sections, in Mises (1932) we find his critique of Wicksell's analysis, in the lack of theoretical foundations in his monetary theory. Mises is clearly dissatisfied with Wicksell's explanation and feels that Wicksell fails to explain the mechanism for a changed monetary rate of interest to return in the long term for two reasons. At first he did not deal with the problem of how the level of monetary rate of interest is determined in the long term. Secondly, Wicksell's explanation is incomplete due to omitting the reason that a decreased monetary rate of interest must begin to increase again within that process.[11] So Mises, different from Wicksell, tries to find a kind of the

mechanism or process, called 'feedback' in modern economic theory; that is, not only the process of how the change in monetary rate of interest would affect the real sector of economy, but also the reverse process of how the change of real sector would affect the monetary rate of interest in the long-term. Mises tries to formulate his own economic analysis, taking advantage of Wicksell's concept, the divergence of the monetary rate of interest from the natural rate of interest. By examining the theoretical structure of fluctuation in Mises' analysis, we can understand how he overcomes these two deficiencies.

Initially it would be necessary to confirm the close relationship between the natural rate of interest and the length of processes of production in Mises' analysis. Mises defines the natural rate of interest as, for example, "the rate determined at the time by the whole economic situation" or "established by the free play of the forces operating in the market". (*Ibid*, pp.359-361)[12] He describes it as follows:

> The level of the natural rate of interest is limited by the productivity of that lengthening of the period of production which is just justifiable economically and of that additional lengthening of the period of production which is just no justifiable; for the interest on the unit of capital upon whose aid the lengthening depends must always amount to less the marginal return of the justifiable lengthening and to more than the marginal return of the unjustifiable lengthening. (*Ibid*, p.360)

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11) Mises felt that the case of an increasing monetary rate of interest "need not be considered". (Mises 1924, p.360), so he omitted this case in his analysis.

12) Bellofiore (1998) believes the latter definition is more important for us to understand Mises' analysis.

Mises assumes that a natural rate of interest must be defined as a marginal return of the production process, which is ruled by a law of diminishing returns regarding length. According to Mises, which processes of production are realized depends on the amount of subsistence funds available for this economy.

> The period of production which is thus defined must be of such a length that exactly the whole available subsistence fund is necessary on the one hand and sufficient on the other for paying the wages of the labourers throughout the duration of the productive process. (*Ibid*, p.360)

Of course, as described below, the monetary rate of interest rate is equal to this natural rate of interest, at least in the long term equilibrium. Thus, in Mises' analysis, as Wicksell assumed, the monetary rate of interest adjusts to the natural rate of interest, which depends on the available subsistence funds in that economy, whereas in the Stockholm School analysis the natural rate of interest adjusts to the monetary rate of interest determined by a monetary authority.

Secondly, why must a decreased monetary rate of interest begin to increase again in that process? The economic fluctuation in Mises' analysis is described as follows: the decrease of the monetary rate of interest, accompanied by the increasing money supply, means the rise of the relative price of product goods in the capital market in the short term. If the monetary rate of interest declines under the natural rate of interest, it is profitable for entrepreneurs to lengthen the product process. This results in an increasing demand for product factors, product goods and labor, bringing about a rise in the prices of product goods. So immediately after

the monetary rate of the interest declines, the prices of product goods relative to consumption goods rises. So far, there is no reason why the monetary rate of interest will rise again in the long term, because the monetary rate of interest is defined as the exchange rate between consumption goods and product goods. According to Mises, this rise in the price of the product goods is, however, a transitory phenomena, and the reverse situation required for the relative price of product goods to decrease is inevitable, where a new long product process is not feasible because of a lack of available subsistence funds. This is because, before the product goods become consumption goods, all consumption goods would have to be exhausted and so a rise in the prices of the consumption goods is inevitable.[13] The monetary rate of interest should therefore rise, because, as already described, the monetary rate of interest is defined as the exchange rate from consumption goods to product goods. As a result, the monetary rate of interest returns to the same level with the natural rate of interest. Thus, Mises believes that there is a close link between inflation and the rise of the monetary rate of interest. Mises claims that the monetary rate of interest must rise in the long term, even if it is possible for an artificial political trial increasing the money supply to succeed in the short term. (*Ibid*, pp.362-364)

It is clear that the explanation of this case is based on, so to speak, the Wicksellian belief that the monetary rate of interest adjusts to the natural rate of interest. As already described, this argument is important with

13) Mises' explanation for this may not be convincing. In fact, Bellofiore points out that:

> [a]s Hawtrey pointed out in his Economic Journal review of the translation of the Theory, there is nothing compelling in the identification of the loan rate and the relative price of consumption goods against production goods, nor in the idea that the increase in that relative price gives way to a consequent increase in the rate of (money) interest. (Bellofiore 1998, p.558)

regard to the gratuitous nature of credit - that is, in Mises' analysis, as Wicksell assumed, the monetary rate of interest adjusts to the natural rate of interest which depends on the available subsistence funds in that economy. It seems that, not only this Wicksellian adjustment, but the other adjustment, the reverse relationship, is pointed out in previous works.[14)]

> If [banks] attempt to [maintain a loan rate lower than the real rate of interest for long], either (a) the real rate is reduced to the level of the loan rate by real capital formation resulting from "forced saving," or (b) as the price level rises, nonbank creditors press for higher loan rates, and if the banks persist in maintaining the low rate against their wishes, the system spirals toward a crisis. (Uhr 1960, pp.256-257)

In this statement, Uhr (1960) clearly claims two kinds of adjustments, but we must regard this as a misleading interpretation. That is, '(a)' is not an adjustment, unlike Uhr's claim, but just a fluctuation where the natural rate of interest is not guaranteed to correspond to the monetary rate of interest. Mises certainly admitted the possibility that the real rate, equal to the natural rate of interest, is reduced to the level of the loan rate by real capital formation. In fact, he believes that "an increase of fiduciary media does cause a diminution of even the natural rate of interest." (*Ibid*, p.361) We must note, however, that the natural rate of interest does not always decrease to the monetary rate of interest because the level of the natural rate of interest depends on the subsistence fund, which is independent of the monetary rate of interest. Mises did not emphasize that the natural rate of interest adjusts to the monetary rate of interest, as does the Stockholm

14) Festré (2006) seems to accept Uhr's claim unconditionally. (Festré 2006, p. 342)

School. This means, even if the natural rate of interest decreases due to the fluctuation in price level, not only '(a)' but also '(b)' should be necessary for the economy to reach long term equilibrium. Thus, in Mises' analysis, as in Wicksell's, it is assumed that the monetary rate of interest adjusts to the natural rate of interest. Mises' view of adjustment is remarkable in the history of economic theory, but, like Wicksell and his other successors, we can see that Mises also set a high value on only one kind of adjustment mechanism, the Wicksellian mechanism, different from that of the Stockholm School.

## 5. Theoretical Features in Comparison with Hayek's Analysis

We believe that Hayek (1931) is based on an argument of Mises (1924), and positioned as an applied theory of this argument, so, through a comparison with Hayek (1931) in this section, it is expected that the theoretical characteristics in Mises (1924) will be made clearer.

Hayek's aim was, making use of Wicksell's original view, a deviation in the monetary rate of interest from the natural rate of interest, to establish monetary analysis for the change of relative price and the real sector, so unlike Wicksell, he clearly denies neoclassical dichotomy and assumes that monetary policy has an effect on changes in the real sector and relative price. Although, according to Hayek, Mises partly succeeds in improving Wicksell's theory, Hayek does not accept Mises' analysis. This is because Mises' emphasis is on the change in the price level, a concept which Hayek believes to be a secondary factor, not an essential one, in the analysis of business cycles. Of course this means that Hayek denies the long term effect of monetary policy in Mises' analysis, so a natural rate of interest must be changed by a variation in voluntary saving by households in Hayek'

s theory, but in Mises' theory by the fluctuations in the objective exchange-value of money, price levels, and which is brought about by a decrease in the monetary rate of interest. Let us clarify the process of how a deviation in a monetary rate of interest from a natural rate of interest causes economic fluctuation in Hayek's theory, where two causes of deviation are pointed out. Where the larger part of income is saved by a household's optimal behavior, there is greater demand for product goods, and less demand for consumption goods. The relative price of product goods increases while that of consumption goods declines. It is also assumed that the relative prices of all product goods do not rise at the same rate, the higher the orders of product goods, the more the relative prices of those goods rise. Under the new relative price system, as a result of this change, all capital would be used in the earlier stages of the product process and the new equilibrium would be characterized by a longer product process. In the case of monetary policy intervention, to begin with, increasing money supply brings about a decline in the monetary rate of interest in the loan market. Here, two processes should be distinguished from each other: the first process is where the additional money supply is owed by an entrepreneur, and the other is where it is owed by a household.[15] In former process, the additional money supply appears as increasing expenditure on product goods by entrepreneurs. This increasing expenditure brings about a longer product process, accompanied by a rise in the prices of product factors. An economy could not reach the same equilibrium, however, as in the case of the larger part of income being saved by a household's optimal behavior. This is because it is inevitable that the price of consumption

15) In fact, it is possible to analyze these two processes by the same theory, because the latter is necessarily involved in the former.

goods will rise due to a lack of saving, the subsistence funds. It is thus expected that the relative price of consumption goods becomes higher than that of product goods in the long run.[16] This could be regarded as forced saving, in that the amount of consumption goods available for households to receive decreases with its higher price. As a result, the new equilibrium would be characterized as the higher relative price of consumption goods and shorter product processes.

At first sight, Hayek's argument seems almost the same as Mises', except for a more elaborate formulation of the adjustment process in the market, so it is clear that Mises' analysis had a great influence on Hayek's thoughts. Hayek's theory is particularly based on the turnover of the monetary rate of interest, which originated from Mises' theory and is different from not only Wicksell's original theory, but also that of the Stockholm School. As already pointed out, this concept provides their analysis of economic fluctuation with a business cycle theory, but we can find the decisive differences there. Firstly, an economic fluctuation could be caused by both monetary factors and real factors in Hayek's theory, compared to Mises', where it is caused by a monetary factor only, and compared to Wicksell's where it is caused by real factors only.[17] Thus, we can regard Mises' emphasis on monetary disturbance, without reference to productivity shocks, as his theoretical feature. Secondly, the possibility that a natural rate of interest adjusts to a monetary rate of interest is completely excluded in Hayek's analysis, but not in Mises's. It is a well-known fact that one of the contributions of the Keynesian revolution to

16) It is clear that, from this stage, the same phenomena of business fluctuation would take place in both the former and the latter.

17) Festré (2006) claims "the main disturbances are not monetary in origin, but lie in productivity changes." (Festré 2006, p.343)

monetary economics was to emphasize this possibility, which has been neglected since Ricard's original claim (1817). In fact, according to Keynes (1936), who made this causality popular, monetary policy intervention had been positively maintained for several decades since WW2. In view of the history of economic theory, we can thus regard Hayek's consideration as a kind of regression from the theoretical advance made by Mises.[18] It must be remembered that, however, differently from that of the Stockholm School or Keynes, Mises' analysis is mainly based on causality, where the monetary rate of interest adjusts to the natural rate of interest, after all. We can find his negative attitude to monetary policy intervention in Mises' analysis, just as in Hayek's. Mises describes it as follows:

> A precise re-establishment of the old price-ratios between production goods and consumption goods is not possible, on the one hand because the intervention of the banks has brought about a re-distribution of property, and on the other hand because the automatic recovery of the loan market involves certain of the phenomena of a crisis, which are signs of the loss of some of the capital invested in the excessively-lengthened roundabout processes of production. (*Op.cit.*, p.364)

Mises believed that inefficiency brought about by monetary policy intervention was a problem here. In other words, for Mises an adjustment mechanism in the market is assumed to produce a first-best equilibrium in that economy. We must thus consider the innovativeness of Mises' attempt as restrictive, in contrast to that of the Stockholm School or Keynesians,

18) The effect of such an unconditional monetary policy intervention has been regarded as theoretically questionable since Lucas' critique, and ironically Hayek is now regarded highly as a pioneer of the real business cycle theory by new classical economists.

and their different attitudes to monetary policy are clearly from different thoughts about the adjustment mechanism of the market.

## 6. Conclusion

We have examined Mises' analysis based on Mises (1924), especially in view of modern economic theory. Since studies of Mises' theory are, in contrast with those of Wicksell and Hayek, very few, this kind of inquiry seem to be significant in itself. In addition, we have showed Mises' contribution in the history of economic theory. We found that Mises' emphasis on the subjective valuation of money is interpreted as a measure to cope with a problem called Wicksell's indeterminacy. Specifically, Mises assumes a kind of expectation formulation, called 'a static expectation' today. Wicksell assumes the same expectation formulation, but without referring to the subjective valuation of individuals. Thus Mises' trial should be evaluated as a refinement in the assumption of the expectations of individuals. Secondly Mises establishes his original monetary economics in that he completely denies the neoclassical dichotomy. It is clear that Mises is dissatisfied with Wicksell's incomplete denial of neoclassical dichotomy. For Mises, Wicksell's passive attitude deprives his analysis of its innovativeness, which has meaning different from neoclassical theory. Mises introduces the long term effect of monetary policy, which means income redistribution through the fluctuation variations in the objective exchange-value of money, and which brought about the variations in the natural rate of interest. Finally, Mises constructed a different monetary approach to that of Hayek, taking over Wicksell's innovativeness. A distinct difference between them is in the cause of disturbance, which is monetary policy intervention in Mises' analysis but not in Hayek's. It is

regrettable that Mises did not analyze the case formally, where the natural rate of interest corresponds to the monetary rate of interest as a result of the redistribution brought about by the fluctuation variations in the objective exchange-value of money. In contrast, the Stockholm School, represented by Lindahl, Myrdal and Ohlin, elaborated new theories, which emphasized a case which Mises barely referred to. This is why their studies are often positioned as pioneers of the Keynesian revolution.

Our next task is thus to consider the examinations of Mises' claims in comparison with Lindahl's analysis. His theory is notable for us in that Lindahl also denied the neoclassical dichotomy and formulated a fluctuation of the natural rate of interest by monetary policy intervention. Specifically, the natural rate of interest is assumed to adjust to the monetary rate of interest in Lindahl's analysis. This task is not easy, however, because Lindahl's theory is based on a refined assumption of expectation, involved in forward-looking type of expectation. Careful attention should be paid to a comparison of their theoretical claims. In fact, Mises also provided an assumption, in addition to the static assumption, that is more complex than the one in Mises (1949), to which we do not refer in this paper. For comparison, Mises (1949) must be examined as carefully as Mises (1924) in this paper. There is still more to examine in Mises (1924), because in Section 4 the way that each particular factor influenced economic fluctuations is not examined in view of modern theoretical analysis. To make use of Mises' unique views in the development of modern monetary economics, it is inevitable that we provide his claims as a theoretical analysis. We must, however, leave these tasks, described above, to future efforts.

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