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credit from a Schumpeterian perspective

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THE RELATIONSHIP BETWEEN SAVING AND CREDIT FROM A SCHUMPETERIAN PERSPECTIVE

Abstract. Mainstream economic theory underlines the close relation between saving decisions and credit supply: the saving decisions determine the credit supply and thus the investment flow carried out by all the firms. The objective of this paper is to highlight the theoretical limits of this causal sequence on the basis of the arguments developed by Schumpeter, who instead maintains that in a *capitalist economy* the credit supply and investment decisions are independent of saving decisions

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Introduction

Mainstream economic theory underlines the close relation between saving decisions and credit supply. The significance of this relationship can be explained by considering the behaviour of a single economic agent who saves when he chooses not to use part of his income for the purchase of consumer goods. The decision to save translates into the supply of credit when our agent decides not to hide his unconsumed income under the mattress and instead chooses to deposit his savings with a bank or to purchase bonds or shares issued by a firm. In these cases he meets the demand for credit from agents, the firms, who need purchasing power in order to increase the stock of capital goods, i.e. to carry out investments. Mainstream economic theory deems that this causal sequence applies also at a macroeconomic level: the saving decisions of all the households determine the credit supply and thus the investment flow carried out by the all the firms.

The objective of this paper is to highlight the theoretical limits of this causal sequence on the basis of the arguments developed by Schumpeter, who instead maintains that in a *capitalist economy* the credit supply and investment decisions are independent of saving decisions. The paper is divided into two parts. In the first part, the arguments used under the mainstream theory to justify the causal link between saving decisions, credit supply and investment decisions are summarised. In the second part, the alternative analysis elaborated on the basis of the arguments developed by Schumpeter is presented.

FIRST PART: SAVING, CREDIT AND INVESTMENTS ACCORDING TO THE MAINSTREAM THEORY.

The causal link between saving decisions, credit supply and investment decisions is not a defining feature of only the contemporary mainstream theory, being also present, in different forms, in the classic and neoclassical theories.¹ A detailed reconstruction of this causal sequence from the point of view of the history of economic thought does not fall within the aims of this paper; instead, the focus shall be put on some aspects of the classical and neoclassical theory on which the mainstream contemporary theory of saving is founded. The first section shall be devoted to the classical theory, using the analysis of A. Smith as a reference point, the second to the neoclassical theory and in particular the theory of Böhm-Bawerk; in the third part, Cannan's credit theory is presented and finally, in the fourth section, it is shown that the theoretical elements elaborated by the classical and neoclassical theory are still very much present in the contemporary mainstream theory.

1.1. The classical theory: the analysis of A. Smith

According to the classical theory, saving is the key element that explains how an economic system develops. Adam Smith (1776) states that the level of development depends on the number of productive workers present in the system; he defines as productive any worker who is involved in the production of goods sold at a price that makes it possible to obtain a surplus over the value of the means of subsistence consumed by the worker. The unproductive workers are instead those who are involved in the production of services that satisfy the needs of the higher classes and do not produce any surplus. The development process, according to Smith, consists in the continuous increase in the number of productive workers made possible by the accumulation of capital fostered by the flow of savings from the capitalists. Smith considers an economy in which capital is made up of consumer goods that are anticipated to the productive workers; we can assume, for example, that workers consume only corn and therefore that corn is the product and the capital of this economy. Corn production realised in a certain period represents the constraint on the amount of capital, the greater the amount of corn that becomes capital, i.e. that is destined for giving means of subsistence to the

¹ As Bresciani-Turroni observes: "The truth is that, though the outcome of saving is normally in any case the same –namely, the stream of saving transforms itself into a stream of new intermediate goods which later results in an increase of consumable income- the ways leading to this result are different." (Bresciani-Turroni, 1936, p. 11)

productive workers, the greater the production of corn that will be carried out in the subsequent period.

Let us suppose that in a certain period $-t-$, 60 productive workers have made an amount of product which makes it possible in the subsequent period, given the characteristics of the productive work, to employ 100 workers, either productive or unproductive. The total production that will be achieved in the period $-t+1-$ depends on the number of productive workers employed. Let us assume that the capitalists, who having paid in advance the wages of the productive workers in the period $-t-$, have at their disposal the production achieved, decide to employ in the period $-t+1-$ again 60 productive workers, and to use the remaining resources for the employment of 40 unproductive workers. In this case we would get in $-t+1-$ the same level of production obtained in the previous period and all the surplus, used to remunerate the unproductive workers, would according to Smith's definition, be consumed; there would be no saving and no growth would be registered. If, alternatively, the capitalists had decided to use the entire surplus to employ new productive workers, then in the period $-t+1-$ they would have employed 100 productive workers obtaining a greater income than in the previous periods and thus a higher profit. In this case the capitalists would have realised a savings flow equal to 40 wage units which would have given rise to an equivalent increase in capital.

Napoleoni (1970) observes that Smith's definition of development can be understood if we consider the historical context within which it was formulated, characterised by the passage from the upper class society in which surplus was destined exclusively to satisfy higher class consumption by means of the use of a significant quota of unproductive workers, to a capitalist society characterised by the process of accumulation fostered by saving decisions. The absence of saving condemns the high-class society to stagnation, while the process of capital accumulation transforms the increase in the population into an increase in income-receiving workers instead of in an increase in poor people with no work or income; this explains Smith's view that: every spendthrift is a public enemy and every parsimonious person, a public benefactor.

Smith's 'corn economy' highlights an important aspect of the classical analysis that consists of identifying decisions to save with decisions to invest. The decision of capitalists to save coincides with the decision to expand the amount of capital i.e. with the decision to invest; the capitalist who saves is the same agent who invests; Say's law, in the 'corn model' is automatically satisfied (Bridel 1987a, b).

S. Hollander (1972) expresses some doubts about the appropriateness of representing Smith's theory of development by means of the 'corn model', since this model overlooks fixed capital as a productive factor, and, furthermore, because it considers just one good, it neglects the system of prices and therefore the presence of money, elements that Smith considers in his analysis. There certainly is some basis to this observation, but that does not alter the fact that the 'corn model' has the advantage of presenting in a rigorous manner the fundamental conclusions of Smith about the causal analysis that links the concepts of saving, investment and development. Moreover, it is Smith (1776) himself who underlines that the presence of money does not alter the conclusions of the corn model; in fact he observes that if at the end of the period $-t-$ the capitalists received an income in money instead of in corn, they would always find themselves facing the same choice: to use their monetary income to pay for the services of unproductive workers, or to save some of it by increasing the use of productive workers in order to obtain a profit.

1.2. The neoclassical theory: the analysis of Böhm-Bawerk

We can highlight two elements of the neoclassical theory that are relevant in order to define the causal relation between saving decisions, credit supply and investment decisions. The first regards the definition of capital; the neoclassical theory considers explicitly the capital goods as a productive instrument distinct from labour. Secondly, the neoclassical theory considers explicitly the phenomenon of the dissociation between saving decisions and investment decisions: the agent that saves is not necessarily the agent who decides to expand his own capital endowment.

Böhm-Bawerk notes that goods are not produced only through labour, but they are also made using tools that in turn were produced by means of labour. The final goods are thus produced by means of a roundabout process that adds together the labour incorporated in the instruments used with the labour directly applied in the production.² He emphasizes that unlike labour: "... capital cannot be an originary source of goods, since it is itself the fruit of nature." (Böhm-Bawerk, 1884, p. 350).

Böhm-Bawerk illustrates these concepts with a famous example that is applied to the world of Robinson Crusoe whose survival depends on fishing. Let us assume that at first

² Böhm-Bawerk defines capital: "... as consisting of a complex of produced means of acquisition, that is to say, a complex of goods which come into existence as the result of a previous process of production, and which are destined, not for immediate consumption, but for acquisition of future goods." (Böhm-Bawerk, 1884, p.5)

Crusoe just gathers the fish that the tide leaves on the beach; in this phase, production is realized only through labour. He could, however, expand the future production of fish if he decided to dedicate part of his work day to making a fishing rod, fishing net or even a boat. In such case Robinson Crusoe's saving would consist in subtracting work time from the direct production of fish in order to build tools that would enable him to increase future production. Böhm-Bawerk (1884, p. 273) underlines that the incentive to accumulate capital derives from the fact that an indirect production process is more productive than a process that uses only labour: "It is an elementary fact of human experience that time consuming roundabout methods of product are more productive." And this greater productivity constitutes the origin of the interest that he defines as "The revenue which is derived from capital..." (Böhm-Bawerk, 1884, p. 5).

Moreover, he considers explicitly the phenomenon of the dissociation between saving and investments and he provides an effective example regarding a primitive society of fishermen:

"Let us imagine ... a tribe of people who live by fishing and who are entirely without capital. They catch their fish on the seashore by seizing with their bare hands such fish as are stranded in the pools left behind by the receding tide. A workman of this tribe catches and consumes 3 fish a day. If he had a boat and net he could catch 30 fish a day instead of 3. But he cannot construct those implements because their construction would cost him a month's time and labor, and during that interval he would have nothing to live on." Böhm-Bawerk (1884, pp. 280-281)

The situation of our fisherman could improve considerably if someone were in a position to lend him sufficient fish to keep him alive in the period in which he is building the boat: in this case, due to the greater production of fish obtained with the boat, he can undertake to repay the loan and pay a premium constituted by the *loan interest*:

"Now someone lends him 90 fish on condition that he promise to pay back 180 fish one month later. Our man agrees to the transition, provides his subsistence out of the borrowed fish for one month and in the meantime constructs a boat and net with which in the following month he catches 900 fish instead of 90. From these he cannot only repay the stipulated amount of 180 fish but also retain a sizable net gain for himself." Böhm-Bawerk (1884, p. 281)

By explicitly considering the separation of saving and investment decisions, it is possible to highlight the relation between saving decisions and supply of capital or credit; the interest rate constitutes the price of capital and its fluctuations guarantee the equilibrium between savings and investments.

If we compare the example of Böhm-Bawerk with Smith's 'corn economy', we can observe that in both cases an economy that produces just one good is considered: fish or corn, and in

both cases the accumulation of capital is preceded by a saving decision, that is by a renunciation to consume part of the production. In the case of Smith, the corn saved becomes capital when it is used to increase the number of productive workers involved in the production of corn; in the case of Böhm-Bawerk, instead, the fish saved become capital when it permits the production of instrumental goods that will be used jointly with labour. In the case of Smith the increase in the production that follows the accumulation of capital is determined by the productivity of labour, while in the case of Böhm-Bawerk this is brought about by the greater productivity of the roundabout methods. However, these differences must not mask the close continuity that exists between the two theories; both point out that the saving decisions constitute the necessary premise for the accumulation of capital and the increase in production.

The express consideration of the dissociation between saving and investment decisions constitutes the necessary premise for the introduction of financial intermediaries. If, thanks to the boats, in our primitive society a good number of fishermen are able to fish a quantity of fish greater than what they consume, one of them could get an idea to build a structure to conserve the fish over time. This agent might not limit himself to just conserving the fish, but indeed might loan it in exchange for an interest; in this case our society of fishermen shall have its “bank”³ The neoclassical theory states that the presence of banks does not modify the nature of credit compared with an economy in which savers directly finance those who wish to accumulate capital; banks are mere intermediaries, the real creditor is the saver. A clear illustration of this view is provided by Cannan.

1.3. The meaning of bank deposits under the neoclassical theory.

In 1921 Cannan wrote an important article with the objective of refuting the thesis that was gaining ground, according to which banks are able to create:

“... thousands of millions of pounds by lending something which did not before exist to borrowers, who proceed to pay it to other people, who in their turn deposit it in the banks, and who could not have so deposited it unless the banks had lent.” (Cannan, 1922, p. 32)

He deems perfectly valid the traditional theory according to which:

³ Taylor (2000) makes up some tales that describe the effects of the presence of a bank in a “... subsistence (but otherwise idyllic) island society.”

“The banker was a man or a collection of men who undertook to keep money safely for its owners until they wanted it, and who made the business pay by lending out a good deal of this money to other people who wanted temporary loans.” (Cannan, 1922, p. 28)

Cannan developed his thesis by observing that the nature of bank deposits is analogous to that of deposits having as objects a real good, such as for example the deposit of a bag at the cloakroom.⁴ He acknowledges that there are two differences between bank deposits and the deposit of things for safe custody. In the first place, in the case in which one deposits a bag in the railway cloakroom the depositor expects to get his own bag back and not just any bag similar to his one. Secondly, the depositor also expects that no one will use his bag. These two conditions, Cannan notes, do not apply in the case of money and bank deposits as money is a perfectly homogenous good; in the case of money the depositor expects to get the same amount of money back, and he doesn't care if the notes he gets back are the same ones he lodged with the bank. Moreover, Cannan remarks that the perfect homogeneity of money makes depositors' drop their objections about the use to which the bank puts the money; the fact that the bank can lend the cash received explains why the depositor doesn't pay anything for the conservation of the money but actually receives a remuneration on the deposits. According to Cannan, these differences do not modify the nature of bank deposits compared to the deposit of things for safe custody; the two phenomena have in common the fact that neither the bank nor the cloakroom attendant can lend more than what has been deposited:

“There is nothing in [these differences] between money and other goods to suggest that the person with whom money is deposited can lend out more than he possesses in his own right *plus* what is deposited with him. The most abandoned cloakroom attendant cannot lend out more umbrellas or bicycles than have been entrusted to him, and the most reckless banker cannot lend out more money than he has of his own *plus* what he has of other people's.” (Cannan, 1922, p. 30)

Cannan's analysis fits perfectly with the causal sequence that, according to the classical and neoclassical theories, links savings, investments and economic development. Equating bank deposits with deposits of things for safe custody means, in fact, to highlight that the depositor forgoes using goods that he produced by selling them to other agents who will be

⁴ “There is nothing really mysterious about the nature of banking ‘deposits’. The term ‘deposit’ seems very appropriate as the name of the verb which we use to describe the action of placing an article with some person or institution for safe custody. We ‘put things down’ anywhere –our spectacle-case and our gloves, and often fail to find them again, and to ‘deposit’ a thing is etymologically nothing more than to put it down; but the latinity of the word seems to give it a tinge of solemnity suggestive of the rites we go through when we entrust our bag to the cloakroom clerk instead of ‘putting it down’ on the platform.” (Cannan, 1922, pp. 28-29)

able to earn from these goods an income that will allow them to pay interest to the saver-depositor, as happens in the example of Böhm-Bawerk's fisherman.

1.4. Mainstream contemporary theory

The elements of classical and neoclassical theory regarding the causal sequence between saving and investment, and the role of the banks that we described in the previous paragraphs, were totally assimilated by contemporary mainstream theory. The literature on growth theory that developed starting from the fundamental work of Solow (1956) shares the vision that the consumption and saving decisions households make, condition the accumulation of capital. Barro and Sala-i-Martin (2004) point out that all the models elaborated by contemporary theory assume that households' saving decisions determine the growth of the economy.⁵ This causal sequence is confirmed in numerous empirical analyses.⁶

Furthermore, mainstream theory, in line with Cannan's analysis, considers banks as mere intermediaries and the credit market simply as a reflection of the saving and investment decisions; this implies that, in order to elaborate an explanation of how the economic system works it is sufficient to specify saving and investment decisions, leaving aside the credit market. This point has been well explained by, for example, McCallum (1989) who introduces his Monetary Economics text by making explicit the reasons why he looks at the money market, completely leaving aside the credit market; he observes that this decision:

“... rests 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.” McCallum (1989, pp. 29-30)

Recently this theoretical view has been challenged in numerous studies which maintain that the presence of an evolved financial system is an important factor capable of influencing

⁵ “Given that [in a closed economy] saving must equal investment, $S(t) = I(t)$, it follows that the *saving rate* equals the *investment rate*. In other words, the saving rate of a closed economy represents the fraction of GDP that an economy devotes to investment.” (Barro and Sala-i-Martin 2004, p. 25) “A greater willingness to save... and a better technology raise the growth rate” (Barro and Sala-i-Martin 2004, p. 297)

⁶ See for example: Feldstein and Horioka (1980); Cadoret (2001); Chakrabarti (2006).

the rate of growth of the economy. However, these studies continue to describe a growth process that depends on the saving decisions that influence the investment decisions and thus the process of capital accumulation. The role of the financial system is to make the transformation of savings into investments possible by allocating the saved resources to the most productive firms. Chou (2007), for example, maintains that it is necessary to abandon the assumption that characterises traditional growth models, according to which investment always equals saving, as this presupposes the presence of a perfectly efficient financial system:

“In general, the intermediation process will not be completely efficient. Unless the financial sector is highly sophisticated and well developed, not all the savings of individuals will be transformed into productive funds that firms can use to finance investment in new plant and machinery. In particular, some risk-averse savers will continue to hold liquid but unproductive assets unless offered a sufficient variety of financial products. As an extreme example, in some poor countries, villagers sometimes hide their savings under their pillows, where they cannot be accessed by potential borrowers. Therefore instead of assuming that $I=S$, where S is aggregate savings, I specify: $I=\varepsilon S$, where $0<\varepsilon<1$ measures the efficiency of financial intermediation.” (Chou 2007, p. 80)

Hence, the role of the financial system is to ensure that a) the greatest proportion of saving is devoted to investments; b) savings are used for the most productive investments; this analysis does not challenge the causal relation between saving decisions, credit supply and investment decisions.⁷

SECOND PART: AN ALTERNATIVE ANALYSIS OF THE RELATION BETWEEN SAVING AND CREDIT

In this second part a different analysis of the relation between saving and credit shall be presented, elaborated on the basis of arguments developed by Schumpeter. In the first section Schumpeter's critique of Cannan's theory is set out; the second section is dedicated to the loanable funds theory that shares some common features with Schumpeter's theory. Finally, the third section highlights the more significant aspects of this alternative analysis.

⁷ See for example: King and Levine (1993); Levine (1997, 2002, 2004); Wurgler (2000); Stulz, R. (2001); Gorton and Winton (2003); Wachtel (2003); Capasso (2004); Fergusson (2006).

2.1 Schumpeter's critique of Cannan.

Schumpeter states that the traditional theory considers credit as a phenomenon independent of the presence of banks:

“...[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, p.1113)

He takes Cannan's theory as a reference in order to set out his critique of the traditional theory; he 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:

“As Professor Cannan put it...’If cloakroom attendants managed to lend out exactly three-quarters of the bags entrusted to them... we should certainly not accuse the cloakroom attendants of having ‘created’ the number of bags indicated by the excess of bags on deposits over bags in the cloakroom. Such were the views of 99 out of 100 economists.

But if the owners of those bags wish to use them, they have to recover them from the borrower who must then go without them. This is not so with our depositors and their gold coins. They lend nothing in the sense of giving up the use of their money. They 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.” (Schumpeter 1954, pp. 1113-4)⁸

The presence of banks profoundly alters the nature of credit and the relation between saving and credit⁹; credit becomes an independent phenomenon from saving decisions.

⁸ Schumpeter had already set out these considerations in his *The Theory of Economic Development*: “While I cannot ride on a claim to a horse, I can, under certain conditions, do exactly the same with claims to money as with money itself, namely buy.” (Schumpeter 1912, p. 97)

⁹ 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

Schumpeter stresses that banks create more or less perfect substitutes of money at the moment in which someone deposits money with them, but we can observe that banks do not create money only at the moment in which they receive deposits; in a world in which their liabilities are used as a means of payment, banks can finance an agent by granting him a line of credit, that is, by authorising him to issue cheques up to a certain amount.¹⁰

Schumpeter, in the 1940s, believed that Cannan's theory had been abandoned and that most economists had accepted the new theory, albeit with difficulty.¹¹ This conviction seems to be contradicted by the reality of the second half of the twentieth century; the mainstream contemporary theory, as we have seen, continues to consider saving decisions as the factor that determines the credit supply and investment decisions, and to represent banks as intermediaries, completely neglecting Schumpeter's teaching. Probably this situation can be

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, p. 1114)

¹⁰ This point has been well described, for example, by J. Hicks who distinguishes three different phases in the evolution of the banks: "There are three distinct stages in the evolution of banking, ... (in) the first ... the bank is no more than a financial intermediary... People lend to the banker, altogether he pays a lower rate of interest than that which he charges... because they do not have the knowledge, which he has acquired in building up his business, by which they can find for themselves such safe and profitable investments as he is finding. ... The second stage of banking evolution comes when the banker realizes that it is safe for him, or usually safe for him, to accept money on deposit, subject to withdrawal on demand or at short notice. ... The importance of this second stage is largely that it leads (and often very rapidly leads) to the third... This is the point at which deposits in banks, withdrawable deposits, are made transferable; either by cheque, which is an instruction to a bank to transfer an existing deposit, or by note – which is in effect a cheque payable to bearer, having the guarantee of the bank behind it, without reference to the depositor against whose deposit it was originally issued. This is vital; for it is at this point that the banks becomes able to create what is in effect money. When it makes a loan, it does not have to hand out the old 'hard' money; all it does is to exchange claims. Against the obligation of the borrower, to repay by some fixed date, it provides an obligation of its own, which is transferable upon demand, and for that reason has a money quality. The money which it lends is money that it itself creates." (Hicks 1969, pp. 94-96; see also: Kindleberger 1984; Hicks 1989; Goodhart 1989)

¹¹ "... it proved extraordinarily difficult for economists to recognize that bank loans and bank investments do create deposits... even in 1930, when the large majority had been converted and accepted that doctrine as a matter of course, Keynes, rightly felt it to be necessary to reexpound and to defend the doctrine at length, and some of its most important aspects cannot be said to be fully understood even now." (Schumpeter 1954, p. 1114)

explained by the fact that in the first decades of the twentieth century a theoretical approach, the *loanable funds theory*, was developed which, while recognising the capacity of the banks to create money, held that the process of bank money creation did not modify in a significant way the structure of the economic system compared with what was described in Smith's 'corn economy' or in the example of Böhm-Bawerk fishermen's island.

2.2 The loanable funds theory.

The loanable funds theory is linked to Wicksell who between the end of the nineteenth century and the early years of the twentieth century published some works where he analysed the relation between rate of interest and inflation. Wicksell's objective is to explain the causes of price fluctuations; he maintains that the version of the quantitative theory of money elaborated by Ricardo is perfectly valid if it is applied to an economic system where: "everybody buys and sells for cash and with money on their own, that is to say, neither commodity credits nor loans exist." (Wicksell 1898, p. 73). In this system, economic agents must keep holdings of cash in order to be able to carry out their expenditure decisions and these holdings are proportional to the total amount they intend to spend. In an economy of this type exogenous changes in the quantity of money trigger the variations in the price levels described by the quantitative theory of money. Wicksell holds that this explanation of price fluctuations cannot be applied to an economy in which a fiat money constituted by the bank liabilities is used, as in this case, the spending decisions are carried out by using money created by the banks; the economic operators do not need to keep cash holdings to finance the demand for goods. Money becomes an endogenous variable because whoever desires money to purchase goods will be able to obtain it by getting into debt with the banks; therefore inflation cannot be caused by an exogenous variation in the quantity of money.

Wicksell therefore recognises, like Schumpeter, that banks can create money when they meet the firms' demand for credit, in other words he acknowledges that the presence of banks makes the credit supply independent of saving decisions. At the same time, however, Wicksell states that the presence of bank money does not change in a significant way the structure of the economic system with respect to an economy without banks. As a matter of fact he emphasizes that in order to analyse the consequences of the presence of bank money it is necessary to take as a reference the structure of an economy in which bank money does not exist; in particular it is necessary to consider:

“... the phenomena of capital and interest on capital, as they would appear if liquid capital, production’s means of support, was in reality lent in kind, without the intervention of money; *and only then it is possible to distinguish what modifications are in reality caused by the introduction of money.*” (Wicksell, 1898, p. 84)

The close link between an economy without bank money and an economy characterised by the presence of banks is highlighted by the concept of the natural interest rate that Wicksell considers important for both. He defines the natural interest rate as the rate that is obtained in an economy in which capital goods are exchanged directly.¹² Thus it is the interest rate that characterizes Smith’s ‘corn economy’ or Böhm-Bawerk’s fishermen’s island,¹³ a rate that constitutes an essential element of the Wicksellian explanation of inflation. Wicksell (1898, p.78) affirms that in a pure credit economy the price levels do not depend on the gap between money demand and supply but rather on the price of money that is represented by the rate of interest that must be paid to obtain money, i.e. on the interest rate set by the banks: “A low rate of interest must lead to rising prices, a high rate of interest to falling prices.” (Wicksell, 1898, p. 78). He observes that ‘high’ and ‘low’ interest rates are not absolute concepts but that they must be defined in relation to a term of reference that is constituted by the natural rate of interest. A pure credit economy is characterised by the presence of two distinct markets: the credit market and the capital market within which two different rates of interest are determined; the rate of interest on money, set by the banks, and the natural rate of interest.

The monetary interest rate applied by banks does not necessarily coincide with the natural interest rate; this makes possible a discrepancy between the two interest rates that influences the rate of inflation. Wicksell (1898, pp. 81-82) remarks that the discrepancy between the two rates is caused by variations in the natural rate of interest, which the banks may not even realise, caused for example by events that modify the productivity of roundabout methods described by Böhm-Bawerk. Finally, Wicksell notes that the process of price fluctuations caused by the gap between interest rates cannot last long; neither the individual bank nor all the banks together can maintain the monetary rate of interest at a different level than the natural rate for long.

¹²“...if capital was lent in kind, there would undoubtedly develop, through the supply of and the demand for available capital, a certain rate of interest on the lending market, which would be the natural rate of interest on capital in the strictest sense.” (Wicksell, 1898, p. 84)

¹³ Wicksell (1898, p. 84) in fact quotes Böhm-Bawerk among the economists that influenced the elaboration of his theory of capital and interest rate; for a definition of the natural rate of interest in terms of the ‘corn model’ see: Bindseil 2004.

Concerning the subject of this paper it is important to point out that although he elaborated a theory of banks at odds with what Schumpeter asserted in those years was accepted by 99% of economists, Wicksell states that the independence of the credit supply from saving decisions as a consequence of the endogeneity of bank money, does not alter the structure of the economic system. The natural rate of interest constitutes the nucleus around which the economy gravitates; the only consequence of the presence of banks is the inflation process determined by the discrepancy between the rate of interest set by the banks and the natural rate of interest.

In the 1930s, following Wicksell, economists such as Ohlin, Robertson and Hayek set against the Keynesian interest rate theory, one that states that the rate of interest on money is determined within the credit market. There are two aspects of the analysis of these authors that warrant highlighting. In the first place, they noted that there is a relation between the credit supply and demand functions and the saving and investment functions,¹⁴ even if these functions do not coincide. Robertson emphasizes this relation when he considers a succession of periods:

“I assume the existence of a period of time, to be called a ‘day’, which is finite but nevertheless so short that the income which a man receives on a given day cannot be allocated during its course to any particular use. A man’s disposable income – the income about which the question arises on any particular day as to whether it shall be ‘saved’ or ‘spent’ – is thus the income received not on that day but on the previous one. A man is said to be *saving* if he spends on consumption less than his disposable income.” (Robertson, 1933, p. 399)

Savings precede and therefore condition investment decisions even if there is not a perfect coincidence between the two flows, since a saving decision can lead to the choice of lending or accumulating money, while an investment decision can be financed by getting into debt with savers, by using existing money or, finally, by the creation of new money. The condition of equilibrium on the loanable funds market can thus be represented by the following equation:

$$S + \Delta M = \Delta H + I$$

S stands for the savings flow, ΔM the new money created by the banks, ΔH the fluctuations in the cash holdings accumulated by the private operators, while I indicates the investment flows. If ΔM and ΔH are equal to zero the functions of credit demand and supply

¹⁴ “That the relation between the curves referring to savings and investment and those referring to credit is close should be obvious. If a man plans to save, must he not either plan to invest or to lend? “ (Ohlin, 1937c, p. 425)

coincide with the saving and investment functions; furthermore, at parity of ΔM and ΔH , a variation in the saving flow influences the monetary interest rate and investment decisions. If banks acted as simple intermediaries, collecting households' savings and transferring them to firms, the rate of interest on money would coincide with the natural rate.¹⁵

The second significant aspect of the analysis that developed in the early decades of the last century based on Wicksell's work concerns the description of the effects of the discrepancy between the monetary interest rate and the natural interest rate. This analysis points out that a discrepancy between the interest rates does not influence only the rate of inflation but it alters saving and investment decisions; for example, a situation in which the monetary interest rate is less than the natural one because of an expansionary monetary policy provokes a phenomenon of *forced saving*:

“The policy-induced lowering of the interest rate causes the economy to react in important respects *as if* the additional investment funds had been made available by voluntary saving. Hence, the corresponding increase in investment in the early stages of production gets labelled with the term ... *forced saving*: resources are allocated ... in accordance with greater saving even though the saving implied by such an allocation is not at all voluntary...” (Garrison 2004, p. 326)

It can be observed that despite the concept of *forced saving*, the loanable funds theory asserts the substantial neutrality of bank money in that: a) it holds that the concept of natural interest rate can be applied to an economy with bank money and that an economy of this type can thus be described by means of Smith's 'corn economy' or Böhm-Bawerk's parable of the fishermen's island; b) the neutrality of money can be obtained through a correct monetary policy that aims to maintain the monetary rate at the level of the natural one. In this case the monetary authorities will have achieved the objective of price stability and phenomena of *forced saving* shall be avoided.

The loanable funds theory has profoundly influenced the mainstream monetary theory; it constitutes the theoretical foundation of the strategy adopted in recent years by the central banks of western countries, i.e. pursuing the objective of price stability through a monetary policy rule based on interest rate manoeuvre.¹⁶

¹⁵Robertson (1934) defines the natural rate of interest as:“... the rate at which the new lendings which can be absorbed by industry per atom of time and the new available savings for atom of time are equal.” (Robertson, 1934, p. 651)

¹⁶ The European Central Bank for instance states that: “In the long term, real interests rates are determined mainly by real factors, inter alia by the rate of productivity growth and by households' preferences as to whether to spend on consumption sooner rather than later. In the short term, however, real interest rates can be influenced

2.3. An alternative analysis

2.3.1 The role of credit in a *capitalist economy*.

Wicksell and Schumpeter formulate a similar explanation of the nature of deposits and bank credit, very different from that of Cannan; despite this, there is a strong difference between the two authors. Wicksell deems that the credit phenomenon is independent of the presence of banks; as a matter of fact, his analysis is based on the concept of natural interest rate that represents the starting point from which he analyses the working of an economy with bank money. Instead, Schumpeter claims that the credit phenomenon is not at all independent of the presence of banks, and that the diffusion of bank money signals a break with Böhm-Bawerk's fishermen's economy or A. Smith's corn economy.

According to Schumpeter, the presence of bank money constitutes a fundamental factor in explaining the principal characteristic of a capitalistic economy: change.¹⁷ He proposes to explain the phenomenon of change by distinguishing between growth and development; the former regards a pure exchange economy while a capitalist economy is characterised by the process of development. 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 to changes triggered by extra-social factors like natural conditions, or by extra-economic social factors such as wars, or by consumer tastes; it is an economy in which the production decisions are influenced by consumers' preferences and in which the principle of consumer sovereignty holds.

by monetary policy. ...The most intuitive and straightforward determinants of the natural real interest rate are those anchored in households' decisions on their pattern of consumption and saving over time. For example, a decrease in the value households attach to future consumption relative to current consumption... will, other things being equal, encourage households to bring forward consumption and reduce saving. In this situation the equilibrium real interest rate must rise in order to ensure, in the aggregate, that savings remain equal to investment. ... For firms, *fast productivity growth* implies higher returns on physical investment. This stimulates investment demand. To generate sufficient savings to meet this investment demand, the natural real rate of interest rate must rise." (ECB, 2004, pp. 57-58) On this point see: Woodford (2003).

¹⁷"Unlike other economic systems, the capitalism system is geared to incessant economic change. Its very nature implies recurrent industrial revolutions which are the main sources of the profit and interest incomes of entrepreneurs and capitalists and supply the main opportunities for new investments...Whereas a stationary feudal economy would still be a feudal economy, and a stationary socialist economy would still be a socialist economy, stationary capitalism is a contradiction in terms." (Schumpeter, 1943, p. 178)

Schumpeter states that the traditional theory is able to explain only the working of a *pure exchange economy*; to describe the working of a capitalist economy he elaborates a theory based on a double heresy:

“... 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 term of means of payment are not merely reflexes of processes in terms of goods.” (Schumpeter 1912, p. 95)

Banks and credit constitute an essential element in explaining the phenomenon of development that according to Schumpeter (1912, p. 63) is determined by two endogenous factors, i.e. of an economic character. First, the changes taking place in production as a consequence of the innovations spawned by entrepreneurs; these innovations might consist in the realisation of a new product, the adoption of a new production method, or 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 (1912, pp. 69-70) 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...”

The essential role attributed to credit is due to the presence of three 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; 3) private ownership of the factors of production. Schumpeter argues that if innovations were realised by existing firms, credit would not be necessary, since, in order to realise the innovations, the entrepreneur would use the productive means already available. Credit becomes a necessary factor for development when innovations are made by new entrepreneurs who do not own means of production. He (Schumpeter, 1912, pp. 79-81) 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.¹⁸ To underline this point, Schumpeter (1912, p. 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 of production resources assumption. Schumpeter introduces this assumption to underline the fact that innovations are realised by withdrawing available productive resources

¹⁸ We will come back to this point in the following pages.

from existing firms and allocating them to the entrepreneurs-innovators lacking means of production. For this reason, he assumes that innovations are introduced in a situation in which all the productive resources are fully utilised.¹⁹ In order to carry out innovations, therefore, a tool allowing the change of ownership and control of existing productive resource is required; this tool is credit: banks, through the creation of bank money, transfer to the innovators-entrepreneurs the purchasing power necessary to divert the resources from their traditional uses.

By creating money to finance the innovators-entrepreneurs, the banks alter the distribution of ownership of the means of production. The instrument permitting the ownership and control of the means of production to be transferred to the innovators-entrepreneurs is the inflation triggered by the fact that the demand for means of production on the part of the innovators-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 enabling the innovator to divert resources from their current allocation. With inflation it is possible to generate:

...a shift in purchasing power among individuals and ... a transfer of means of production to those individuals to whom credits are granted by means of newly created money. ... New men and new plans come to the forefront that otherwise would always have remained in the background. The obstacles are removed which private property places in the way of him who does not already have command over means of production. The banking world constitutes a central authority of the economy whose directives put the necessary means of production at the disposal of innovators in the productive organism. ... The essence of modern credit lies in the creation of such money. It is the specifically capitalistic method of effecting economic progress. It gives scope to the *capitalistic function* of money, as opposed to its market-economy function.” (Schumpeter 1917, pp. 205-206)

Ultimately, the fundamental role of credit described by Schumpeter depends on the fact that in a capitalistic economy the ownership of means of production is private. Schumpeter (1912, p. 78) argues that in a socialist economy the innovation process does not require the use of credit, given that in this system there is a central authority that decides to employ the

¹⁹ “...whenever we are concerned with fundamental principles, we must never assume that the carrying out of new combinations takes place by employing means of production which happen to be unused. In practical life, this is very often the case. There are always unemployed workmen, unsold raw materials, unused productive capacity, and so forth. ... but great unemployment is only the consequence of non-economic events - as for example the World War - or precisely of the development which we are investigating. In neither of the two cases can its existence play a fundamental rôle in the explanation, and it cannot occur in a well balanced circular flow from which we start.” Schumpeter (1912, p. 67). On this point see: Oakley (1990).

production resources differently from the way they were previously used in order to realise the innovations.

2.3.2 The reasons for the non-neutrality of bank money

Schumpeter asserts, as we have seen, that the presence of bank money is a necessary element to explain the process of change determined by the introduction of innovations that characterise a *capitalist economy*; an economy that is profoundly different from Smith's corn economy or Böhm-Bawerk's fishermen's island. There are two aspects that characterise these economies and that cannot be applied to the *capitalist economy* described by Schumpeter.

The first concerns the assumption of a sole good being produced which can be consumed or invested; this assumption is not appropriate for describing a world characterised by innovations that consist also in the production of new goods. If we allow the possibility that new goods are produced, we are faced with the problem of establishing who decides what should be produced. A world in which a sole good is produced can be considered as an extreme example of the application of the principle of consumer sovereignty as, evidently, this sole good is what guarantees the survival of consumers. Schumpeter holds that the principle of consumer sovereignty can be applied to a *pure exchange economy*,²⁰ but not to a *capitalist economy* in which consumers' choices are conditioned by the decisions of entrepreneurs and of the banks;²¹ Schumpeter (1939, p. 47) illustrates this point very effectively:

“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,

²⁰ In this economy: “... the productive process have in general no real leader, or rather the real leader is the consumer. The people who direct business firms only execute what is prescribed for them by wants or demand and by the given means and methods of production. Individuals have influence only in so far as they are consumers, only in so far as they express a demand.” (Schumpeter 1912, p. 21)

²¹ “... innovations in the economic system do not as a rule take place in such a way that first new wants arise spontaneously in consumers and then the productive apparatus swings round through their pressure. We do not deny the presence of this nexus. It is, however, the producer who as a rule initiates economic change, and consumers are educated by him if necessary....Therefore, while it is permissible and even necessary to consider consumers' wants as an independent and indeed the fundamental force in a theory of circular flow, we must take a different attitude as soon as we analyse *change*.” Schumpeter (1912 p. 65).

have resisted the change and have had to be educated up by elaborate psychotechnics of advertising.”

Schumpeter therefore attributes to banks a very different role from the one specified under the traditional theory; in fact, he emphasizes that in a capitalist economy, by financing innovations through the creation of new money, banks condition the process of change in the economic system characterised by the production of new goods. The presence of banks makes possible the occurrence of phenomena that cannot be found in a static economy. In particular, by creating money, banks allow new players to make innovations by taking control of the productive resources away from existing firms; in the absence of banks and credit money this would not be possible because the existing firms would continue to use the productive resources in the traditional productive processes and they would not have any reason to transfer them to new agents who intend to alter the existing productive equilibriums.²²

The second aspect that distinguishes the *capitalist economy* described by Schumpeter is the fact that the innovations that characterise this economy highlight the dimension of uncertainty. In an economy that produces just one good the entrepreneurs are sure they will sell everything they produce as the good produced is that which guarantees the survival of consumers; it could be Smith’s corn or Böhm-Bawerk’s fish.²³ This hypothesis cannot be applied in the case of Schumpeterian innovations; the entrepreneur that makes a new good is not at all sure that he will be able to sell, making a satisfactory profit, everything he produces because the innovation alters the existing world and this makes it very difficult to predict the reaction of consumers to the new proposal. Schumpeter believes that the introduction of innovations requires competencies that are very different from those necessary to run an existing business because the innovator-entrepreneur must take decisions without having clear

²² This transfer is made possible thanks to the credit: “This is done by credit, by means of which one who wishes to carry out new combinations outbids the producers in the circular flow in the market for the required means of production. And although the meaning and object of this process lies in a movement of goods from their old towards new employments, it cannot be described entirely in terms of goods without overlooking something essential, which happens in the sphere of money and credit and upon which depends the explanation of important phenomena in the capitalist form of economic organisation, in contrast to other types.” (Schumpeter, 1912. p. 71)

²³ This statement implies acceptance of the assumption that the welfare of consumers grows with the growth in the quantity of corn or fish consumed; it is an implicit hypothesis in all the growth models elaborated by the mainstream contemporary theory in which it is assumed that a sole good is produced and that higher growth rates increase social wellbeing.

points of reference that allow him to forecast the consequences of his decisions;²⁴ for this reason, innovations are brought in by ‘new men’ capable of taking decisions in conditions of uncertainty.

The presence of bank money and the phenomenon of credit therefore characterise an economy that is markedly different from the one described by traditional theory; it is an economy that is subject to a continuous process of change due to the introduction of innovations, in which the principle of consumer sovereignty does not hold and in which the dimension of uncertainty assumes considerable weight. The working of such an economy cannot be described by taking as a reference a static economy without innovations, that which Schumpeter defines *pure exchange economy*; he emphasizes this point when he observes that Wicksell’s concept of the natural interest rate has no relevance when one wants to explain the working of a *capitalist economy*:

“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, p.101)

²⁴ “... 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, pp. 84-85). It can be observed that when Schumpeter describes the behaviour of the innovator-entrepreneur, the views he expresses are similar to those of Keynes on the impossibility of predicting the future effects of economic decisions on the basis of observations on the past; on this point see: Bertocco 2007.

It is not possible to apply to a *capitalist economy* concepts that are appropriate for an economy characterised by the absence of bank money. As we have seen, Schumpeter believes that to explain the working of a *capitalist economy* it is necessary to elaborate a theory based on the heresy that money is not a neutral variable since its presence constitutes a necessary element to explain the phenomenon of development. An important implication of the non-neutrality of money theory elaborated by Schumpeter is in the importance given to the monetary nature of capital, profits and interest rates; he notes that in such an economy the meaning of these variables can be defined only starting from the presence of banks and bank money. Schumpeter affirms that the definition of capital as a set of goods used as means of production, the definition used by Böhm-Bawerk, cannot be applied to a capitalist system because it is a definition that can be adapted to any economic system.²⁵ Schumpeter's definition reflects the importance he assigns to bank money in the development process; in fact, he identifies capital with the purchasing power made available to entrepreneurs 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, p. 122)

By specifying the monetary nature of capital, Schumpeter (1939, p. 80) affirms that profits cannot be considered as the result of the productivity of a particular productive factor; he (Schumpeter 1912, p.154) considers profits as a phenomenon present only in a monetary economy in which innovations, financed by money created by the banks, invest entrepreneurs with a monopolistic power that allows them to get a monetary surplus over costs.

Moreover, Schumpeter highlights the monetary nature of the interest rate; it does not constitute the reward for giving up consumption because the supply of credit does not coincide with the saving. Schumpeter derives the monetary nature of the 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, p. 183; Schumpeter, 1939, p. 100), and emphasises (Schumpeter 1912, p. 195) 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.

²⁵ "... capital defined so as to consist of goods belongs to every economic organisation and hence is not suitable for characterising the capitalistic one..." Schumpeter (1912, p. 117); and again: "Capital is neither the whole nor a part of the means of production – original or produced. Nor is capital a stock of consumption goods." Schumpeter (1912, p. 123).

2.3.3 Schumpeter and the consensus dimension.

As we have seen in the previous pages, Schumpeter assumes that the productive resources, that we can assume are made up of labour force and instrumental goods constructed through labour according to the definition of Böhm-Bawerk, are completely used by the existing firms; the bank money that is created by the banks allows innovator-entrepreneurs to take control of the productive resources away from the existing firms and inflation is the tool that enables us to modify the distribution of the existing productive resources. What makes the process described by Schumpeter different from *forced saving* described by the *loanable funds theory* is the presence of innovations. The concept of *forced saving* is applied to a world in which just one good is produced; in this case the production process can be described by considering simply the level of production and its composition in terms of quotas of consumption and investment and the presence of bank money makes the relation between saving and investment more complicated without altering the structure of the system. Bresciani-Turroni (1936) for example, notes that in the presence of bank money saving and investments are not realised simultaneously, but the flow of investments can anticipate the saving flow.²⁶ He hypothesises, following Böhm-Bawerk, that the investment goods must be realised through labour and thus, in an initial phase it is necessary for the entrepreneurs to procure an amount of consumer goods that will make it possible to maintain the workers involved in the production of investment goods; this demand can be financed through credit. In the second phase the saving flow arises, allowing the entrepreneurs to extinguish the debts contracted for the acquisition of the capital goods.²⁷

²⁶ "... new investment... need not take place simultaneously with saving, or follow more or less closely upon it, but will in many cases precede saving. Investment is then financed not with savings but with bank credit, which anticipates future saving." (Bresciani-Turroni 1936, p. 165)

²⁷ "The essential fact is that, in order that new investment goods be produced, it is necessary to dispose of a certain flow of consumers' goods, which will maintain labour during the process of production. Either these goods are supplied by the savers themselves, and in this case no short time credit is needed; or the new investment goods are produced in anticipation of future saving, through diverting part of the existing stream of consumption goods to other directions; and in this case the subsequent saving does not result in the creation of additional free capital in the form of consumption goods, but merely renders it possible to the entrepreneurs to pay off their debts." (Bresciani-Turroni 1936, pp. 21-22)

It is most significant that, in order to illustrate his arguments, Bresciani-Turroni uses the example of the railways,²⁸ the same example employed by Schumpeter to describe the process of change that characterises a *capitalist economy*. Bresciani –Turroni does not use the concept of innovation and therefore he analyses only the repercussions of the decision to build the railways on the total amount of investments and saving; in contrast, Schumpeter forces us to consider new aspects concerning the construction of the railways. First, he emphasizes that the introduction of the railways did not result from the demands of consumers, but was the fruit of a decision by entrepreneurs and banks that could radically alter the structure of the economic system. By facilitating the connections between different regions, railways foster exchanges, permit the opening of new markets, determine the influx of new products; these changes can bring existing firms to crisis point, and more in general, radically affect the standards of living in society.

Secondly, Schumpeter’s analysis leads us to notice that the decision to make the railways was taken in conditions of uncertainty: the entrepreneurs-innovators only had a vague idea of the economic consequences of their decisions. If they had done nothing more than build a new model of boat that was more efficient than the previous one, they would have been able to predict with ease the greater quantity of fish that they could have obtained. In the case of the railways, the situation is different; the entrepreneur must be able to imagine the characteristics of the new world in which fishing is no longer the only productive activity because, for example, thanks to the railway the fishermen can easily reach a new region where other goods are produced. Finally, Schumpeter observes that the introduction of an innovation such as the railways can give rise to a profit as a result of the monopolistic power that the entrepreneur-innovator enjoys.

We can point out that if the dimension that characterises the mainstream approach is the neutrality of the financial structures, the dimension that marks the Schumpeter approach is

²⁸ “When it is anticipated that, for instance, a railway will be constructed during the period BC, the preparatory work will already begin, say, during the period OA. Coal producers get credit in order to pay their workers, and the credits are repaid when the coal enterprises sell the coal to firms which produce raw steel. The latter will also buy coal, iron ore, and services of labour with credits, which in turn will be repaid when the steel is sold. The volume of short term credit thus swells as production proceeds from the higher to the lower stages. When during the period BC funds begin to be raised by the promoters who plan to construct a railway, there are already locomotives, car, rails, sleepers, building materials awaiting a purchaser. They embody a certain volume of bank credit which will be released, and will become again available for production either on the same or on other lines, as soon as the new investment goods are exchanged against savings.” (Bresciani-Turroni 1936, pp. 20-21)

that of consensus. The role of banks is to decide whether or not to finance innovation projects whose effects will be produced at an uncertain future date. Schumpeter emphasises that banks do not act on behalf of a particular group of economic agents, but on behalf of society as a whole, since they do not lend resources owned by a specific group of agents.²⁹ He underlines that the entrepreneur-innovator does not risk his own resources but he acquires the means of production thanks to the purchasing power created by the banks; it is the bank that assumes the risk of the innovation and, through it, the entire community that accepts the redistribution of the ownership of the means of production, caused by the banks' decisions.³⁰ We can thus say that the banks express the consensus of society on the projects that the entrepreneurs plan to carry out.

Schumpeter underlines the importance of the role of the banks by affirming that they have the same function as the central authority in a socialist economy. In a socialist economy the means of production are publicly owned and so it is the central authority that decides how to use the available productive factors. When such authority decides to produce a new good, it orders a certain quantity of productive factors from a given sector to be collected and used in the new activity. In a capitalist economy in which the means of production are privately owned, the role of the central authority is carried out by the banks who offer the entrepreneur-innovator the purchasing power to enable him to use the productive factors, diverting them away from the uses to which they were previously destined (Schumpeter, 1939, p. 86). Awareness of the banks' social function leads Schumpeter (1939, pp. 90-91) to specify the features of the banker's behaviour. In the first place, the banker must know how to assess the characteristics of the investment project to be carried out and the personality of the

²⁹ After having underlined that the entrepreneur-innovator can carry out the innovations only thanks to the credit obtained by the banks and thus only if he becomes a debtor, Schumpeter states: "The entrepreneur is also a debtor in a deeper sense, as may be emphasised here: he receives goods from the social stream –again in principle- before he has contributed anything to it. In this sense he is so to speak a debtor of society. Goods are transferred to him, to which he has not that claim which alone gives access to the national dividend in other cases." (Schumpeter, 1912, p. 102)

³⁰ "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, p. 137)

entrepreneur. Secondly, as the banks act on behalf of society and not of particular agents, they must stay independent of the firms and political power.³¹

Finally, we can stress that the Schumpeter analysis leads us to ask a question that is not relevant according to mainstream theory. This question can be formulated as follows: given that the banks, in taking their financing decisions, express the consensus of society about the projects that the firms intend to make, we can ask ourselves to what extent can banks represent the aspirations and desires of society as a whole, and if there are tools that allow society to express some sort of judgement on the banks' action. This is a problem that is not posed in the mainstream approach since in a world without innovations and in which a sole good is produced, banks have just one objective: to facilitate the transfer of resources from savers to the firms in order to favour the growth of production; in this case the fundamental decision belongs to savers.

2.3.4 The role of saving

In contrast with mainstream theory, Schumpeter states that the process of development of a *capitalist economy* is independent of saving decisions: innovations are financed by money created by banks and not by saving. Naturally also in a *capitalist economy* the economic agents save, that is they decide not to use part of their income to demand goods; the problem then arises of how to define what type of relation manifests itself in this economy between credit supply, saving decisions and investment decisions.

We can specify this relation by introducing two hypotheses. The first one is to assume that the innovations are introduced by means of investment decisions; Schumpeter assumes that the stock of means of production is given and that innovations are introduced by subtracting the control of these means of production from the existing firms through the credit granted to

³¹ "If (banks) are to fulfil the function which has above been illustrated with the analogy with that socialist board which examines and passes upon the innovations envisaged by the executive, they must first be independent of the entrepreneurs whose plans they are to sanction or to refuse. This means, practically speaking, that banks and their officers must not have any stake in the gains of enterprise beyond what is implied by the loan contact. ... But another kind of independence must be added to the list of requirements: banks must also be independent of politics. Subservience to government or to public opinion would obviously paralyze the function of that socialist board. It also paralyzes a banking system. This fact is so serious because the banker's function is essentially a critical, checking, admonitory one. Alike in this respect to economists, bankers are worth their salt only if they make themselves thoroughly unpopular with governments, politicians, and the public." (Schumpeter 1939, p. 92).

the entrepreneurs-innovators. Let us assume instead that the innovations are introduced by means of the demand for investment goods; in this case, investment decisions do not consist merely of adding to the existing stock of capital goods new units of capital goods identical to the existing ones, 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.³² The second hypothesis is the introduction of the Keynesian principle of effective demand.

These assumptions enable us to describe the process of money creation by distinguishing two phases that correspond to the distinction between finance and funding introduced by Keynes:

“The entrepreneur when he decides to invest has to be satisfied on two points: firstly, that he can obtain sufficient short term finance during the period of producing the investment; and secondly, that he can eventually fund his short-term obligations by a long-term issue on satisfactory conditions.” (Keynes 1937c, p. 217)

In the first phase banks finance firms by creating new money. Banks and firms are the main actors in this phase; the supply of credit does not depend on saving decisions but on the decisions taken by banks. The investments financed by the banks determine an increase in income according to what is laid down in the Keynesian income theory. Dalziel (1996, 2001) describes the different phases of the income multiplication process which arises out of the expansion in the demand for investment goods financed by the creation of new bank money. In the second phase, wealth owners step in; the new money created by banks is added to the existing money and the saving flow generated by investment decisions increases the public's

³² Schumpeter himself underlines the relation between investment decisions and innovations when he criticises the static structure of Keynes's *General Theory*: "... reasoning on the assumption that variations in output are uniquely related to variations in employment imposes the ... assumption that all production functions remain invariant. Now the outstanding feature of capitalism is that they do not but that, on the contrary, they are being incessantly revolutionized. The capitalism process is essentially a process of change of the type which is being assumed away in this book, and all its characteristic phenomena and problems arise from the fact that it is such a process. A theory that postulates invariance of production functions may, if correct in itself, be still of some use to the theorists. But it is the theory of another world and out of all contact with modern industrial fact, unemployment included. No interpretation of modern vicissitudes, 'poverty in plenty' and the rest, can be derived from it. ... Since Mr. Keynes eliminates the most powerful propeller of investment, the financing of changes in production functions, the investment process in his theoretical world has hardly anything to do with the investment process in the actual world..." Schumpeter (1936, p. 794)

wealth. The second phase is the one in which firms and households express their decisions about the composition of their debts and their wealth; in this phase the conditions are created for the wealth owners to accept to hold the money created by the banks. We can distinguish the two stages of the money creation process by specifying two distinct markets: the money market and the credit market. The credit market is made up of flow variables: the credit demand function reflects the behaviour of firms; this demand for liquidity can be considered as a demand for credit since it is expressed by actors who: (a) do not have liquidity; and (b) who, when they obtain the cash, undertake to pay it back at a fixed future date. By specifying the credit demand function, we distinguish the firms' demand for liquidity to finance investment decisions from the demand for bank money which instead reflects the portfolio decisions of wealth owners. As for the credit supply function, the main conclusion which emerges from Schumpeter's analysis is that the supply of credit does not depend on saving decisions but depends on the decisions taken by banks and that it is independent of the savings flow. The money market is made up of stock variables; the money demand function describes the portfolio decisions of wealth owners, while the money supply corresponds to the sum of the stock of money available at the beginning of the period and the flow of money created by the banks to finance the firms' investment decisions.³³

Finally, we can highlight a problem that arises out of Schumpeter's analysis of the role of banks. The emphasis that he places on the monetary function of banks, that is on their capacity to create means of payment to finance innovations, contrasts with the conclusions of many recent studies that point out that innovations are financed by financial institutions such as venture capitalists. In these studies we can observe that bank credit does not constitute a very suitable instrument for financing the particularly risky investment projects which, if successful, could yield high returns. Indeed in these cases the banks would have to apply excessively high interest rates, above the limits that are set by law against usury, and which, if they could be applied, would constitute an intolerable burden for firms. On the contrary the venture capitalists finance the firms by underwriting shares, counting more on the possible gain in capital account to be obtained by the sale of shares rather than on the dividends.³⁴ If it is recognised that in contemporary economies innovations are not financed by banks but

³³ In Bertocco (2005) some examples of models that describe the credit market and the money market are specified.

³⁴ See for example: Gompers 1995; Berger and Udell 1998; Freel 2000; Mason and Harrison 2001; Carpenter and Petersen 2002; Rajan and Zingales 2003a, 2003b, 2003c, Perez 2007.

above all by agents such as venture capitalists, then we must ask if also these agents are able to carry out a monetary function similar to the one that characterises the banks. At first sight it would seem that the banks have a particular characteristic that distinguishes them from the other 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 what happens for the banks, the action of the non-bank financial institutes 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 traditional theory of credit according to which saving decisions constitute the original phenomenon that determines the credit supply and thus investment decisions; according to this theory the financing of innovations with money collected from savers has no effect on the level of the aggregate demand since set against the greater demand on the part of the innovator entrepreneur is the lower demand on the part of the savers.

It is possible to show that this conclusion is not well-founded by using the arguments, described in section 2.1, employed by Schumpeter to criticise Cannan's theory. As we have seen, Schumpeter notes that there is a fundamental difference between bank deposits and the deposits that have as an object a real good. Whoever deposits an object forgoes using that object up to the moment in which it is returned; he shall obtain a receipt that will allow him to obtain the return of the deposited object, but this receipt certainly cannot carry out the function of the deposited object. This is not true in the case of the bank deposit; in fact, in this case the depositor obtains a receipt that he can use as a means of payment, so therefore, Schumpeter concludes, in the case of money the depositors do not in fact give up consumption because they can purchase goods using as a means of payment their credit instruments with the banks.

These considerations allow us to observe that even if venture capitalists 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 players who obtained the financing, the lower demand for goods on the part of whoever underwrites the liabilities of the intermediary. Let us suppose, in fact, that the venture capitalists obtain the necessary funds to finance the entrepreneur-innovators from agents who decide not to consume part of their income and to underwrite quotas of a venture capital firm. Following Schumpeter's reasoning, we can observe that the savers who decide to finance a venture capitalist do not forgo demanding

goods at all as at any moment they can sell their quotas in the venture capital firm and thus use these quotas as a means of payment. We can say therefore that in the presence of a financial system that allows financial assets to be liquidated with ease, venture capitalists, while they do not create bank money, do create new liquidity when they collect money by selling their quotas to savers. Moreover, we must note that the wealth owners who underwrite shares in exchange for their money do not give up demanding goods, but they simply alter the composition of their wealth. The income saved, which is added to the stock of households wealth, heightens demand for financial assets without putting any limitation on the firms' investment decisions that are financed by means of the creation of new money or by the employment of existing money.

Conclusions

The aim of this paper is to highlight the limits of the mainstream theory according to which saving decisions determine the credit supply, investment decisions, and therefore the process of economic development. In the first part the common elements found in the saving theory elaborated by the classical, neoclassical and contemporary theories were specified.

The first element of the alternative analysis based on the arguments elaborated by Schumpeter in his critique of Cannan is the emphasis on the fact that the banks are not simply intermediaries, but that they finance firms by creating new means of payment. This thesis is analogous to that of Wicksell and the supporters of the *loanable funds theory*; where Schumpeter and Wicksell clearly diverge is in the specification of the consequences of the diffusion of bank money. Wicksell and the supporters of the *loanable funds theory*, as we have seen in section 2.2, believe that the spread of bank money does not modify the structure of the system with respect to a barter economy; the Wicksellian concept of the natural interest rate testifies to the close link between the two economies. The only consequence linked to the presence of banks is the fact that the monetary interest rate set by the banks can assume a value different from the natural rate; this discrepancy can generate cyclical fluctuations characterised by inflation and phenomena of *forced saving*.

Wicksell's thesis and that of the supporters of the *loanable funds theory* applies to an economy that Schumpeter would define as static, that is an economy whose only form of change regards the quantity of the only good produced: Smith's corn economy or the fishing-based economy of Böhm-Bawerk. Schumpeter observes that what distinguishes a *capitalist economy* from the economy described by the traditional theory is the phenomenon of change determined by two endogenous factors: innovations and bank credit. These two elements give

rise to a profoundly different economic system from the one described in the *loanable funds theory*; in the first place, as was pointed out in section 2.3.2., it is a world in which the principle of consumer sovereignty does not hold; as a matter of fact, innovations are not introduced through pressure from consumers, but instead they reflect the decisions of entrepreneur-innovators and the banks that finance them. In the second place, the *capitalist economy* described by Schumpeter is characterised by the presence of uncertainty defined in a Keynesian sense: the innovator entrepreneur, and the banks that finance him, take their decisions without having the possibility of predicting in probabilistic terms the future outcome of their decisions. Hence, it is an economy in which the effects of the banks' decisions cannot be described using the reductive concept of *forced saving*. Schumpeter underlines the fracture between a *capitalist economy* and a *real exchange economy*, abandoning the Wicksellian concept of natural interest rate and highlighting the monetary nature of concepts of capital, profit and interest.

In conclusion, Schumpeter's analysis leads us to state that in a *capitalist economy* credit and investment are variables which are independent of the saving flow. In section 2.3.4 we described the causal relation that links credit, investment decisions and saving decisions, specifying two phases in the process of money creation and distinguishing between the money market and the credit market. It was noted that investments can be financed not only through the creation of new money but also through the employment of existing money that can be made available to entrepreneurs-innovators thanks to the action of agents other than the banks such as the venture capitalists.

References

- Barro, R. and Sala-i-Martin, X. 2004. *Economic Growth*, Second Edition.
- Berger, A. and Udell, G. 1998. The economics of small business finance: the roles of private equity and debt markets in the financial growth cycle, *Journal of Banking & Finance*, 22, 613-673.
- Bertocco, G. 2005. The role of credit in a Keynesian monetary economy, *Review of Political Economy*, vol. 17, pp. 489-511.
- Bertocco, G. 2007. The characteristics of a monetary economy: a Keynes-Schumpeter approach, *Cambridge Journal of Economics*, vol. 31, 1, pp.101-122.
- Bindseil, U. 2004. *Monetary Policy Implementation*, Oxford University Press.
- Bridel, P. 1987a. Saving equal Investment, *The New Palgrave Dictionary of Economics*, The Macmillan Press, London.
- Bridel, P. 1987b. *Cambridge Monetary Theory*, The Macmillan Press, London
- Böhm-Bawerk, E. 1884. 'The problem of interest', 'Final conclusions' and Presente and future in economic life' in *Capital and Interest*, reprinted in: Cohen, A. and Harcourt, G. (eds.) *Capital Theory*, Elgar, Cheltenham, 2005.
- Bresciani-Turroni, C. 1936. The theory of saving. I The forms of the saving process, *Economica*, vol. 3, 9, pp. 1-23.

- Bresciani-Turroni, C. 1936. The theory of saving. II Disequilibrium between saving and investment, *Economica*, vol. 3, 10, pp. 162-181.
- Cadoret, I. 2001. The saving investment relation: a panel data, *Applied Economics Letters*, vol. 8, pp. 517-520.
- Cannan, E. 1921. The meaning of bank deposits, *Economica*, 1, pp. 28-36.
- Capasso, S. 2004. Financial markets, development and economic growth: tales of informational asymmetries, *Journal of Economic Surveys*, vol. 18, n. 3, pp.267-292.
- Carpenter, R. and Petersen, B. 2002. Capital market imperfections, high-tech investment, and new equity financing, *The Economic Journal*, vol. 112, february, pp. F54-F72.
- Chakrabarti, A. 2006. The saving-investment relationship revisited: new evidence from multivariate heterogeneous panel cointegration analyses, *Journal of Comparative Economics*, vol. 34, pp. 402-419.
- Chou, Y. 2007. Modelling financial innovation and economic growth: why the financial sector matters to the real economy, *Journal of Economic Education*, winter, pp. 78-91.
- Dalziel, P. 1996. The Keynesian multiplier, liquidity preference, and endogenous money, *Journal of Post Keynesian Economics*, vol.18, pp. 311–331.
- Dalziel, P. 2001. *Money, Credit and Price Stability*, London, Routledge.
- European Central Bank, 2004. The natural real interest rate in the Euro area, *ECB Monthly Bulletin*, may, pp. 57-69.
- Feldstein, M. and Horioka, C. 1980. Domestic saving and international capital flows, *Economic Journal*, vol. 90, pp. 314-329.
- Fergusson, L. 2006. Institutions for financial development: what are they and where do they come from?, *Journal of Economic Surveys*, vol. 20, n. 1. pp.27-69.
- Freel, M. 2000. Strategy and structure in innovative manufacturing SMEs: the case of an English region, *Small Business Economy*, 15, pp. 27-45.
- Garrison, R. 2004. Overconsumption and forced saving in the Mises-Hayek theory of the business cycle, *history of political Economy*, vol. 36, 2, pp. 323-349.
- Gompers, P. 1995. Optimal investment, monitoring, and the staging of venture capital, *The Journal of Finance* 50, pp. 1461-1489.
- Goodhart. C. 1989. *Money, Information and Uncertainty*, Macmillan, London..
- Hicks, J. 1969. *A Theory of Economic History*, London, Oxford University Press.
- Hicks, J. 1989. *A Market Theory of Money*, Oxford, Oxford University Press.
- Hollander, S.
- Kaldor N. 1982. *The Scourge of Monetarism*, Oxford University Press, Oxford.
- Keynes, J.M. 1973 (1937). The 'ex ante' theory of the rate of interest, *The Economic Journal*, in: J.M. Keynes, *The Collected Writings*, London, Macmillan Press, vol. XIV, 215-223
- Kindleberger, C. A. 1984. *Financial History of Western Europe*, George Allen & Unwin, London.
- King, R. and Levine, R. 1993. Finance and Growth. Schumpeter might be right, *The Quarterly Journal of Economics*, vol. 108, n. 3, pp. 717-737.
- Lavoie, M. 1996. Horizontalism, structuralism, liquidity preference and the principle of increasing risk, *Scottish Journal of Political Economy*, august, pp. 275-300.
- Leijonhufvud, A. 1981. *Information and Coordination. Essays in Macroeconomic Theory*. Oxford University Press, Oxford.
- Levine, R. 1997. Financial development and economic growth: views and agenda, *Journal of Economic Literature*, june, pp. 688-726.
- Levine, R. 2002. Bank-based or market-based financial systems: which is better?, *Journal of Financial Intermediation*, 11, pp. 398-428.
- Levine, R. 2004. Finance and growth: theory and evidence, NBER working paper 10766, september.
- Mason, C and Harrison, R. 2001. Financing entrepreneurship: venture capital and regional development, in: Martin, R. (ed.) *Money and the Space Economy*, John Wiley & Sons.
- McCallum, B. 1989. *Monetary Economics. Theory and Policy*. Macmillan Publishing Company, New York.
- Napoleoni, C. , *Smith, Ricardo, Marx*, Boringhieri, 1970, Torino.

- Ohlin, B. 1937a. Some notes on the Stockholm theory of savings and investment I, *The Economic Journal*, vol. 47, pp. 53-69.
- Ohlin, B. 1937b. Some notes on the Stockholm theory of saving and investment II, *The Economic Journal*, vol. 47, pp. 221-240.
- Ohlin, B. 1937c. Alternative theories of the rate of interest: three rejoinders, *The Economic Journal*, vol. 47, pp. 423-427.
- Oakley A. (1990). *Schumpeter's Theory of Capitalist Motion*, Edward Elgar, Aldershot.
- Perez, C. 2007. Finance and technical change: a long-term view, in: Hanusch, H. and Pyka, A. (eds.) *Elgar Companion to Neo-Schumpeterian Economics*, Edward Elgar, Cheltenham, UK.
- Rajan, R. and Zingales, L. 2003b. The great reversal: the politics of financial development in the twentieth century, *Journal of Financial Economics*, vol. 69, pp. 5-50.
- Rajan, R. and Zingales, L. 1998. Financial dependence and growth. *The American Economic Review*, 88, pp. 559-586.
- Rajan, R. and Zingales, L. 2003a. Banks and markets: the changing character of european finance, *NBER Working Paper Series*, n. 9595, march.
- Rajan, R. and Zingales, L. 2003c. *Saving Capitalism from Capitalist*, Crown Business Division of Random House, New York.
- Robertson, D. 1934. Industrial fluctuation and the natural rate of interest, *The Economic Journal*, vol. 44, pp. 650-656.
- Robertson, D. 1936. Some notes on Mr. Keynes' General Theory of Employment, *The Quarterly Journal of Economics*, vol. 51, pp. 168-191.
- Robertson, D. 1937. Alternative theories of the rate of interest: three rejoinders, *The Economic Journal*, vol. 47, pp.428-436.
- Schumpeter, J. 1912 [1934] *The Theory of Economic Development*, Harvard University Press, Cambridge, Mass.
- Schumpeter, J. 1917[1956]). Money and the social product, *International Economic Papers*, vol. 6, pp.148-211.
- Schumpeter, J. 1939 [1964] *Business Cycle. A Theoretical, Historical and Statistical Analysis of the Capitalist Process*, McGraw Hill, New York.
- Schumpeter, J. 1943. Capitalism in the postwar world, in Harris S. (ed.) *Postwar Economic Problems*, McGraw-Hill, London, reprinted in: Schumpeter, J. *Essays on Economic Topics of J. A. Schumpeter*, Kennikat Press, Port Washington, NY.
- Schumpeter, J. 1954. *History of Economic Analysis*, Oxford University Press, New York.
- Smith, A. 1776 (1904). *An Inquiry into the Nature and Causes of the Wealth of Nations*, Oxford University Press.
- Solow, R. 1956. A contribution to the theory of economic growth, *Quarterly Journal of Economics*, LXX, I, pp. 65-94.
- Stulz, R. 2001. Does financial structure matter for economic growth? A corporate finance perspective, in: Demirgüç-Kunt, A. and Levine, R. (eds.), *Financial structure and Economic Growth*, The MIT Press, Cambridge, Massachusetts.
- Taylor, L. 2000, *Capital, Accumulation and Money*, Kluwer Academic Publishers, Boston.
- Vercelli, A. 1997. Keynes, Schumpeter and beyond, in: Harcourt, G. and Riach, P. (eds.): *A 'Second Edition' of The General Theory*, vol. 2, Routledge, London.
- Wachtel, P. 2003. How much do we really know about growth and finance?, *Federal Reserve Bank of Atlanta Economic Review*, first quarter, pp. 33-47.
- Wicksell, K. 1898. The influence of the rate of interest on commodity prices, in: Wicksell, K. *Selected Papers on Economic Activity*, Augustus M. Kelley Publishers, New York, 1969.
- Woodford, M. 2003. *Interest and Prices*, Princeton University Press, Princeton.
- Wurgler, J. 2000. Financial markets and the allocation of capital, *Journal of financial Economics*, 58, pp. 187-214.