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On the relationship between  
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Keynesian perspective

2011/3



UNIVERSITÀ DELL'INSUBRIA  
FACOLTÀ DI ECONOMIA

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Printed in Italy in January 2011  
Università degli Studi dell'Insubria  
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**Money as an institution of capitalism.  
On the relationship between money and uncertainty from a  
Keynesian perspective.  
*Giancarlo Bertocco***

**Abstract**

Dillard (1987) notes that to consider money as an institution of capitalism means to emphasise that the presence of money is an essential element in explaining fluctuations in income and employment. He states that Keynes's *General Theory* offers a sound explanation of money as an institution of capitalism. Keynes's explanation is based on a necessary condition, independent of money: the presence of uncertainty. The objective of the paper is to elaborate a different explanation of the role of money as an institution of capitalism according to which the presence of money constitutes the necessary condition to justify the importance of uncertainty.

**Introduction**

Dillard (1987) maintains that Keynes in the *General Theory* formulated an important explanation of the reasons why money is an institution of capitalism.<sup>1</sup> He notes that to consider money as an institution of capitalism means to emphasise that the presence of money is an essential element in explaining fluctuations in income and employment; this is the difference between money as an institution of capitalism and money as an institution under other economic systems.<sup>2</sup> Dillard (1987) states that in non capitalist economies such as feudal, agricultural or socialist economies, money is a neutral variable, that is a variable that does not influence income and employment, and he adds that these are the economies described by the mainstream economic theories.<sup>3</sup> In these non capitalist economies the

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<sup>1</sup>“Although no one claims John Maynard Keynes as an institutional economist, his *General Theory of Employment, Interest and Money* may be interpreted as an explanation of money as an institution of capitalism.” (Dillard 1987, p. 1630)

<sup>2</sup>“Money as an institution under capitalism differs from money as an institution under other economic system because under capitalism the withholding of money capital characteristically leads directly to substantial unemployment and to fluctuations in output.” (Dillard 1987, p. 1624)

<sup>3</sup> “Mainstream economics, beginning with Smith, is more relevant to nonmonetary economies than to capitalist because money is neutral with respect to output and employment in classical and neoclassical economics.” (Dillard 1987, pp. 1625-6)

function of money as a means of exchange assumes importance, while in a capitalist economy the non neutrality of money is based on his store of wealth function.<sup>4</sup> By specifying this function of money Keynes, in the *General Theory*, highlights the monetary nature of the interest rate and shows that the interest rate can assume a value which is too high with respect to the rate that is coherent with full employment. Dillard (1987) notes that this explanation of the non neutrality of money is based on two elements: the first is the characteristics of money that Keynes specifies in chapter XVII of the *General Theory*;<sup>5</sup> the second is the presence of uncertainty. The particular characteristics of money justify the hypothesis introduced by Keynes in the *General Theory*, according to which the supply of money can be considered as a variable controlled by the monetary authorities who act in conditions of monopoly.<sup>6</sup> The presence of uncertainty, and in particular uncertainty about the future value of the interest rate, instead explains fluctuations in the demand for money which, given the supply, can determine values of the interest rate which are not coherent with full employment.<sup>7</sup> Thus, Dillard explains the role of money as an institution of capitalism by considering the presence of uncertainty as an exogenous element, independent of the presence of money.

It is evident that the thesis of the non neutrality of money would assume more importance if we could explain the importance of the dimension of uncertainty starting with the presence of money. The objective of this paper is to elaborate a different explanation of the non-neutrality of money according to which the presence of money constitutes the necessary condition to justify the importance of the dimension of uncertainty. It will be shown that this is what Keynes tries to do in his 1933 works in

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<sup>4</sup> “Money is not just a medium of exchange, not just a measure of value; money is a form of private property that wealth holders in a business enterprise economy at times treasure more than income itself.” (Dillard 1987, p. 1645)

<sup>5</sup> “The properties of money that account for its singular importance include its high liquidity premium, its low carrying cost, and its zero or negligible elasticities of production and substitution.” (Dillard 1987, p. 1632)

<sup>6</sup> “Money may be viewed as an institutional monopoly. *Monopoly* means control over supply. The zero or negligible elasticity of production and substitution of money means that when the demand for money increases, more money cannot be produced – as in the case of almost all other assets- and the price (interest rate) will rise.” (Dillard 1987, p. 1633)

<sup>7</sup> “... the money rate [of interest] is strategic in impeding new investment and leads thereby to involuntary unemployment of labor. This is Keynes’s ultimate explanation of why the means of production are withheld from labor as a normal condition in a money-making economy. In conjunction with unfavorable expectations about uncertain future, owners of the means of production prefer to leave some of the plants idle rather than operate them.” (Dillard 1987, p. 1632)

which he highlights the need to elaborate a *monetary theory of production* in order to explain the phenomena of the crisis and the fluctuations in income and employment. This relation between money and uncertainty is illustrated using the arguments with which Keynes, in some works published between 1937 and 1939, responds to the criticism leveled at the *General Theory* from supporters of the *loanable funds theory* such as Ohlin and Robertson. In these works Keynes considers a particular type of money that has the characteristics specified in chapter XVII of the *General Theory*: bank money; it will be shown that the presence of this money allow us to explain the importance of the dimension of uncertainty.

The paper is divided in two parts. In the first one, it will be shown that the causal link between money and uncertainty which characterizes the *General Theory* contrasts with the causal link defined in Keynes's 1933 works. In the second one, the reasons why the presence of a bank money can be considered a necessary condition to justify the important of the dimension of uncertainty are presented.

## **1. Money and uncertainty in Keynes's works.**

Many Keynesians consider uncertainty as a starting point for the justification of the store of wealth function of money.<sup>8</sup> This relation is based on what Keynes states in the *General Theory*. In chapter 13 of the *General Theory* Keynes criticises the classical theory that states that the interest rate depends: "... on the interaction of the schedule of the marginal efficiency of capital with the psychological propensity to save." (Keynes, 1936, p. 351) He observes that an individual, after having decided how much to save, must decide: "... in *what form* he will hold the command over future consumption which he have reserved, whether out of his current income or from previous savings." (Keynes 1936, p. 166).

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<sup>8</sup>Fontana, for instance, states that: "But once uncertainty is recognized as a pervasive feature of individual decision-making, what is left to economic agents? In answering this question, some Post Keynesians have focused their attention on the role of money as a store of wealth. Money is the fundamental macroeconomic institution, a time-machine vehicle, in Davidson expression, for coping with the uncertainty of individual decision-making... A positive demand for a stock of money is thus the way economic agents cope with their uncertain knowledge about the future. Importantly, uncertainty and the related demand for money are grounded in the non-atomistic nature of economic reality. Therefore both uncertainty and the demand for money are permanent features of economic decision-making." (Fontana 2006, 448-9; see also: Fontana 2009)

Keynes thus states that the interest rate does not depend on saving decisions but on the liquidity preference:

“It should be obvious that the rate of interest cannot be a return to saving or waiting as such. For if a man hoards his savings in cash, he earns no interest, though he saves just as much as before. On the contrary, the mere definition of the rate of interest tells us in so many words that the rate of interest is the reward for parting with liquidity for a specified period. For the rate of interest is, in itself, nothing more than the inverse proportion between a sum of money and what can be obtained for parting with control over the money in exchange for a debt for a stated period of time.” (Keynes 1936, p. 167)

The money demand function or, to use Keynes’s terminology, the liquidity preference schedule, is defined by considering the store of wealth function of money and by specifying the factors that induce wealth owners to accumulate money; the interest rate is one of these factors. Keynes specifies that the relation between liquidity preference and the rate of interest is based on a necessary condition: the presence of uncertainty about the future rate of interest.<sup>9</sup> If there were no uncertainty individuals would not employ money as a store of wealth. Keynes accuses the classical theory of having elaborated a theory of money that completely overlooks the dimension of uncertainty.<sup>10</sup>

The presence of uncertainty allows Keynes to highlight a key aspect of the money demand function: its instability. The consequences of the fluctuations in the liquidity preference depend on the characteristics of the money supply function; in the *General Theory*, as Dillard (1987) recalls, Keynes assumes that the quantity of money is controlled by the monetary authorities and that it can vary independently of the money demand. He can therefore conclude that the fluctuations in liquidity preference do not cause changes in the quantity of money but that they influence the level of the interest rate.<sup>11</sup> Given the

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<sup>9</sup> ““There is ...a necessary condition failing which the existence of a liquidity-preference for money as a means of holding wealth could not exist. This necessary condition is the existence of *uncertainty* as to the future of the rate of interest, i.e. as to the complex of rates of interest for varying maturities which will rule at future dates.” (Keynes, 1936, p. 168)

<sup>10</sup> “Money, it is well known, serves two principal purposes. By acting as a money of account it facilitates exchanges... In the second place, it is a store of wealth. So we are told, without a smile on the face. But in the world of the classical economy, what an insane use to which to put it. For it is a recognized characteristic of money as a store of that it is barren... Why should anyone outside a lunatic asylum wish to use money as a store of wealth?” (Keynes 1937a, pp. 115-6)

<sup>11</sup> “... it is impossible for the actual amount of hoarding to change as a result of decisions on the part of the public, so long as we mean by ‘hoarding’ the actual holding of cash. For the amount of hoarding must be equal to the quantity of money...and the quantity of money is not determined by the public. All that the

quantity of money, the rate of interest depends on operators' expectations about the future interest rate level; this implies that the rate of interest could be a different level from that coherent with Say's law:

“It might be more accurate, perhaps, to say that the rate of interest is a highly conventional, rather than a highly psychological phenomenon. For its actual value is largely governed by the prevailing view as to what its value is expected to be. *Any* level of interest which is accepted with sufficient conviction as *likely* to be durable *will* be durable... [the rate of interest] may fluctuate for decades about a level which is chronically too high for full employment...” (Keynes 1936, 203-4)

The causal relation between uncertainty and money that characterizes the *General Theory* is in contrast to the one that emerges in Keynes's 1933 works in which Keynes underlines the need to elaborate a *monetary theory of production* and uses the expression *monetary economy* or *entrepreneur economy* to define an economy in which the presence of money that is not produced by means of work,<sup>12</sup> radically changes the structure of the economic system compared to a barter economy.<sup>13</sup> In these works Keynes considers the presence of money as a necessary element to explain the importance of the dimension of uncertainty.

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propensity of the public towards hoarding can achieve is to determine the rate of interest at which aggregate the aggregate desire to hoard becomes equal to the available cash.” (Keynes 1936, p. 174)

<sup>12</sup> “It is of the essence of an entrepreneur economy that the thing (or things) in terms of which the factors of production are rewarded can be spent on something which is not current output, to the production of which current output cannot be diverted... and the exchange value of which is not fixed in terms of an article of current output to which production can be diverted without limit.”

<sup>13</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 on harvesting the crop. It is not supposed to affect the essential nature of the transaction from being, in the minds of those making it, one between real things, or to modify the motives and decisions of the parties to it. Money, that is to say, is employed, but is treated as being in some sense *neutral*. 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 decisions, so that the course of events cannot be predicted, either in the long period 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 economy*.” (Keynes 1933b, 408-9)

Keynes observes that in a *monetary economy* or, as it is otherwise defined, in an *entrepreneurial economy*, the presence of money changes the law of production compared to the one that characterises the economic system described by the classical theory, and he illustrates this thesis using a framework described by Marx:

“[Marx] pointed out that the nature of production in the actual world is not, as economists seem often to suppose, a case of C- M- C’, i. e. of exchanging commodity (or effort) for money in order to obtain another commodity (or effort). That may be the standpoint of the private consumer. But it is not the attitude of *business*, which is a case of M-C-M’, i. e. of parting with money for commodity (or effort) in order to obtain more money. This is important for the following reason. The classical theory supposes that the readiness of the entrepreneur to start up a productive process depends on the amount of value in terms of product which he expects to fall to his share; i. e. only an expectation of more *product* for himself will induce him to offer more employment. But in an entrepreneur economy this is a wrong analysis of the nature of business calculation. An entrepreneur is interested, not in the amount of product, but in the amount of *money* which will fall to his share. He will increase his output if by so doing he expects to increase his money profit, even though this profit represents a smaller quantity of product than before.” (Keynes 1933a, 81-2)

Dillard (1987) considers the fact that Keynes cites Marx very important since it shows that Keynes, like Veblen and Marx, underlines that the objective of the entrepreneur is not to produce goods but to make money:

“The central problem of a monetary economy, to be reflected in a theory about it, is the realization of the value of real output (goods and services) in real terms; that is, the conversion of real output into money; that is, selling the product for money. .... Monetary production does not end with the creation of real output, but only with the conversion of real output into money” (Dillard 1987, p. 1625)

This seems an obvious truth: a producer of cars is not interested in accumulating unsold cars in his store rooms, but in making profits by selling cars in exchange for money. Selling what has been produced is the decisive moment in the entrepreneur’s activity, and this obvious observation seems to sufficient to justify Dillard’s conclusion that: “... under capitalism the object of business firms is to make money.” (Dillard 1987, p 1631). In fact, we must underline that the distinction between the production phase and the sale phase is not relevant in a world in which just one good is produced, such as in Smith’s corn economy, as in this case we assume that whatever is produced will be used as a consumer good or an investment good.

The necessary condition to make this distinction relevant is that more than one good is produced; in this case our producer will not be interested, for example, in accumulating cars, but in obtaining a monetary profit from the sale of cars. The presence of numerous goods is a necessary but not a sufficient condition, as, indeed, if our car producer was sure



of selling all the cars that he produces at a given price, we would again find ourselves in what Keynes calls a *real-exchange economy* in which money is merely a means of exchange, that is a neutral variable. The distinction between the production phase and the sale phase becomes relevant in a world in which the entrepreneurs are not sure of selling everything they produce. The fundamental question is to explain what makes the presence of uncertainty about the monetary profits relevant; Keynes proposes to show that this uncertainty depends on the characteristics of money. In fact, Keynes uses Marx's 'formula for capital' to highlight the fact that what distinguishes a *real-exchange economy* in which the formula C-M-C holds from a *monetary economy* in which the law of production M-C-M applies, is not the mere use of money but the fact that in a monetary economy the presence of a money that has particular characteristics changes the nature of the monetary proceeds. In the economic system described by the classical theory, the marginal proceeds coincide with the marginal productivity of labour as firms are sure that they will sell everything they produce. Instead, in a *monetary economy* the marginal proceeds do not coincide with the marginal productivity of labour but with "... the amount of money which will fall to [an entrepreneur] share." (Keynes 1933, p. 81). Keynes explains this relation between money that has certain characteristics and uncertainty, observing in the first place that uncertainty about revenue is due to the fluctuations of effective demand:

"The explanation of how output which would be produced in a co-operative economy may be 'unprofitable' in an entrepreneur economy, is to be found in what we may call, for short, *the fluctuation of effective demand*.... In a co-operative or in a neutral, in which sale proceeds exceed variable cost by a determinate amount, effective demand cannot fluctuate... But in an entrepreneur the fluctuations of effective demand may be the dominating factor in determining the volume of employment..." (Keynes 1933a, 80)

Secondly, Keynes defines the fluctuations of effective demand that give rise to booms and depressions as: "... a monetary phenomenon..." (Keynes 1933b, 85) in as much as these fluctuations depend on the particular characteristics of money used in a *monetary economy*. In chapter 17 of *General Theory* two essential properties of money are defined: (a) zero elasticity of production; and (b) zero elasticity of substitution between liquid assets and reproducible goods. The first property refers to the fact that entrepreneurs cannot cause more money to be produced by hiring additional labour. By the second property, Keynes means that 'as the exchange value of money rises there is no tendency to substitute [producible goods] for it' (Keynes, 1936, p. 231). It is the presence of this particular money that, as we will see in the next pages, Keynes in his works published between

1937 and 1939 identifies with bank money, which makes possible the fluctuations in the aggregate demand and changes the nature of the marginal revenues. We must underline that Keynes defines the law of production that characterises a *monetary economy* by expressing the costs and the marginal proceeds in monetary terms to highlight the fact that the presence of bank money, by making possible fluctuations in aggregate demand, ‘produces’ uncertainty.

We must thus conclude that in his 1933 works, Keynes defined the causal link between money and uncertainty in the opposite way to that which characterises the liquidity preference theory, according to which, as we recalled, the presence of uncertainty constitutes the necessary condition to justify the store of wealth function of money. The aim of the next pages is to show that the arguments used by Keynes to respond to the criticism leveled at the liquidity preference theory by supporters of the loanable funds theory such as Ohlin, make it possible to explain the causal relationship between money and uncertainty.

## **2. The characteristics of a *monetary economy*.**

In some works published between 1937 and 1939 Keynes responded to the criticism levelled at the *General Theory* by supporters of the loanable funds theory such as Ohlin. Ohlin contrasted the liquidity preference theory with a new version of the loanable funds theory which holds that the interest rate is determined by the loanable funds supply which corresponds to the sum of the flow of *ex-ante* savings, and the flow of new money created by the banks, net of the variation of the stock of accumulated money, and by the loanable funds demand which corresponds to the flow of investments. In the face of Ohlin’s criticism, Keynes recognizes the importance of the concept of *ex ante* investment; he recognizes that the planning of an investment decision leads the entrepreneur to obtain liquidity to finance this cost and thus associates the investment decisions with the demand for credit.<sup>14</sup> However, he does not accept Ohlin’s thesis that the credit supply depends on *ex ante* savings,<sup>15</sup> but he recognizes the role of banks in creating new money.<sup>16</sup> Not only

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<sup>14</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... In what follow I use the term ‘finance’ to mean the credit required in the interval between planning and execution” (Keynes 1937c, p. 216)

<sup>15</sup> “Surely nothing is more certain than that the credit or ‘finance’ required by *ex ante* investment is not mainly supplied by *ex ante* saving.” (Keynes 1937c, p. 217)

does Keynes accept an important point of the LFT, but he uses the presence of banks to underline, in contrast with the LFT, that the demand for credit is satisfied by means of the creation of money by banks and not by savings:

“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 propose 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.” (Keynes, 1937c, p. 222)

In order to highlight the distance between his theory and Ohlin’s, Keynes separates the money market from the credit market and states that his theory of the rate of interest is elaborated considering the money market. Indeed, Keynes considers the ‘finance’, that is firms’ demand for liquidity for the purpose of financing investment decisions, as a further component of money demand.<sup>17</sup> In order to highlight the difference between his theory and that of Ohlin, Keynes separates the money market from the loanable funds market; indeed, he considers ‘finance’ as another component of money demand.<sup>18</sup> The specification of the *finance motive* has given rise to much commentary;<sup>19</sup> for the purposes of our analysis we must note that when Keynes explicitly recognizes that banks create money to satisfy firms’ demand for liquidity he breaks from the approach of the *General Theory* according to

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<sup>16</sup> “The *ex ante* saver has no cash, but it is cash which the *ex ante* investor requires. On the contrary, the finance required during the interregnum between the intention to invest and its achievement is mainly supplied by specialists, in particular by banks, which organize and manage a revolving fund of liquid finance.” (Keynes 1937c, p. 219)

<sup>17</sup> “If by ‘credit’ we mean ‘finance’, I have no objection at all to admitting the demand for finance as one of the factors influencing the rate of interest. For ‘finance’ constitutes ... an additional demand for liquid cash in exchange for a deferred claim. It is, in the literal sense, a demand for money.” (Keynes 1937c, pp.209-10)

<sup>18</sup> “If by ‘credit’ we mean ‘finance’, I have no objection at all to admitting the demand for finance as one of the factors influencing the rate of interest. For ‘finance’ constitutes ... an additional demand for liquid cash in exchange for a deferred claim. It is, in the literal sense, a demand for money.” (Keynes 1937c, pp.209-10)

<sup>19</sup> For a critical analysis of the *finance motive* see for example: Graziani, 1984; Asimakopulos 1985, 1991; Trevithick 1994; Bibow 1995; Chick 1997; Bertocco 2005.

which the quantity of money is determined by monetary authorities and is independent of demand; it is therefore necessary to verify how this shortcoming can be overcome.

I think that one solution which would make it possible to overcome these shortcomings would be to specify two distinct markets: the money market and the credit market.<sup>20</sup> The specification of the credit market allows us to emphasize that banks create money through a debt contract by which they finance the spending decisions of agents who do not have purchasing power. It is made up of flow variables, the credit demand function reflects the behaviour of firms; this demand for liquidity can be considered as a demand for credit since it is expressed by actors who: (a) do not have liquidity; and (b) who, when they obtain the cash, undertake to pay it back at a fixed future date. By specifying the credit demand function, we distinguish the firms' demand for liquidity to finance investment decisions from the demand for bank money which instead reflects the portfolio decisions of wealth owners. As for the credit supply function, we can assume, following Keynes, that the supply of credit does not depend on saving decisions but depends on the decisions taken by banks and that it is independent of the savings flow.

The money market is made up of stock variables. There is a link between the flow variables that characterise the credit market and the stock variables that make up the money market; this link can be defined by distinguishing between two phases in the money creation process. In the first one banks finance firms by creating new money. Banks and firms are the main actors of this phase. The investments financed by the banks determine an increase in income according to what defined by the Keynesian income theory. In the second phase, wealth owners step in; the new money created by banks is added to the existing money and the saving flow generated by investment decisions increases the public's wealth. The second phase is the one in which the conditions are created for the wealth owners to accept to hold the money created by the banks.

I think that Keynes's insistence, in the face of Ohlin's comments, on denying the relation between saving decisions, credit supply and the interest rate is due to his conviction that the presence of money and, in particular of bank money, allows us to explain two fundamental characteristics of a *monetary economy*: i) the causal relationship between money and uncertainty; ii) the fluctuations of income and employment.

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<sup>20</sup> Many post Keynesians have underscored the utility of differentiating between the money and the credit market; see for example: Wray (1992); Lavoie (1996); Palley (1996); Arestis and Howells (1996, 1999); Dow (1997); Rochon (1999); Bertocco (2001, 2005); Fontana (2003); Docherty (2005); Howells (2006).

## **2.1 Money and uncertainty in a monetary economy.**

The causal relation between money and uncertainty is based on two points. The first is the relation between investment decisions and uncertainty; the second is the relation between money and investment decisions. The relation between investment decisions and uncertainty can be explained by recalling that Keynes (1937a) accuses the classical theory of having overlooked the dimension of uncertainty, and claims that this theory is able to describe only a world without uncertainty, that is an economy in which consumption decisions prevail and decisions on investment and wealth accumulation, whose results are not predictable in probabilistic terms, are absent.<sup>21</sup> Naturally it would be excessive to claim that the classical theory describes an economic system based only on consumption decisions; instead, what divides the classical theory from the keynesian theory is the specification of the characteristics of investment decisions. The classical theory considers investments as a phenomenon that depends on saving decisions and is independent of the presence of bank money. This conception can be applied to a *corn economy* in which corn is at the same time, according to Smith (1776), a consumer good if it is used to maintain an unproductive worker, that is a worker involved in the production of services in favour of the upper classes, or a capital good if instead it is used as wages to pay the productive worker, i.e. a worker involved in producing corn. Or it can be applied to the fishermen's economy described by Böhm-Bawerk (1884) to illustrate his interest rate theory; in both cases they are economies that produce just one good.

What distinguishes the investments that characterise the *monetary economy* described by Keynes is the fact that they are closely associated with the dimension of uncertainty. Of course even in the case of an economy that produces just one good, we can assume that an entrepreneur is not able to predict in probabilistic terms the future results of his decisions. This situation arises due to extra-economic factors such as unfavourable climatic

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<sup>21</sup> “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.” Keynes (1937a, p. 113).

conditions that ruin the harvest, or social-political events such as the break-out of a war, and so forth. What distinguishes the investments that are made in a *monetary economy* is the fact that the impossibility of predicting their results in probabilistic terms is due to factors of an economic nature, that is the factors which make the distinction between the production phase and the sale phase relevant. This conclusion can be understood if we consider the examples of investment decisions used by Keynes:

“Our knowledge of the factors which will govern the yield of an investment some year hence is usually very slight and often negligible. If we speak frankly, we have to admit that our basis of knowledge for estimating the yield ten years hence of a railway, a copper mine, a textile factory, the goodwill of a patent medicine, an Atlantic liner, a building in the City of London, amounts to little and sometimes to nothing; or even five years hence.” (Keynes 1936, 149-50)

The future yield of a railway, a copper mine or an Atlantic liner are not easily foreseeable because they do not coincide with the productivity of some specific productive factor such as land in the case of the Smith’s *corn economy*, or the boat in the case of Böhm-Bawerk’s *fishermen’s economy*. The investments considered by Keynes have the same characteristics as the innovations that are at the centre of Schumpeter’s analysis. As is well known, Schumpeter holds that innovations constitute the first endogenous factor that brings about the process of change characterising a capitalist economy. The phenomenon of innovation regards the sphere of production and it may consist of the realization of a new product, the introduction of a new productive method or the opening of new markets.

We can consider the investments of the Keynesian entrepreneur as the tool through which firms launch new products on the market, or modify the productive process through which the existing goods are realized, or even open new markets; so the Keynesian entrepreneur who takes the investment decisions coincides with the Schumpeterian entrepreneur who introduces innovations.<sup>22</sup> This point is emphasized by Davidson (2006, 2007) who describes the differences between mainstream and Keynesian theory by distinguishing between ergodic systems (or immutable-reality models) and non-ergodic systems (or transmutable-reality systems). With the first term Davidson refers to economic systems that replicate themselves unchangingly, or that are subject to alterations predictable in probabilistic terms. With the second term, Davidson refers to systems

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<sup>22</sup> Several economists have emphasised the desirability of integrating the Keynesian theory of income determination with Schumpeter’s theory of economic development; see for example: Minsky (1986, 1993) Goodwin (1993), Morishima (1992); Vercelli (1997); for a more detailed analysis see: Bertocco (2007).

characterised by a process of continuous transformation triggered by investment decisions; he declares that the presence of the Schumpeterian entrepreneur is a necessary element of a non-ergodic system.

The presence of investments and innovations gives prominence to the uncertainty dimension. In an economy in which just one good is produced, such as a *corn economy* whose investments are made up of unconsumed corn, entrepreneurs are sure of selling everything they produce because the good produced is what ensures the survival of consumers. This does not hold when we consider innovations that give rise to the production of new goods: the entrepreneur who produces the new good is not at all sure that he will be able to sell, making a satisfactory profit, all of the production because the innovation alters the existing world, making it very difficult to predict the reaction of the consumers to the new proposal (Schumpeter 1912, 65).

For this reason, both Keynes and Schumpeter note that investment decisions and innovations are carried out by agents who have particular skills, that is by agents who are able to take decisions in conditions of uncertainty, guided by what Keynes defined as *animal spirits*:

“... a large proportion of our positive activities depend on spontaneous optimism rather than on a mathematical expectation, whether moral or hedonistic or economic. Most, probably, of our decisions to do something positive, the full consequences of which will be drawn out over many days to come, can only be taken as a result of animal spirits – of a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities. Enterprise only pretends to itself to be mainly actuated by the statements in its own prospectus, however candid and sincere. Only a little more than an expedition to the South Pole, is it based on an exact calculation of benefits to come. Thus if the animal spirits are dimmed and the spontaneous optimism falters, leaving us to depend on nothing but a mathematical expectation, enterprise will fade and die...” (Keynes 1936, 161-2)<sup>23</sup>

We can distinguish at least two types of innovations: the innovations that modify the productive process through which the existing goods are realised and the innovations by means of which new goods are produced. The first type of innovation can be realised even in Smith’s corn economy, by, for example, the introduction of the plough or the tractor. In this case, the investments correspond to the quantity of corn that is used to pay the workers involved in the production of ploughs or tractors, or boats in the case of the fishermen’s economy described by Böhm-Bawerk. These innovations increase the productivity of

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<sup>23</sup> Some years earlier Schumpeter (1912) noted that the introduction of innovations required very different capabilities from those required to run existing firms and he describes the decisions of the innovating entrepreneur using similar terms to those used by Keynes (see: Bertocco 2007).

labour but they do not create uncertainty because, as Keynes notes, the law of production according to which an entrepreneur will hire a new worker if the marginal productivity of labour is higher than the marginal cost, always holds. In this economy costs and revenues are measured in units of the only good produced, the economic activity of the entrepreneur coincides with the production phase as everything that is produced will be consumed or invested, and the profits are defined in terms of corn.

The relation between investment decisions, innovations and uncertainty becomes important if we consider the second type of innovation. In a world in which several goods are produced, the investments that lead to the production of new goods are made in conditions of uncertainty as the entrepreneur is not able to know, for example, how many cars he will be able to sell and at what price. We can associate the two types of innovations with the two types of economies described by Keynes: a *real exchange economy* is an economy in which few goods are produced and innovations serve only to improve the productivity of labour with which the few existing goods are produced; it is, as Keynes observes, an economy in which the classical theory that saving decisions determine investment decisions, and money is only a means of exchange, holds. Instead, a *monetary economy* is an economy in which the second definition of innovation applies. It is thus an economy in which many goods are produced and in which investment decisions must be associated with uncertainty as the entrepreneur is not sure that he will be able to sell what he produces.

The second link of the causal sequence between money and uncertainty is constituted by the relation between bank money and investments. To explain the relation between bank money and investment decisions we can observe that both the Keynesian entrepreneur and the Schumpeterian innovator-entrepreneur must have the resources available to them to carry out their investments; bank money is the tool that enables them to obtain these resources. The importance of bank money can be explained by recalling that the investments that characterise a *monetary economy* are very different from those that are found, for example, in Smith's *corn economy*. In a *corn economy* to invest means to decide not to consume a part of the corn crop in order to produce more corn, while in a *monetary economy* to invest means, for example, to decide to build a railway; building a railway would be very difficult without bank money.

Indeed, let us suppose that in our *corn economy* an entrepreneur emerges who, following his *animal spirits*, plans to build a railway the construction of which requires the employment of a certain number of workers for ten years. Let us further suppose that the



existing production techniques make it possible to produce a quantity of corn sufficient to guarantee the survival of the farm workers and those that might be employed in the construction of the railway. We can observe that the railway, at least theoretically, could be built also in a *corn economy*;<sup>24</sup> in this case the construction of the railway is financed by the corn producers who give to our entrepreneur the corn necessary to pay the workers involved in building the railway. In return, they receive debt claims that will give them, when the railway is built, the right to obtain a quantity of corn equal to the amount lent during construction plus a premium consisting of the interest.

There are at least two elements that impede the realisation of this credit contract. The first is the fact that it is very difficult for corn producers to assess whether the entrepreneur who plans to construct the railway will be able to return the loaned capital because the credit contract necessary to finance the construction of the railway is very different from the one that is usually made in a *corn economy* under which the corn producer gives the excess corn over the amount he intends to consume to another producer who will use it to produce corn. In this case, given the production technique, it is easy for the creditor to calculate the yield of the loaned corn and thus to define the rate of interest to apply to the debtor; in the case of the railway this evaluation is much more difficult because there is no physical law that makes it possible to calculate how much corn will be obtained by the sale of train tickets starting from the amount of corn used to build the railway. The second difficulty concerns the duration of the loan; our entrepreneur will have to find corn producers who are willing to wait ten years before obtaining repayment of the loan.

The construction of the railway becomes easier in a world in which bank money is used. In this case our entrepreneur will have to convince the banks, not the corn producers, of the profitability of his project. The banks will finance the construction of the railway by creating new money with which our entrepreneur will pay the workers who will then be able to buy corn. The corn producers will not have any difficulty in exchanging corn for bank money, which is a perfectly liquid debt claim that can be used as a means of payment at any time. Although they do sell corn to the workers involved in building the railway, the corn producers are not creditors of our entrepreneur who is instead in debt to the bank, which is in turn in debt to those who own bank money. These agents may be the corn producers if we assume that the latter decide to accumulate the money obtained by selling the corn, or other agents that decided to accumulate the money obtained from payment of goods or services.

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<sup>24</sup>In Bresciani-Turroni (1936) there is a similar example.

Banks therefore carry out a key role in a *monetary economy*: they evaluate the applications for financing presented by entrepreneurs. The banks share with the entrepreneurs the responsibility of deciding which investments are carried out; with their decisions they influence the development of the economic system; it is a very different role from that of mere intermediary that they could perform in a *corn economy* by facilitating the transfer of corn saved to the producers who intend to expand their grain production.<sup>25</sup> Thus, we can maintain that the presence of bank money, and a well-developed credit market, constitutes the necessary condition for the development of an economy in which investment decisions become relevant and in which the presence of uncertainty becomes an essential factor; we can state that uncertainty is not merely an exogenous dimension, but it becomes a factor whose presence is explained by the spread of bank money.

### ***2.3 The fluctuations of effective demand as a monetary phenomenon.***

As we have seen, Dillard (1987) maintains that the liquidity preference theory elaborated by Keynes in the *General Theory* constitutes a meaningful explanation of the presence of involuntary unemployment based on the particular characteristics of money in a capitalist economy. I think that the liquidity preference theory tends to minimize the capacity of the monetary authorities to influence the interest rates which depends essentially on the expectations of wealth owners, as the central bank can influence the interest rates only indirectly through control of the quantity of money. We can underline that in a world where bank money is used, the monetary authorities directly set the interest rate at which they finance the banking system; we can assume that this reinforces their capacity to influence the interest rate level which conditions the firms' investment decisions. This affirmation is coherent with the decisions made in recent years by the monetary authorities of the industrialised countries. They have abandoned the control of monetary aggregates and instead target short-term interest rates. (see, for example: Bank of England (1999); Mishkin (1999), Romer (2000), Woodford (2003), Bindseil (2004), Fullwiler(2006), Nishiyama (2007)). We can maintain that the fact that the monetary authorities can set the short-term interest rate at any level desired, even at a rate close to zero, affects households' liquidity preference and the long-term interest rates and makes it more difficult to assume that unemployment can be attributed to the effects of liquidity

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<sup>25</sup> It is significant that Stiglitz and Weiss (1990, 91-92) consider the credit market of an agricultural economy when presenting the asymmetric information approach; on this point see: Bertocco 2009.

preference on long-term interest rates. In other words, we can assume that the expectations regarding future interest rate values are influenced by the value of  $r^*$  set by the monetary authorities, (see, for example: Wray 2006, p. 274; Tily 2007, chap. 7) . It is therefore difficult to assume that the presence of unemployment is due to the liquidity preference that determines a value of the interest rate higher than the one coherent with full employment. We must recognize that the explicit consideration of the bank money creation mechanism reduces the importance of the liquidity preference theory in explaining the fluctuations in aggregate demand and therefore in income and employment.

The deep economic crisis resulting from the financial crisis following the collapse in the subprime mortgage market is an important example which confirms this thesis; the very low rates of interest set by the monetary authorities in countries all over the world prevents us from considering the big rise in unemployment in Europe and the United States as a consequence of the liquidity preference that determines excessively high rates of interest.

We can formulate a different explanation for the reasons why in a monetary economy that uses bank money Say's law cannot be applied; an explanation based on the relation between bank money, investment decisions and uncertainty that we described in the previous section. To this end, we can observe that investment decisions have a double dimension: on the one hand, they are the tool by means of which innovations are introduced, and, on the other, they are a significant component of the aggregate demand as we have seen with the simple example of the railway. The link between investment decisions and uncertainty described in the previous pages, allows us to explain the monetary nature of the fluctuations in the aggregate demand. The amount of investments depends, at first, on the *animal spirits*;<sup>26</sup> given the *animal spirits*, we can distinguish two situations. Firstly, we can assume that there is no rate of interest higher than zero at which entrepreneur-innovators are willing to realise a flow of investment coherent with full employment; in this case there will be involuntary unemployment even at a rate of interest equal to zero. Secondly, we can suppose that there exists a value of the interest rate so low to cause a flow of demand for investment goods coherent with the full employment

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<sup>26</sup> "... if the animal spirits are dimmed and the spontaneous optimism falters, leaving us to depend on nothing but a mathematical expectation, enterprise will fade and die... individual initiative will only be adequate when reasonable calculation is supplemented and supported by animal spirits, so that the thought of ultimate loss which often overtakes pioneers... is put aside as a healthy man put aside the expectation of death." (Keynes 1936, p.162)

income. As is well known, Wicksell and the supporters of the loanable funds theory such as Ohlin and Robertson state that when banks fix the rate of interest of money at a value that equals the natural rate of interest, the presence of bank money does not alter the economic equilibrium (Wicksell 1898, p. 84). The same conclusion is reached if we assume that the monetary authorities are able to control the interest rate and to set the level in correspondence with the optimal rate of interest compatible with full employment. This conclusion is based on the assumption that once the rate of interest is set at a level at which entrepreneurs wish to realise a flow of investments coherent with full employment the banks also decide to create a flow of new money capable of financing the amount of investments desired by the entrepreneur-innovators; in this case Say's law is satisfied and banks can be considered as intermediaries which lend what is lent to them.

This assumption does not necessarily apply in a *monetary economy*; indeed, we must stress that the presence of uncertainty connected with the use of a bank money also influences the banks' decisions. They also take decisions in conditions of uncertainty; not even the banks can predict in probabilistic terms the future results related to the construction of the railway. They could thus decide not to finance the railway, that is, they may decide to ration credit because, for example, they may view the prospects of a given investment project in a less optimistic light than the entrepreneurs. In this case Say's law cannot be applied; the level of income depends on the effective demand and the Keynesian inversion of the causal relation between savings and credit works.

If we consider the example of the railway we can distinguish two dimensions of uncertainty: that which conditions the decisions of the entrepreneur innovator who intends to build the railway, and that relating to the corn producers whose future profits depends on the level of the investments made by the entrepreneur-innovators. This simple example allows us to show that a *monetary economy* has a continuous need for innovations in order to maintain full employment; indeed, we can observe that to run the railway once it is built will probably not require the same number of workers used to construct it, therefore it will be necessary to realise other innovations in order to maintain full employment.

Finally, there is another element that characterises a *monetary economy*: its fragility. This point was underlined by Minsky (1975, 1980, 1982) who highlighted the fact that money is created by means of a credit contract that requires the debtor's commitment to pay back the money received at a certain date. This depends on the success of the innovation; in our example it depends on the willingness of the public at large to modify its consumption by accepting to consume not only corn but also train rides. The entrepreneur-

innovator will manage to repay his loan if he obtains monetary profits the total amount of which will depend not only on the willingness of the public to use the train but also on the level of consumption, which will in turn depend on the income and therefore on the investments of the entrepreneur-innovators. If the profits are too low, the entrepreneurs will become insolvent and this could lead to a crisis characterised by low incomes and high unemployment.

## **Conclusions.**

Dillard (1987) states that Keynes's liquidity preference theory constitutes an important explanation for the reasons why money is an institution of capitalism. This theory considers the presence of uncertainty as an exogenous element which can be taken as a starting point to justify the store of wealth function of money, and elaborate an explanation of the fluctuations of income and employment.

In this paper it has been shown that the relationship between uncertainty and money on which the liquidity preference theory is based is at odds with that which emerges from Keynes's 1933 works in which he underlines the need to elaborate a *monetary theory of production* (Keynes 1933a) and maintains that the presence of money constitutes the necessary condition to justify the relevance of uncertainty. This relation between money and uncertainty was defined on the basis of the arguments used by Keynes in his works published between 1937 and 1939, to respond to criticism from the supporters of the *loanable funds theory*.

In the last part of this paper it has been shown that the spread of bank money can be considered as the necessary condition to explain the nature of investment decisions that characterise: "...the economic society in which we actually live" and thus the importance of uncertainty. Finally, it has been shown that the presence of a bank money and uncertainty makes it possible to elaborate a sounder explanation of the reasons why in a *monetary economy* Say's law does not apply than that based on the liquidity preference theory.

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