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ARE BANKS REALLY SPECIAL? A NOTE ON THE THEORY OF FINANCIAL INTERMEDIARIES.

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Abstract

Economic theory has not paid much attention to the topic of firm financing; this lack of interest was common to the two principal macroeconomic theories, the Keynesian theory and the Monetarist one. This work considers two important exceptions to the mainstream theory. The first coincides with Tobin's theory. The second exception is constituted by the asymmetric information approach. These two approaches define in a different way the role of banks; Tobin elaborates a 'new view' which, in contrast with the 'old view', maintains that there are no reasons to attribute a special role to the banks. In contrast with Tobin's theory, the supporters of the AI approach attribute a special role to the banks but, unlike the 'old view', they think that banks' specificity is justified by the characteristics of their assets rather than by the characteristics of their liabilities. The objective of this paper is twofold: a) to analyse critically Tobin's approach and the asymmetric information approach; b) to elaborate a theory of financial intermediaries which get over the limits of these two approaches.

Introduction

Economic theory has not paid much attention to the topic of firm financing, i.e. the mechanisms through which firms procure themselves the means of payment necessary to carry out their investment decisions, and to the analysis of the role of financial intermediaries. This lack of interest was common to the two principal macroeconomic theories, the Keynesian theory and the Monetarist one. Both were presented through models identifying the monetary sector solely with the money market.

The Keynesian theory supported the thesis of the non-neutrality of money by using more or less sophisticated versions of the IS-LM model, according to which investment decisions depend only on the interest rate whose level is determined by the money market equilibrium. The implicit hypothesis in these models is that firms are always able to obtain the liquidity necessary to carry out the desired investments. This approach found important theoretical support in the Modigliani-Miller theorem that shows that the cost of the capital, i.e. the rate of return that conditions the firm's investment decisions, is independent of the decision regarding the source of financing, whether this be self-financing, a new equity issue or indebtedness.

The Monetarist theory motivates the irrelevance of the firm financing issue by stating that it is not possible to attribute to the credit market a role which is distinct from that played in the real sector, inasmuch as the credit market coincides with the real sector. This theory separates the money market from the credit market; Friedman and Schwartz (1982) assert that the two markets are characterised by different prices: the price of money corresponds to the quantity of goods that can be purchased with a unit of money, thus it is equal to the inverse of the price level, while the price of credit is the interest rate. This distinction reflects the conclusions of the quantity theory of money according to which the imbalance between money demand and supply influences the level of the aggregate demand and thus the price level. In the case of the credit market, however, any demand and supply disequilibrium will have no effect on the aggregate demand and on the price level. The absence of a link between the quantity of credit and the aggregate demand level is due to the fact that the credit demand and supply derive from real decisions: the credit supply is generated by saving decisions while the credit demand reflects investment decisions. The credit market coincides with the real sector of the economy, so it is pointless to study the relation between the credit market

and the real sector.¹ To leave aside the credit market means also to overlook the financial intermediaries, whose essential role is to facilitate the transfer of resources from savers to firms.

This work considers two important exceptions to the mainstream theory. The first is Tobin's theory. Since the 1960s Tobin has set himself the objective of developing a macroeconomic model more general than that specified by Keynes in *The General Theory*. Keynes had assumed that all the assets different from money were perfect substitutes; this hypothesis allowed him to explain only one interest rate. On the contrary, Tobin abandons the perfect substitutability hypothesis and elaborates a theoretical model which envisages more than two assets and explicitly deals with financial intermediaries. Moreover Tobin asks himself whether banks play a special role compared with the other intermediaries and elaborates a 'new view' which, in contrast with the 'old view', maintains that there are no reasons to attribute a special role to the banks.

The second exception is constituted by the asymmetric information (AI) approach. This approach explicitly analyses the topic of financing firms' investment decisions, and elaborates a theory of financial intermediaries which justifies their existence by the presence of asymmetric information. In contrast with Tobin's theory, the supporters of the AI approach attribute a special role to the banks but, unlike the 'old view', they think that banks' specificity is justified by the characteristics of their assets rather than by the characteristics of their liabilities.

The objective of this paper is twofold: a) to analyse critically Tobin's approach and the (AI) approach; b) to elaborate a theory of financial intermediaries capable of overcoming the limits of these two approaches. The paper is divided into three parts: in the first one, the most important aspects of the Tobin's 'new view' and of the (AI) approach are described. The

¹ McCallum (1989, pp. 29-30) states that the decision to overlook the credit market "... 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."

limitations of these theoretical approaches are then showed in the second section; in the last section the elements of a theory of financial intermediaries which overcomes these limits are outlined.

1. Tobin's 'new view' and the asymmetric information approach.

1.1 Tobin's 'new view'.

Tobin presents his theory of financial intermediaries by starting from a criticism of the 'old view' according to which banks, in contrast with other intermediaries, can spread out their loans without limits since their liabilities are used as means of payment. Banks loans are not bound by banks deposits as banks can create money by a simple 'stroke of pen' which allows borrowers to issue cheques. Banks are special because depositors entrust to banks whatever amount banks are willing to lend, whereas other intermediaries lend up to what they are able to collect. Moreover, the 'old view' deems it necessary to impose a reserve requirement on banks in order to limit banks' loans. Tobin (1963, p. 2) thinks that the 'old view' is conditioned by the:

“... mystique of 'money' – the tradition of distinguishing sharply between those assets which are and those which are not 'money', and accordingly between those institutions which emit 'money' and those whose liabilities are not 'money'.”

In other words, he thinks that the 'old view' is grounded in the thesis according to which money is unique and there are no substitutes for it. The 'mystique of money' is founded on the idea that money has a particular function which differentiates it from other assets: the means of exchanges function. Tobin's analysis is grounded in a different vision which emphasises its store of wealth function. This vision, which has his theoretical roots in Hicks's famous article (Hicks 1935) and in *The General Theory*, is based on the concept of demand for money and maintains that the most important question that monetary theory have to deal with is to explain:

“... why paper that makes no intrinsic contribution to utility or technology is held at all and has positive value in exchange for goods and services.” (Tobin, 1982, p. 173)

Tobin produced fundamental contributions on this issue. In his 1958 article, Tobin elaborated a new version of the Keynesian liquidity preference theory showing that a wealth owner can choose, on the basis of the speculative motive, a diversified portfolio. Starting from the 1960s Tobin published works in which he developed models of the capital account which are based on the elimination of the hypothesis employed by Keynes in the General Theory, according to which all the assets different from money are perfect substitutes.² In these works Tobin (1963, pp. 3-4) defines the role of financial intermediaries as:

“According to the ‘new view’, the essential function of financial intermediaries, including commercial banks, is to satisfy simultaneously the portfolio preferences of two types of individuals or firms. On one side are borrowers, who wish to expand their holdings of real assets – inventories, residential real estate, productive plant and equipment, etc. beyond the limits of their own net worth. On the other side are lenders, who wish to hold part or all of their net worth in assets of stable money value with negligible risk of default. The assets of financial intermediaries are obligations of the borrowers – promissory notes, bonds, mortgages. The liability of financial intermediaries are the assets of the lenders – bank deposits, insurance policies, pension rights.”

Financial intermediaries can match the portfolio preferences of these two types of subjects thanks to their ability to assume liability of smaller risk and greater liquidity than their assets.³

Tobin maintains that there are no reasons to attribute a special role to banks; banks, like other intermediaries issue liabilities which have to satisfy the preferences of wealth owners, and they store up assets which satisfy the portfolio preferences of borrowers. The fact that banks liabilities are used as means of payment is not a sufficient reason to attribute a special

² “In a world of financial assets and well-developed capital markets, Keynes ... was right in perceiving the tactical advantage to the theorist of treating separately decisions determining total wealth and its rate of growth and decisions regarding the composition of wealth. A theory of the income account concerns what goods and services are produced and consumed, and how fast nonhuman wealth is accumulated. The decision variables are flows. A theory of the capital account concerns the propositions in which various assets and debts appear in portfolios and balance sheets. The decision variables are stocks.” Tobin (1961, p. 28).

³ Tobin (1963, p. 4) specifies the factors that allow intermediaries to carry out their function : “The reasons that the intermediation of financial institutions can accomplish these transformations between the nature of the obligation of the borrower and the nature of the assets of the ultimate lender are these: 1) administrative economy and expertise in negotiating, accounting, appraising, and collecting; 2) reduction of risk per dollar of lending by the pooling of independent risks, with respect both to loan default and to deposit withdrawal; 3) governmental guarantees of the liabilities of the institutions and other provisions... designed to assure the solvency and liquidity of the institutions.”

role to the banks.⁴ Tobin (1963; Tobin and Brainard 1963) justifies this conclusion by underlying that banks' dimensions are conditioned by the same factors that determine the dimensions of other intermediaries: the portfolio preferences of wealth owners and of borrowers.

Tobin maintains that the 'old view' is founded on the wrong hypothesis according to which wealth owners get ready to demand whatever quantity of money banks decide to create. Tobin underlines that, in reality, banks' decisions depend on the wealth owners' availability to hold new bank deposits. He illustrates this conclusion by describing two operations which allow the banks to expand their assets:

“The banking system can expand its assets either (a) by purchasing, or lending against existing assets; or, (b) by lending to finance new private investment in inventories or capital goods, or buying government securities financing new public deficits. In case (a) no increase in private wealth occurs in conjunction with the banks' expansion. There is no new private saving and investment. In case (b), new private saving occurs... In neither case will there automatically be an increase in savers' demand for bank deposits equal to the expansion in banks assets.

In the second case, it is true, there is an increase in private wealth. But even if we assume a closed economy in order to abstract from leakages of capital abroad, the community will not ordinarily wish to put 100 per cent of its new saving into bank deposits. Banks deposits are, after all, only about 15 per cent of total private wealth in the United States; other things equal, savers cannot be expected greatly to exceed this proportion in allocating new saving. So, if *all* new saving is to take the form of bank deposits, other things cannot stay equal. Specifically, the yields and other advantages of the competing assets into which new saving would otherwise flow will have to fall enough so that savers prefer bank deposits.

This is *a fortiori* true in case (a) where there is no new saving...the banking system has to induce the public to swap loans and securities for bank deposits. This can happen only if the price is right.

Clearly, then, there is at any moment a natural economic limit to the scale of the commercial banking industry. Given the wealth and the asset preferences of the community, the demand for bank deposits can increase only if the yields of other assets fall. ... In this respect the commercial banking industry is not qualitatively different from any other financial intermediary system. The same process limits the collective expansion of savings and loan associations, or savings banks, or life insurance companies.”

⁴ “The special attention given commercial banks in economic analysis is usually justified by the observation that, alone among intermediaries, banks ‘create’ means of payment. This rationale is on its face far from convincing. The means-of-payment characteristic of demand deposits is indeed a feature differentiating bank liabilities from those of other intermediaries. Insurance against death is equally a feature differentiating life insurance policies from the obligations of other intermediaries, including banks. It is not obvious that one kind of differentiation should be singled out for special analytical treatment.” (Tobin 1963, p. 5)

Tobin concludes that even in absence of reserve requirement, banks' dimensions are limited by the same factor that determines the size of other intermediaries;⁵ the presence of wealth owners who wish to hold intermediaries' liabilities. He maintains that:

“... it is more accurate to attribute the special place of banks among intermediaries to the legal restrictions to which banks alone are subjected than to attribute these restrictions to the special character of bank liabilities.” (Tobin 1963, p. 9)

1.2 The asymmetric information approach

The AI approach like the ‘old view’ attributes a special role to the banks, but unlike the ‘old view’, it maintains that banks’ specificity is justified by the characteristics of their assets rather than those of their liabilities. This approach abandons the hypothesis of perfect markets on which the neoclassical theorems on the irrelevance of money and the financial variables were founded. The capital market is significantly different in one respect from the other markets in which a simultaneous exchange between goods and money takes place; in the capital market, a given amount of money is exchanged for the promise of receiving a greater amount of money in the future. The temporal dimension of the credit contract leads the creditors to gather information in order to evaluate the ability of debtors to pay back the loan. Two types of situations can be distinguished: a) in the first, characterised by symmetric information, debtor and creditor have the same access to all the information available, b) in the second, characterised by asymmetric information, the creditors do not have all the information available to the debtors. The presence of information asymmetries in the capital market has two important consequences: a) in the first place, it eliminates the assumption of perfect substitutability between the different sources of firm financing. In the presence of asymmetric information, the Modigliani–Miller theorem is no longer valid and the firms are not indifferent as regards the choice of the source of financing. The problem of the choice of the optimal financial structure, that is of the financial structure that allows the information

⁵ “The volume of assets and liabilities of every intermediary, both non banks and banks, would be determined in a competitive equilibrium, where the rate of interest charged borrowers by each kind of institutions just balances at the margin the rate of interest paid by its creditors.” (Tobin 1963, p. 7)

costs to be minimized, becomes important⁶; b) secondly, it provides a justification for the presence of financial intermediaries, and, in particular, of the banks, who specialise in information gathering. The objective of a financial intermediation theory is to provide a justification for the existence of financial intermediaries. The theory which characterises the AI approach is elaborated by starting from the observation that the presence of debtors and creditors is the necessary premise to justify the presence of financial intermediaries. The recourse to financial intermediaries entails a cost for the creditors and debtors; for this reason, the theory should explain what are the services provided by the financial intermediaries which compensate for the costs of intermediation.⁷ The presence of asymmetric information allows us to formulate a good answer: the services offered by the intermediaries is to gather information. Intermediaries play the same role in the credit market as the merchants play in Akerlof's used car market. Akerlof (1970) emphasized that the presence of asymmetric information stimulates the creation of agents whose purpose is to reduce the information costs; he considered, in particular, the activity of merchants that specialize in evaluating the quality of the goods exchanged. Fama (1985, p. 36) illustrates the role played by financial intermediaries using the distinction between inside debt and outside debt:

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

The characteristic of banks is to provide finance through inside debt contracts stipulated on the basis of information not publicly available, which is obtained in virtue of the close relation with the debtors. Also Goodhart (1987) underlines that banks' special role is justified by the characteristics of their assets: he observes that banks' specificity cannot be justified by

⁶ See: Myers (2001); Myers and Majluf (1984); Greenwald, Stiglitz and Weiss (1984); Greenwald and Stiglitz (1987, 1990, 1991, 1993a, 1993b).

⁷ “... it is useful to observe that, in principle, intermediate finance has one disadvantage: the chain of transactions between the firm and the final investor is longer, and *ceteris paribus*, an increase in the length of the chain of transactions may be taken to entail an increase in transactions costs. Any proposition that intermediated finance is more advantageous than direct finance must therefore be based on a view that the presumed gains from intermediation are more than enough to compensate for the increased transactions costs.” (Hellwig 1991, p. 42).

their capability to create money since there are no reasons that prevent other intermediaries from creating money. He maintains that a financial system in which the monetary function were carried out by investment funds rather than banks, would be probably safer and more stable;⁸ he asserts that the fact that the monetary function is carried out by banks is the result of an historical process.⁹ This leads Goodhart (1987, p. 85) to conclude that banks' specificity is justified by the characteristics of their assets:

“The key difference between a collective investment fund and a bank is that the former invests entirely, or primarily, in marketable assets, while the latter invests quite largely in non-marketable (or, at least, non marketed) assets.

Why do borrowers prefer to obtain loans from banks rather than issue marketable securities? The set-up costs required to allow a proper market to exist have represented, in practice, formidable obstacles to the establishment of markets in the debt and equity obligations of persons and small businesses. Underlying these are the costs of providing sufficient public information to enable an equilibrium fundamental value to be established... and the size of the expected regular volume of transactions necessary to induce a market maker to establish a market in such an asset. ... the particular role of banks is to specialize in choosing borrowers and monitoring their behaviour. Public information on the economic condition and prospects of such borrowers is so limited and expensive, that the alternative of issuing marketable securities is either non-existent or unattractive.”

⁸ “We are so used to having payments' services provided against checkable fixed nominal value liabilities, with 100% convertibility of demand deposits, that we have not –mostly- realized that payments' services could be just as easily provided by a mutual collective investment financial intermediary, where the liabilities are units representing a proportional claim on a set of marketable assets. ... I see no insuperable technical problem why payments' services could not be provided by mutual collective investment intermediaries a monetary system in which transactions' services were provided to unit holders of collective investment mutual funds would seem inherently safer and more stable than the present system, in which such services are provided to (a sub-set of) bank depositors. Indeed, the nature of bank portfolios, largely filled with nonmarketable assets of uncertain true value held on the basis of nominally fixed value liabilities, would seem remarkably unsuited to form the basis of our payments' systems.” (Goodhart 1987, pp. 79-83).

⁹ Goodhart asserts that the fact that the monetary function is carried out by banks is due to: “... the accidents of historical evolution. Broad, well-functioning, efficient asset markets are a reasonably recent phenomenon. Because of people's need both to borrow and to find a secure home for savings, banks developed well before mutual collective investment funds. The historical form of bank development led them inevitably into the payments' business. Thereafter, the economies of scale involved in the existing structure of the payments' system, the clearing houses, branch networks and the intangibles of public familiarity and legal and institutional framework, left the banks largely – indeed in some Anglo Saxon countries absolutely – unrivalled in the provision of payments' services.” (Goodhart 1987, p. 83)

Both Fama and Goodhart single out an element which witness banks' specificity. Fama observes that banks unlike other intermediaries, are required to hold non-interest-bearing reserves against demand deposits, so they have to transfer the reserve costs to their customers. He maintains that the reserve costs are borne by banks' borrowers since a significant share of banks' liabilities is made up by certificates of deposit which must yield lenders the same interest as other securities of equivalent risk. This leads Fama(1985, p. 30) to conclude that there must be something special about banks assets:

“... there must be something special about bank loans that makes some borrowers willing to pay higher interest rates than those on the other securities of equivalent risk. Moreover, there must be something special about banks that prevents other intermediaries, like insurance companies and finance companies, whose liabilities are not subject to reserve requirements, from competing with banks to assure that it never pays to finance loans with CD's.”

The element which induces Goodhart to assert the banks' specificity thesis is the presence of a central bank. The presence of a central bank is justified by banks' riskiness which is not due to the monetary function carried out by them, but to the characteristics of their assets. Goodhart (1987, pp.84-85) maintains in fact, that even if banks did not carry out their monetary function, their riskiness, due to the characteristics of their assets, would not change and the presence of a central bank would always be indispensable:

“The ... question is whether the withdrawal of commercial banks from the provision of payments' services... would absolve the Central Bank from its central concern with the well-being of the banking system. If banks offered only time deposits, CDs, etc., leaving payments' and transactions' services to others, would there be any need for special support for the banking system?”

The answer to this, I believe, is that cessation of payments' services would make little difference to banks' riskiness or to the real basis of Central Bank concern with the banking system. ... Recent occasions of runs on banks have *not* involved an attempt by the public to move out of bank deposits into cash, but merely a flight of depositors from banks seen as now excessively dangerous to some alternative placement (not cash). ... I shall argue that, even were banking to be entirely divorced from the provision of payments' services, such flows between banks would be extremely damaging for the economy, and would require a continuing support role for a Central Bank to prevent and, if necessary, to recycle such flows.”

2. A critical analysis of Tobin's 'new view' and of the asymmetric information approach.

2.1 A critical analysis of Tobin's 'new view'.

Tobin analyses the role of financial intermediaries by using a theoretical scheme founded on the concept of money demand and on the liquidity preference theory; this theoretical scheme allows him to conclude that banks' dimensions depend, as in the case of other intermediaries, on the wealth owners' willingness to demand banks' liabilities. Tobin's approach describes in a partial way the money creation process and the role of banks. Following Tobin's analysis, open market operations are the only mechanism through which money is created in a capital account model. With these operations the central bank manages to change the quantity of money by inducing the wealth owners to modify the composition of their wealth. The moment in which the central bank changes the quantity of money coincides with the moment in which wealth owners change the composition of their wealth; in this case, the quantity of money can change only if the money demand changes.

We have to observe however, that in a world which uses bank money, open market operations are not the only channel by which money is created. Banks can create money by financing agents' spending decisions; for example, they can finance firms' investment decisions. In this case the process of money creation can be divided in two phases. In the first one, banks finance firms by creating new money. Banks and firms are the main actors of this phase. The increase in effective demand will cause an increase in income according to what defined by the Keynesian income theory. In the second phase, wealth owners step in: bank money created in order to finance firms' investment decisions need to be demanded by wealth owners. Tobin completely neglects the first phase and concentrates his attention only on the second phase; this choice has two implications.

First we can note that Tobin elaborates a partial explanation of the role of banks; he maintains in fact, that the presence of debtors and creditors is the necessary premise to justify the presence of financial intermediaries and hence of banks. In reality, if we contemplate the first phase of the money creation process, we can single out only two groups of agents: banks and firms. In this phase there is no role for wealth owners; we can conclude that the existence of banks doesn't presuppose the presence of wealth owners.

The specification of the two phases of the money creation process, allows us to underline a second limit of Tobin's analysis: Tobin assumes that the money created by banks to finance firms' investment must be stored up by wealth owners; he assumes that banks deposits coincide with bank loans and that banks' balance sheet can be represented by the following equation:

$$a) D = L$$

D = banks deposits

L = banks loans

This equation describes a particular situation; we can in fact, imagine different situations in which banks' deposits and banks' loans do not coincide. We can assume, for example, that banks issue two types of liabilities: deposits and certificates of deposit (CD); alternatively, we can hypothesize that banks store up two assets: loans and bonds. These two cases can be described by the following equations:

$$b) D + CD = L$$

$$c) D = L + B$$

CD = certificates of deposit

B = bonds

In these cases banks can vary deposits and loans independently of each other. After having created, in the first phase, the money necessary to finance firms' investment decisions, in the second phase, banks could satisfy the wealth owners demand for money, by modifying their stock of bonds or of CD.

We can illustrate these concepts with the following macroeconomic model which describes a system composed of five markets: money, which corresponds to bank deposits; monetary base; bank credit; government bonds and commodities. Let us suppose that the banks' balance sheet can be represented by the following equation containing flow variables:

$$\Delta D + \Delta CD = \Delta R + \Delta L$$

Banks issue two types of liabilities: deposits (ΔD), which have a return equal to zero and certificates of deposit (ΔCD). Let us suppose that the CDs are considered perfect substitutes for government bonds by wealth owners. The banks' assets are made up of loans (ΔL) and free reserves (ΔR)¹⁰ which are proportional to deposits according to the relation:

$$\Delta ROB = f(\Delta D)$$

¹⁰ We hypothesize that banks are not required to have legal reserves.

Let us suppose that banks can get the monetary base necessary to make up their free reserves by borrowing from the central bank which will charge the official rate of interest (r^*). Let us further assume that the banks set their interest rate on loans (r_l) by applying a mark-up on the rate (r^*).

We can represent the credit market and the goods market using the following equations:

$$r_l = (1+q)r^* \quad (1)$$

$$I = I(\pi_f^e; r_l) \quad (2)$$

$$\Delta L = I \quad (3)$$

$$Y = Y(I; G; s) \quad (4)$$

Equation (1) defines the rate on loans r_l as a function of the rate r^* set by the monetary authorities. Firms define the desired investments (I) according to their expectations of profits (π_f^e) and the loan rate. We assume that once the interest rate on loans has been set, the banks meet firms' demand for credit to finance the desired investments (eq. 3). Equation (4) determines the level of income Y as a function of investment, public spending G , and the propensity to save s . This first block of four equations determine: r_l ; I ; ΔL ; Y . The level of investment spending depends on the decisions of the monetary authorities and the banks which determine interest rates and the amount of credit.

The money market can be represented by the following equations:

$$M = M(Y; r_b; W) \quad (5)$$

$$r_b = r_l - a \quad (6)$$

$$W = W_{t-1} + S(Y) \quad (7)$$

$$\Delta D = M - M_{t-1} \quad (8)$$

$$\Delta R = f(\Delta D) \quad (9)$$

$$\Delta BM = \Delta R \quad (10)$$

$$\Delta CD = \Delta L + \Delta ROB - \Delta D \quad (11)$$

Equation (5) determines the money stock demanded by wealth owners as a function of income, the interest rate on public bonds and on CD, and of wealth W . Moreover it is assumed that banks apply an interest rate on CD (r_b) equal to the rate on loans net of the intermediation costs (a). In equation (7) the wealth available at any time is equal to the level of wealth in the preceding period (W_{t-1}) increased by the savings flow S which depends on the current income. Equation (8) defines the flow of deposits ΔD , and equation (9) describes the relation between the reserve and deposits, while equation (10) determines the monetary base flow that must be created by the monetary authorities to fulfil banks' demand for reserves.

Lastly, equation (11) determines the flow of CDs which the banks must create to meet their budgetary constraints; this flow is consistent with households' demand for CDs. The second set of equations determines: M , r_b , W , ΔD , ΔROB , ΔBM , ΔCD .

Through the creation of CDs, the banks are able to satisfy, on the one hand, the demand for money by the wealth owners, and, on the other, firms' demand for credit. In other words, the possibility of altering the flow of CDs allows the banks to vary the deposits and loans independently of each other. Let us consider, for example, an equilibrium situation with a bond rate (r_b^*), a loan rate (r_l^*), a flow of investments (I^*) and of income (Y^*). At these rates let us suppose that wealth owners demand a flow of money equal to ΔD^* , and that the monetary authorities create a monetary base flow equal to ΔBM^* . Equation (11) determines the value ΔCD^* which allows the banks' budgetary constraint to be met. Let us assume that the public's preference for liquidity changes: given the same level of income Y^* , the public now desires to hold a greater quantity of money. In this case the banks can satisfy the public's demand by creating deposits and correspondingly reducing their CDs; a new equilibrium will be reached in which the credit flow ΔL^* will remain unchanged, while there will be an increase in the flow of money.

Moreover, we can describe the consequences of a rise in the propensity to invest, by distinguishing two phases. In the first one, interest rate being constant, firms will increase their credit demand. Banks will finance firms by creating new money. When firms purchase investment goods, banks will record an increase in the flow of credit and a corresponding increase in the flow of deposits. The investment goods demand financed by bank credit permits the realization of the income level predicted by the multiplier theory and a savings flow equal to that of investments. The flow of savings so generated causes a change in the stock of wealth (eq. 7); in the second phase the problem arises of the choice of the composition of wealth. The increases in income and wealth triggered by an expansion in investments determine, given r_b , an expansion of the money demand (eq. 5). Naturally, this increase in money demand is not necessarily equal to the increase in deposits which corresponds to the flow of financing granted by banks to firms; wealth owners will eliminate the disequilibrium on the money market by exchanging deposits with certificates of deposits. These examples show that the wealth owners' decisions are not a fundamental factor in allowing us to determine banks' dimensions, which rather depend on banks and firms decisions. The dimensions of bank loans can change if change the criteria used by banks to examine firms' demand for credit, or if the firms' demand for credit change.

2.2 The limits of the asymmetric information approach.

There is an element that associate Tobin's and the AI approaches: they both regard the presence of debtors and creditors as the necessary condition justifying the presence of banks. However we can indicate an important difference between these two approaches: Tobin analyzes stock variables and underlines the role of banks in satisfying the portfolio preferences of creditors and borrowers, while the AI approach envisages flow variables. This difference evidences a different vision of the credit market. Tobin hypothesizes that borrowers demand credit in order to buy a quantity of existing capital goods exceeding their wealth, or to buy new capital goods. This analysis of the credit market is consistent with the Keynesian theory which maintains that credit supply does not coincide with saving decisions.

On the contrary, the AI approach analysis of the credit market has many elements in common with the Neoclassical theory. The credit market is the place in which savers transfer their resources to the firms. In an ideal world without imperfections, savers directly finance firms and there are no reasons justifying the presence of banks; their presence is justified by the existence of frictions which hinder the direct transfer of resources from savers to firms..¹¹

The credit market and the banks' decisions have a significant role only if it is assumed that banks are able to only partially screen firms. This hypothesis allows the supporters of the AI approach to state that, despite the presence of financial intermediaries, the capital market is still characterised by asymmetric information; this allows them to show that it is possible to reach a rationing equilibrium on the credit market. The presence of a rationing equilibrium is founded on the hypothesis that the banks are unable to perfectly screen firms, in other words, they are unable to gather all the information necessary to fully define the features of every investment project, which the firms intend to carry out. Starting from the hypothesis that every investment project has two features, the expected return and the risk, the AI approach assumes that the banks are able to identify the expected return of each project but not the degree of risk. The presence of asymmetric information has an important consequence, as Akerlof points out in his analysis of the used car market: the quality of the good exchanged depends on the price; in the case of the credit market the degree of riskiness

¹¹ "By credit creation process, we mean the process by which, in exchange for paper claim, the savings of specific individuals or firms are made available for use of other individuals or firms..." Bernanke (1993, p. 50). See also: Stiglitz and Weiss (1990); James and Smith (1994); Lewis (1995); Gorton and Winton (2002).

of the loans granted by the banks varies in accordance with the interest rate applied. Due to the adverse selection and incentive effects, an increase in the interest rate can bring about a sufficient increase in the riskiness of the loans to cause a reduction in the banks' expected profits. If there is an excessive demand for credit at the interest rate which maximises the banks' expected profit, there will be no reason for them to raise the interest rate, as such a decision would trigger a drop in their expected profits; in such a case, a rationing equilibrium occurs. The AI approach maintains that this phenomenon is due to the fact that banks are unable to perfectly screen firms.¹²

The hypothesis that the banks are able only to partially screen firms doesn't seem founded. Even if the role this hypothesis plays in the AI approach is clear, it is by no means clear what prevents the banks from obtaining all the information necessary about the firms' investment projects. In the used car market there are no obvious reasons to prevent merchants from accurately assessing the quality of used cars and thus eliminating the asymmetric information between buyers and sellers. Why is it that the banks, which were created with the aim of gathering information, are not able to obtain the necessary data to eliminate the asymmetric information between firms and savers? The doubts about the soundness of the assumption introduced by the AI approach are accentuated by the fact that this approach maintains that information exists which enables the future results of investments to be specified by a probability distribution. If we assume, as the supporters of the AI approach do, that it is possible to represent the future income of investment projects by a probability distribution characterized by two features, the expected return rate and the risk, then the assumption that the banks know only the expected return and not the degree of risk of each project becomes arbitrary. The soundness of the hypothesis introduced by the AI approach is challenged by Allen and Santomero (1998), who observed that the spread of the information technology revolution produced a significant reduction in information costs and therefore they

¹² "... the interest rate a bank charges may itself affect the riskiness of the pool of loans by either: 1) sorting potential borrowers (the adverse selection effect); or 2) affecting the actions of borrowers (the incentive effect). Both effects derive directly from the residual imperfect information which is present in loan markets after banks have evaluated loan applications." Stiglitz and Weiss (1981, p. 393). Stiglitz and Weiss (1990 p. 98) confirm: "The fact that the return received by lenders may *decrease* with an increase in the interest rate has one further effect: it means that there may be credit rationing... It should be emphasized that these arguments apply so long as the bank does not have *perfect* information concerning borrowers."

conclude that these costs do not constitute a convincing explanation for the presence of financial intermediaries.¹³

In conclusion, the AI approach doesn't seem to add much to the Neoclassical theory which regards credit as a real phenomenon. I believe that it is necessary to elaborate a credit theory according to which: a) the existence of banks does not depend on the presence of asymmetric information; and b) the credit supply is not identified with the saving decisions.

3. An alternative analysis

The fundamental limit of Tobin's 'new view' and of the AI approach consists in neglecting banks' monetary function: both the approaches do not give importance to the money creation process which take place in the credit market. Tobin analyzes the role of banks by using a portfolio model, while the AI approach only underlines banks assets and hypothesizes that credit supply depends on saving decisions. It is possible to define in a more significant way the role of banks and of financial intermediaries on the basis of Keynes's and Schumpeter's theories; the element which is common to them is the emphasis on the importance of the money creation process which take place in the credit market.

3.1 The Keynes-Schumpeter approach.¹⁴

In contrast with the mainstream theory, Keynes and Schumpeter state that the diffusion of a fiat money induces a radical modification into the way in which the economic system works. Both Keynes and Schumpeter maintain that it is not possible to describe the way in which an economy works in the presence of a fiat money by adopting the same theoretical framework used to describe a barter economy.

¹³ "... the advent of the technological revolution has substantially reduced the cost of information and reduced information asymmetry. Yet it did not reduce the need for intermediary services and encourage direct lending by households. In fact, the data suggest the opposite. In short, the decline in frictions which were allegedly the market imperfections that led to a need for intermediation services has not reduced the demand for them. Intermediation is growing and prospering even as the frictions decline." Allen and Santomero (1998, p. 1465); see also: Scholtens and Van Wensveen (2000).

¹⁴ For a more detailed analysis see: Bertocco (2003).

Keynes (1933a; 1933b) maintains that the spread of fiat money profoundly changed the characteristics of the economic system by distinguishing between a *real exchange economy* and a *monetary economy*. He uses the first term to denote an economy in which money is just an instrument that makes it possible to reduce the costs of the exchange; the use of money does not change the structure of the economic system with respect to a barter economy. It is an economy in which there is a mechanism which insures that all the monetary income is spent, directly or indirectly, to buy the goods produced by firms; in other words, it is an economy in which Say's law applies. With the term *monetary economy*, Keynes refers to an economy in which the presence of fiat money radically changes the nature of the exchanges and the law of production. The change in the nature of transactions depends on the characteristics of the mechanism by which fiat money is created. Fiat money, which is not a commodity, cannot be produced by labour. The production of fiat money is a prerogative of special entities, such as banks. The entities that are able to create money can buy commodities even if they do not possess goods. Banks do not buy commodities, but they finance agents against the promise to repay the amount received at a given future date. In either cases, the use of fiat money alters the nature of exchange since the necessary condition in order to buy goods is not the availability of goods, but the availability of money.

When bank money is used it is not necessary to possess goods in order to buy money; instead it is necessary to fulfil the criteria used by banks to ration credit. In a fiat money world the function of money as a means of payment acquires particular relevance: the disposability of money is necessary in order to buy goods, but the disposability of goods is not necessary in order to buy money. Keynes tackled the problem of the financing of spending decisions in several papers published between 1937 and 1939 in response to the criticisms of *The General Theory*, and, in particular, in response to Ohlin's criticisms of the book's interest rate theory. Ohlin contrasts Keynes's theory with a new version of the loanable funds theory, which holds that the interest rate is determined by the credit demand flow which depends on ex-ante investment, and by credit supply flow which depends on ex-ante saving. The concept of ex-ante investment enabled Keynes (1937c, p. 216) to show that firms intending to carry out investment projects must obtain the necessary funds. Although Ohlin's criticisms led Keynes to pay more attention to the financing of investment decisions, Keynes continued to dispute the thesis that ex-ante investment is financed by ex-ante saving. Keynes (1937c) criticises Ohlin by pointing out that the firms' demand for liquidity must be met by a supply of liquidity which can not arise from ex-ante saving. Saving cannot be the source of investment

financing inasmuch as it is the result of the investment process. From Keynes's analysis there emerges a theory of credit which is completely different to the one which characterises the Monetarist theory and the asymmetric information approach. According to them, the object of the credit is resources which have been saved; the existence of savers and investors is a necessary condition for a credit market, while the presence of banks is a consequence of the existence of asymmetric information. The use of fiat money has no effect on the nature of the credit market; both in the case in which commodity money is used and in the case in which fiat money is used, the object of the credit is the resources set aside by savers. Keynes instead maintains that: a) the object of credit is not saving, but the money created by the banks; b) the credit market is based on the relationship between banks and firms and not on the saver-investor relation.¹⁵

Like Keynes, Schumpeter states that the presence of fiat money gives the economy a completely different structure with respect to that of a barter economy. To highlight this change, Schumpeter (1912) distinguishes between a *pure exchange economy* and a *capitalist economy*. A *pure exchange economy* is one based on private property, on the division of labour and on free competition; an economy that always tends to replicate itself unchangingly, or that is in any case subject to very gradual changes triggered by extra-social factors like natural conditions, or by extra-economic social factors like wars, or by consumer tastes; it is an economy in which the production decisions are influenced by consumers preferences and in which the principle of consumer sovereignty holds. In a pure exchange economy, money is just an instrument that reduces the transaction costs; its presence does not alter the structure of the economic system. A capitalist economy, on the other hand, is an economy characterised by a continuous process of change triggered by endogenous factors.

Schumpeter (1912; 1939) emphasizes that the traditional theory is capable of describing only a *pure exchange economy*; the traditional theory is essentially a static theory which can describe the effects of exogenous changes on the characteristics of the equilibrium, or the effects of modifications of consumers preferences, but it is not capable of describing how the system evolves as a consequence of changes due to endogenous factors. Schumpeter's aim is to elaborate a theory which can explain the continuous evolution process that is typical of the capitalistic economy and that is generated by internal factors. This process is characterised by two elements; first, the changes taking place in production as a consequence of the

¹⁵ For a more detailed analysis on this point see: Bertocco (2005).

innovations spawned by entrepreneurs; these innovations might consist in the realisation of a new product, in the adoption of a new production method, or in the opening of new markets.

The second key element of the process of economic development is the creation of money by banks through credit. The essential role of 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 productions factors already available. Credit becomes a necessary factor for development when innovations are made by new entrepreneurs who do not own means of production. He justifies (Schumpeter 1912, ch. 2) 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. In order to underline this point, Schumpeter (1912, ch. 2) defines as entrepreneurs only those economic agents who introduce innovations. The second factor that makes the role of credit very important is the full employment hypothesis. Schumpeter (1912, ch. 2) stresses that the innovations are not realised by using unemployed production resources, but rather by using the existing resources in a different way. Credit is the instrument that makes it possible to realise innovations; banks, through the creation of bank money, transfer to the innovators-entrepreneurs the purchasing power which is necessary to divert the resources from their traditional uses.

By creating money to finance the innovators-entrepreneurs, the banks alter the distribution of the ownership of the means of production. The instrument which allows the ownership of the means of production to be transferred to the innovator entrepreneurs is the inflation triggered by the fact that the demand for means of production of the innovator-entrepreneurs is added to that of the already existing firms; this increase in the demand with respect to a constant supply of productive services causes an increase in the price of services which enables the innovator to divert resources from their current allocation.

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) argues that in a socialist economy, the innovation process does not require the use of credit, given that in this system there is a planning authority which decides to use the

production resources differently from the way they were previously used in order to achieve the innovations. By highlighting that the innovations are brought in by using existing resources differently, Schumpeter maintains that innovations do not depend on the flows of saving and investment. Schumpeter (1912, ch. 3) also points out that the roles of money and credit in a capitalist economy are completely different from those in a *pure exchange economy*. In a *pure exchange economy*, money is only an instrument to facilitate trade, which is obtained in exchange for goods or services; it is a "... certificate for previous production" (Schumpeter, 1912, p. 83), and its presence does not influence the structure of the economy. Conversely, bank money does not embody any right to realised production, but it is purchasing power created by banks which allows innovators-entrepreneurs to use existing production resources even if they have never been involved in the production process.

Schumpeter (1912; 1954) underlines that in a capitalistic economy, banks do not lend purchasing power that has been given to them by savers, but rather they create substitutes of legal-tender money which have the same functions as legal-tender money. In Schumpeter's view (1912, p. 125) the main players in the credit market, therefore, are not the savers and the firms, but banks and firms.

We must remember that there are important differences between the theories of Keynes and Schumpeter. The distance between the theories of Keynes and Schumpeter is testified by the negative judgment that Schumpeter expressed about *The General Theory*. Schumpeter criticised the static structure of Keynes' analysis based on the hypothesis of the existence of time-invariant production functions, which allowed Keynes to assert the existence of a strict relationship between variations of production and of employment. Schumpeter (1936) believed that a static theory was wholly unsuitable to describe how a modern capitalistic economy works.

We sustain that it is possible to elaborate a theoretical approach that contains the more meaningful aspects of the theories of Keynes and Schumpeter. This approach is based on three points. First of all, this approach acknowledges that Schumpeter's critique of *The General Theory* should be considered as well founded; Keynes' analysis neglects the consequences of investment decisions on the overall production capacity of the economy. This limit has been acknowledged by economists such as Kalecki (1971), Kaldor (1985), Hicks (1989). The first point that should characterise a Keynes-Schumpeter approach is the extension of the short term Keynesian theory by using Schumpeter's view on the effects of

innovations on the evolution of the economic system. Several economists have emphasised the desirability of integrating the Keynesian theory of income determination with Schumpeter's theory of economic development.¹⁶

In the second place, this approach accepts the Keynesian theory of income and abandons the hypothesis of full employment assumed by Schumpeter. This hypothesis allows Schumpeter to affirm that credit is the tool by which the productive resources are subtracted from the control of the existing enterprises and put to the disposition of the innovating entrepreneurs. Accepting the Keynesian theory of income and the principle of effective demand, we can underline that innovations are carried out, different from what was specified by Schumpeter, by investment decisions; in this case it is not necessary to assume the presence of full employment of the productive resources.

In third place, the Keynes-Schumpeter approach affirms the principle of money non-neutrality. Keynes and Schumpeter have elaborated two different monetary theories. Keynes's analysis focuses on the money market and gives prominence to the store of wealth function of money. Schumpeter does not distinguish between the money market, the credit market and the market for capital. The market for capital is the market in which entrepreneurs demand bank liquidity. The subject of exchange in the capital market is the money created by banks which is transferred to firms through a credit contract; hence, Schumpeter (1912) does not distinguish between demand for capital, money demand and credit demand. Schumpeter identifies the money market with the credit market, since he gives no relevance to the store of wealth function of money; he does not consider money as an instrument to store wealth in time.

The contrast between the respective positions of Keynes and Schumpeter can be reconciled by specifying two distinct money and credit markets; in this way, the money demand and the credit demand functions are separated. In paragraph 2.1 we have used a model with these characteristics to show the two phases of the money creation process. We can add that this analysis is consistent with the distinction between 'finance' and 'funding' defined by Keynes. As is well known, Keynes (1937c, 1939) criticizes the mainstream theory of capital formation and elaborates an alternative theory which specifies two phases. In the first phase, firms get money necessary to carry out investments, while in the second one firms

¹⁶ See: Minsky (1986, 1993); Morishima (1992); Goodwin (1993, p. 83), Vercelli (1997).

choice the liability structure they deem satisfactory by replacing short-term debts with long-term debts which are more consistent with the structure of their future incomes:

“The entrepreneur when he decides to invest has to be satisfied on two points: firstly, 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 second phase the portfolio choices of wealth owners and of firms come into play, and intermediaries carry out the role defined by Tobin.

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

The Keynes-Schumpeter approach analyses the role of banks in a different way from Tobin’s approach: the Keynes-Schumpeter approach in fact, underlines not only the role of banks in satisfying the portfolio preferences of wealth owners and firms, but it underlines, above all, the monetary function carried out by banks.

3.3 The question of bank specificity. Are banks really special?

The specification of the double function of banks, and of the two phases of the money creation process, may lead us to conclude that banks are special. Banks are the only intermediary which operates in the first phase of the money creation process (when new money is created to finance firms' investment decisions). In the second phase, banks and other intermediaries match the portfolio preferences of wealth owners and firms.

A similar thesis is held up by many economists; in particular by the supporters of the theory of monetary circuit and by many Post Keynesians. Graziani (1996, p. 141) for example, maintains:

“... when banks are included in the model, it becomes clear that their role is to create means of payments, while the role of the financial market is to return to firms their monetary outlays and to enable them to repay their bank debits. The financial market can no longer appear a source of fresh liquidity to firms as a whole.”

Parguez and Seccareccia (2000, p. 102) underlines that a fundamental characteristic of the theory of the monetary circuit is the assertion that:

“... there is no alternative between debt financing on the one hand, and the tapping of existing liquid resources (or accumulated savings) to 'finance' expenditures, on the other.”

I believe that this thesis is not correct: it is true that banks finance firms' investment decisions by creating new money but this does not imply that banks are the only agents which are capable of financing firms. As maintained by Keynes (1937c, p. 222) firms' investment can be financed by new money, or by existing money made available to the firms. This means that also non-bank intermediaries can carry out an important role in the first phase of the money creation process.

Many economists maintains that these two forms of firms' financing, by creation of new money and by the use of existing money, have very different effects on effective demand. Chick (2000) observes that the existing money stock stored up by wealth owners, depends on saving decisions carried out in the past; for this reason firms' investment decisions financed by existing money would have no effects on aggregate demand since the increase in investment goods demand would be made up for by the reduction in the aggregate demand

caused by saving decisions.¹⁷ I believe that this conclusion is not correct; the wealth owners decision to trade their money stock in exchange, for example, for shares issued by a venture capital society, does not entail a reduction in the aggregate demand since it is not the result of a saving decision, but it is the consequence of the decision to change the composition of wealth. We can conclude that the firms' investments effects on aggregate demand, are independent of the way in which investments are financed: by creating new money or by existing money. The choice of the form of financing will affect only the composition of wealth owners' wealth.¹⁸

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

¹⁷ "Company borrowing for investment may take many forms other than bank credit, including the issue of long-term securities or debentures and the issue of equity shares and rights. However, Keynes did not bring out well the fact that investment financed in these latter ways would have a different impact on effective demand than finance which give rise to new money. When other sources of borrowing finance investment, they do so by the transfer of monetary wealth, the product of previous saving. This is a zero-sum game which reallocates financial resources... The contribution to income of investment financed in these ways is through gains in efficiency or scale, whereas an investment accompanied by new money immediately causes a rise in money income." (Chick, 2000, p. 133)

¹⁸ We must point out that the change of wealth composition may affect the structure of the interest rates. When investments are financed by the existing money, the structure of the interest rate must change in order to induce wealth owners to trade in their money. We can add that in the case in which investments are financed by the creation of new money, we cannot exclude that banks will charge on their loans an interest rate which grow with the loans dimension.

"..The main monetarist thesis is that the net dissaving of the public sector is 'inflationary ' in so far as it is 'financed' by the banking system and *not* by the sale of debt (bond or gilts) to the public. But this view ignores the fact that the net saving, or net acquisition of financial assets of the *private* sector will be the same irrespective of whether it is held in the form of bank deposits or of bonds. The part of the current borrowing of the public sector which is directly financed by net purchases of public debt by the banking system - and which has its counterpart in a corresponding increase in bank deposits held by the non-banking private sector - is just as much part of the net saving of the private sector as the part which is financed by the sale of gilts to the private sector. When the public sector's de-cumulation of financial assets increases (i.e. the public sector's deficit increases) there must be an equivalent increase in the net savings of the non-bank private sector ... which will be the same irrespective of how much of that saving takes the form of purchases of gilts and how much takes the form of an increase in deposits with the banking system. The decision of how much of the increment in private wealth is held in one form or another is a portfolio decision depending on relative yields, the expectation of future changes in interest rates (long and short), and the premium which the owners are willing to pay for 'liquidity' ... But it is a mistake to think that an individual's spending plans... are significantly affected by the decision of how much of his wealth he decides to keep in the form of money (broadly or narrowly defined) as against other financial assets that are easily convertible into money..." (Kaldor 1982, pp. 49-40)

These considerations lead us to maintain that banks are not the only institution which is able to carry out the monetary function: this function is also carried out by non bank intermediaries making existing money available for firms.

Conclusions

This work has analysed two theories which explain in a different way the role of banks. Tobin defines the role of banks by using a model of the capital account and concludes that there are no reasons to attribute a special role to the banks. On the contrary, the supporters of the asymmetric information approach maintain that banks are special institutions as they provide finance through inside debt contracts stipulated on the basis of information not publicly available.

This work points out a limit that associate the two theories: they describe in a partial way the process by which money is created in an economy which uses a bank money. Tobin criticises the 'mistique of money' and underlines the store of wealth function of money; this vision leads him to underline that money is created by open market operations and that the quantity of money is determined by the wealth owners' decisions. The supporters of the asymmetric information approach, on the contrary, do not envisage the process of money creation because they suppose that loan supply is determined by saving decisions.

This paper outlines the elements of an alternative theory of banks which is grounded in the Keynes's and Schumpeter's work. Two points differentiate this theory from Tobin's theory and the AI approach:

- a) this theory underlines the monetary function carried out by banks; this function does not consist so much in creating a liquid asset which satisfies wealth owners' portfolio preferences, but it consists above all, in creating new money which allows firms to carry out investments;
- b) this theory maintains that the monetary function is not a banks' prerogative since investment decisions can be financed by existing money which non-bank intermediaries make available to firms.

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