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FINANCIALIZATION AND THE MONETARY CIRCUIT: A MACRO-ACCOUNTING APPROACH

MARCO PASSARELLA *

ABSTRACT: This paper aims to cross-breed the standard monetary circuit accounting model with inputs from the current Post-Keynesian literature. The goal is twofold: (i) to analyze the impact of household credit-based consumption, fed by capital-asset inflation, on the soundness of a ‘pure sign-money’ economy of production; (ii) to supply a bit more sophisticated description of the working of modern financial systems than the one grounded on the usual ‘bank-based vs. marked-based’ distinction.

KEY WORDS: Monetary Theory of Production; Social Accounting Matrix; Banks and Financial Markets

JEL CLASSIFICATIONS: B51; E12; E16; E44

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1. Introduction

The Franco-Italian approach to the Monetary Theory of Production (MTP hereafter) – also known as the Theory of the Monetary Circuit (TMC) or the Circulation Approach¹ – is the arrival point of a varied line of research which was pursued by some French and Italian monetary economists (such as Barrère, 1979, 1990; Graziani, 1977, 1984, 1989, 1994, 2003; Parguez, 1975, 1996, 2001; Poulon, 1982) in the mid-1970s and which has been further developed in the 1980s-1990s². This line of research is based on the rediscovery of some of the most far-reaching aspects of the analysis of Karl Marx, whose view of capitalism – which he regarded as a monetary economy of production – shows a noteworthy resemblance with a number of ‘dissenting’ works of the twentieth century (see Messori, 1983). The obvious reference is the crop of studies that is drawn from the point at which the most influential work of Knut Wicksell, *Geldzins und Guterpreise* [Interest and Prices] was published (in 1898), and then merges into the *Treatise on Money* (1930) of John Maynard Keynes. There is, evidently, a strong link between the Franco-Italian specific ‘declension’ of the MTP and the Cambridge School of Keynesian Economics³ – including the direct pupils of Keynes (Richard Kahn, Nicholas Kaldor and Joan Robinson) and Michał Kalecki⁴. However, it is within the pioneer work of some French scholars – notably, Jaques Le Bourva (1962) and Bernard Schmitt (1960, 1972, 1975, 1984) – that we can find the early attempt to build a general macro-monetary circuit framework aiming to be an alternative to (and in competition with) the neoclassical simultaneous general equilibrium model.

These very theoretical roots make the TMC show a high degree of affinity to, and consistency with, the current Post-Keynesian approach and other radical schools⁵. There are, of course, many and deep theoretical differences

¹ Whose authors are usually called, somewhat ironically, ‘les circuitistes’.

² For an introduction to the MTP and a discussion about its perspectives, see Lucarelli and Passarella (2012a,b).

³ This definition has been coined by Pasinetti (2005) and refers to those economists who are sometimes labelled as the ‘English’ Post-Keynesians. English Post-Keynesians were based in Cambridge and were mainly interested in the analysis of production, distribution and growth. Historians of economic thought usually distinguish them from the ‘American’ Post-Keynesians (notably, Paul Davidson, Alfred Eichner, Hyman Minsky, Basil Moore, Joseph Staindl and Sidney Weintraub), who were/are mainly interested in the theory of money and finance, and whose theoretical framework is akin to the TMC’s one.

⁴ We have not mentioned those Italian economists who developed the ‘Classical-Marxian’ approach of Piero Sraffa and came to be appointed to the academic staff of Cambridge (notably, Luigi Pasinetti and Pierangelo Garegnani). However, it is possible to show that the TMC and the Sraffian theory of prices and distribution are mutually consistent (see Lavoie, 2006).

⁵ Significantly, some scholars refer to the TMC as the ‘post-Keynesian Circuit approach’ (see Halevi and Taouil, 2002) or the ‘French and Italian post-Keynesian school’ (see Godley and Lavoie, 2007). Among the works suggesting integration between the theory of monetary circuit and the current Post-Keynesian studies, see also Godley (1999), Lavoie (2004, 2006),

between authors such as Marx, Wicksell, Schumpeter, Keynes and Minsky, as well as between the New Cambridge simulation modeling and, say, the ‘linguistic’ research of Bernard Schmitt. Yet, the Franco-Italian approach to the MTP shows that those divergences can be regarded as less relevant than the views that they have in common with each other. More precisely, the keystone of the TMC is the association of the Keynesian concept of ‘initial finance’ with the Marxian notion of ‘money-capital’ (see Messori, 1983). On this basis, TMC authors depict the working of capitalism as a ‘monetary circuit’, viz. a circular sequence of economic acts involving the use of sign-money which is *ex nihilo* created by banking system. In detail, the causal-chain which marks an ‘artificial’ monetary economy of production, made up of only three sectors (non-financial corporations, workers and banks), is opened by the decision of corporations to borrow from the banking sector. This flow of credit-money, named the initial finance, is used to pay a wage-bill to workers in return for the labour-force required to start the process of production. Notice that the labour-force bought thanks to the bank initial finance is the only item that the corporate sector (considered as a whole) cannot reproduce by itself. Once the production cycle is concluded, wage-earners spend one portion of their income in the commodity market and a second portion in the financial market, on the purchase of securities issued by firms⁶. Notice that, for corporate sector considered as a whole, there is no difference between these two sources of expenditure: in both cases, the liquidity flows back to firms in the form of final finance. However, wage-earners can also decide to save part – the third portion – of their income by holding it in the form of bank deposits (or even in the form of cash balances, if the government sector is included in the model). In this case, the greater the liquid balances held by wage-earners, the greater the losses of revenue suffered by the corporate sector. Nevertheless, as wage-earners use the whole of their income both on expenditure of consumer-goods and/or the purchase of securities, corporations are able to repay their debt and ‘the circuit is closed “without losses”’ (Graziani, 2003, p. 30)⁷.

It is starting from this sketched description of the working of a monetary economy of production that we are able to isolate and highlight the theoretical cornerstones of the TMC, which are: (i) the rejection of the so-called ‘methodological individualism’ (and of its associated notions of the ‘micro-foundations’ and the ‘representative agents’) in favour of a model that explicitly considers the hierarchic relationships among different economic

Zeza (2004, 2012), Keen (2009), and Pilkington (2009).

⁶ For the moment, we assume away the other real and financial assets held by households.

⁷ We simplify away the repayment of interest (in monetary terms) to the banks. In the next sections, following Zeza (2004, 2012), we will implicitly assume that the ‘financial period’ (which starts when the bank loan is created on demand of corporations, and ends when the loan is paid back) is longer than the ‘production period’ (in which corporations recover liquidity from sales and pay the interest to banks, which, in turn, spend this liquidity to purchase goods and/or equities from corporate sector). This will allow us to treat interest payments consistently. On this out-and-out rebus (or conundrum) of the circuit approach, see also Parguez (2003), Lavoie (2004), Rochon (2005), Bellofiore and Passarella (2009).

sectors⁸; (ii) the adoption of a sequential model, characterized by the non-ergodicity⁹ – which, of course, is in stark contrast to any neoclassical notion of a simultaneous general equilibrium; (iii) the endogenous determination of the supply of money which is considered a pure sign, i.e. a mere book-keeping liability in the balance-sheet of the issuing bank¹⁰; (iv) the rejection of the ‘marginalist’ theory of distribution in favour of the so-called ‘Kalecki-Keynes formulation’, which is not only close to the Post-Keynesian theory developed by Kaldor and Joan Robinson but also consistent with Sraffa’s approach; (v) the idea that credit-money and finance really matter (both in the short- and in the long-run) and that this makes capitalist economies intrinsically unstable. Finally, notice that the proponents of the TMC share also a number of epistemological presumptions with the other MTP authors. Besides refusing the old neoclassical individualist reductionism, they also oppose the ‘instrumentalist’ epistemology embraced by the majority of current mainstream economists¹¹. By contrast, most MTP authors regard the aim of the economic theory as to explain what happens in the ‘real’ world. Consequently, a good economic theory has to start from ‘stylized facts’ (i.e. a specific class of basic abstract hypotheses which are derived from the observation of the empirical – or ‘concrete’ – capitalist reality) and hence to recognize the existence of both institutions and different social classes, in a world marked by radical uncertainty. Notice that MTP authors do not deny that a theory could arise from a process of abstraction. What is claimed is that abstraction to be – in Marx’s words – ‘historically determined’.

The ‘standard’ version of the monetary circuit framework is doubtless a fine description of the effective working of Western capitalist economies during the period 1950s-mid 1970s. However, since the end of the 1970s, especially in the US and in the UK, stock markets and financial business sector have progressively taken on a role which seems to be much more relevant than the ‘passive’ function assigned by the TCM. Even the banking sector has seemed to shift its core towards consumer-credit and the managing of financial activities, thereby changing its nature into fee-related business. To the extent that those changes have become permanent features of modern financially-sophisticated economies, ‘circuitist’ analysis needs to be updated. This is the starting point of the remainder of the paper, which is organized as

⁸ Notice that not all the authors who refer to the MTP refuse to give micro-foundations to their macroeconomic models. Minsky’s ‘financial instability hypothesis’, on the one hand, and current ‘(heterogeneous) agent-based modeling’, on the other hand, are both examples of micro-founded MTP approaches. Rather, what MTP authors always refuse is to bring back the role of each economic agent to the behavior of a perfectly rational and forecasting consumer. According to MTP authors, the essence of capitalism is its domination by capitalists (firms and banks) rather than households (see Toporowski, 2008).

⁹ The point is that, for non-ergodic variables, ‘sample moments (averages, variances, etc.) do not converge on their true values over time. The implication is that future realizations of random variables [...] cannot be predicted based on prior empirical observations’ (Hanngsen, 2006, p. 208).

¹⁰ On this aspect, we refer the reader to the recent work of Sawyer (2013).

¹¹ According to whom a hypothesis is a ‘good’ assumption whether it provides valid and meaningful predictions concerning the class of phenomena which it is intended to explain, whereas the (lack of) ‘realism’ of the assumption is totally irrelevant.

follows. Section 2 deals with the remarkable change in the historical structure of the circuit of monetary payments in high-income economies. Sections 3 presents the basic assumptions behind the accounting framework developed in the subsequent sections. Sections 4 and 5 analyze the impact of ‘capital-asset inflation’ on the financial-economic soundness of the corporate sector and hence of the whole economy. In section 6 we provide a more sophisticated description of the working of modern financial systems than the one grounded on the usual ‘bank-based vs. market-based systems’ dichotomy. Some concluding remarks are provided in section 7.

2. The Monetary Circuit in ‘Money-Manager Capitalism’

We know that a distinctive feature of a growth-oriented productive system – such as the one analyzed by Keynes and, in the wake of him, further analyzed by TMC authors during the 1970s – is the major role of banks in the financing of production (and investment), where security market plays a passive role in channelling household saving towards manufacturing corporations. However, as Seccareccia (2012) has argued, since the end of the 1970s financial markets have begun to take on a central role first in Anglo-Saxon countries and then in other Western economies. In fact, ‘growing profits and retained earnings associated with a relatively weak business investment have slowly transformed (or rentierized) the nonfinancial business sector itself into a net lender that seeks profitable outlets that provide high financial returns for its internal funds’ (Seccareccia, 2012, p. 282). At the same time, households’ saving has fallen drastically: since the 1990s, the household sector in the most part of Anglo-Saxon countries has increasingly become a net borrower, rather than a net lender (that has been long considered as households’ ‘traditional’ role). On the money-supply side, banks have become ‘financial conglomerates’ that seek to maximize their fees and commissions by issuing and managing assets in off-balance-sheet affiliate vehicles. This has produced a change compared to the standard monetary circuit framework, where the banking system is assumed to finance the activity of the corporate sector (current production and, at a lower level of abstraction, investment plans). In fact, during the so called ‘Money Manager Capitalism’, the traditional link between non-financial firms and banks ‘has been largely severed [...], and it is the dynamics of the bank/financial markets axis [...] that has taken center stage’ (Seccareccia, 2012, p. 284).

In FIG. 1 the simplest version of the monetary circuit is represented by the sequence (1)-(5). For the sake of simplicity, we are assuming that households use their incomes (i.e. both labour-incomes and capital-incomes) for buying commodities and/or securities (say, shares) issued by corporate sector, with any increase in their holdings of bank deposits being excluded. In short, within a monetary economy of production, the usual (i.e. logical) sequence is: (1) commercial banks lend to the non-financial corporations, enabling them to start the process of production, as well as to finance each individual investment plan (but notice that, at the macroeconomic level, the purchase of intermediate goods is an exchange ‘internal’ to the firm sector); (2) corporations use the initial finance to pay a money wage-bill to households in

return for the labour-power that those corporations need; (3.a,b) once the production process is over, households spend a percentage of their income in the commodity market and hold the rest in the form of financial assets (by hypothesis, equities issued by corporations); (4.a,b) the liquidity (notably credit-money) that is spent in both the equity market and the commodity market comes back to the corporate sector as a whole; (5) insofar as non-financial firms get back their monetary advances, they are able to repay (the ‘principal’ of) their bank debt¹².

Yet, as has been mentioned, during the last decades the process of financialization of Western economies has involved a remarkable change in the historical structure of the monetary circuit. The strategic position of banks and financial markets in this ‘new capitalism’ made in US (and UK) is depicted in FIG. 2. On the one hand, the creation of credit-money has been increasingly sustained by household debt (L_h , hereafter) rather than by the demand for finance of the corporate sector (see arrow 1). On the other hand, household debt has fuelled the transactions on the financial markets (both on the corporate stock market and on the other financial asset markets) because of the demand arising from the growing saving (i.e. money profits) of the corporate sector (see arrow (3) in FIG. 2)¹³. In short, the sequence which marks the ‘new’ monetary circuit is virtually opened by the decision of banks to grant credit to households on the basis of their wealth (i.e. the stock of assets hoarded by households) (arrow (1)). Households spend both this flow of credit-money and (a share of) their labour (and financial) income in the commodity market (arrow (2)). To the extent that corporations are able to fund their desired productive investment plans, they can assign a percentage of the retained earnings to both the equity market and the market of other financial assets (i.e. generic ‘securities’ issued by banking sector, within the simplified model we are developing in the next sections). In the former corporations can repurchase a part of their own shares – either from other firms or from households and banks (arrows (4.b)-(4.c))¹⁴. In the latter, banks and financial intermediaries place financial assets (for instance, derivative products such as the notorious ‘collateralized debt obligations’ (CDO)) which are indirectly ‘monetized’ by non-financial corporate saving (arrows (3)-(4.a)). This happens because, in the presence of rising prices and returns in the financial markets, ‘it may become profitable for overcapitalised firms to allocate excess capital to financial assets in preference to engaging in real investment’ (Toporowski and Michell, 2012, p. 20). The final outcome is that, eventually, corporations

¹² Notice that if households do not hoard deposits, then even the sums paid by corporations as dividends on shares flow back to the same corporate sector. For a complete analytical description of the standard monetary circuit phases, we refer the reader to Graziani, 2003.

¹³ Notice that loans funding household credit-based expenditure turn into an equivalent amount of bank deposits received by the corporate sector as a whole. That amount of deposits (in excess of the funds needed to undertake the production and the investment) feeds corporate ‘over-capitalization’, allowing firms to invest in financial assets. On this point, see Toporowski, 2008; Toporowski and Michell, 2012.

¹⁴ The reasons why the single corporation buys back its-own shares are: (i) to sustain the price of shares; (ii) to settle the level of internal liquidity; (iii) to distribute income to its owners in the form of capital gains.

assume the role of net lenders, whereas households become net borrowers.

3. Basic Assumptions and the Accounting Framework

In the remaining sections, the effect of the process of financialization on the soundness of the corporate sector, and hence of the circuit of money payments of the whole economy, will be analysed within a social accounting formal model where three macro-sectors are explicitly included.

- (i) Households (or wage-earners). This sector comprises individuals who sell their labour-power to firms in return for a money-wage. They spend their income in order to acquire the desired quantity of consumer goods and financial assets (i.e. bank deposits and equities). They can also borrow in order to feed their extra-consumption. However, by definition, households cannot obtain bank (initial) finance in order to start the process of production.
- (ii) Non-financial corporations (or firms). For the sake of simplicity, this sector is assumed to include firms which produce a single homogeneous output by means of labour and use the same output-good as an input. In order to start the process of production, firms need to borrow from banks and to use that finance to purchase labour-power from households. Once the production is concluded, corporations enter financial markets in order to place their-own shares and to subscribe a number of financial assets (i.e. both their-own equities and other securities issued by financial sector).
- (iii) Integrated financial sector (or financial-banking sector). It's the macro-sector that includes central bank, commercial banks and other non-bank financial intermediaries. Notice that, within a 'pure credit' economy, central bank is just supposed to steer the target rate of interest on refinancing, and to lend to commercial banks¹⁵. Commercial banks, in turn, lend to non-financial corporations, households and non-bank financial operators. Finally, financial operators issue financial assets. More precisely, they issue equities which are bought by households, and other securities which are subscribed by corporate sector. Finally, both banks and financial operators (may) hold a percentage of non-financial corporate capital stock.

From points (i) to (iii) it follows that, in order to account for the features of the new capitalism, we are temporarily neglecting the usual distinctions between commercial banks and investment banks, and between banks and other financial intermediaries. Furthermore, we are assuming that households demand (and obtain) bank loans in order to finance consumption beyond the limit of their disposable income¹⁶. Notice that, since those loans are supposed

¹⁵ On a heterodox interpretation of the effective rule followed by the central banker in the steering of the target rate of interest, we refer the reader to Brancaccio and Fontana (2013).

¹⁶ On this point, see also Palley (1994) that emphasizes the role of consumer debt within a

to be an increasing function of household net wealth, consumption increases (decreases) as the price level in the financial market increases (decreases). Thus, in the presence of flat corporate investment at least, ‘autonomous’ consumption induced by asset inflation must be regarded as the real engine of the considered artificial pure credit economy. Notice that both the government sector and foreign markets are to be ignored at this stage of the analysis.

In the wake of the current stock-flow consistent modelling (SFCM, hereafter), previous hypotheses have been summarized within a set of sectoral accounting sheets, viz. table 1, 2 and 3¹⁷. These social matrixes constitutes the ‘skeleton’ of the circuit framework we are going to discuss in sections 4 and 5. The starting point of SFCM authors is that, at the macroeconomic level, every financial asset always needs a counterpart liability, and vice versa. In this regard, tables 1, 2 and 3 assure the respect of the condition of aggregate stock-flow coherence. In detail, TABLE 1 is the nominal balance-sheet matrix of our artificial pure sign-money closed economy of production; TABLE 2 is the corresponding transaction-flow matrix; and TABLE 3 shows uses and sources of funds within the economy – that is to say, it shows the monetary budget constraint faced by households, corporations and financial sector, respectively. More precisely, each column of TABLE 1 shows current stocks of assets and liabilities of every sector; each row of TABLE 2 shows the flow of expenditures, income and transfers from one sector to another; finally, each column of TABLE 3 shows how each sectoral balance sheet is affected by current flows. This point is worth of some additional comments. The fourth column of TABLE 3 shows the identity between the productive investment undertaken by corporations and its sources of financing (bank loans, equities and retained profits, net of the purchase of financial assets). As for the causality, we are assuming that bank loans are defined in ‘residual’ and ‘revolving’ terms, namely, as the external funds that corporations need in order to cover non-self-financed productive investment (in addition to current production). The second column of TABLE 3 shows household flows of funds. Notice that, to the extent that bank loans are used to finance extra-consumption, this entails an additional and (potentially) lasting indebtedness of household sector. The point is that consumption, unlike investment (be it ‘financial’ or ‘productive’, as in the case of corporations), does not entail any additional future return. Finally, the sixth column of TABLE 3 shows the flow of funds of the integrated financial sector. This latter manages a number of different financial assets and its net income is given by the algebraic sum of the corresponding financial revenues (as is shown in the fifth column of

Minskian context.

¹⁷ Notice, in this regard, that (within the current heterodox literature) the label ‘stock-flow consistent’ is typically associated with a specific set of macroeconomic Post-Keynesian models mainly developed by Wynne Godley and the scholars of the Levy Institute of New York (see Godley and Lavoie, 2007; see also Dos Santos, 2006). The system of difference equations and accounting identities of the SFCM is explicitly derived from a complete set of sectoral balance-sheets. However, this preliminary procedure (allowing SFCM authors to avoid any accounting ‘black hole’) could be extended to every formal macroeconomic model, whatever its theoretical leaning.

TABLE 2)¹⁸.

4. The Effect of ‘Capital-Asset Inflation’ on Profits

The somewhat paradoxical accounting structure of the ‘new’ monetary circuit depicted in FIG. 2 can be derived by TABLE 1, 2 and 3. In this regard, it is assumed that corporations express two different kinds of demand for bank loans: (i) the stricto sensu ‘initial finance’ which the corporate sector as a whole needs to fund current production, L_{fw} , and which covers the wage-bill paid to workers (W , the cost of production); (ii) a further demand for credit, allowing each single firm to fund that part of productive investment which cannot be financed by internal sources, L_{fk} ¹⁹. The amount of the initial loan demanded (and obtained) by the corporate sector is therefore:

$$\dot{L}_f^i = L_{fw} + L_{fk} = W + \lambda p \Delta K \quad (1)$$

where λ is the (residual) share of investment funded by loans (i.e. a measure of the leverage ratio of the investment), p is the unit value of the homogenous output (i.e. the price level), and ΔK is the current change in the existing stock of capital (i.e. the ‘productive’ investment in real terms).

At the end of the process of production, households can purchase consumer goods and/or save a share of their income, thereby increasing their stock of financial assets. If we assume that households can also borrow credit-money in order to fund their extra consumption (i.e. in order to achieve the ‘desired’ level of consumption), then their ‘augmented’ budget constraint is:

$$W + F_{fh} + F_b + i_{M(-1)} M_{h(-1)} + \Delta L_h - i_{L(-1)} L_{h(-1)} = C + \Delta V_h \quad (2)$$

where F_{fh} is the flow of dividends from corporations to households, F_b is the flow of dividends from financial sector to households, i_M is the rate of return on bank deposits, M_h is the stock of deposits held by households, ΔL_h is the flow of new loans to households, i_L is the rate of interest on loans, L_h is the stock of bank loans to households, C is the flow of consumption, and ΔV_h is

¹⁸ Notice that within the proposed framework: (i) every interest rate (and rate of return) is set at a level that remains fixed during a given accounting period; (ii) the corresponding interest-payments (and returns) are due in the subsequent period. For a Minskian-Kaleckian simulation model derived from this accounting framework, we refer the reader to Passarella (2012b).

¹⁹ According to Graziani, firms ‘need finance in order to set up and carry on any kind of production’. Hence, a bank loan ‘must cover the cost of total production and is not confined to financing specifically the production of capital goods’ (Graziani, 2003, p. 69). However, Graziani himself admits that, insofar as we abandon the conception of the corporate sector as one that is fully integrated and we consider a multiplicity of units, ‘in order to buy finished [capital] goods, firms need finance as much they need finance for paying the wage bill in the labour market’ (Graziani, 2003, p. 99). This is the reason why we consider both flows of finance. Notice that L_{fw} is borrowed at the beginning of the period, whereas one should assume that L_{fk} is demanded only when the production is completed. We will neglect this complication hereafter, by assuming that the whole finance is obtained at the beginning of the period.

the change in the stock of household wealth.

For the sake of simplicity, let us assume that: (i) bank loans to households can be expressed as a proportion, ρ , of the value of household stocks of assets (including capital gains, see the seventh row of TABLE 3); (ii) the interest rate on bank deposits is negligible; (iii) the integrated financial sector does not face any cost of production, and uses entirely any level of its retained earnings to subscribe equities issued by corporations²⁰; (iv) banks and financial operators do not issue new shares; (v) hence, households divide their savings between corporate equities and deposits only. Given these premises, we have:

$$\Delta L_h = \rho (V_{h(-1)} + \Delta p_{Ef} E_{fh(-1)}) \quad (3)$$

$$\Delta V_h = \Delta M_h + p_{Ef} \Delta E_{fh} \quad (4)$$

$$p_{Ef} \Delta E_{fb} = \theta_b (i_{L(-1)} L_{(-1)} + F_{fb} - i_{D(-1)} D_{(-1)}) \quad (5)$$

$$\Delta E_{fN} = \Delta E_f (1 - \sigma) \quad (6)$$

from which we obtain:

$$\begin{aligned} p_{Ef} \Delta E_{fN} &= p_{Ef} \Delta E_{fh} + p_{Ef} \Delta E_{fb} \\ &= (\Delta V_h - \Delta M_h) + \theta_b (i_{L(-1)} \Delta L_{(-1)} + F_{fb} - i_{D(-1)} D_{(-1)}) \end{aligned} \quad (7)$$

where θ_b is the percentage of financial sector's retained earnings, ΔE_{fN} is the quantity of newly issued corporate shares, net of any stock buyback, and $\sigma \geq 0$ is the corporate ratio of stock buyback to current issues. Variables D and i_D are worth of a more thorough comment: D is the overall value of securities issued by banks (through other financial intermediaries) using loans to households as collateral; i_D is the corresponding rate of return. In a sense, we are assuming that banks can turn part of their 'uses of funds' (i.e. loans to households) into an equivalent amount of 'sources of funds' (i.e. new marketable securities). Since the above simplified description roughly corresponds to the actual scheme adopted by banks and financial operators to issue derivative financial products, we will refer to those securities as the 'derivatives' (D). As for the meaning of the remaining symbols, we refer the reader to the glossary at the end of the paper.

Equation (7) shows that the demand for corporate equities arises from household saving (although it is likely that it happens in decreasing terms as the process of financialization takes off) and from net receipts of banks and financial operators. Notice that if corporations decide to use their retained

²⁰ As has been argued, if we model a single monetary circuit, 'the rationale for banks asking for interest payments is either to pay for their "cost of production" [...] or to distribute profits to bank owners, or to cumulate wealth, and since we can rule out that banks cumulate wealth in the form of their own deposits, we can safely assume that any level of undistributed profits obtained by the banking sector is used entirely to purchase equities' (Zezza, 2012, p. 6; see also Zezza, 2004).

earnings in order to repurchase (from households and the financial-banking sector) part of the issued capital stock, then the current net change that is described by the left-hand term of equation (6) may be negative – this will be so if $\sigma \geq 1$. In this case, households and financial sector can spend the resulting additional flow of credit-money only for consumption. Consequently, even in the presence of share re-purchase, there is only one circumstance which can produce a net loss of liquidity for corporate sector as a whole: the decision of the other sectors to save a percentage of their income in the form of cash balances (i.e. bank deposits, in this simplified model). Finally, if we divide equation (7) by ΔE_{fN} , and then we use (6) in (7), we obtain:

$$P_{Ef} = \frac{(\Delta V_h - \Delta M_h) + \theta_b (i_{L(-1)} L_{(-1)} + F_{fb} - i_{D(-1)} D_{(-1)})}{\Delta E_f (1 - \sigma)} \quad (7')$$

which is a positive function of both the retained earnings of financial sector and the buy-back of corporate shares.

From the second column of TABLE 2 we can derive also the macroeconomic equation of corporate profits, which roughly corresponds to the well-known Kaleckian aggregate identity between capitalists' incomes and capitalists' expenditures (see Kalecki, 1971):

$$P_f = p\Delta K + C - W - i_{L(-1)} L_{f(-1)} + i_{D(-1)} D_{(-1)} \quad (8)$$

It deserves to be noted that the rate of return on derivatives is directly linked to the rate of interest on household debt. The reason is that the integrated financial sector issue bonds subscribed by corporations which are looking for higher returns on their internal capital. This process allows the banking system to 'monetize' a percentage (call it α) of its credit with households without waiting until the maturity-date. However, in order to do so, the financial-banking sector needs to pay an interest on the issued bonds, whose rate of return must be higher than the rate on deposits and lower than (or equal to) the rate on loans to households ($i_M < i_D \leq i_L$).

Besides, from (2) and (7') we obtain the following identities:

$$C = W + F_{fh} + F_b + \Delta L_h - i_{L(-1)} L_{h(-1)} - \Delta V_h \quad (9)$$

$$P_{Ef} \Delta E_{fN} = \theta_b (i_{L(-1)} L_{(-1)} + F_{fb} - i_{D(-1)} D_{(-1)}) + (\Delta V_h - \Delta M_h) \quad (10)$$

Let us consider two different cases. Case 1. We assume that: (i) the productive investment is entirely financed by the issuing of new equities (so that $p\Delta K = P_{Ef} \Delta E_{fN}$); (ii) both corporations and financial-banking sector do not distribute dividends (so that $F_{fh} = F_{fb} = F_b = 0$ and $\theta_f = \theta_b = 1$)²¹; (iii) the rate of return on derivatives is negligible ($i_D = 0$). Using (9) and (10) into (8), we get:

²¹ Notice that, in this case, the only reason for purchasing equities is the wish to realize capital gains.

$$P_f = \Delta L_h - \Delta M_h \quad (11)$$

and hence:

$$\Delta L_h > \Delta M_h \Rightarrow P_f > 0 \quad (12)$$

Receipts from sales (made by corporate sector as a whole) are enough to pay back what the corporations have borrowed (i.e. principal plus interest) and to provide a positive net money profit, if the amount of loans to households is larger than the amount of deposits that households (decide to) hold. The conclusion is that non-financial corporations (considered as a wholly integrated sector) realize money profits if households become net debtors with the banking sector (and, hence, firms result to be net creditors).

Case 2. Let us suppose that: (i) the productive investment of corporations could be debt-financed; (ii) the rate of return on derivatives is positive, allowing corporations to realize financial gains. If we keep on assuming that neither the corporate sector nor the financial sector distribute dividends, then the amount of money profits of the corporate sector as a whole becomes:

$$P_f = (\Delta L_h + L_{fk} + i_{D(-1)} D_{(-1)}) - \Delta M_h \quad (13)$$

Remembering equation (3), we obtain:

$$P_f = \rho(1 + \alpha i_{L(-1)}) (V_{h(-1)} + \Delta p_{Ef} E_{fh(-1)}) + \lambda_f p \Delta K - \Delta M_h \quad (13')$$

from which:

$$\rho(1 + \alpha i_{L(-1)}) (V_{h(-1)} + \Delta p_{Ef} E_{fh(-1)}) + \lambda_f p \Delta K > \Delta M_h \Rightarrow P_f > 0 \quad (14)$$

where α is the percentage of loans to household sector which have been turned into derivatives (i.e. which have been ‘securitized’)²². Once again, we see that the higher the level of productive investment, the higher will be the net money profit realized by the corporate sector – as stated by Kalecki’s law. Notice, however, that the profitability of the corporate sector is now positively affected also by both the level of the receipts from the ‘investment’ in financial assets (i.e. the return on derivatives, in this simplified model) and the household wealth, including capital gains realized by households on the equity market. More precisely, the inflation in the price of equities has two positive effects: first, it increases the amount of consumer credit, therefore sustaining corporate profits from sales; second, (part of) the interest accruing to the debt of households is a financial gain for the corporate sector. Notice also that, since inflation of capital assets allows each individual firm to replace its borrowing by the equity financing, the ‘capital-asset inflation’ could reduce the monetary cost of such financing. Nonetheless, if we admit that banks and

²² So that we have: $i_D D = \alpha i_L \Delta L_h$.

financial operators spend all of their receipts, then interest-payments on loans are never a ‘real’ cost for the corporate sector, because they are doomed to flow back to it in the form of higher consumption and/or higher equity-financing. This is the reason why interests accruing on bank loans to corporate sector do not appear in the equation (13’)²³.

5. Financialization, Prices and the Distribution of Income

As the most part of ‘dissenting’ scholars, ‘circuitistes’ reject the ‘marginalist’ theory of prices, distribution and employment. By contrast, their position is akin to the Post-Keynesian theory developed by Nicholas Kaldor, Joan Robinson and Michał Kalecki. Following Graziani (2003), the first step is to determine the equilibrium price level which results from the equality between the aggregate demand and the aggregate supply of goods. This latter is set in real terms by autonomous decisions taken by corporate sector about the level and the composition of the current production²⁴. In algebraic terms, the total monetary value of the aggregate supply is:

$$AS = p\pi N \quad (15)$$

where p is the (unknown) price of a unit of output, π is the average output per worker (i.e. a measure of the labour productivity) and N is the employment level.

From the first column of TABLE 2 we can derive the aggregate demand for consumption of households within our artificial economy. Adding the demand for investment of non-financial corporations, we get:

$$\begin{aligned} AD &= C + I \quad (16) \\ &= \left(W + F_{fh} + F_b + i_{M(-1)}M_{h(-1)} - i_{L(-1)}L_{h(-1)} + \Delta L_h - S_h \right) + p\Delta K \end{aligned}$$

²³ Herein lays a possible difference with respect to the traditional TMC. For Graziani (2003), while interests paid on securities are never a real cost to corporations (apart from a possible ‘income effect’), interests paid on bank loans represent a real subtraction from corporate profits. However, the adoption of a fully coherent macroeconomic approach allows us to show that: (i) the corporate sector as a whole can, theoretically, always realize its-own autonomous investment plans and hence the deriving net profits, given the scale of intended production; (ii) the financial-banking sector can always successfully compete with households in the ‘commodity’ market by settling the rates of return on deposits and loans. Thus, bank interest payments are a subtraction from household real income, rather than from the corporate one. Nevertheless, for the sake of simplicity, in the rest of the paper we will keep on assuming that banks use the entirety of they retained earnings to purchase equities.

²⁴ Observe that if one considers n firms (or sectors) producing n different goods (with $n \geq 2$), then the hypothesis that the supply is given in real terms becomes inconsistent with the hypothesis of the tendential uniformity of the profit rates (see Lughini and Bianchi, 2004; see also Brancaccio, 2008). However, the adoption of a totally aggregated approach, dealing with a single homogeneous good, a single price and a single rate of profit, allows us to disregard this problem (to a first approximation, at least).

Notice, however, that: (i) the monetary wage-bill is the product of the (average) wage paid to each worker, w , and the level of employment, N ; (ii) both household flow of financial incomes and household saving can be regarded as a percentage of the wage-bill; (iii) the productive investment of corporations is anything but a share, k , of the produced output²⁵. Hence, the equation (16) can be re-written as:

$$AD = wN(1 + f_h + l_h - s_h) + pk\pi N \quad (16')$$

where f_h is the percentage of net financial incomes and l_h is the percentage of bank loans granted to households, both percentages being related to the wage-bill. As usual, s_h is the (both average and marginal) propensity of households to save.

As we have mentioned before, the equilibrium price-level is determined by the equality between aggregate demand and aggregate supply, which gives us²⁶:

$$p = \frac{w}{\pi} \cdot \frac{1 + f_h + l_h - s_h}{1 - k} \quad (17)$$

The price of output depends on the unit cost of labour (the left-hand ratio) and on the profit margin of the corporate sector (embedded in the right-hand ratio)²⁷. This latter, in turn, depends on: the average propensity of non-financial corporations to invest, k ; the average propensity of households to save, s_h ; and, finally, the value of f_h and l_h (i.e. the percentages of financial incomes and consumer-credit, respectively). Notice that if, by chance, the propensity to invest of corporations equals the ‘overall’ propensity to save of households ($k = s_h - f_h - l_h$), then the equilibrium unit price equals the unit cost of production. This implies that the ‘entrepreneurial’ profit is absent. Nonetheless, this must be considered just an accidental event: no ‘spontaneous’ economic force is able to assure a zero-level for corporate profits within a circuit model.

On the other hand, gross profits in real terms are equal to money gross profits ($P_{Gf} = p\Delta K + C - W + i_{D(-1)}D_{(-1)}$) divided by the price level. If, for the sake of simplicity, we assume that rate of return on derivatives is negligible, then we obtain:

²⁵ In fact, ‘firms offer for sale the whole of the finished product. At the same time they enter the market as buyers having decided to buy the fraction $[k]$ of aggregate product’ (Graziani, 2003, p. 101).

²⁶ It is easy to demonstrate that this method leads to results which are equivalent to the usual cost-plus pricing. Notice also that, unlike Graziani, we prefer to assume that the level of employment is determined by the amount of initial finance bargained by non-financial firms and banks (viz. that the supply of credit-money is not perfectly horizontal), given the (average) nominal wage per worker that has been negotiated by firms and workers ($N = L_{fw}/w$). Obviously, one might also assume that the amount of initial finance is linked, in turn, to the expected aggregate demand.

²⁷ The profit rate of corporate sector, gross of monetary interests due to banks, is therefore: $r = (1 + f_h + l_h - s_h) / (1 - k) - 1 = (f_h + l_h - s_h + k) / (1 - k)$.

$$\frac{P_{Gf}}{p} = \frac{k + f_h + I_h - s_h}{1 + f_h + I_h - s_h} \pi N \quad (18)$$

As we would expect, on the basis of Kalecki's lesson, if consumption equals the wage-bill ($C = W \Rightarrow f_h + I_h - s_h = 0$), then real profit before the deduction of interest payments is equal to real investment ($P_{Gf}/p = k\pi N = \Delta K$), and hence non-financial corporations earn exactly what they have spent on productive investment ($P_{Gf} = p k \pi N = p \Delta K$).

From the (13') we can derive also net profits in real terms, $RP_f = P_f/p$, which amount to:

$$RP_f = \left[\frac{\rho(1 + \alpha i_{L(-1)})(V_{h(-1)} + \Delta p_{Ef} E_{fh(-1)}) - \Delta M_h}{w(1 + f_h + I_h - s_h)} \right] (1-k)\pi + \lambda_f k \pi N \quad (19)$$

Equation (19) is represented in FIG. 3. Net profits of corporate sector depend on several factors, among which are the net worth of households (including capital gains on corporate shares) and the coefficient of 'securitization' (that is, α). Notice, however, that the same possibility of realizing financial gains through the purchase of derivatives is likely to negatively affect the propensity of corporations (as a whole) to undertake productive investment. More precisely, we could suppose that the greater the prospect of realizing financial returns (on derivatives), the lower is the benefit coming from undertaking a productive investment and hence from the production of goods. To the extent that this happens, the final effect on the net profit of the corporate sector is ambiguous, since the percentage α (which can be regarded as a proxy of the degree of financialization) increases, but the scale of production (N , in this simplified model) decreases, because of the smaller amount of productive investment.

As mentioned, the distribution of output between corporations and households is autonomously set by the decisions of the former with regard to the scale of production (N) and the composition (k) of output (given the labour productivity, π). This means that the purchasing power of households can be regarded as the residual term (or the dependent variable) to bridge the gap between the total output and the real profit realized by the corporate sector. Finally, notice that, once the process of inflation of capital-assets starts, this is likely to cause a change in the profile of customers of banks and, hence, a quickening in the change of the whole financial system. Indeed, (commercial) banks are driven to shift towards consumer-credit and/or other financial activities, insofar as the corporate sector is able to borrow funds and/or realize profits in the financial markets. The same increase in the autonomous consumption of households is another factor which allows corporations to increase their internal funds (in the form of retained profits) and to reduce their non-speculative demand for bank loans. The result is that banks as a whole

face a trade-off: they can expand their business towards households and financial activities only if they accept the risk of reducing their role in the financing of investment plans and current production of the corporate sector²⁸. But to the extent that they do that, they lose their function of banks, viz. of capitalist institutions whose liabilities are employed by firms to start the process of production, and turn into financial intermediaries operating as mere clearing houses.

6. Beyond the Market-Based vs. Bank-Based Dichotomy

A logical corollary of the above considerations is the bringing into question of the relevance of the traditional ‘market-based vs. bank-based financial systems’ dichotomy, dominant in the economic thought of the last century²⁹. According to that approach, financial-based systems are those under which corporations raise the most part of funds they need by issuing new securities (especially shares), whereas bank-based systems are those under which corporations mainly borrow from banks. It follows that, in the former, the main source of financial instability is asset price bubbles, whereas, in the latter, the main source of financial instability is excess of lending. More in general, pros and cons related to each system have been the subject of a high number of both theoretical debates and empirical analyses. Yet, seldom have their participants pointed out that the ‘bank based/market based’ dichotomy is implicitly linked to a specific (and very controversial) view of the nature of money, namely, that of the so-called ‘theory of loanable funds’ (TLF hereafter). According to the TLF, the role of financial systems is to allow net suppliers of funds, or ‘savers’ (typically households), to meet net demanders of funds, or ‘investors’ (typically corporations). Apart from the sources of instability, the only difference between market-based and bank-based systems is that the former realize the matching of supply and demand through the trading of securities, whereas in the latter saving takes the form of bank deposits and investment takes the form of demand for loans – with deposits being the basis/condition of loans. In both cases, the causality goes from the supply of money to the demand of money, and from aggregate saving to aggregate investment. Eventually, financial markets and banking sector play the same role, that is, to merely make the matching of supply and demand of loanable funds easier. The result is that the two institutions appear to be interchangeable: indeed they are perfect substitutes. The adoption of the TLF is, therefore, the hidden premise of the whole age-old discussion on the shift of advanced economies from the bank-based ideal-type to the market-based one, and of the linked debate on the more or less ‘desiderability’ of that historical trend.

²⁸ In this sense, an expansive monetary policy pursued by the central bank, via the reduction of the target interest rate, may have a ‘crowding out’ effect on the traditional banking activity – if this is not offset by a harsh regulation of financial business, at least.

²⁹ Among recent works trying to investigate the standard dichotomy, as well as further typologies of financial systems, see Levine (2002).

By contrast, one of the basic features of the TMC is the conception of the capitalistic economies as hierarchical structures in which each macro-sector (households, corporations, banking system) and each market (consumer market, financial market) carry out a specific, and hence non-replaceable, function. From the TMC's viewpoint, the market-based vs. bank-based typology is, thus, grounded on a two-fold theoretical misunderstanding. First, the banking sector is not, and has never been, the 'cloak-room attendant' of Cannan (1921) and the neoclassical economics, but a capitalistic institution whose function is to ex-nihilo create sign-money (i.e. credit), without any need for previously stored savings (see arrow (1) in FIG. 1). Second, the logical macroeconomic function of financial markets is to allow corporations to recover the liquidity they inflated in the circuit at the beginning of the period, and not to fund corporate working. In the 'original' circuit at least, corporations cannot but borrow from banks in order to finance current production, i.e. the purchase of labour-force. During subsequent circuits, each single firm will need also to (partially) fund its own investment plan, i.e. the purchase of a portion of output of previous period (see arrow (4) in FIG. 1). Notice that it is this second source of (bank) financing that allows corporate sector as a whole to 'monetize' real profits. In any case, the point is that the corporate sector cannot turn to financial market until household saving is formed (financial markets are not banks!), viz. until the same corporate sector has started the process of production (by requiring an initial finance to banks) and distributed incomes to the participants in that process. Household saving (be it either voluntary or 'forced'), in turn, will always match corporate investment, but only ex-post, through the price level setting (see Graziani, 2003). This is the reason why TMC authors call the bank financing 'the initial finance', whereas the liquidity coming from the placing of newly-issued securities in the financial markets is usually denominated 'the final finance'. The former is the necessary condition to start the process of production and the circuit of payments among sectors; the latter determines the degree of final indebtedness (towards either banks or households) of corporations. Still, the former directly settles the scale of current production and hence the levels of employment and income (if one assumes that the supply of credit-money is not infinitely elastic, at least); the latter affects the scale of the (subsequent) circuits just indirectly (in the presence of credit-rationing linked to the corporate leverage ratio).

Yet, as has been argued in section 2, in the last three decades the process of financialization has involved a remarkable change in the working of a number of financially-sophisticated economies, especially of the US. Hence, some questions arise: does the TMC still provide a fine representation of the effective working of today's advanced economies? How is it possible to re-read the process of financialization in the light of the circuit approach? The basic thesis of this paper is that the TMC should not be considered a mere 'empirical' description of the 'old' Fordist manufacturing system (interpreted as a sort of 'Golden Age' of capitalism), as opposed to the new financially-sophisticated capitalism. Rather, the TMC must be regarded as the general social accounting of a monetary economy of production, be it either 'traditional' or 'financialized'. In particular, the basic circuit framework is a logical meta-model such as the *Tableau économique* of François Quesnay and

the Marxian reproduction schemes. Its function is to define the conditions of macro-monetary reproducibility of the system (i.e. the solvency requirements for the corporate sector and hence for the economy as a whole), regardless of any individual behavioural function. In other words, the TMC defines the necessary monetary relationships between sectors (corresponding to well-defined social classes) and markets. In this sense, the recent twin-crises of the US economy (in 2001 and 2008) have brought out an subterranean increasing conflict between the proper (that is, the logical) function of financial markets (depicted in FIG. 1) and the historical evolution they have had in the US (leading to the new scheme of FIG. 2)³⁰. From this viewpoint, the question is not why did a double deep crisis explode during the 2000s in the US, but why did not it burst before. In our opinion, the reason lies in that the somewhat ‘paradoxical’ monetary circuit depicted in Fig. 2 was temporary (although not indefinitely) sustainable. In fact, it represented, for two decades at least, a powerful counter-tendency to the stagnation tendencies affecting the US economy since the mid 1970s.

Notice that such a counter-tendency was anything but spontaneous: rather, it was politically managed and fed by the US authorities, especially after the mid of 1980s (see Bellofiore, 2011). The main instrument of intervention was the monetary policy; the main source of aggregate demand was household autonomous consumption fed by asset inflation (via bank credit); finally, the condition of sustainability of the whole system was given by the increasing market value of assets employed as collaterals. Notice that, as mentioned, an increase in the percentage of household autonomous consumption, insofar as it increases the net profit of corporate sector, allows this latter to reduce its need for external funds. Analogously, increasing equity-prices allow corporations to replace bank borrowing with ‘cheaper’ long-term funds (and hence to reduce their leverage ratio on productive investment)³¹. Consequently, in the presence of inflation of equities, banks could be driven to shift further towards consumer-credit and/or change their nature into fee-related financial businesses. This happens because they no longer have the non-financial corporate sector as their main category of customer. In the US, since the mid-1980s, this phenomenon had become a self-feeding process: the change in the banking model concurred to produce the inflation in the prices of (financial and then real-estate) assets which, in turn, concurred to modify the customer profile of banks. The very capacity to self-feeding could be considered, together with the stimuli of the Federal Reserve, the main factor allowing the paradoxical circuit depicted in Fig. 2 to last for a considerable period of time

³⁰ A thorough discussion about the peculiar antitrust legislation and the other historical reasons for the US ‘anomaly’ is out the aim of this contribution.

³¹ One might be tempted to think that capital-asset inflation cannot induce macroeconomic changes but can only produce microeconomic effects, since capital gains realized by some units (either households or corporations) offset capital losses suffered by other units. However, this is not true whenever: (i) there is asymmetric information, so that units realizing capital gains react more quickly than units suffering capital losses; (ii) capital gains and losses entail a redistribution of income among different sectors (for instance, from households to corporations and banks); (iii) bank loans are linked to the value of assets, allowing units to realize capital gains immediately.

before it collapsed³².

7. Concluding Remarks

In this paper, we have revisited the monetary circuit framework in the light of the central role taken, during the last decades, by financial markets in the US and in a number of other advanced economies. The result is a new, although somewhat ‘paradoxical’, circuit of payments in which bank lending is sustained by household debt, rather than by the corporate demand of finance. The same household debt fuels the expansion of the financial markets, by virtue of the growing corporate saving invested in financial assets. It is this interconnection between increasing household debt, increasing financial profits and progressive changes in the role of banks, that has become the ‘artificial heart’ of the new capitalism (made in the US) of the 1990s-2000s, until the big crash of 2008 at least. Of course, the end of that ‘model’, and hence of the role of the US households as buyers of last resort of world surpluses, will require re-thinking again the specific future ‘declension’ of the circuit of money payments among sectors and/or countries. For instance, the recent foreign debt crisis of several Euro Area’s Member-States will require including explicitly both the government sector and foreign markets as further sources/leakages of liquidity³³. In this purpose, the traditional ‘market-based vs. bank-based systems’ dichotomy, linked to the old theory of loanable funds, should be recognized to be empirically useless and theoretically wrong. By contrast, the basic framework of the TMC still represents the best logical starting point of every specific analysis of the historical changes in the working of capitalist economies.

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³² For a description of the sequence leading to the crisis we refer the reader to the final Appendix.

³³ In particular, deficits of government sector financed through issues of legal money represent an additional source of funds for the private sector. The same goes for deficits of foreign markets, that is, for net export. To this regard, notice also that, in the Euro Area, the financial condition of countries marked by external surpluses may be easily likened to that of corporations depicted in FIG. 2, whereas the situation of deficit countries can be likened to that of household sector. In both cases, behind the appearance of sustainability, there are increasing imbalances between sectors and/or countries, which are doomed to lead to financial fragility and to the crisis.

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Figures

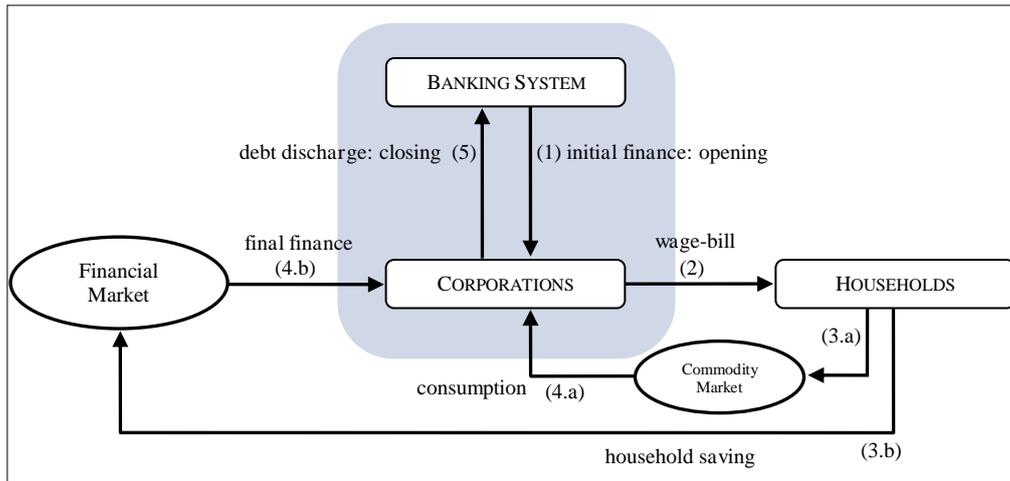


FIG. 1. The logical structure of the monetary circuit. The government sector and foreign sector are assumed away. It is also assumed that households do not desire to hoard bank deposits.

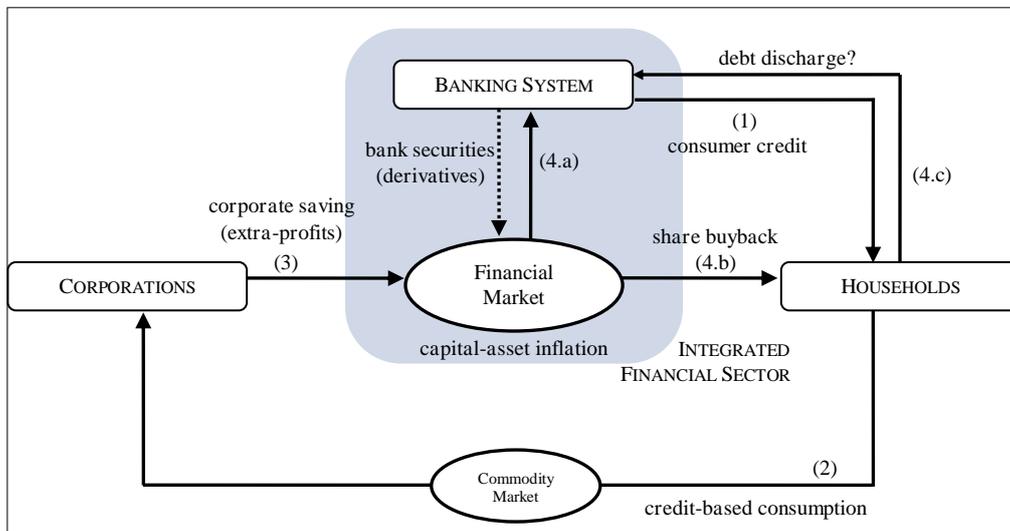


FIG. 2. The paradoxical form of the monetary circuit in the 'new capitalism'. Arrow-lines show only the new 'tendential' links between integrated financial sector, corporations and households.

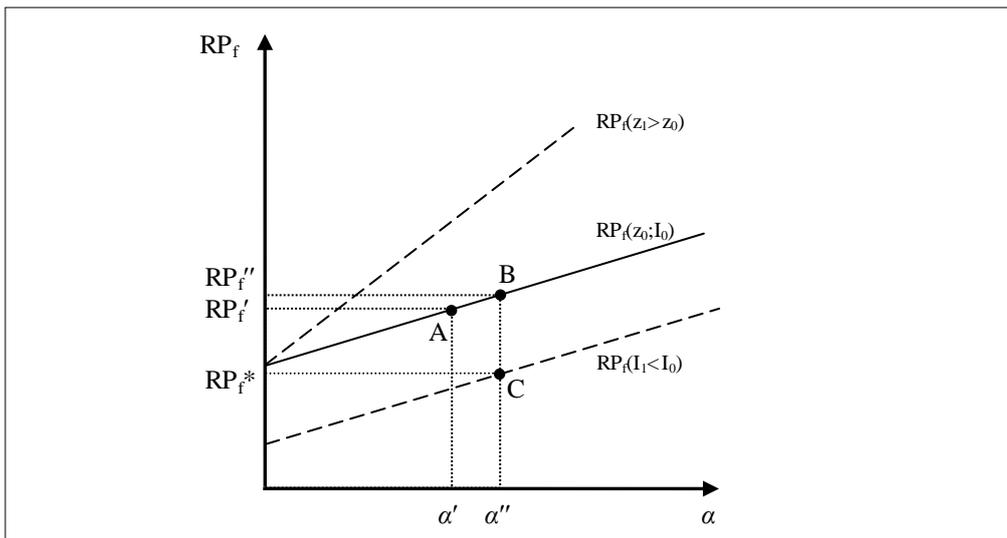


FIG. 3. The relationship between real corporate profits and financialization. On the one hand, the higher the coefficient of securitization, α , the higher will be, *ceteris paribus*, the amount of corporate profits (from RP_f' to RP_f'' , in the picture). On the other hand, the process of financialization is likely to reduce the volume of the productive investment undertaken by firms ($I = \Delta K = k\pi N$), thereby bringing down the intercept of the profit function. The final result is therefore ambiguous (from RP_f'' to RP_f^* , in the depicted case). Finally, notice that the slope of the profit function depends, in turn, on a number of different variables (embedded, for the sake of simplicity, in the scalar z). Among these variables are the rate of interest on bank loans, i_L , the household loans to assets ratio, ρ , the investment to output ratio, k , and further variables linked to household flow of incomes and stock of assets.

Appendix: the road to hell

The sequence which leads to financial fragility and to the crisis, within the circuit of payments depicted in FIG. 2, can be split into two different phases. Initially, the increase in financial asset prices and consumer credit may have a positive effect on the balance-sheet of the corporate sector, through the reduction in the total cost of financing (for the same level of consumption). This is likely to be a self-feeding process: financial asset inflation fuels credit-based consumption which fuels saving of corporate sector which, in turn, fuels financial asset inflation. We may assume that the historical starting point of the described process is the long-run decrease in the rate of return on ‘productive’ investment, which leads corporations to use their funds to buy financial assets. This very inflow of new funds sustains the quotations of assets in the financial markets. In turn, the increasing value of assets allows households to recur to bank credit in order to feed their desired level of consumption, in spite of stagnating wages. In fact, this is what happened in the US during the 1990s and – although with some differences – during the upswing of 2003-2007.

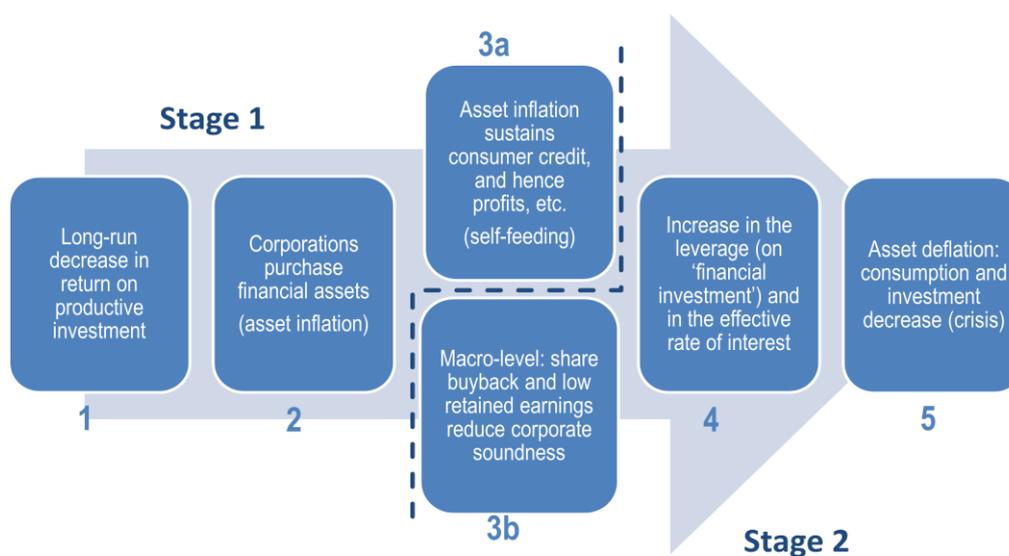


FIG. 4. From tranquillity to financial fragility, and from fragility to crisis: the whole sequence.

During the second phase of the ‘financialization’ process, this latter shows its negative side. First, insofar as it becomes profitable for over-capitalized corporations to allocate excess capital to financial assets in preference to engaging in ‘productive’ investment, this component of the aggregate demand is doomed to decrease. Second, financialization could lead to a ‘over-indebtedness’ of a number of corporations, because of their attempt to increase the rate of return on their own funds by using the leverage to purchase financial assets (according to the well-known scheme described in Minsky, 1975). Third, corporate buyback of shares ends up reducing the resilience of

the sector considered as a whole, because it increases the leverage ratio on (both financial and productive) investment³⁵. At the same time, both the increase in the price of assets and the growing financial fragility of economic units can lead to an increase in the effective rate of interest³⁶. Eventually, all these factors cannot but forcing indebted units to cut consumption and investment, therefore giving rise to the crisis.

³⁵ A look at the Fig. 2 shows that, if the stock buyback is ‘internal’ to the corporate sector, then households (as a whole) cannot draw from the financial market the liquidity that they need in order to pay off their bank debt. However, they can easily keep on renewing their bank loans, as the price of financial assets (and hence their wealth) keeps on increasing, thanks of the inflow of corporate saving. The same goes for the corporate purchases of financial assets from banks and other financial operators. By contrast, to the extent that corporations repurchase their shares from households, these can pay off (part of) their debt, but at the price of ‘de-accumulating’ their stock of assets, with the risk of a debt-deflation crisis. Data seem to indicate that the two hypotheses describe two different (subsequent) phases of the actual process of financialization. On the one hand, the financialization of western economies (which started at the end of the 1970s and continued to take place during the 1980s) has been associated with a tendential fall in the proportion of (fixed) investment financed by new issues. On the other hand, the equity-to-investment ratio has decreased during the upswings (mainly because of the stock-repurchase of the non-financial corporate sector) and has increased after the crises, such as in the Wall Street crashes of 1987, 2000 and 2007 (see Ryoo, 2010; see also Passarella, 2012a).

³⁶ As either the endogenous outcome of the pressure of demand for credit on a non-infinitely elastic supply (as claimed by Minsky, 1975) or the result of an autonomous decision – concerning the target rate of interest – taken by the central bank in order to hold inflation down (as claimed by ‘horizontalist’ authors). On this point, we refer the reader also to Passarella, 2010.

Tables and Key to Symbols

TABLE 1. Nominal balance-sheets of each economic sector in a pure 'sign-money' capitalist economy

	1. Households	2. Non-financial corporations	3. Integrated financial sector	Totals (column)
1. Deposits	$+M_h$	$[-M_f]$	$-M$	0
2. Loans	$-L_h$	$-L_f$	$+L$	0
3. Capital		$+p \cdot K$		$+p \cdot K$
4. Derivatives		$+D$	$-D$	0
5. Equities	$+p_{Ef} \cdot E_{fh} + p_{Eb} \cdot E_b$	$-p_{Ef} \cdot E_{fN}$	$+p_{Ef} \cdot E_{fb} - p_{Eb} \cdot E_b$	0
6. Net worth (Totals)	V_h	V_f	V_b	$p \cdot K$

Notes: A '+' before a magnitude denotes an asset, whereas '-' denotes a liability; L_h is the total amount of bank loans borrowed by households in order to fund their extra-consumption.

TABLE 2. Nominal transactions among economic sectors

	1. Households		2. Non-financial corporations		3. Integrated financial sector		Totals (row)
	Current	Capital	Current	Capital	Current	Capital	
1. Consumption	$-C$		$+C$				0
2. Investment			$+p \cdot \Delta K$	$[-p \cdot \Delta K]$			0
3. Wages	$+W$		$-W$				0
4. Consumer credit	$+\Delta L_h$	$[-\Delta L_h]$					0
5. Interest on loans	$-i_{L(-1)} \cdot L_{h(-1)}$		$-i_{L(-1)} \cdot L_{f(-1)}$		$+i_{L(-1)} \cdot L_{(-1)}$		0
6. Interest on deposits	$+i_{M(-1)} \cdot M_{h(-1)}$		$[+i_{M(-1)} \cdot M_{R(-1)}]$		$-i_{M(-1)} \cdot M_{(-1)}$		0
7. Return on derivatives			$+i_{D(-1)} \cdot D_{(-1)}$		$-i_{D(-1)} \cdot D_{(-1)}$		0
8. Dividends (distrib. profits)	$+F_{fh} + F_b$		$-F_f$		$+F_{fb} - F_b$		0
9. Current saving (Totals)	S_h	0	F_{uf}	0	F_{ub}	0	S_{tot}

Notes: A '+' before a magnitude denotes a receipt, whereas '-' denotes a payment; it is assumed that there is neither a government sector nor a foreign sector; both inventory stocks and capital depreciation are assumed to be negligible.

TABLE 3. Flow of funds at current prices: uses and sources

Changes in:	1. Households		2. Non-financial corporations		3. Integrated financial sector		Totals (row)
	Current	Capital	Current	Capital	Current	Capital	
1. Deposits		$+\Delta M_h$		$[-\Delta M_f]$		$-\Delta M$	0
2. Loans		$-\Delta L_h$		$-\Delta L_f$		$+\Delta L$	0
3. Derivatives				$+\Delta D$		$-\Delta D$	0
4. Capital goods			$[-p \cdot \Delta K]$	$+p \cdot \Delta K$			0
5. Equities		$+p_{Ef} \cdot \Delta E_{fh} + p_{Eb} \cdot \Delta E_b$		$-p_{Ef} \cdot \Delta E_{fN}$		$+p_{Ef} \cdot \Delta E_{fb} - p_{Eb} \cdot \Delta E_b$	0
6. Net capital trans. (Totals)	0	S_h	0	F_{uf}	0	F_{ub}	S_{tot}
7. Net worth (acc. memo)	$S_h + \Delta p_{Ef} \cdot E_{fh(-1)} + \Delta p_{Eb} \cdot E_{b(-1)}$		$F_{uf} - \Delta p_{Ef} \cdot E_{fN(-1)} + \Delta p \cdot K_{(-1)}$		$F_{ub} - \Delta p_{Eb} \cdot E_{fb(-1)} + \Delta p_{Ef} \cdot E_{fb(-1)}$		$S_{tot} + \Delta p \cdot K_{(-1)}$

Notes: A '+' before a magnitude denotes a use of funds, whereas '-' denotes a source of funds; the total amount of deposits is always equal to total amount of loans; ex post total saving always equals total investment; changes in capital does not enter in the column totals (because they are considered in TABLE 3) and the same goes for loans to households; the difference between current saving (row 9 in TABLE 2) and net capital transactions (row 6 in TABLE 3) is always zero.

Glossary of symbols in Tables 1, 2 and 3

D	Derivatives
C	Total consumption (of households)
M	Deposits (total)
M_h	Deposits held by households
M_f	Deposits held by corporations
E_b	Equities issued by financial sector (and purchased by households)
E_f	Equities issued by corporations (total)
E_{fN}	Equities issued by corporations net of share repurchase
E_{fb}	Corporate equities purchased by financial sector
E_{fh}	Corporate equities purchased by households
F_b	Financial sector's dividends (distributed to households)
F_f	Corporate dividends (total)
F_{fb}	Corporate dividends distributed to financial sector
F_{fh}	Corporate dividends distributed to households
F_{ub}	Retained earnings of financial sector ($\equiv \theta_b i_L L$)

F_{uf}	Retained earnings of corporations ($\equiv \theta_f P_f$)
i_D	Rate of return on derivatives
i_M	Rate of return on deposits
i_L	Rate of interest on loans
K	Quantity of capital
L	Total amount of bank loans
L_f	Loans to corporations
L_h	Loans to households (consumer credit)
p	Price of a unit of output (or price level)
p_{Eb}	Price of equities issued by financial sector
p_{Ef}	Price of equities issued by corporations
V_b	Net worth of financial sector
V_f	Net worth of corporations
V_h	Net worth of households
W	Total wage-bill