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# The role of credit in a Keynesian monetary economy

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## Introduction

The aim of this paper is to describe the features of a monetary economy on the basis of Keynes's distinction between a *real exchange economy* and a *monetary economy*. As is well known, Keynes uses the former term to refer to an economy in which money is merely a tool to reduce the cost of exchanges and whose presence does not alter the structure of the economic system, which remains substantially a barter economy. *Monetary economy* instead refers to an economic system in which the presence of fiat money radically changes the nature of the exchanges and the characteristics of the production process.<sup>1</sup> Keynes notes that the classical economists formulated an explanation of how the *real-exchange economy* works, convinced that this explanation could be easily applied to a *monetary economy*.<sup>2</sup> He believed that this conviction was unfounded and stressed the need to elaborate a “.. monetary theory of production, to supplement the real-exchange theories which we already possess.”;<sup>3</sup> the *General Theory* constitutes the principal result of Keynes's work.

In the *General Theory*, the reasons for the non-neutrality of money are identified by highlighting the store of wealth function of money, and this approach has been adopted by most Keynesian economists. The aim of this paper is to show that such an approach only partially explains the reasons for money non-neutrality and that important elements which demonstrate the relevance of the monetary variables emerge when the means of payment function of money is highlighted. Emphasizing the significance of this function means acknowledging that, in a monetary economy, the availability of money is the necessary condition to carry out a spending decision, and therefore to recognise the need to explicitly deal with the issue of the financing of spending decisions. In the

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<sup>1</sup> See: Keynes 1933a, 1933b.

<sup>2</sup> Keynes 1993a, p. 410

<sup>3</sup> Keynes 1933a, p. 411.

*General Theory* this problem is not tackled because it is implicitly assumed that all the agents have at all times sufficient money to carry out the desired expenditure. It will be shown that the process by which money is created and made available to agents planning to carry out a spending decision significantly influences the level and composition of income.

In this paper it is maintained that, in order to highlight the issue of the financing of agents' spending decisions, it is necessary to explicitly consider a credit market separately from a money market; it is shown that a meaningful credit theory can be built from some works by Keynes that were published after the *General Theory*, between 1937 and 1939. Many Keynesians look with diffidence on the theoretical models which incorporate the credit market because they fear that the specification of this market may inevitably lead to the acceptance of the neo-classical interest rate theory. In this paper an alternative credit theory to the neo-classical one is presented, which can provide elements in favour of the non-neutrality of the monetary variables that do not emerge when only the money market is considered.

The paper is divided into five sections. The first one describes the limits of an approach that justifies the non-neutrality of money by referring only to its stock of wealth function. In sections two and three a theory of credit developed from the works published by Keynes between 1937 and 1939 is presented. In the fourth section the differences between the credit theory elaborated in this paper and the neo-classical credit theory are highlighted; finally, in the fifth section the differences with respect to the New Keynesians' credit theory are pointed out.

## **1. The limits of a theory of non-neutrality of money based on the store of wealth function.**

Keynes maintains that a monetary economy is not simply an economy in which money is used as a means of exchange, but it is an economy in which the presence of money changes the nature of the exchanges and the characteristics of the production process.<sup>4</sup> The presence of money transforms an exchange economy where the resources

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<sup>4</sup> “The distinction which is normally made between a barter economy and a monetary economy depends upon the employment of money as a convenient means of effecting exchanges – as an instrument of great convenience, but transitory and neutral in its effect. It is regarded as a mere link between cloth and wheat, or between the day’s labour spent on building the canoe and the day’s labour spent in harvesting the crop. It is not supposed to affect the essential nature of the transaction from being, in the minds of those making it, one between real things, or to modify the motives and decisions of the parties to it. Money, that is to

available to each agent are given, into a production economy where the level of production is subject to fluctuation. To highlight the consequences of the employment of money, Keynes distinguishes a 'co-operative economy' from a 'neutral entrepreneur economy' and an 'entrepreneur economy'. The former is essentially a barter economy, the latter an economy in which money is used and in which there is a mechanism which insures that all the monetary income is spent, directly or indirectly, to buy the goods produced by firms; in other words, it is an economy in which Say's law applies. Finally, in an 'entrepreneur economy' Say's law does not apply, and the income level is subject to fluctuations that depend on the oscillations in the aggregate demand.<sup>5</sup> The money that Keynes envisages is not commodity money, but fiat money; he maintains (1933b, p.85) that the fluctuations in the aggregate demand depend on the employment of token money which has no intrinsic value and is not produced with the use of labour. Keynes observes that in a gold standard system, there is no such thing as unemployment as, in the event of a fall in aggregate demand, the unemployed workers will turn to gold mining<sup>6</sup>; on the other hand, if fiat money is used, the fluctuations of the aggregate

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say, is employed, but is treated as being in some sense *neutral*. That, however, is not the distinction which I have in mind when I say that we lack a monetary theory of production. An economy, which uses money but uses it merely as a neutral link between transactions in real things and real assets and does not allow it to enter into motives or decisions, might be called.... a *real exchange economy*. The theory which I desiderate would deal, in contradistinction to this, with an economy in which money plays a part of its own and affects motives and decisions and is, in short, one of the operative factors in the situation, so that the course of events cannot be predicted, either in the long or in the short, without a knowledge of the behaviour of money between the first state and the last. And it is this which we ought to mean when we speak of a *monetary economics*." (J.M.Keynes 1933a, p. 408).

<sup>5</sup> "In a co-operative or in a neutral economy... effective demand cannot fluctuate; and it can be neglected in considering the factors which determine the volume of employment. But in an entrepreneur economy the fluctuations of effective demand may be the dominating factor in determining the volume of employment."(J.M.Keynes, 1933b, p. 80)

<sup>6</sup> "In actual fact under a gold standard gold can be produced, and in a slump there will be some diversion of employment towards gold mining. If, indeed, it were easily practicable to divert output towards gold on a sufficient scale for the value of the increased current output of gold to make good the deficiency in expenditure in other forms of current output, unemployment could not occur; except in the transitional period before the turn-over to increased gold-production could be completed." (J.M.Keynes 1933b, pp. 85-86).

demand will cause income and employment levels to vary.<sup>7</sup> The presence of fiat money alters the law of production of an 'entrepreneur economy'.<sup>8</sup>

In the *General Theory*, Keynes defines the essential properties of fiat money which are: a) zero elasticity of production; b) zero elasticity of substitution between liquidity assets (including money) and reproducible goods. Keynes uses the first term to refer to the fact that money is not just any good which can be produced by anyone who decides to do so by means of labour. By the second expression, Keynes means that an excessive demand for money does not translate into the demand for money substitutes whose production requires labour. In a world in which money has these characteristics an increase in the demand for money causes a drop in the effective demand and thus a rise in unemployment, as the decision to accumulate money determines a level of aggregate demand that is insufficient to absorb all the production realized.<sup>9</sup> This conclusion has been used by many Keynesians to justify the presence of involuntary unemployment; P. Davidson (1994, p.95), for example, states that:

“... suppose because the future suddenly appears more uncertain, people decide to buy fewer space vehicles (automobiles) to transport themselves geographically and instead demand more time vehicles to convey their purchasing power to an unspecified future time to meet possible liquidity needs. The decreased demand for space vehicles causes unemployment in the economy's auto factories. The increased demand for liquidity does not induce an offsetting increase in employment in the production of money or any good

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<sup>7</sup> Keynes maintains that there are reasons to believe that income fluctuations caused by a lack of effective demand are more frequent: “I fancy... that there is a further feature of our actual monetary system which makes a deficiency of effective demand a more frequent danger than the opposite; namely the fact that the money in terms of which the factors of production are remunerated will ‘keep’ more readily than the output which they are being remunerated to produce, so that the need of entrepreneurs to sell, if they are to avoid a running loss, is more pressing than the need of the recipients of income to spend. This is the case because it is a characteristic of finished goods, which are neither consumed nor used but carried in stock, that they incur substantial carrying charges for storage, risk and deterioration, so that they are yielding a negative return for so long as they are held; whereas such expenses are reduced to a minimum approaching zero in the case of money.” (J.M. Keynes 1933b, p. 86).

<sup>8</sup> “The law of production in an entrepreneur economy can be stated as follow. A process of production will not be started up, unless the money proceeds expected from the sale of output are at least equal to the money costs which could be avoided by not starting up the process. In a real-wage and co-operative economy there is no obstacle in the way of the employment of an additional unit of labor if this unit will add to the social product output expected to have an exchange value equal to 10 bushels of wheat, which is sufficient to balance the disutility of the additional employment. Thus the second postulate of the classical theory is satisfied. But in a money- wage or entrepreneur economy the criterion is different. Production will only take place if the expenditure of 100 (pounds) in hiring factors of production will yield an output which it is expected to sell for at least 100 (pounds). In these conditions the second postulate will not be satisfied, except in the limiting case of a neutral economy.” (J.M. Keynes 1933b, p. 78).

<sup>9</sup> “Unemployment develops, that is to say, because people want the moon; - men cannot be employed when the object of desire (i.e. money) is something which cannot be produced and the demand for which cannot be readily choked off. There is no remedy but to persuade the public that green cheese is practically the same thing and to have a green cheese factory (i.e. a central bank) under public control.” (Keynes 1936, p. 235)

producible in the private sector. Of course, if peanuts were money ... then unemployment in the auto industry would be offset by increased employment in the peanuts farms.... Uncertainty and unwillingness to commit earned income to current purchases of producibles (a process that layperson terms savings) will cause unemployment, if, *and only if*, the object of the savers' desire is a resting place for their savings that is non producible and not readily substitutable for producibles – even if prices are flexible.”<sup>10</sup>

The Keynesian thesis of money non-neutrality is elaborated by highlighting the store of wealth function of money; unemployment occurs because people decide to demand money rather than goods; to be convincing, this explanation must specify the reasons why the public demand money rather than goods. The fundamental reason why the store of wealth function of money is important is the presence of uncertainty. The *General Theory* gives a different explanation of the non-neutrality of money from the one contained in the works of 1933. In the *General Theory* Keynes works out his theory of interest according to which the interest rate is the price of money and concludes that the non-neutrality of money is explained by the fact that the interest rate - determined by the public's preference for liquidity - can reach a higher level than the one compatible with full employment.

Both of these explanations underline the concept of demand for money with one important difference. In the first case, the source of the money demand is the income of the agents who decide to conserve a part of the income received in monetary form; however, the second explanation considers money as a financial asset, the demand for which depends on the wealth level and not on savings decisions. Both explanations have limitations. The first one stresses that if a part of the monetary income received by the operators is accumulated rather than spent, the effective demand will not be able to absorb all the production and this will fuel unemployment; this explanation overlooks the fact that the new money which is accumulated by those who decide not to spend all their income must have been created by some agent, and that the creation of the new money can determine an increase in the demand for goods equivalent to the lesser demand for goods generated by the decision to save a part of the income. To paraphrase Davidson, we could say that the lower demand for cars on the part of savers could be offset by the greater demand for cars that occurs as a result of the creation of the money

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<sup>10</sup>Likewise, Kregel (1980, p. 43) states that:“... in a monetary production economy... when incomes are paid in terms of money, income will represent demand for either current output or stores of value. The use of income to demand ‘money’ as a store of value, however, is not an *effective demand* (for labor), because

flow which is subsequently saved. It is important to emphasize that the demand for money by the operators who decided to make savings, cannot be met by the open market operations of the central bank. By means of these operations the central bank exchanges new money with bonds supplied by the public; in this case, the demand for money is determined by the operators' desire to modify the composition of their wealth. The demand for money produced by a saving decision can be met by new money created in order to finance aggregate demand. This conclusion stands out clearly when considering the Keynesian theory of income according to which the level of investments determines an income flow capable of producing a savings flow equivalent to that of investments. We can hypothesize that the new money accumulated by savers corresponds to the flow of money created to finance the firms' investment decisions. In this case the presence of a level of income insufficient to determine full employment does not so much depend on the presence of fiat money as on factors which influence investment decisions and savings decisions.

The explanation of money non-neutrality based on the liquidity preference theory appears to be flawed too; this explanation is based on two assumptions: a) the monetary authorities set the money stock exogenously; b) the only financial assets alternative to money are long-term bonds. The second assumption is necessary to justify the presence of a speculative demand for money; the expectations of a future interest rate increase can generate the expectation of capital account losses only if the alternative to money is long-term bonds. These assumptions do not reflect the characteristics of the contemporary financial systems. In the first place, we can observe that in contemporary economies short-term bonds are common; the presence of these bills eliminates the conditions which justify the existence of a speculative demand for money, as these bills crowd out money as a tool for the conservation of wealth because, like money, they are liquid and they give a positive return. Secondly, in recent years the monetary authorities of the industrialised countries have abandoned control of monetary aggregates and have chosen as an objective the short-term interest rate; the presence of a developed monetary market in which short-term bonds are traded enables the monetary authorities to achieve the short-term interest rate which they fix as an objective.<sup>11</sup> The fact that the

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it does not lead to the expectation of future sales of producibles goods, and this does not create the *expectation* of income." See, amongst others: Skidelsky (1996).

<sup>11</sup> Romer (2000) proposes to rewrite the IS-LM model, eliminating the LM curve. For a description of the strategies of the contemporary monetary authorities see, for instance: Leiderman and Svensson (1995); Mishkin (1999); Bank of England (1999); Meltzer (2001).

monetary authorities can set the short-term interest rate at any level desired, even at a rate close to zero,<sup>12</sup> affects the households' liquidity preference and the long term interest rate and makes it more difficult to assume that unemployment can be triggered by the fact that the preference for liquidity drives the long term interest rate to a level incompatible with full employment.

The thesis put forward in this paper is that important arguments justifying the non-neutrality of money can be developed by starting from Keynes's thesis in according to which the presence of fiat money alters the nature of exchanges as compared with what happens in a barter economy. The Keynes's conclusion is in contrast with the mainstream view which is focuses on the role of money as a medium of exchange, and envisages money as a spontaneous response to the inefficiencies of barter. The mainstream view asserts that the passage from commodity money to fiat money does not alter the nature of exchanges; the use of token money simply reduces the cost of exchanges as it leads to reduced costs of production of the medium of exchange. The most important feature of a world in which commodity money is used is that all individuals can produce money in the same way that can produce any other commodity. Keynes points out that under a gold standard the fluctuations of the effective demand cannot cause a long-lasting unemployment as, in a slump, unemployed workers will produce gold. Fiat money, which is not a commodity, cannot be produced by unemployed workers. The production of fiat money is a prerogative of special subjects; a typical example examined by Keynes, is money created by the banking system. The subjects that are able to create money can buy commodities even if they do not possess goods. In reality, banks do not buy commodities, but they finance operators against the promise to repay the amount received at a given future date. In both cases, the use of fiat money alters the nature of exchanges as the necessary condition in order to buy goods is not the availability of goods, but the availability of money. When bank money is used it is not necessary to possess goods in order to buy money, but it is necessary to fulfil the criteria used by banks to select the demand for credit. In a world in which token money is used we can highlight the function of money as a means of payment. This term highlights a different function from that of means of exchange: this term is used to point out that the disposability of money is

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<sup>12</sup> In recent years there has been a proliferation in the number of studies that analyse the role of monetary policy when the short-term nominal interest rate is close to zero; see, for example: Clouse, Dale, Orphanides, Small and Tinsley (2000).

necessary in order to buy goods, but the disposability of goods is not necessary in order to buy money.

When bank money is used it is important to define the criteria which are used by the banks in order to create new money; in particular, it is important to specify the subjects that receive credit and the operations that are financed. The Keynesian theory of income and the inversion of the causal relation between savings and investments allow us to work out a first answer. If we observe that the spreading of bank money proceeds in parallel with the emergence of agents who use the obtained purchasing power to carry out new production projects, we can hold that investments are the principal component of the aggregate demand financed by the banking system. As Chick (1986) points out, the inversion of the relation between savings and investments which characterizes Keynes's theory is appropriate in a world in which bank money is used. The Keynesians have generally neglected the relation between the presence of bank money and the theory of income. This paper aims to show that by focusing on the relation between bank money and firms' investment decisions it is possible to bring to light elements in favour of the non-neutrality of money theory which are overlooked if only the liquidity preference theory is examined. To this end, it is necessary to work out a theoretical model which treats the credit market separately from the money market; in the next pages it will be shown that a meaningful credit theory can be built on the basis of some works by Keynes.

## **2. The finance motive and the credit theory.**

In the *General Theory* it is implicitly assumed that firms have the necessary liquidity to carry out their planned investments at the interest rate determined on the money market. Keynes tackled the problem of the financing of spending decisions in some works published between 1937 and 1939 to respond to the criticisms of the *General Theory*, and, in particular, to Ohlin's criticisms of the interest rate theory. Ohlin contrasts Keynes's theory with a new version of the *loanable funds theory*, which holds that the interest rate is determined by the credit demand flow which depends on *ex-ante investment*, and by credit supply flow which depends on *ex-ante saving*. Keynes considers the concept of *ex-ante investment* important because it makes it possible to show that firms that intend to carry out a certain investment project must find the

necessary funds.<sup>13</sup> While, on the one hand, Ohlin's criticisms do lead Keynes to give more importance to the issue of investment decision financing, he rejects the thesis that *ex-ante investment* is financed by *ex-ante saving*. Keynes criticises Ohlin by pointing out that the firms' demand for liquidity must be met by a supply of liquidity which can not arise from *ex-ante saving*.<sup>14</sup> The firms' demand for liquidity is met by the banks which create new money or by the public which gives the existing money to firms:

“... the transition from a lower to a higher scale of activity involves an increased demand for liquid resources which cannot be met without a rise in the rate of interest, unless the banks are ready to lend more cash or the rest of the public to release more cash at the existing rate of interest. If there is no change in the liquidity position, the public can save *ex ante* and *ex post* and *ex anything else* until they are blue in the face, without alleviating the problem in the least... This means that, in general, the banks hold the key position in the transition from a lower to a higher scale of activity. If they refuse to relax, the growing congestion of the short-term loan market or of the new issue market, as the case may be, will inhibit the improvement, no matter how thrifty the public purpose to be out of their future incomes. On the other hand, there will always be *exactly* enough *ex post* saving to take up the *ex post* investment and so release the finance which the latter had been previously employing. The investment market can become congested through shortage of cash. It can never become congested through shortage of saving. This is the most fundamental of my conclusions within this field.”<sup>15</sup>

Saving cannot be the source of investment financing inasmuch as it is the result of the investment process.<sup>16</sup> In response to Ohlin's criticism, Keynes acknowledges that he hadn't dealt with the issue of investment financing in the *General Theory* and he fills this gap by specifying a further motive for demanding money: the finance motive.<sup>17</sup> Keynes stresses that the demand for money justified by the *ex-ante investment* of firms is manifested only in the interval of time which separates the moment in which the firm obtains the necessary cash to carry out the *ex-ante investment*, and the moment in which

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<sup>13</sup> “...*ex-ante investment* is an important, genuine phenomenon, inasmuch as decisions have to be taken and credit or ‘finance’ provided well in advance of the actual process of investment...” (J.M.Keynes 1937c, p. 663).

<sup>14</sup> “... The *ex-ante saver* has no cash, but it is cash which the *ex-ante investor* requires. ... Surely nothing is more certain than that the credit or ‘finance’ required by *ex-ante investment* is not mainly supplied by *ex-ante saving*.” (J.M.Keynes 1937c, p. 664-5).

<sup>15</sup> J.M.Keynes 1937c, p.668.

<sup>16</sup> “Increased investment will always be accompanied by increased saving, but it can never be preceded by it. Disharding and credit expansion provides not an *alternative* to increased saving, but a necessary preparation for it. It is the parent, not the twin, of increased saving.” (J.M.Keynes 1939, p. 572).

<sup>17</sup> “... if the liquidity-preferences of the public ... and of the banks are unchanged, an excess in the finance required by current *ex-ante* output ... over the finance released by current *ex-post* output will lead to a rise in the rate of interest; and a decrease will lead to a fall. I should not have previously overlooked this point, since it is the coping-stone of the liquidity theory of the rate of interest. I allowed, it is true, for the effect of an increase in *actual* activity on the demand for money. But I did not allow for the effect of an increase in *planned* activity, which is superimposed on the former, and may sometimes be the more important of the two...” (J.M.Keynes 1937c, p. 667).

the firm makes the investment by spending the liquidity obtained.<sup>18</sup> When the firms acquire the desired investment goods, they release the liquidity received into the system; this liquidity may be used again to meet the demand from other firms that want to make new investments. It can thus be concluded that the demand for money generated by the 'finance motive' is manifested only when there is an increasing investment flow.<sup>19</sup>

By defining the demand for liquidity on the part of the firms which plan to make an investment as a further component of the demand for money, Keynes overlooks the fact that this demand for liquidity gives rise to a relation of indebtedness between the firms and the banks that meet this demand. This decision was probably justified by the desire to reply to Ohlin's criticisms without substantially altering the framework of the *General Theory*.<sup>20</sup> I believe that the failure to specify the credit market meant that Keynes did not thoroughly analyse the issue of the financing of firms' investment decisions. In the first place, Keynes's solution overlooks the differences between the demand for liquidity expressed by firms to finance investments and the demand for liquidity expressed by the wealth owners. The former involves the demand for liquidity from agents that do not have money and that get into debt to carry out a planned investment; the theory of liquidity preference described in the *General Theory* instead describes the factors which influence the agents' choices regarding the composition of their wealth.

Secondly, the specification of the 'finance motive' does not seem to fully describe the characteristics of a world in which bank money is used. Keynes states that the demand for money linked to the 'finance motive' manifests itself only in the interval of time which separates the moment in which the firm receives the financing and the moment in which it uses the financing to purchase investment goods. In reality the banks finance companies by granting them lines of credit, which the firms use when they make the investment; when the firms use the line of credit the banks register in

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<sup>18</sup> "During the interregnum – and during that period only – between the date when the entrepreneur arranges his finance and the date when he actually makes his investment, there is an additional demand for liquidity without, as yet, any additional supply of it necessarily arising. In order that the entrepreneur may feel himself sufficiently liquid to be able to embark on the transaction, someone else has to agree to become, for the time being at least, more unliquid than before." (J.M.Keynes 1937c, p. 665)

<sup>19</sup>"... finance is a revolving fund. In the main the flow of new finance required by current ex-ante investment is provided by the finance released by current ex-post investment. When the flow of investment is at a steady rate, so that the flow of ex-ante investment is equal to the flow of ex-post investment, the whole of it can be provided in this way without any change in the liquidity position. But when the rate of investment is changing in the sense that the current rate of ex-ante investment is not equal to the current rate of ex-post investment, the question needs further consideration. J.M.Keynes 1937c, p.666.

their assets the credit with the firm, which is offset by the debt composed of the deposits accumulated by those who sold the investment goods. In these conditions, the 'finance motive' is no longer relevant inasmuch as the decision to make an investment does not trigger any increase in the demand for money before the investment is made.<sup>21</sup> In this type of economy, even if the 'finance motive' disappears, there is still an important aspect to study, namely the relation between the bank and the firm, as the firm is able to make the investment only because of its indebtedness with the bank.

Thirdly, it must be said that also the conclusion that the 'finance motive' is a phenomenon which is manifested only when there is an increasing investment flow, overlooks the role of the banks in the process of financing firms. Keynes's analysis tends to consider banks as automatic mechanisms registering only the level, and not the composition, of investments; the intervention of the banks is limited to the case in which the level of investments is increasing. In actual fact, if we assume that in financing investments, banks apply selection criteria, we must conclude that their selection activity is important even when the investment flow is constant.<sup>22</sup> In conclusion, Keynes's 'finance motive' does not seem a wholly effective tool to analyse the process of investment financing. A more in-depth analysis of this point could be effected by elaborating a theory of credit on the basis of Keynes's comments on the 'finance motive'.

In order to specify a credit market separate from the money market it is convenient to use the distinction between capital account and income account introduced by Tobin (1961,1969,1982). The capital account describes all the assets and the liabilities of the institutional sectors (families, firms, public sector, financial intermediaries) and a capital account theory analyses the factors which determine the supply and demand of the various assets. It is therefore composed of stock variables; the money market is a component of the capital account. The income account, on the other hand, describes the income flow and a theory of income account analyses the factors which determine its

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<sup>20</sup> See for example: Chick (1997); Chick (2000)

<sup>21</sup> See: Graziani (1984); Lavoie (1986); Bibow (1995); Chick (1997). This point is made by Keynes himself (Keynes 1937c, p. 223).

<sup>22</sup> This point is stressed by Graziani (1996, p.147): "When dealing with a stationary economy Keynes almost eliminates the problem (of finance) by defining the supply of finance as a 'revolving fund which can be used over and over again'. The trouble with the Keynesian revolving fund is that it suggest the idea of an automatic mechanism, supplying a constant amount of finance without any negotiation with the banks ever being needed. As Robertson rightly remarked, the fact of its amount being constant does not deprive the revolving fund of its being by nature a flow of liquidity supplied by the banks. In stationary conditions, the amount of finance needed by firms is constant- something which by no means implies that firms become financially independent from the banks."

level and use. The credit market must be associated with the income account because the demand for credit is determined by the investment decision of firms.<sup>23</sup>

A theory of credit must specify a credit demand function and a supply function and it must explain what factors influence the interest rate on credit. On the basis of Keynes's comments on the 'finance motive', we can assume that the demand for credit depends on the investment decisions of firms. Investment decisions therefore assume particular importance, not just because, owing to their instability, they are the principal factor in explaining fluctuations in the levels of income, but also because of the way they are financed. It is assumed that investments are financed by bank credit, while consumption decisions are financed by the distributed income.<sup>24</sup> As far as the credit supply function is concerned, the main conclusion which emerges from Keynes's analysis is the contention that the supply does not depend on saving decisions. As has been seen, Keynes is very firm in asserting that the firms' demand for liquidity is not met through the savings supply, but rather by banks which create new money. We can therefore hypothesize that the credit supply depends on the decisions taken by the banks and that it is independent of the savings flow. To complete the description of the credit market it is necessary to specify the factors which determine the interest rate on loans. This explanation must be coherent with Keynes's conclusion that the interest rate is not influenced by savings decisions; the assumption regarding the credit supply function leads us to highlight the role of the banks in determining the interest rate on loans.

From this preliminary analysis it emerges that the credit market in an economy where bank money is used has very different features from the credit market of a barter economy. In a barter economy the object of the credit is the resources which are not consumed by savers and the interest rate is the variable that balances savings and investment decisions. In a monetary economy the credit supply depends on the banks' decisions and the interest rate on loans is independent of savings decisions. The New Classical economists, too, are aware of this difference, thanks to the work of Wicksell, who remarks that in an economy in which bank money is used, the object of credit is not real goods:

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<sup>23</sup> In support of the view that credit and money should be distinguished see: Rochon (1997); (1999).

<sup>24</sup> This point is stressed by Minsky (1980, p. 27).

“It is said that what is lent in reality is not money but real capital; money is only an instrument, a way of lending capital and so on. But this is not strictly true; what is lent *is* money and nothing else...”<sup>25</sup>

In a world in which money is banks' liabilities, the only limit to the banks' creation of money is the demand for it <sup>26</sup> and the interest rate on loans is influenced by the banks' decisions.<sup>27</sup>

A theoretical model specifying a credit market which is separate from the money market describes the process of the determination of income by distinguishing two distinct phases. In the first phase, firms carry out their investment projects thanks to the financing obtained from the banks; we assume that the liquidity created by the banks permits the realization of the income level predicted by the multiplier theory and a savings flow equal to that of investments. The flow of savings so generated causes a change in the stock of wealth; in the second phase the problem arises of the choice of the composition of wealth. We can consider two opposing situations. Let us suppose that, in the first case, savings are made by firms; in this case firms will be able to pay back the loans received from the banks and the increase in wealth coincides with the accumulation of new capital goods. In the opposite situation, let us assume that the actors that save are households; in this case, the increase in household wealth is translated into an increase in the demand for financial assets and, hence, also into an increase in the demand for money. This demand for money finds as a counterpart the supply of money, which is composed of the banks' liabilities; in this way the decision of the banks influence the supply of credit and money.<sup>28</sup>

We can illustrate the meaning of these concepts by using a model which describes a system composed of five markets: money, which corresponds to bank deposits, monetary base; bank credit, government bonds and commodities. Let us suppose that

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<sup>25</sup> Wicksell 1898, p. 190.

<sup>26</sup> “The banks in their lending business are not only not limited by their own capital; they are not, at least not immediately limited by any capital whatever; by concentrating in their hands almost all payments, they themselves create the money required...in our days demand and supply of money become the same thing, the demand to a large extent creating its own supply .” (Wicksell 1907, p. 214-5).

<sup>27</sup> “In a pure system of credit, where all payments were made by transference in the bank-books, the banks would be able to grant at any moment any amount of loans at any, however diminutive, rate of interest. (Wicksell 1907, p. 215).

<sup>28</sup> The analysis of this second phase can be developed by using the results of Tobin's work, which underlines the role of financial intermediaries in satisfying the portfolio preferences of wealth owners and debtors. See: Tobin (1963); Tobin and Brainard (1963). The difference between the model which is considered in this paper and Tobin's is that Tobin completely overlooks the role of banks in the process of investment decision financing and he only considers the action of the banks and the other financial intermediaries in reconciling the portfolio preferences of debtors and creditors.

the banks' balance sheet can be represented by the following equation containing flow variables:

$$a) \Delta D + \Delta CD = \Delta ROB + \Delta L$$

Banks issue two types of liabilities: deposits ( $\Delta D$ ), which have a return equal to zero and deposit certificates of deposits ( $\Delta CD$ ); let us suppose that the CDs are considered perfect substitutes of government bonds by the wealth owners, so the banks will pay, on these liabilities, interest equal to the rate on bonds ( $r_b$ ). The banks' assets are made up of loans ( $\Delta L$ ) and by the reserve requirements ( $\Delta ROB$ ) which are proportional to the deposits according to the relation:

$$b) \Delta ROB = q_k \Delta D$$

Let us suppose that the monetary authorities set an objective rate of interest on bonds ( $r_b^*$ ) and create the monetary base necessary to satisfy the operators' demand for liquidity. Let us further assume that the banks set the interest rate on loan ( $r_l$ ) - by applying a mark up on the rate on bonds established by the monetary authorities. In this case we can represent the credit market and the goods market using the following equations:

$$1) r_l = (1+q)r_b^*$$

$$2) \Delta L = I(r_l)$$

$$3) Y = Y(I(r_l); G; s)$$

Equation 1) defines the rate on loans ( $r_l$ ) as a function of the bond rate ( $r_b^*$ ) set by the monetary authorities. Let us assume that, once the interest rate on loans has been set, the banks meet the demand for credit from firms according to the desired investments  $I(r_l)$  (eq. 2). Equation 3) determines the level of income  $Y$  as a function of investments and public spending  $G$ , and the propensity to save ( $s$ ). This first block of three equations determines the three unknowns:  $r_l$ ;  $\Delta L$ ;  $Y$ . These equations show that the level of investments is conditioned by the decisions of the monetary authorities and the banks that determine the interest rates and the amount of credit. The money market can be represented by the following equations:

$$4) M = M(Y; r_b^*; W)$$

$$5) W = W_{t-1} + S(Y)$$

$$6) \Delta D = M - M_{t-1}$$

$$7) \Delta ROB = q_k \Delta D$$

$$8) \Delta BM = \Delta ROB$$

$$9) \Delta CD = \Delta L + \Delta ROB - \Delta D$$

Equation 4) determines the money stock demanded by the operators as a function of income, of the interest rate fixed by the monetary authorities and of wealth (W). The wealth available at any time is equal to the level of wealth in the preceding period ( $W_{t-1}$ ) increased by the savings flow (S) which depends on the current income (eq.5). Equation 6) defines the flow of deposits (?D), and equation 7) describes the relation between the reserve requirements and deposits, while equation 8) determines the monetary base flow that must be created by the monetary authorities to enable the banks to offer the money demanded by the wealth owners. Lastly, equation 9) determines the flow of CDs which must be created by the banks to meet their budgetary constraints; this flow is consistent with the households' demand for CDs.<sup>29</sup> The second block of equations determine the six unknowns: M, W, ?D, ?ROB, ?BM, ?CD.

We note that, through the creation of CDs, the banks are able to satisfy, on the one hand, the demand for money by the wealth owners, and, on the other, the firms' demand for credit. In other words, the possibility of altering the flow of CDs allows the banks to vary the deposits and loans independently of each other. Let us consider, for example,

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<sup>29</sup> It is possible to define the demand for CDs starting from the households' balance sheet:

a)  $W = M + CD + B_H$

M = money stock;  $B_H$  = Households' bonds

If we use flow variables, we have:

b)  $S(Y) = \Delta D + \Delta CD + \Delta B_H$

Once  $W$ ,  $r^*$  and  $Y$  have been set, the money stock and the flow of deposits  $\Delta D$  demanded by the households are determined (eq. 4,5,6). Equation b) determines the sum of CD and B demanded by the wealth owners. In the model it is supposed that CDs are considered perfect substitutes of government bonds by wealth owners (p.13); for this reason we can suppose that households are indifferent to the choice between CDs or bonds. We can assume that the wealth owners will buy all the government bonds not purchased by the central bank ( $\Delta B_{CB}$ ):

c)  $\Delta B_H = \Delta B - \Delta B_{CB}$

The flow of bonds purchased by the central bank coincides with the flow of monetary base which is used by the banks in order to found the reserve fund:

d)  $\Delta B_{CB} = \Delta BM = \Delta ROB$

On the ground of these relations, it is possible to obtain the demand for CDs:

e)  $\Delta CD = S - \Delta D - \Delta B_H = S - \Delta D - \Delta B - \Delta B_H$

If we observe that:

f)  $S = I + G - T$

and:

g)  $I = \Delta L$

and:

h)  $G - T = \Delta B$

we obtain:

i)  $S = \Delta L + \Delta B$

Therefore:

l)  $\Delta CD = \Delta L + \Delta B - \Delta B - \Delta D - \Delta ROB$

At last, we have:

m)  $\Delta CD = \Delta L - \Delta D - \Delta ROB$

Equation m) coincides with equation 9) This model does not specify the interest flows and envisages a low number of assets and liabilities; for a more detailed model see: Godley 1999.

an equilibrium situation with a bond rate ( $r_b^*$ ), a loan rate ( $r_l^*$ ), a flow of investments ( $I^*$ ) and of income ( $Y^*$ ); at these rates let us suppose that the agents demand a flow of money equal to  $\Delta D^*$ , and that the monetary authorities create a monetary base flow equal to  $\Delta BM^*$ ; equation 9) determines the value  $\Delta CD^*$  which allows the banks' budgetary constraint to be met. Let us assume that the public's preference for liquidity changes; let us suppose that given the same level of income  $Y^*$ , the public desires to hold a greater quantity of money. In this case the banks can satisfy the public's demand by creating deposits and correspondingly reducing their CDs; a new equilibrium will be reached in which the credit flow  $\Delta L^*$  will remain unchanged, while there will be an increase in the flow of money.<sup>30</sup>

At this point it is possible to identify some aspects which characterise the theory of credit defined on the basis of Keynes's writings on the 'finance motive'. In the first place, this theory points out that the credit supply is completely independent of the saving decisions. Secondly, while the neo-classical theory of credit considers the presence of savers as a necessary pre-condition for the existence of a credit market, a Keynesian theory of credit stresses that in an economy in which bank money is used the credit market is founded on the relation between the bank and the firm, inasmuch as the banks do not lend resources which have previously been saved by other agents, but rather they give the entrepreneur new purchasing power. The granting of credit constitutes the tool through which money is created in a system which uses bank money, while saving is a consequence of the decisions taken by the banks and the firms.

Thirdly, we note that the description of the credit market provides valid support for Keynes's thesis that the presence of fiat money substantially alters the structure of the economic system. The spread of the use of bank money proceeds simultaneously with the emergence of a group of agents willing to obtain money today against the promise to repay the amount received at a given future date. It would be unrealistic to think that these agents are simply individuals who prefer to expand present consumption and forgo future consumption; those who take out loans are, instead, agents who are convinced that they can use the purchasing power obtained in productive activities which will enable them to obtain sufficient returns to repay the debt. The spread of bank

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<sup>30</sup> This is an example of a solution to the problem which is frequently exposed by the post Keynesians, which consists of specifying the factors that render the money created by the banks to satisfy the firms' credit demand coherent with the public's demand for money. The response presented in this paper emphasizes the ability of the banks to manoeuvre independently the credit supply and the money supply. On this topic see: Arestis and Howells (1996); De Carvalho (1997).

money takes place simultaneously with the creation of a group of agents, the entrepreneurs, who use the finance received to carry out new production projects. The specification of a credit market connected with the creation of bank money underlines a fundamental change in the structure of the economic system; in particular, it marks the passage from an exchange economy, made up of operators with given resources whose only concern is to find an effective system of exchanges, to a production economy in which the level, composition and distribution of income depend on the decisions of the entrepreneurs who plan to carry out new investment projects and the banks that select which entrepreneurs to finance.

### **3. The bank-entrepreneur relation.**

The study of how the credit market works in a Keynesian framework leads us to give more prominence to the relation between banks and firms rather than the relation between savers and debtors, as held by the neo-classical theory. In order to study this relation a fundamental aspect of the Keynesian theory becomes important: uncertainty. The neo-classical theorists also take uncertainty into account in their analysis of the role of money in an exchange economy. Friedman (1969), for instance, points out that it is uncertainty that justifies the demand for money in an exchange economy, inasmuch as an individual who possesses a certain amount of commodity A, and wishes to exchange it for commodity B, is not able to ascertain which other agent possesses commodity B and wishes to exchange it for A, or else our individual is not able to know which commodity he will need in the future. Hahn (1982) remarks that in a world without uncertainty there is no reason to hold money because in this type of world it is possible to make all the future 'contingent' contracts imaginable, hence all the exchanges take place in just one moment; the use of money is justified in an economy in which exchanges take place in a different succession of moments, i.e. in a sequential economy. The consideration of a succession of periods and thus of historical time makes it necessary to formulate expectations. Hahn gives Keynes credit for having elaborated a theory of money which highlights the role of expectations and uncertainty.

The phenomenon of uncertainty assumes greater relevance if the logic of the exchange is left aside and emphasis is put on the link between the spread of bank money

and the increase in the number of entrepreneurs who bet on their ability to realize productive activities capable of producing sufficient monetary returns to meet their debt repayment obligations. Although within an exchange economy money constitutes a tool that reduces the consequences of uncertainty, the use of bank money that spreads through investment financing contributes to the creation of an economic system in which the degree of uncertainty assumes a greater weight than it does in an exchange economy. As is widely known, Keynes notes that the phenomenon of uncertainty becomes essential especially in an economy where investment decisions, and so decisions regarding the accumulation of wealth, take on a particular significance, as these decisions produce results some time in the future:

“The whole object of the accumulation of wealth is to produce results, or potential results, at a comparatively distant, and sometimes at an *indefinitely* distant, date. Thus the fact that our knowledge of the future is fluctuating, vague and uncertain, renders wealth a peculiarly unsuitable subject for the methods of the classical economic theory. This theory might work very well in a world in which economic goods were necessarily consumed within a short interval of their being produced. But it requires, I suggest, considerable amendment if it is to be applied to a world in which the accumulation of wealth for an indefinitely postponed future is an important factor; and the greater the proportionate part played by such wealth accumulation the more essential does such amendment become.”<sup>31</sup>

Keynes (1937a) points out that in conditions of uncertainty there are no objective methods deriving from the theory of probability or financial mathematics that enable the future results of economic decisions to be represented. The presence of uncertainty is the element on which, in the *General Theory*, Keynes builds an alternative theory of income to the classical one. In this paper it is contended that the specification of the credit market makes it possible to highlight important consequences of the presence of uncertainty which do not come to light if only the money market is considered.

The presence of uncertainty has a significant influence on the banks' behaviour. In the first place, we can observe that in the presence of uncertainty not even the banks possess objective criteria enabling them to know the 'true' probability distribution of future returns of the investment projects. Keynes maintained that in the presence of uncertainty the evaluation criteria used to take economic decisions are subject to sudden changes.<sup>32</sup> We can therefore say that also the banks' evaluation criteria can change

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<sup>31</sup> J.M.Keynes 1937a, p. 113.

<sup>32</sup> “... a practical theory of future... has certain marked characteristics. In particular... it is subject to sudden and violent changes. The practice of calmness and immobility, of certainty and security, suddenly breaks down. New fears and hopes will, without warning, take charge of human conduct. The forces of disillusion may suddenly impose a new conventional basis of valuation.”(Keynes 1937a, pp. 114-5)

suddenly causing considerable instability in the economic system. Minsky is the post-Keynesian economist who studied most extensively the instability of the capitalist economies characterized by the presence of sophisticated financial institutions. He points out that the financial relations connected with investment decisions make it possible to define the temporal dimension of the economic process because they enable us to distinguish a past, present and future.<sup>33</sup> The ability of firms to repay today the loans taken out in the past depends on the current profits and thus on the income level which in turn depends on the investments which the firms plan to make on the basis of their expectation of future profits; this makes a capitalist economy very unstable.<sup>34</sup> Minsky explains that the alternation of phases of boom and bust is due to changes in the banks' criteria in appraising firms' investment projects. The application of permissive criteria drives the boom phases, encouraging firms to increase their borrowing and, consequently, their debt repayment commitments; this creates the conditions for a crisis caused by events that prevent firms from honouring their repayment obligations. Minsky underlines that there exists an endogenous tendency towards instability, since, in the normal periods, the firms' ability to pay back their loans constitutes a confirmation of the validity of their forecasts, and induces the banks to believe that they applied excessively rigid criteria in evaluating the firms' requests for credit. The upshot of this is that firms will be encouraged to plan more risky investment projects, and, for their part, the banks will be led to apply less rigid selection criteria; this behaviour will transform a normal situation into a boom fuelled by speculative investments.<sup>35</sup>

Secondly, we can point out that in the presence of uncertainty the banks may decide to ration the credit even if they are in a position to create credit endogenously. In conditions of uncertainty, the decision to ration the credit is due to the fact that banks and firms have different expectations about the future results of the same investment project: the banks may view the prospects of a given investment project in a less optimistic light than the entrepreneurs, or they may be more risk averse. We can

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<sup>33</sup> "our economy has a past, which is present today in maturing payment commitments, and a future, which is present today in debt that are being created" Minsky 1982, p. 18

<sup>34</sup> "An economy with private debts is especially vulnerable to changes in the pace of investment, for investment determines both aggregate demand and the viability of debt structures. The instability that such an economy exhibits follows from the subjective nature of expectations about the future course of investment, as well as the subjective determination by bankers and their business clients of the appropriate liability structure for the financing of positions in different types of capital assets. In a world with capitalist financial usages, uncertainty – in the sense of Keynes - is a major determinant of the path of income and employment." (Minsky 1982, p. 65).

<sup>35</sup> See: Minsky (1980; 1982).

therefore hypothesize that in a situation in which the banks fix the loan rate by applying a mark up on the interest rate controlled by the monetary authorities, they limit themselves to financing the investments which they deem profitable, rejecting the projects which they consider insufficiently profitable or particularly onerous. This explanation of the credit rationing phenomenon is quite different from the one put forward by the New Keynesians, based on the presence of asymmetric information, i.e. the fact that the banks have less information about the investment project than the firms. In this case the banks are not able to distinguish the firms on the basis of the characteristics of their investment project, and they ration credit to firms that they consider identical to those that receive the credit.<sup>36</sup> However, in the presence of uncertainty, the banks refuse to give loans to firms that they consider different from the others, namely to firms deemed unworthy of obtaining financing.<sup>37</sup> We can formalize this explanation of the credit rationing phenomenon by reformulating the model described in the previous paragraph:

$$10) r_l = (1 + q)r_b^*$$

$$11) I_d = I(AI; r_l)$$

$$12) ?L_d = I_d$$

$$13) ?L = L(AB; ?L_d) \quad ?L < ?L_d$$

$$14) I = ?L$$

$$15) Y = Y(I; G)$$

The banks set the loan rate ( $r_l$ ) on the basis of the interest rate controlled by monetary authorities ( $r_b^*$ ) (eq.10); the firms define the desired investments ( $I_d$ ) according to their expectations of profit ( $AI$ ) and the loan rate (eq. 11). The firms' credit demand ( $?L_d$ ) is equal to the desired investments (eq. 12). The banks define their credit supply ( $?L$ ) according to their expectations ( $AB$ ) and the credit demand ( $?L_d$ ) (eq. 13). The amount of credit created by the banks will be inferior to that demanded by the firms: it is difficult to imagine a situation in which the banks apply selection criteria such that all the requests for finance are accepted. If that were the case, the behaviour of the banks would spur applications from adventurers and dreamers and the stability of the system would be imperiled. The flow of credit created by the banks determines the

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<sup>36</sup> This topic will be dealt with in more depth in section 5.

<sup>37</sup> As Tobin (1980) states: "Typically (debtors) indebtedness is rationed by lenders, not just because of market imperfection but because the borrower has greater optimism about his own prospects and the value of his collateral, or greater willingness to assume risk and to die insolvent, than the lender regards as objectively and prudently justified." See: Lavoie (1992; 1996); Dow (1996), (1998); Wolfson (1996).

amount of investments (eq. 14), while the income level is determined on the basis of the autonomous demand (eq. 15). This block of equations determines the six unknowns:  $r$ ,  $I_d$ ,  $?L_d$ ,  $?L$ ,  $I$ ,  $Y$ . The equations which describe the money market are the same ones we have seen in the previous section (eq. 4-9).

The specification of the credit market allows us to affirm that the non-neutrality of money is linked not only to the monetary character of the interest rate, but that it derives above all from the influence of the banks' decisions on the level and composition of investments.

#### **4. The criticism of the neoclassical theory of credit.**

In the preceding pages it has been recalled that Wicksell, too, emphasizes that in an economy in which bank money is used the credit market is of a different nature to that of a barter economy. The fundamental difference between Wicksell's theory and a Keynesian theory of credit is the prominence that Wicksell gives to the concept of the natural interest rate, i.e. the rate of interest which would occur in a barter economy.<sup>38</sup> What distinguishes Wicksell's theory is the contention that the natural interest rate is also relevant for an economy in which bank money is used. In particular, Wicksell maintains that there exists a mechanism capable of bringing back the monetary interest rate set by the bank to the natural interest rate. This mechanism is the variation of the price level; the price level remains stable when the two rates co-incide, while it varies when they diverge. Wicksell assumes that at the natural rate of interest, full employment output is reached, so when the monetary interest rate is different from the natural rate there is an imbalance between aggregate demand and the full employment output.<sup>39</sup> When the monetary interest rate is lower than the natural rate, we get an increase in the market price of capital goods, which triggers an increase in the demand for investment good, fuelling in turn a rise in the demand for labour. The increase in the demand for capital goods and for labour causes a price hike. Wicksell maintains that the prices will continue to rise until the monetary interest rate is lower than the natural rate. Symmetrically, in the case in which the monetary rate is higher than the natural rate, a reduction in the market price of capital goods is obtained; this triggers a fall in the

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<sup>38</sup> "... if the capital was lent in kind, there would undoubtedly develop, through the supply of and demand for the available capital, a certain rate of interest on the lending market, which would be the natural rate of interest on capital in the strictest sense." (Wicksell 1898, p. 192).

demand for investment goods and labour, and therefore a continuous reduction in the price level. The price variation cannot, however, last forever, for two reasons; first, the price variation influences the level of the bank reserves and this induces the banks to revise the monetary rate.<sup>40</sup> The second reason which drives banks to alter the monetary interest rate is the variations in the foreign exchange reserves due to the balance of payment disequilibria.<sup>41</sup>

Wicksell's theory is characterised not so much by the idea that a natural interest rate, i.e. a rate of interest compatible with full employment, exists, but the conviction that in an economy that uses bank money price flexibility constitutes an effective mechanism for bringing the monetary interest rate back to the natural level. This represents the main point of divergence with Keynes, who instead maintained that a monetary economy is structurally different from a barter economy. In this paper it has been contended that in order to emphasize the reasons why money is non-neutral it is necessary to describe the credit market using the considerations developed by Keynes in the works published between 1937 and 1939. It can be seen that the specification of the credit market provides an important element enabling us to challenge the conclusions of the neoclassical theory based on the effectiveness of the price flexibility mechanism. To illustrate this point we can use Minsky's arguments; he observed that, given the importance of the demand for investment goods in a world characterised by sophisticated financial relations, price flexibility can drive the system towards full employment only if it influences the long-term expectations which condition investment decisions, and he concludes that it is not possible to show that the fall in prices impacts positively on these expectations. On the contrary, if we consider the consequences of a fall in prices on the real value of debts, it is more reasonable to expect that a drop in prices and salaries will trigger a reduction in the aggregate demand.<sup>42</sup> Hence the conclusion that in a monetary economy the presence of involuntary unemployment cannot simply be attributed to price rigidity:

“... there are factors influencing effective demand in a capitalist economy that cannot be linked unequivocally to wage, price, or interest rate rigidities. These factors, however, are only a problem in an investing capitalist economy that has developed sophisticated

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<sup>39</sup> On this point see for instance: Leijonhufvud (1980); Kohn (1981).

<sup>40</sup> Wicksell 1907, p. 215

<sup>41</sup> Wicksell 1907, p. 217.

<sup>42</sup> Minsky (1980); see also: Palley (2002).

financial institutions in response to the uncertainty inherent in long-term financial commitments.”<sup>43</sup>

Wicksell's theory constitutes the basis for the monetarist analysis; Friedman, citing Wicksell, states that the monetary authorities cannot control the monetary interest rate. Only in the short term can a divergence arise between the two rates; the inflation or deflation which occur when the two rates are at variance with each other bring the monetary rate back to the level of the natural one. Friedman and the monetarists, on the other hand, seem to distance themselves from Wicksell when they state that the variation in the quantity of credit has no effect on the level of aggregate demand and hence on price level. This position emerges when Friedman explains the difference between the money and credit markets by observing that they are characterised by different prices: the price of money is the reciprocal of the price level, while the price of credit is the interest rate. Friedman and Schwartz (1982, p. 26) introduce this distinction, by signalling the:

“... widespread tendency to confuse ‘money’ and ‘credit’ which has produced misunderstanding about the relevant price variable. The ‘price’ of money is the quantity of goods and services that must be given up to acquire a unit of money – the inverse of the price level. ... The price of money is not the interest rate, which is the price of credit. The interest rate connects stocks with flows – the rental value of land with the price of land, the value of the service flow from a unit of money with the price of money. Of course the interest rate may affect the quantity of money demanded – just as it may affect the quantity of land demanded - but so may a host of other variables.”

The imbalances between demand and supply that occur in the two markets give rise to very different effects: the imbalances which regard money cause variations in the aggregate demand and so in the price level. For example, an excess of money supply will trigger a fall in the price of money, in other words, an increase in the price level. The imbalances between credit demand and supply will only cause interest rate variations, while the price level will remain the same; this means that the imbalances that occur in the credit market have no effect on the level of aggregate demand. Consequently, Friedman maintains, only variations in the quantity of money influence

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<sup>43</sup> Minsky 1980, p. 29. The dominant macroeconomic theory seems to have essentially accepted the monetarist thesis that price flexibility guarantees full employment; Hahn and Solow (1995, p. 133) are an important exception: “In our culture we have come to think of wage and price flexibility as an unequivocally good thing. (The vulgar version is ‘leave it to the market’). Under proper assumption that may be correct. We were concerned to show that the range of proper assumptions is quite narrow, in the sense that other assumptions, at least equally plausible and made equally respectable by long use, may lead to very different conclusions without irrationalities, nonconvexities, and the like.”

the level of aggregate demand; the implicit assumption in this conclusion is that the higher demand for goods by borrowers is offset by the lenders abstaining from demanding goods. This assumption could be reasonable in the case of a barter economy, but it becomes unsustainable in a system which uses bank money. When the banks finance companies, no agent lowers his demand for goods, so there will be an increase in the aggregate demand in correspondence with the credit expansion.

The monetarists' tendency to consider the credit market of an economy which uses bank money equivalent to that of a barter economy also emerges when the distinction between inside money and outside money is used. The outside money is non-convertible money, while the inside money is all the other means of payment which can be converted into outside money. The bank deposits which can be converted into legal money issued by the central bank constitute inside money. Friedman contends that only the variations in the outside money trigger a change in the aggregate demand and, hence, in inflation.<sup>44</sup> He assumes that a financing operation which takes place by means of a debt relation has no net effect on the aggregate demand; only variations in the outside money determine variations in the aggregate demand and thus in inflation. This formulation also emerges when the consequences of different ways of financing the public deficit are analysed: only the financing through the creation of new money (outside money) causes an increase in aggregate demand and therefore in inflation, while financing by means of the issue of bonds does not have any effect on aggregate demand.<sup>45</sup> This reasoning is hardly compelling inasmuch as the private sector, when it decides to underwrite stock, merely decides to modify the composition of its wealth, and so the level of demand should not change. This point is forcefully underlined by Kaldor in his critique of monetarism:

"The main monetarist thesis is that the net dissaving of the public sector is 'inflationary' in so far as it is 'financed' by the banking system and *not* by the sale of debt (bond or gilts) to the public. But this view ignores the fact that the net saving, or net acquisition of financial assets of the *private* sector will be the same irrespective of whether it is held in the form of bank deposits or of bonds. The part of the current borrowing of the public sector which is directly financed by net purchases of public debt by the banking system - and which has its counterpart in a corresponding increase in bank deposits held by the non-banking private sector - is just as much part of the net saving of the private sector as the part which is financed by the sale of gilts to the private sector. When the public sector's de-

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<sup>44</sup> Friedman and Schwartz (1986).

<sup>45</sup> "Higher government spending will not lead to more rapid monetary growth and inflation *if* additional spending is financed either by taxes or by borrowing from the public. In that case, government has more to spend, the public has less. Higher government spending is matched by lower private spending for consumption and investment." (Friedman and Friedman 1980, p. 264).

cumulation of financial assets increases (i.e. the public sector's deficit increases) there must be an equivalent increase in the net savings of the non-bank private sector ... which will be the same irrespective of how much of that saving takes the form of purchases of gilts and how much takes the form of an increase in deposits with the banking system."<sup>46</sup>

In a world in which the monetary authorities set an objective in terms of the interest rate, the form of financing of the public deficit does not influence either the amount of money, which is determined by demand, or the income level.

## **5. The criticism of the New Keynesians' credit theory.**

In the last twenty years the New Keynesians have elaborated a theoretical approach which emphasises the credit market and the role played by financial intermediaries rather than the money market. The theory of credit formulated in this paper is different and, I believe, more coherent with Keynes's theory than the one put forward by the New Keynesians.<sup>47</sup> The approach described in this work specifies the credit market by describing the process of the creation of money in a system which uses bank money; the fundamental relation which characterises the credit market is that between banks and firms. The New Keynesians, instead, come to give prominence to the bank credit market through their analysis of the capital market. They analyse this market starting from the seemingly obvious consideration that the necessary pre-condition for the existence of a capital market is the presence of debtors and creditors. According to the New Keynesians, what makes the capital market important is the presence of imperfections which are caused by conditions of asymmetric information. A situation of asymmetric information is characterised by the fact that potential creditors have less information than debtors about the future returns on investment projects which the firms plan to carry out. The conclusions reached by the NKs can be summarised in the following three points : i) the presence of asymmetric information renders the Modigliani-Miller theorem inapplicable; ii) the presence of asymmetric information justifies the existence

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<sup>46</sup> Kaldor (1982), p. 49. For a more detailed analysis of Kaldor's views refer to: Bertocco (2001)

<sup>47</sup> Reference will be made in particular to the works of Stiglitz and his collaborators, especially Greenwald and Weiss.

of financial intermediaries and, in particular, of banks; iii) the presence of asymmetric information can determine a credit rationing equilibrium.

The first result obtained by the NKs was to show that it is not the same for a firm to finance an investment project by issuing equities or by borrowing. They maintain that, in the presence of asymmetric information, it is more costly to get financing by a share issue than by borrowing, and they therefore conclude that the latter is the prevalent form of financing chosen by firms. The NKs reach this conclusion by applying to the capital market the results of a study carried out by Akerlof (1970).<sup>48</sup> In Akerlof's model, the potential buyers of used cars are unable to discern the quality of the cars; in the case of the capital market, the NKs assume that potential share subscribers know only the expected return on the investment projects, while the firms have at their disposal information allowing them to know what the actual return on their project will be. If it is assumed that the yield expected from all the projects is the same, it must be concluded that the shares of all the firms will be issued on identical terms and that the best firms will be penalised. In this situation it is onerous for the best firms to issue equities; if the best firms finance themselves by borrowing, the firms with the less profitable investment projects will have to do likewise in order to avoid being identified by the market. In conclusion, in the presence of asymmetric information, the prevalent form of investment financing is borrowing.<sup>49</sup>

The second result obtained by the NKs is to show that the form of borrowing used by the firm is not the direct issue of bonds, but rather bank borrowing. Akerlof observed that the presence of asymmetric information stimulates the creation of institutions whose aim is to reduce information costs; in particular, Akerlof drew attention to the activity of the merchants who specialise in evaluating the quality of the goods.<sup>50</sup> The banks play the same role in the capital market as the merchants play in Akerlof's used car market.<sup>51</sup> The NKs introduce a key assumption; they observe that the banks are unable to perfectly screen firms, in other words, they are unable to gather all the

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<sup>48</sup>The influence which Akerlof's analysis had on the NKs' theory is important; on this point see: Stiglitz 1987, 2000; Ardeni, Boitani, Delli Gatti and Gallegati 1999; Messori 1999; De Meza and Webb 1987, Myers and Majluf 1984.

<sup>49</sup> See for example: Myers and Majluf 1984; Greenwald, Stiglitz and Weiss 1984; Greenwald and Stiglitz 1987, 1990, 1993a, 1993b.

<sup>50</sup> "In *our* picture the important skill of the merchant is identifying the quality of merchandise; those who can identify used cars in our example and can guarantee the quality may profit by as much as the difference between type two traders' buying price and type one traders' selling price. These people are merchants." Akerlof 1970, p.117.

<sup>51</sup> See: Stiglitz and Weiss 1990; Blinder and Stiglitz 1983.

information necessary to fully define the features of every investment project, which the firms intend to carry out.<sup>52</sup> This hypothesis allows the NKs to state that, despite the presence of financial intermediaries, the capital market is still characterised by asymmetric information and so it works in a different way from a world in which there is perfect information. The most important result that illustrates this conclusion is the demonstration that it is possible to reach a rationing equilibrium on the credit market. This result is the third element that characterises the NKs' theory.

This credit theory contains elements which are at variance with Keynes's thinking. The first one is the fact that this theory of credit is applied to an exchange economy, that is to an economy in whose credit market real or monetary resources that have not been consumed by savers are exchanged; the imperfections caused by the presence of asymmetric information renders the direct financing of firms by savers costly and justifies the presence of financial intermediaries. The NKs' thesis that the presence of asymmetric information justifies the existence of financial intermediaries implies acceptance of the thesis that if the condition of asymmetric information were eliminated, creditors would directly finance the debtors without any need for bank intervention.<sup>53</sup> The NKs maintain that if the banks were able to obtain the same information as the debtors, the interest rate would behave just like any other price, and the equilibrium between credit demand and supply would coincide with the equilibrium between savings and investments.<sup>54</sup>

Hence, the presence of information asymmetry is the element that justifies a credit rationing equilibrium and prevents the credit market from reaching a position of equilibrium consistent with full employment.<sup>55</sup> The NKs maintain that the presence of asymmetric information provides a satisfactory answer to the question to which it is widely held that a theory of financial intermediaries should respond. This question is formulated by starting from the seemingly obvious and common sense consideration

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<sup>52</sup> See: Jaffee and J.Stiglitz 1990; Stiglitz and Weiss 1990; Greenwald and Stiglitz 1991.

<sup>53</sup> This approach is largely shared by scholars of the theory of financial intermediaries; see for example: James and Smith 1994, Lewis 1995.

<sup>54</sup>“...what impedes the standard equilibrating forces from working? In particular, why does not the interest rate adjust to equilibrate the demand and supply for credit at a full employment, non-inflationary level... Considerations of imperfect information impede the use of the interest rate as equilibrating mechanism.” (Stiglitz and Weiss 1990, p.89).

<sup>55</sup> “The fact that the return received by lender may *decrease* with an increase in the interest rate has one ..effect: it means that there may be credit rationing... It should be emphasized that these arguments apply so long as the bank does not have *perfect* information concerning borrowers. Banks categorize potential borrowers... But the categorization is never perfect... So long as either the adverse incentive or selection

that the presence of creditors and debtors is the necessary premise to justify the existence of financial intermediaries; intermediaries can only emerge in a world in which debtors and creditors exist. In this situation, the recourse to financial intermediaries involves a cost for debtors and creditors, therefore the theory should explain what are the advantages, deriving from the presence of the intermediaries, which can offset costs.<sup>56</sup> The presence of asymmetric information seems to provide a good answer; the service offered by the intermediaries consists in information gathering.

The NKs' analysis is based on the premise, which contrasts with Keynes's arguments as described in the preceding pages, that an ideal world does exist, without imperfections, in which the interest rate assumes what Wicksell defines as the natural value, that is the value that guarantees equality between savings and investments.<sup>57</sup> This leads the NKs to maintain that the size of the credit market is essentially determined by real factors, and in particular that the credit supply is conditioned by savings decisions. This conviction is evident from the definition of the credit market used by the NKs: the fundamental actors that operate in this market are the savers and the investors, and the objective of the trade can be, indifferently, either a real good or money. Jaffee and Stiglitz (1990, p. 839) state that:

“The need for credit is evidence of change: those who control existing resources, or have claims on current wealth, are not necessarily those best situated to use these resources. They thus transfer control over their resources to others, in return for a promise. ... in the absence of a credit market, those with resources would have to invest the resources themselves, possibly receiving a lower return than could be obtained by others. When credit is allocated poorly, poor investment projects are undertaken, and the nation's resources are squandered.”<sup>58</sup>

This approach is significantly different from Keynes's one based on the distinction between *real-exchange economy* and *monetary economy*; in a Keynesian formulation it is not possible to think that the object of the credit market is, indifferently, a real good or money, and that the characteristics of this market are the same in a barter economy

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effects from raising interest rates is sufficiently strong, interest rates will not be used to equilibrate the loan market.” (Stiglitz and Weiss 1990, p. 98).

<sup>56</sup> See: Hellwig 1991.

<sup>57</sup> The NKs maintain that there is a close relation between their theory and the loanable funds theory; Blinder and Stiglitz state that their theory aims to: “... to take issue with some currently fashionable views of why money has real effects, and to suggest a new theory, or rather resurrect an old one – the loanable funds theory – and give it new, improved micro foundations.” (Blinder and Stiglitz 1983, p. 297)

<sup>58</sup> See also: Stiglitz and Weiss 1990, pp. 91-92.

and in an economy that uses bank money. The theory of credit put forward in this paper emphasizes how the credit supply is independent of the savings decisions.

The second element which differentiates the NKs' theory from Keynes's is the importance attributed to the time aspect. The attention given to the credit market leads the NKs to underline the importance of the temporal dimension of economic decisions. The NKs' approach diverges from Keynes's theory in that, in dealing with the issue of time, it does not give importance to the implications of the presence of Keynesian uncertainty. The asymmetric information assumption presupposes that information which enables the future results of investments to be predicted does exist, and in many examples it is assumed that if the operators had the same information they would come up with the same forecasts. Keynes held that there are no objective methods for representing the future results of an investment project. As has been pointed out earlier in this paper, in the presence of uncertainty neither the banks nor the firms possess objective criteria enabling them to describe the future results of economic decisions. In the presence of uncertainty, banks and firms can express different expectations regarding the future yields on a given investment project, even if they possess the same information. This, as we have seen, allows us to formulate an explanation of the phenomenon of credit rationing that does not imply the presence of asymmetric information.

In conclusion, the credit theory presented in this paper seems more general than the one developed by the NKs because it is independent of the presence or otherwise of asymmetric information. In the case in which the banks have the same information as the firms, the NKs' approach holds that the same results that characterize a world without imperfections in which creditors directly finance the debtors would be obtained. The importance of the assumption of asymmetric information was challenged by Allen and Santomero (1998), who observed that the spread of the information technology revolution produced a significant reduction in information costs and therefore they conclude that these costs do not constitute a convincing explanation for the presence of financial intermediaries.<sup>59</sup> I believe that Allen and Santomero's view on the impact of the technological revolution on information costs has important consequences for the

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<sup>59</sup> "... the advent of the technological revolution has substantially reduced the cost of information and reduced information asymmetry. Yet it did not reduce the need for intermediary services and encourage direct lending by households. In fact, the data suggest the opposite. In short, the decline in frictions which were allegedly the market imperfections that led to a need for intermediation services has not reduced the

NKs' thesis. If the assumption introduced by the NKs that there are informations which enables the future results of investment projects to be specified by a probability distribution is accepted, it then becomes reasonable to conclude that the IT revolution tends to eliminate the costs necessary to define the returns on an investment project and the degree of risk it involves. Thus, if the banks' existence is justified by the presence of asymmetric information, it must be concluded that the elimination of information costs drives the economy towards a situation in which the banks no longer have a *raison d'être*.

## Conclusions

Keynes maintained that the presence of fiat money profoundly changed the nature of exchanges and the structure of the economic system. In this paper it has been argued that in order to explain the reasons why money is non-neutral it is opportune to explicitly analyse the issue of the financing of spending decisions and thus to describe the process through which money is made available to agents. To this end, the need to develop a theoretical model that describes a credit market separately from the money market has been stressed. The credit theory put forward in this paper is based on Keynes's views as they appear in works published between 1937 and 1939, in which he tackles the issue of the financing of spending decisions, specifying a new motive which justifies the money demand: the 'finance motive'. It has been observed that this solution is subject to some limitations which could be overcome by describing a credit market separately from the money market. On the basis of Keynes's arguments a theory of credit having the following characteristics has been presented: a) the credit supply is independent of the savings decisions; b) the credit demand depends on firms' investment decisions; c) the interest rate on credit is not influenced by savings decisions.

Describing the credit market separately from the money market enables us to describe the working of a monetary economy by distinguishing two phases. The first phase is characterised by the firms' investment decisions. In this phase the banks' role in

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demand for them. Intermediation is growing and prospering even as the frictions decline." Allen and Santomero 1998, p. 1465; see also: Scholtens and Van Wensveen 2000.

influencing the level and the composition of investments is fundamental. In this paper attention has been focused on Keynes's views that economic decisions are taken in conditions of uncertainty, allowing important aspects of the bank-firm relation to be highlighted; the specification of the credit market makes it possible to give the degree of uncertainty greater relevance than is possible when only the money market is specified. According to the multiplier theory, investment decisions determine an income level at which a flow of savings equal to the investment flow is obtained. This savings flow corresponds to the variation in wealth; in the second phase the problem arises of the choice of the composition of wealth, which can be dealt with using the liquidity preference theory. The model described in the text enables us to show that the banks play an important role in both phases; in fact, their decisions influence both the credit supply and the money supply. It has been shown that the widespread presence of short-term bonds and the decision of the monetary authorities to set an objective in terms of the interest rate makes justification for the non-neutrality of money linked with the money stock value function less relevant. In these conditions the non-neutrality of money is not only linked to the monetary character of the interest rate, but it derives above all from the influence of the banks' decisions on the level and composition of investments.

The credit theory described in this paper is clearly distinguishable from the one developed by the New Classical economists, which assumes that the system is constantly in the presence of full employment owing to the price flexibility. And it is also different from the theory developed by the New Keynesians according to which the relevance of the credit market is justified only by the presence of imperfections.

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