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Money, Banking and Dynamics:

Two Wicksellian routes from Mises to Hayek and Schumpeter

By AGNÈS FESTRÉ*

ABSTRACT. This paper examines and compares, in both historical and theoretical perspectives, Hayek and Schumpeter's account of the role played by banks and credit in their respective explanations of business cycles. The first section is focused on the common inheritance of these two authors, which can be traced back to Wicksell, going from Mises whose *Theory of Money and Credit* provides, as we shall see, a crucial link in this perspective.

The two following sections deal with Hayek and Schumpeter's respective accounts as well as critical reconstruction of this tradition. A close examination of their respective treatments of the banking system and its effects on economic productive structures then allows to see in a new light the theoretical question of the impact of credit on economic dynamics and its related policy proposals in a different light.

The last section is dedicated to a comparison between Hayek and Schumpeter's views of the dynamics of monetary economies and their corresponding policy issues.

I

Introduction

JOSEPH SCHUMPETER AND FRIEDRICH VON HAYEK, although a generation apart, belong to different sides of the same Austrian tradition. The one side –that of Ludwig von Mises and

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Hayek– led to the Modern Austrian School, whereas Schumpeter built his proper version of Austrian economics without generating, strictly speaking, a school of thought. Their respective contributions to economic analysis have given rise to a considerable synthetic and critical literature, including useful work on comparative grounds by historians of economic thoughtⁱ. However, these authors did not investigate thoroughly the relations between Hayek’s and Schumpeter’s theories of banking and business cycles. According to us, this issue is worth investigating for two reasons at least.

From a historical point of view, comparing Hayek and Schumpeter’s approaches as applied to the question of the dynamic interference between bank-credit and productive dynamics illustrates the well-known influence of Wicksell upon the development of Austrian theories of business cycles. In this connection, Mises’ *Theory of Money and Credit* and, in particular, his criticism of Wicksell provide a crucial linkⁱⁱ for interpreting the relations between Swedish and Austrian traditions of economic analysis and one of the aim of the paper is to emphasize the analytical ‘Mises bridge’ between Wicksell and both Hayek and Schumpeter.

Moreover, from a theoretical angle, this investigation raises a fundamental question which is still at stakes within today’s debates among macroeconomists, namely, the issue of the influence of credit pertaining to dynamic economic processes. If both Hayek and Schumpeter took as a same starting-point of their business cycle approaches the Wicksellian original intuition of the possible interference by banks with the market for capital, they however provided two radically opposed as regard to the impact of credit on the dynamics of production. From this standpoint also, the re-reading of Mises’ *Theory of Money and Credit* brings into light some of the theoretical underlying assumptions as regard to the working of the banking system that may help to understand why Schumpeter and Hayek reached so divergent conclusions.

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The structure of the paper is the following. The first section is focused on the common inheritance of these two authors, which can be traced back to Wicksell, going from Mises whose *Theory of Money and Credit* provides, as we shall see, a crucial link in this perspective.

The two following sections deal with Hayek and Schumpeter's respective account as well as critical reconstruction of this tradition. A close examination of their respective treatment of the banking system and its effects on economic productive structures then permits to see the theoretical question of the impact of credit on economic dynamics and its related policy proposals in a different light.

A last section is therefore dedicated to a comparison between Hayek and Schumpeter's views of the dynamics of monetary economies and their corresponding policy issues.

II

The Wicksell-Mises connection

IN THE AFTERMATH OF THE SO-CALLED 'MARGINAL REVOLUTION' of the last end of the XIXth, economic analysis splits into two branches. The first one is made up of economists who take as the methodological starting-point of their analyses the static or stationary state of a barter economy and consider that this basic framework is likely to be extended in order to account for monetary and financial considerations as well as dynamics. However, in such a

theory and business cycle analysis through both historical and theoretical approaches.

setting, the introduction of money, bank-credit or any factor of growth does not substantially alter the features that are associated with the rudimentary economy of static real exchange.

This tradition is to be distinguished from a second one which one can trace back to Wicksell. It is now commonplace to refer to this author as the forerunner of the Austrian tradition of business cycles starting with von Mises and culminating in Hayek's trade cycle theories. Though less widely recognized, and as we shall develop, Schumpeter's contribution to business cycle analysis can also be seen in line with Wicksell's approachⁱⁱⁱ.

In contrast to the orthodox monetary view, these authors consider that the introduction of the organization of bank credit in the field of economic theory implies radical changes within the economic system. Indeed, as soon as one accounts for the existence of a banking system, money ceases to be exogenous and the mere counterpart of real exchanges. The *ex novo* and endogenous nature of credit-money modifies the conditions under which the mechanisms of co-ordination between savings and investment operate. In other terms, while in a barter economy these two magnitudes are defined in real terms, in a monetary one, credit money can, to a certain extent, become a substitute for real savings. Thus, by altering co-ordination between savings and investment, the organization of the banking system may allow the emergence of global disequilibria.

Historically, the first attempt to deal in analytical terms with this issue was provided by Wicksell. In particular, this author put much emphasis on the dynamic processes that characterize the co-movements of savings and investment and analyzed the conditions under which an equilibrium could be established. As well-known, the 'working hypothesis' at the core of Wicksell's argument lies in the well-know distinction between the money rate of interest, which is pegged down as given in his analysis since it is assumed to be fixed by the banking system quite irrespectively of real productivity conditions, and the natural (or normal) rate of interest, which Wicksell defines as follows:

The rate of interest at which the demand for loan capital and the supply of savings exactly agree, and which more or less corresponds to the expected yields on the newly created real capital will then be the normal or natural rate. It is essentially variable. If the prospects of employment of capital become more promising, demand will increase and will at first exceed supply; interest rates will then rise as the demand from entrepreneurs contracts until a new equilibrium is reached at a slightly higher rate of interest. At the same time equilibrium must ipso facto obtain (...) in the market for goods and services, so that wages and prices remain unchanged. The sum of money income will then usually exceed the money value of consumption goods annually produced, but the excess of income -i.e., what is annually saved and invested in production- will not produce any demand for present goods but only for labor and future production (Wicksell, 1967, pp. 192-193).

In other terms, the level of the natural rate of interest corresponds to the one that would be determined by supply and demand of capital if the latter was lent without the mediation of the banking system. In contrast to the money rate of interest, the natural rate of interest is very likely to fluctuate in accordance with new investment opportunities. Under these circumstances, Wicksell's cumulative process is naturally triggered by a variation in the real rate of interest.

Mises adopts a similar distinction, though he finds Wicksell's analysis of the interaction of the money and natural rates inadequate. In his *Theory of Money and Credit*, he indeed writes:

According to [Wicksell's] argument, the objective exchange value of money is not determined at all by the processes of the market in which money and the other economic goods are exchanged. If the money price of a single commodity or group of commodities is wrongly assessed in the market, then the resulting maladjustment of the supply and demand and the production and consumption of this commodity or group of commodities will sooner or later bring about the necessary correction. If, on the other hand, all commodity prices, or the average price level, should for any reason be raised or lowered, there is no factor in the circumstances of the *commodity* market that could bring about a reaction. Consequently, if there is to be any reaction at all against a price assessment that is either too high or too low it must in some way or other originate outside the commodity market. In the further course of his argument, Wicksell arrives at the

conclusion that the regulator of money prices is to be sought in the relations of the commodity market to the money market, in the broadest sense of the term. The cause which influences the demand for raw materials, labor and other means of production, and thus indirectly determines the upward or downward movement of commodity prices, is the ratio between the money rate of interest (...) and the ‘natural’ or equilibrium rate of interest (...) 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. He never asserts that the rate of interest on loans determines the actual level of this value in any way (...) (Mises, 1980, p. 140).

By this statement, we are to understand that, in contrast to Wicksell, Mises provides a theory of the determination of the ‘objective exchange value of money’^{iv}, whereby the level of the rate of interest on loans is not to be considered as different *in natura* from the ratio between money and other economic goods. Indeed, the interest on loans or the monetary rate of interest is identical to “the interest on capital” since “for Mises (...) there is no fixed capital and no explicit account is given of the bond market” and therefore “the capital market is included, and confused with the money market” (Bellofiore, 1998, p. 542. From here, following Böhm-Bawerk’s theory of interest^v, Mises asserts that the variations in the ratio of exchange between present goods and goods of higher orders^{vi}, from which the natural phenomenon of interest is derived, are not different phenomena from the variations in the objective exchange value of money (Mises, 1980, p. 388).

More precisely, Mises distinguishes between two kinds of influence on the rate of interest (on capital) that may result from an increase of the issue of fiduciary means by banks^{vii}. The first one is indirect and permanent. The connection is indirect and permanent because it operates through the displacements in the social distribution of income and wealth which occur as a consequence of variations in the objective exchange value of money^{viii}. But whether the increase of the stock of money in the broader sense causes the interest rate (on capital) to fall (or to raise) depends on whether the new distribution of income and property is more (or less) favorable to the accumulation of capital. In certain circumstances, for instance, when the

redistribution of wealth following an increase of fiduciary media leads to increased saving and a reduction of the standard of living, i.e., to an increase in the national subsistence fund, it is possible for even the natural rate of interest to diminish^{ix}.

The second kind of influence is directly related to the business of banking^x. More exactly, when issuing new fiduciary media, commercial banks cause the interest rate on capital to fall.

Let us quote Mises on this point:

The new fiduciary media coming on 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. 391).

Mises then draws the reader's attention on the connection between the *indirect effect following the displacements in the social distribution of income and property* and the *direct effect resulting from the issue of new fiduciary media*. Although he recognises that both the direction and the intensity of the indirect effect are not easy to determine, he nevertheless assumes that "the increase in the supply of fiduciary media in the market in which present goods are exchanged for future goods at first exerts a stronger influence than the displacement of the social distribution which occurs as a consequence of it" (Mises, 1980, p. 391).

Let us now consider how Mises defines the natural rate of interest. As already mentioned, Mises' distinctive contribution as compared to Wicksell has been to shed light on the link between both the monetary and the natural rate and the objective exchange value of money. Nevertheless, on the subject of the natural rate of interest, Mises' allegiance to Böhm-Bawerk is manifest. Mises indeed defines the level of the natural rate of interest as:

[T]he level of 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 not justifiable; for the interest on the unit of capital upon whose aid the lengthening depends must always amount to less than the marginal return of the justifiable lengthening. 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 laborers throughout the duration of the productive process” (Mises, 1980, p. 399).

From here Mises builds his critical re-construction of Wicksell’s analysis of the dynamics between the rate of interest on loan and the natural rate of interest.

As for the impulse, and in contrast to Wicksell for whom the cumulative movement start with a spontaneous lowering of the real rate of interest, Mises assumes that the banks have the power, by issuing new fiduciary media, to lower the rate of interest below its natural level, the latter being defined accordingly with Böhm-Bawerk’s representation of the average period of production.

This reduction of the interest on loans enables and obliges entrepreneurs to enter upon longer processes of production^{xi}. Indeed, assuming decreasing returns on capital, the additional funds provided by banks are invested in longer roundabout processes of production as long as they still pay the entrepreneurs. Thus, the decrease of the rate of interest on capital is necessarily followed by a lengthening of the average period of production. However, this lengthening of the average period of production is only practicable when the means of subsistence have increased sufficiently to support the workers and entrepreneurs during the whole period of production. If this is not the case, then, the trend towards increased productive activity will prove to be unsustainable. Mises writes that “a time must necessarily come when the means of subsistence available for consumption are all used up although the capital goods employed in production have not yet been transformed into consumption goods” (Mises, 1980, p. 400). Indeed, assuming as a starting-point a situation of general stationary equilibrium where all factors of production are already fully employed^{xii}, the implementation of more roundabout

processes of production will cause the price of production goods (including labor) to rise since there has been no increase of intermediate products. However, Mises suppose that the pressure on production goods is greater than that on consumption goods, since the prices of the latter, although they rises, do it in a moderate degree, namely, “only insofar as they are raised by the rise in wages”^{xiii} (Mises (1980), p. 401). Therefore, it turns out that the tendency toward a fall in the rate of interest on loans that originates in the policy of banks is at first strengthened. But at a certain point, a counter-movement will set in, i.e., the prices of consumption goods will rise while those of production goods will fall. In other terms, the rate of interest on capital will rise, thus approaching the natural rate” (Mises, 1980, p. 401). Mises’ explanation runs as follows. The implementation of more roundabout processes of production implies the transfer of intermediate goods as well as labor from their previous employment in shorter processes of production, i.e., those producing consumption goods, which are now activated at a reduced scale. Since no change in the consumption needs of the wage earners is involved^{xiv}, the effect of this is an increase in consumption goods’ prices. Furthermore, this tendency is now strengthened by the decrease in the objective exchanged value of money following the increase of fiduciary media issued by the banking system^{xv}. Thus, the structure of relative prices which is determined by the state of the capital market and has been disturbed by the intervention of the banks will be approximately re-established^{xvi}.

What is particularly interesting to focus on at this stage is the fact that the behavior of banks is not invoked in Mises’ explanation of the reversal of the cycle, although it is the case concerning the impulse.

On one hand, Mises makes it clear that any action from the banks in order to offset the automatic rise in the rate of interest on capital will be useless^{xvii}. He writes:

At first, the banks may try to oppose these two tendencies [due to the insufficient supply of consumption goods and reinforced by the fall in the objective exchange value of money] by continually reducing the

interest rate on loans and forcing fresh quantities of fiduciary media into circulation. But the more they thus increase the stock of money in the broader sense, the more quickly does the value of money fall, and the stronger is its countereffect on the rate of interest (Mises, 1980, p. 402).

On the other hand, the reversal of cycle is not to be attributed to the deliberate increase of the interest rate on loans by banks as it is the case in Wicksell's explanation. On this subject, it is worth reminding Mises' critical argumentation against the latter's account of the end of the inflationary cumulative process. In his *Theory of Money and Credit*, Mises indeed points out some inconsistencies in Wicksell's claim according to which a general increase in commodity prices would induce the banks to raise their rates of interest. One of the contradiction lies in the fact that, though assuming as a starting-point that only fiduciary media are in circulation and that the quantity of them is not legislatively restricted, Wicksell then have recourse to arguments as regard to the requirements of business for gold coins and banknotes (their demand increasing as the price level rises) in order to show that the banks must raise the rate of interest on loans. A second contradiction is related to another limit to the circulation of fiduciary media mentioned by Wicksell, i.e., the limit set by the employment of the precious metals for industrial purposes. Here again, such a mechanism, which may be effective in the case of commodity money^{xviii} is not relevant in a 'pure credit economy'.

To sum up, Mises' critical re-construction of Wicksell's analysis of the influence of credit on the dynamics of prices and its consequences on real production can be interpreted as follows:

1. By having clarified the various influences in time of a modification of the quantity of fiduciary media on the movement of relative prices as well as the force that pushes the two rates into equilibrium, Mises avoided the inconsistencies of the Wicksellian framework and paved the way for the development of various explanations of business cycles.

More precisely, Mises explained that the issue of fiduciary media by banks, which comes to the same as the net credit creation associated with an abnormally low loan rate (relatively to the natural rate) in Wicksell's treatment, increases the supply of money in the broader sense and is consequently able to influence the objective exchange value of money.

Then, variations of the value of money evokes a redistribution of real income and wealth, on the one hand, because people are apt to overlook the variability of the exchange value of money and, on the other hand, because variations in the value of money do not affect all economic goods uniformly and simultaneously. Indeed, the agents who first come to the market to buy goods make relatively the largest gains in a sequence scale the later they exercise the declining purchasing power of their money.

2. On the other hand, Mises linked the previous analysis with Böhm-Bawerk's conception of the natural rate of interest in relation to the period of production. This lead him to focus on the impact of credit upon the determination of the length of the production period (a point to which, as we have seen, Wicksell objected), and hence, on the limit to capital accumulation set by consumers' choices.

3. He also provided an explanation of the upper turning point of the cycle which is consistent with the framework of a 'pure credit economy' described by Wicksell^{xix}, without presenting however, the flaw in the latter's argumentation when considering the question of the limit to credit creation.

In the following, we shall examine and compare what Hayek and Schumpeter did with this 'Wicksell-Mises' inheritance, more particularly with regard to the three preceding

characteristics to which we will refer respectively as: the ‘redistribution effect’, the ‘lengthening effect’ and the ‘reference to a unconstrained banking system’, everytime needed.

III

Hayek’s route

IT IS NOW COMMONPLACE TO REFER TO HAYEK as an inheritor of Wicksell.

On one hand, in *Monetary Theory and the Trade Cycle* (1929) first translated into English in 1933, Hayek goes back to the Wicksellian distinction between a barter (or a commodity money) economy and a monetary economy and notes the crucial role played by a commodity money in ensuring equilibrium between savings and investment. He notes that “in a barter economy, interest forms a sufficient regulator for the proportional development of the production of capital goods and consumption goods, respectively” (Hayek 1966, pp. 91-2). Nevertheless, as Wicksell, he considers that it is possible to conceive of the special case of a monetary economy in which there would be no tendency to disequilibrium. More specifically, the introduction of a supply of money- that is, the transition to a monetary economy - has no impact on the tendency towards stability so long as it is backed by an equivalent amount of accumulated savings (Ibid., p. 92).

On the other hand, Hayek’s position with respect to interest also grew out of the work of Wicksell. As well-known, in his two major contribution to business cycles, i.e. *Monetary Theory and the Trade Cycle* and *Prices and Production* (1931), he distinguishes between two rates, the monetary rate of interest on one side, and the equilibrium rate on the other^{xx}. When

re-constructing Wicksell's argument, he writes that if there was no money, the 'natural' rate of interest, which he prefers to call the 'equilibrium' rate of interest, would be such as to make the *in natural* demand for capital, i.e., investment, coincide with the *in natura* supply of capital, i.e., savings. By contrast, in a money economy the monetary rate may differ from the equilibrium one, because demand and supply do not meet in their 'natural' form, but in the form of money, "the quantity of which available for capital purposes may be arbitrarily changed by the banks" (Hayek, 1935, p. 23). Thus, the possible divergence between the two rates is due to the existence of a banking system which may interfere with the working of the capital market, i.e. the loanable funds market, since, by granting credit to entrepreneurs, banks can create new means of payment that circulate within the economy. Therefore, and provided all banks are induced to take concerted action with one another, the banking system as a whole can modify the conditions under which saving and investment adjust each other. In other terms, disequilibria only become a possibility when the organisation of credit disturbs the adjustment process towards equilibrium between supply and demand.

However, Hayek disagrees with Wicksell's definition of 'neutral money', which amounts to admit that the natural rate of interest ensure both the stability of prices and equilibrium between the demand for and the supply of capital. In *Monetary Theory and the Trade Cycle*, he writes:

The monetary starting point makes it possible, in fact, to show deductively the inevitability of fluctuations under the existing monetary system and, indeed, under almost any other which can be imagined. It will be shown, in particular, that the Wicksell-Mises theory of the effects of a divergence between the 'natural' and the money rate of interest already contains the most important elements of an explanation, and has only to be freed from any direct reference to a purely imaginary 'general money value' (...) in order to form the basis of a Trade Cycle theory sufficing for a deductive explanation of all elements in the Trade Cycle (Hayek 1966, p. 147).

As is evident from this statement, Hayek adheres with Mises' analysis by claiming that a change in the volume of money affects not only the aggregate price level but also systematically cause variations in the exchange ratio between consumption goods and production goods^{xxi}. Thus, a change in the total quantity of money in circulation implies the formation of prices or rates of interest which differ from those one would find associated with a barter economy equilibrium. For Hayek, the new intertemporal price structure following a change in the volume of money due to the influence of banks conveys wrong information which "elicit movements which not only do not lead to a new equilibrium position but which actually create new disturbances of equilibrium" (Hayek, 1966, p. 94).

Therefore, the 'equilibrium' rate of interest is conceived as that particular level of the interest rate which corresponds to the 'right' prices. Taking Böhm-Bawerk's definition of the 'average production period' as granted, Hayek assumes that the equilibrium rate of interest reflects time preferences of agents. If the latter are modified in such a way that individuals make the decision to forgo present for future consumption, i.e., to save more, the average period is lengthened to such an extent that the increased amount of capital can remain invested until the output of the single consumption good is obtained.

Let us now remind Hayek's explanation of the cycle as betrayed in *Monetary Theory and the Trade Cycle* as well as in *Prices and Production*.

As already indicated, for Hayek, the origin of the cycle lies in a divergence between the money rate of interest and the 'equilibrium' one. Whether the initial disequilibrium is caused by a monetary or a real change is of no significance for Hayek since, according to him, all the problem lies in the inability of the banking system to ensure, at every point in time, the coincidence of the level of the monetary rate with the natural one. Various circumstances causing a divergence between the two rates are indeed envisaged by Hayek in *Monetary Theory of the Trade Cycle*. For instance, he refers to "changes in the relations of costs and

selling prices” (Hayek, 1966, p. 129) or to “shifts in the distribution of incomes” (Ibid.) which he considers as phenomena resulting indirectly from “monetary influences” (Hayek, 1966, p. 128). Indeed, Hayek consents that the level of the rate of interest on loans need not to be lowered by deliberate intervention from the monetary authorities. As he indicates:

The same effect can be obviously produced by an improvement in the expectations of profit or by a diminution in the rate of saving, which may drive the ‘natural rate’ (at which the demand for and the supply of savings are equal) above its previous level; while the banks refrain from raising their rate of interest to a proportionate extent, but continue to lend at the previous rate, and thus enable a greater demand for loans to be satisfied than would be possible by the exclusive use of the available supply of ‘savings’ (Hayek, 1966, p. 147).

As can be shown, Hayek’s position on the subject of ‘monetary influences’ is not so clear. In *Monetary Theory and the Trade Cycle*, he insists on the elasticity of the volume of money as an “immanent necessity of the monetary and credit mechanism” (Hayek, 1966, p. 127) and gives the reader the impression that the endogenous nature of the mechanisms of credit creation by the banking system provides a necessary and sufficient condition for business cycles, whether it is associated with the arbitrary interference of authorities or not (Ibid. p. 140).

By contrast, in *Prices and Production*, the focus of Hayek’s interest has shifted to the “successive changes in the real structure of production which constitutes those fluctuations” (Hayek, Introduction to the English translation of *Monetary Theory and the Trade Cycle*, 1966, p 17). He now regards the “case of an increase of money in the form of credits granted to producers” (Hayek, 1935, p. 54) as the starting point of the analysis and sees in the “deliberate” decision-making by the monetary authorities the ultimate cause of the cycle (Hayek, 1935, p. 85).

Finally, in *Profit, Interest and Investment*, a contribution undoubtedly marked by his ongoing debate with Kaldor on Keynesian issues, Hayek minimises the role given to the banks and the

organisation of the monetary system (see Kaldor and Hayek, both 1942). Business cycles are now caused by a rise in the rate of profit and its effects on income distribution and factors substitution, the monetary rate of interest being kept constant.

Upon closer analysis, Hayek's hesitancy as regard to the monetary influences on the cycle may be attributed to the fact that he did not make sufficiently clear the institutional monetary framework he has in mind. His treatment of the interference by banks with the real propagation mechanisms in the course of the cycle provides a meaningful example of the lack of unity within Hayek's business cycle analysis as regard to his handling of monetary and banking patterns^{xxii}.

As well-known, the upswing of the cycle is characterized by an increase in the demand for capital emanating from producers perceiving new opportunities of investment thanks to bank-credit. Similarly to Mises, the newly raised capital is allocated to more roundabout processes of production. However, since full-employment prevails, the increase of capital goods can only be achieved through the withdrawal of productive resources already employed in shorter lines of production. Therefore, the growing production of capital goods goes hand in hand with a declining output of consumption goods. Assuming some delay in the wage rise, prices of capital goods rise at a greater rate than the prices of consumption goods, thus reinforcing the movement of expansion. Moreover, there are additional empowering factors linked to the 'organization of credit'. Let us consider in more details how Hayek describes the banking system. Unlike Mises, Hayek assumes a 'mix' monetary economy, involving both an exogenous and an endogenous kind of money. The commercial banks make their decisions according to their profits expectations, which depend on the risk characteristics of borrowers as well as the actions of their respective competitors. Risk-aversion of banks grows as the movement of expansion proceeds and is not independent from their pricing policy. Indeed, at a given risk-level, the choice not to satisfy demand (by imposing a too high loan rate) implies

a greater opportunity cost for the banker. This induces a winner's course problem, whereby banks are incited, so as not to lose their clients and not to encounter additional risk, to grant more credit in the rising tide even at the cost of a depletion of their own reserves. From this we are to understand that there exist an 'elastic' deposit multiplier which is likely to sustain growing productive activity.

However, a time will come where the consumers will face an insufficient supply of consumption goods, thus creating a tension on the market which will be worsened with the appearance of additional incomes generated by the upswing. Then a countermovement of relative prices will occur: the market price of consumption goods will rise while the one of capital goods will fall, and the old price ratio will be re-established. However, contrary to Mises, Hayek thinks that they are technical limits to the creation of credit, so that it is the specific behavior of the banks that determines the upper turning point of the cycle^{xxiii}. In other terms, the flexible deposit multiplier described above appears to be bounded. Hayek indeed indicates that, when the price of consumer goods begins to rise more quickly than the price of consumption goods, the ratio between cash payments and payments by cheque is altered in favor of the former. Consequently, in the course of a boom, the need for cash will increase along with prices and induce a cash drain that will force banks to restrict credit supply. Hayek's reasoning is as follows:

Concerted action in this direction, which for competitive reasons is the only action possible, will ensue only when the increased cash requirements of business compel the banks to protect their cash balances by checking further credit expansion, or when the Central Bank has preceded them. This, again, will only happen, as a rule, when the banks have been induced by the growing drain on their cash to increase their re-discount. Experience shows, moreover, that the relation between cheque-payments and cash payments alters in favour of the latter as the boom proceeds, so that an increased proportion of the cash is finally withdrawn from the banks (Hayek, 1966, pp. 174-175).

In this matter, Hayek follows Wicksell. To a certain extent, his approach could be criticized on the same grounds as Mises' critical argumentation with respect to Wicksell's treatment of the banking system. Indeed, in *Monetary Theory and the Trade Cycle*, Hayek gives the impression to take for granted a commercial banking system whose monetary liabilities enter circulation by way of loans to manufacturers and he emphasizes "the potential implicit in this institutional fact for the creation of money to interfere with the capital market's co-ordination of saving and investment" (Laidler, 1994, p. 9). However, in *Prices and Production*, when discussing the case of 'voluntary savings', he refers to a monetary system consisting in stable base money, whereby the confusion between "those deposits which find their origin in credit and those which arose through cash payments" (Hayek, 1966, p. 163), which was at the origin of the unsustainable cash drain in *Monetary Theory and the Trade Cycle*, is not allowed for anymore. As stressed by Trautwein, this 'dual' treatment of the monetary system renders Hayek's distinction between the cases of 'voluntary savings' and 'forced saving' inconsistent. There is indeed no reason to assume that, in the case of 'forced savings', banks act as passive brokers if we have in mind the same underlying institutional framework as the one prevailing in *Monetary Theory and the Trade Cycle*. Indeed, if we conceive banks as creators of money which are therefore unable to distinguish precisely between deposits originating in credit and those coming out cash payments, then an increase of voluntary savings would also imply an expansion of bank deposits which would trigger exactly the same kind of destabilizing mechanisms as the direct creation of credit^{xxiv}.

Let us now consider how Schumpeter dealt with the Wicksell-Mises encounter.

IV

Schumpeter's route

In Schumpeter's writings, references to Wicksell mark his consideration for the work accomplished by the Swedish author and his direct followers inside the Stockholm School in the field of monetary theory^{xxv}.

More specifically, Schumpeter acknowledges that Wicksell has made great progress for the development of a monetary analysis fully integrated with the economic theory of value and distribution, although he has not reversed the well-established tradition in economic theory according to which monetary theory is in a separate compartment and the theory of value and distribution in another. Schumpeter demonstrates this by commenting on the concept of 'neutral money' introduced by Wicksell. On this, it is worth quoting Schumpeter at length:

If, on the one hand, the facts of value and distribution are logically so independent of money that they can be set forth with only a passing reference to it, but if, on the other hand, it is recognized that money may act as a disturber, then the problem arises of defining how money would have to behave in order to leave the real processes of the barter model uninfluenced. Wicksell was the first to see the problem clearly and to coin the appropriate concept, Neutral Money. In itself, this concept expresses nothing but the established belief in the possibility of pure 'real' analysis. But it also suggests recognition of the fact that money *need* not be neutral. So its creation induced a hunt for the conditions in which money is neutral. And this point eventually led to the discovery that no such conditions can be formulated, that is, that there is no such thing as neutral money or money that is a mere veil spread over the phenomena that really matter –an interesting case of a concept's rendering valuable service by proving unworkable (Schumpeter, 1954, pp. 1088-89).

Likewise, Schumpeter points out that Wicksell was in rupture with the customary habit among theoreticians to treat banking activity as a passive device of intermediation between individual lenders and borrowers^{xxvi}.

Finally, he mentions Wicksell's well-known distinction between money and real rates of interest, indicating that:

[T]he Wicksellian emphasis upon the effects of possible divergences between money and real rates of interest does not constitute a compelling reason for abandoning the position that the fundamental fact about interest is a net return to physical goods, a position from which Wicksell himself never departed. However, it does constitute a good and sufficient reason for treating the money rate as a distinct variable in its own right that depends, partly at least, upon factors other than those that govern the net return to physical capital (natural or real rate). The two are related, of course. In equilibrium they are even equal. But they are no longer ‘fundamentally the same thing’” (Schumpeter, 1954, p. 1118).

Except for his conception of interest, Schumpeter’s allegiance to Wicksell is rather clear. First, the Schumpeterian ‘circular flow’ in his *Theory of Economic Development* simply replaces the Wicksellian “pure cash economy” (Wicksell, 1965, pp. 51-58). In the basic framework of the circular flow, money is primarily perceived as a special good serving the purpose of a unit of account and facilitating the circulation of commodities within the economy (Schumpeter, 1934, p. 53). However, metal money is not the only conceivable means of payment. Credit - in this case “normal credit” (Schumpeter, 1934, p. 100)- also plays a part. Together with commodity money, collaterals, or asset-backing requirements it serves as a counterpart to real exchanges.

Second, Schumpeter regards credit creation by banks as the *differentia specifica* of capitalism. In the same vein as Wicksell, he claims that the emergence of a banking system signifies a departure from the static case in that it gives rise to a new category of credit to which he refers as “abnormal credit” (Schumpeter, 1934, p. 102). This form of credit is associated with the case of economic development, that is with dynamic analysis, since without it neither innovation nor cycles were possible. Thus, the process of economic development creates a situation where the nature and role of money is dominated by its bank credit form. The key role of credit is the *creation* of purchasing power for the purpose of transferring it to innovators in order for them to finance their new productive activities. If the stationary state is confined to the mere transfer of already existing purchasing power, economic development

requires the creation of new means of payment. Bank credit thus consists in “new means of payment created *ad hoc*, since the entrepreneurs have no means of their own and since there are -so far- no savings”(Schumpeter 1934, p. 107). These means of payment do not only include money as such but also different kinds of credit instruments performing the same role as money^{xxvii}. Schumpeter argues that now “not only a part but the whole of the exchange process can be settled by (...) credit media” (Schumpeter 1934, p. 53).

Third, for Schumpeter, this generalised role of credit cannot but affect the market for loanable funds. Like Wicksell, he shows that credit creation by banks together with the institutional setting that renders it possible - i.e. an organised banking system producing new sources of purchasing power within the economy - disrupts the Walrasian adjustment mechanism of the supply and demand for cash balances. In such an environment, it is logically impossible to interpret the market for money and credit in the same way as any other market in which supply and demand would be represented by independent functions. Indeed, Schumpeter writes:

[The] demand for credit makes possible not only itself, but also a corresponding supply; and every supply makes possible a corresponding demand, so that supply and demand in this case do not confront each other as independent forces. To this extent, therefore, the banks determine not only to whom they will grant credit but also how much credit as a whole they wish to grant and what demand to call forth (Schumpeter (1917) 1956, p. 207).

Schumpeter’s adherence to Wicksell is less clear with regard to the definition of interest rates. On one side, in spite of his Austrian academic education and in contrast to Hayek and Mises, Schumpeter does not take Böhm-Bawerk’s theory of capital as a starting-point of his business cycle analysis. He indeed consider that such a conception of the interest rate is inapplicable to the understanding of economic development. For him, the real modifications implied by a decrease in the natural rate of interest, i.e., in Hayek’s eyes, the access to more roundabout

and therefore, more productive methods of production, cannot qualify for the role of an explanation of the process of economic development^{xxviii}. In other terms, the effect of a change in the volume of savings is capable of being currently absorbed within the economic system and cannot by itself create the alternation of booms and depressions we observe^{xxix}. According to Schumpeter, the emergence of interest is to be associated with dynamics, and the only factor of change that permits the passage from stationary states (including the case of ‘steady-growth’) to dynamics is innovation. This is the reason why he argues that the interest rate has to be reduced to zero in the state of what he called ‘the circular flow’^{xxx}.

On the other side, he clearly defines the rate of interest as essentially a ‘*monetary phenomenon*’ which owes its existence to the emergence of a positive rate of profit associated with innovative productive activity. Such a conception of interest is the consequence of Schumpeter’s definition of saving and investment as monetary magnitudes. Indeed, according to the author, investment gives rise to an equivalent amount of saving since the latter is defined independently from its real source. In his own terms:

By Saving we mean the earmarking, by an household, of an element of its current receipts –as distinguished from “capital gains”– for the acquisition of titles to income or for the payment of debt. If a firm does the same thing with an element of its net receipts from the sale of products and services, we shall speak of Accumulation. The distinction between Saving and Accumulation also applies, although it may be difficult to carry out, in cases in which, as in the case of many farmers, “firm” and “household” are one. We confine both concepts to decisions about monetary funds and we neglect, for convenience’s sake, any similar decision that may be taken with respect to commodities. Saving and Accumulation will thus be treated as elements of a monetary process: the complementary process in the world of goods constitute a distinct problem (Schumpeter, 1939, vol. I, p. 75).

On the ground of the previous definition of saving, the notion of real rate of interest loses its relevance since the interest factor is a purely monetary phenomenon. Schumpeter writes:

Interest –more correctly, the capital sum plus interest– is, to use our turn of phrase, the price paid by borrowers for a social permit to acquire commodities and services without having previously fulfilled the condition which in the institutional pattern of capitalism is normally set on the issue of such a social permit, i.e., without having previously contributed other commodities and services to the social stream (Schumpeter, 1939, vol. I, p. 123).

Moreover, as the rate of interest is derived directly from the emerging positive rate of profit associated with the gains implied by the operation of innovative productive activities, it is also a short-term phenomenon. In this prospect, the Wicksellian dichotomy between real and monetary rates of interest becomes meaningless. What indeed turns out is that, for Schumpeter, the real and the monetary rates are no longer determined independently from each other since the magnitude of the real rate derives from the difference between the monetary rate of interest and the rate of inflation. This is what suggests the following passage:

Nominal and real rates in this sense are only different measurements of the same thing or, if we prefer to speak of different things even in this case, it is the monetary rate which represents the fundamental phenomenon and the real rate which represents the derived phenomenon (Schumpeter, 1939, vol. I, p. 111)

By contrast, Schumpeter’s references to Mises are scarce^{xxx1}, which is surprisingly enough judging by the fact that they knew each other from Böhm-Bawerk seminars.

Moreover, Schumpeter’s comments in *Business Cycles* on the Hayek-Mises’ approach exemplify his misinterpretation of Mises’ explanation of the process a re-adjustment between the two rates of interest^{xxx2}.

Indeed, Schumpeter alleges that the flaw in the Hayek-Mises’ theory is that “the motive force [for cyclical movements] is entirely supplied by the initiating action of banks” (Schumpeter, 1939, vol. II, p. 634).

But if Schumpeter's critique is acceptable in view of Hayek's explanation of the upper turning point, it is not the case any more when applied to Mises. Indeed, as we have emphasized, Mises does not invoke the behavior of banks, nor the existence of any limit to the creation of credit due to the shrinking of banks' reserves, in his explanation of the reversal of the cycle. As suggested by Bellofiore, Schumpeter's interpretation overlooks the fact that "Mises' main concern is to show that Wicksell's extreme case of a single bank and of a 'pure credit system', in which there is no limit to the amount of credit the bank(s) can create, is anything but unrealistic; on the contrary, it is representative of the natural working of a modern monetary economy" (Bellofiore, 1998, p. 533).

To contrast his own view with the Hayek-Mises' one, Schumpeter attempts to prove that both the initiative of banks and mechanism of interest rates are, as elements of explanation, superfluous since, as we may infer from theoretical considerations, and as we can see statistically and historically, primary factors which disrupt the existing state of equilibrium as well as those which bring about the upper turning point of the cycle are independent of the changes in the rates of interest that have previously occurred. As he puts it: "[i]n this sense, we may say that interest no more causes the down turn than it causes the excursion of the cycle into prosperity" (Schumpeter, *Ibid.*, p. 636).

As well-known, Schumpeter attributes the origin of business cycles to discontinuous changes due to innovations that disrupt the 'circular flow' which was prevailing before. At first sight, this position leads the reader to interpret Schumpeter's *Theory of Economic Development* as a real approach^{xxxiii}. This however does not mean that Schumpeter neglected the role of the banking system within the process of economic development. On the contrary, according to him, innovative activities cannot be undertaken without the collaboration of bankers who provide 'entrepreneurs' with the necessary financial means^{xxxiv}.

Moreover, the influence of banks goes far beyond the mere provision of credit. Schumpeter writes:

Since all reserve funds and savings today usually flow to him [the banker] and the total demand for free purchasing power, whether existing or to be created, concentrates on him, he has either replaced private capitalists or become their agent ; he has himself become the capitalist par excellence. He stands between those who wish to form new combinations and the possessors of productive means (Schumpeter, 1934, p. 74).

More precisely, in his analysis, banks appear to exert permanent and asymmetric effects upon the “money market” which includes both the “sphere of hoards and reserves” and the “sphere of capital”^{xxxv}. Moreover, Schumpeter assumes that these two spheres do not work separately but interfere within a single “money market”. On the ground of this interdependence, banks hence extend their influence to the sphere of income-yielding assets. Schumpeter indeed writes:

The most cursory glance at money market processes shows that the banks regulate both stock market speculation and the pulse-beat of industrial and commercial life, now restraining, now stimulating them (Schumpeter, 1956, p. 176).

Such an assertion indicates that banks exert a very strong control on economic life. In particular, they may interact with real propagation mechanisms during the cycle by altering the distribution of productive resources within the economy. These reallocation effects may thus interfere with price competition and channel productive efforts towards new activities. In contrast to Hayek’s analysis, these effects are not transitory. The real modifications following credit expansion durably alter instead, through a process of adaptation, the system of values prevailing within the economy.

Turning to the problem of the limit to credit expansion, Schumpeter's position may be re-constructed as follows. First, he suggests the existence of a natural limit to the credit creation process. Indeed, since the interest rate on loans is conceived as a 'tax' on the yield of innovation, declining profits resulting from intensive exploitation of inventions restrain the demand for finance. Second, according to their expectations with respect to borrowers' solvency, banks can decide to ration credit and therefore, they become able to control their own level of liquidity^{xxxvi}.

Finally, the phenomenon of inflation appears to be of secondary importance in Schumpeter's analysis, so that the issue of the cash drain and the resulting collapse of the monetary system is no more relevant. According to Schumpeter, the new sources of purchasing power created by banks are indeed oriented towards an individual entrepreneur for a specific productive purpose. To put it differently, credit precedes the realization of entrepreneurial gains. In this respect, credit inflation may arise, but it can only be temporary, as explained in the following passage:

After completing his business (...) [the entrepreneur] has, if everything has gone according to expectations, enriched the social stream with goods whose total price is greater than the credit received and than the total price of the goods directly and indirectly used up by him. Hence the equivalence between the money and commodity streams is more than restored, the credit inflation more than eliminated, the effect upon prices more than compensated for, so that it may be said that there is no credit inflation at all in this case –rather deflation– but only a non-synchronous appearance of purchasing power and of the commodities corresponding to it, which temporarily produces the semblance of inflation (Schumpeter, 1934, p. 110).

This assertion clearly indicates that the banking system cannot have the detrimental effects associated with a cumulative inflationary process that are assumed by Hayek. Far from artificially altering the structure of prices, banks allows the modifications of the system of

values that are associated with innovation to occur. They thus perform a necessary function for economic development, which would not be feasible otherwise.

Our revival of Hayek and Schumpeter, in the light of their common Wicksellian-Misian inheritance has allowed us to underline the similarities between these four authors with respect to their treatment of the relation between money defined in a broader sense (i.e., including bank-credit) and the working of the market for capital.

Indeed, both Schumpeter and Hayek, as Wicksell and Mises, consider that credit creation by banks alter the conditions under which investment takes place. However, the explanations provided by each of them with regard to the influence of banks in the unfolding of dynamic economic processes sharply differ.

If for Mises and Hayek, the ‘lengthening effect’ plays a crucial role in their respective explanations of economic fluctuations, for Wicksell and Schumpeter, this effect is, if ever existing, conceived as being of minor importance.

Now, as we have developed, Mises’ *Theory of Money and Credit* contains the foundations for a conception of the dynamics of capital accumulation whereby the modifications in the distribution of income and wealth implied by the creation of new means of payments by banks could be consistent with real growth^{xxxvii}. This view is supported by the fact that Mises considers that the banking system as a whole encounters no technical limits to the circulation of fiduciary media, provided all banks issue fiduciary media according to uniform principles. Therefore, if they are not constrained by some sort of deliberate intervention by monetary authorities, banks may durably affect the distribution of economic resources in such an extent as to increase the amount of means of subsistence within the economy. As we have shown,

such a conception is in accordance with Schumpeter's view of the way a monetary works in the presence of a developed banking system.

Finally, both Hayek and Wicksell focus on the limits of credit creation that a banking system is likely to encounter over the cycle as a determining force of business fluctuations. By contrast, as we have seen, Mises emphasizes the fundamental role played by the indirect monetary influences through the variations in the objective exchange value of money and deliberately excludes all kinds of institutional constraints to credit creation by banks from his analysis of the cycle. As far as Schumpeter's description is concerned, focus is put on the real forces (imitation, competition, liquidation, etc.) emanating from the process of adaptation to technological innovation.

Now, if we concentrate on Hayek and Schumpeter's theories of business cycles, the aforementioned differences may be reflected on in the light of their respective views of economic dynamics and its implications in terms of monetary policy.

V

Hayek and Schumpeter's views of the dynamics of monetary economies and their corresponding policy

prescription : two distinct views of how credit shapes the economy

IN THE PREVIOUS SECTION WE HAVE CONCENTRATED on the common Wicksellian-Misian origin of Hayek and Schumpeter's conceptions of money and banking and focused on their respective views concerning the influence of the banking system on the working of the market for capital.

We have then emphasized that the two Austrian authors contrast markedly as regards their description of the mechanisms that constitute economic dynamics.

The oppositions between Hayek and Schumpeter's theories of business cycles should be reconsidered in the light of the debates that took place in the 20s and 30s' among German speaking economists^{xxxviii}. The conflicting issue of whether or not equilibrium theory could account for the observed fluctuations of main macroeconomic magnitudes has constituted one of the main concern of those discussions. The following quotation from Schumpeter gives an account of this conflict:

There is the 'theory' that the economic process is essentially non-oscillatory and that the explanation of cyclical as well as other fluctuations must be therefore be sought in the particular circumstances (...) which disturb that even flow (...) And there is the 'theory' that the economic process itself is essentially wave-like –that cycles are the form of capitalist evolution (Schumpeter, 1952, p. 252).

These two confronting views of economic processes might serve as a convenient starting point for contrasting Hayek and Schumpeter's respective approaches of business cycles.

On one side, Hayek indeed insists on the necessity “to build on the foundations given by the concept of a tendency towards an equilibrium [because] it is this concept alone which permits us to explain fundamental phenomena like the determination of prices or incomes, an understanding of which is essential to any explanation of fluctuation of production” (Hayek, 1935, p. 34).

On the other side, Schumpeter regards business cycles as the major manifestation of economic dynamics and considers that equilibrium theory is not qualified for providing any satisfactory explanation of economic fluctuations. In the Preface of *Business cycles*, he wrote:

Analysing business cycles means neither more nor less than analysing the economic process of the capitalist era (...) Cycles are not, like, tonsils, separable things that might be treated by themselves, but are, like the beat of the heart, of the essence of the organism that display them (Schumpeter, 1939, vol. I, p. v).

Upon closer investigation, things are far more complicate. On one hand, Hayek's main concern is to investigate empirical questions such as the existence of business cycles which, according to him, need a theoretical explanation. Nevertheless, he considers as part of the task of a theoretician "to determine how the fact of cyclical oscillations in economic activity can be reconciled with the general theory of equilibrium, or how that theory can be reconciled with facts" (Hayek, 1935, p. 34). In other terms, it seems that we are justified in contending that, far from being fully satisfied with the usual general theory of equilibrium, Hayek always tried to extend its boundaries so as to make it apt to account for disequilibrium economic situations. Plausibly, what Hayek undermined is that, to be consistent, such a endeavor implied more drastic modifications of the usual economic analytical tools as he thought beforehand^{xxxix}.

On the other hand, Schumpeter took a more radical way, consisting in denying the possibility to reconcile the equilibrium approach with any explanation of dynamic phenomena such as business cycles. Dynamics is therefore conceived as a separate side of economic theorizing that not only deals with distinct matters but also with different methods and tools that have to be forged for that purpose^{xl}. However, as stressed by Perroux, Schumpeter's theory of development also entails an inner tension which derives from the methodological dilemma due to the relationship between abstract logic analysis and the historical and sociological approach^{xli}. Schumpeter's description of the succession of waves of innovation is a striking example of this tension^{xlii}.

These differences between Hayek and Schumpeter are important not only for identifying their respective vision of economic dynamics but also for interpreting their corresponding policy prescriptions.

In the field of monetary policy, both Hayek and Schumpeter agree that price-stabilization policies are not to be prescribed because they perturb the free play of prices and its essential function of signaling modifications in scarcity conditions as well as providing the necessary set of information on which agents rely when making economic decisions^{xliii}. In particular, they both contend that when technical progress raises productivity, the level of price should fall while total money incomes remain unchanged^{xliiv}. However, there are important differences in their respective argumentations.

In Schumpeter's 'pure model', the cyclical dynamics brings about recurrent expansions and contractions of credit-money supply. Therefore, Schumpeter is favorable to some elasticity of credit over the cycle so that the price level would rise in the upswing and fall in the downswing.

By contrast, Hayek's prescription is to eliminate such cyclical fluctuations. Consequently, he rules out all kinds of external intervention that would allow the quantity of money to vary. Indeed, in his 1928 article on intertemporal equilibrium, he criticized the gold exchange because it allows the stock of gold to vary. Likewise, he was not favorable to free banking because it necessarily implies some elasticity of the supply of bank-issued money.

However, there is a puzzle in the development of Hayek's view with regard to monetary policy considerations. Indeed, his claim for a monetary system in which any change in the quantity of money should be held constant, which is exemplified in his 1928 article, has been amended several times until it has been completely dismissed in his last work, *The Denationalization of Money* (Hayek, 1978)^{xliv}.

In this respect, it is interesting to note that during the formation period Hayek's view on the cycle was not so dissimilar from that of Schumpeter to the extent that he consented to some benefits of forced saving. In 1925, he wrote:

There can be no doubt at all that the development of the capitalistic economy over the last 100 years would not have been possible without the ‘forced saving’ effected by the extension of additional bank credit. Hence economic fluctuations must probably be regarded as necessary accompaniment of the accelerated development experienced by countries of the Western world in the last 150 years. Such fluctuations, in turn could be entirely eliminated only if the tempo of this development was substantially lessened...(Hayek, 1984, p. 103).

This position should have led him to make some concessions with respect to his later radical claim. Indeed, as already mentioned, in *Monetary Theory and the Trade Cycle*, he seems to believe in a flexible credit multiplier so that he should have admitted that this mechanism would be as effective in the case of ‘forced saving’ as in the case of ‘voluntary saving’. But as we know, by the time he wrote *Prices and Production*, Hayek switched to a more restrictive explanation of business cycles, seeing in the deliberate decision-making by monetary authorities the ultimate cause of fluctuations, implying that this harmful influence should be avoided. However, in the same book, he acknowledges that there were one “exception to the general rule that, in order that money should remain neutral towards prices, the amount of money payments or the amount of money payments should be invariable” (Hayek, 1935, p. 123). This improvement appeared as he went to consider the changes in the velocity of money circulation which he had previously ignored. This led him to revise his monetary policy accordingly, now stating that it was the “total money stream” (Hayek, 1935, p. 131), i.e. the quantity of money times its velocity of circulation, that should remain constant.

As is obvious now, Hayek and Schumpeter were critical of the price stabilization proposal yet for different reasons. Clearly, Hayek attacks this prescription from the following angle : a stable instead of a falling trend of the price level in a growing economy causes an artificial increase of the total money stream, leading to an inevitable crisis^{xlvi}. For Schumpeter, a policy which stabilizes prices inhibits economic development by preventing the process of credit

creation by banks to have its full effects, i.e. to provide the innovators with the required means of payment in order to implement their productive activity.

From a different sight, Hayek and Schumpeter shared the view that national price stabilization policies conflicted with the international prevailing system of the gold standard.

Although both Hayek and Schumpeter did not considered the gold standard as an ideal system in theory, they nevertheless esteemed the fact that it was designed to work automatically, i.e., without the interference of the political sphere.

In 1927, Schumpeter wrote that “even if gold (...) surrenders the monetary system to the arbitrariness of gold production, it prevents other and more harmful arbitrary action” (Schumpeter, 1927, p. 161)^{xlvi}.

In 1937, Hayek’s stance at the gold standard has moved from his early position. As suggested by White (1999), this was due to his switch from the ‘constant money stock’ to the ‘constant money stream’ norm in *Prices and Production*^{xlvi}. This theoretical improvement altered his critique of the gold standard. While in 1928, dissenting from Mises’ view, he rejected it entirely on the grounds that it allows the quantity of gold to vary, in *Prices and Production*, when warning that an attempt “drastically to reconstruct our monetary system, in particular to replace the semi-automatic gold standard by a more or less arbitrarily managed currency” poses dangers “much greater than the harm which is possibly done by the gold standard” (Hayek, 1935, p. 127), his position is akin to the one of his teacher^{xli}. In the same vein, in *Monetary Nationalism and International Stability*^{xlii}, similarly to Schumpeter, he indicates that they are merits in “any mechanical principle (such as the gold standard)” which at least has an equilibrating mechanisms for distributing the global money stock among countries (Hayek, 1937, p. 93).

Finally, the arguments developed in *The Denationalization of money* lead Hayek to move again his position with respect to the gold standard. He now favors free banking and predicts that in a free competition among different types of money, the public would choose stable-valued private fiat-money over gold¹.

VI

Conclusion

THE RE-EXAMINATION OF HAYEK AND SCHUMPETER'S theories of banking and business cycles clearly confirms the existence of a Wicksellian connection. This result is not surprising. It is indeed now commonplace to recognize the widespread influence of the Swedish tradition within the debates about macroeconomic issues that marked the 20s and the 30s. Following this line, it should be reminded that both Hayek and Schumpeter were also great historians of economic thought and that they strongly participated to the diffusion of Wicksell's ideas among the English speaking readers. Mises also greatly contributed to establish this connection among the Austrians. His major work, the *Theory of Money and Credit*, though often undermined, clearly paved the way for the development of a business cycle approach tying together Wicksell's analysis of credit and the Austrian theory of capital. Furthermore, from what we have seen, the Mises' synthesis has inspired two distinct explanations of the role played by credit and the banking system within the working of the economy. Our interpretation is that Mises' work already indicated the two possible extensions that were respectively privileged by Hayek and Schumpeter. Hayek took one of the direction which consisted in concentrating on the real capital requirements for the economic production structures to be maintained in equilibrium through time and therefore regarded credit and the

organization of the banking system as harmful factors. Schumpeter favoured the other way which relied on the 'ultra Wicksellian' idea of a 'pure credit economy' and thus conceived credit and its associated effects on income distribution and resources allocation as a necessary lubricant for growth.

Finally, although Hayek and Schumpeter find common ground in their monetary policy prescriptions, we should not be surprised that, in view of their quite distinct visions of dynamic economic processes, they parted company on the arguments against price-stabilization policies.

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- i. See Hong's article on Schumpeter vs. Hayek's theory of capital and their respective vision of economic dynamics. See also Klaussinger's paper on Schumpeter and Hayek's respective views of the Great Depression.
- ii. This connection is usually undermined in the literature. See, for instance, David Laidler's survey on the Austrians and the Stockholm School, where Mises contribution to the development of Austrian business theory is not given due account (Laidler, 1991, p. 298). As suggested by Bellofiore (1998), one of the reasons of the relative lack of receptivity of *Theory of Money and Credit* could be that Mises never replied to Wicksell's review of the first edition of the book in the *Zeitschrift für Volkswirtschaft, Sozialpolitik und Verwaltung* in 1914. We are grateful to Bellofiore for indicating that the English translation of this review is now available in Bien-Greaves and McGee (1993). See Bellofiore (1998), p. 570, note 50.
- iii. The same point is also sometimes made in relation to the Robertson-Keynes Cambridge-based approach of the late 20s and early 30s. We shall not consider this connection here since it is beyond the scope of this paper.
- iv. Mises defines the objective exchange value of money as follows: "[b]y 'the objective exchange value of money' we are accordingly to understand the possibility of obtaining a certain quantity of other economic goods in exchange for a given quantity of money" (Mises, 1980, p. 122).
- v. Even if Mises does not considered himself as an adherent of Böhm-Bawerk's theory of interest, he regards it as a satisfactory solution of the problem. In particular, he recognizes that Böhm-Bawerk was the first to clear the way that leads to understanding of the problem; he was the first to make it possible systematically to relate the problem of interest to that of the value of money (Mises, 1980, footnote p. 378).
- vi. On this point, Mises adopts Menger's classification of goods according to which goods are evaluated in relation to their relative distance from final goods. Present goods are consumption goods, or goods of first-order, the value of which depends on the expected utility from consumption. Goods of higher-orders comprise the set of heterogeneous intermediate goods that are gradually incorporated within the process of production. Their respective value is determined by a process of imputation back to the lower order goods, in accordance with the marginal contribution they make to the production of final goods.
- vii. The issue of 'fiduciary media' corresponds to the creation by banks of money substitutes that are not covered by an equivalent and simultaneous quantity of goods or money proper. Mises indeed distinguishes between money in the broader sense and money in the narrower sense. The latter corresponds to money proper in the usual sense (including fiat money), while the former comprises also money substitutes. These substitutes are either *money certificates* or *fiduciary media* depending on whether or not they are wholly covered by money in the narrower sense and serve the same purpose as money proper since they are convertible and secure claims to payments. They then add to the total quantity of money in circulation (Mises, 1980, p. 155). In the following, interest is focused on fiduciary media, that is banknotes and current accounts which are not wholly covered by money in the narrower sense. This distinction echoes the opposition made by Mises between the *commodity credit* and the *circulation credit*. The former corresponds to "those credit transactions which are characterized by the fact that they impose a sacrifice on that party who performs his part of the bargain before the other does-the foregoing of immediate power of disposal over the exchanged good, or, if this version is preferred, the foregoing of immediate power of disposal over the surrendered good until the receipt of that for which it is exchanged"

(Ibid. p. 297). By contrast, the second kind of credit transaction is “characterized by the fact that in them the gain of the party who receives before he pays is balanced by no sacrifice on the part of the other party” (Ibid.). Obviously it is with this second sort of banking business alone that Mises is concerned. It is worth pointing out here that this distinction is very similar, as we shall see, to Schumpeter’s opposition between *normal credit* and *abnormal credit*.

viii. In fact, the effect on the rate of interest is as permanent as the fluctuations in the objective exchange value of money (Mises, 1980, p. 384).

ix. Mises (1980), p. 400.

x. For Mises, the business of banking falls into two distinct branches. The first one is restricted to the “negotiation of credit through the loan of other people’s money while the second is characterized by the granting of credit through the issue of fiduciary media (...)” (Mises, 1980, p. 293). For him, provided all banks act according uniform principles, the circulation of fiduciary media meets no other natural limit than the banks’ running costs, which are extremely low. Thus, if there is no artificial restriction of the credit system, i.e., if there is no some sort of deliberate human intervention, the activity of issuing fiduciary is almost infinitely elastic (Ibid. p. 346).

xi. This is one of the point on which Wicksell replied to Mises’ first edition of the *Theory of Money and Credit* in his 1914 review. The argument is found in Uhr (1960, p. 257). What Wicksell objects to Mises is the fact that the real rate of interest would be reduced to the level of the loan rate by real capital formation resulting from “forced saving” (Mises, 1934, pp. 355-365). For Wicksell, the entrepreneurs are not forced to lengthen the period of production because, if we assume that entrepreneurs used an optimal production period before the loan rate became low, then they will continue to produce for a while with the same length production period. Meanwhile they merely pocket their gain by being able to obtain credit at less expense than they had counted on. This gain induces them to extend their operations in the next period, in the sense of “widening” the capital structure. This attempt at widening forces them to bud up wages in competition with one another. Now, if prices remained constant, the increase in wages would reduce the real rate and would induce entrepreneurs to offset this tendency by lengthening the period in the sense of “deepening” or increasing its vertical dimension. But prices do not remain constant. Instead they rise, because real capital –the subsistence fund– has not increased appreciably in so short a time. In fact the subsistence fund may have decreased since the loan rate, as an inducement to saving, has been reduced. On the other hand, money wages and rents have risen. Thus, as prices rise, entrepreneurs are again in a position to continue making gains, despite higher wages and rents. Consequently, they are not forced to extend the capital structure in the vertical dimension, and thus the real rate does not fall” (Wicksell, 1914, p. 147).

In 1915 however, faced with objections by Davidson and Mises, Wicksell when the second Swedish edition of *Lectures-II* was published, made concession toward his critics concerning the mutual influence of the money rate and the natural rate:

The objection has been raised to the whole of the above reasoning, that a lowering of the loan rate must also depress the real rate so that the difference between them is more and more leveled out and thus the stimulus to a continued rise in prices eliminated. This possibility cannot be entirely rejected. *Ceteris Paribus* a lowering of the real rate unconditionally demands new real capital, i.e., increased saving. But this would

certainly occur, even if *involuntarily*, owing to the fact that higher prices would compel a restriction of consumption on the part of those who had fixed money incomes (...) (Wicksell, Lectures-II, pp. 198-199).

xii. This need not to be the case. It is worth mentioning here that, in contrast to Hayek (1966, 1935), Mises does not make this assumption.

xiii. Hayek gives a similar account of the movement of relative prices during the cycle. As stressed by Hicks (1967), some delay (of consumption relative to wages, or in the wage rise) must be supposed for the Hayek story to make sense. As for Mises, see Ellis (1934, p. 336) and Bellofiore (1998, note 53), who support Mises claim, i.e., a delay in wages. However, though this assumption is central for the unfolding of the cycle, it must not be taken for granted, given that the financing of increased activity involves an increase in wages and therefore, a corresponding increase in demand for consumption goods. See Bellofiore (1998, note 34).

xiv. Insofar as they experience rising wages, they would rather increase their demand for consumption goods.

xv. This reinforcing effect on the rate of interest on capital results from transitory movements in the objective exchange value of money that are linked to the fact that “variations in the exchange value of money do not appear everywhere simultaneously and uniformly, but start from a particular point and only spread out gradually throughout the market” (Mises, 1980, p. 387). More precisely, Mises writes that it is the entrepreneurs who generally benefit from the increase of the issue of fiduciary media. Indeed, if the objective exchange value falls, the entrepreneur gains in the short run since “he will be able to meet part of his expenses of production at prices that do not correspond to the higher level, while, on the other hand, he will be able to dispose of his product at a price that is in accordance with the variation that has meanwhile occurred” (Ibid.). This circumstance cannot fail to have an effect on the interest rate on loans. Indeed, those entrepreneurs who benefit from inflation, i.e., those that are up the scale of goods, are prepared if necessary to pay a higher rate of interest, and the competition of other would-be-borrowers, who are attracted by the same prospects of profits, will accept the higher rate. Thus, as long as this process going on and as differential profits (or losses) occur, there is a tendency for the interest rate to increase (or to decrease) depending on whether the objective exchange value of money falls (or rises) (Ibid.).

xvi. Mises believes that a precise re-establishment of the old price ratio between goods of the first order and goods of higher orders is not possible. On one hand, the intervention of banks has brought about a redistribution of income and property. On the other hand, the automatic recovery of the loan market involves certain of the phenomena of a crisis (a certain degree of irreversibility, social losses of value, etc.), which are the signs of the loss of some of the capital invested in the excessively lengthened roundabout processes of production. According to Mises, the remaining trace of all these disturbances will be a general increase of the objective exchange value of money (Mises, 1980, p. 402).

xvii. As emphasized by Bellofiore (1998), in times of hyperinflation, things are even worse since, contrary to the usual assumption by Mises of static expectations, now, expectations do not only reflect previous inflation rate but anticipate the future state of the market (Mises, 1923, pp. 8-9). This circumstance leads to an even more drastic fall in the objective exchange value of money. In this case, prices rises at a greater rate than the growth of money and the loan rate of interest can then rise without bounds (Mises, 1980, p. 402). For more details, see

Bellofiore (1998, p. 568, note 44).

xviii. If the purchasing power of the commodity money is too low it discourages the production of the commodity which serves as money, but increases, *ceteris paribus*, its industrial consumption, and the deficiency which would arise as soon as consumption began to exceed production has to be made up from the bank reserves.

xix. As suggested by Bellofiore, this characteristic, i.e. Mises' reference only to fiat paper money in his theory of the cycle, has been overlooked by the secondary literature (Bellofiore, 1998, p. 570, note 49). See also Moss (1976, pp. 36-37).

xx. In this respect, Hayek's reading of Wicksell is worth pointing out. For Hayek, Wicksell's success in his attempt to link money and capital accumulation is essentially due to "the fact that his attempt was based on a modern and highly developed theory of interest, that of Böhm-Bawerk" (Hayek, 1933, p. 20). However, he adds:

But by a curious irony of fate, Wicksell has become famous, not for his real improvements on the old doctrine, but for the one point in his exposition in which he definitely erred: namely, for his attempt to establish a rigid connection between the rate of interest and the changes in the general price level (Ibid.).

xxi. On this point, Hayek pays a true tribute to Mises. He indeed acknowledges that Mises "has succeeded in transforming the Wicksellian theory into an explanation of the credit cycle which is logically satisfactory" (Hayek, 1966, p. 22).

xxii. In his 1932 review of *Prices and Production*, Sraffa points out that what one would have expect from Hayek is that he would have provided a comparison between what he refers as 'neutral money', which comes to the same as a state in which there is no money at all, and other monetary systems. He writes:

We therefore might expect that Dr. Hayek would, in discussing a number of assumed cases in which equilibrium is disturbed, compare the results in a moneyless economy with the corresponding results obtained under various monetary systems, or policies. This would bring out which are the essential characteristics common to every kind of money, as well as their differences, thus supplying the elements for the estimate of the merits of alternative policies (Sraffa, p. 1995, p. 199).

xxiii. See A. H. Hansen and H. Tout (1933), pp. 133-135 and M. Colonna (1994), pp. 41-44.

xxiv. See T-M Trautwein (1994), p. 77 and T-M Trautwein (1996), pp. 45-46.

In his review of *Prices and Production*, Sraffa makes a similar statement. He criticizes Hayek's distinction between the cases of 'voluntary savings' and 'forced savings', stating that there is no reason for the latter to be less stable than the former. He argues that the crisis resulting from "the attempt of agents to expand consumption to the usual proportion" is not likely to occur since:

[O]ne class [the producers] has, for a time, robbed another class [the consumers] of a part of their incomes; and saved the plunder. When the robbery comes to an end, it is clear that the victims cannot possibly consume the capital which is now well out of their reach. If they are wage-earners, who have all the

time consumed every penny of their income, they have no wherewithal to expand consumption. And if they are capitalists, who have not shared in the plunder, they may indeed be induced to consume now a part of their capital by the fall in the rate of interest; but not more so than if the rate had been lowered by the 'voluntary savings' of other people (Sraffa [1932], 1995, p. 203-204).

See also A. H. Hansen and H. Tout (1933), pp. 139-140 and H. Neisser (1934), pp. 436-439.

xxv. In his *History of Economic Analysis*, Schumpeter ranks Wicksell's contribution –together with the ones of Walras, Marshall and the Austrians (Menger, Wieser, Mises) –among the great performances in this field during the period 1870-1914 and later, even he adds with some irony that “posthumously he acquired even greater international reputation as monetary theorist than either Marshall or Walras (...) due to the facts that his Swedish disciples never ceased to call themselves Wicksellians, even if they criticized and surpassed him, and that his message became accessible in German at a relatively early date and in a form that was not so forbidding as was that of Walras” (Schumpeter, 1954, p. 1085).

Note also that Schumpeter paid a specific tribute to Wicksell in a German article entirely dedicated to the works of the Swedish authors (Schumpeter, 1927a, pp. 238-251) .

xxvi. More specifically, Schumpeter describes Wicksell's achievement in his famous model of the Cumulative Process as the combination of two facts that had become the concern of more and more economists, i.e. 1) “that there is no such thing as a quantitatively definite need for loans or discounts and that the actual amount of borrowers' demand is as much a question of the banks' propensity to lend and of the rates they charge as it is a question of borrowers' demand for credit” ; 2) “that the practice of financing nothing but current trade – discounting good commercial paper– does not guarantee stability of prices or of business situations in general or, in depression, the liquidity of banks” (Schumpeter, 1954, pp. 1112-1113).

xxvii. Schumpeter lists them as “commodities which in fact circulate as money”, “money made of a material the market price of which is less than the purchasing power of the monetary unit made of it”, “bank notes” but also “current accounts and clearing accounts”, “the amount of all payments which are disbursements out of income and are handled exclusively by compensation” and, finally, “credit instruments and claim titles of all kinds, to the extent that they in fact perform the role of money” (Schumpeter, (1917) 1956, p. 207).

xxviii. For Schumpeter, the 'lengthening effect', referred by him as the “Hayek effect” which he defines as “the effect on investment of a rate of interest lower than would have obtained had the process been left to itself” (Schumpeter, 1939, vol. II, p. 812), is a mechanism of secondary importance. According to him, the preoccupation with the vertical composition of capital, fails to account for the transfer of resources that characterizes ‘the process by which the effects of the entrepreneurial activity spread (...) over the whole system, dislocating values, disrupting the equilibrium that existed before.’ (Schumpeter, 1939, vol. I, p. 132). Since his main concern is about the process of diffusion of novelty within the whole economy, he prefers an even more disaggregated approach to the analysis of economic processes, which also allows to deal with the sectoral (horizontal) investment shifts which constitute an essential characteristic of the mechanisms of technological diffusion.

xxix. Schumpeter (1934), p. 68 and Schumpeter (1939), vol. I, p. 78.

xxx. Controversial as it is, the question of whether this assertion is plausible or not is not relevant to us in this

paper. Furthermore, as suggested by Samuelson (1943) Schumpeter's conception of the circular flow could be saved by interpreting that Schumpeter holds the less extreme version that there would exist a positive rate of interest in the stationary economy. Indeed, in the case referred by Schumpeter as 'steady-growth' and which is to be interpreted as a mere extension of the static case of the circular flow, both the rate of interest and saving can display positive values. Nevertheless, this case does not belong to the field of dynamics as defined by Schumpeter, since it deals with changes that can be accommodated in a routine way. What is actually observed is "an increase in the more durable elements, let us call them machinery, such as will exactly equal the additional saving offered both in value and cost, which is what we mean by saving creating its own demand (...). The result would, in fact, be a steady growth of the system's industrial outfit by the steady addition to it of new units of plants and machinery, which, however, must be of the same types as those which are already in use or would be in use but for lumpiness, in order to exclude a new and different element which would otherwise intrude" (Schumpeter, 1939, vol. I, p. 80)

xxxi. In *Business Cycles*, Schumpeter describes Mises' analysis of the cycle as an extension of Wicksell initial framework of the consequences of a divergence between the real and the monetary rates of interest. He indeed writes:

Suppose that banks emerge from a period of recovery or quiescence in a liquid state. Their interest will prompt them to expand their loans by lowering their rates until these are below the Wicksellian real rate, which, as we know, is Böhm-Bawerk's real rate. In consequence, firms will invest –especially in durable equipment with respect to which rate of interest counts heavily– beyond the point at which they would have to stop with the higher money rate that is equal to the real rate. Thus, on the one hand, the time structure of production is distorted. This process can not go on indefinitely, however –there are several possible reasons for this, the simplest being that banks run up against the limits set to their lending by their reserves– and when it stops and the money rate catches up with the real rate, we have an untenable situation in which the investment undertaken on the stimulus of an 'artificially' low rate proves a source of losses: booms end in liquidation that spell depression (Schumpeter, 1954, p. 1120).

xxxii. See Bellofiore (1998), p. 533.

xxxiii. In this respect, Schumpeter's position as regards the origin of disequilibrium is similar to the one of Wicksell. As we know, the cumulative process, although being a far less sophisticated kind of dynamics, starts by a real productivity shock which create a divergence between the monetary and the natural rates of interest.

xxxiv. It is interesting to note that Hayek considers this aspect of Schumpeter's analysis as a drawback. Let us remind how Hayek characterizes it:

This group [of theories] pays close attention to the monetary inter-connections and expressly emphasizes them as a necessary condition for the occurrence of the processes described. But they fail to pass from this realisation to the necessary conclusion; to make it a starting-point for their theoretical elaboration, from which all other particular phenomena have to be deduced. To this group belongs the theory of Professor J. Schumpeter... (Hayek, 1966, p. 97).

xxxv. The 'sphere of capital' consists of income-yielding assets. It includes the real estate and mortgage markets as well as the stock market (Schumpeter, [1917], 1956), p. 176.

The common characteristic of these spheres and therefore the distinctive feature of the money market as compared to the narrower ‘credit market’ is related to the fact that they permit the working of stock markets. In this framework, it is then clear that the role of banks is not limited to the control of credit. As we have emphasized, credit creation by banks allows the emergence of a positive rate of interest which stimulates savings. Therefore, the “sphere of hoards and reserves” is strongly dependent on banks since the latter modify, through their activity of granting credit, the volume of available liquidity.

xxxvi. Several passages of Schumpeter suggest this view. In his *Theory of Economic Development*, he writes:

We know already by what forces this supply is regulated: first with regard to possible failures by entrepreneurs, and secondly with regard to the possible depreciation of the credit means of payment (Schumpeter, 1934, p. 195).

In *Business Cycles*, he also indicates that:

The banker must not only know what the transaction in which he is asked to finance and how it is likely to turn out, but he must also know the customer, his business, and even his private habits, and get, by frequently ‘talking things over him’, a clear picture of the situation (Schumpeter, 1939, vol. I, pp. 116-117).

Upon closer investigation, one may find several arguments in Schumpeter’s writings which indicates that, even in a monetary system where banking operations are constrained by reserve requirements, the issue of the technical limit to the supply of credit is of little relevance. On one hand, Schumpeter suggests that the deposit multiplier would vary in a procyclical manner in accordance with real profit opportunities (see Schumpeter (1956), pp. 206-208 – Schumpeter (1934), pp. 112-115 – Schumpeter (1939), vol. I, pp. 121-123). But, in contrast to Hayek’s explanation, the cash/deposit ratio would meet no other limits than those related to the shifts of demand for credit in the course of the cycle. Indeed, modifications in the demand for finance would affect not only the actual credit which is lent out but also the potential credit (i.e. the maximum credit banks can create in a given institutional context), so that the limit of credit expansion would also vary with the cycle (See Bellofiore (1991), p. 78).

xxxvii. Note that in *Banking Policy and the Price Level*, Robertson also emphasizes the indirect and durable influence, through redistributive effects altering economic agents’ attitude towards savings, of credit creation by banks on the process of capital accumulation.

xxxviii. See Rühl (1994).

xxxix. What Hayek refers as the ‘general theory of equilibrium’ should not be confused with the Walraso-Paretian framework we have usually in mind. A closer look at Hayek’s 1928 article suggests a quite different view, where the process of price formation and its convergence to equilibrium follows a much more complex procedure than the one assumed in the Arrow-Debreu model of intertemporal equilibrium. In particular, and in contrast to the latter view, the Hayekian notion of intertemporal equilibrium allows the possibility of changes in

‘fundamentals’ in the individuals’ sets of future decisions. See R. Arena (1999), p. 5.

xl. Schumpeter (1908), p. 182.

xli. See Perroux (1965), p. 189.

xlii. This point has been emphasized by Kuznets in 1940. The authors indeed wonder why, given the existence of an infinite supply of possible innovations (including inventions and other combinations), the entrepreneurial genius should systematically postpone the pace of the next pioneer until the previous pace have been imitated and spread out to such an extent that the upsetting of equilibrium should stop even himself in his pace (Kuznets, 1940, p. 262).

44. It should be specified here that comparing ‘on the same dimension’ Hayek and Schumpeter with respect to their monetary policy views raises some difficulty. Indeed, Hayek has always been preoccupied by monetary policy. As reported by White, in the new preface to the English translation of *Monetary Theory and the Trade Cycle*, Hayek notes that “the critique of the programme of the ‘stabilizers’, which is in many ways the central theme of this book, has now occupied me for many years” (Hayek, 1933, pp. 16-17). See White (1999), p. 110.

The same kind of statement cannot be made for Schumpeter. If he accepted the need for this, and had himself been a Minister of Finance in Austria, he nevertheless drew a very sharp line between ‘scientific’ work which he considered as a priority and economic policy making.

45. The last condition, i.e., unchanged total money incomes, is only verified in Schumpeter’s ‘pure model’. Indeed, at the stage of ‘secondary approximations’, i.e. when growth factors such as saving, which have been assumed away within the framework of the pure model, are now introduced into the analysis, money incomes will display a long-term tendency to increase. See Date (1991), pp. 333-334.

46. Note that Hayek’s critical argumentation against price stabilization was not only an abstract theoretical issue. He strongly believed that this policy had inspired the Bank of England and the U.S. Federal Reserve System between 1925 and 1929 in a harmful futile joint effort at monetary expansion to prevent the fall in prices that should have accompanied the outflow of Gold from Britain and the rapid growth of real output in the U.S. economy. See White (1999), p. 110.

47. The arguments is borrowed from Klaussinger (1995), as translated by him from Schumpeter (1927b).

48. The argument runs as follows. Having moved toward the ‘constant money stream’ norm, Hayek now regards the gold’s supply elasticity as a virtue rather than a vice (Hayek, 1948, pp. 210-211), providing that the gold stock responds to money demand shifts with an adequate speed and that there exists a “central monetary authority for the whole world” or its equivalent in policy cooperation among national banks (Hayek, 1937, p. 93). See White (1999), p. 114.

49. In his *Theory of Money and Credit*, Mises makes a similar statement:

The significance of adherence to a metallic-money system lies in the freedom of the value of money from state influence that such a system guarantees. Beyond doubt, considerable disadvantages are involved (...). But (...) such a [system] would still deserve preference over one subject to state intervention, since the latter sort of money would be subjected to still greater fluctuations. (Mises, 1980, p. 270).

50. It should be recalled here that in *The Denationalization of Money*, Hayek abandons his earlier position. He

now argues for the coordinating properties of price-stabilization policies, underlining that, by minimizing forecasting errors, they ensure better reliability of economic agents' long-term contractual decisions, and advocates free banking. See Hayek (1978), pp. 64-70.

However, this new prescription now conflicted with the problem of the non-neutral injections of bank-credit which were at the core of his business cycle theory. Hence, in a striking about-face, he dismissed his previous work, as the following passage exemplifies:

[E]ven those additions to the quantity of money that in a growing economy are necessary to secure a *stable* price level may cause an excess of investment over saving. But though I was among those who early pointed out this difficulty, I am inclined to believe that it is a problem of minor importance (Hayek, 1978, p. 3).

51. See White (1999), p. 117.

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