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THE ECONOMICS OF FINANCING FIRMS: TWO DIFFERENT APPROACHES

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Up to a few years ago, macroeconomic theory did not pay any attention to the topic of firm financing, This situation has changed in recent years thanks to the development of a theoretical approach that has applied the conclusions of information economics to the analysis of the working of the financial markets. This approach does not constitute the only theoretical framework which gives prominence to the issue of firm finance; a meaningful theory could be elaborated on the basis of the works of Keynes and Schumpeter. The aim of this paper is to highlight the most significant differences between these two approaches; it will be shown that the distinctive element of the asymmetric information approach is the return to the principle of the neutrality of financial variables. In contrast, the Keynes-Schumpeter approach underlines that bank money, banks and credit market are elements that mark an economy that is completely different from the pure exchange economy to which the principle of the neutrality of the financial variables is applied. The paper shows the reasons why the Keynes-Schumpeter approach seems more suitable to analyse the evolution of modern economies.

INTRODUCTION

UP to a few years ago, macroeconomic theory did not pay any attention to the topic of firm financing, that is, the mechanisms through which firms procure the means of payment necessary to carry out their investment decisions. This lack of interest was common to the two principal macroeconomic theories, the Keynesian theory and the monetarist one. Both were presented through models identifying the financial sector solely with the money market.

The Keynesian theory supported the thesis of the non-neutrality of money by using more or less sophisticated versions of the IS-LM model, according to which investment decisions depend only on the interest rate whose level is determined by the money market equilibrium. The implicit hypothesis in these models is that firms are always able to ob-

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tain the liquidity necessary to carry out the desired investments. The monetarist theory motivates the irrelevance of the firm financing issue by stating that it is not possible to attribute to the credit market a role which is distinct from that played by the real sector, inasmuch as the credit market coincides with the real sector. This theory separates the money market from the credit market; Friedman and Schwartz (1982) assert that the two markets are characterised by different prices: the price of money corresponds to the quantity of goods that can be purchased with a unit of money, thus it is equal to the inverse of the price level, while the price of credit is the interest rate. Consequently, a disequilibrium between money supply and demand will be eliminated by the variation in the price of money and hence of the general price level, while an imbalance between credit supply and demand will be eliminated by the variation in the interest rate. This distinction reflects the conclusions of the Quantity Theory of Money according to which the imbalance between demand and supply influences the level of the aggregate demand money and thus the price level. In the case of the credit market, however, any demand and supply disequilibrium will have no effect on the aggregate demand and on the price level. The absence of a link between the quantity of credit and the aggregate demand level is due to the fact that the credit demand and supply derive from real decisions: the credit supply is generated by saving decisions while the credit demand reflects investment decisions. The credit market coincides with the real sector of the economy, so it is pointless to study the relation between the credit market and the real sector. To leave aside the credit market means also to overlook the financial intermediaries, whose essential role is to facilitate the transfer of resources from savers to firms.

This situation has changed in recent years thanks to the development of a theoretical approach that has applied the conclusions of information economics to the analysis of the working of the financial markets.[1] This approach does not constitute the only theoretical framework which gives prominence to the issue of firm finance; a meaningful theory could be elaborated on the basis of the works of Keynes and Schumpeter. The aim of this paper is to highlight the most significant differences between these two approaches; the main difference can be specified using the distinction between *real analysis* and *monetary analysis* employed by Schumpeter (1954) to classify monetary theories. In the first category he includes those theories that consider money only as an instrument meant to facilitate trading without having any effect on economic processes; these theories state the money neutrality principle. In

[1] The characteristics of this theory are highlighted by Stiglitz (2002) in his Nobel Lecture; see also: Stiglitz and Greenwald 2003.

the second category, Schumpeter inserts those theories that consider money an essential element in understanding how the economic system works.

It will be shown that the distinctive element of the asymmetric information approach is the return to the principle of the neutrality of financial variables. Under this approach the presence of a complex financial structure eliminates the negative effects connected with asymmetric information; the function of the financial structure is to ensure that the real world reproduces the results that characterize the ideal world without imperfections in which savers finance directly the firms and the financial institutions have no role at all. In contrast, the Keynes-Schumpeter approach underlines that bank money, banks and credit market are elements that mark an economy that is completely different from the pure exchange economy to which the principle of the neutrality of the financial variables is applied.

The paper is divided into three parts. In the first section, the asymmetric information approach is presented, and, in the second, the Keynes-Schumpeter approach is described; in the conclusions, the implications deriving from these two different analytic perspectives of firm financing are set out. In particular, the second part and the conclusions show the reasons why, in my opinion, the Keynes-Schumpeter approach seems more suitable to analyse the evolution of modern economies.

1. The asymmetric information approach

The asymmetric information (AI) approach abandons the hypothesis of perfect markets on which the neoclassical theorems on the irrelevance of money and the financial variables were founded. The capital market is significantly different in one respect from the other markets in which a simultaneous exchange between goods and money takes place; in the capital market, a given amount of money is exchanged for the promise of receiving a greater amount of money in the future. The temporal dimension of the credit contract leads the creditors to gather information in order to evaluate the ability of debtors to pay back the loan. Two types of situations can be distinguished: a) in the first, characterised by symmetric information, debtor and creditor have the same access to all the information available, b) in the second, characterised by asymmetric information, the creditors do not have all the information available to the debtors. The presence of information asymmetries in the capital market has two important consequences: a) it eliminates the assumption of perfect substitutability between the different sources of firm financing. In the presence of asymmetric information, the Modigliani-Miller theorem is no longer valid and the firms are not indifferent as

regards the choice of the source of financing. The problem of the choice of the optimal financial structure, that is of the financial structure that allows the information costs to be minimized, becomes important; b) secondly, it provides a justification for the presence of financial intermediaries, and, in particular, of the banks, who specialise in information gathering.

The first result obtained by the AI approach is to show that the presence of AI renders the Modigliani-Miller theorem inapplicable; if the potential creditors have less information than the entrepreneur who plans to carry out a new investment project, then it is not indifferent for the firm to choose among self-financing, debt or to issue new equities. In the presence of asymmetric information the firms have to address the problem of choosing the financial structure that makes it possible to minimize the information costs. The most well-known response is the «pecking order theory» (see Myers 1984, 2001; Myers and Majluf 1984), whose conclusions can be summarised in the following points: a) in the presence of asymmetric information, firms prefer self-financing over external financing; b) if self-financing proves insufficient to fund the planned investment, firms prefer to get into debt rather than to issue new equities. These conclusions are obtained by applying to the capital market the results of the work of Akerlof (1970). In Akerlof's model the potential used car buyers are not able to recognise the quality of the cars; in the case of the capital market, it is assumed that the potential financiers know only the expected return of the investment project that a single firm intends to carry out, while the single firm knows the actual return of its project. If it is assumed that there are many firms planning to carry out investment projects, and that every project has the same expected rate of return, it can be shown that the issue of new equities would be a very costly form of financing for the best firms. They would, in fact, have to issue equities on the same conditions as other firms so the potential equity subscribers would not be able to distinguish between the strong and weak investment projects. The best firms would thus prefer to finance themselves through debt; in this situation, the worst firms have to follow the example of the best ones if they want to avoid being identified by the market. In conclusion, in the presence of asymmetric information, the prevalent form of investment financing is borrowing.[1]

The second result obtained from using the asymmetric information approach is that it provides a convincing theory of financial intermedi-

[1] On this point see: Myers and Majluf 1984; Greenwald, Stiglitz and Weiss 1984; Greenwald and Stiglitz 1987, 1990, 1993; Stiglitz and Greenwald 2003. This conclusion is widely shared by scholars of the theory of financial intermediaries; see for example James and Smith 1994; Lewis 1995; Gorton and Winton 2002.

aries according to which their function is to reduce the costs associated with asymmetric information; as asserted by Blinder and Stiglitz (1983, 299): «Imperfect information about the probability of default has several fundamental implications for the nature of capital markets … it gives rise to institutions – like banks – that specialize in acquiring information about default risk». The objective of a financial intermediation theory is to provide a justification for the existence of financial intermediaries. The theory which characterises the AI approach is elaborated by starting from the observation that the existence of debtors and creditors is the necessary premise to justify the presence of financial intermediaries. The recourse to financial intermediaries entails a cost for the creditors and debtors; for this reason, the theory should explain what are the services provided by the financial intermediaries which compensate for the costs of intermediation (Hellwig 1991, 42). The presence of asymmetric information allows us to formulate a good answer: the services offered by the intermediaries is to gather information. Akerlof (1970) emphasized that the presence of asymmetric information stimulates the creation of agents whose purpose is to reduce the information costs; he considered, in particular, the activity of merchants that specialize in evaluating the quality of the goods exchanged. The banks play the same role in the capital market as the merchants play in Akerlof's used car market. Fama (1985, 36) illustrates the role played by financial intermediaries using the distinction between inside debt and outside debt:

> Inside debt is defined as a contract where the debtholder gets access to information from an organization's decision process not otherwise publicly available… Bank loans are inside debt, as are the other types of debt commonly classified as private placements. In contrast, outside debt is defined as publicly traded debt where the debtholder relies on publicly available information generated by the organization or information purchased by the organization (for example, independent audits and bond ratings)

The characteristic of banks is to provide finance through inside debt contracts stipulated on the basis of information not publicly available, which is obtained in virtue of the close relation with the debtors. Also Goodhart (1987) underlines that banks' special role is justified by the characteristics of their assets: he observes that banks' specificity cannot be justified by their capability to create money since there is nothing to prevent other intermediaries from creating money. He maintains that a financial system in which the monetary function were carried out by investments funds rather than banks would probably be safer and more stable; he asserts that the fact that the monetary function is carried out by banks is the result of an historical process. This leads Goodhart (1987, 85) to conclude that banks' specificity is justified by the characteristics of their assets.

2. The Keynes-Schumpeter approach

As we have seen, economists such as Stiglitz, Blinder, Fama and Goodhart maintain that the presence of banks is justified by the existence of imperfections, such as imperfect information, which prevent savers from directly financing firms. This explanation of the presence of financial intermediaries implies acceptance of three points. The first is the recognition that it is possible to specify an ideal world characterised by perfect information, in which the savers directly finance firms and in which there are no intermediaries; in this world the neoclassical interest rate theory, to which Friedman and Schwartz (1982) refer, as we have seen in the introduction, applies. The second point involves acknowledging that, by specialising in information acquisition, the banks make it possible to eliminate the obstacles that the presence of imperfect information creates, in the real world, to the achievement of the results which characterise the ideal world with perfect information. The third point consists of acceptance of the argument that the presence of the banks does not modify the nature of the credit market with respect to the ideal world without imperfections; the key actors which operate in this market are the savers and investors, and the object of the exchange can either be a real good or money. It is significant that Stiglitz and Weiss (1990, 91-92) 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. …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

Acceptance of these points leads us inevitably to consider the study of financial intermediaries and the relation between the financial structure and the real structure of the economy as of little importance because the credit market coincides with the real sector.[1]

[1] This conclusion is well illustrated by McCallum 1989, 29-30, who, on presenting his text on monetary economics, maintains that the decisions to overlook the credit market: «…rests

Keynes and Schumpeter elaborate an explanation of the role of the banks which is much different from the one that characterises the AI approach. The fundamental point which is common to the views of Keynes and Schumpeter is the assertion that the presence of banks and the diffusion of fiat money made up by bank money radically alter the way the economic system works. They state that in a world in which the object of the credit is bank money, the credit market does not coincide with the real sector as the credit supply is not determined by saving decisions. They claim that it is not possibile to describe the working of an economy which uses bank money with a theory that identifies the credit market with the real sector. In the next few paragraphs a summary of the most important aspects of the monetary theories of Keynes and Schumpeter is presented.

2.1. *The nature of the credit market*

Keynes and Schumpeter maintain that the spread of fiat money profoundly changed the characteristics of the economic system. Keynes (1933a) underlines this point by distinguishing between a *real exchange economy* and a *monetary economy*. He uses the first term to denote an economy in which money is just an instrument that makes it possible to reduce the costs of the exchange; the use of money does not change the structure of the economic system with respect to a barter economy. With the term *monetary economy*, Keynes refers to an economy in which the presence of fiat money radically changes the nature of transactions compared with a *real-exchange economy*:

> The distinction which is normally made between a barter economy and a monetary economy depends upon the employment of money as a convenient means of effecting exchanges – as an instrument of great convenience, but transitory and neutral in its effect. It is regarded as a mere link between cloth and wheat, or between the day's labour spent on building the canoe and the day's labour spent in harvesting the crop. *It is not supposed to affect the essential nature of the transaction from being, in the minds of those making it, one between real things*, or to modify the motives and decisions of the parties to it. Money, that is to say, is employed, but is treated as being in some sense *neutral*.
>
> (Keynes 1933a, 408)

basically on the fact that in making their borrowing and lending decisions, rational households (and firms) are fundamentally concerned with goods and services consumed or provided at various points in time. They are basically concerned, that is, with choices involving consumption and labour supply in the present and in the future. But such choices must satisfy budget constraints and thus are precisely equivalent to decisions about borrowing and lending – that is, supply and demand choices for financial assets. …Consequently there is no need to consider *both* types of decisions explicitly. …it is seriously misleading to discuss issues in terms of possible connections between 'the financial and real sectors of the economy', to use a phrase that appears occasionally in the literature on monetary policy. The phrase is misleading because it fails to recognise that the financial sector *is* a real sector».

The change in the nature of transactions depends on the characteristics of the mechanism by which fiat money is created. Fiat money is not a good produced by labour, hence it cannot be produced by any given individual relying on his own labour, as instead is the case for any good. The production of fiat money is the prerogative of a particular economic agent; in modern economies whose workings Keynes sets out to explain, this agent is the banks. The employment of fiat money alters the nature of the exchanges: when bank money is used, it is not necessary to own goods to buy other goods, but it is necessary to have money, and to obtain money it is necessary to satisfy the criteria applied by the banks for granting loans. The credit market is the instrument through which banks distribute money; to describe this market it is necessary to explain who are the agents that demand credit.

Keynes deals with the credit market in some works published between 1937 and 1939 to reply to criticism of the *General Theory*, and, in particular, to Ohlin's criticism of his interest rate theory. Ohlin compares with the keynesian interest rate theory a new version of the loanable funds theory, according to which the interest rate is determined by the credit demand which depends on *ex-ante* investments, *i.e.* those planned by the firms, and by the supply of credit which instead depends on *ex-ante* savings. Keynes (1937c, 217) considers the concept of *ex-ante* investment important because it shows that the firms, to carry out their spending decisions, must obtain liquidity and, thus, that a lack of liquidity can impede the firms' investment decisions. While on the one hand Ohlin's criticism induces Keynes to pay more attention to the issue of investment decision financing, on the other hand he rejects the proposition that investments are financed by *ex-ante* savings (Keynes 1937c, 217). Keynes criticised Ohlin asserting that the liquidity supply that allows the firms to realise their investment decisions cannot come from saving decisions as they depend on investment decisions, but that they depend on the bank decisions:

> The transition from a lower to a higher scale of activity involves an increased demand for liquid resources which cannot be met without a rise in the rate of interest, unless the banks are ready to lend more cash or the rest of the public to release more cash at the existing rate of interest. If there is no change in the liquidity position, the public can save ex ante and ex post and ex anything else until they are blue in the face, without alleviating the problem in the least.… This means that, in general, the banks hold the key position in the transition from a lower to a higher scale of activity.…The investment market can become congested through shortage of cash. It can never become congested through shortage of saving. This is the most fundamental of my conclusions within this field.
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> (Keynes 1937c, 222)[1]

[1] In the works published after the *General Theory* Keynes gives prominence to the process of money creation on the part of banks to finance firm' investment decisions, a phenomenon

Like Keynes, Schumpeter states that the presence of fiat money gives the economy a completely different structure with respect to that of a barter economy. To highlight this change, Schumpeter (1912) distinguishes between a *pure exchange economy* and a *capitalist economy*. A *pure exchange economy* is one based on private property, on the division of labour and on free competition; an economy that always tends to replicate itself unchangingly, or that is in any case subject to very gradual changes that do not alter the structure of the economic system, or by changes triggered by extra-social factors like natural conditions, or by extra-economic social factors like wars, or by consumer tastes. It is an economy in which the production decisions are influenced by saver preferences and in which the principle of consumer sovereignty holds. In a pure exchange economy, money is just an instrument that reduces the transaction costs; its presence does not alter the structure of the economic system. A *capitalist economy*, on the other hand, is an economy characterised by a process of change triggered by internal factors. Schumpeter (1912, 1939) emphasizes that the traditional theory is capable of describing only a *pure exchange economy*, and his aim is to elaborate a theory which can explain the continuous evolution process that is typical of the capitalistic economy and that is generated by two internal factors. First, the changes taking place in production are a consequence of the innovations spawned by entrepreneurs; these innovations might consist in the realisation of a new product, in the adoption of a new production method, or in the opening of new markets. The second key element of the process of economic development is the creation of money by banks through credit; Schumpeter states that credit:

> …is the characteristic method of the capitalist type of society – and important enough to serve as its *differentia specifica* – for forcing the economic system into new channels, for putting its means at the service of new ends … it is as clear *a priori* as it is established historically that credit is primarily necessary to new combinations…
>
> (Schumpeter 1912, 69-70)

The essential role of credit is due to the presence of two elements: 1. the fact that innovations are carried out especially by new men, who do not own the factors of production; 2. the full employment of productive resources. Schumpeter argues that if innovations were realised by existing firms, credit would not be necessary, since, in order to realise

completely overlooked by the *General Theory* in which the store of wealth function of money and money demand are highlighted; in these works he acknowledges that he hadn't dealt with the issues of investment financing in the *General Theory* and fills this gap by specifying a further motive for demanding money: the 'finance motive'; for an analysis on this point see Bertocco 2005.

the innovations, the entrepreneur would use the productions factors already available. Credit becomes a necessary factor for development when innovations are made by new entrepreneurs who do not own means of production. He justifies this hypothesis by noting that the introduction of an innovation requires decisions which are completely different from those connected to economic activity in a pure exchange economy; for this reason, innovations will not normally be brought in by the persons who manage the existing firms (see Schumpeter, 1912, ch. III). In order to underline this point, Schumpeter (1912, 74) defines as entrepreneurs only those economic agents who introduce innovations. The second factor that makes the role of credit very important is the full employment hypothesis (Schumpeter 1912, 67; on this point see Oakley 1990). Schumpeter stresses that the innovations are not realised by using unemployed production resources, but rather by using the existing resources in a different way. Credit is the instrument that makes it possible to realise innovations; banks, through the creation of bank money, transfer to the innovators-entrepreneurs the purchasing power which is necessary to divert the resources from their traditional uses. By creating money to finance the innovators-entrepreneurs, the banks alter the distribution of the ownership of the means of production. The instrument which allows the ownership of the means of production to be transferred to the innovator entrepreneurs is the inflation triggered by the fact that the demand for means of production of the innovator-entrepreneurs is added to that of the already existing firms; this increase in the demand with respect to a constant supply of productive services causes an increase in the price of services which enables the innovator to divert resources from their current allocation.

Schumpeter underlines that in a capitalistic economy, banks do not lend purchasing power that has been given to them by savers, but rather they create substitutes of legal-tender money which have the same functions as legal-tender money (see Schumpeter 1954, 1114). In Schumpeter's view the main players in the credit market, therefore, are not the savers and the firms, but banks and firms.[1] He observes that in order to describe the working of a capitalist economy it is necessary to elaborate a theory based on a double heresy concerning money:

> …first to the heresy that money, and then to the second heresy that also other means of payment, perform an essential function, hence that processes in terms of means of payment are not merely reflexes of processes in terms of goods.
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> (Schumpeter 1912, 95)

[1] «The banker … is not so much primarily a middleman in the commodity 'purchasing power' as a *producer* of this commodity. …He is essentially a phenomenon of development… He make possible the carrying out of new combinations, authorises people, in the name of society as it were, to form them. He is the ephor of the exchange economy.» (Schumpeter 1912, 74).

We can conclude that from the works of Keynes and Schumpeter a common credit theory emerges which is profoundly different from the theory defined by the AI approach. According to the AI approach the credit market has similar characteristics to that of Akerlof's used car market: a) as in the used car market, in the credit market there are two groups of individuals who propose to make an exchange. In the case of the credit market, the subject of the exchange is the real or monetary resources put aside by savers; b) as in the case of the used car market, the presence of asymmetric information hinders the direct exchange between savers and firms and stimulates the emergence of intermediaries who specialise in evaluating the quality of the goods exchanged. The presence of banks constitutes a phenomenon that logically follows the presence of savers and debtors, one which emerges only if asymmetric information exists. The use of fiat money has no effect on the nature of the credit market; both in the case in which commodity money is used and in the case in which fiat money is used, the object of the credit is the resources set aside by savers. Keynes and Schumpeter instead maintain that: a) the object of credit is not saving but the money created by the banks; b) the credit market is based on the relationship between banks and firms and not on the saver-investor relation. While the AI approach considers credit as a phenomenon that is independent of the presence of banks, Keynes e Schumpeter instead hold that the presence of banks alters the nature of credit and the relation between saving and credit.[1] Keynes and Schumpeter highlight the process of money creation that takes place within the credit market; a process which is wholly overlooked in the AI approach, under which it is assumed that the banks transfer the savings obtained from savers to the firms.

[1] The conception of credit that characterizes the AI approach coincides with the one that Schumpeter attributed to economists at the beginning of the twentieth century: «…[for a] typical economist, writing around 1900 … credit is quite independent of the existence or non-existence of banks and can be understood without any reference to them. …The public is … the true lender. Bankers are nothing but its agents, middlemen who do the actual lending on behalf of the public and whose existence is a mere matter of division of labor… They add nothing to the existing mass of liquid means, though they make it to do more work» (SCHUMPETER 1954, 1113). In contrast, Schumpeter maintains that the presence of banks: «…alters the analytic situation profoundly and makes it highly inadvisable to construe bank credit on the model of existing funds' being withdrawn from previous uses by an entirely imaginary act of saving and then lent out by their owners. It is much more realistic to say that the banks 'create credit', that is, that they create deposits in their act of lending, than to say that they lend the deposits that have been entrusted to them. And the reason for insisting on this is that depositors should not be invested with the insignia of a role which they do not play. The theory to which economists clung so tenaciously makes them out to be savers when they neither save nor intend to do so; it attributes to them an influence on the supply of credit' which they do not have. The theory of 'credit creation' … brings out the peculiar mechanism of saving and investment that is characteristic of fullfledged capitalist society and the true role of banks in capitalist evolution. …this theory therefore constitutes a definite advance in analysis.» (SCHUMPETER 1954, 1114).

In recent years two theoretical approaches, the monetary circuit approach and the endogenous money approach have attributed particular importance to the process of bank money creation. The most significant aspect of the monetary circuit approach is its highlighting of the fact that the presence of bank money is a necessary condition to explain the existence of distinct social groups who carry out different functions that depend on their relation with banks.[1] The first modern formulation of the endogenous money theory can be found in the works of Kaldor published in 1970s.[2] He intended the endogenous money theory to be an instrument for resisting the spread of the monetarist counter-revolution. He underlines that the monetarist theory is valid only in the presence of three conditions: a) that money supply and demand are independent variables and the supply of money is an exogenous variable; b) that the variations in the supply of money, given the money demand, cause a corresponding variation in the aggregate demand; c) total production is independent of the aggregate demand, hence variations in expenditures will influence the price level (Kaldor and Trevithick 1981, 2; Kaldor 1982, 23). Kaldor (1985, 7-8) asserts that these conditions exist only in a system that uses commodity money. In a world in which a fiat money such as bank money is used, money is created by banks to meet the public's demand for liquidity, so an excess of money supply cannot occur. He stresses that the theory of endogenous money applies to a world that uses a fiat money consisting of bank money created by means of a credit contract through which the banks finance the expenditure decisions of some economic agents. The credit phenomenon therefore constitutes the core element of the endogeneity theory elaborated by Kaldor and the post-Keynesians. As Palley notes

[1] Graziani 2003, 18-19 states that: «…any theory based on an individualistic approach is necessarily confined to microeconomics and is unable to build a true macroeconomic analysis… any theory based on an individualistic approach have in common the definition of macroeconomics as the result of an aggregation performed on a microeconomic model and not as an independent analysis based on new and different assumptions. In the perspective of circuit theory, a simple aggregation of the individual behaviour functions doesn't turn a microeconomic model into a true macroeconomic theory.…circuit theorists introduce a preliminary distinction between producers and wage earners, producers having access to bank credit and wage earners being excluded from it. The two groups enter the market having different initial endowments. Entrepreneurs, being admitted to bank credit, can rely on a potentially unlimited purchasing power, while wage earners can only dispose of as much money as they have previously earned». See also Graziani 1996; Deleplace and Nell 1996; Fontana 2000; Parguez and Seccareccia 2000; Rochon 2003; Gnos 2006; Realfonzo 2006.

[2] Kaldor's analysis triggered an outpouring of comments and studies; see for example: Rousseas 1986; Arestis 1988; Moore 1988; Rogers 1989; Nell and Semmler 1991; Lavoie 1992, 2006; Carvalho 1993; Cottrell 1994; Musella and Panico 1993, 1995; Davidson 1994, 2002; Hewitson 1995; Howells 1995; Deleplace and Nell 1996; Dow 1997, 2006; Harcourt and Riach 1997; Rotheim 1998; Wray 1990, 1998; Rochon 1999; 2003, 2006; Fontana 2000; 2003; Smithin 2000; Bertocco 2001, 2006; Dalziel 2001; Palley 2002; Cavalieri 2004; Docherty 2005.

(2002, 154): «…the post-Keynesian innovation is not the distinction between exogenous and endogenous money, but rather the construction of endogenous money in terms of bank lending».

I believe that the specification of the process of bank money creation allows us to focus on aspects of the non neutrality of money that were not considered by the liquidity preference theory and, further, that the works of Keynes published between 1937 and 1939, and those of Schumpeter, enable us to define significant elements that distinguish a *monetary economy* which are not generally highlighted with sufficient intensity either by the monetary circuit approach or the endogenous money approach. In particular, we can identify three elements that characterise a *monetary economy* and which will be analysed in the following sections: a) the importance of the dimension of uncertainty; b) the social function of banks; c) the monetary nature of capital, profits and interest rates.

2.2. *The dimension of uncertainty*

As is widely known, Keynes (1937a) states that the fundamental difference between his own theory and the classical one is the hypothesis introduced about the way the expectations regarding future results of economic decisions are specified. The classical theory assumes that it is possible to objectively represent these results by using tools of financial mathematics and probability theory. In contrast, Keynes (1937a) assumes that there are no objective methods that allow the future results of investment decisions to be represented; these decisions are taken in conditions of uncertainty.[1] In the *General Theory* the presence of uncertainty is the necessary condition for attributing importance to the store of wealth function of money and for defining the interest rate as: «…the premium which has to be offered to induce people to hold wealth in some form other than hoarded money.» (Keynes 1937a, 116). This definition of the interest rate allows Keynes to state that the economic system is subject to strong fluctuations caused by the instability of investments. Keynes (1937a, 119), in fact, states that, in the presence of uncertainty, the liquidity preference curve assumes such features in terms

[1] «By 'uncertain' knowledge, let me explain, I do not mean merely to distinguish what is known for certain from what is only probable. The game of roulette is not subject, in this sense, to uncertainty; nor is the prospect of a Victoria bond being drawn. Or, again, the expectation of life is only slightly uncertain. Even the weather is only moderately uncertain. The sense in which I am using the term is that in which the prospect of a European war is uncertain, or the price of copper and the rate of interest twenty years hence, or the obsolescence of a new invention, or the position of private wealth owners in the social system in 1970. About these matters there is no scientific basis on which to form any calculable probability whatever. We simply do not know.» (Keynes 1937a, 113).

of stability and interest rate elasticity that it causes investment fluctuations to generate strong income variations. In conclusion, in the *General Theory* uncertainty is an exogenous dimension whose presence does not depend on the existence of money.

Circuit writers and post-Keynesians have very different opinions about the importance of uncertainty. In particular, the distance between Circuitists and the supporters of the structuralist version of the endogenous money theory is quite profound. Structuralists, such as Dow (1996, 1997, 2006), maintain that the liquidity preference theory constitutes the central nucleus of the Keynesian monetary theory and that the presence of uncertainty is a necessary condition in order to justify the store of wealth function of money. The specification of the bank money creation process does not modify in a substantial way the conclusions of the *General Theory;* this process only makes it possible to define the correct meaning of the exogenous money assumption used by Keynes: the money supply is endogenous to the banks and the monetary authorities and exogenous to the private sector.[1] In contrast, as Rochon (2003, 124) observes, Circuitists: «…do not link the existence of money to uncertainty. Money exists irrespective of whether there is uncertainty».

I think that the observations of Keynes and Schumpeter about the role of bank money and the credit market make it possible to explain the importance of the uncertainty dimension starting from the specification of the nature of money; in other words, to reverse the relation between uncertainty and money and show that the use of a bank money is the element that allows us to justify the presence of uncertainty. In this case uncertainty is not merely an exogenous dimension, but it becomes an element whose presence is explained by the presence of bank money.

The causal sequence that links bank money and uncertainty is based on two points. The first one is the relation between bank money and investment decisions; the second one is the relation between investments and uncertainty. As we have seen in the first part, Keynes and Schumpeter assert that the diffusion of fiat money radically changes the structure of the economic system. Keynes states, as we have recalled, that the diffusion of bank money alters the nature of the exchanges. When fiat money is used as bank money, it is not necessary to own goods in order to obtain money, but it is necessary to satisfy the banks' criteria in granting credit. The agents who obtain money are the firms that seek liquidity in order to realise their investment decisions; we can maintain that the specification of the credit market allows us to explain how in-

[1] See Dow 1996, 1997, 2006; Bertocco 2006.

vestments are financed in a world in which the relation between investment decisions and saving decisions is the reverse of what the classical theory holds. By explicitly considering the presence of bank money it is possible to state that in a *monetary economy* the credit supply and investment decisions are independent of saving decisions. Keynes in his reply to Ohlin underlines, as we have seen, that investments can be conditioned by the lack of liquidity but not by the lack of saving; this allows us to conclude that the presence of bank money and not of saving is the necessary condition for obtaining a significant investment flow.[1]

The second point of the sequence that links bank money and uncertainty is the relation between investment decisions and uncertainty. Keynes underlines this relation when he accuses the classical theory of being able to describe just an economy without uncertainty based on consumption decisions, and of not being able to explain the workings of an economy in which investment decisions have a substantial bearing. Keynes associates the presence of uncertainty to the existence of a high proportion of investment decisions.[2] Naturally it would be excessive to claim that the classical theory describes an economic system based only on consumption decisions; instead, what divides the classical theory from the Keynesian theory is the specification of the characteristics of investment decisions. The classical theory considers investments as a phenomenon that depends on saving decisions and is independent of the presence of bank money. This conception can be applied to a *corn economy* in which corn is at the same time, according to Smith (1776), a consumer good if it is used to maintain an unproductive worker, that is a worker involved in the production of services in favour of the upper classes, or a capital good if instead it is used as wages to pay the productive worker, i.e. a worker involved in producing corn. Or it can be applied to the fishermen's economy described by Böhm-Bawerk (1884) to illustrate his interest rate theory; in both cases they are economies that produce just one good.

What distinguishes the investments that characterise the *monetary economy* described by Keynes is the fact that they are closely associated

[1] Many post-Keynesians underline that the specification of the credit market makes the Keynesian theory's causal relationship between investments and savings transparent (see Kaldor and Trevithick 1991; Trevithick 1994; Chick 1986, 1997, 2000; Dalziel 1996).

[2] «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, 113).

with the dimension of uncertainty. Perhaps the most effective way to illustrate the features of investment decisions that characterise a monetary economy and thus to illustrate the relation between investment decisions and uncertainty is in the use of the concept of innovation that is at the centre of Schumpeter's analysis. As we have seen, Schumpeter holds that innovations constitute the first endogenous factor that brings about the process of change characterising a capitalist economy.

The presence of innovations highlights the dimension of uncertainty. In an economy in which just one good is produced, as in the case of Smith's corn economy or of the fishermen's economy described by Böhm-Bawerk, the entrepreneurs are sure they will sell everything they produce as the good produced is what assures the survival of consumers. This is not the case when we consider innovations that give rise to the production of new goods: the entrepreneur who makes a new good is not at all sure if he will be able to sell everything he produces, thus making a satisfactory profit, since the innovation changes the existing world and this makes it very difficult to forecast the reaction of consumers to the new proposal. Schumpeter believes that the introduction of innovations requires very different skills from those required for managing an existing business because an entrepreneur-innovator must take decisions without having solid points of reference that enable him to predict the consequences of his own decisions; he describes the behaviour of the innovator-entrepreneur with arguments that are very similar to the ones used by Keynes.[1]

We can consider investment decisions as the tool through which innovations are introduced, so the Keynesian entrepreneur who takes the investment decisions coincides with the schumpeterian entrepreneur who introduces innovations. This point is emphasized by Davidson (2000) who describes the differences between mainstream and keynesian theory by distinguishing between ergodic systems (or immutable-reality models) and non-ergodic systems (or transmutable-reality sys-

[1] «…every step outside the boundary of routine has difficulties and involve a new element. …outside these accustomed channels the individual is without those data for his decisions and those rules of conduct which are usually very accurately known to him… Of course he must still foresee and estimate on the basis of his experience. But many things must remain uncertain, still others are only ascertainable within wide limits, some can perhaps only be 'guessed'. In particular this is true of those data which the individual strives to alter and those which he wants to create. …Carrying out a new plan and acting according to a customary one are things as different as making a road and walking along it. …As military action must be taken in a given strategic position even if all the data potentially procurable are not available, so also in economic life action must be taken without working out all the details of what is to be done. Here the success of everything depends upon intuition, the capacity of seeing things in a way which afterwards proves to be true, even though it cannot be established at the moment, and of grasping the essential fact, discarding the unessential, even though one can give no account of the principles by which this is done.» (Schumpeter 1912, 84-85).

tems). With the first term, Davidson refers to economic systems that replicate themselves unchangingly, or that are subject to alterations predictable in probabilistic terms. With the second term, Davidson refers to systems characterised by a process of continuous transformation triggered by investment decisions; he declares that the presence of the Schumpeterian entrepreneur is a necessary element of a non-ergodic system.[1] In this case, investment decisions do not consist merely of adding to the existing stock of capital goods new units of capital identical to the existing ones, *i.e.* they do not simply consist in the production of new fishing boats, but we can consider them 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. The introduction of innovations determines the continuous evolution that characterises a monetary economy, a process which prevents us from considering the past and present as a base on which to formulate forecasts in probabilistic terms about the future results of economic decisions; in such a system the firms and wealth owners act in conditions of uncertainty.

Besides Davidson, several economists have emphasised the desirability of integrating the Keynesian theory of income determination with Schumpeter's theory of economic development (see, for example, Minsky 1986, 1993; Morishima 1992; Goodwin 1993; Vercelli 1997). The synthesis of the theories of these two great economists allow us to overcome the static structure which marks Keynes's theory. Economists such as Kalecki (1971), Kaldor (1985) and Hicks (1989) have shown how Keynes's analysis neglects the consequences of investment decisions on the overall production capacity of the economy. A Keynes-Schumpeter approach is characterised by the extension of the short term Keynesian theory by using Schumpeter's view on the effects of innovations on the evolution of the economic system. This approach accepts the Keynesian theory of income and abandons the hypothesis of full employment assumed by Schumpeter. Accepting the Keynesian theory of income and the principle of effective demand, we can underline that innovations are carried out, different from what was specified by Schumpeter, by investment decisions; in this case it is not necessary to assume the

[1] «If entrepreneurs have any important function in the real world, it is to make crucial decisions. Entrepreneurship … by its very nature, involves cruciality. To restrict entrepreneurship to robot decision-making through ergodic calculations in a stochastic world… ignores the role of the Schumpeterian entrepreneur – the creator of technological revolutions bringing about future changes that are often inconceivable to the innovative entrepreneur. Entrepreneurs do not merely discover the future, they create it… Probability models are a beguiling representation of decision-making only in a world where only routine decisions are made … these models cannot explain the essential creative function of entrepreneurial behaviour in a Keynes-Schumpeter world where the reality is transmutable.» (Davidson 2000, 113).

presence of full employment of the productive resources (see, for a more detailed analysis: Bertocco 2007).

Bearing in mind Keynes's and Schumpeter's observations about the role of banks in the financing of firms' investments, we can maintain that the spread of bank money is linked to the development of an economy in which investment decisions become relevant and in which the presence of uncertainty becomes an essential element; an economy in which investment decisions do not entail a mere increase in the production capacity, but imply a structural modification of the production system, the results of which cannot be objectively predicted. From this viewpoint, uncertainty is not merely an exogenous dimension, but it becomes an element whose presence is explained by the spread of bank money. This interpretation of the relation between bank money and uncertainty, based on the arguments of Keynes and Schumpeter, can be considered as a possible response to what Rochon (2006, 176) considers:

> The challange … to develop a theory of bank credit supply … that is consistent with some fundamental post-keynesian arguments, namely endogenous money, the importance of aggregate demand and the existence of uncertainty.

2.3. *The social role of banks*

The Keynes-Schumpeter approach leads us to define the role of banks in a completely different way from the AI approach which assumes that the credit market works in the same way as Akerlof's used car market. It assumes that it is possible to attribute values representing the expected yield and the degree of risk to the future yield of each investment project; the asymmetric information between debtor and creditor can relate to one or both of these values. The role of the bank is to collect information about the expected yield and the risk of the investment project, just as Akerlof's merchant assesses the quality of the used cars. Banks make it possible to eliminate the obstacles that the presence of imperfect information creates, in the real world, to the achievement of the results which characterise the ideal world with perfect information in which the savers directly finance firms.

What makes the world analysed by Keynes and Schumpeter different from the one described in the asymmetric information approach is the presence of uncertainty whose importance, as we have seen in the previous pages, is connected to the link between the presence of bank money, investment decisions and innovations. A world with uncertainty is significantly different from a world with asymmetric information since assessing the future results of an innovation is much different from gauging the quality of a used car. In a world with asymmetric information the different evaluations of individuals about the quality of

a used car or the future returns on a given investment project depend only on the different information which individual agents have at their disposal; if all the operators had the same information they would make the same evaluations.

Many economists have claimed that the asymmetrical information approach does not give any importance to the Keynesian uncertainty;[1] some believe that the two approaches are complementary because there are issues that can be dealt with using the hypothesis of asymmetric information.[2] This is certainly true, but I do not believe on the basis of what has been seen to date, that the hypothesis of asymmetric information is the significant element on which to found a credit theory and an explanation of the role of banks and more in general, of the financial structure.

In the presence of uncertainty there are no objective criteria that allow the future returns of investment projects to be evaluated; even the banks act in conditions of uncertainty. They evaluate the applications for financing presented by firms on the basis of discretionary criteria, therefore the banks share with the entrepreneurs the responsibility of deciding which investments are carried out; by their decisions they influence the development of the economic system. The function of banks emerges when the consequences of the decisions of banks on the evolution process of the capitalist system are considered; this evolution process is generated by investment decisions financed via creation of bank money. This point is effectively emphasised by Morishima (1992, 20):

> …the vision that the financial sectors play a crucial role in the economy is common between Schumpeter and Keynes. It then follows that the path the economy will trace out depends on the attitudes of the financial organizations. It is obvious that the capital goods accumulated when they support, say, the electronics industry would be completely different from those accumulated when they support the ship buildings industry. In the long run the economy will turn out to be of a greatly different kind according to which of these options is taken.

Morishima's statement could seem coherent with the AI approach. The supporters of this approach also acknowledge that banks take on the responsibility of selecting the investment projects that the firms intend to carry out, and they further recognise that the banks' choices are different from those that the savers would have made if they themselves had directly financed the firms. We should add, however, that the AI approach leads to the conclusion that the banks make the same choices

[1] See, for example, Dymski 1993, 1994, 1998; Isemberg 1998; Dow 1998.

[2] «…asymmetric information is not an economically trivial or artificial assumption; to the contrary some important classes of economic interactions embody asymmetric information.» (Dymsky 1993, 51); see also Fazzari 1992, Fazzari and Variato 1994.

that the savers would make if they had the same information as the banks. This assertion would be correct if, bearing in mind the example of Stiglitz and Weiss set out earlier, it was assumed that the object of credit was seeds to be assigned to the owners of plots of land having different productivity. In that case we could assume that banks are able to recognise the different levels of productivity of the plots of land and that they are able to assign the seeds to the owners of the most productive plots, willing to pay higher interest rates. We could further conclude that the owners of the land and the owners of the seeds could carry out the same distribution of seeds that the banks do, if they had the same information about the productivity of the land. In general, this thesis would be correct if it were assumed that the credit market worked in the same way as Akerlof's used car market; if we assume that it is possible to acquire information to assess the quality of an investment project in the same way in which we gather the information necessary for evaluating the quality of a used car, then we could conclude that the banks allocate savings among firms by making the same decisions that savers would make if they had access to the same information.

This conclusion does not at all reflect the view of Keynes and Schumpeter. Indeed, they state that the credit market is based on the relation between banks and firms; banks cannot make the same decisions that savers would make as the object of the credit is the money that banks create. Moreover in a world characterised by the presence of uncertainty it is not possible to assert that bank decisions reproduce the results that characterise the ideal world, without imperfections, in which savers directly finance firms; in the world described by Keynes and Schumpeter, by creating new money, the banks finance investment decisions through which the firms introduce their innovations. They are crucial decisions, which alter the structure of the economic system and whose results cannot be predicted in probabilistic terms.

We can highlight the differences between the two views by stating that the Keynes-Schumpeter approach underlines the 'social role' of banks. The awareness of the social role carried out by banks is particularly strong in Schumpeter (1912) who notes that in a capitalist economy the principle of the consumers' sovereignty in accordance to which the tastes and the preferences of the consumers drive the decisions of production of the enterprises, is not valid. The specification of the role of the credit in the process of realization of innovations allows us to conclude that the consumers' choices are conditioned by the decisions of the entrepreneurs and of the banks; Schumpeter (1939, 47) illustrates very effectively this point:

> 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 electronic lamps or rayon stocking, 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.

The evolution of the production system is conditioned by the innovations introduced by entrepreneurs and not by the desires of consumers (Schumpeter 1912, 65).

The specification of the social role of the banks prompts us to study their behaviour and the motivations for their decisions. If the role of banks were analogous to that of Akerlof's merchants who have to evaluate the quality of used cars, or that of the intermediary who, in the example of Stiglitz and Weiss, must evaluate the productivity of the plots of land, then the conclusions about their behaviour would be immediate. The banks must show that they are able to correctly evaluate the quality of the used cars or the plots of land; otherwise, the owners of the cars and of the plots of land, the 'savers', would not have any reason to bear the costs of intermediation and the incompetent banks would be expelled from the market.

In the world described by Keynes and Schumpeter, characterised by the presence of uncertainty and the transformation process produced by innovation, it is more difficult to define the behaviour of the banks. Schumpeter specifies two fundamental points concerning the behaviour of the banks. In the first place the banker must know how to assess the characteristics of the investment project to be carried and the personality of the entrepreneur by establishing continuative relations with him. In the second place he observes (Schumpeter 1939, 90-92) that as the banks act on behalf of society and not of particular agents, they must be independent of firms and political power. Schumpeter (1939, 91) notes that if the banks behave improperly, the consequences can be disastrous; the wrong decisions of the banks are «…sufficient to turn the history of capitalist evolution into a history of catastrophes».

Schumpeter's remarks are in line with some recent theoretical developments. An example of an unpopular decision made by independent banks is credit rationing. The possibility that a rationing equilibrium occurs within the credit market is an important result of the AI approach. As is well known, this result depends on the fact that, as Akerlof points out in his analysis of the used car market, in the presence of asymmetric information the quality of the good exchanged in a particular market, depends on the price; in the case of the credit market the degree of riskiness of the loans granted by the banks varies in accordance with the interest rate applied. Due to the adverse selection and incentive effects, an increase in the interest rate can bring about a sufficient increase

in the riskiness of the loans to cause a reduction in the banks' expected profits. If there is an excessive demand for credit at the interest rate which maximises the banks' expected profit, there will be no reason for them to raise the interest rate, as such a decision would trigger a drop in their expected profits; in such a case, a rationing equilibrium occurs. This explanation of the presence of credit rationing is based on the hypothesis that information asymmetries exist between banks and firms, that is to say, it is based on the hypothesis that banks do not have all the information possessed by firms (see Stiglitz and Weiss 1981, 393). Furthermore, we note that banks ration credit to the firms that, in their opinion, are identical to those to which they grant credit.[1]

More in line with Keynes's and Schumpeter's approach, I believe, is a different explanation which considers the phenomenon of credit rationing a consequence of the presence of uncertainty. In conditions of uncertainty, the decision to ration credit stems from the fact that banks and firms have different expectations about the future results of the same investment project. Banks may view the prospects of a given investment project in a less optimistic light than the entrepreneurs, or they may be more risk averse, and they reject projects which they consider insufficiently profitable or particularly risky. In this case banks ration credit to firms that they deem to have different characteristics from those firms that do get financing (see Tobin 1980; Lavoie 1992, 1996; Dow 1996, 1997; Wolfson 1997; Rotheim 2006).[2]

Schumpeter's remarks about the disastrous effects of the improper behaviour of banks have also been taken up in some contemporary studies. We can consider two examples. The first is the analysis carried out by Minsky (1975, 1980, 1982), who had been a student of Schumpeter, that highlights the crucial role of the banks in explaining the instability of capitalism. Minsky's analysis of the financial nature of the instability of capitalism is closely connected to the observations made by Keynes and Schumpeter on the importance of bank money, credit, uncertainty. Keynes (1937a) maintained that in the presence of uncertainty the evaluation criteria used to take economic decisions are subject to sudden changes. We can therefore say that also the banks' evaluation criteria can change suddenly causing considerable instability in the economic system. Minsky (1980, 1982) explains that the alternation of phases of boom and bust is due to changes in banks' criteria in appraising firms' investment projects. The adoption of permissive criteria drives

[1] For a more detailed analysis on this point see Bertocco 2004.

[2] Rochon uses the expression 'credit constraint' instead of credit rationing to emphasize that the phenomenon of rationing is not provoked by the scarcity of funds: «For post-Keynesians, credit is constrained not because demand is greater than supply, but because banks become very pessimistic and they *choose* not to lend to certain borrowers.» (Rochon 2006, 182)

boom phases, encouraging firms to increase their borrowing and, consequently, their debt repayment commitments; this creates the conditions for a crisis when events prevent firms from honouring their repayment obligations. There is an endogenous tendency towards instability, since, in normal periods firms' ability to repay their loans constitutes a confirmation of the validity of their forecasts, and induces banks to believe that they applied excessively rigid criteria in evaluating the firms' requests for credit. The upshot of this is that firms will be encouraged to consider more risky investment projects, and banks will be led to adopt less rigid selection criteria. This behaviour transforms a normal situation into a boom fuelled by speculative investments.

It is my belief that the use of the schumpeterian concept of innovation can bolster the explanation of the alternating boom and bust phases. The introduction of innovations is a phenomenon capable of raising profit expectations owing to the conviction that a new era replete with unprecedented opportunities, arising out of unfolding events, is afoot.[1] The anticipation of a new era founded on innovations can render any project, even the most unlikely one, worthy of financing, as long as it is connected with the new innovating revolution.[2] Moreover, the financial system can encourage the speculative process by creating new financial instruments, thereby triggering an explosion in the financial structure with respect to the real one.[3]

The second example is the analysis carried out by Rajan and Zingales (2003a, 2003b, 2003c). They note that banks may fail to fulfil the function described by Schumpeter, and become an obstacle to the process of development. Schumpeter points out that the entrepreneurs' innovations break the existing equilibrium and thus trigger the reaction of the agents who feel threatened by the effects of the innovation. Hence, the entrepreneurs and the banks must overcome: «…the reaction of the social environment against one who wishes to do something new…» (Schumpeter 1912, 86-87). Rajan and Zingales (2003a, 23-24) observe that a financial structure characterised by the presence of banks that grant

[1] Perez 2002, 2007 uses the Schumpeterian concepts of innovation and credit to explain the occurrance of boom phases marked by phenomena of speculation, financial innovation and «irrational exuberance».

[2] With the introduction of innovations: «Opportunities grow explosively. Innumerable entrepreneurs will offer their projects to the also growing number of financiers. If they seem to follow the new paradigm, all projects, good and bad, honest and crooked, are likely to have access to the required funds.» (Perez 2007, 792)

[3] «…financial capital… will now innovate in ways that turn the stock market into a casino, decoupling from the real economy and building extraordinary paper mountains. It will speculate with whatever is at hand, from gold to real estate, and will also invent all sort of bonds and derivatives, inverted pyramids and even less legitimate schemes. High profit expectations will be kept alive by the financial wizards in a growing atmosphere of 'irrational exuberance'» (Perez 2007, 793)

credit to firms on the basis of a lasting relationship over time may become an obstacle to the introduction of innovations by new entrepreneurs as the banks tend to protect the interests of the existing firms threatened by innovations.[1] They underline bank tendency to finance existing firms rather than the new agents who intend to carry out innovations; the innovations are financed by financial institutions such as venture capitalists. Many studies highlight the fact that bank credit is not a very suitable instrument for financing the particularly risky investment projects that, if successful, could yield high returns. Indeed, in these cases the banks would have to apply exceedingly high interest rates – above the legal limits for usury – that would constitute an intolerable burden for firms. In fact, venture capitalists finance firms by underwriting shares, counting more on the possible gain in capital account to be obtained by the sale of shares than on the dividends.[2]

This analysis raise a problem: if, following Keynes's and Schumpeter's theory, the importance of the monetary function played by banks is acknowledged, while on the basis of Rajan and Zingales's analysis it is recognised that in contemporary economies innovations are not financed by banks but mainly by agents such as venture capitalists, then we must ask if also these agents are capable of carrying out a monetary function similar to the one that characterises the banks.

2.4. *Are banks special?*

At first sight it would seem that there is a particular characteristic that distinguishes banks from financial institutions, i.e. the fact that their liabilities are used as a means of payment; thus banks can finance a firm by authorising it to issue cheques, whereas other financial institutions lend up what they are able to collect. Unlike in the case of banks, the action of the non-bank financial institutions seems to presuppose the existence of savers and firms: these institutions collect financial resources from the savers and they lend them to firms. An economic system based on non-bank financial institutions therefore seems to possess characteristics which are coherent with the neoclassical theory of credit according to which saving decisions constitute the original phenomenon determining the credit supply and, thus, investment decisions.

It is possible to demonstrate the lack of grounds for this conclusion, using two arguments. In the first place, we can observe that the wealth owners' decisions to trade their money stock in exchange, for example, for shares issued by a venture capital society does not entail a reduction

[1] For a critical analysis of Rajan and Zingales's thesis, see Bertocco 2008.

[2] See, for example, Gompers 1995; Berger and Udell 1998; Freel 2000; Mason and Harrison 2001; Carpenter and Petersen 2002.

in the aggregate demand since it is not the result of a saving decision, but rather the consequence of the decision to change the composition of wealth. Even if intermediaries do not create new money, their action cannot be analysed within the framework of the neoclassical theory that sets against the greater demand for goods by the subjects who obtained the financing, the lower demand for goods on the part of whoever underwrites the liabilities of the intermediary. Although he can in a general sense be defined as a saver since his wealth is a consequence of the saving decisions made in previous years, with this decision whoever underwrites the liabilities of the intermediary is not choosing to give up spending a part of his income, but he is merely choosing to alter the composition of his wealth. We can conclude that the firms' investments effects on aggregate demand are independent of the way in which investments are financed: by creating new money or by existing money. The choice of the form of financing will affect only the composition of wealth owners' wealth.

This conclusion has been well underlined by Kaldor (1982) when he criticises the monetarist theory. Kaldor maintains that there are no reasons to expect a stable relation between money and nominal income, as we can observe, on the one hand, changes in money stocks without any variations of aggregate demand, and on the other hand, changes of the aggregate demand without any change in the stock of money. Kaldor's belief that there is no relation between the quantity of money and expenditure decisions is also evident from his views on the effects of different forms of financing public expenditure (for a more detailed analysis see Bertocco 2001). He maintains that the expansionary effects of an increase in public spending are independent of the way in which such increase is financed. This contrasts sharply with the monetarist view that only the financing of public spending through the creation of new money triggers an increase in aggregate demand, while in the case of the issue of bonds the increase in demand from the public sector is offset by the lower demand on the part of holders of state bonds.[1]

[1] «…The main monetarist thesis is that the net dissaving of the public sector is 'inflationary' in so far as it is 'financed' by the banking system and *not* by the sale of debt (bond or gilts) to the public. But this view ignores the fact that the net saving, or net acquisition of financial assets of the *private* sector will be the same irrespective of whether it is held in the form of bank deposits or of bonds. The part of the current borrowing of the public sector which is directly financed by net purchases of public debt by the banking system – and which has its counterpart in a corresponding increase in bank deposits held by the non-banking private sector – is just as much part of the net saving of the private sector as the part which is financed by the sale of gilts to the private sector. When the public sector's de-cumulation of financial assets increases (i.e. the public sector's deficit increases) there must be an equivalent increase in the net savings of the non-bank private sector… which will be the same irrespective of how much of that saving takes the form of purchases of gilts and how much takes the form of an increase in deposits with the banking system. The decision of how much of the increment in private

Secondly, in order to show that the presence of non-bank financial institutions does not presuppose that saving decisions determine the credit supply, we can use the arguments Schumpeter made to criticise the theory of credit accepted by the majority of economists in the early 1900s. He takes as an example of the traditional theory Cannan's view that the nature of bank deposits is the same as deposits of real goods that are entrusted to an agent who undertakes to look after them. Schumpeter (1954, 1113-1114) criticises Cannan's thesis, noting that there is a fundamental difference between bank deposits and deposits involving real goods. Whoever deposits an object renounces using that object until the moment it is returned; he shall get a claim that will allow him to obtain the return of the object deposited, but this claim cannot of course perform the same function as the object deposited. This is not true in the case of the bank deposit; in fact, in this case, the depositor receives from the bank a claim that he can use as a means of payment and that therefore performs the same function as gold coin. Hence, Schumpeter concludes that in the case of money, the depositors:

> …continue to spend, paying by check instead of by coin. And while they go on spending just as if they had kept their coins, the borrowers likewise spend 'the same money at the same time'. Evidently this phenomenon is peculiar to money and has no analogue in the world of commodities. No claim to sheep increases the number of sheep. But a deposit though legally only a claim to legal-tender money, serves within very wide limits the same purposes that this money itself would serve. …this alters the analytic situation profoundly and makes it highly inadvisable to construe bank credit on the model of existing funds' being withdrawn from previous uses by an entirely imaginary act of saving and then lent out by their owners. It is much more realistic to say that the banks 'create credit', that is, that they create deposits in their act of lending, than to say that they lend the deposits that have been entrusted to them.
>
> (Schumpeter 1954, 1114)

This view allows us to analyse the role of venture capitalists and to underscore that even if venture capitalists do not create new money, their action cannot be analysed within the framework of the neoclassical theory. Let us suppose that the venture capitalists obtain the necessary financing funds from agents who decide not to consume part of their income and underwrite quotas of venture capital firms, that is from savers. Following Schumpeter's reasoning, we can observe that the savers who decide to finance a venture capitalist do not renounce demanding goods at all because at any time they can sell their shares in the

wealth is held in one form or another is a portfolio decision depending on relative yields, the expectation of future changes in interest rates (long and short), and the premium which the owners are willing to pay for 'liquidity'… But it is a mistake to think that an individual's spending plans … are significantly affected by the decision of how much of his wealth he decides to keep in the form of money (broadly or narrowly defined) as against other financial assets that are easily convertible into money…» (Kaldor 1982, 49-40).

venture capital firms and so, it could be said, use these quotas as a means of payment. Thus, it can be stated that in a financial system in which financial assets can be liquidated with ease, venture capitalists, though not creating bank money, do create new liquidity when they collect money by offering their quotas to savers.

We can conclude that Keynes's and Schumpeter's analysis allows us to highlight an essential function of the financial structure that can be performed by banks or by institutions such as venture capitalists: that of supplying innovating entrepreneurs with the liquidity necessary to carry out their projects, such liquidity supply being independent of saving decisions. The presence of banks or venture capitalists constitutes the necessary condition for carrying out operations that could not take place in a world without a developed financial system in which investments depend on savings.

2.5. *The monetary nature of capital, profits and interest rates*

Keynes and Schumpeter emphasise that the presence of banks and bank money changes the structure of the economic system compared with a barter economy.[1] An important expression of this thesis is represented by the fact that both assert that concepts of capital, profit and interest have different meanings in the two economies. They highlight the monetary nature that these variables take on in a *monetary economy,* that is to say, they note that in such economy the meaning of these variables can be defined only starting from the presence of banks and banks money. Keynes (1933b) uses the distinction put forward by Marx between the sequence good-money-good (G-M-G'), which characterises a *real-exchange economy*, and the sequence money-good-money (M-G-M'), which instead characterises a *monetary economy*, to emphasize the fact that the presence of a fiat money changes the law of production. Keynes underlines that the aim of an entrepreneur is not to produce goods, but to obtain a profit in monetary terms, *i.e.* a positive difference between monetary revenues and monetary costs. This is the same definition used by Schumpeter (1912, 128): «Entrepreneurial profit is a surplus over costs. From the standpoint of the entrepreneur, it is the difference between receipts and outlay in a business…». This apparently trivial definition has an important meaning that can be understood by specifying the concept of capital which emerges from the theory of these two great economists. Schumpeter (1912 117, 123) states that the definition of

[1] This is a point that the supporters of the monetary circuit approach emphatically stress when they claim, as we have seen, that the presence of bank money is a necessary condition for obtaining an economy that is not populated by perfectly homogenous individuals, but by social groups that carry out different functions in relaton to the possibility of accessing credit.

capital as a set of goods used as means of production cannot be applied to a capitalist system because it is a definition that can be adapted to any economic system. Schumpeter's definition reflects the importance that he assigns to bank money in the development process; in fact, he identifies capital with the purchasing power which is made available to entrepreneurs in so that they can carry out their innovations: «We shall define capital … as that sum of means of payments which is available at any moment for transference to entrepreneurs.» (Schumpeter 1912, 122). Also Keynes (1939) highlights the monetary nature of capital by criticising the traditional theory of the process of capital formation which considers capital as a stock of means of production generated by the accumulation of saving flows. Keynes's critique is based on the considerations contained in the reply to Ohlin: the source that finances firms' investments is not savings, i.e. the supply of resources not consumed by savers, but the money created by banks.[1]

By specifying the monetary nature of capital Schumpeter (1939, 80) affirms that profits cannot be considered as the result of the productivity of a particular productive factor; he (Schumpeter 1912, 154) considers the profits a phenomenon that is present only in a monetary economy in which the innovations, financed by the money created by the banks, attribute to the entrepreneurs a monopolistic power that allows him to get a monetary surplus over costs. Profits cannot even be considered as the reward for bearing risk since normally the entrepreneur does not own the means of production, but he obtains them by getting into debt:

> The entrepreneur is never the risk bearer… The one who gives credit comes to grief if the undertaking fails… But even if the entrepreneur finances himself out of former profits… the risk falls on him as capitalist or as possessor of goods, not as entrepreneur. Risk-taking is in no case an element of the entrepreneurial function. Even though he may risk his reputation, the direct economic responsibility of failure never falls on him.
>
> (Schumpeter 1912, 137)

Finally, Keynes and Schumpeter underline the monetary nature of the interest rate; it does not constitute the reward for having renounced consumption as the supply of credit does not coincide with the saving. Schumpeter derives the monetary nature of interest rate from the monetary nature of capital. He criticises the theories that consider the interest rate as a reward for abstinence from consumption or as the compensation for a production factor (Schumpeter 1912, 193; Schumpeter

[1] «Increased investment will always be accompanied by increased saving, but it can never be preceded by it. Dishoarding and credit expansion provides not an *alternative* to increased saving, but a necessary preparation for it. It is the parent, not the twin of increased saving.» (Keynes 1939, 281).

1939, 100), and emphasises that the transaction that generates interest is not the exchange of goods between savers and firms, but the exchange of money taking place on the credit market between banks and firms (Schumpeter 1912, 195). Schumpeter criticises the distinction introduced by Wicksell between the monetary interest which is fixed by banks, and the natural interest rate which corresponds to the rate that would arise on the credit market if capital goods were directly traded.[1] Keynes's analysis too, leads us to not consider as valid the distinction introduced by Wicksell between the monetary and the natural interest rates. Indeed, when introducing the distinction between real-exchange economy and monetary economy, Keynes (1933a, 410) states that it is not possible to apply to a monetary economy the laws that hold for a real-exchange economy. The concept of a natural rate of interest can be applied in a world in which the object of credit is real goods but not in a world in which the object of credit is bank money.

3. Some conclusions about the differences between the two approaches

In conclusion, we can note that the two theoretical frameworks described analyse the role of banks from different perspectives. The AI approach offers a reassuring picture of the working of an economy marked by the presence of a complex financial structure. This financial structure is considered as the response to the imperfections that characterise the real world and that prevent savers from directly financing firms. The presence of a complex financial structure eliminates the negative effects connected with asymmetric information and allows an efficient allocation of savings. It can be concluded that the distinctive element of this approach is the return to the principle of the neutrality of the financial variables, as the function of the financial structure is to ensure that the real world, with its imperfections, reproduces the results that characterise the ideal world without imperfections, in which savers directly finance the firms and the financial institutions have no role at all.

[1] «The necessity of reconciling a nonmonetary theory with obvious facts of the sphere of money and credit is, in particular, responsible for the idea that there are two kinds of interest rates, a 'natural' or 'real' one which would also exist in a barter economy and which represents the essence of the phenomenon, a permanent net return from physical means of production, and a monetary one, which fundamentally is but the former's reflex in the monetary sphere… The roots of this idea reach very far into the past…Its role in the thought of our own time is due to the teaching of Knut Wicksell… For us, however, there is no such thing as a real rate of interest, except in the same sense in which we speak of real wages…the money market with all that happens in it acquires for us a much deeper significance than can be attributed to it from the standpoint just glanced at. It becomes the heart, although it never becomes the brain, of the capitalist organism.» (Schumpeter, 1939, 101).

The Keynes-Schumpeter approach leads us to analyse in a more complicated way the role of the financial structure. This approach underlines, in an analogous way to the Post Keynesians and the supporters of the monetary circuit approach, that bank money, banks and credit market are elements that mark an economy that is completely different from the pure exchange economy to which the principle of the neutrality of the monetary variables is applied. It is an economy in which: 1. the object of the credit market is not the resources saved but the means of payment created by the banks; 2. the credit market is based on the relation between banks and firms and not on the relation between savers and firms; 3. the evolution of the economic system is determined by the innovations that are made through investment decisions that are taken in conditions of uncertainty. These elements make it possible to highlight the social role of the banks, which do not act on behalf of a particular group of economic subjects, the savers, but they act on behalf of the entire society. If the dimension that characterizes the asymmetric information approach is that of the neutrality of the financial structures, the dimension that marks the Keynes-Schumpeter approach is that of consensus: the financial structure is the instrument through which the consensus of society in its entirety is expressed about the innovations that are made through the firms' investments.

The difference between the Keynes-Schumpeter approach and the AI approach can be illustrated by using the concept of path dependence that defines dynamic processes that do not converge towards a position of unique and stable equilibrium, but that produce results which are fundamentally conditioned by events of the past, that is they produce historically conditioned results (David 2001, 2005). The Keynes-Schumpeter approach is coherent with the concept of path dependence and with the analysis of North, who points out that the process of change characterising economic systems is distinguished by subsequent transformations caused not by natural facts, as is the case in the biological world according to Darwinian evolutionary theory, but by the choices of economic agents.[1] In North's view, these transformations do not converge towards an optimal world, but they produce new forms of

[1] «Economic change is a process… In contrast to Darwinian evolutionary theory, the key to human evolutionary change is the intentionality of the players. The selection mechanisms of Darwinian evolutionary theory are not informed by beliefs about the eventual consequences. In contrast, human evolution is guided by the perceptions of the players… Economic change … is for the most part a deliberate process shaped by the perceptions of the actors about the consequences of their actions. The perceptions come from the beliefs of the players – the theories they have about the consequences of their actions – beliefs that are typically blended with their preferences.» (North 2005, viii).

uncertainty that induce the economic agents to take new decisions that change the structure of the economic system giving rise to new uncertainty.[1]

An indirect confirmation of the ability of the Keynes-Schumpeter approach to describe the evolution of a capitalist economy can be found in the analyses by various economists of a key phase in the evolution of modern economies, namely the industrial revolution (see for example: Gershenkron 1962; Hicks 1969, 1989; Cameron 1967; Kindleberger 1984; North 1990). The theory advanced by Gerschenkron (1962) seems to be particularly significant in this respect. He notes that the term industrial revolution used to describe the industrialisation of the European countries between the eighteenth and nineteenth centuries is appropriate because the process was: «sudden, eruptive, that is, *'revolutionary'*». Gerschenkron challenges the view that there is only one route that leads to industrialization, a route that must be followed by every country irrespective of the era in which the industrialisation process actually takes place. Historical experience shows instead that the process of industrialization in the continental European countries was marked by characteristics which were very different from those of the industrialisation of England a few decades earlier. For our purposes, the most important aspect of Gerschenkron's analysis is made up by the conclusions he draws about the role of the banks in the process of industrialisation. He observes that the role of the banks depends on the degree of economic backwardness of the country in which the industrialisation is starting. The role of the banks was modest in England, while it become fundamental in the industrialisation which later took place in the continental European countries, such as France, Germany and Italy, all more economically backward than England.

Gerschenkron's thesis rests on two points. In the first place he observes that the process of industrialisation in continental Europe was faster and more intense, and therefore required a greater amount of investment, per unit of time, than in England. This can be explained by the tendency of continental European countries to use the more advanced technologies that England introduced at the end of its process

[1] «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 well-being 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 law, the institutional integration of distributed knowledge, the creation of a judicial system, have been important parts of efforts making markets more efficient in developed countries. And they are leading us into an unknown world of future uncertainties.» (North 2005, 20-21).

of industrialisation. The second point on which Gerschenkron's thesis is based is his criticism of the concept of original accumulation and his definition of capital. The concept of original accumulation is an essential element of the argument, criticised by Gerschenkron, that there is just one route which must be followed to carry out the process of industrialisation. According to this view, there are certain prerequisites for industrial development, that is, conditions that must be met and without which industrialisation cannot take place. One of these requirements is the availability of capital; the industrialisation process must be preceded by a phase of wealth accumulation, creating the capital necessary for industrial development. Gerschenkron maintains that if it is acknowledged that the industrialisation of the most backward continental European countries was faster and more intense than the process in England, then it must be concluded that in the more economically backward countries industrialisation was preceded by a phase of wealth accumulation which was greater than the one in England. In other words, the original wealth accumulation of a country should be inversely proportional to its level of backwardness; paradoxically, the more backward the country, the wealthier it had to be to carry out the industrialisation process.

Gerschenkron claims that the experience of the industrial revolution in Europe shows that the availability of wealth is not a necessary nor a sufficient condition to trigger the process of industrialisation. In fact, he distinguishes between wealth and capital, and defines capital in a similar way to Schumpeter: while for Schumpeter, as we have seen, capital is the purchasing power available to entrepreneurs to carry out innovations, for Gerschenkron capital is the purchasing power available for financing of the industrialisation process; wealth, observes Gerschenkron (1962, pp. 39-40), is not necessarily transformed into capital.

According to Gerschenrkon, the English experience is a case in which industrialisation took place because of the presence of a financial system, created to overcome the financial crisis of the state, which proved capable of transforming private wealth into purchasing power available to the industrial firms (see also Hicks 1969; North 1990). Gerschenkron further notes that the experience of the continental european countries has shown that the presence of wealth is not a necessary condition for the formation of capital. As a matter of fact, in these countries capital, *i.e.* the purchasing power that made it possible to carry out the industrialisation process, was not created from the private wealth accumulated in an earlier phase, but rather, it was created by the banks:

> The building of factories in England no doubt benefited considerably from the existence of manifold sources of private wealth. One of the characteristics of the English development was that, in conditions of considerable antecedent progress, there

was much willingness on the part of individuals to invest in industrial pursuits. But, in the more backward countries on the European continent, neither the size of previous accumulations nor the sympathy with industrial development was consonant with the much greater capital requirements of a delayed industrialization. The focal role in capital provision in a country like Germany must be assigned not to any original capital accumulation but to the role of credit-creation policies on the part of the banking system.

(Gerschenkron 1962, 45)

Gerschenkron (1962, 113) comments that, thanks to the process of money creation carried out by the banks, in the countries of continental Europe, the phase of preparation for industrialisation practically coincided with the actual phase of industrialisation itself. Moreover, Gerschenkron (1962, 88) notes that the banks did not confine themselves to selecting the sectors in which to invest, but they also transferred entrepreneurial competences to the firms, helping them to grow and consolidate.[1]

We can conclude that Gerschenkron's analysis of the historical experience of industrialisation in European countries, is consistent with the Keynes-Schumpeter approach. Gerschenkron describes the role of the banks in a completely different way from the AI approach. The banks are not simply intermediaries that transfer to firms the resources saved and that make the choices that the savers would make if they had the same information as that available to the banks; but rather they are institutions that, by creating purchasing power, determine through their decisions the process of transformation of the economic system.

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[1] Gerschenk on underlines that banks' decisions determine the process of change of the economic process: «All the basic tendencies inherent in industrial development in backward countries were greatly emphasized and magnified by deliberate attitudes on the part of the banks. From the outset of this evolution the banks were primarily attracted to certain lines of production to the neglect, if not virtual exclusion, of others. To consider Germany until the outbreak of World War I, it was essentially coal mining, iron-and steelmaking, electrical and general engineering, and heavy chemical output which became the primary sphere of activities of German banks. The textile industry, the leather industry, and the foodstuff-producing industries remained on the fringes of the banks' interest.» (Gerschenkron 1962, 15). See also Cameron 1967, 1972.

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