

***On the monetary nature of the interest rate in a
Keynes-Schumpeter perspective***

Giancarlo Bertocco*, Andrea Kalajzić**

*University of Insubria, Department of Economics

**University of Insubria, Department of Economics

Introduction

In his response to Ohlin criticism of the *General Theory*, Keynes defined the rate of interest as “[...] a *monetary* phenomenon” (Keynes 1937b, p. 207). In the *General Theory* Keynes justified the monetary nature of the interest rate by means of the liquidity preference theory. The objective of this paper is twofold. First, to highlight the limits of the explanation of the nature of the rate of interest based on the liquidity preference theory. Secondly, to develop a different explanation of the monetary nature of the interest rate by referring to: i) the arguments used by Keynes to respond to the criticisms of the *General Theory* developed by Ohlin and Robertson, and ii) Schumpeter’s analysis of the role of bank money in a capitalist economy. We will show that this explanation reflects the conception of the non-neutrality of money elaborated by Keynes in his 1933 works in which he stressed the need to elaborate a *monetary theory of production* (Keynes 1933a, p. 408) in order to explain the occurrence of economic crises. The paper consists of two parts. The first part is dedicated to the description of the main aspects of the liquidity preference theory and to the explanation of its limits. In the second part we elaborate an alternative concept of the monetary nature of the rate of interest and of the non-neutrality of money

1. A critical analysis of the liquidity preference theory

1.1 *The liquidity preference theory*

At the beginning of the *General Theory* Keynes states that the ‘classical’ theory is not able to describe the “[...] economic society in which we actually live [...]” (Keynes 1936, p. 3), because it deals primarily to explain the “[...] distribution of a *given* volume of employed resources between different uses [...]” (Keynes 1936, p. 4). He furthermore asserts that the inability of the classical theory to explain the fluctuations of income and employment is due to the way in which it explain the nature of the rate of interest.¹ Keynes underlines that in the classical theory the rate of interest is considered: “[...] as the factor which brings the demand for investment and the willingness to save into equilibrium with one another.” (Keynes 1936, p. 175). He presents an alternative theory showing why, in the presence of a level of effective demand insufficient to ensure full employment, the rate of interest “[...] does not automatically fall to the appropriate level” (Keynes 1936, p. 31). In the third chapter of the *General Theory*, Keynes announces the essential role played by money in his theory of the rate of interest: “We shall discover [...] that money plays an essential part in our theory of the interest rate” (Keynes 1936, p. 32).

The liquidity preference theory presented in chapter 13 of the *General Theory*, explains why the rate of interest does not automatically reach an ‘appropriate’ level. In order to highlight the relationship between money and the rate of interest, Keynes emphasizes the peculiar nature of saving decisions in what he calls a *monetary economy*. He states that in a *monetary economy* the causal relationship between saving and investment decisions that characterizes the *real exchange economy* described by the classical theory does not hold, since the relevant relationship is that between saving decisions and wealth:

¹ “There is, I am convinced, a fatal flaw in that part of the orthodox reasoning which deals with the theory of what determines the level of effective demand and the volume of aggregate employment; the flaw being largely due to the failure of the classical doctrine to develop a satisfactory theory of the rate of interest.” (Keynes, 1934, p. 489)

“[...] the act of saving implies, not a substitution for present consumption of some specific additional consumption which requires for its preparation just as much immediate economic activity as would have been required by present consumption equal in value to the sum saved, but a desire for ‘wealth’ as such, that is for a potentiality of consuming an unspecified article at an unspecified time.” (Keynes 1936, p. 211)

In a monetary economy to save means to accumulate money income and, more generally, to accumulate wealth. A saver is a wealth holder who first decides how much to save, and then chooses “[...] in *what form* he will hold the command over future consumption which he has reserved, whether out of his current income or from previous savings” (Keynes 1936, p. 166). Keynes thus claims that the rate of interest does not depend on saving decisions but on liquidity preferences: “The rate of interest is not the ‘price’ which brings into equilibrium the demand for resources to invest with the readiness to abstain from present consumption. It is the ‘price’ which equilibrates the desire to hold wealth in the form of cash with the available quantity of cash” (Keynes 1936, pp. 166-167).

The demand for money function specifies the factors inducing wealth holders to accumulate money; Keynes asserts that the existence of the preference for liquidity crucially depends on the presence of uncertainty about the future value of the rate of interest.² In the *General Theory* Keynes assumes that the quantity of money is controlled by the monetary authorities, and is independently of the demand for money. He therefore concludes that fluctuations of the liquidity preference do not cause changes in the quantity of money, but they influence the level of the rate of interest (Keynes 1936, p. 174). Given the quantity of money, the rate of interest depends on the agents’ expectations about its future level. Consequently, the rate of interest may reach an equilibrium level that is inconsistent with Say’s law validity:

[The] actual value [of the rate of interest] is largely governed by the prevailing view as to what its value is expected to be. *Any* level of interest which is accepted

² “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)

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, pp. 203-204).

1.2 *The limits of the liquidity preference theory*

The explanation of the non-neutrality of money based on the liquidity preference theory has two limits. The first limit stems from Keynes’s assertion that the liquidity preference theory explains the reasons for which the interest rate “does not automatically fall to the appropriate level.” In fact, Keynes thereby recognizes the existence of a specific value of the rate of interest that is consistent with full employment. In other words, he acknowledges that there is an ‘appropriate’ value of the rate of interest at which the amount of goods produced by using all the available labor force, will be demanded. Since Dillard’s interpretation (1948), this definition of the role of liquidity preference characterizes a widespread understanding of Keynes’s theory. Rogers, for example, claims:

“In its most general form the principle of effective demand demonstrates that the rate of interest sets a limit to the profitable expansion of output before full employment is achieved. Keynes also argued in the *General Theory* that there was no mechanism in a *laissez faire* monetary economy for automatically generating the natural rate of interest consistent with full employment. Keynes makes it clear that the failure of the rate of interest to automatically fall to the level consistent with full employment is to be a key element of his analysis.” (Rogers 2008, pp. 2.8; see also Dillard 1987, Rogers 1997a, 1997b)

The hypothesis of the existence of a value of the interest rate that is consistent with full employment weakens Keynes’s thesis that in a monetary economy Say’s Law does not hold. In fact, this assumption leads to the conclusion that the problem of involuntary unemployment can be easily solved by eliminating the gap between the level of the rate of interest that balances the demand and supply of money and the level consistent with full employment. Kurz (2010, 2013) describes Sraffa’s doubts about the relevance of the liquidity preference theory as follows:

“Sraffa [...] was critical of [Keynes’s] explanation of why liquidity preference was to prevent the money rate of interest from falling sufficiently not only in the short run, but also in the long. Keynes’s liquidity preference – which Sraffa called ‘Keynes’s system’ - could not bear the brunt of the explanation of a downward

rigidity of the interest rate. According to Sraffa, [...] Keynes's arguments suffer in particular from neglecting the implications of flexible prices via the value of money for the level of the 'own rate of money interest'.“ (Kurz 2013, pp 67-68)

In fact, it was the flexibility of wages and prices that allowed the advocates of the Neoclassical Synthesis to consider Keynes's model as a special case of the neoclassical theory that applies if prices and wages are rigid. If price and wage were flexible, the gap between the monetary rate of interest and the 'appropriate' level of the interest rate would disappear because, in the presence of involuntary unemployment, a fall of wages and prices would cause an increase of the real quantity of money. Keynes (1936, pp. 266-67) recognized the positive impact of falling wages and prices on the level of employment, but he also specified that these effects could be nullified by the negative influence of a sharp drop of wages and prices on the state of 'confidence'. Keynes uses the concept of 'confidence', and thus the related notions of 'expectations' and 'uncertainty', to question the effects of the flexibility of wages and prices on the rate of interest.

Some economists have emphasized a logical limit in Keynes' analysis by pointing out that in Chapter 18 of the *General Theory*, Keynes refers to the economic agents' expectations, as the 'ultimate independent variables' (Keynes 1936, p. 246). Nevertheless, in Chapter 19 he argues that expectations may be affected by strong variations in prices and wages. The specification of a relationship between the changes in nominal wages and prices and individuals' expectations transforms the latter from an exogenous into an endogenous variable, without having previously specified a theory of expectations. From the point of view of the logical consistency of Keynes' theory, this is not acceptable. Messori (2012) has highlighted this criticism very effectively with the following words:

“Keynes [...] recognizes that a decline in money wages and in the general price level increases the amount of money supplied in real terms; and that, all else being equal, this increase is trending downwards the monetary interest rate and upwards the investment demand, which in turn raises the equilibrium level of aggregate output by means of the income multiplier. However, Keynes adds that [...] a worsening of wealth holders' expectations can make the interest rate sticky downwards even in the presence of increments in the money supply in real terms (the 'liquidity trap'); and a

worsening of entrepreneurs' long-term expectations can make investment demand sticky upwards even in the presence of a decline in interest rates. These observations of Keynes are empirically plausible ... From the analytical standpoint, however, Chapter 19 is one of the weakest parts of Keynes's framework. As the author explicitly underscores in Chapter 18 [...] in the first seventeen chapters expectations are treated as 'ultimate independent variables', and Chapters 5 and 12 serve to justify this assumption. The transformation in Chapter 19 of these 'ultimate independent variables' into dependent variables, subject to changes in money wages and prices, must be written off as an ad hoc assumption." (Messori (2012), p. 109)

If expectations are an ultimate independent variable, it is not correct, from a logical point of view, to assume the existence of a causal relationship between the level of money wages and the wealth holders' expectations in order to assert that the reduction of wages will not push the rate of interest towards its 'appropriate' level. The proponents of the Neoclassical Synthesis could thus claim that the flexibility of wages and prices would lower the level of the rate of interest. Hence, the idea of the existence of an 'appropriate' level of the rate of interest leads to the conclusion that the Keynesian model represents no more than a special case of the neoclassical theory, useful to describe an economic system characterized by wage and price rigidities.

The second limit of the liquidity preference theory concerns the definition of money used by Keynes. In the *General Theory* Keynes identifies money with the liabilities of the central banks and underlines that the money supply does not adapt to the demand for money. For this reason "[...] the rate of interest of money plays a peculiar part in setting a limit to the level of employment" (Keynes 1936, p. 222). Nevertheless, in this way Keynes neglects the presence of bank money, and offers only a partial description of both money and credit. Credit agreements are limited to the case in which the economic agents who need liquidity can obtain it from the wealth holders. In fact, the latter can transfer their idle balances in exchange of the payment of a reward represented by the rate of interest on money. However, this is a very questionable way to define the phenomenon of credit as it overlooks the fact that the demand for liquidity can be met also by the banks through the creation of new money.

To overcome these limits it is necessary to develop a theory that is able: i) to explain why in a monetary economy the existence of a level of the rate of interest that ensures the realization of a flow of investments consistent with full employment is not at all guaranteed, and ii) to explicitly take into account the presence of bank money.

2. An alternative explanation of the monetary nature of the rate of interest

The explanation of the non-neutrality of money that will be presented in the following pages is based on two elements: i) Schumpeter' analysis of the role of bank money in a capitalist economy³; ii) Keynes's arguments used to reply to Ohlin's criticism of the liquidity preference theory. Our explanation highlights two fundamental aspects of the non-neutrality of money. First, it offers a more solid critique of Say's law than that founded on the liquidity preference theory as it shows that: a) an 'appropriate' level of the rate of interest at which businesses are willing to realize a flow of investments consistent with full employment does not necessarily exist, and b) that even if an 'appropriate' level does exist, this does not mean that its achievement would be a sufficient condition for the attainment of full employment. Secondly, our explanation emphasizes the importance of the link between saving decisions and wealth accumulation, which represents a crucial element for the interpretation of the phenomenon of speculation. In order to illustrate this explanation we will begin with the concept of uncertainty, which associates Keynes's and Schumpeter's theoretical framework.

³ Several economists have emphasised the desirability of integrating the Keynesian theory of income determination with Schumpeter's theory of economic development. For example, see Minsky 1986, 1993, Goodwin 1993, Morishima 1992, Vercelli 1997, Bertocco 2007, Dosi 2012, Dosi, Fagiolo and Roventini 2010, and Mazzucato and Wray 2015.

2.1 *Investment decisions and uncertainty*

Keynes points out that the presence of uncertainty is a peculiar feature of a monetary economy and specifies that an economy without uncertainty is characterized by consumption decisions and by the absence of investment decisions and wealth accumulation.⁴ The claim that classical theory describes an economic system in which only consumption decisions are important is obviously overtaken. The real difference between the classical and the Keynesian theory concerns the characteristics of the investment decisions, and regards the degree of certainty with which an entrepreneur can foresee the future results of his decisions. According to Keynes, in a monetary economy investment decisions are taken under conditions of uncertainty. On the contrary, in the economic system described by the classical theory entrepreneurs are able to predict the results of their investment decisions in probabilistic terms. Keynes describes the particular features of the investment decisions in a *monetary economy* by referring to a theoretical framework first developed 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. 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, pp. 81-82)

⁴ “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 1937, p. 113)

In the world described by the classical theory the results of investment decisions can be defined in terms of the amount of goods produced. These results are certain, since the existing technology defines the relationship between the input of productive factors and the quantity of final products. However, in a monetary economy the results of an investment decision can be defined only in monetary terms, because they do not correspond to the quantity of produced goods, but to the monetary value of the goods that will be sold:

“In a real-wage and co-operative economy there is no obstacle in the way of the employment of an additional unit of labour 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. But in a money-wage or entrepreneur economy the criterion is different. Production will only take place if the expenditure of £ 100 in hiring factors of production will yield an output which is expected to sell for at least £ 100.” (Keynes1933b, p. 78)

The impossibility to forecast the results of investments in probabilistic terms is not related to the obtainment of the desired amount of goods; uncertainty concerns the possibility to sell the goods produced, and thus the possibility to achieve a profit in monetary terms. In other words, in a monetary economy uncertainty depends on economic factors. Keynes’s analysis of investment decisions in modern market economies reveals the importance of the distinction between the production phase and the sale phase. Consider, for example, the following 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, pp. 149-150)

Keynes’s investments have the same characteristics of Schumpeter’s innovations. We may consider the investments of the Keynesian entrepreneur as the tool allowing the launch of new products, or the modification of the productive methods used to realize already existing goods. Thus, the Keynesian entrepreneur who takes investment decisions coincides with the Schumpeterian entrepreneur who introduces innovations.

The presence of investments and innovations highlights the importance of the dimension of uncertainty. An entrepreneur that decides to invest in the production of a new good cannot be sure that he will be able to obtain a satisfactory profit by selling everything he produced, because innovations alter the existing world, making predictions about the reaction of consumers very difficult (Schumpeter 1912). For this reason, both Keynes and Schumpeter stress that investment decisions and innovations are carried out by agents possessing particular skills, that is, agents that are guided by what Keynes (1936, p. 161) defined *animal spirits*.⁵

2.2 The money employed in a monetary economy

The sequence M – C - M' shows that, in a monetary economy, the necessary condition to carry out an investment decision is the availability of money; investments consist, for example, in the building of a railway, and, as Schumpeter underlined, their realization would be impossible in a world without money. Schumpeter remarks that the kind of money used in a capitalist economy has the characteristics of bank money, and that there is no capitalist economy at all without bank money.⁶

Schumpeter explains the role of bank money by remarking that usually innovations are not carried out by existing businesses, but by 'new men' possessing special skills, other than those necessary to conduct an already existing business. Being 'new men', entrepreneurs have no control over productive factors, which Schumpeter identifies with the workforce needed to implement innovations. He assumes that the economy is in a state of full employment;

⁵ Some years earlier, Schumpeter (1912) emphasized that the introduction of innovations required different capabilities from those needed to run existing firms. To this end, he described the decisions taken by innovating entrepreneurs with terms that were very similar to those later used by Keynes.

⁶ "Capitalism will be defined by three features of industrial society: private ownership of the physical means of production; private profits and private responsibility for losses; and by the creation of means of payments – banknotes or deposits – by private banks. The first two features suffice to define private enterprise. But no concept of capitalism can be satisfactory without including the set of typically capitalistic phenomena covered by the third." (Schumpeter 1943, p. 179)

consequently entrepreneurs-innovators will have to subtract the control of part of the workforce from the already existing businesses; bank money is the tool that makes it possible. In fact, by issuing new money the banks create the conditions for the realization of productive processes that otherwise would not have occurred, because a direct exchange of labor between existing businesses and new entrepreneurs is hardly conceivable.

As pointed out earlier, in the *General Theory* Keynes neglects the role of the banking sector in the process of money creation and the problem of financing investment decisions. Keynes recognized these omissions when he replied to the criticisms of the *General Theory* made by Ohlin and Robertson. These criticisms pushed Keynes to consider explicitly the issue of financing investment decisions and the importance of the process of money creation by the banks. In his reply to Ohlin, Keynes recognized the weight of the concept of *ex ante* investment. He acknowledged that an entrepreneur that is planning an investment has to look for the liquidity needed to finance the investment's cost, and thus associated investment decisions with the demand for credit.⁷ However, he did not accept Ohlin's thesis that the supply of credit depends on *ex ante* savings, but in turn he emphasized the role of banks in the creation of new money.⁸ In contrast with the loanable funds theory, Keynes uses the presence of bank money to underline that the demand for credit is satisfied through the creation of new money by the banks and not through 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

⁷ “[...] *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 follows I use the term ‘finance’ to mean the credit required in the interval between planning and execution.” (Keynes 1937c, p. 216)

⁸ “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)

previously employing. The investment market can become congested through shortage of cash. It can never become congested through shortage of saving.” (Keynes, 1937c, p. 222)

The process of bank money creation is an essential element of economic systems in which investment decisions are made under conditions of uncertainty. In a monetary economy an entrepreneur is not interested in building a railway as if it was a monument to himself. His objective rather consists in obtaining a monetary profit by selling transport services. To attain this goal, the entrepreneur must compare the monetary values of the wages of the workers he would like to employ, and of the proceeds expected from the sale of the train tickets. These monetary values are not a simple ‘veil’, that is, a mere reflection of real quantities representing the ‘true’ factors influencing the obtainment of a profit. On the contrary, they represent the only element on which both the entrepreneur-innovator that wants to build the railway and the banker that is in a position to finance the investment project, base their decisions. The monetary revenues expected by the entrepreneur willing to build the railway are uncertain in the Keynesian sense. Keynes’s and Schumpeter’s analysis highlight that the use of bank money is a necessary element for the explanation of the presence of investments that are made under conditions of uncertainty (on this point see Bertocco 2013).

Bank money and the process of money creation linked to the banking system’s lending activity, represent the pillars of the endogenous money theory, which is the core element of the post-Keynesian monetary theory (on this point see Bertocco 2010, Harcourt and Kriesler 2013). In a world in which bank money is used, central banks directly set the rate of interest at which they finance the banking system, thereby reinforcing their capacity to influence the level of the rate of interest that affects the firms’ investment decisions. In recent years, the monetary authorities of the industrialised countries have abandoned the control of monetary aggregates in order to target short-term interest rates (see, for example, Bank of England 1999, Mishkin 1999, Romer 2000, Woodford 2003, Bindseil 2004, Fullwiler 2006, Nishiyama 2007, Docherty 2011, McLeay, Radia and Thomas 2014). By setting the short-term rate of interest at any level desired,

even at a rate close to zero, the monetary authorities are able to affect the households' liquidity preference and the long-term rates of interest. It is thus very difficult to presume that unemployment can be attributed to the effects of liquidity preference on long-term interest rates (see, for example, Wray 2006, p. 274, Tily 2007, chap. 7).

The deep recession that followed the financial crisis triggered by the collapse of the US subprime mortgage market confirms this thesis. The very low rates of interest set by the monetary authorities in the aftermath of the crisis, prevents from considering the big rise in unemployment in Europe and in the United States as a consequence of the agents' liquidity preference on the level of long-term interest rates. Moreover, it is worth recalling 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 cause of the crisis. Regardless of the acceptance of this explanation, it is easy to recognize that after 2001 the Fed pushed the rates of interest to a very low level, and thus to highlight that monetary authorities are able to control the term structure of interest rates.⁹

If there were an 'optimal' value of the rate of interest, in a world characterized by the use of bank money, the monetary authorities should not have difficulties in steering the level of the rate of interest towards this value in order to achieve full employment. Since the recent experience has shown that central banks can set the level of interest rates at zero, it should be

⁹ Bernanke, for example, when describing the monetary policy adopted by the Fed after the outbreak of the crisis, acknowledged that monetary authorities influence long-term interest rates: "By December 2008, the federal funds rate was reduced basically to zero. It cannot be cut any more, obviously. So, as of December 2008, conventional monetary policy was exhausted. And yet, the economy clearly needed additional support. We needed something else to support recovery, and so we turned to less conventional monetary policy. The main tool we have used is what we in the Fed call the large-scale asset purchases, or LSAPs, known in the press and elsewhere as quantitative easing, or QE. [...] to influence longer-term rates, the Fed began to undertake large-scale purchases of Treasury and GSE mortgage-related securities. This was really a monetary policy by another name: instead of focusing on the short-term rate, we were focusing on longer-term rates." (Bernanke 2013, pp. 102-104)

concluded that, in a monetary economy, an ‘appropriate’ level of the rate of interest does not necessarily exist.

2.3 Bank money and Say’s Law

Schumpeter (2012) emphasizes the importance of bank money by assuming that, initially, the economy is in a state of full employment. However, this hypothesis is not necessary to explain the importance of bank money. In fact, even in the presence of unemployed workers, entrepreneurs-innovators would still need the newly created purchasing power in order to hire the workers required to implement their innovations. Furthermore, it can be shown that the relationship between bank money, investment decisions, innovations and uncertainty emerging from Schumpeter’s and Keynes’s works is a crucial element for the elaboration of a sounder explanation of the presence of unemployment than that based on the liquidity preference theory.

In a monetary economy the achievement of an investment flow consistent with the full employment of the available workforce depends on two conditions: i) the presence of an adequate number of entrepreneurs-innovators that, guided by their *animal spirits*, wish to implement the required amount of investment projects, and ii) the willingness of the banks to finance the investment projects submitted by the entrepreneurs-innovators. Fulfilling these conditions does not depend on the achievement of a particular level of the rate of interest. The rate of interest is a monetary phenomenon determined by the monetary authorities and the banking system. Nevertheless, even if the rate of interest were equal to zero, the flow of investments required to ensure full employment would still depend on the *animal spirits* of the entrepreneurs willing to carry out innovative projects. Should no such entrepreneur exist, there would be unemployment even if the rate of interest is equal to zero.

Moreover, given the level of the rate of interest set by the banking system, the presence of entrepreneurs-innovators willing to create a flow of investments consistent with full employment is not a sufficient condition for the actual achievement of the condition of full employment. In

fact, nothing ensures that banks will be willing to finance these projects. In a monetary economy banks finance investments by creating new money, and, like the entrepreneurs-innovators, they take their decisions under conditions of uncertainty. Thus, their evaluations of the investment projects could sharply differ from those formulated by the entrepreneurs. For example, they may consider an entrepreneur who plans to build a railway as an eccentric or visionary individual, whose investment project has no chance of success. In this case, the innovative investment could not be realized and the system would not reach the full employment of the available workforce.

In a monetary economy investments and savings are determined in two separate logical steps. First, businesses carry out their investment projects thanks to the money obtained from the banks. In a second, logically distinct, time, an equivalent flow of savings will emerge due to the rise of income. These considerations reveal the limits of the explanation of the presence of involuntary unemployment that emerges from Chapter 17 of the *General Theory*. In Chapter 17 Keynes explains the presence of unemployment with the fact that money is not producible by labor:

“[...] if money could be grown like a crop or manufactured like a motor-car, depressions would be avoided or mitigated because, if the price of other assets was tending to fall in terms of money, more labour would be diverted into the production of money. [...] Unemployment develops, that is to say, because people want the moon; men cannot be employed when the object of desire (i.e. money) is something which cannot be produced and the demand for which cannot be readily choked off. There is no remedy but to persuade the public that green cheese is practically the same thing and to have a green cheese factory (i.e. a central bank) under public control.” (Keynes 1936, pp 230-235)

Following this analysis, many Keynesians have pointed out that in a fiat money world an increase in the demand for money causes a drop in effective demand, and thus a rise in unemployment (see for example Kregel 1980 and Davidson 1994, 2001). Clearly, if money were a commodity produced by means of work, an increase of its production would cause a rise in employment. The argument that in an economic system characterized by the use of a commodity

money unemployment would not exist, is therefore acceptable.¹⁰ However, it is worth recalling that the use of a commodity money characterizes what Keynes called a real-exchange economy, that is, an economy described by the sequence $C - M - C'$. In such a system Say's Law is valid, and money is simply a tool that facilitates the exchanges.

Keynes is very clear when he states that contemporary economies are structurally different from those defined by the sequence $C - M - C'$. The sequence $M - C - M'$ is of crucial importance for the description of the central role played by money in what Keynes calls a monetary economy. The first link in the sequence emphasizes the fact that in a monetary economy the process of money creation affects production decisions. In a monetary economy money has the characteristics of bank money, and Keynes's and Schumpeter's insights highlight the causal relationship between bank money, investment decisions, innovations and uncertainty that is typical for contemporary economies. This causal sequence shows that in a monetary economy the existence of an 'optimal' level of the rate of interest is not at all guaranteed, and that even if it existed its achievement would not be a sufficient condition for the attainment of full employment. In a monetary economy the level of employment depends on the investment decisions and on the propensity to consume and therefore to save of households. Furthermore, unlike what suggested by Keynes in Chapter 17 of the *General Theory*, given the propensity to save, the savers' decision to accumulate a kind of money that is not produced by labor has no effect on the level of aggregate demand, and therefore on employment. In fact, as in a monetary economy investments and savings are the result of two distinct logical steps, the money accumulated by the savers corresponds to the flow of new money previously created by the banking system to finance the firms' investment decisions. In other words, in a monetary

¹⁰ Already in 1933 Keynes argued that in a world in which a commodity money is used involuntary unemployment could not exist: "In actual fact under a gold standard gold can be produced, and in a slump there will be some diversion of employment towards gold mining. If indeed, it were easily practicable to divert outputs towards gold on a sufficient scale for the value of the increased current output of gold to make good the deficiency in expenditure in other forms of current output, unemployment could not occur." (Keynes 1933b, pp. 85-86)

economy income and employment depend on the flow of investments and on the propensity to save, and not on the way in which savers decide to allocate their savings and to accumulate their wealth (see Kaldor 1982).

2.4 What remains of the liquidity preference theory: money, wealth and speculation

We have shown the limits of the explanations of the presence of involuntary unemployment based on the liquidity preference theory. Nevertheless, there is a part of the liquidity preference theory that is extremely important for the description of a monetary economy, namely the relationship between saving decisions and wealth accumulation.

The relationship between saving decisions and wealth accumulation is a distinctive feature of monetary economies, which, as we noted earlier, can be described by the sequence $M - C - M'$, while a real-exchange economy is represented by the sequence $C - M - C'$. When comparing these two economic systems it is necessary to clarify why the aim of accumulating money and the relationship between wealth and saving decisions assume importance only in a monetary economy and not in the real-exchange economy described by the neoclassical tradition. Schumpeter's analysis allows us to show that an economy described by the sequence $C - M - C'$ is a static system in which only a few unchanging goods are produced over time. A real-exchange economy is characterized by the production of only few goods for the satisfaction of what Keynes defines 'absolute needs' (Keynes 1930, p. 237). Such a system thus resembles to an agricultural economy that can be described by theoretical models based on the assumption that just one good is produced. In this world, which is ruled by the principle of the satiety of needs, the process of wealth accumulation is irrelevant. In fact, it is unrealistic to assume that a farmer would accumulate an unlimited amount of corn, or that a carpenter would amass an endless amount of hand-made tables.

The process of wealth accumulation is relevant only in a world ruled by the principle of the insatiability of needs, that is, in an economy in which individuals have unlimited wants and

resources are, therefore, scarce. The presence of individuals that accumulate wealth because their resources are scarce compared to a set of unlimited needs, can be explained through the concept of innovation. This concept allowed Schumpeter to emphasize that businesses cannot be considered as simple tools directed at meeting a given set of needs as established by the principle of consumer sovereignty. On the contrary, the introduction of innovations by businesses constantly changes the consumption patterns of households and expands the size of their needs.¹¹ The continuous introduction of innovations thus pushes households to accumulate purchasing power because they do not know neither the quality nor the quantity of goods they will desire in the future.

Starting from the definition of wealth, it is possible to describe the phenomenon of speculation. Investments with the characteristics described by Keynes justify the presence of markets in which long term bonds and shares are traded. Keynes (1936, Chapter 12) remarks that the spread of shares distinguishes a phase of the development of modern economies in which the businesses' ownership is divided among many individuals who do not manage the firm directly. This phase of capitalist economies is therefore characterized by the appearance of markets in which shares and long-term bonds are continuously traded, and in which the figure of the speculator emerges alongside that of the entrepreneur. Keynes distinguishes between 'speculation' and 'enterprise' by using "[...] 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, p. 158). As shown by Hyman Minsky (1975, 1982, 1986, 1996), uncertainty and speculation are fundamental to

¹¹ "Railroads have not emerged because any consumers took the initiative in displaying an effective demand for their service in preference to the services of mail coaches. Nor did the consumers display any such initiative wish to have electric lamps or rayon stockings, or to travel by motorcar or airplane, or to listen to radios, or to chew gum. The great majority of changes in commodities consumed has been forced by producers on consumers who, more often than not, have resisted the change and have had to be educated up by elaborate psychotechnics of advertising." (Schumpeter (1939) [1964], p. 47)

understand the relationship between money and economic crises which characterizes a monetary economy

Conclusions

The explanation of the presence of involuntary unemployment based on Keynes's liquidity preference theory implicitly assumes that in a monetary economy there is an 'appropriate' level of the rate of interest. In this paper we have shown the limitations of this analysis, and have presented a sounder explanation of the presence of involuntary unemployment. Our explanation links Schumpeter's and Keynes's theoretical approaches in order to define the relationship between bank money, investment decisions, innovations and uncertainty that characterizes a monetary economy. The analysis presented in this paper emphasizes the monetary nature of the rate of interest, which, depending on the decisions of the monetary authorities and of the banking system, can take any value greater than or equal to zero. Finally, we have pointed out that the liquidity preference theory highlights the monetary nature of savings and the relationship between saving decisions and wealth accumulation that is of crucial importance for the explanation of the phenomenon of speculation and the presence of speculative markets.

References

- Bank of England, The Monetary Policy Committee (1999): The transmission mechanism of monetary policy.
- Bernanke B. (2013): *The Federal Reserve and the Financial Crisis*; Princeton University Press, Princeton.
- Bertocco G. (2007): The characteristics of a monetary economy: a Keynes-Schumpeter approach; *Cambridge Journal of Economics*, 31 (1), pp.101-122.
- Bertocco G. (2010): The endogenous money theory and the characteristics of a *monetary economy*; *Rivista Italiana degli Economisti*, vol. XV (3), pp.365-401.
- Bertocco G. (2013): Money as an institution of capitalism: some notes on a monetary theory of uncertainty; *Economic Notes*, 42 (1), pp. 75-98.
- Bindseil U. (2004): *Monetary Policy Implementation*; Oxford University Press, Oxford.
- Davidson P. (1994): *Post Keynesian Macroeconomic Theory*; Edward Elgar, Aldershot.
- Davidson P. (2001): The principle of effective demand: another view; *Journal of Post Keynesian Economics*, Spring, 23 (3), pp. 391-409.
- Docherty P. (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. 521-535.
- Dillard D. (1948): *The Economics of J.M.Keynes: the Theory of a Monetary Economics*; Crosby Lockwood and Son, London.
- Dillard D. (1987): Money as an institution of capitalism; *Journal of Economic Issues*, XXI (4), pp. 1623-1647.
- Dosi G. (2012): Economic coordination and dynamics: some elements of an alternative 'evolutionary' paradigm, in *Economic Organization, Industrial Dynamics, and Development, Selected Essays, Vol. 2*; Edward Elgar Publishing, Cheltenham, UK, Northampton, MA, USA.
- Dosi G., Fagiolo G. and A. Roventini (2010): Schumpeter meeting Keynes: a policy-friendly model of endogenous growth and business cycles; *Journal of Economic Dynamics and Control*, 34, pp. 1748-1767.
- Fullwiler S. (2006): Setting interest rates in the modern era; *Journal of Post Keynesian Economics*, Spring, 28 (3), pp.495-525.
- Goodwin R. (1993): *Schumpeter and Keynes*, in Biasco S., Roncaglia A. and M. Salvati (eds.): *Markets and Institutions in Economic Development*; The Macmillan Press, London.
- Harcourt G. and P. Kriesler (2013): *The Oxford Handbook of Post-Keynesian Economics*; Oxford University Press, Oxford.
- Kaldor N. (1982): *The Scourge of Monetarism*, Oxford University Press, Oxford.
- Keynes J.M. (1973a [1930]): Economic possibilities for our grandchildren, in J.M. Keynes, *The Collected Writings*, vol. IX, pp. 321-332; Macmillan, London.
- Keynes J. M. (1973b [1933a]): A monetary theory of production, in J.M. Keynes: *The Collected Writings*, vol. XXIX, pp. 408-411; Macmillan, London.
- Keynes J. M. (1973c [1933b]): The distinction between a co-operative economy and an entrepreneur economy, in J.M. Keynes, *The Collected Writings*, vol. XXIX, pp. 76-106; Macmillan, London.

- Keynes J.M. (1973d [1934]): Poverty in plenty: is the economic system self-adjusting?, in J.M. Keynes, *The Collected Writings*, vol. XIII, pp. 485-92; Macmillan, London.
- Keynes J. M. (1973e [1936]): *The General Theory of Employment, Interest, and Money*, in J.M. Keynes, *The Collected Writings*, vol. VII; Macmillan, London.
- Keynes J. M. (1973f [1937a]): The general theory of employment, *The Quarterly Journal of Economics*, in J.M. Keynes, *The Collected Writings*, vol. XIV, pp. 109-123; Macmillan, London.
- Keynes J. M. (1973g [1937b]): The 'ex ante' theory of the rate of interest, *The Economic Journal*, in J.M. Keynes, *The Collected Writings*, vol. XIV, pp. 215-223; Macmillan, London.
- Kregel J. (1980): Markets and institutions as features of a capitalistic production system; *Journal of Post Keynesian Economics*, 3, pp. 32-48.
- Kurz H. (2010): Keynes, Sraffa, and the latter's secret scepticism, in Bateman B., Hirai T. and M.C. Marcuzzo (eds.): *The Return to Keynes*; Belknap Press of Harvard University Press, Cambridge, MA, USA.
- Kurz H. (2013): Sraffa, Keynes, and Post-Keynesianism, in Harcourt G. and P. Kriesler (eds.): *The Oxford Handbook of Post-Keynesian Economics*; Oxford University Press, Oxford.
- McLeay M., Radia A. and R. Thomas (2014): Money creation in the modern economy; *Bank of England Quarterly Bulletin*, Q 1, pp. 14-27.
- Messori M. (2012): Developing a new textbook approach to macroeconomics; *Rivista di Politica Economica*, July-September, pp. 102-115.
- Mazzucato M. and L. R. Wray (2015): Financing the capital development of the economy: a Keynes-Schumpeter-Minsky synthesis; *Levy Economics Institute, Working Paper No. 837*, May.
- Minsky H. (1975): *John Maynard Keynes*; Columbia University Press.
- Minsky H. (1980): Money, financial markets and the coherence of a market economy; *Journal of Post Keynesian Economics*, 3, pp. 21-31.
- Minsky H. (1982): *Can 'It' Happen Again? Essays on Instability and Finance*; M.E.Sharpe, New York.
- Minsky H. (1986): Money and crisis in Schumpeter and Keynes, in Wagener H. and J. Drukker (eds.), *The Economic Law of Motion of Modern Society*; Cambridge University Press, Cambridge, UK.
- Minsky H. (1993): Schumpeter and finance, in Biasco S., Roncaglia A. and M. Salvati (eds.): *Markets and Institutions in Economic Development*; Macmillan, London.
- Minsky H. (1996): Uncertainty and the institutional structure of capitalist economies; *Journal of Economic Issues*, vol. XXX, 2, pp. 357-368.
- Morishima M. (1992): *Capital and Credit: A New Formulation of General Equilibrium Theory*; Cambridge University Press, Cambridge, UK.
- Mishkin F. (1999): International experiences with different monetary policy regimes; *NBER Working Paper no. 7044*, March.
- Nishiyama Y. (2007): Monetary transmission, federal funds rate and CD rates; *Journal of Post Keynesian Economics*, Spring, 29 (3), pp. 409-426.

- Rogers C. (1997a): The General Theory. Existence of a monetary long-period unemployment equilibrium, in Harcourt G. and P. Riach (eds.): *A 'Second Edition' of the General Theory*, Routledge, London.
- Rogers C. (1997b): Post Keynesian monetary theory and the principle of effective demand, in Cohen A., Hagemann H. and J. Smithin (eds.): *Money, Financial Institutions and Macroeconomics*; Kluwer Academic Publishers, Dordrecht.
- Rogers C. (2008): The principle of effective demand and the state of Post Keynesian monetary economy; The University of Adelaide School of Economics, Research Paper No. 2008-04.
- Romer D. 2000. Keynesian macroeconomics without the LM curve; *Journal of Economic Perspectives*; 14, pp. 149-169.
- Schumpeter J.A. (1934 [1912]): *The Theory of Economic Development*; Harvard University Press, Cambridge, MA, USA.
- Schumpeter J.A. (1939 [1964]): *Business Cycles. A Theoretical, Historical and Statistical Analysis of the Capitalist Process*, abridged edition; McGraw Hill, New York.
- Schumpeter J.A. (1943): Capitalism in the postwar world, in Harris S. (ed.): *Postwar Economic Problems*, pp. 113-126; McGraw-Hill, London, reprinted in Schumpeter J.A. (1951): *Essays on Economic Topics of J. A. Schumpeter*, pp. 170-183; Kennikat Press, Port Washington, New York.
- Tily G. (2007): *Keynes's General Theory, the Rate of Interest and 'Keynesian' Economics*; Palgrave Macmillan, Houndmills.
- Vercelli A. (1997): Keynes, Schumpeter and beyond, in Harcourt G. and P. Riach (eds.): *A 'Second Edition' of The General Theory*, vol. 2; Routledge, London.
- Woodford M. (2003): *Interest and Prices*; Princeton University Press, Princeton.
- Wray R. (2006): When are interest rates exogenous? in Setterfield M. (ed.): *Complexity, Endogenous Money and Macroeconomic Theory*; Edward Elgar, Cheltenham.