

# Money as an Institution of Capitalism: Some Notes on a Monetary Theory of Uncertainty

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*Dillard notes that to consider money as an institution of capitalism means to emphasize that money is an essential element in explaining fluctuations in income and employment. He states that Keynes's liquidity preference 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, based on Keynes's 1933 and 1937–39 works, according to which the presence of money constitutes the necessary condition to justify the importance of uncertainty.*

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## 1. Introduction

Dillard (1987) maintains that Keynes in the *General Theory* formulated an important explanation of the reasons why money is an institution of capitalism. He notes that to consider money as an institution of capitalism means to emphasize 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>1</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>2</sup> In these non-capitalist economies the

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<sup>1</sup>'Money as an institution under capitalism differs from money as an institution under other economic systems because under capitalism the withholding of money capital characteristically leads directly to substantial unemployment and to fluctuations in output' (Dillard, 1987, p. 1624).

<sup>2</sup>'Mainstream economics, beginning with Smith, is more relevant to nonmonetary economies than to capitalism 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>3</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*; 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. 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>4</sup> Thus, Dillard explains the role of money as an institution of capitalism by considering the dimension 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 weight 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; in other words, the aim is to elaborate a monetary theory of uncertainty. It will be shown that this is what Keynes tries to do in his 1933 works in which he highlights the need to work out 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 levelled at the *General Theory* from supporters of the *loanable funds theory* (LFT) 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

<sup>3</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>4</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).

money allows us to explain the importance of the dimension of uncertainty and to elaborate a sounder explanation of the reasons why a monetary economy is characterized by fluctuations in income and employment than that based only on the liquidity preference theory.

The paper is divided into 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 importance of the dimension of uncertainty and to explain the fluctuations in income and employment, are presented.<sup>5</sup>

## 2. 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>6</sup> This relation is based on what Keynes states in the *General Theory*. In chapter XIII Keynes criticizes 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. 165). 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). Keynes (1936, p. 167) thus states that the interest rate does not depend on saving decisions but on the liquidity preference. The money demand function or, to use Keynes's terminology, the liquidity preference schedule, is defined 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

<sup>5</sup>A partial and schematic presentation of this thesis can be found in Bertocco (2010, pp. 386–92). This paper aims to put forward a broad and comprehensive explanation of the various elements of what may be defined as a monetary theory of uncertainty.

<sup>6</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).

presence of uncertainty about the future rate of interest.<sup>7</sup> If there were no uncertainty individuals would not employ money as a store of wealth.

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 (Keynes, 1936, p. 174). Given 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 at a different level from that coherent with Say's law (Keynes, 1936, pp. 203–4).

The aim of this paper is to show, starting from Keynes's 1933 works, that the presence of money is a necessary element to explain the importance of the dimension of uncertainty. In these works Keynes underlines 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, and introduces the distinction between a *real-exchange economy* and a *monetary economy*. As is well known, Keynes (1933a, 1933b) uses the former term to refer to an economy in which money is merely a tool to reduce the cost of exchange and whose presence does not alter the structure of the economic system, which remains substantially a barter economy. A *monetary economy* instead refers to an economic system in which the presence of money radically changes the nature of exchange and the characteristics of the production process compared to a barter economy.

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 characterizes 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

<sup>7</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).

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. that only an expectation of more *product* for himself will induce him to offer more employment. But in an entrepreneur economy this is a wrong analysis of the nature of business calculation. An entrepreneur is interested, not in the amount of product, but in the amount of *money* which will fall to his share. He will increase his output if by so doing he expects to increase his money profit, even though this profit represents a smaller quantity of product than before. (Keynes, 1933b, 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 money terms; that is, the conversion of real output into money; that is, selling the product for money . . . . As long as the so-called real output remains in the hands of the capitalist producer, it has no use-value and only potential exchange-value. The output must be sold for money in order to realize its exchange-value for the capitalist and its use-value for consumers. 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 be sufficient to justify Dillard's conclusion that: '...under capitalism the object of business firms is to make money.' (Dillard, 1987, p. 1631). In my opinion, the challenge is to explain why the definition of the goals of an entrepreneur presented above should be valid only in a *monetary economy*. Indeed even a *real-exchange economy* or, as it is otherwise defined a *real-wage economy*, is characterized by the division of labour and by the opportunity to exchange goods using money as a medium of exchange. Therefore we could conclude that also in this kind of economy the aim of the entrepreneur is not to produce goods, but to make a profit measured in terms of goods or money. Even to a *real-wage economy* we could apply the words used by Keynes to explain the sequence M-C-M' which he linked to a *monetary economy*:

The explanation of [the sequence M-C-M'] is evident. The employment of factors of production to increase output involves the

entrepreneur in the disbursement, not of product, but of money. The choice before him in deciding whether or not to offer employment is a choice between using money in this way or in some other way or not using it at all. He has the command of £100 (in hand or by borrowing), and he will use it if by so doing he expects . . . to turn it into more than £100. (Keynes, 1933b, p. 82)

Both the entrepreneur who operates in a *monetary economy* and the one who operates in a *real-exchange economy* take their decisions on the basis of their expectations of profits whether they are expressed in terms of products or money. I believe that by associating with these two economies a different law of production, Keynes intends to emphasize that there is an element that differentiates the expectations of the two groups of entrepreneurs; this element is the degree of uncertainty. The entrepreneur who operates in a *real-exchange economy* knows the results of his choices with a high level of certainty when he decides, for example, to hire a new worker because he is sure to sell everything he produces. The results of this choice correspond to the new worker's marginal productivity; indeed, if the entrepreneur is sure to sell everything he produces he will decide to hire a new worker only when the marginal productivity, measured in terms of goods or of money, is greater than the real wage.<sup>8</sup> In this economy production decisions determine the levels of income and employment, therefore Say's law applies:

From the time of Ricardo the classical economists have taught that supply creates its own demand; which is taken to mean that the rewards of the factors of production, must, directly or indirectly, create in the aggregate an effective demand exactly equal to the costs of the current supply . . . (Keynes, 1933b, p. 80)

On the contrary, in a *monetary economy* the entrepreneur acts under uncertainty; when he decides to hire a new employee he cannot identify the future results by considering the marginal productivity of labour because he is not sure to sell everything he produces. In a *monetary economy* the distinction between the production phase and the sale phase becomes relevant since the decision to produce a certain good does not automatically generate the level of demand capable of absorbing all the goods produced. In a *monetary economy* there are no mechanisms that ensure the presence of an effective demand that can absorb the entire production undertaken by firms, but as Keynes observed: 'For the proposition that supply creates its own demand, I shall substitute the proposition that expenditure creates its own income, i.e. an income just sufficient to meet the expenditure'

<sup>8</sup>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 (Keynes, 1933b, p. 78).

(Keynes, 1933b, pp. 80–1). In this world the decision to produce goods is affected by the expectations about the likelihood to sell all that is produced in exchange for money.

Keynes underlines that uncertainty 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 fluctuations of effective demand*.... In a co-operative or in a neutral economy, in which sale proceeds exceed variable cost by a determinate amount, effective demand cannot fluctuate... But in an entrepreneur economy the fluctuations of effective demand may be the dominating factor in determining the volume of employment... (Keynes, 1933b, 80)

Keynes defines this economy as a *monetary economy* in order to emphasize that the presence of a money with particular features, is the cause of fluctuations in aggregate demand; in fact, he defines the fluctuations of effective demand that give rise to booms and depressions as: ‘... a *monetary* phenomenon...’ (Keynes, 1933b, 85). In the *General Theory* Keynes uses the liquidity preference theory to explain the monetary nature of the fluctuations in aggregate demand. This explanation, as we have recalled, assumes that the uncertainty is given; this contrasts with the causal link between money and uncertainty which characterizes Keynes’s 1933 works. In these works Keynes uses Marx’s formula for capital and expresses the costs and the marginal proceeds in monetary terms to highlight the fact that the presence of money, by making possible fluctuations in aggregate demand, ‘produces’ uncertainty.

The aim of the following pages is to explain the causal relationship between money and uncertainty. To do this, two issues must be addressed: (i) the specification of the characteristics of the money used in a monetary economy; (ii) the specification of the relation between money, uncertainty and fluctuations in the aggregate demand on which a monetary theory of uncertainty is based.

### 3. The Characteristics of a *Monetary Economy*

#### 3.1. *The Money Employed in a Monetary Economy*

In order to explain what makes the use of money special in a *monetary economy* as opposed to a *real exchange economy*, we should ask ourselves if in both types of economy the same money is employed or if the money used in a *monetary economy* has particular properties. My opinion is that a *monetary economy* is characterized by the presence of a particular money:

bank money. This view is based on two elements. The first one can be found in Keynes's 1933a work (pp. 85–6) in which he points out that the fundamental characteristic of the money used in a *monetary economy* is that it is not produced by means of work. In chapter XVII of the *General Theory* Keynes reiterates these arguments by defining two essential properties of money: (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).

The second element can be found in some works published between 1937 and 1939 in which Keynes responded to the criticism levelled at the *General Theory* by supporters of the LFT such as Ohlin. Ohlin contrasted the liquidity preference theory with a new version of the LFT which holds that the interest rate is determined by the loanable funds supply and demand functions. The loanable fund supply corresponds to the sum of the flow of *ex ante* savings ( $S$ ) and the flow of new money created by the banks ( $\Delta M$ ), net of the variation of the stock of accumulated money ( $\Delta H$ ), while the demand for loanable funds corresponds to the flow in *ex ante* investments ( $I$ ). In the face of Ohlin's criticism, Keynes (1937b, p. 216) 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. However, he does not accept Ohlin's thesis that the credit supply depends on *ex ante* savings, but he recognizes the role of banks in creating new money (Keynes, 1937b, p. 217–19). Not only 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 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. (Keynes, 1937b, p. 222)



In the following pages it will be showed that the presence of a bank money is a necessary condition in order to explain the monetary nature of uncertainty and of the fluctuations of effective demand. The explanation of the relation between money and uncertainty is based on two points: (i) the specification of the relationship between investment decisions and uncertainty; (ii) the specification of the relationship between bank money and investment decisions.

### 3.2. *Investment Decisions and Uncertainty*

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>9</sup>

The presence of a substantial flow of investments thus constitutes an element that distinguishes a *monetary economy* from a *real-exchange economy*. The classical theory, Keynes notes, describes a world in which a few goods, which meet essential needs, are produced; this would be the case of an agricultural economy, for example. Naturally it would be excessive to claim that the classical theory describes an economic system based only on consumption decisions, investments are also made in this economy; what divides the classical theory from the Keynesian theory is the specification of the characteristics of investment decisions. To illustrate this point we can hypothesize that in the economy described by the classical theory a single good is produced; this economy might be 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 identified with the fishermen's economy described by Böhm-Bawerk (1884) to illustrate his interest rate theory.

<sup>9</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).

What distinguishes the investments that characterize 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 conditions that ruin the harvest, or social-political events such as the break-out of a war, and so forth; these are all events that prevent the entrepreneur from obtaining the desired quantity of product. 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 not due to the uncertainty regarding the possibility to obtain the desired amount of product, but it is due to the uncertainty regarding the sale of the goods produced; such uncertainty has an economic nature. The investment decisions analysed by Keynes make the distinction between the production phase and the sale phase relevant and justify the association of the sequence M-C-M' with a *monetary economy*. 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* as the entrepreneur is not sure to sell everything he produced. 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 characterizing 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>10</sup>

The presence of investments and innovations gives prominence to the uncertainty dimension. The decision to make an investment that results in the production of a new good is not based on the simple comparison between the marginal productivity of the work and the real wage since 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*.

In this case what becomes important is that the presence of investments which have the characteristics described by Keynes and Schumpeter, make the separation between the production phase and the sale phase important and justify the conclusion that the aim of the entrepreneur is not to produce goods, but to make a profit measured in terms of money. A *monetary economy* is thus an economy in which several goods are produced, and whose productive structure is in constant evolution.

### 3.3. Bank Money, Investment Decisions and Uncertainty

The second link of the causal sequence between money and uncertainty is constituted by the relation between bank money and investments. This relation is based on two points. To illustrate the first point we can start from a commonplace observation: the necessary condition to be able to assert that in a *monetary economy* the objective of an entrepreneur is not to produce goods but to make money, that is, to make a profit in monetary terms, is the presence of a money. The analyses elaborated by Keynes and Schumpeter allow us to come to a less banal conclusion. In fact, they enable us to emphasize the monetary nature of profits, that is, to note that in a *monetary economy* profits can be defined only starting from the presence of money. As we have seen, Keynes shows this by using the sequence M-C-M' introduced by Marx and by defining profits strictly in monetary terms.<sup>11</sup> Likewise, Schumpeter (1912, p. 128) states

<sup>10</sup>Several economists have emphasized 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).

<sup>11</sup>'The firm is dealing throughout in terms of sums of money. It has no object in the world except to end up with more money than it started with. That is the essential characteristic of an entrepreneur economy' (Keynes, 1933b, p. 89).

that: 'Entrepreneurial profit is a surplus over costs. From the standpoint of the entrepreneur, it is the difference between receipts and outlay in a business...'. Schumpeter (1912, p. 154) uses this definition to underline that profits cannot be considered as the result of the productivity of a particular productive factor and that they are a phenomenon present only in a *capitalist economy* in which innovations, financed by money created by the banks, invest entrepreneurs with a monopolistic power that allows them to fix a price that causes a monetary surplus over costs.

In an economy in which a single good is produced, as in the case of Smith's corn economy or the Böhm-Bawerk fishermen's economy, profit is defined in real terms as the difference between the quantity of corn produced or fish caught, and the quantity of corn or fish used to pay the workers employed to make ploughs or boats. The amount of profit is known at the time when the entrepreneur starts production and it derives from the productivity of the land and from the increased productivity achieved in fishing owing to the use of boats and nets. However, in a *monetary economy* the revenues earned by an entrepreneur who produces a new good, for example, who builds a railway or a ship, are not composed of the good that is manufactured; rather they are made up of the monetary proceeds generated by the sale of the new good or the services that it produces and such proceeds are uncertain because they depend on the reaction of consumers to the new product. The monetary nature of profits derives from the fact that in a *monetary economy* the production phase is clearly separated from the sale phase and this is explained by the characteristics of the investments, whose realization, as we shall see below, depends on the existence of bank money. Moreover, it must be acknowledged that in a world in which several goods are produced, there is no physical homogeneity between means of production and finished products; therefore money acts as a unit of account and permits the innovating entrepreneur to render costs and revenues homogenous and to decide whether to build the railway, for example, on the basis of his expectations of monetary profit.

Money is also the tool that entrepreneurs must have available to them in order to purchase labour and other factors of production; indeed, a *monetary economy* is not a society of individual producers and merchants who sell products acquired from small productive units, but an economy founded on the presence of entrepreneur-innovators who produce large quantities of goods by hiring workers and acquiring factors of production. Polanyi (1944) strongly emphasizes this point when, describing the characteristics of the economy created by the industrial revolution, he concludes that a market economy is characterized by the presence of markets in which labour and land are acquired in exchange for money and in which economic decisions are motivated by monetary profit.

The second point on which the relation between money and investment decisions is founded can be defined by specifying the essential role of banks

and of bank money in a *monetary economy*. The banks play a dual role: (i) first, by creating new money they enable the entrepreneur–innovator to obtain the productive factors necessary to make the investment; (ii) second, banks influence the conditions on which the entrepreneur–innovator can obtain the monetary profits necessary to reimburse loans. We can illustrate the essential role of bank money in a *monetary economy* with an example.

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*; in this case the construction of the railway is financed by the corn producers who lend to our entrepreneur the corn necessary to pay the workers involved in building the railway.

In fact there is at least one fundamental element that impedes the realization of this credit contract. It 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. In fact, 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 construction of the railway becomes possible in a world in which banks are present and bank money is used. Let us assume as an initial approximation that the banks act as mere intermediaries, collecting the corn that the producers decide not to consume and lending it to the entrepreneurs. In this case, the presence of banks could be justified, for example, by the existence of asymmetric information that prevents the savers from directly financing the entrepreneurs. Stiglitz and Weiss, for example, refer to a credit market of an agricultural economy in which the object of the exchange is seed to be planted in plots of land having different productivity:

The need for credit arises from the discrepancy between individual's resource endowments and investment opportunities. This can be seen most simply if we imagine a primitive agricultural economy, where different individuals own different plots of land and have different endowments of seed with which to plant the land. (For simplicity we assume that seed is the *only* input) The marginal return to additional seed on different plots of land may differ markedly. National output can be increased enormously if the seed can be reallocated from plots of lands where it has a low marginal product to plots where it has a high marginal product. But this requires *credit*, that is, some farmers will have to get more seed than their endowment in return for a *promise* to repay next period, when the crop is harvested. Banks are the institutions within this society for screening the loan applicants, for determining which plots have really high marginal returns, and for monitoring, for ensuring that the seed are actually planted, rather than, say, consumed by the borrower in a consuming binge. (Stiglitz and Weiss, 1990, pp. 91–2)

In our example, the banks should use the savers' corn to finance the entrepreneur who wishes to build the railway instead of financing the other corn producers. There is a fundamental difference between the two types of operation; in the example of Stiglitz and Weiss, the presence of banks does not modify the nature of the credit market with respect to the ideal world in which savers finance directly investors. The key actors operating in this market are the savers and investors who can repay the loan obtained thanks to the productivity of the land; the presence of banks is justified by the fact that savers are unable to distinguish an expert farmer from a conman or an incompetent one. The case of financing the construction of the railway is completely different: the entrepreneur who builds the railway does not produce corn, and it cannot even be assumed that he will receive from the sale of the train tickets a quantity of corn sufficient to repay the loan since all the corn produced has been used to ensure the survival of the workers who are involved in producing corn and building the railway.

It is therefore difficult to imagine that our entrepreneur–innovator can build the railway in a world in which banks act as mere intermediaries who loan the corn that savers did not consume. The railway can be built instead, in a world in which bank money is used and banks are not simple intermediaries. 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 key actors which operate in the credit market are not savers

and entrepreneurs but banks and entrepreneurs. 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.

It follows from this example, moreover, that the presence of bank money constitutes the necessary condition for our entrepreneur–innovator to obtain a profit. By building the railway, as we have noted, he does not produce corn, but he produces services from the sale of which he hopes to generate sufficient monetary profits to repay the loan obtained and to pay the interest. The necessary condition for this expectation to be met is the existence of a sufficient number of consumers willing to purchase train tickets for money. This will depend, on the one hand, on the ability of the entrepreneur–innovator to convince consumers to use the railway, and, on the other hand, on the presence of an institution such as the banking system, capable of creating money that will finance the demand for train tickets. Since the banks create money to finance the firms' investments, we can assert that the monetary profits that will be made by the entrepreneur that built the railway depend on the amount of new investments that the banks will finance when the construction of the railway is complete. This conclusion is coherent with Minsky's analysis (1982), which, following Kalecki's view, underlines that the profits depend on the investment decisions.

We can conclude that in a monetary economy the role of banks is very different 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. The presence of banks changes the nature of the credit market as: (i) the object of the credit is not the corn saved by corn producers, but the money created by the banks; (ii) the necessary conditions for the debtors to be able to repay the loan change. In the case of the corn economy or the fishermen's economy, the ability of debtors to repay the loans obtained depends on the productivity of the land or of the fishing methods based on the use of boats and nets. Instead, in the case of the monetary economy, the mere construction of the railway is not a sufficient condition to permit the repayment of debts; the activity of the entrepreneur who builds the railway does not end with the construction of the railway but with the sale of train tickets. He will be able to repay his loans only if the railway is 'successful', and this depends on the decisions of consumers and the decisions of the banking system.

These considerations allow us to conclude that the investments that characterize a monetary economy are made under conditions of uncertainty and 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.

#### *3.4. 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 industrialized countries. They have abandoned the control of monetary aggregates and instead target short-term interest rates (see, e.g., 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 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 the interest rate set by the monetary authorities (see, e.g., Wray, 2006, p. 274; Tily, 2007, chapter 7; Docherty, 2011). 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 in the United States as a consequence of the liquidity preference that determines excessively high rates of interest. Moreover, we can recall that many economists have considered the over-expansionary monetary policy implemented by the Federal Reserve in the first half of the last decade, as the principal reason of the crisis. It is not necessary to accept this argument to recognize that after 2001 the Fed has pushed interest rates to a very low level and, therefore, to highlight that monetary authorities are able to control interest rates.

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. The foregoing analysis allows us to highlight that in a *monetary economy* the presence of a bank money changes the nature of investment decisions and saving decisions, and the causal relation between saving decisions and investment decisions *vis-à-vis* a *real-exchange economy* in which Say's law holds. We have shown above that the investments that are carried out in a *monetary economy* have different characteristics to those that are typical of a *corn economy*, and that the presence of a bank money is a necessary condition to explain the importance of investment decisions that are taken in conditions of uncertainty. We can show that the presence of a bank money also changes the nature of saving decisions and the causal relation between saving decisions and investment decisions compared to the tenets of the classical theory.

On several occasions Keynes mentions that the presence of money changes the nature of the phenomenon of saving. He notes, for instance, that in a world in which goods are exchanged for money, the money necessary to finance investment decisions does not necessarily originate from saving decisions because consumption decisions also put into circulation money that could be used to finance investment decisions: spending decisions are not substantially different from saving decisions as sources of the supply of credit.<sup>12</sup> Second, in the *General Theory* Keynes defines the nature of saving decisions starting from the observation that in a *monetary economy*

<sup>12</sup>Keynes explained his reasoning in a criticism of how the Committee of Statistical Experts analysed the process of capital formation: 'According to the Committee funds for investment can only become available either from prior saving or from dishoarding and credit expansion... The Committee have overlooked the fact that *spending* releases funds just as much as saving does, and that these funds when released can then be used indifferently for the production either of capital goods or of consumption goods... Money which is spent on prior consumption flows into the same pool of available funds as money which is saved... As soon as it is understood that the

labour and capital are remunerated in money. In a world in which labour is purchased with money, savings are not necessarily transformed into investments since savers can decide to keep their savings in money. The fact that wages and profits are paid in money allows Keynes to separate saving decisions from investment decisions and to link saving decisions with the wealth accumulation process; Keynes underlines that:

An act of individual saving means- so to speak- a decision not to have a dinner to-day. But it does *not* necessitate a decision to have dinner or to buy a pair of boots a week hence or a year hence or to consume any specified thing at any specified date . . . . If saving consisted not merely in abstaining from present consumption but in placing simultaneously a specific order for future consumption, the effect might indeed be different. (Keynes, 1936, p. 210)

Then Keynes concludes that: ‘. . . the act of saving implies . . . a desire for “wealth” as such, that is for a potentiality of consuming an unspecified article at an unspecified time.’ (Keynes, 1936, p. 211). This relation between money and wealth can be justified only in presence of bank money. Indeed, we can observe that the concept of wealth becomes relevant in a world where several goods are produced, and investments have the characteristics described by Keynes and Schumpeter. In the world described by the classical theory which has the characteristics of an agricultural economy where few goods are turned out and whose working can be represented by models which assume that just one good is produced, as in the case of corn, it is difficult to define the concept of wealth. In fact in this world the presence of agents willing to accumulate unlimited amounts of corn, year after year, is an improbable hypothesis; we can reasonably assume that there is a limit to the amount of corn that an individual would wish to own and consume.<sup>13</sup> This does not apply in a multi-good world where money is used; the relation between bank money and investments makes it possible to consider savers as wealth holders, that is to hypothesize the presence of individuals willing to accumulate an unlimited amount of purchasing power.

The concept of wealth is necessary to describe the phenomenon of speculation. In a *monetary economy* in which investments have the characteristics described by Keynes we can justify the presence of markets in which long-term bonds and shares are traded. The presence of these

available funds arise from the *whole* of the money income earned at a previous date, whether saved or spent, supplemented by dishoarding and credit expansion, and are then employed for the *whole* of production . . . at the subsequent date whether for investment or for consumption . . . their schematism breaks down completely in so far as it purports to relate the funds arising from savings at a previous date to the funds required for investment at a subsequent date’ (Keynes, 1939, pp. 572–3).

<sup>13</sup>This consideration is coherent with the conclusions of anthropological studies showing that in pre-industrial economies based on subsistence rather than profit, the accumulation of goods and wealth was not a significant phenomenon. See, for example, Polanyi (1944) and Sahlins (1966).

markets allows wealth owners to become speculators; once the savers-wealth owners decide how to use their disposable income by choosing between consumption and saving, they will have to define the composition of their wealth by choosing money or alternative financial instruments. Keynes considers at least two alternative assets to money: long-term bonds and shares. The presence of long-term bonds can be associated with the realization of long-term investments such as, for example, railways, and the presence of a public sector that produces services that represent a significant amount of GDP. Keynes uses the presence of long-term bonds to explain an important aspect of the phenomenon of speculation, i.e. speculative demand for money; wealth owners become speculators in that they choose the composition of their wealth depending on their forecasts, formulated in conditions of uncertainty, about prospective gains to be made from bonds which depends on the future value of the rate of interest.

The second type of asset that can be accumulated by savers as an alternative to money is shares. Keynes (1936, chapter 12) notes that the spread of shares characterizes a phase in the development of the modern economy where the ownership of the firm is divided up among many owners who do not directly manage the firm; this evolution can be explained by thinking of the realization of innovations that require large investments as in the case of railways. In this phase markets in which shares and long-term bonds are continuously traded develop, and the figure of the speculator emerges alongside that of the entrepreneur. Keynes distinguishes between speculation and enterprise by proposing to use: ‘... the term *speculation* for the activity of forecasting the psychology of the market, and the term *enterprise* for the activity of forecasting the prospective yield of assets over their whole life ...’ (Keynes, 1936, 158).

Describing the saving and investment decisions that are characteristic features of a *monetary economy* enables us to invert the causal relation between investment decisions and saving decisions with respect to the tenets of the classical theory, which accepts Say’s law. In a *monetary economy* investments and savings are determined in two separate logical steps: in a first step the firms carry out the investments thanks to the money obtained from the banks, and at a different time, which is later than the first step from a logical point of view, an equivalent flow of saving caused by the variation of the income is determined.

The construction of the railway is not the consequence of the saving decisions of corn producers who lend the unconsumed corn to the entrepreneur that decided to build the railway. On the contrary, the entrepreneur builds the railway because of the funding obtained from the banks that create money; this causes an increase in the demand for corn that leads the corn producers to expand production in exchange for money. The corn producers do not become savers at the moment when they decide to produce an amount of corn in excess of that which they

wish to consume, but at the moment when they decide to accumulate the money created by the banks that they receive in exchange for the corn sold to the workers involved in building the railway. In other words, the presence of money allows us to show that the corn producer, who would not be willing to accumulate wealth in the form of corn, would be willing to accumulate wealth in the form of money in a world in which he can use his own wealth at any future time to purchase any good. The presence of money transforms the savers into wealth owners; indeed, we can conclude that in the absence of a bank money the corn producers would not have accumulated wealth in the form of corn, but they are willing to accumulate wealth in the form of money.

The inversion of the relation between investment decisions and saving decisions which characterizes a *monetary economy* makes it possible to elaborate an explanation of the monetary nature of fluctuations in aggregate demand, and therefore of the Keynesian principle of effective demand, which is more robust than that based on the liquidity preference theory. This explanation that, as we have recalled, states that the preference for liquidity can drive the interest rate to a higher level than the one coherent with full employment, is characterized by two limits: (i) it tends to minimize the capacity of the monetary authorities to influence the interest rate that determines investment decisions; (ii) it assumes that there is an optimum rate of interest, that is a level of the rate of interest at which entrepreneurs will make a flow of investments coherent with full employment and that the attaining of this level is a sufficient condition for achieving full employment.<sup>14</sup>

In the previous pages we have underlined that in a *monetary theory* the monetary authorities can determine the rate of interest that influences investment decisions. In this case if we assume that there is an optimum rate of interest coherent with full employment, we have to conclude that in a *monetary economy* there are no obstacles to the realization of the full employment. Indeed, let us assume that the monetary authorities do not know the value of the rate of interest coherent with full employment and so, for example, they set the rate of interest at a higher value than the optimal one. This will cause a level of involuntary unemployment which will lead the monetary authorities to reduce the rate of interest until full employment is reached. In the case of a monetary rate of interest which is lower than the optimal rate, there will be an excess of aggregate demand which triggers inflation.

We can show, in fact, that this conclusion does not necessary apply in a *monetary economy*. In a *monetary economy* where investments have

<sup>14</sup>In equilibrium the production of capital goods is determined by equality between the marginal efficiency of capital and the normal rate of interest but this need not imply full employment unless the normal rate of interest happens to coincide with the optimum rate; the optimum rate being the rate consistent with full employment' (Rogers, 1997, 21).

the characteristics described by Keynes and Schumpeter, the amount of investments depends at first, on the *animal spirits*; given the *animal spirits*, we can distinguish two situations. First, we can assume that there is no rate of interest higher than zero at which entrepreneur–innovators are willing to realize 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. Second, 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 income. The attaining of this level of the rate of interest is a sufficient condition for achieving full employment only in a *corn economy* in which the rate of interest is the price of the saved resources and therefore it must reach the level at which demand and supply of these resources are in equilibrium.

This condition is not sufficient in a *monetary economy* in which investment and saving decisions are determined in two separate logical steps. In this economy the flow of investments does not depend on saving decisions, but it depends on the *animal spirits* and on banks' decisions. Banks 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. This means that once they have fixed the rate of interest on money, the banks are not necessarily willing to satisfy the whole credit demand from firms. They could, for example, decide not to finance the railway, that is, they may decide to ration credit because 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 Keynesian inversion of the causal relation between savings and credit works, and the level of income depends on the effective demand.

Finally we can mention two other elements of fragility that characterize a *monetary economy*. The first one 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; 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 banks' decisions to finance new investments by creating money. If the profits are too low, the entrepreneurs will become insolvent and this could lead to a crisis characterized by low incomes and high unemployment. This aspect is overlooked by the mainstream theory which elaborates macroeconomic models describing only the money market, and overlooking the credit market as it is implicitly assumed that debtors will always be able to repay the loans received. This hypothesis is valid only in the case of a *corn economy* or a *fishermen's economy* in which the ability of entrepreneurs to

pay back the loans taken out depends on the productivity of the land or of the fishing methods based on the use of boats and nets.

The second element of fragility derives from the consequences of the excessive growth of the phenomenon of speculation described by Keynes in chapter XII of the *General Theory*; as we have recalled, speculation becomes relevant in a *monetary economy* in which the specification of the relation between money and uncertainty makes it possible to define a relation between saving decisions and wealth accumulation.

#### 4. Conclusions

The objective of this paper has been to explain the reasons for the non-neutrality of money by illustrating the relation between bank money and uncertainty. It has been shown that the presence of bank money constitutes the necessary condition to explain: (i) the presence of a high level of investments that have different characteristics from those described by the classical theory; (ii) the monetary nature of profits, the amount of which depends, given the relation between investments and profits, also on the banks' decisions; (iii) the inversion in the relation between saving decisions and investment decisions with respect to the tenets of the neoclassical theory; (iv) the relation between saving decisions and wealth and the importance of the phenomenon of speculation.

These elements enable us to highlight two important aspects of a *monetary economy*. First, we can note that a *monetary economy* is characterized by a process of economic change brought about by the investment decisions financed by the money created by the banking system. Second, we can underline that a monetary economy is a fragile economy, subject to crises. Fluctuations in investments, that depend on the decisions of entrepreneurs and of banks, cause fluctuations in aggregate demand and thus in income and employment and they also influence the entrepreneurs' profits and thus their ability to repay their loans. Moreover, as Keynes explained in chapter XII of the *General Theory*, crises can be associated with the phenomenon of speculation that, as we have seen above, becomes relevant in a *monetary economy*, in which the concept of wealth is important.

The causal sequence described in this paper, which links bank money, investment decisions, innovations, uncertainty and crises presents at least two points that are coherent with the analysis of Polanyi (1944). The first is the fact that the investment decisions described by Keynes and Schumpeter have similar characteristics to the decisions that triggered the massive use of machinery during the industrial revolution and that constitute, according to Polanyi, the decisive factor in the creation of the market economy. The second is the causal relation between investments and innovations, on the one hand, and crisis, on the other. Furthermore, we can indicate two

important differences between the analysis presented in this paper and that of Polanyi. The first regards the specification of the role of bank money. Polanyi also underlines the fundamental role of bank money within the market economy created after the industrial revolution, but he uses different arguments to the ones presented in this paper. The analysis of Polanyi is based on the relation between money and prices that characterizes the quantitative theory of money. He points out that a commodity money is an unsuitable tool for a market economy that owing to the introduction of machinery can register rapid and significant increases in the production of goods and trade. The scarcity of money that can occur in a system that uses a commodity money, could trigger deflation and therefore hinder the growth of production and employment. Bank money makes it possible to overcome the limitations associated with the use of a commodity money since the quantity of bank money can be easily adapted to the needs of the production of goods, avoiding the consequences of deflation.

The second difference regards the explanation of the relation between investments, innovations and crises. In this paper, this relation was explained following a substantially Keynesian framework: crises are due to fluctuations of effective demand or to financial and speculative phenomena. Polanyi, in contrast, considers the crisis as a consequence of the contradictions that arise in a society in which the economic dimension dominates. The most evident sign of the prevalence of economics on society is the creation of markets in which labour and land are acquired in exchange for money, just like another other good. The crisis occurs when the prices that the markets assign to these goods have an unsustainable impact on society.

The monetary theory of uncertainty presented in this paper is coherent with the analysis of the process of economic change carried out by North (2005). The key point of North's analysis is the association of the continuous transformation of the economic system with uncertainty. North illustrates his thesis by highlighting that the economic system created by the industrial revolution allowed the Western world to overcome the uncertainty linked to the battle for survival, but it gave rise to new forms of uncertainty:

The alteration of institutions that has led to the reduction in the uncertainties of the physical environment has created the complex human environment which has produced a whole new (and in many cases still unresolved) set of uncertainties. The revolution in technology of the past several centuries has made possible a level of human wellbeing of unimaginable proportions as compared to the past, but it also has produced a world of interdependence and universal externalities, and in consequence a whole new set of uncertainties. The law merchant, patent laws, the institutional integration of distributed knowledge, the creation of a judicial

system, have been important part of efforts making markets more efficient in developed countries. And they are leading us into an unknown world of future uncertainties. (North, 2005, pp. 20–1)

These considerations are coherent with the causal sequence described in this paper that links bank money, investment decisions, innovation and uncertainty. The link between the process of economic change and uncertainty facilitates our understanding of North's conclusion that technology cannot be considered as the only factor that drives the process of economic change. This conclusion is coherent with the analysis of Sahlins (1966) that on the one hand applies the concept of affluent society to the hunting and gathering economies of the Palaeolithic era, and, on the other, notes that modern economies, despite being characterized by infinitely superior levels of technology to those of pre-industrial economies, are founded on the concept of scarcity that denotes the insufficient availability of means with respect to the needs. Needless to say, the concept of scarcity gains prominence in a world in which a large number of different goods are produced, there are significant investment flows, and in which the concept of wealth becomes important.



## REFERENCES

- Bank of England, The Monetary Policy Committee (1999), “The Transmission Mechanism of Monetary Policy”.
- G. BERTOCCO (2007), “The Characteristics of A Monetary Economy: A Keynes–Schumpeter Approach”, *Cambridge Journal of Economics*, 31(1), pp. 101–22.
- G. BERTOCCO (2010), “The Endogenous Money Theory and The Characteristics of A Monetary Economy”, *Rivista italiana degli Economisti*, XV(3), pp. 365–401.
- U. BINDSEIL (2004), *Monetary Policy Implementation*. Oxford: Oxford University Press.
- E. BÖHM-BAWERK (1884), “The Problem of Interest”, in *Capital and Interest*, reprinted in A. Cohen and G. Harcourt (eds), *Capital Theory*. Elgar: Cheltenham.
- D. DILLARD (1987), “Money As An Institution of Capitalism”, *Journal of Economic Issues*, XXI(4), pp. 1623–47.
- P. DOCHERTY (2011), “Keynes’s Analysis of Economic Crises and Monetary Policy in the General Theory: Its Relevance After 75 Years”, *Review of Political Economy*, 23(4), pp. 521–35.
- G. FONTANA (2006), “Keynesian Uncertainty and Money”, in P. Arestis and M. Sawyer (eds), *A Handbook of Alternative Monetary Economics*. Cheltenham: Edward Elgar.
- S. FULLWILER (2006), “Setting Interest Rates in the Modern Era”, *Journal of Post Keynesian Economics*, spring, 28(3), pp. 495–525.
- R. GOODWIN (1993), “Schumpeter and Keynes”, in S. Biasco, A. Roncaglia and M. Salvati (eds), *Markets and Institutions in Economic Development*. London: Macmillan Press.
- J. M. KEYNES (1973a [1933a]), “A Monetary Theory of Production”, in J. M. Keynes (ed.), *The Collected Writings*. London: Macmillan Press, vol. XIII, pp. 408–11
- J. M. KEYNES (1973b [1933b]), “The Distinction Between A Co-Operative Economy and An Entrepreneur Economy”, in J. M. Keynes (ed.) *The Collected Writings*. London: Macmillan, vol. XXIX, pp. 76–106.
- J. M. KEYNES (1973c [1936]), “The General Theory of Employment, Interest, and Money”, in J.M. Keynes (ed.), *The Collected Writings*, London: Macmillan Press, vol. VII

- J. M. KEYNES (1973b [1937a]), "The General Theory of Employment", *The Quarterly Journal of Economics*, in J. M. Keynes (ed.), *The Collected Writings*. London: Macmillan Press, vol. XIV, 109–123.
- J.M. KEYNES (1973e [1937b]), "The 'Ex Ante' Theory of the Rate of Interest", *The Economic Journal*, in J. M. Keynes (ed.), *The Collected Writings*. London: Macmillan Press, vol. XIV, 215–23.
- J.M. KEYNES (1973e [1939]), "The Process of Capital Formation", *The Economic Journal*, in J. M. Keynes (ed.), *The Collected Writings*. London: Macmillan, vol. XIV, pp. 278–85.
- H. MINSKY (1975), *John Maynard Keynes*. Columbia University Press.
- H. MINSKY (1980), "Money, Financial Markets and The Coherence of A Market Economy", *Journal of Post Keynesian Economics*, 3, 21–31.
- H. MINSKY (1982), *Can 'It' Happen Again? Essays on Instability and Finance*, New York: M.E. Sharpe.
- H. MINSKY (1986), "Money and Crisis in Schumpeter and Keynes", in H. Wagener and J. Drukker (eds.), *The Economic Law of Motion of Modern Society*. Cambridge: Cambridge University Press.
- H. MINSKY (1993), "Schumpeter and Finance", in S. Biasco, A. Roncaglia, and M. Salvati (eds.), *Markets and Institutions in Economic Development*. London: Macmillan Press.
- F. MISHKIN (1999), "International Experiences with Different Monetary Policy Regimes", *NBER Working Paper*, n. 7044, March.
- M. MORISHIMA (1992), *Capital and Credit. A New Formulation of General Equilibrium Theory*. Cambridge: Cambridge University Press.
- Y. NISHIYAMA (2007), "Monetary Transmission—Federal Funds Rate and CD Rates", *Journal of Post Keynesian Economics*, spring, 29(3), pp. 409–26.
- D. NORTH (2005), *Understanding the Process of Economic Change*, Princeton: Princeton University Press.
- B. OHLIN (1937a), "Some Notes On The Stockholm Theory of Savings and Investment I", *The Economic Journal*, 47, pp. 53–69.
- B. OHLIN (1937b), "Some Notes on the Stockholm Theory of Saving and Investment II", *The Economic Journal*, 47, pp. 221–40.
- B. OHLIN (1937c), "Alternative Theories of The Rate of Interest: Three Rejoinders", *The Economic Journal*, 47, pp. 423–7. Distribution.
- K. POLANYI (1944), *The Great Transformation*. New York: Holt, Rinehart & Winston.
- D. ROBERTSON (1934), "Industrial Fluctuation and The Natural Rate of Interest", *The Economic Journal*, 44, pp. 650–6.
- C. ROGERS (1997), "Post Keynesian Monetary Theory and The Principle of Effective Demand", in A. Cohen, H. Hagemann and J. Smithin (eds), *Money, Financial Institutions and Macroeconomics*. Dordrecht: Kluwer Academic Publishers.
- D. ROMER (2000), "Keynesian Macroeconomics without the Lm Curve", *Journal of Economic Perspectives*, 14, pp. 149–69.
- M. SAHLINS (2006 1966), "The Original Affluent Society", in J. Solway (ed.), *The Politics of Egalitarianism: Theory and Practice*. New York: Berghahn Books.
- R. SHILLER (2008), *The Subprime Solution*, Princeton: Princeton University Press.

- J. SCHUMPETER (1912 [1934]), *The Theory of Economic Development*. Cambridge, MA: Harvard University Press.
- J. SCHUMPETER (1964 1939), *Business Cycle. A Theoretical, Historical and Statistical Analysis of the Capitalist Process*, abridged edition. New York: McGraw-Hill.
- A. SMITH (1904 1776), *An Inquiry into the Nature and Causes of the Wealth of Nations*. Oxford: Oxford University Press.
- J. STIGLITZ – A. WEISS (1990), “Banks as Social Accountants and Screening Devices for the Allocation of Credit”, *Greek Economic Review*, 12, Supplement, Autumn, pp. 85–118; reprinted in M. K. Lewis, ed., *Financial Intermediaries*. Aldershot: Edward Elgar, 1995, pp. 297–330; see also *NBER Working Paper*, 2710, September 1988.
- G. TILY (2007), *Keynes’s General Theory, the Rate of Interest and ‘Keynesian’ Economics*. Houndmills: Palgrave Macmillan.
- A. VERCELLI (1997), “Keynes, Schumpeter and Beyond”, in G. Harcourt and P. Riach (eds.), *A ‘Second Edition’ of The General Theory*, vol. 2. London: Routledge.
- K. WICKSELL (1898), “The Influence of the Rate of Interest on Commodity Prices”, in: K. Wicksell (ed.), *Selected Papers on Economic Activity*. New York: Augustus M. Kelley Publishers, 1969.
- R. WRAY (2006), “When are Interest Rates Exogenous?” in M. Setterfield (ed.), *Complexity, Endogenous Money and Macroeconomic Theory*. Cheltenham: Edward Elgar.

### Non-technical Summary

Keynesians consider uncertainty as a starting point in order to emphasize that the presence of money is an essential element in explaining fluctuations in income and employment. The aim of this paper has been to reverse the causal relationship between uncertainty and money, to show that the presence of money constitutes the necessary condition to justify the importance of the dimension of uncertainty and to elaborate a monetary theory of uncertainty.