ON SOME EQUILIBRIUM AND DISEQUILIBRIUM THEORIES OF ENDOGENOUS MONEY: A STRUCTURALIST VIEW

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This paper is intended to be a contribution to a historico-critical analysis of some recent theories of endogenous money supply. Not a systematic survey of the literature on the subject. It is mainly concerned with the internal consistency of the 'circuit' theories developed in the 1980's and early 1990's and their later reappraisals and adjournments. It deals, *inter alia*, with some theoretical and practical problems concerning the monetary equilibrium framework of some of such theories, the endogenous or exogenous nature of the supply of money and of its single components, the relative importance of the different functions of money, the distinction between money and bank credit, the 'closure' of a monetary circuit and the institutional role of a central bank as a lender of last resort. The author is a non-fundamentalist post-Keynesian monetary theorist. He regards money demand and supply as two strictly connected variables, whose structural interdependence precludes a causal approach to an analysis of the way money enters the circular income flow.

1. Equilibrium and disequilibrium theories of endogenous money supply.

1.1 *Macroeconomics: the Search for a Monetary Foundation.*

Theories of the endogenous determination of the stock of money – which regard the supply of money as an effect, not a cause, of the level of economic activity – have ancient origins, that go back to the British Banking School of Charles Bosanquet, Thomas Tooke and John Fullarton and to its controversial "doctrine of real bills". That early approach – firmly contrasted by Lord Overstone (Samuel Jones Loyd), David Ricardo, Robert Malthus, William Thornton and other defenders of the 'old view of money' and the Bullion Report – was later revived by neoclassical economists. Some of whom, as Wicksell, Marshall and Fisher, studied the circuit of money as part of the more general circular flow of income, with the purpose of incorporating money into a comprehensive model of production and exchange. They emphasized the role of bank credit as a convenient intermediary of exchange and as means of payment (the most intuitive functions of money), but underestimated in some degree the importance of money as a financial asset (a function fully recognised by Keynes).

Later on, other economists who worked along some different (non-Walrasian, or weakly Wicksellian) lines in the neoclassical tradition, as the two Austrian authors Ludwig von Mises and Friedrich von Hayek, regarded the supply of money as endogenously determined. But they realistically considered an uncontrolled free banking system as subject to a serious risk of insolvency, because of its power of creating credit money in excess of bank reserves, by means of simple writings in the accounting books, without incurring in additional costs and without any limit of quantity. With a clear advantage, represented by the interest earned on bank loans.

In the last few decades, new theories based on endogenous supply of money have been proposed, in a number of distinct versions, all of which tended ultimately to identify money with transferable credit rights (pure bank or credit money, circulating in the form of bank account transfers, or cheques) and to recognize a twofold priority of the demand for money to its supply and of loans to deposits (for the system as a whole, not for a single bank). Initially, they have been suggested by

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'fundamentalist' post-Keynesian authors, like Nicholas Kaldor, Sidney Weintraub, R.S. Sayers, Basil Moore and Wynne Godley, who looked at money as a component of the total liquidity of the system, with a perfectly elastic supply schedule (a 'horizontal' line, matched by a vertical demand for money schedule).

In their search for a macroeconomic foundation of economic theory, and aiming at a return to an 'authentic' Keynes, these authors particularly emphasized four points: *i*) that 'money matters' in a capitalist economy, in the sense that it is essential for the very existence of such system, and must be accounted for in its analysis from the beginning; *ii*) that today the supply of money has essentially an endogenous nature, being ultimately originated by the money needs of the real sector of the economy; *iii*) that money is non-neutral both in the short and in the long period; and *iv*) that money has negligible elasticities of production and substitution[1]. Recent contributions to the problem conceived along similar, largely accepted, wisdom lines are due to Rochon, Vernengo, Rossi and others.

1.2 *Fundamentalist Keynesism.*

'Fundamentalist' Keynesians maintain that a central bank cannot exert an effective control over the total supply of money and that any attempt to exercise such control, by regulating either the monetary base or bank credit, would be inconsistent with the central bank's function of lender of last resort. They think that whenever a reserve requirement is established by the monetary authority, banks must have unrestrained access to the monetary base needed to meet the reserve ratio and that in this respect the central bank is forced to adopt an 'accommodative' (or 'accommodationist') behaviour, to ensure equilibrium between money demand and supply[2]. They reject both the neoclassical loanable funds theory of interest and Keynes's liquidity preference approach to the problem[3] and regard money only as a component of the total liquidity of the system. In their opinion, the stock of money is bound to adjust in order to match the demand for money, whichever the current level of interest rates, because of both the accommodative behaviour shown by the central bank, in its function of lender of last resort, and of the generalised practice, in banking systems of non-asset-based modern economies, of current account contracts implying for the best customers of the banks the possibility of making almost unlimited overdrafts of bank accounts.

Some of these authors consider inflation due to excess demand as the cause of the growth of the stock of money, rather than its effect. They do not think that producers and sellers set their prices on the basis of the amount of money which circulates in the economy. Taking the central bank discount rate as the key instrument of monetary policy, they tend to regard the stock of money as a residual.

1.3 *Horizontalists and Structuralists.*

[1] On these points, see a somewhat 'dated' but still interesting survey made by Cottrell, 1994, who spoke of a fundamentalist Keynesians' attempt "to push Keynes beyond himself", as in his *General Theory* he assumed an exogenous money stock (a 'vertically given' money supply), which made him appear insufficiently radical at their eyes.

[2] The reason for such an interpretation is easy to understand. If the central bank has the power to deny a refinancing to commercial banks and exerts such power, credit expansion cannot go on indefinitely, because it finds a constraint in the amount of bank reserves. For this motive, post-Keynesians assume that in a monetary economy the central bank is generally induced to adapt passively the supply of money to the demand for credit and to renounce to exert the institutional power it has to deny the credit. Paradoxically, Keynesians look here as sustainers of market freedom, in opposition to monetarists, who do not object to an intervention of the monetary authority aimed at limiting the decisional autonomy of the banks. From this point of view, their traditional roles seem here to be inverted.

[3] See Moore, 1988, pp. 309-13. But some post-Keynesian authors are prepared to accept the liquidity preference role in determining the risk and term differentials of interest rates.

Inside the post-Keynesian endogenous approach to the theory of money supply, which allows to study the behaviour of a monetary economy both in equilibrium and in disequilibrium, a second important perspective is provided by the 'structuralist' approach (Pollin, 1991; Palley, 1991, 1994, 1996). It supports a generalised liquidity preference theory of the demand for money and maintains that the supply of credit money is only partially determined by the demand for bank credit[4].

The controversy with fundamentalist Keynesism is focused on the slope of the supply curve of credit money and on the behaviour of the central bank. The LM curve is considered by structuralists as being positively sloped. Not flat (horizontal), at at the interest rate implied by the exogenously fixed official discount rate of the central bank, as assumed by the 'accommodationist' or 'horizontalist' more uncompromising approach[5]. The possibility for commercial banks, profit-seeking enterprises whose business is selling credit, to apply at any moment at the central bank discount window and get from it any amount of money, is thus denied[6]. Both the liquidity preference of banks (including that of the central bank) and that of the general public (firms and families of wage-earners) are important in determining the supply of money. But with some differences. For instance, families have no active role in the creation of the flow of money, being simply indirect and passive recipients of bank lending to firms; and the preferences of the first recipients of bank credit should be distinguished from those of the final recipients.

In opposition to horizontalists, structuralists – such as Rousseas, Chick, Dow, Arestis, Howells, Sawyer – do not assume a necessary fulfilment of equilibrium conditions between money demand and supply. Structuralists of the new generation pay great attention to the role of money as a liquid store of wealth, to the speculative demand for money and to the interdependence between the credit money and the financial markets. They put emphasis on liability management bank procedures, aimed at reducing the ratio between bank loans and reserves, so as to be able to increase bank lending. Such as the practice of borrowing in the financial market.

There are important similarities to be recorded between the two approaches, in addition to their being both critical of the monetarist theory. It has indeed been argued that, although in principle the accommodationist hypothesis can be accepted, a full accommodative reserve policy by the central bank may appear unrealistic in the presence of policy constraints, such as the balance of payment equilibrium or an inflation target (Tabellini, 1985). It has also been remarked that one of the structuralists' aims is "to qualify and enrich", not to reverse, the accommodationist theory (Dow, 1996, p. 498) and that "structuralists tooke over where accommodationists stopped", bypassing their simplifying assumptions of a horizontal supply curve of money and of banks as price setters and quantity takers, and facing the complications and complexities of the real world (Fontana, 1999).

Some endogenist authors, as the Canadian Lavoie (1996), formely an accommodationist (1984, 1987), and more recently Fontana (1999, 2000) and Halevi and Taouil (2001), have worked in the theoretical space placed between the circuitist and the post-Keynesian traditions, trying to show that there is a sort of inherent consistency between these two approaches to endogenous money and that, starting from either one of them, it should be possible to construct a unified endogenous theory of money supply[7]. But more fundamentalist endogenists, as Rochon and Vernengo (2001, 2003), have defended the separation of these two schools of thought, by noting that they disagree in estimating

[4] By 'structural endogeneity of money supply' Pollin means those situations of moderate endogeneity of technical nature in which bank reserves are generated inside the financial system, by means of innovative 'liability management' practices, rather than by recourse to financing of last resort by the central bank.

[5] The term 'accommodationist', frequently used in the literature, is somewhat ambiguous in this respect, for it suggests a high degree of flexibility (which is contrary to evidence). It should not induce in error.

[6] The central bank is not assumed to be committed to 'accommodate' completely, in a passive way, the demand for credit loans, by supplying to the commercial banks all the money they may require to create non-borrowed reserves.

[7] Halevi and Taouil (2001) did refer to a strand of monetary thought called "the Post-Keynesian Circuit". Fontana (2000, p. 27) thinks that, in spite of their different methodological and theoretical foundations, the similarities of these two approaches may be ultimately expected to prevail, as both of them, in addition of being critical of the exogenist paradigm, "share a genuine commitment to understand the nature and functions of money in modern economies".

the degree of endogeneity of money supply (taken as full by the accommodationists and as only partial by the structuralists) and in assessing the temporal dimension of the analysis (which may extend sequentially over several periods, as suggested by the structuralists, or be limited to a single period, as maintained by the accommodationists)[8].

1.4 *Integrating Money in a Theory of Production.*

Following the tendency to 'rediscover' that money matters in a capitalist economy, two other interesting approaches to the theory of monetary policy have recently been developed. One of them, the 'new consensus view in macroeconomics', was proposed by neo-liberal and new-labour authors. It may be considered an outcome of the theoretical controversy between the 'New Classical' and the 'New Keynesian' schools of economic thought. According to this approach to the problem, a monetary policy devised to control a demand pull inflation is bound to produce real effects on the economy, by affecting aggregate demand. Such theoretical position does not repropose the classical dichotomy between the real and the monetary sector of the economy and the idea of a long-run neutrality of money. It is suggested that the central bank, acting as a quasi-monopolist on the supply side of the money market, should adopt a monetary policy based on the control of short-term nominal interest-rates, rather than on a targeting of the quantity of money or of the exchange rates[9].

The level of effective demand is regarded as scarcely influent on that of economic activity, which is thought to be more affected by the supply side of the economy. The operating rule of monetary policy for interest rate setting, 'Taylor's rule'(seemingly applied in recent years by both the FED and the BCE), is assumed to relate the fixing of the central bank's discount rate to a pair of economic variables: the extent of the 'total output gap' and the inflation targeting.

A second approach to the theory of monetary policy which should be mentioned provides a 'mixed' – partly exogenous and partly endogenous – non-fundamentalist post-Keynesian way of dealing with the problem of the logical nature of money: the 'neo-chartalist' one, a revival of an old German approach to the problem, recommended by Keynes in his *Treatise on Money.* It may perhaps be considered an *ante litteram* variant of the structuralist approach to endogenous money. It emphasizes the role of State money, a peculiar type of 'pay token' which has the status of legal tender but no intrinsic value[10], being a pure symbol of the power of the issuing authority. State money is supposed to operate in the monetary circuit through the working of the fiscal system, being accepted in payment of taxes (differently from credit money, which does not provide legal means of discharging tax liabilities)[11].

Emphasis is put by this approach on the monetary base, the exogenous component of the total supply of money, suitable to be regulated by the monetary authority; not on the money multiplier, which is assumed to be endogenously determined and insufficiently stable. Under such conditions, bank credit plays a less important role, as recognized by several authors (Wray, Mosler, Goodhart, Lerner, Minsky). It is an endogenous by-product of a balance-sheet operation made by the banks; a multiple of State money, whose amount is determined through the 'leveraging' of fiat money reserves, by the monetary multiplier mechanism. With this approach to the problem, it is possible to speak of a degree of endogeneity, or exogeneity, of the supply of money and to make it depend on institutional factors, such as the mix of government and credit money, the reserve requirement established by the monetary authority, the techniques in use in the banking system and the behaviour of the central bank. Some neo-chartalists are also inclined to admit the possibility that to

[8] On the latter element of distinction, see Fontana, 2003.

[9] For the 'new consensus' approach, see Clarida, Galì and Gertler, 1999, Meyer, 2001, Le Heron, 2003, and Arestis and Sawyer, 2003a, 2004. On Taylor's rule, see Taylor, 1999.

[10] See G.F. Knapp in his *Staatliche Theorie des Geldes*, 1905, where money was regarded as "a creature of law".

[11] As opposed to the 'naturalistic' view of G. Simmel (*Philosophie des Geldes*, 1900), who regarded money as the result of a spontaneous process of self-organization performed by the market (an endogenous conception of the nature of money supply). See also Grierson, 1977.

finance an increasing amount of public expenditure a government may need to borrow money from the banking system. That is to sell Treasury bills and bonds to commercial banks[12].

The main purpose of these theories has been the construction of a macroeconomic model of the working of a capitalist system, suited to integrate money into the theory of production and the circular flow of income, without resorting for this purpose to controversial *ad hoc* devices, such as the assumption that all decisions are taken by perfectly rational agents acting separately of each other, or as the real balance effect. Both these approaches acknowledge the performing of an essential role to credit money, by a close integration of the monetary and the real dimensions of the economy and by a complete independence from a market theory of value (though not necessarily from any theory of value). With the ultimate aim of providing a reasonable macro-foundation to the theory of economic policy.

2. The monetary equilibrium framework of some 'circuit' theories.

2.1 *Bernard Schmitt's Theory*.

Other endogenous approaches to the theory of money supply privilege the purchasing power function of money, as opposed to its store of wealth function, and have a different – equilibrium, rather than disequilibrium – nature[13]. Hence, though recognizing the monetary nature of a capitalist economy (an important feature of reality, somewhat neglected by Sraffians[14]), they do not provide a single and unitary theoretical framework with the post-Keynesian monetary theories previously mentioned.

One theory of this kind was formulated in the 1970's by Bernard Schmitt, the non-neoclassical author of an original 'quantic', or 'quantum-theoretical', approach to macroeconomics and monetary theory. His theoretical construction provides an extreme version of the endogenous money approach, which interprets monetary phenomena in terms which remind the theory of quantic emissions in physics (production itself being regarded as an emission, i.e. as the result of a process of creation, not of a transformation). Quantum theory also provides the basis for a clear distinction between money and credit. It deals with an economic system where money is 'dematerialized', products ("real credits") have a monetary origin, and payments consist in book-keeping transfers. Money, an immaterial, purely scriptural, vehicle of exchange, takes the form of deposit transfers expressing bilateral or trilateral debt-credit (or liability-asset) relations.

The circuit of money is taken as different from the circular income flow. It is assumed that money flows back instantaneously to its origin (a bank) at the same moment it is created, since each payment entails both the creation and the destruction of bank money, owing to its incorporeal nature[15]. As a vehicle of exchange, initially money has no content (it is an 'empty vehicle', until it is 'integrated' in the real economy). It is only by entering the monetary circuit that money acquires the specific content of a purchasing power (which it loses, as soon as it is spent).

Each bank has two separate departments. One of them, the 'monetary department', creates credit money, which is both a liability (a debt of the bank) and an asset (for it must be repaid to the bank, with an interest). Money does not transit in this department. The other department, the 'financial'

[12] On the neo-chartalist approach, see Wray, 1998 and 2003, Rochon and Vernengo, 2001, 2003, Rossi, 2003, and Fontana and Realfonzo, 2004. Lavoie, 2003, has even introduced a distinction between a 'neo-chartalist' and a 'post-chartalist' approach to the problem, founded on the way the financial relationship between the government sector and the banking system is conceived.

[13] By monetary equilibrium, we obviously mean equality between the demand and the supply of money, implying a stable price level.

[14] But see Pivetti, 2001.

[15] See Schmitt, 1975, where money is destroyed at the very moment it is created. He distinguishes money, which he regards as an instantaneous circular flow used to make a bank payment, from the resulting bank deposit, for the payee.

one, performs an intermediary function, that of transmitting part of the money which has been created by the monetary department, from the lenders (the families, who save and deposit) to the borrowers (the firms, which need money to make real investments). There is no hoarding of money. According to this theory, a circuit, distinct from circulation, cannot be interrupted (an 'interrupted circuit' would be a contradictory concept, from a logical point of view). Hence no unlent saving of credit money is conceivable. Any amount of saving is bound to take the form of a financial asset and has to be matched by a corresponding amount of lending in the financial market.

2.2 *Other Circuit Theories.*

Other 'circuit' theories – those with which we shall be more specifically concerned here – have been proposed by A. Parguez, F. Poulon and A. Graziani. All of them, following Schmitt, regarded credit money as the result of a triangular rather than bilateral payment relationship. Differently from the post-Keynesians, these authors focused their attention on the role played by money in financing expenditure, rather than in hoarding, and on the sequential decisions taken by three categories of perfectly rational, self-interested, economic agents (banks, firms, workers). Unlike Schmitt, they did not consider the circuit of credit money (the only 'authentic money') as instantaneous and were therefore disposed to acknowledge this type of money a possible role of financial asset.

Alain Parguez contrasted Schmitt's view of the role of capital in production, by recognizing the real origin of outputs. He considered credit money as an essential requisite of capitalist production, the one which allows a capitalist system to get rid of the constraint of a previous accumulation of savings. He objected to the idea of an instantaneous temporal dimension of the circuit of money, put much emphasis on the notion of a 'dynamic circuit', maintained that money should be destroyed in what he called "the reflux stage of the circuit" and paid much attention to the theory of economic policy and to the analytical treatment of money in disequilibrium. In a sense, Parguez could not be regarded as a Keynesian: he thought that Keynes and the post-Keynesians did not have a unitary and consistent theory of money supply and demand, and that they did not pay sufficient attention to the monetary theory of the State, which is a distinct subject from the monetary theory of production.

Frédéric Poulon was the first author to provide a complete macroeconomic circuit model fit for describing the hierarchical relationships between the different groups of economic agents. He recognized a possible cause of economic crises in the transgression by the firms of the "credit reimbursement constraint", whose compliance would imply for them the lost of part of their property rights.

Augusto Graziani examined the connection between the creation of credit money and the beginning of the production process, in a theoretical perspective that he regarded as genuinely Keynesian. He put new emphasis on the two distinct problems of production and investment financing, afforded by the firms, arguing that the first of them should be solved by bank credit and the second one by recourse to previous savings (a 'Hayekian', un-Keynesian solution). He confirmed the equilibrium nature of the theory of the circuit, but noticed the possibility of multiple and unstable equilibria. He denied that banks, which control the supply of credit money, could act as intermediaries between savers and investors (he considered a myth "the commonplace according to which banks, by selling deposits, would be collecting savings and by granting loans would be financing investment"). He also advocated the achievement of a more coherent synthesis of the circuit theory and pointed out that a free banking institutional system, or something close to it, does not prevent the presence of a central bank acting as a clearing house and as lender of last resort. And he maintained that a circuit theory should explain the whole circular path of credit money, from its beginning to its end.

2.3 *Basic Assumptions of Circuit Theories.*

In this paper I shall be specifically concerned with the class of circuit theories developed in France and Italy in the 1980's and early 1990's, to describe the essential features of the process of money creation and circulation. What distinguishes them from other approaches devised to integrate endogenous money into the circular flow of income, and makes them an interesting subject to study, is the fact that they analyse the whole chain of payments made during the life-cycle of money, conceived as a credit instrument devised to settle a triangular transaction.

Among their basic assumptions, the following should be mentioned:

a) Capitalist production implies the presence of three different categories of economic agents: firms, banks and wage earners. It presupposes the existence of labour, of non-produced material means of production and of an 'initial' or *ex ante* finance, required to pay the total wage-bill and provided by credit money, an interest-bearing claim devoid of any intrinsic value, endogenously created on demand by the banking system (its total amount being equal to the total wage fund, plus interests) and endogenously destroyed by the same, through scriptural notes.

b) Output and employment levels are determined by the joint decisions of firms and banks and are affected by the rate of interest. Credit is confined to firms or businessmen (capitalists), who use it to pay wages (short-term credit) and to make investments (long-term credit). Wage earners have no access to personal loans (a "classist" rule). They may cause serious difficulties to the equilibrium working of the system if they decide to spend their money gradually, rather than instantaneously, or to hold part of their wages as liquid balances (bank deposits), expressing a stock demand for money[16].

c) The causal order goes from the demand for credit money, made by the firms, to its supply, provided in unlimited amount by banks to creditworthy borrowers (in an institutional framework similar to the traditional "free banking" system acting under legal restrictions), at the current interest rates charged by the banks. Having unlimited access to credit, efficient firms may increase indefinitely their investments, whatever the amount of savings in the economy. Saving is not a constraint in the process of accumulation.

d) For the banking system as a whole, causality goes from bank credit to deposits. The traditional causality relation is thus reversed: the supply of money is no longer regarded as an indirect cause of the demand for money, but as an effect of it[17].

e) The working of the monetary circuit necessarily takes some time, as any circular flow. It is not instantaneous (as assumed by Schmitt). Both firms and families get income flows and make final expenditures gradually over time. Firms use the credit obtained by the banks as a wage fund, in an amount which depends on the wage rate and the employment level. Families use their wage earnings to buy the outputs and securities issued by the firms, thus ensuring them a 'final finance'.

f) With this final finance the firms should ultimately be able to repay the banks, in order 'to close' the circuit of credit money (the 'reflux phase', implying a canceling of the initial debt). Credit money has therefore an ephemeral nature. It lasts only for a single production period, at the end of which the closure of the circuit may be problematic.

[16] When it is kept as an idle balance, instead of being immediately spent, credit money is no longer considered a means of payments (a flow-variable), but a liquid store of wealth (a stock-variable) held in an uncertain world, characterized by a 'cash-in-advance' constraint. Steve Keen and Trond Andresen, in two still unpublished working papers, have put emphasis on the fact that money could only exist in this system if its spending was gradual rather than immediate.

[17] Departing from the dominant classical and neoclassical tradition – that of Fisher and Cannan, rejected by C.A. Phillips in *Bank Credit* (1920) and by Keynes in his *Treatise on Money* (1930), and substantially reproposed first by Mises in *Theorie des Geldes* (1924) and then by Hayek in *Prices and Production* (1931) – banks are not considered by circuitists as financial intermediaries ('cloak-room' or 'portmanteau' mechanisms, capable to lend at most what has been previously deposited with them), but as 'credit creators', an expressive name, which however seems to overrate the role they play in the monetary circuit process of credit creation.

2.4 *Monetary Equilibrium.*

By a further important 'auxiliary' hypothesis usually made in standard accommodationist models of the monetary circuit, the money market is supposed to be always in equilibrium (a dynamic equilibrium, moving from an initial equilibrium position to a new one). This is due to the implicit or explicit assumption that the the supply of deposits has an infinite interest-elasticity and automatically adjusts to equilibrium in the credit market. Under unchanging expectations, any demand for credit is thus assumed to give origin to an endogenous supply of equal amount (a sort of reversed "Say's Law", preventing any excess demand for credit money).

The assumption of an infinite interest-elasticity of the supply of credit money is somewhat relaxed in the structuralist models of the monetary circuit (particularly in those of the new generation). But even so, the interest-elasticity assumed in these models is always very high.

It should also be noticed that the monetary equilibrium may be ensured either at a level of aggregate investment which does not exhaust full-employment saving, or above such level (when part of the investment is financed with credit).

In such oversimplified 'pure-credit model' of the economy, where all payments would be made through scriptural notes (cheques), the money supply would necessarily have an endogenous nature. Hence it would not provide a choice parameter to the monetary authority.

3. Critical remarks addressed to circuit theories.

3.1 *External Critiques.*

Several critiques of the monetary circuit approach have been advanced in the literature. A few of them have come from neoclassical and monetarist economists. That is from authors who believed in the quantitative theory of money and in the exogenous nature of money supply. They assumed neutrality of money in the long period, price stability, general accessibility to bank credit and logical priority of bank deposits over bank loans. Though these critiques did not throw doubts upon the equilibrium framework of a large class of circuit theories, they were rejected by circuitists, as ideologically biased.

3.2 *A Different Kind of Critiques.*

Other critiques had a different nature. They rejected the idea of a systemic equilibrium, implicit in the standard monetary circuit approach. Namely, the basic assumption that the circuit is necessarily a closed loop and that all means of payment created in each period are completely destroyed at the end of the same period (the equilibrium constraint being the scriptural withdrawal of the credit money previously created).

Broadly speaking, this point of view is shared by economists of various theoretical tendencies – as Messori, Giannola, Arena, Chick, De Vroey, Benetti and Cartelier, and myself – who accept the concept of a circuit of capital, don't believe in the dichotomy between the monetary and the real sectors of the economy and in the neutrality of money, reject the assumption of perfectly rational agents' behaviour and the marginal theory of income distribution and recognize the fundamental role of bank credit expansion in a dynamic economy.

These critiques cannot be dismissed by the circuitists as 'external', or ideologically biased, because they come from economic theorists who have established their reputation working out of the mainstream theoretical framework of the neoclassical synthesis.

3.3 *On the Nature of Money Supply.*

The endogenous or exogenous nature of the supply of money cannot be established once for ever. It depends on the institutional context assumed in the theoretical model used by the analyst and on the specific criterion adopted to make the distinction (degree of control, of interest-elasticity, of stability of money supply with respect to changes in the demand for money).

The ratio *M/k* – that is the money supply *M* multiplied by its velocity of circulation with respect to income (*M/Y = 1/k*), where *k* is the real quantity of money which is demanded per unit of product – has an endogenous nature. By equating the demand for money *kY* to the supply of money, we obtain the 'Cambridge quantitative equation', *M = kY*. This equation cannot be considered the expression of an endogenous theory of the supply of money. It implies a causal relation which goes from an exogenous supply of money to money income.

If the Cambridge equation is completed by adding to the demand for money which depends on the level of income Keynes' speculative component, inversely related to the rate of interest, then the simple proportionality relation between the demand for money and money income assumed by the quantitative theory breaks down.

The simplest way to close the Keynesian model of the economy is treating the supply of money as an exogenous variable. As in *The General Theory*. An alternative and perhaps better way is to use a 'flow of funds', or 'credit counterparts', approach and to treat the supply of money as a result of the interaction of individual portfolio preferences and the choices made by the monetary authorities and by the financial intermediaries, so as to make it only a partially exogenous variable.

3.4 *Money Flows and Stocks.*

Capitalist production requires an initial stock of money, needed by capitalists to buy labour power. But there is no initial stock of money in a pure-credit economy. Both the demand and the supply of money are flow variables. This basic theoretical framework is in sharp contrast with that used in the Keynesian analysis of money, which runs in terms of both flows (of income and payments) and stocks (money balances held for precautionary or speculative motives). Circuitism is not a particular type of Keynesism.

Examples of a stock-flow approach, implying that every flow comes from somewhere and goes somewhere, so to exclude the existence of 'black holes', are provided by the 'revolving fund' nature of the Keynesian finance needed by new investments[18]; by Le Bourva's monetary elasticity's approach to the multiplier theory and the theory of endogenous credit money; and by the Godley-Cripps model of the monetary economy, in which expenditure flows and stocks of money and other financial assets kept as stores of value coexist and satisfy some basic accounting macroeconomic identities (such as the equality of total income and total expenditure and of total demand and total supply of money).

In a circuit approach the possibility of using a stock-flow monetary framework appears problematic, because in the standard flow circuit model there is no place either for a stock demand for money, made for precautionary or speculative purposes[19]; or for a buffer-stock demand for

[18] The reference is to Keynes' "finance motive for holding money" (which completed his liquidity theory of interest, bridging the real and monetary sectors of the economy), strangely interpreted by Graziani as dealing with a fund created for financing production activities, not for the initial financing ('pre-financing') of investments. This appears in sharp contrast with the usual post-Keynesian interpretation. According to Cottrell (1994), Keynes' finance motive, which refers to a revolving fund of financial activities and not to a credit flow, "has not found much favour with proponents of endogenous money".

[19] Though, in principle, wage earners may decide to hold liquid balances, when they are paid by firms with bank deposits. On the stock demand for money, Parguez is more radical than other circuitists. He thinks that there cannot be a

money, resulting from a short-term, disequilibrium-adjustment, absorption process, originated by supply-determined exogenous monetary shocks.

3.5 *Opening and Closing the Circuit.*

By stressing the importance of the opening of the monetary circuit, rather than that of its closing, validity of Say's Law seems to be usually assumed by circuit theorists[20], as in neoclassical models implying full employment equilibrium (contrary to Marx's and Keynes' opinions). The role of effective demand in determining the level of economic activity is thus implicitly denied. Money is regarded as a simple means of payment, devoid of any direct utility. There are no liquid balances held as a store of wealth, under conditions of uncertainty, and no real balance effects. The *ex ante* equality of savings and investments at a macroeconomic level is taken for granted, as in traditional neoclassical equilibrium models. The fact that the financing of investments requires long-term credit – i.e. money for the purchase of capital goods, which has to be subsequently repaid, not savings – is ignored.

Credit rationing is generally precluded[21]. It is simply assumed that, at any level of the interest rate, the supply of credit adapts completely to the demand for credit (therefore the financing of investments is no longer a problem for the firms) and economic agents different from speculators have no reason to hold money as a convenient asset. A hoarding of liquid balances and the theoretical possibility of a liquidity trap are usually ignored by circuitists in their flow models; though in a more general mixed stock-flow model, in the presence of a speculative demand for money, a liquidity trap may not be precluded.

Moreover, in a circuit model there is no room for consumer sovereignty. The demand for goods is supply-induced and independent of the price level fixed by the firms by adding a mark-up to their average costs (an assumption which makes the integration of money in the theory of production and in a general theory of value a difficult task).

3.6 *Circuits and Open Loops.*

There is an intrinsic logic in a circuit, which cannot be ignored. A circuit is a closed loop. It has no initial and no final point. It must allow for a roundabout moving of a circular flow. Closure should therefore be regarded as a necessary preliminary assumption of any circuit theory. Not as a simple condition of equilibrium (see Graziani, 1994, 1996). This point is recognised by the circuitists of the Dijon-Fribourg group (Schmitt, Sadigh) and by Messori and Zazzaro.

In a sequential dynamic monetary equilibrium framework, implying equality between the demand and the supply of money, the closure of the monetary circuit cannot be disregarded. It has to be ensured stage by stage. Otherwise there would not be a circuit, but a sequence of connected open loops, each of which would end in disequilibrium, with an increasing indebtness of the firms towards the banks. This is a very dangerous state of affairs which would give rise to what Minsky has described as an unstable speculative financial position, of explosive nature, implying continuous new indebtment by the firms, to cover their previously accumulated debt. Under such conditions of structural disequilibrium, the dynamics of firms indebtness would be completely out of control.

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monetary equilibrium between the stock of money and the demand for money, because the latter "does not exist". Thus in his opinion the demand for money cannot be regarded as a possible determinant of the stock of money.

[20] The founder of the modern theory of the monetary circuit, Bernard Schmitt, calls Say's 'Law of the markets' (the so-called '*loi des debouchés'*) "Circuit Law" ('*loi du circuit*'), reinterpreting it as arguing that each purchase is financed by a sale and each sale finances a purchase (money being treated as a simple intermediary of exchanges). He regards such 'law' as "a genial intuition" fit to clear the reality. Cfr. Schmitt, 1975, pp. 14-15 e 33.

[21] But see Parguez, 175, p.108.

3.7 *Structural Disequilibrium.*

The result would be the "production of debts by means of debts", an unstable financial situation implying a continuous insolvency by the firms, regarded as an integrated sector, with respect to the banking system. With possible failures of single firms and single banks (the case studied by Messori and Zazzaro, 2004), but no final breakdown of the economy.

We would thus be in the presence of an abnormal and illogical structural disequilibrium situation, where some firms could make a profit in money form, and so get a possible source for self-financing and interest payment, if at the same time some other firms were suffering a loss; but where the firms as a whole could neither make profits (the so-called 'profit paradox') nor pay interests to the banks. Therefore either the firms or the banks, though not both of them, could fulfil their expectations.

Some attention has thus to be paid also to microeconomic monetary circuits: to their opening, their closing and their interrelationships. Circuitists have paid much attention to the opening of the monetary circuit. But they have somewhat disregarded its closing and the intermediate phase of the circulation of money (a circulation which – to use Keynes' own terminology – should not be regarded only as "industrial", but also as "financial"). By so doing, they seem to have undervalued the importance of some behavioural parameters, as the velocity of circulation of money.

4. On the closure of the monetary circuit.

4.1 *Further Logical Difficulties.*

Three serious logical difficulties concerning the closure of the monetary circuit arise in such context. The first one has important accounting implications. It is related to the need of each firm and of the firms as a whole to raise profits and pay interests and dividends in money (not in kind, as in a barter economy). This implies for a circuit theory a serious analytical difficulty, as for this purpose firms must dispose of an amount of money greater than that created by the banks in the form of credit money. Government or State money, a primary component of the supply of money, is thus needed, as distinct from central bank money, in addition to credit money.

According to some Keynesian authors (Davidson, Rousseas, Cramp, Minsky), this fact confers to the total supply of money a mixed institutional nature, partly exogenous (government money issued by the central bank, to the extent that it provides finance to the public sector) and partly endogenous (credit money, which is demand determined, though influenced by the credit conditions, but may be forced to indirect control by the monetary authority, a circumstance which suggests to regard the total supply of money as a prevalently exogenous variable)[22]. And the same is true for the supply of monetary base (the supply of money divided by the money multiplier).

As noticed by Messori (1985, 1988), in the absence of an exogenous supply of money, originated by the public or the foreign sectors, or of overlapping and intersecting money circuits[23] implying the permanence of firms' debts towards the banks at the end of each single production period, the total amount of money that firms may hope to recover by selling their products is at most equal to the amount to which they have been financed by the banks. Unless one supposes that banks cumulate wealth in the form of securities; or that interest payments are made in kind by the firms to the banks; or that they are made in advance and covered by the initial loan, together with the wage bill (see Zezza, 2004).

[22] Some circuitists, on the contrary, regard all kinds of money supply as endogenously originated, since they consider also government money as the result of a credit operation (a central bank lending to the Treasury).

[23] Money circuits such that the opening of one makes possible the closure of others, in a never-ending process, in the course of which new firms enter the market while others fail, providing the needed profits.

In short, firms and banks should systematically spend their future incomes before obtaining them. Contrary to both logics and the assumptions usually made in monetary circuit models about the initial finance of the firms.

Under more realistic conditions, the only way firms could extinguish their debts towards the bank sector seems to be that of selling to the banks some of the goods produced, or some new securities. In the absence of this, a smooth working of the system over a multi-period time horizon requires an additional injection of money at the end of each period.

4.2 *Credit Money and the Central Bank.*

Credit is a particular exchange relationship, implying a deferred payment. It should not be confused with credit money, which is a particular means of payment. As a norm, the amount of credit cannot be expanded indefinitely (even in the presence of clearing conditions between credits and debits). It is constrained by bank assets, and more specifically by bank reserves, which are endogenously provided, being a function of bank deposits, and should be repaid.

In the real world only short-term credit has to be repaid by the firms at the end of each single production period. But it may be renewed at its terminal date – for its previous principal amount, plus past interests – even in the absence of newly created means of payments. Long-term credit is usually repaid over several periods, with the yields of investments. To avoid a crisis of the whole system, a sequential circuit model extending over an infinite time horizon, but suitable to be closed in each single period as regards its short-term financing, would thus be needed. Under such conditions, the short-term debt of the firms would be bearable; but their long-term debt would not.

To make the payment of interests possible at a macroeconomic level, the presence in the economy of another source of money supply, of exogenous nature (fiat money having no intrinsic value, issued by the Central Bank or by the government to finance a budget deficit), must be postulated. Any other assumption[24] should be regarded as an *ad hoc*, unjustified, analytical hypothesis.

4.3 *Profits in Circuit Models.*

A second logical difficulty of the monetary circuit approach is that, having no theory of the determination of relative values, such an approach is unable to explain the origin of a surplus value in a capitalistic system. It may show how profit is spent, once formed. But it cannot explain how and why profit comes into existence, how it is physically appropriated and how it is realized in the market in money terms. In a circuit model of the economy, profit is necessarily bound to be zero in money terms.

4.4 *The Role of a Central Bank.*

A third logical difficulty for the circuit approach arises if one is willing to allow for the existence in the pure-credit system of a central bank, which will issue money, will make credit operations with commercial banks and will act in their regards as a lender of last resort (a function which in the real world central banks usually perform under an overdraft or ‘semi-automatic indebtment’ financial system, like Italy and France, but that they are not obliged to accomplish in an asset-based financial system with no reserve requirement, like the U.S. and Canada, where the causality relation

[24] Such as the one which assumes that the amounts of money paid as interests by the firms to the banks would be entirely spent by the latters in the purchase of goods produced by the firms. See, for instance, Giannola, 1985.

is reversed). The demand by the banks for credit of last resort is assumed to be highly inelastic with respect to the cost conditions.

Government money issued by the central bank – when present in the circuit model in the form of exogenous fiat money and/or of endogenous settlement balances originated in the interbank market (denied by Schmitt, but more realistically allowed by other circuitists) – is assigned a purely supplementing role, being considered as not required for a regular working of the system. Its supply is therefore regarded as unsuitable to be used as a control variable by the monetary authority.

This is hardly acceptable, as the amount of government money limits the supply of credit money, which in itself is not a scarce resource, tied to physical boundaries[25]. The whole credit system stands up on the supply of government and central bank money. The circuit of credit money is only a part of the broader circuit of money, which is itself a part of the more general circuit of income[26].

4.5 *Hoarding Credit Money.*

In the past, I expressed the opinion that credit money could not be conveniently held as a liquid store of value[27], an inactive balance suited to transfer purchasing power over time, to cope systematically with the uncertainty of the future. That statement has been contended by Graziani (1996), who remarked that if an amount of transferable credit money is not directly borrowed from a bank, but is received in payment (being a triangular transaction, not a bilateral relationship), it may be kept for some time by the recipient as a liquid store of wealth, instead of being spent. This is certainly possible, though not convenient, because the storing of money has an opportunity-cost.

Besides, hoarding credit money as a reserve would not be consistent with the equilibrium state of the system, which requires the closure of the circuit, stage by stage. In the presence of hoarding of credit money, or of any other type of money, Say's Law would break down.

4.6 *The Money Circuit as a Didactic Device.*

How fruitful is the circuit approach? In my opinion, a pure-credit system of strictly endogenous nature, such as that implied by the circuit theory in its highly stylized canonical form has little cognitive and heuristic value. It is only a didactic device fit for a first approximation analysis of the working of a rather unrealistic monetary economy, characterized by a structurally feeble capital market and by a banking system prepared to finance indefinitely the growth of efficient firms.

The task of providing a macro-foundation to the theory of economic policy is usually pursued by circuitists in a traditional systemic equilibrium framework of social accounting, where the supply of money is assumed to adapt itself passively to the demand for liquid balances, for the renounce of monetary authorities to control the credit component of total money supply (a typically non-interventionist, un-Keynesian attitude)[28]. In equilibrium there would be no motives to hold idle money balances for financing future expenditure. Say's Law would necessarily hold (as a logical identity, not as a law of nature). This explains why the analysis of the supply of money is taken by

[25] It may be noticed that what is in question, here, is the degree of realism of the model. Not the degree of desirability which an analyst is prepared to recognize to the present institutional asset of the world (as wrongly argued by Figuera, 2000, p. 151).

[26] The Dijon and Fribourg circuit school (led by Schmitt and including Sadigh, Cencini, Gnos, Rasera, Rossi and others) distinguishes the circuit of money, which is assumed to be instantaneous, due to the immaterial nature of credit money, from the circuit of income, a flow-variable, whose determination process necessarily takes some time.

[27] In this sense, see also Parguez, 1985, for whom credit money is not suited to be accumulated.

[28] On the equilibrium character and the alleged "heterodoxy" of this theoretical approach, see Cavalieri, 1994, 1996 (with replies by Graziani, 1995a, 1996), and, more recently, Zazzaro, 2003.

several circuitists to be free from fundamental uncertainty[29]. But there are circuitists who do not share this opinion.

5. Further logical difficulties and missing elements.

5.1 *Controlling the Credit System.*

Another important issue should now be discussed. According to the circuit theory, the institutional role of the central bank will have to be severely limited, as regards both the creation of fiat money and the control of credit money, if the supposed strict endogeneity of money has to be preserved. The monetary authority should limit itself to support the choices made by the commercial banks in the matter of credit. The central bank would therefore be deprived of its traditional power of direct control over the credit system. A control which, if really exerted, would confer an exogenous nature to the total money supply (even in the presence of endogenous central bank money entering the circuit in the form of interbank settlement balances provided to the banks, whose amount is determined by the banks demand for them).

With a purely endogenous supply of money, a restrictive monetary policy would be almost nonsensical[30]. Thus, under such conditions, a less important economic role is assigned to the central bank (whose presence, however, is not to be regarded as essential for the existence of a monetary economy).

5.2 *A Money Ordering.*

There is a pyramidal hierarchy of money, which goes from government money to credit money and commercial paper (promises to pay of firms and households)[31]. Both government and credit money are money in a narrow sense of the word. But whereas government and central bank money are always necessary components of the monetary base, credit money is not. A circumstance which makes a substantial difference between these types of money.

In the real world no payment system is able to work efficiently without a basis of government and central bank money, suited to provide a necessary upper limit to credit expansion, which could otherwise be infinitely interest-elastic. In the absence of such a limit and in the presence of an increasing demand for loans and of an accommodating supply, credit expansion could go on indefinitely, as creditworthy firms, being not subject to a fixed budgetary constraint, would be in the position to finance any desired amount of expenditure. The result would be an 'earning-through-spending' circuit theory of income.

5.3 *Credit Rationing.*

Differently from fiat money, credit money cannot be created *ex nihilo*. It presupposes the existence of government and/or central bank money. In the real world bank lending is always subject to credit rationing. Even in the absence of the constraint imposed by the commitment of the

[29] See, for instance, Deleplace and Nell, 1996, p. 24, and Parguez and Seccareccia, 2000, pp. 115-17, who deny the Keynesian linkage between money and uncertainty. But the certainty assumption – the ergodic hypothesis made in stochastic models, by which 'the future is simply a reflection of the past' – is not considered as strictly necessary to circuit theories by Fontana (2000, pp. 37-38). According to Fontana and Realfonzo (2004), "proponents of the MTP [monetary theory of production] focus on the incompleteness of information and the role of fundamental uncertainty".

[30] But see on this point Fontana and Palacio-Vera, 2004.

[31] On the concept of "hierarchy of money", see Bell, 2001.

banks to respect a legal reserve ratio, it is indeed limited by the amount of bank reserves and by bank assets.

Credit rationing of this kind – an important feature of reality, distinct both from institutionally imposed rationing and from simple credit constraints self-imposed by the banks – is ignored by circuitists. Yet it changes completely the analytical framework of the problem we are considering. Because in the presence of any type of credit rationing, the amount of credit money is supply determined, not demand determined.

5.4 *Non-Credit Money.*

In my opinion, unconvertible money issued by the government or by the central bank is not credit money, if we look at it from a substantial (not merely formalistic) point of view. The two types of money are intrinsically different. The former, being non-redeemable and carrying no interest yield, does not represent a credit, an interest-bearing claim of the holder and a true liability of the issuer (the monetary authority). The alleged identity of functions between government money (in the form of cash and banknotes) and credit money (bank deposits, i.e. financial claims) is far from being a complete one.

All money supply comes from the banking system (which includes the central bank). But this does not mean that all money has the nature of credit money. Or that it is "credit driven and demand determined" and may therefore be represented by a horizontal line in the price-quantity space (as maintained by B.J. Moore, in his 'horizontalist', or 'accommodationist', approach to the theory of endogenous money supply).

5.5 *Inside and Outside Government Money.*

In our times, only a part of the nominal supply of money – its credit component, bank money – is certainly endogenous (demand determined). Another component, government money, may be regarded as partly endogenous (inside money, created for refinancing a pre-existent private indebtness) and partly exogenous (outside money, issued to finance a public deficit). The real supply of money (the nominal supply multiplied by the velocity of circulation of money, or divided by the average price level), on the contrary, is always endogenous. Unconvertible government money may be regarded as a net financial asset by the private sector of the economy; but it is not a debt of the central bank, because it does not involve a commitment of the issuer.

5.6 *Loans and Deposits.*

In the real world, where the financial structure of the economy includes both a banking system and a capital market, financial options are usually available. Families are not supposed to spend immediately all their incomes, but may save part of them and choose between leaving their savings inactive or investing them in long-term bonds, corporate securities, treasury bills or bank deposits. Firms which need additional liquid funds are in the position to choose between looking for bank credit and seeking long-term finance in the capital market. Commercial banks decide whether to finance themselves by collecting private savings or through the discount window of the central bank; and whether to invest in making loans to their customers or to buy financial assets. Deposits make loans and loans make short-term, 'convenience lending', deposits. There is no logical priority between them (though there may be a historical priority). This is the basic framework of the Keynesian analysis of the monetary theory of production.

In circuit theories all this is impossible. No distinction is usually made between the money market and the financial market, whose role, when it is explicitly recognised, seems to be a purely auxiliary one, being limited to that of allowing the firms to repay their bank debts, and does not include the financing of investments[32]. There is a banking sector, which is supposed capable of financing every level of firms' productive activity and suited to be refinanced in any circumstance by the central bank. Therefore there is not need of a financial sector (its role being reduced to the allocation of existing liquid resources). A speculative activity in the bond market is thus impossible. We are supposed to be in a pure indebtness or credit economy.

Under such unnaturally restrictive conditions, there can be no uninvested savings by the families and no self-financing by the firms. Loans make deposits (as maintained by the Banking School and by Keynes and Schumpeter), because bank deposits are created simultaneously with the provision of loans (and more or less immediately used); but deposits do not make loans (contrary to the traditional view held by the Currency School). Thus at any moment deposits and loans are not necessarily equal. Investment decisions are assumed to be quite independent of financial market conditions.

Banks do not borrow money from the families and do not pay interests. Interests are paid by the firms (both to the banking system, on loans covering the cost of investment and production, and to equity holders) and by the State, on the public debt.

5.7 *Money, Credit and Finance.*

To allow for a theoretical advancement of the circuit approach, the degree of complexity of this oversimplified stylized model has to be considerably augmented. The capital market and a financial circulation must be explicitly introduced into the monetary theory of production, with the purpose of supplementing credit institutions and the industrial circulation of money, which gives rise to current payments. But as soon as this is done, the unrealistic and analytically unsatisfactory assumption of a pure-credit economy, in which firms, considered as a whole, can finance their productive activities only by recurring to bank credit of endogenous nature, breaks down. Full interaction of money, credit and finance must be admitted. For this purpose, a different kind of model – a stock-and-flow model – is required. This composite nature is indeed unavoidable, because money as means of payment is a flow variable, whereas money as a store of wealth is a stock variable.

5.8 *Interdependence.*

In a stock-and-flow model of the economy, the demand for money will find a satisfactory analytical explanation only within the framework of a general theory of portfolio choices, suitable to define the equilibrium of the whole capital account.

Functional interdependence of supply and demand for money should be fully recognised. The two functions of the demand and the supply of money cannot be estimated independently of each other, because they depend on the same parameters. Thus it is not correct to trace distinct curves for them, in the Marshallian quantity-price space.

[32] On this point, see Cavalieri, 1999. See also Bossone, 2001, for an attempt to deal with this important issue in a circuit model. Circuitists are generally inclined to recognize a hierarchical priority of the bank-credit money market, where firms are supposed to get their initial finance, with respect to the financial market, where firms would be in the condition to obtain the final finance they need for making investments. But it should be noticed that Parguez, differently from Graziani, admits the possibility for the banking system of providing in the form of long-term credit also the final finance needed for this purpose by the firms.

Rather, an analytical effort should be made to transform the large number of the relations among the single economic agents involved (firms, families, banks, public sector, foreign sector) into a small number of consolidated relations among macro variables.

In a closed economy with a supply of money characterized by the presence of both government and credit money, the liquid balances held by the banking system should equal at any moment the difference between bank deposits and bank loans, plus the amount of credit facilities accorded by the central bank to commercial banks actually used[33].

5.9 *Bidirectional Causation.*

Because of the interaction of demand and supply of money, a bidirectional and asymmetrical causal ordering between these variables – recognized by Charles Goodhart, Sheila Dow, Victoria Chick and others – has to be admitted. In general, there is neither a unique causal direction moving from the demand to the supply of money, as assumed by fundamentalist Keynesians and circuitists[34]; nor the inverse causal relation held by monetarists.

It may therefore be rather problematic to distinguish the demand from the supply of money, when government and credit money coexist. A change in the supply of money will necessarily affect the level of economic activity of the system, which is a determinant of the demand for money. And vice versa: the demand for money is partly dependent from the supply (as has been maintained by some exponents of 'fiscal monetarism'). But these two money variables do not affect each other in equal measure. They do not work in a symmetrical way.

Acknowledgement of the mutual dependence of demand and supply of money has the effect of making the planning of monetary policy more complex. In such a situation, any rational basis for the construction of the LM curve, the locus of equilibrium positions on which the 'neoclassical synthesis' is based, breaks down.

6. On some alleged historical links of the monetary circuit approach.

6.1 *Labour Value and Money.*

Some authors of the circuitist group maintain that the Marxian "law of value" (the 'pure' labour theory of value), though unsuited for a correct determination of commodities relative prices of production, is applicable to money and is consistent with the circuit theory[35]. According to the "new interpretation" of the Marxian "transformation problem", which makes use of constant monetary expressions of labour time, instead of labour values, or to one of its 'sequentialist' variants, these authors think that the value of money may be coherently expressed by the amount of labour time used to produce a unit of net social output, valued at prices of production, in money terms. On this premise, the monetary value of the net output produced in the system would be proportional to the amount of living labour employed.

These authors therefore interpret the circuit theory as a "monetary theory of labour-value", suited to measure the purchasing power of money in labour terms (or in labour equivalents). And on this ground, they feel entitled to claim that, at the beginning of the circuit story, it is the value of

[33] See Cavalieri, 1999.

[34] And there is no logical need to finance investment only by resorting to previous savings – either voluntary or 'forced' (families' forced savings, necessarily implied in a circuit theory by firms' profits) – as maintained by Graziani (1994, pp. 83-85) and other circuitists. In the real world, somewhat neglected by circuit theories of the first generation, credit has much to do with investment.

[35] See, for instance, Bellofiore, Forges Davanzati and Realfonzo (2000). See also Trigg, 2004.

labour power which determines the value of money. They thus propose to 'enrol' Marx among a selected set of precursors or ancestors of the theory of the monetary circuit.

6.2 *Marx on Credit Money.*

30. This is hardly acceptable. Marx did never say that capitalist production presupposes credit money creation by banks. He rejected Say's Law and thought that capitalist production presupposed an initial stock of commodity money. Not a stock of paper money, or a simple amount of credit money (which is not a commodity), supported by real or commodity money.

Differently from the circuitists, Marx, who was greatly concerned with the problem of integrating money in a general theory of value, did not attribute a credit nature to the entire money supply. At his times money was in large part commodity money, a tangible good ("true money"). In his theory of money, which combined elements of the metallist and the paper views, the value of commodity money, made with a precious metal exogenously supplied, could be expressed in terms of labour embodied, being measured by the amount of labour time required to produce and coin the metal. That of credit money, which was only abstract wealth, could not.

In Marx's opinion, the usual laws of production did not apply to bank credit, a special kind of institutionally produced commodity. Unfortunately, Marx himself paved the way to the circuitists' misunderstanding, as he used to speak of credit money also in a second, more general meaning, which regarded as such all the money which circulated in a capitalist economy, quite independently of its being commodity or paper money, because in his opinion money was primarily a social convention expressing the credit right of workers over the total product of the system.

6.3 *Wicksell and the Pure-Credit Economy.*

As concerns Wicksell – a neoclassical author deeply interested in the study of the inner nature of interest and money and a critic of the quantity theory of money, who analyzed a pure-credit economy (in *Geldzins und Güterpreise*, 1898, ch. 9, section B) – he also placed such analysis in the more general context of a comprehensive theory of value (in his case, one of a subjective nature). A pure-credit, or indebtness, economy was intended by Wicksell only as a convenient first approximation theoretical hypothesis, compatible with a monetary equilibrium framework. Not a realistic analytical assumption, but a simplifying one, destined to be removed.

6.4 *Schumpeter.*

On a possible Schumpeterian link of endogenous money theories, let me notice that Schumpeter, another celebrated 'heterodox' neoclassical author, was a firm believer in the practical convenience of using credit money, though not in the necessary credit nature of money. He regarded the intermediary, unit-of-account, function of money as its essential one (*Das Wesen des Geldes*, 1931). But he did nothing to support the idea of a token-money, or bank-accounting, system, where money would consist only in the liabilities issued by a credit institution (a third part intervening in the originally bilateral debt-credit relation) and any transfer of a commodity from an economic agent to another one would require a corresponding transfer of token-money, intrinsically worthless, recorded by a bank in her accounting books. For Schumpeter, money was a spontaneous conventional 'social institution'; not something created by the bank system, or imposed by the State. As Wicksell, he did not hold only a 'credit theory of money', implying a logical incompatibility with commodity money[36].

[36] On his point, see Zazzaro, 2003.

6.5 *Keynes.*

On the alleged connection between the circuit approach and Keynes' monetary theory of production, claimed by most circuitists, let me recall just two things: (*i*) that Keynes considered the demand and the supply of money as stock relationships and did not assume flow equilibrium in the money market; (*ii*) that, as Marx, Keynes unambiguously rejected Say's law of markets.

In his major work dealing with "a monetary theory of production", *The General Theory*, Keynes treated the supply of money as exogenously determined by the monetary authority. But this choice was not due, as in some of his previous works, to the adoption of a quantitative approach to the problem (the "cash-balance approach"). It was intended to ensure the formal 'closure' of the underlying analytical model of the economy, a fully integrated monetary and real model, by which the "classical dichotomy" could be definitely overcome. An endogenously determined money supply would have implied an additional (and excessive) unknown variable in the model.

On the basis of this short and inadequate treatment of a complex hermeneutic question (which should be more properly analysed in a separate essay), I am inclined to conclude that, in spite of the emphasis put by both Marx and Keynes on the role of credit money as a source of finance for the firms, to-day monetary circuitism cannot be regarded either as a particular kind of Marxism, or as a special type of Keynesism[37].

7. On the supposed logical priority of either the supply or the demand for money.

7.1 *The Heterogeneity of Money Supply.*

Money supply should generally be considered a heterogeneous variable, characterized by the presence of two distinct components – a primary one (fiat or government money) and a secondary one (credit money) – suitable to be reckoned independently of each other. Fiat money is always part of the monetary base. Being strictly linked to the refinancing of banks and to the financial needs of the public sector, it has a mixed endogenous-exogenous nature and is subject to direct control by the monetary authority. On the contrary, credit money, which is by far the major component of money supply in developed countries, has an unambiguous endogenous nature and is exposed only to an indirect control by the monetary authority. The possibility of regulating, directly or indirectly, both these components should ensure sufficient control of the aggregate supply of money.

7.2 *Interaction through the Money Multiplier.*

Due to the functional interdependence of the demand and supply of money, a bidirectional and asymmetric causal relationship emerges, implying systematic interaction between this pair of money variables, rather than unilateral causality in either sense. Some attention should therefore be paid to the mechanisms which make possible the interaction between the demand and supply of money.

[37] A direct Keynesian legacy as regards the monetary theory of production is taken for granted by circuitists (see Realfonzo, 1998). A similar critical view may be expressed as concerns an alleged Wicksellian legacy, related to the circuit theories' assumption of a pure credit economy, implying money of strictly scriptural nature (an assumption which is incompatible with the existence of liquid balances, a necessary logical pillar in Wicksell's analysis of wealth effects). Other attempts to individuate 'genuine precursors' of circuit theories have been recently made with reference to Dennis Robertson, Michal Kalecki and Joan Robinson, all of whom recognized the historical function performed by money in the initial financing of the production process in a capitalist system.

The exogeneity model pays attention to the central bank's ability to control the monetary base through the money multiplier, which limits the credit potential of the banks. For this purpose, it assumes the two parameters which determine the value of the multiplier – the banks' reserve ratio and the liquidity ratio of the public – as independent of the amount of the monetary base and sufficiently stable. It thus underrates the fact that the amount of credit allowances does not depend only on the demand for loans made by the economic agents, but also on the lending behaviour of the banks.

In a similar way, those Keynesian authors who maintain that all the supply of money has an endogenous nature, and that the monetary authority should only control its rental price, forget both the parallel existence of government money of outside nature and the fact that private economic choices are always conditioned by the authority's decisions about the control of the monetary base, which affect the interest rates and the level of income.

In my opinion, both the strictly endogenous and the strictly exogenous theoretical models of money supply are unsatisfactory. They are based on two sets of different intuitions, many of which, though fundamentally sound, are insufficiently general.

7.3 *The Nature of Money Supply.*

The supply of money is a variable of an intrinsically 'mixed' nature, partly exogenous and partly endogenous. It may assume a prevalently exogenous or prevalently endogenous character, according to the choice of the intermediate policy objective made by the monetary authority, in an analytical context of full integration of the money, credit and finance circuits. When the authority's principal aim is to control the amount of money in circulation – or the amount of any other quantitative money or credit variable – the money supply has a prevalently exogenous nature. When, on the contrary, the monetary authority choses to control the level of interest rates, the supply of money becomes an endogenous variable. The specific nature of money flows tends ultimately to reflect historically both the monetary authority's political attitude and the changing power relationships between the financial and the industrial capital.

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