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Are banks special? A note on
Tobin's theory of financial
intermediaries

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Are banks special?

A note on Tobin's theory of financial intermediaries.

Introduction

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. This paper critically analyses Tobin's theory and presents two results. First, it shows that Tobin's theory overlooks an important function of banks; a function highlighted by Keynes in some writings which preceded and followed the publications of *The General Theory*. Second, this work shows that Tobin's thesis that the specificity of banks does not exist can be confirmed, albeit on different grounds, also taking into account the function of banks that he overlooks. The paper is divided into four parts: in the first one, the most important aspects of the Tobin's 'new view' are described. The limitations of these theoretical approaches are then showed in the second section; in the last two sections the elements of an alternative theory are outlined.

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.¹ Moreover, the ‘old view’ deems it necessary to impose a reserve requirement on banks in order to limit banks’ loans. Tobin (1963, p. 409) 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, the function of means of exchange, which differentiates it from other assets. Tobin criticises this approach because it focuses on the moment in which money is created and overlooks the fact that the money created must be accumulated by wealth-owners; in other words it neglects the store of wealth function of money. Tobin’s analysis has his theoretical roots in Hicks’s famous article (Hicks 1935) and in *The General Theory*. This analysis 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, he 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. In these works Tobin

¹ Tobin describes the ‘old view’ in an ironic way: “Perhaps the greatest moment of triumph for the elementary economics teacher is his exposition of the multiple creation of bank credit and bank deposits. Before the admiring eyes of freshmen he puts to rout the practical banker who is so sure that he ‘lends only the money depositors entrust to him’. The banker is shown to have a worm’s-eye view, and his error stands as an introductory object lesson in the fallacy of composition. From the Olympian vantage of the teacher and the textbook it appears that the banker’s dictum must be reversed: depositors entrust to bankers whatever amounts the bankers lend. ... Whatever their other errors, a long line of financial heretics have been right in speaking of ‘fountain pen money’ – money created by the stroke of the bank president’s pen when he approves a loan and credits the proceeds to the borrowing’s checking account.” (Tobin, 1963, p. 408)

elaborates a ‘new view’ which does not consider the distinction between intermediaries who create money and the other intermediaries important; he 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.” (Tobin 1963, pp. 410-411)

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.² Tobin, focusing on the store of wealth function of money 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 role to the banks:

“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. 412).

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. He criticises the

² Tobin (1963, p. 411) 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.”

‘old view’ because it implicitly assumes that wealth owners get ready to demand whatever quantity of money banks decide to create.³ Tobin underlines that, in reality, it is not correct to assume that when they expand credit the banks face an automatic increase in demand for deposits equal to the expansion of the bank credit. He maintains that banks may expand credit only if they succeed in inducing wealth-owners to increase their share of deposits and thus he concludes that the banks’ dimensions depend on the same constraint that influences the other intermediaries. :

“Neither individually nor collectively do commercial banks possess a widow’s cruse. Quite apart from legal reserve requirements, commercial banks are limited in scale by the same kinds of economic processes that determine the aggregate size of other intermediaries. One often cited difference between commercial banks and other intermediaries must be quickly dismissed as superficial and irrelevant. This is the fact that a bank can make a loan by ‘writing up’ its deposit liabilities, while a saving and loan association, for example, cannot satisfy a mortgage borrower by crediting him with a share account. The association must transfer means of payment to the borrower; its total liabilities do not rise along with its assets. True enough, but neither do the bank’s, for more than a fleeting moment. Borrowers do not incur debt in order to hold idle deposits, any more than savings and loan shares. The borrower pays out the money, and there is of course no guarantee that any of it stays in the lending bank. Whether or not it stays in the banking system as a whole is another question, about to be discussed. But the answer clearly does not depend on the way the loan was initially made. It depend on whether somewhere in the chain of transactions initiated by the borrower’s outlays are found depositors who wish to hold new deposits equal in amount to the new loans. Similarly, the outcome for the savings and loan industry depends on whether in the chain of transactions initiated by mortgage are found individuals who wish to acquire additional savings and loan shares ...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.” (Tobin 1963, pp. 412-4)

Tobin (1963, p. 415) concludes that even in absence of reserve requirement, banks’ dimensions are limited by the same factor that determines the size of other intermediaries: the presence of wealth owners who wish to hold intermediaries’ liabilities; he maintains that:

³ Tobin points out that the ‘old view’ is based on the hypothesis that: “...the preferences of the public normally play no role in determining the total volume of deposits or the total quantity of money. For it is the beginning of wisdom in monetary economics to observe that money is like the ‘hot potato’ of a children’s game: one individual may pass it to another, but the group as a whole cannot get rid of it. If the economy and the supply of money are out of adjustment, it is the economy that must do the adjusting.” (Tobin 1963, pp. 408-9)

“... 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. 416)

2. A critical analysis of Tobin’s ‘new view’.

The conclusion that banks’ dimensions depend, as the case of other intermediaries, on the wealth owners’ willingness to demand banks’ liabilities, derives from the fact that Tobin analyses the role of financial intermediaries by using a theoretical model which contemplates the capital account of an economic system. The capital account describes all the assets and the liabilities of the sectors of the economy (households, firms, the public sector, financial intermediaries), and a capital account theory analyses the factors which determine the supply of and the demand for different assets; under this approach, according to Tobin, (1963, pp. 410-11) the intermediaries’ role consists in matching the portfolio preferences of debtors and creditors. We can illustrate Tobin’s thesis starting from the simplest model of capital account that he analysed (Tobin and Brainard 1963). It is a model that considers only two assets, money and capital goods, and that aggregates the operators in two sectors: the public sector that issues money to finance its own deficit and the private sector that accumulates money and capital goods. The equations that describe the conditions of equilibrium in the two markets of assets determine the interest rate structure; in particular, given the rate of return on money, the model determines the yield on capital goods. The presence of financial intermediaries in this model depends in the first place on the existence of economic agents willing to get into debt to purchase an amount of existing capital goods greater than that of their wealth. The intermediaries finance these agents by giving them money; the difference between the banks and the other intermediaries is the fact that banks can create new money while the other intermediaries obtain money by issuing financial instruments that must be absorbed by the wealth holders in exchange for money. Tobin maintains that this difference is of no importance as in both cases the presence of intermediaries depends on the willingness of wealth owners to alter the composition of their wealth by selling capital goods in exchange for the liabilities issued by the intermediaries: money in the case of the banks, or other assets issued by the non-bank intermediaries. Like the other intermediaries, the banks will manage to grow in size only if the wealth owners are willing to sell capital goods in exchange for their liabilities.

The thesis that this paper puts forward is that Tobin's analysis, confined as it is to the capital account, just partially describes the role of banks. In reality, banks do not limit themselves to financing the acquisition of existing capital goods, but they finance any spending decision of the agents; in particular they finance the investment decisions of firms, that is the purchase of new units of capital goods. Using Tobin's distinction between income account and capital account⁴ we can state that in order to fully describe the role of banks we must also consider the income account, and we must ask whether also in this case the fact that banks are able to create money is irrelevant.

Economic theory offers two different answers to this question. The first is provided by the mainstream contemporary monetary theory that has its theoretical foundation in the monetarist counter-revolution elaborated by Friedman in the second half of the last century. An important element that characterises the dominant monetary theory is the specification of the consequences of using a fiat money such as bank money. According to this theory, the use of a money devoid of any intrinsic value instead of a commodity money makes it possible to substitute a means of exchange having high production costs with another whose production costs are close to zero. Smith and Ricardo had already pointed out that the use of a fiat money instead of a metallic currency makes it possible to reduce the production costs of the means of exchange.⁵ The substitution of the commodity money with a fiat money such as bank money improves the efficiency of the economic system but it does not alter its structure. Moreover the mainstream theory separates the money market from the credit market; Friedman and Schwartz (1982, p. 26) assert that the two markets are characterised by different prices: the price of money corresponds to the quantity of goods that can be purchased with a unit of money, thus it is equal to the inverse of the price level, while the price of credit is the interest rate. Consequently, a disequilibrium between money supply and demand will be eliminated by the variation in the price of money and hence of the general price level, while an imbalance between credit supply and demand will be eliminated by the variation in the

⁴ "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 portfolio and balance sheets. The decision variables are stocks." Tobin (1961, p. 28)

⁵ The modern version of this theory has been elaborated by Menger (1892); recent versions can be found, for example, in: Brunner and Meltzer (1971); Jones (1976); Kiyotaki and Wright (1989); Gravelle (1996); Dowd (1999).

interest rate. 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 mainstream theory considers the credit market as a component of the income account; the object of the credit are the saved resources that are transferred to firms to finance investments. The presence of banks does not change the nature of credit, 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.⁶

A completely different answer to the one supplied by the mainstream theory can be gleaned from the works of economists such as Keynes and Schumpeter, who state that the diffusion of a fiat money induces a radical modification into the way in which the economic system works. 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 law of production and the nature of transactions. . In order to underline the fact that the use of a fiat money alters the law of production Keynes (1933b) uses the distinction introduced by Marx between the sequence: commodity-money-commodity that characterises a *real-exchange*

⁶ 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."

economy, and the sequence: money-commodity-money that instead marks a *monetary economy*: the objective of an entrepreneur is not to produce goods, but to make a profit in monetary terms, i.e. a monetary return which is higher than the costs (for a more in-depth analysis see: Bertocco 2005).

The other important structural change linked with the employment of fiat money regards the nature of the exchanges; Keynes affirms that the circulation of a fiat money changes the nature of the transactions with respect to a *real-exchange economy*:

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

The modification of the nature of the exchanges can be explained by considering the characteristics of the fiat money creation mechanism. Fiat money is not a commodity that is produced through labour, hence it cannot be produced by just any individual by means of his work, as instead is the case for any given commodity. The production of fiat money is the prerogative of particular economic agents; in modern economies whose workings Keynes sought to explain, these agents are the banks. By creating new money within the credit market, the banks finance the spending decisions of operators who undertake to pay back the amount obtained at a future given date. The employment of a fiat money such as bank money alters the nature of the exchanges compared with a *real-exchange economy* since the necessary condition to buy goods is not the availability of the goods, but the availability of money. When a fiat money like bank money is used it is not necessary to own goods in order to obtain money; rather, it is necessary to meet the criteria set by the banks for granting loans. In a world in which fiat money is used, you need to have money in order to purchase goods, but you don’t need to have goods in order to get money.

Once bank money has been brought into the analysis, it becomes important to specify which agents are financed by the banks. 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 to show that firms intending to carry out investment projects must obtain the necessary funds.⁷ 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 cannot arise from ex-ante saving. Saving cannot be the source of investment financing inasmuch as it is the result of the investment process.

Like Keynes, Schumpeter distinguishes between a *pure exchange economy* and a *capitalist economy*. 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: "... money only perform the function of a technical instrument, but adds nothing new to the phenomena. To employ a customary expression, we can say that money thus far represents only the cloak of economic things and nothing essential is overlooked in abstracting from it." (Schumpeter 1912, pp. 51) In a *capitalist economy* the situation changes completely because it is not possible to assert that: "... nothing essential 'can' depend on money" (Schumpeter 1912, p. 96). Also Schumpeter stresses that the circulation of bank money radically changes the nature of the credit market as the object of the credit is not the resources saved, but the money created by the banks.⁸ He did not even accept the distinction introduced by Wicksell and

⁷ "... [E]x-ante investment is an important, genuine phenomenon, inasmuch as decisions have to be taken and credit or 'finance' provided well in advance of the actual process of investment..." (Keynes, 1937c, p. 216).

⁸ In the 1950s Schumpeter criticised the theory of credit that Friedman would reappraise a few years later: "... let us restate how a typical economist writing around 1900, would have explained the subject of credit... He would have said something like this. In the (logical) beginning is money – every textbook on money, credit and banking begin with that. For brevity's sake, let us think of gold coin only. Now the holders of this money, so far as they neither hoard it nor spend it on consumption, 'invest' it or, as we may also say, they 'lend' their 'savings' or they 'supply capital' either to themselves or to somebody else. And this is the fundamental fact about credit. Essentially, therefore, credit is quite independent of the existence or non-existence of banks and can be understood without any reference to them. If, as a further step in analysis, we do introduce them into the picture, the nature of the phenomenon remains unchanged. The public is still 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." (Schumpeter 1954, p. 1113)

taken up by Friedman, between the natural interest rate and the market interest rate.⁹ Moreover, Schumpeter notes that in a world in which bank liabilities are used as a means of exchange, banks create money not only when they authorise firms to issue cheques, but also when they receive legal tender from the wealth owners in exchange for deposits:

“Means of payment are created in the economic system which are, in their external form, it is true, represented as mere *claims* to money, but which differ essentially from claims to other goods in that they perform exactly the same service –at least temporarily- as the good in question itself, so that they may under certain circumstances take its place. ... Although one may not in general add up claims to goods and the goods themselves –any more than the ear and the grains of corn – yet the matter is clearly somewhat different here. 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)

There is a fundamental difference between a credit contract having as subject matter a real asset, for example a horse, and a credit contract whose subject matter is a sum of legal tender. The difference lies in the fact that whoever lends out a real asset gives up the use of that good, while whoever lends legal money does not give up the money at all, because he can buy goods using the credit instruments issued by the financial intermediaries. Schumpeter (1954, p.1113) reaffirms this argument a few decades later when he criticises the traditional theory that considers banks as mere intermediaries: “... who collect ‘liquid capital’ from innumerable small pools in order to make it available to trade. They add nothing to the existing mass of liquid means, though they make it do more work.” As a reference, Schumpeter uses Cannan’s theory that compares bankers to cloak-room attendants who, if they decided to lend out the bags deposited with them, could certainly not increase their total number:

⁹ “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)

“As Professor Cannan put it ... ‘If cloak-room attendants managed to lend out exactly three-quarters of the bags entrusted to them ... we should certainly not accuse the cloak-room attendants of having ‘created’ the number of bags indicated by the excess of bags on deposit over bags in the cloak rooms.’ 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 borrowers 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 sheeps increases the number of sheep.” (Schumpeter, 1954, pp. 1113-4)

We can conclude that from the works of Keynes and Schumpeter a common credit theory emerges which is characterised by two propositions: 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. We can further note that the specification of the ability of the banks to finance firms’ investments by creating new money makes it possible to complete the keynesian theory of income and to justify the particular causal relation between investment and saving that is a feature of the keynesian theory of income. The inversion of the relation between investment and savings with respect to the tenets of the neoclassical theory makes it necessary to explain how the firms acquire the purchasing power necessary to finance the desired investments. The coherent response with the analyses of Keynes and Schumpeter is to assert that investments are financed by the money created by banks.

Tobin neglects the role of banks in the process of investment financing as his analysis, which takes as a reference the capital account, concentrates on the specification of the conditions that induce the wealth owners to absorb the liabilities issued by financial intermediaries. We may therefore ask if it is possible to reconcile these two frameworks of analysis; that is, if it is possible to describe the behaviour of the banks by taking into consideration both the income account and the capital account; this point shall be dealt with in the next section.

3. An alternative analysis

Tobin's analysis is coherent with the approach elaborated by Keynes in *The General Theory*, a theoretical scheme founded on the concept of money demand and on the liquidity preference theory. This approach describes a world in which open market operations are the typical mechanism through which money is created. In this case, as is specified in all macroeconomic textbooks, the monetary authorities 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. In other words, monetary authorities can alter the quantity of money only by inducing the wealth owners to demand money; in the same way, according to Tobin, banks can create money only if they induce wealth owners to accumulate bank money and to sell capital goods.

This theoretical approach does not take into account the role of banks in the financing of firms' investment decisions; if this phenomenon were taken into consideration, it would lead to the conclusion that the moment in which banks create money does not coincide with that in which wealth owners accumulate money. From the logical point of view, these two instants are separated by the variation in the flows of investment, income and saving generated by the decisions of banks, firms and households. In this case we can divide the money creation process into two phases: in the first, banks create money to finance the firms' investment decisions. In this phase banks and firms are the principal actors and their decisions are not conditioned by the decisions of wealth owners. The investments financed by the banks determine an increase in income according to what defined by the keynesian income theory.¹⁰ Once the income creation process described by the keynesian theory is completed, the second phase, in which the decisions of wealth holders become important, is entered into; the new money created by banks is added to the existing money and the saving flow generated by investment decisions increases the public's wealth. The second phase is the one in which the

¹⁰ Dalziel (1996) 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. The demand for investment goods and consumption goods are financed in different ways: the first is financed by new money created by the banks while the second is financed by income received by workers; this point was underlined also by Minsky (1980).

conditions are created for the wealth owners to accept to hold the money created by the banks.¹¹

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 Keynes's and 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. We can describe the process of bank money creation through 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. We can represent the credit market and the goods market using the following equations:

$$r_1 = (1+q)r^* \quad (1)$$

$$I = I(\pi_f^e; r_1) \quad (2)$$

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

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

¹¹ 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 process 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 choose 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, 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)

Equation 1) introduces the typical assumption of the horizontalist version of the endogenous money theory according to which banks set the interest rate on loans r_l by applying a markup on the official discount rate exogenously set by the monetary authority (on this point see: Bertocco 2006b) . Firms define the desired investments (I) according to their expectations of profits π_f^e and the loan rate (eq. 2). 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 of the banks which determine interest rates and the amount of credit.

The specification of the money market allows us to define under which conditions the wealth owners are willing to accumulate the money created by the banks:

$$5) \Delta D = \Delta R + \Delta L$$

$$6) \Delta R = q_k \Delta D$$

$$7) \Delta R = \Delta BM$$

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

$$9) M = f(W; r_D; r_b)$$

$$10) W = W_{t-1} + S(Y)$$

Equation 5) determines the deposit flow ΔD on the base of the banks' budget constraint. ΔR represents the amount of the required reserves (eq. 6); equation 7) determines the monetary base flow ΔBM created by the monetary authorities to meet the demand from banks. Equation 8) determines the stock of money that corresponds to the stock existing at the beginning of the period M_{t-1} to which is added the flow of deposits created in the current period. Equation 9) describes the money demand function that depends on the stock of wealth W, the rate on deposits r_D which is assumed given, and the rate on bonds r_b . Finally, equation 10) determines the value of the stock of wealth as a sum of the stock existing at the beginning of the period W_{t-1} and the saving flow $S(Y)$ that is registered in the course of the period. The equations 5-10 determine the unknowns: ΔD , ΔR , ΔBM , r_b , M, W.

This model highlights the relation between stock variables and flow variables. In his Nobel Lecture (1982), Tobin acknowledges that the macroeconomic models he elaborated in

the sixties analysed only stock variables and he puts forward a model in which saving decisions and portfolio choices are also included. In the model described in the previous pages, unlike Tobin's, the role of banks in the financing of firms is highlighted. Moreover, this model shows that in contrast to what Tobin holds, the portfolio choices of wealth owners do not influence the process of money creation through which banks finance firms. In fact, the model shows (eq. 10) that a change in the liquidity preference influences the rate on bonds without influencing firms' investment decisions, which depend on the interest rate set by the banks. Investment decisions depend only on the decisions of firms and banks; in fact, a change in the propensity to invest on the part of firms will trigger an increase in the credit demand, which the banks will choose whether or not to satisfy in accordance with their decision criteria, independently of the wealth owners' decisions.

The model assumes that investment decisions depend only on the interest rate on bank loans; if it is assumed that these decisions depend also on the rate on shares, we would have to conclude that the choices of wealth owners are able to influence firms' investment decisions. This retroactivity effect does not, however, cancel the phenomenon of money creation which allows the banks to finance firms. When the banks decide to finance firms they are not influenced by the decisions of wealth owners; it is only after the creation of money that the conditions necessary to induce wealth owners to accumulate new money will have to be created. Instead, Tobin maintains that the wealth owners' choices influence the decisions of banks, even when they create money to finance the firms' investment decisions:

“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, matching dollar for the private investments or government deficits financed by the banking system. In neither case will there automatically be an increase in savers' demand for bank deposits equal to the expansion in bank 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. Bank 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.”

According to Tobin there are no differences between cases (a) and (b); in actual fact, I believe that there is an important difference between the two situations. In case (a), when the

banks finance the purchase of existing capital goods the fact of whether or not their liabilities are used as a means of payment is not important, as has been seen in the previous pages, because in both cases the banks can expand their dimensions only if the wealth owners accept to modify the composition of their wealth by selling capital goods and accumulating the liabilities issued by the banks. In this case, the creation of money by banks has the same effect as the operations of the open market described in all macroeconomics textbooks. However, in case (b) the fact that banks create money to finance investment decisions radically alters the structure of the economic system with respect to a barter economy. The presence of bank money constitutes the necessary condition to justify the inversion of the causal relation between investments and savings that characterises the Keynesian income theory. The process of income creation is set in motion by the banks' decisions; the portfolio choices can in certain circumstances slow down this process, but they cannot stop it.

The specification of the role of banks in investment financing enables us to highlight aspects of a *monetary economy* that Tobin's analysis, concentrated as it is on the portfolio preferences of wealth owners and debtors, overlooks. These elements can be defined on the basis of the common considerations of Keynes and Schumpeter about the nature of the credit phenomenon in an economy in which bank money is used. On the one hand, Keynes's analysis leads us to consider the presence of bank money as a necessary condition for the realisation of an economic system characterised by a high level of investment decisions. The agents who obtain bank money are the firms that seek liquidity in order to realize their investment decisions, so we can conclude that the diffusion of bank money is the required condition in order to have an economic system in which investment decisions are an important factor. On the other hand, Schumpeter considers credit as a key factor in explaining the continuous evolution process typical of the capitalistic economy and generated by endogenous factors. This process is characterised by two elements: first, the changes taking place in production as a consequence of the innovations spawned by entrepreneurs; the second key element of the process of economic development is the creation of money by banks through credit. The considerations of Keynes and Schumpeter makes it possible to define a theoretical scheme that stresses the essential role played by banks' decisions in the evolution of the economic system. We can hypothesise that innovations are introduced by means of the investment decisions of firms; in this case investment decisions do not consist, as Tobin claims, of merely 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. In a world in which the Schumpeterian entrepreneur who introduces innovations coincides with the Keynesian entrepreneur who makes the investment decisions, the banks take on the crucial responsibility of choosing the innovations to be carried out and in this way they condition the evolution of the economic system; this is an aspect of the action of the banks that does not emerge from Tobin's analysis. (for a more detailed analysis see: Bertocco 2005, 2006a)

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

The specification of the two phases of the money creation process may lead us to conclude that banks are special. Banks are the only intermediary which operate in the first phase of the money creation process, when new money is created to finance firms' investment decisions. A similar thesis is upheld 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) underline 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' investments. 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 maintain that these two forms of firms' financing, by creation of new money and by the use of existing money, have very different consequences 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.¹² 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. Even if intermediaries do not create new money, their action cannot be analysed within the framework of the neo-classical theory that sets against the greater demand for goods by the subjects who obtained the financing, the lower demand for goods on the part of whoever underwrites the liabilities of the intermediary. Although he can in a general sense be defined as a saver since his wealth is a consequence of the saving decisions made in the previous years, with this decision who underwrites the liabilities of the intermediary is not choosing to give up spending a part of his income, but he is merely choosing to alter the composition of his wealth. We can conclude that the firms' investments effects on aggregate demand are independent of the way in which investments are financed: by creating new money or by existing money. The choice of the form of financing will affect only the composition of wealth owners' wealth.¹³

¹² "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)

¹³ 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

This conclusion has been well underlined by Kaldor (1982) when he criticises the monetarist theory. Kaldor maintains that there are no reasons to expect a stable relation between money and nominal income, as we can observe, on the one hand, changes 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. (for a more detailed analysis see: Bertocco 2001) He maintains that the expansionary effects of an increase in public spending are independent of the way in which such increase is financed. This contrasts sharply with the monetarist view that only 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:

"..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, i.e. the only intermediary which can finance firms' investment decisions; this function is also carried out by non bank intermediaries making existing money available for firms.

investments are financed by the creation of new money, we cannot exclude that banks will charge on their loans an interest rate which grows with the loans dimension.

Conclusions

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 banks. He criticises the ‘mystique of money’ and underlines the store of wealth function of money; this vision leads him to underline that the quantity of money and banks’ dimensions are determined by the wealth owners’ decisions and thus concludes that there are no reasons to invest them with any special role with respect to other intermediaries. This paper outlines that Tobin describes the analysis of the banks only partially as his models focus on the capital account of an economic system; if we extend the analysis and consider also the income account, a function of banks emerges that Tobin overlooks. We can define this function as 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 and in making existing money available for financing firms’ investments. Finally, we conclude that the monetary function does not attribute a special role to the banks since also the other financial institutions can play an essential role in financing firms’ investment decisions through the employment of existing money. Indeed, it has been noted that the impact of a given investment decision on aggregate demand and on the development of the economic system is independent of the way in which it is financed: whether by creation of new money or the use of existing money.

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Notes