

Monetary Theories of Production

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Introduction

The view of capitalism as a circular and surplus-oriented sequence of interconnected (monetary) relationships of production, distribution, and trade has ancient roots. These can be traced back to the theory of the *avances* developed by French physiocrats in the eighteenth century. The pioneering physiocrat studies provided the ground for the ‘wage fund’ doctrine elaborated by David Ricardo (along with John R. McCulloch) in the nineteenth century. As stressed by Graziani (1989, 2003), Ricardo’s insights led to two opposing views of economy and society. On the one hand, the Ricardian take was seen to support the idea that an already-accumulated ‘fund’ (be it corn or money) is necessary in order to undertake productive investment. As such, Ricardo’s approach laid the foundations for the neoclassical (or marginalist) theory of price and distribution, based on the concept of the (partial or general simultaneous) natural equilibrium and the loanable funds theory. This neoclassical interpretation of Ricardo prevails in current mainstream economics and the economic policy debate, underpinned by the microeconomic causality from saving to investment. On the other hand, a different rendition of the Ricardian theory was proposed in the twentieth century. This alternative view stresses the division of capitalist society into different and rival social classes, whose monetary interactions give rise to a sequential process of production, distribution, and trade. This conflictual, monetary, and macroeconomic interpretation of Ricardo was pioneered by Marx, particularly in the first four chapters of the second volume of *Capital* ([1885] 1978).

Although initially ignored by the academic world, Marx's view of capitalism as a surplus-driven monetary production economy exhibits a striking resemblance to the work of some 'dissenting' economists of the twentieth century. In the first draft of what subsequently became the *General Theory* (1936), entitled *A Monetary Theory of Production* (1932), John Maynard Keynes explicitly referred to the Marxian analysis of the capitalist form of circulation. Keynes describes a monetary production economy as an economic system

in which expectations of the future influence decisions taken today; or, one in which money is a subtle device for linking the present and future; or one in which production begins with money on the expectation of ending with more money later. (Wray 1999: 1)

The link between the Marxian analysis of the 'inner laws of movement' of capitalism and the Keynesian 'methodology of aggregates' was not developed by Keynes himself. Rather, it was the subsequent generations of heterodox economists who explicitly engaged with the task of developing a critical theory of capitalist economies. In this regard, two main groups of economists should be mentioned: first, the members of the broadly defined Cambridge school of economics; and, second, the proponents of what may be termed the 'modern endogenous theories of money.' The first group is rather heterogeneous but its members share two common features. First, they reject the neoclassical theory and second, they focus mainly on economic growth and income distribution. This group includes both the strictly defined Post Keynesians, meaning the direct pupils of Keynes and Michał Kalecki,¹ and the proponents of the surplus approach pioneered by Piero Sraffa.² The second group appears as heterogeneous as the first one. However, its proponents share a well-defined theoretical feature. They usually focus on the role

played by money and finance, that is, on the endogenous process of creation, circulation, and destruction of monetary means within a capitalist economy. This group includes the ‘American’ Post Keynesians,³ the modern money theory (or neochartalist approach),⁴ and the Franco-Italian theory of monetary circuit.⁵

This chapter focuses primarily on the second line of research. Its chief purpose is to outline the main features of modern monetary theories of production, particularly the original circuit approach and the current literature about stock-flow consistent models. Weaknesses, strengths, and recent developments are covered as well. The chapter is organized as follows. The second section provides a thorough description of the monetary circuit view. It is shown that circuit economists, along with other heterodox monetary economists, committed to set up a systematic analysis of the inner workings of a monetary economy of production. The third section compares the circuit view with both the dominant approach in macroeconomics and with other heterodox lines of research, including the ‘old’ Cambridge school of economics. The fourth section addresses current developments in the monetary theories of production. The fifth section discusses both the limitations of the original circuit approach and the new possibilities offered by stock-flow consistent models. The final section offers some concluding remarks and suggests that stock-flow consistent models are renewing and strengthening the tradition of the monetary theories of production.

Capitalism as a monetary circuit

As mentioned in the first section, the view of capitalism as a circuit of interconnected acts of production, distribution, and trade has ancient roots. While the French physiocrats (and, at least

to some extent, Ricardo) used to focus on the process of creation, circulation, and consumption of the *produit net* of the agricultural sector, defined in real terms, Marx shifted the attention to the process of creation, circulation, and destruction of the monetary surplus within a capitalist system. Such a macro-monetary view of capitalism shows a considerable degree of affinity with a set of heterodox monetary theories of the twentieth-century—notably, with the ‘hidden’ line of research that stretches from Knut Wicksell’s *Interest and Prices* (1898) to Joseph Schumpeter’s *The Theory of Economic Development* ([1911] 1934), and then to Keynes’ *Treatise on Money* (1930) and the works of Kalecki (1971). The theory of monetary circuit can be regarded as a synthesis and refinement of the above line of research. It was mainly developed by French and Italian authors between the mid-1970s and the early 1990s and its essential analytical skeleton lies beneath other monetary theories of production.⁶ This is the reason the circuit approach can be used as the benchmark model.

The simplest circuit accounting model refers to a closed economy, comprised of three macro-sectors: the banking sector (including clearing or commercial banks); the corporate sector (including non-financial or production firms); and the household sector (including workers or wage-earners). Other financial intermediaries (notably, saving and investment banks, and non-bank financial institutions) are usually assumed away, but the role of financial markets and assets is explicitly accounted for. The intervention of the state is generally neglected, at least to a first approximation (the rationale is pointed out below). Irrespective of the level of institutional sophistication, capitalist dynamics are always triggered by the decision of firms to start the production process. That decision is based on expected demand for products (this is the way the principle of ‘effective demand’ is included in the circuit theory). From a microeconomic perspective, each firm needs a certain amount of monetary means to purchase the factors of

production. In other words, each firm has to cover all of its current costs, including both the labor cost and the cost of capital or intermediate goods (such as buildings, machinery, raw materials, and inventories). From a macroeconomic or social perspective, the trade of intermediate goods should be better regarded as an exchange that is ‘internal’ to the corporate sector. In other words, if we consider firms as one integrated and consolidated sector, the only ‘external’ purchase they have to make is to hire workers. Consequently, their only cost or payment concerns the wage bill (Moore 1983; Graziani 2003). Whatever the perspective chosen, entrepreneurs (or managers) need to borrow from banks. Money and labor are the only ‘things’ that the corporate sector cannot (directly) reproduce on its own. The amount of credit granted by the clearing banks to firms at this initial stage of the circuit is usually termed the ‘initial finance.’ Such an act of monetary creation is the spark that triggers the overall capitalist process of production, distribution, and trade. Given the target interest rate steered by the central bank, negotiations between commercial banks and firms determine the amount of credit (i.e. the initial finance) and/or the actual nominal interest rate on loans. It is assumed that only firms are admitted to bank credit in the initial stage of the circuit, to cover production costs and start the production process. Once this initial step of the circuit has been taken, households and financial intermediaries can also access the credit market (for example, to finance extra consumption and/or financial investments). The reason is that the class divide is not just an instrumental hypothesis. It is a theoretical, ontological, and methodological pillar of the circuit approach. In other words, there is a twofold relation between class identity and access to credit money.⁷

Accordingly, decisions about the amount and the composition of output are made autonomously by the capitalist class, meaning firms and banks. Both the employment rate and the types of jobs available are determined in this stage. This means that bargaining between firms

and trade unions within the labor market only determines the nominal wage rate, rather than the real compensation of workers or the employment level. Consumer preferences can only have an indirect effect on production structure and job creation, through their possible impact on sales expectations of firms. As a result, consumer sovereignty is replaced by producer sovereignty within this model. Working-class households can only make decisions on how to distribute their money incomes between consumption expenditure, additional cash balances (bank deposits), or purchase of financial assets (bonds, shares, or other securities).⁸ In the simplest model, the government sector is assumed away. Financial assets other than bank deposits can only be issued by firms. Consequently, the initial liquidity flows back to firms whatever the kind of expenditure made by households (be it consumption or purchase of financial assets). This ‘final finance’ is what enables firms to repay their debt towards clearing banks. To the extent that this happens, an equal amount of money is destroyed. However, households can also decide to save a portion of their income in the form of bank deposits. In this case, the greater the liquid balances held by households, the greater the losses suffered by the corporate sector. From an accounting viewpoint, an equal amount of money remains in existence in the form of corporate debt (and household credit) towards the banking system (Graziani 2003). The standard representation of the circuit of monetary transactions and flows within a closed capitalist economy, with bank money only, is provided by Figure 1. As stressed by neochartalist authors, in the real world the circuit of bank money is coupled with the circuit of *fiat* money (legal tender or reserves) created by the state (Wray 1998).⁹ When the government spends, the central bank debits the account of the Treasury, while crediting the accounts of (private) clearing banks by the same amount. These newly created reserves flow into the economy as the government sector buys goods and services from the private sector. Plainly, taxation and sales of sovereign bonds have the opposite effect.

They allow the government to absorb liquidity from the system (that is, to destroy a part of the reserves created), thereby affecting the term structure of interest rates. This second circuit is sketched by Figure 2.

[Figure 1 here]

[Figure 2 here]

A comparison with other approaches

The chief aim of the circuit approach has been claimed to account for the process of creation and destruction of money (both viewed as endogenous phenomena) under a capitalist system during ‘normal times.’ As a result, both the precautionary and the speculative motives for holding money are usually ruled out of the picture, and so is the investigation of the determinants of liquidity preference. Similarly, the government and the foreign sector are generally neglected in the first stage of the analysis. This feature differentiates the monetary circuit approach from the one adopted by Keynes (1936) in the *General Theory* (but not in the *Treatise* of 1930 and post-1937 writings) and from other monetary theories of production. The simplified accounting nature of the circuit framework is actually a strength when outlining the key features of a pure bank-money capitalist economy. It allows its proponents to develop a macro-monetary analysis regardless of hypotheses on the behavior of economic agents. In addition, it enables them to argue for a multiplicity of possible ‘equilibria’ of the economy, and for the irrelevance of ‘wealth effects’ as spontaneous adjusting mechanisms, due to the endogeneity of money (Graziani 1994; Sawyer & Veronese Passarella 2015).¹⁰ Finally, the very basic circuit framework sheds light on

the long-lasting controversy about the origin of social surplus value. It suggests that capital valorization, for capitalists taken as a social class (namely, for the corporate sector regarded as a fully aggregate and consolidated industry), can only derive from exchanges they make outside their own social class. However, the only possible ‘external exchange’ for them is the purchase of labor power from the working class. Therefore, it is only to the extent that capitalists or firms ‘use’ labor power within the production process, and appropriate a share of output, that they can realize the social surplus in the form of profit. Accordingly, profits earned by firms can only arise from the difference between the total living labor spent by workers in the production sphere and the quantity of labor that the working class gets back in the form of wages (Graziani 1997a, 1997b). Thus, although this aspect is usually neglected by other heterodox monetary economists, including most *circuitistes*, the circuit approach can possibly offer a sound macro-monetary explanation about the origin of the social surplus from surplus labor. In this sense, it could be regarded as a Marxian rendition of the Keynesian methodology of aggregates.¹¹

As it is argued in the fourth section, the circuit framework still provides the monetary core of (current) Post Keynesian or structuralist models. Since its inception, it has offered a harsh critique of the mainstream theories of the 1970-80s,¹² while providing an alternative foundation for macroeconomics. The explicit recognition of the endogenous nature of money, along with the multiplicity, non-optimality, and path-dependency of economic equilibria, was in stark contrast to the general equilibrium model (be it static and deterministic, or dynamic and stochastic) and the connected theory of loanable funds. From this perspective, the recent rise and academic success of the New Keynesian approach may well be regarded as a recognition (implicit, late, and only partial though it is) of both the theoretical soundness and the empirical relevance of endogenous money approaches, including the theory of monetary circuit. While the neoclassical

principle of the ‘long-run neutrality of money’ is usually not questioned by the New Keynesians, money supply targeting is rejected in favor of money being a residual of inflation targeting by central banks via short-term interest rate smoothing. To put it differently, the supply of money is regarded as an endogenous variable of a model in which the LM curve is replaced by a central banking rule. Consequently, from an endogenous money perspective, the current mainstream in macroeconomics represents a step forward, at least compared to the previous neoclassical models. By contrast, the emphasis of current models (including the New Keynesian one) on natural output and unemployment, along with rational-expectations microfoundations, is in stark contrast to the macroeconomic or social nature of the monetary theories of production. The point is that the behavior of individuals and social groups cannot but be ‘procedural,’ while current levels of output and employment depend on the specific path that led to those levels. In other words, there is no such thing as an exogenously-given optimal equilibrium of the economic system, let alone a free market mechanism assuring the maximization of both economic efficiency and individual well-being in the long-run. Within a financially-sophisticated capitalist economy, continuous intervention by the government sector and the central bank is necessary. This should be coupled with an active industrial policy by the government, aiming to redefine the qualitative composition of output. For such a coordinated intervention creates those ‘ceilings and floors’—as Hyman Minsky used to term them—that smooth and constrain the instability of the system.¹³

While the emphasis on the struggle between labor and capital, and between industrial capital and financial capital, resembles the conflictual view of the Sraffian surplus approach, the stress on the monetary nature of social relations distances the circuit view from the surplus one. However, the two lines of research are not necessarily incompatible (see, for example, Lavoie

2006, 2014; Cesaratto & Mongiovi 2015). Since the mid-2000s, attempts have been made to embed the Sraffian theory of price and distribution in a monetary circuit framework (Brancaccio 2008). Analogous considerations could be made for most ‘orthodox’ Marxian approaches to political economy, whereas it has been already argued that there is a clear affinity between the circuit approach and recent monetary renditions of Marx (Bellofiore 1989; Bellofiore *et al.* 2000). The resemblance of the circuit theory (and other current monetary theories of production) to Post Keynesian models of growth and distribution is similarly apparent.¹⁴ The historical link between different branches of the monetary theory of production is sketched in Figure 3 (which is a re-elaboration of Figure 1.1 in Lavoie 2006: 3). Recent theoretical developments are discussed further in the next section.

[Figure 3 here]

Recent theoretical developments

It was mentioned earlier that the emphasis on the creation, circulation, and destruction of money explains why the analytical tool chosen by early *circuitistes* to support their theory was a one-period accounting analysis of a pure bank-money closed economy with no public sector. Clearly, this simplification turns out to be a limitation when a more detailed analysis concerning cross-sector relations and variegated institutional settings is to be undertaken. For the same reason, the basic circuit framework is unsuitable for econometric and other empirical applications. While many dynamic models have been developed by Post Keynesians and other heterodox monetary economists since the 1980s, a general benchmark model, underpinning a unified theory of monetary production, was still missing in the mid-1990s. Such a theoretical and methodological

gap has been progressively bridged thanks to the rise of the stock-flow consistent approach to macroeconomics (SFCA hereafter). The SFCA is not a brand-new macroeconomic theory. Rather, it is a modeling method deeply grounded on the Post Keynesian or structuralist paradigm in economics. It was pioneered by James Tobin (1982) and has subsequently been developed by Wynne Godley, Marc Lavoie, and other heterodox monetary economists.¹⁵ SFCA economists base their models on sound social matrixes or accounting frameworks that integrate financial flows of funds with cross-sector balance sheets. These frameworks allow SFCA economists to point out the analytical skeleton of their models. In addition, they provide a consistency check mechanism for their hypotheses, while reducing the degrees of freedom of theory. Finally, such a rigorous social accounting allows SFCA modelers to shed light on the relations between economic sectors and within social groups (Dos Santos 2006). Against this methodological background, several dynamic models have been developed since the early 2000s, in which economic variables move ‘forward non-ergodically in historic time’ (Godley & Lavoie 2007: 9). In short, the method adopted by SFCA modelers is made up by three steps: “(1) do the (SFC) accounting; (2) establish the relevant behavioural relationships; and (3) perform “comparative dynamics” exercises (generally with the help of computer simulations) to see how the model behaves” (Dos Santos 2005: 713). In other words, SFCA modelers set up a dynamic ‘artificial economy’ grounded on stylized facts. They then use this analytical device (consisting of a set of difference or differential equations) to derive some system-wide logical implications. They focus, in particular, on the twofold relation between flows and stocks. Sectoral budget constraints are carefully modeled as well. As has been mentioned, this allows SFCA theorists to make their assumptions explicit and to limit the number of hypotheses on behavior. The last step in SFCA

methodology is to perform some comparative experiments to check the sensitivity of the model to changes in key exogenous variables and parameter values.

Notice that, in principle, the above method could be used to model different economic theories, be they mainstream or heterodox. At the same time, it logically leads to question the concept of ‘natural equilibrium.’ It allows modeling of the transition from one dynamic time position to another, thereby recognizing that “the conditions under which this transition occurs may affect the final position of equilibrium” (Lavoie 2006: 15). Accordingly, the SFCA turns out to be particularly fruitful when pinpointing structural macro-monetary models. In other words, it allows extending the basic (one-period or pure-flow) circuit scheme to a dynamic financially- and institutionally-augmented monetary production economy. In fact, the strict link between the circuit approach and the SFCA has been stressed explicitly by both circuit and SFCA economists.¹⁶ The social accounting nature of the SFCA helps one “to understand how production is being financed ... at the beginning of the production period” (Godley & Lavoie 2007: 47). More precisely, the first step of the monetary circuit with private money can be represented by means of a reduced transactions-flow matrix based on a quadruple-entry bookkeeping. Under a monetary production economy, with no legal tender, money is created as non-financial firms borrow from clearing banks. As is shown in the grey area of Table 5.1, both new bank loans and a corresponding amount of newly created bank deposits are initially held by the corporate sector. Clearing banks create private money *ex nihilo* in the form of deposits that are credited to the account of firms before the production takes place. However, this is just a transitory situation as firms instantaneously transfer these bank deposits to workers in exchange for labor power (see dotted arrow in Table 1). Notice that the “moment these funds are transferred, they constitute households’ income. Before a single unit is spent on consumer goods,

the entire amount of the bank deposits constitutes savings by households, and these are equal to the new loans granted to production firms” (Godley & Lavoie 2007: 49). This is the second logical step of the monetary circuit, and it is shown by other entries in Table 5.1.¹⁷ Eventually, workers spend their income by purchasing consumption goods and/or newly issued securities, thereby allowing firms to recover their money balances and pay back their debt to clearing banks. In other words, bank money is destroyed as households use their monetary balances to buy something from firms. This final step of monetary transactions is the one shown in Table 5.2.¹⁸

[Table 5.1 here]

[Table 5.2 here]

Financialization and other open issues

The SFCA *inter alia* addresses the four most important questions raised by the original circuit approach. The first question relates to the particular price setting adopted by circuit authors. The second question is tied with the first one and concerns the effectiveness of active fiscal policies within a monetary circuit scheme. The third question is about the so-called ‘paradox of profit.’ The fourth question is about the evolution of the financial system in the past three decades, changes associated with the term ‘financialization.’

The first two questions relate to price setting and the effectiveness of active fiscal policies. In the basic (one-period) circuit model, the unit price of output is usually derived in such a way that there is never excess or lack of demand. When household consumption (and

saving) decisions do not match the composition of output chosen by firms, the costing margin adjusts to clear the market. For instance, if the consumption demand is greater than the production of consumer goods, their unit price will rise correspondingly. This suggests that investment is always *ex post* covered by savings, be they voluntary or ‘forced.’ In other words, household savings never constrain corporate investment plans (as claimed by the proponents of loanable fund theories). In addition, this approach enables the questioning and replacement of the concept of consumer sovereignty with that of producer sovereignty, as it makes it clear that household preferences can only have an indirect effect on production plans. However, for the same reason, any increase in aggregate demand components will lead to a corresponding rise in costing margin and unit price of output, with no effect on employment and real output. This corollary is potentially at odds with the Post Keynesian advocacy for an active fiscal policy to support and stabilize the economy (Seccareccia 2015). Furthermore, when a plurality of industries is taken into consideration, the above pricing turns out to be inconsistent with the hypothesis of long-run equalization of profit rates across sectors advocated by Marxian and Sraffian economists (for example, Lunghini & Bianchi 2004). By contrast, the SFCA demonstrates that decisions about composition of output are eventually made by firms via cost-plus pricing (as advocated by the *circuitistes*), while recognizing that the economy is demand-led both in the short-run and in the long-run (as traditionally advocated by the Post Keynesians). This restores the effectiveness of fiscal policy, while clarifying that the controversy around the circuit pricing is just a consequence of the simplified structure—particularly of the ‘one-period’ horizon—of the benchmark framework.¹⁹

As mentioned, a third question concerns what is usually termed the ‘paradox of profit’, that is, the impossibility for capitalists as a whole to obtain from the market more (inside) money

than they invested in each single period. This paradox was historically raised by some Marxians, in particular, Rosa Luxemburg (see Bellofiore & Passarella 2009, among others) and the debate has never been resolved.²⁰ In modern terms, the point is that “in a credit economy, in a single period, the revenues of firms can at most equal the initial finance received for production costs and they do not cover interest payment” (Caverzasi & Godin 2015: 13). While many interesting solutions and interpretations have been proposed in recent decades, the SFCA positions the debate within a sound accounting framework (Lavoie 2004; Zezza 2012).

The last question raised by the original circuit approach is its fitness for the analysis of financialization. More precisely, it has been argued that the circuit approach would only sketch a manufacturing-oriented system in which banks play the major role in financing production and investment, while financial markets have a passive role in channeling household saving to firms. Since the end of the 1970s, however, financial markets and intermediaries have begun to occupy a central position in many Western economies. The traditional link between non-financial firms and banks has been largely severed, whereas the bank-financial market axis “has taken center stage” (Seccareccia 2012: 284). Consequently, it has been argued that the original circuit scheme should be amended (Veronese Passarella 2014) or even abandoned (Lysandrou 2014) in light of recent structural and institutional developments. While it is debatable whether the basic circuit scheme would only describe a specific historical configuration of capitalism,²¹ the dynamic structure of SFCA social matrixes and models is certainly more suitable for the analysis of complex, financially-sophisticated economies. In principle, there is no limit to the number of financial markets, intermediaries, assets, and relations, which can be modeled.²² In other words, the SFCA provides a more flexible analytical tool, thereby enabling its proponents to examine

different historical configurations of capitalism, while remaining soundly grounded in the tradition of the monetary theories of production.

Final remarks

The purpose of this chapter is to present the view of capitalism as a circular and surplus-oriented sequence of interconnected monetary acts of production, distribution, and trade. This view has ancient roots, which can be traced back to the pioneering insights of French physiocrats, and then to the works of David Ricardo, Karl Marx, Knut Wicksell, John Maynard Keynes, and other dissenting monetary economists of the twentieth century. Modern monetary theories of production aim to recover and develop the above ‘heretical’ line of research, focusing mainly on the process of creation, circulation, and destruction of money in a world marked by class divide and social conflict. Among different heterodox monetary approaches, the so-called theory of monetary circuit represents a major attempt to set up a comprehensive social (or macroeconomic) accounting skeleton of capitalist relationships. This, in turn, was meant to establish the ground for both a critique of mainstream economics and a new critical theory, fully engaged with the monetary nature of capitalism. Path-breaking though it was, the original circuit approach has been shown to suffer from some limitations, due to the oversimplified structure of the basic framework. Its ‘one period’ horizon does not allow for an accurate analysis of capitalist dynamics, let alone of the process of financialization. The stock-flow consistent approach developed by Wynne Godley and other heterodox economists since the late 1990s provides a flexible analytical tool to bridge the above gaps, while renewing and strengthening the tradition of the monetary theories of production. Unlike mainstream approaches to economics, stock-flow

consistent models explicitly account for the multiple, path-dependent, and transient nature of economic equilibria, resulting from the monetary and conflictual nature of capitalist economies and societies. For non-apologetic, or real world, macroeconomics “has to put at the heart of its discourse not the ‘imperfections’ of the market, but rather the ‘normality’ of power and conflict, not only between labor and capital, but also between fractions of capital, and between capitalisms” (Bellofiore 2013: 430).

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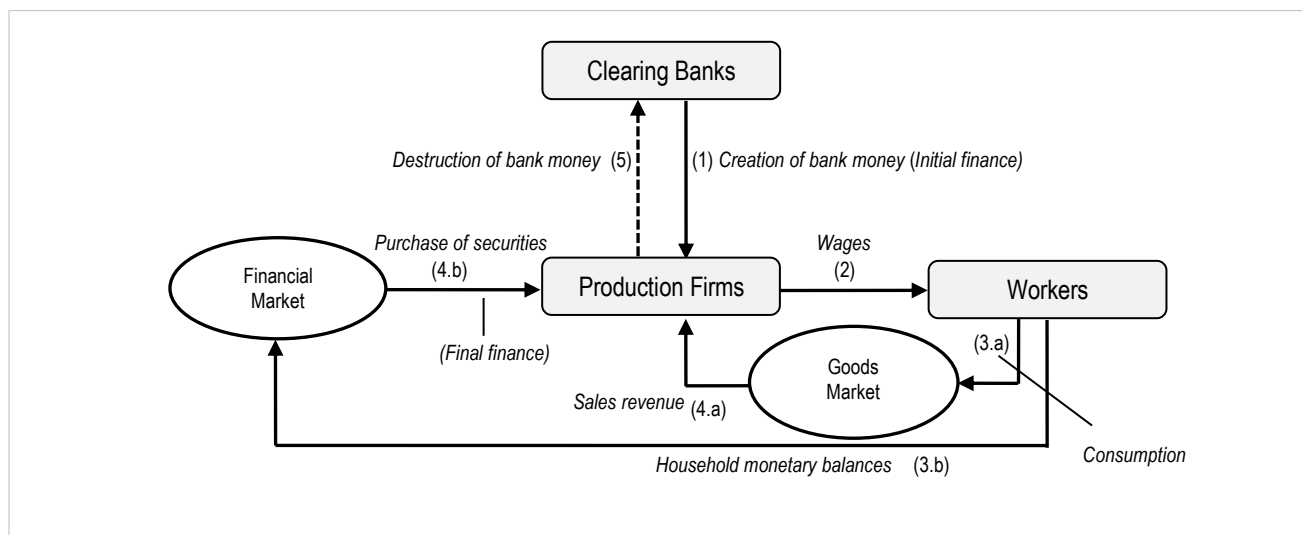
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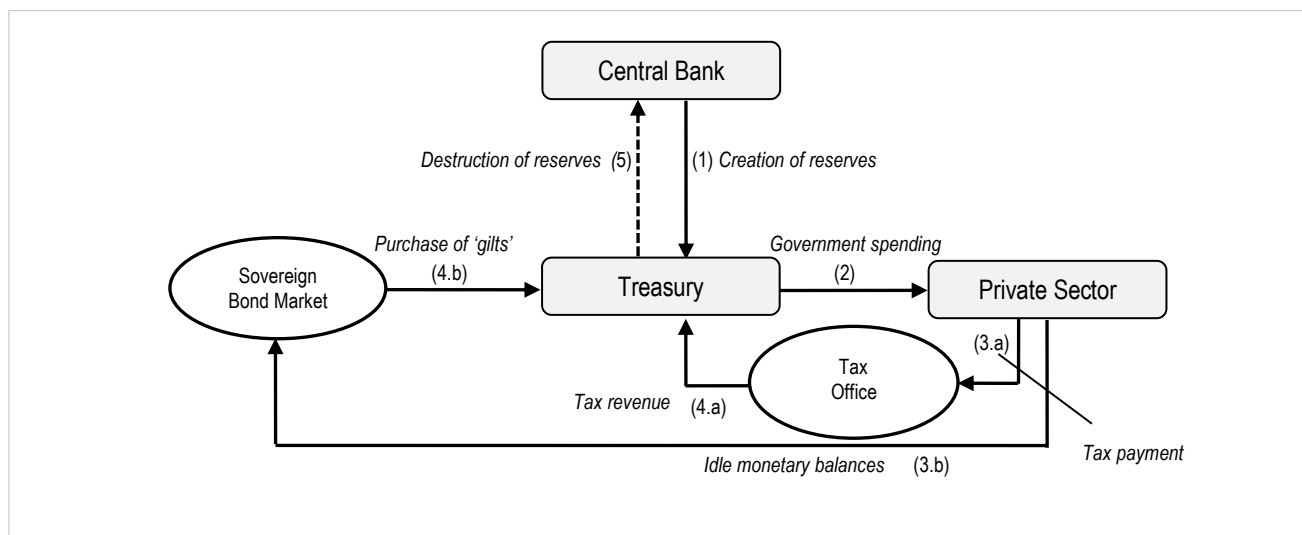
Figure 1. The circuit of bank money in a monetary production economy



Source: Author's own illustration.

Notes: For the sake of simplicity, government, central bank and foreign sector are neglected.

Figure 2. The circuit of *fiat* money in a monetary production economy



Source: Author's own illustration.

Notes: For the sake of simplicity, the foreign sector is neglected. In addition, clearing banks, firms and households are consolidated in the 'private sector'.

Figure 3. The evolutionary tree of macroeconomics from physiocrats to current monetary theories of production

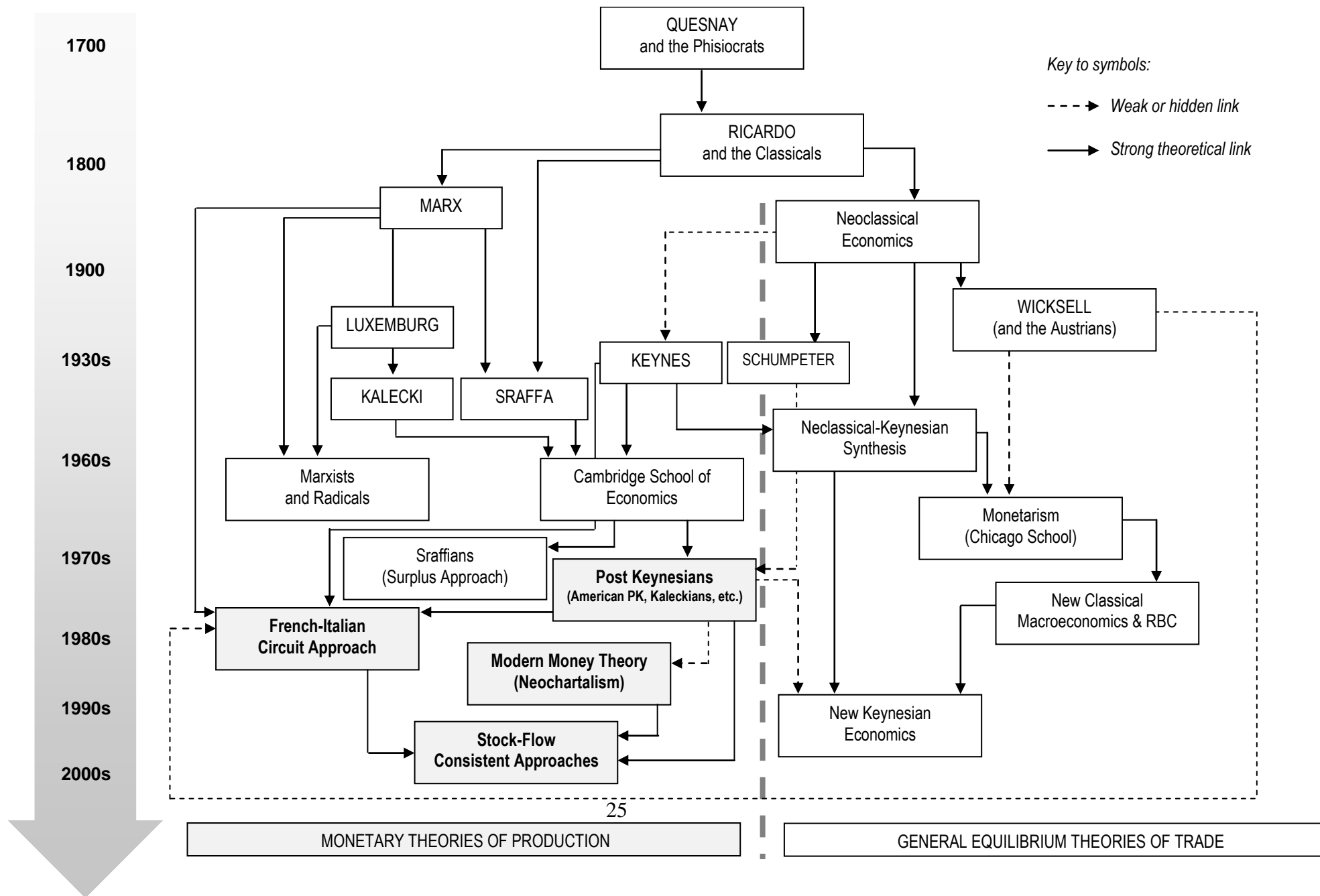


Table 1. Initial steps of the monetary circuit

	Households	Production firms		Clearing banks		Σ
		Current	Capital	Current	Capital	
Consumption						-
Investment		$+I$	$-I$			0
Wages	$+WB$	$-WB$				0
Change in loans			$+\Delta L_f$		$-\Delta L$	0
Change in deposits	$-\Delta M_h$		$[-\Delta M_f]$		$+\Delta M$	0
Σ	0	0	0	-	0	0

Source: Author's own illustration.

Notes: A '+' before a magnitude denotes an asset, whereas '-' denotes a liability.

Table 2. The final step of the monetary circuit: the transactions-flow matrix

	Households	Production firms		Clearing banks		Σ
		Current	Capital	Current	Capital	
Consumption	$-C$	$+C$				0
Investment		$+I$	$-I$			0
Wages	$+WB$	$-WB$				0
Profits of firms	$+FD_f$	$-F_f$	$+FU_f$			0
Profits of banks	$+FD_b$			$-F_b$	$+FU_b$	0
Interests on loans		$-r_{l(-1)} \cdot L_{f(-1)}$		$+r_{l(-1)} \cdot L_{(-1)}$		0
Interests on deposits	$+r_{m(-1)} \cdot M_{h(-1)}$			$-r_{m(-1)} \cdot M_{(-1)}$		0
Interests on securities	$+r_{b(-1)} \cdot B_{h(-1)}$	$-r_{b(-1)} \cdot B_{(-1)}$				0
Change in loans			$+\Delta L_f$		$-\Delta L$	0
Change in deposits	$-\Delta M_h$				$+\Delta M$	0
Change in securities	$-\Delta B_h$		$+\Delta B$			0
Σ	0	0	0	0	0	0

Source: Author's own illustration.

Notes: A '+' before a magnitude denotes a receipt or a source of funds, whereas '-' denotes a payment or a use of funds. For the sake of simplicity, both the government and the central bank are neglected. Securities can include bonds, shares, and other financial assets. Notice that FD stands for distributed profits, whereas FU stands for retained profits. Finally, r_b , r_m , and r_l are the rates of return on securities, deposits, and loans, respectively.

Notes

¹ Notably, Richard Kahn, Nicholas Kaldor, and Joan Robinson.

² Pierangelo Garegnani, Luigi Pasinetti, and Ian Steedman, among others.

³ Notably, Paul Davidson, Hyman Minsky, and Basil Moore. The latter is sometimes regarded as the founding father of the ‘horizontalist’ theory of money creation. Notice that the horizontalist approach deeply influenced circuit authors. Alfred Eichner, Joseph Steindl, and Sidney Weintraub must be mentioned as well.

⁴ Whose main advocates are Stephanie Kelton, Bill Mitchell, Warren Mosler, and Randall Wray.

⁵ Notably, Alain Barrère, Augusto Graziani, Alain Parguez, and Frédéric Poulon. A similar (but not identical) theory, usually labelled the ‘quantum theory of money emissions,’ has been developed by the French economist Bernard Schmitt since the 1960s. Finally, notice that another French economist, Jaques Le Bourva, is sometimes regarded as a forerunner of the circuit approach.

⁶ On the one hand, Post Keynesian economists usually recognize the strict link between their take and the circuit one (Lavoie 2006). Some of them explicitly refer to the monetary circuit approach as the ‘Post Keynesian circuit approach’ or the ‘French and Italian Post Keynesian school’ (Godley & Lavoie 2007: 47). On the other hand, the modern money theory can be regarded as the circuit theory of the creation, circulation and destruction of legal tender (Wray 1998).

⁷ Notice that, from an accounting viewpoint, there must be correspondence between the wage bill paid to workers and the cost of produced goods. Therefore, the initial finance can be measured both by the wage bill and by the value of inventories (Godley & Cripps 1981; Graziani 2003; Godley & Lavoie 2007). The former refers to the bank exposure of firms in a single instant of time. The latter refers to the corporate demand for credit in the initial stage of the circuit. See also footnote 18.

⁸ Workers can hold financial assets. However, they are minority shareholders by definition, with no power on corporate decisions. In this sense, the only difference between bonds and shares is the way returns are paid, for example, whether as interest payments or as dividends.

⁹ Notice that this additional flow of liquidity, along with the one deriving from net export (when a single national economy is considered), allows firms to realize profits in monetary form. In

other words, it allows overcoming the ‘paradox of profit.’ The latter is discussed in the fifth section.

¹⁰ As has been pointed out, this approach “challenges the basic assumptions of orthodox theory by rejecting the initial definition of the economic and social world as being populated by identical individuals, where consumers are sovereign, technology is exogenous and money is neutral. Large social or ‘macro’ groups matter, and corporate power is essential in a world of permanent imbalances and conflicts” (Bellofiore 2013: 426).

¹¹ The link between the Marxian labor theory of value and the Keynesian macroeconomics has been recognized by other heterodox monetarist economists (for example, Dillard 1984; Wray 1999).

¹² These mainstream theories include the neoclassical-Keynesian synthesis, which dominated economics until the early 1970s, and to what may be termed the monetarist approaches (including early Chicago school monetarism, the new classical macroeconomics based on rational expectations, and the real business cycle school).

¹³ Notice that the intervention of the government is explicitly admitted in New Keynesian models. However, it usually takes the form of monetary policies. Fiscal intervention is admitted as well, but mainly in the form of automatic stabilizers. By contrast, discretionary fiscal policies should be just exceptional and temporary. All of above measures are only effective in the short run, due to price stickiness or other temporary frictions. For the economy is assumed to return to its natural equilibrium (path) in the medium to long-run.

¹⁴ The reference is to the models pioneered by Nicholas Kaldor, Joan Robinson, and Luigi Pasinetti in the period between the mid-1950s and the early 1960s, and further developed (and amended) by Kaleckian economists in the 1980-90s (see Lavoie 2014 for a thorough survey).

¹⁵ See, among others, Godley & Cripps (1983), Godley (1999), Godley & Lavoie (2001), Taylor (2004), Dos Santos (2006), Dos Santos & Zezza (2008). The fundamental reference for SFCA modelers is *Monetary Economics* by Godley & Lavoie (2007). See Caverzasi & Godin (2015) for a recent survey.

¹⁶ See, for instance, Graziani (2003), Godley (2004), Lavoie (2004), Godley & Lavoie (2007), Zezza (2012), Veronese Passarella (2014), and Sawyer & Veronese Passarella (2015).

¹⁷ At this stage of the circuit, “output has been produced but not yet sold. The unsold production constitutes an increase in inventories [that] is accounted as investment in working capital.”

Looking at the current account of firms in Table 1, “inventories must necessarily rise by an amount exactly equal to the production costs, the wages paid WB .” Looking at the “capital account, it is clear that the value of this investment in inventories must be financed by the new loans initially obtained” (Godley & Lavoie 2007: 49-50). As a result, the following equality holds: $I = WB = \Delta L_f = \Delta M_h$, where I stands for inventories (or other circulating capital), WB stands for wages bill, ΔL_f is new bank loans to firms, and ΔM_h is new bank deposits held by workers.

¹⁸ In fact, the very comparison between Table 1 with Table 2 “helps us understand the distinction between initial and final finance which has been underlined by the circuitistes” (Godley & Lavoie 2007: 50).

¹⁹ In the circuit one-period model, the price of output is derived from the marked clearing condition: $p \cdot N \cdot a = N \cdot w \cdot (1 - s) + b \cdot p \cdot N \cdot a$, where N is the employment level, a is the labor productivity, w is the nominal wage rate, s is the average propensity to save out of wages, and b is the share of output devoted to investment. Accordingly, $N \cdot a$ is the real supply of goods, $N \cdot w \cdot (1 - s)$ is the nominal consumption of wage-earners, and $b \cdot p \cdot N \cdot a$ is the nominal investment (for example, Graziani 2003). Solving for the unit price of output, one gets: $p = (w/a) \cdot (1 - s)/(1 - b)$. Circuit theorists assume that the scale of production (i.e. N) is chosen by the corporate sector, along with the composition of output (via the propensity to invest, b). Household consumption-saving decisions only affect the costing margin (defined as $r = (b - s)/(1 - b)$) and hence the unit price of output, which is the endogenous variable of the model. The rationale of these assumptions is linked with the twofold aim of the circuit approach: first, to analyze money creation and destruction during ‘normal times’ (i.e. abstracting from liquidity trap, credit rationing, and lack of demand); second, to question the principle of consumer sovereignty (for example, Sawyer & Veronese Passarella 2015).

²⁰ Incidentally, Luxemburg can be considered the ‘bridge’ between Marx and Kalecki in the evolutionary tree of monetary theories of production.

²¹ The circuit approach “should not be considered a mere ‘empirical’ description of the ‘old’ Fordist manufacturing system ... Rather, [it] must be regarded as ... a logical meta-model such as the *Tableau économique* of François Quesnay’s 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 behavioral function. In other words, [it] defines the *necessary* monetary relationships between sectors (corresponding to well-defined social classes) and markets” (Veronese Passarella 2014: 17-18).

²² See, among others, Lavoie (2008), van Treeck (2009), Hein & van Treeck (2010), Michell & Toporowski (2012), Reyes & Mazier (2014), and Sawyer & Veronese Passarella (2015).