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Keynes's finance, the monetary and demand-led circuits: a Sraffian assessment

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Abstract

This paper aims to stimulate the convergence of the Sraffian approach to demand-led growth theory with insights from monetary circuit theory and stock-flow models. The first Sraffian contribution to this convergence we identify is the extension of Garegnani's interpretation of Keynes' *General Theory*'s originality and limitations to Keynes' 1937 papers on "finance." In both cases, it is a question of freeing Keynes from the ties of marginalist theory. After discussing some troubles of the monetary circuit, we identify a complementarity between the Keynesian concept of finance, some insights of the monetary circuit, and the role attributed by the Sraffian take of demand-led growth to the autonomous components of demand (which are also Kalecki's external markets). This seems to us to be the second Sraffian contribution to this convergence towards a monetary theory of demand-led growth.

Keyword: Keynes, Finance, Monetary Circuit, Effective Demand, Supermultiplier

JEL Codes: B26, E12, E43, E50

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Introduction*

This paper aims to stimulate the convergence of the Sraffian approach to demand-led growth theory with insights from monetary circuit theory and stock-flow models. The first Sraffian contribution to this convergence we identify is the extension of Garegnani's (1983) well-known interpretation of Keynes' *General Theory*'s originality and limitations to Keynes' 1937 papers, in which the Cambridge economist introduced the concept of "finance." In both cases, it is a question of freeing Keynes from the ties of marginalist theory. After discussing some troubles of the monetary circuit, we identify a complementarity between the Keynesian concept of finance, some insights of the monetary circuit, and the role attributed by the Sraffian take of demand-led growth to the autonomous components of demand (which are also Kalecki's external markets). This seems to us to be the second Sraffian contribution to this convergence. Finally, we suggest that stock-flow modeling can help systematize this convergence into a satisfactory approach defined as the monetary theory of demand-led growth.

Ohlin (1937a, 1937b) papers on the *General Theory* induced Keynes to reconsider the question of banks' financing of investment that he neglected in his opus magnum. He did so by introducing the innovative concept of "finance." For defensive reasons examined in the paper, Keynes did not fully exploit finance's potentialities toward a full endogeneity of money and interest rate targeting by the central bank. Quite the opposite, he felt that this direction would have exposed him to capture by the Scandinavian approach, which Keynes (correctly) judged old wine in new bottles. He was thus led to reconcile finance within the liquidity preference theory with its self-referential notion of normal interest rate and residuals of the quantity theory of money. However, after the results of the capital theory controversy - the centrality of which for the post-Keynesian monetary theory was not missed by Basil Moore - the danger of capture of full money endogeneity by a flexible version of loanable fund theory is averted.

This paper then reconsiders the application of the Keynesian concept of finance in the monetary circuit theory. After examining two versions of this approach, a constructive attempt is made to recover some main elements of the monetary circuit in a satisfactory monetary theory of demand-led growth. Relying on some post-Keynesian contributions, this paper finally preserves a subsidiary role of liquidity preference theory in determining the structure of interest rates given the short-term base rate set by the monetary authorities.

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The article is structured as follows. Section 1 examines Ohlin's comments on the *General Theory* and Keynes's reaction. Section 2 explores Keynes' concept of finance, while section 3 singles out Keynes's monetary theory's limits. Section 4 examines the positive role of finance in a monetary theory of demand-led output level and growth. Finally, section 5 explores the residual role that liquidity preference theory would assume once finance and endogenous money theory are at the core of the monetary theory of output.

1. The Scandinavian challenge

Immediately after the publication of the *General Theory,* Dennis Robertson (1936a) and Bert Ohlin (1937a, 1937b), among others, challenged Keynes, intending to resize the novelty of the liquidity preference theory and to reaffirm the validity of the loanable fund theory, albeit in a new guise. Keynes (1973e [1937], p. 203) selected Ohlin as the clearest representative of this attack. What worried Keynes is that Ohlin pretended to be on the same side of the road in abandoning the traditional marginalist determination of the interest rate as the price equalizing demand and supply of saving (Ohlin 1937b, p. 221; Keynes 1973e [1937], pp. 201-2). To appreciate Keynes' preoccupations, let us recall two aspects of Ohlin's theory of the interest rate.

First, Ohlin adopts a flexible version of the loanable fund theory in which the demand and supply of banks' credit do not precisely coincide with the demand and supply of saving. More specifically, the ex-ante demand and supply of credit, in gross terms, will have two components:

(a) a component that includes the renewal of *existing credits* (the stock of credit in the economy), which is backed by accumulated savings; and
(b) a net component that concerns the demand and supply of newly created banks' money (new credit that finances net investment), which is not backed by existing savings.

In Ohlin's words

> To explain how the rates of interest are actually determined, we need … a causal analysis which runs chiefly in ex-ante terms. What governs the demand and supply of credit? Two ways of reasoning are possible. One is net and deals only with new credit, and the other is gross and includes the outstanding old credits. (1937b, p. 224)

Coming to the second component, only ex-post, Ohlin points out, the new, purely monetary net credit, becomes saving:

> Here again it is important to distinguish between an ex-post and ex-ante analysis. Ex-post one finds equality between the total quantity of new credit during the period, and the sum total of positive individual savings.

Ohlin's point is even more clear in the incipit to the second part of his 1937 paper in the *Economic Journal*:

> Obviously the rate of interest cannot - with the terminology used above - be determined by the condition that it equalizes the supply of and the demand for savings, or, in other words, equalizes savings and investment. For savings and investment are equal *ex definitione*, whatever interest level exists on the market. Nor can one say that the rate of interest equalizes planned savings and planned investment, for it obviously does not do this. How, then, is the height of the interest level determined?
>
> The answer is that the rate of interest is simply the price of credit, and that it is therefore governed by the supply of and demand for credit. The banking system - through its ability to give credit - *can* influence, and to some extent does affect, the interest level. As a matter of fact, it is often useful as a first approximation to analyse practical problems on the assumption that the banking system fixes the rates of interest which make the interest "level." (Ohlin 1937b, p. 221, italics in the original).[1]

One cannot avoid finding – and possibly Keynes felt the same – a "Keynesian" flavor here. Let us express this feeling in these terms: it is a net investment, financed ex-ante by newly created money, that ex-post generates saving. In a letter to Ohlin, Keynes (p. 184 CW) was struck by a passage by Ohlin (1937a, p. 55) where he argues that according to Knut Wicksell, "investment purchases are not directly governed by the part of income people want to save." Keynes probably read too much in this passage. One thing is, in fact, to claim that saving and investment decisions are taken by unrelated agents, as Wicksell would concede; and another is to claim that the investment is independent of full-employment saving,[2] what Wicksell do not acknowledge, since in his view they are brought in equilibrium by the natural interest rate (e.g., Garegnani, 1983, pp. 42-47).[3]

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[1] Ohlin points out that the interest rate fixed by banks is not arbitrary but is related in the long run to the savings demand and supply "and other elements in the price system" (1937b, p. 221). He later refers to Wicksell notion of natural interest rate "corresponding to the marginal productivity of capital or of round-about methods of production in some Bohm-Bawerkian sense" (ibid, p. 223). He is critical of this concept, that we instead assume as marginalist benchmark to the monetary interest rate fixed by banks (or better, by the central bank), given the enduring influence of this notion up to the present.

[2] Savings forthcoming from the full employment of production factors.

[3] Contrary to the opinion e.g. of Servaas Storm (2020, p. 94), which is based on Keynes' view (Keynes 1936, pp. 179-80) that there are many saving supply schedules, each for each level of real income, "the full-

After reading Ohlin, Keynes certainly realized that, on the one hand, in the *General Theory* an important part of the story was missing, that is investment financing (1973g [1937], pp. 215-6) and the related role of banks (Moore 1988, p. 199; Rochon 1997, pp. 282, 284). On the other hand, he feared that such an important issue could rehabilitate, possibly disguised as flexible loanable fund theory, the marginalist determination of the interest rate ultimately based on the demand and supply of saving.

Keynes quickly took advantage of a non-negligible ambiguity in Ohlin's approach. On the one hand, it pointed to the banking system's capacity to create ex nihilo credit-money. On the other hand, it echoed a standard loanable fund theory in which the supply of credit depends ultimately on the supply of savings. Hence, Keynes denounced that behind the ex-ante Ohlin's credit demand and supply schedules, the traditional theory was hidden, particularly because of the following passages by the Swedish economist:

> The willingness of certain individuals during a given period to increase their holdings of various claims and other kinds of assets minus the willingness of others to reduce their corresponding holdings gives the supply curves for the different kinds of new credit during the period. Naturally, the quantities each individual is willing to supply depend on the interest rates. In other words, the plans are in the nature of alternative purchase and sales plans. Similarly, the total supply of new claims minus the reduction in the outstanding volume of old ones gives the demand-also a function of the rates of interest-for the different kinds of credit during the period. The prices fixed on the market for these different claims- and thereby the rates of interest- are governed by this supply and demand in the usual way (Ohlin 1937b, pp. 224-5).

Keynes commented that, although Ohlin's ex-ante, net credit supply-function is relative, for the net component, to bank loans, its shape reflects in actual the individual saving choices. Therefore, behind the credit supply and demand determination of the interest rate, the traditional saving demand and supply apparatus can be envisaged:

> Prof. Ohlin argues that …the net supply of credit measures the net willingness of individuals to increase their holdings of claims and assets. "Naturally," he continues, "the quantities each individual is willing to supply depend on the interest rates." But what does this mean? The *net supply of credit*, thus defined, is exactly the same thing as the quantity of saving; and the conclusion is exactly the same as

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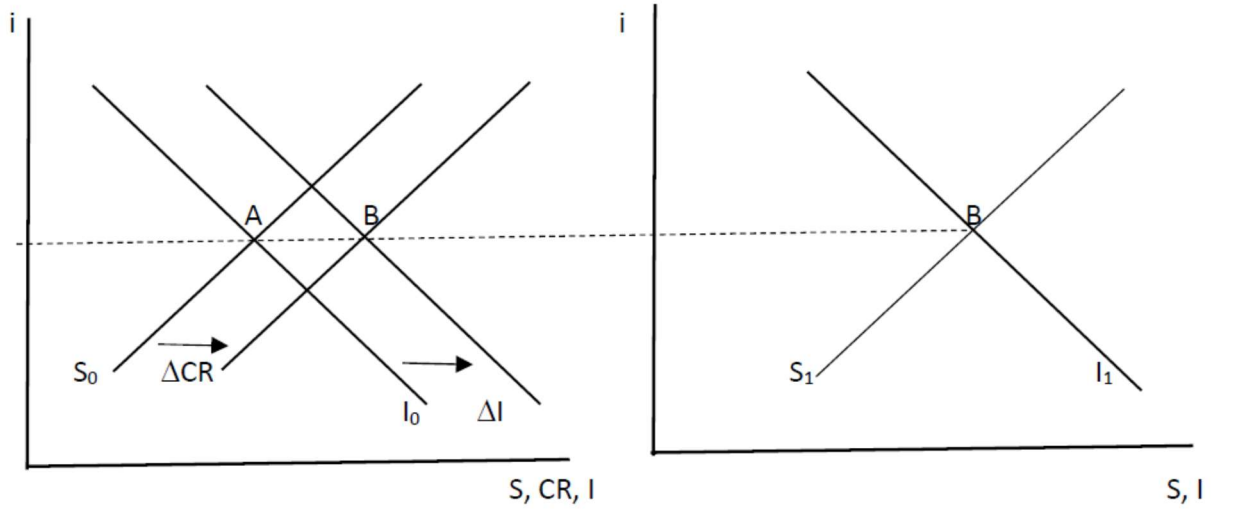
employment supply schedule of savings is the *only* supply of savings to which the theory under examination need to refer in the determination of the equilibrium rate of interest," as Garegnani (1983, p. 51, his italics) demonstrated.

> the classical doctrine, over again, to the effect that the quantity of saving depends on the rate of interest… . Finally, Prof. Ohlin concludes, "the prices fixed on the market for these different claims-and thereby the rates of interest-are governed by this supply and demand in the usual way." Thus we are completely back again at the classical doctrine which Prof. Ohlin has just repudiated-namely, that the rate of interest is fixed at the level where the supply of credit, in the shape of saving, is equal to the demand for credit, in the shape of investment. (Keynes 1973e [1937] pp. 205-6; original italics)

A simple figure may help to fix our ideas. Suppose, for simplicity, an economy in which both income and the capital stock (and all the other relevant variables) grow at a positive rate *g*.

On the left-hand side, point A identifies the stock equilibrium between the accumulated saving demand and supply. Given the steady-state net investment *I* and a corresponding net bank money creation ΔCR, point B is the current (t = 0) or ex-ante equilibrium in the credit market. In the (ex-ante) equilibrium, the credit supply schedule reflects the (virtual or ex-ante) saving supply decisions given full employment income. In the next period (t = 1, right-hand side of the figure), the virtual saving supply, equal to ΔCR, has become effective and is fully embodied in the gross saving supply function $S_1 = S_0 + \Delta CR$.



t = 0
Flexible loanable funds market (ex ante)

t = 1
Saving-investment market (ex post)

Keynes perceives and fears that accepting Ohlin's suggestion that new credit is ex-ante created by banks without being backed by existing savings exposes him to marginalist capture. Indeed, if banking policy, or that of the Central Bank, fixes the interest rate at the natural level, then the

demand and supply of bank credit is nothing more than an ex-ante manifestation of the balance between savings and investment, which, however, only shows itself ex-post. [4]

We may thus appreciate Keynes' preoccupation with not only having missed an important aspect of its own story – who financially supports investment decisions - but also that considering the banks' lending role (finance) could pave the way to a restatement, in new forms, of the established loanable fund doctrine. [5]

The most obvious defense strategy for Keynes was to incorporate bank financing of investments, which he called "finance," into the theory of liquidity preference. "Finance" thus became the fourth reason why liquidity is demanded. Keynes' objective was that, in this way, the determination of the interest rate is taken off banking policy and, ultimately, from the forces of "thrift and productivity" that, according to traditional theory, banking policy should ultimately obey. In the context of the theory of liquidity preference, the determination of the interest rate for "finance" would instead encounter the same rigidities highlighted in the *General Theory* to the setting of a full employment-

[4] That banks can create money is an idea shared by Keynes since long time (see e.g. *The Treatise*, 1930, p. 25). As early as 1922, when working closely with Keynes, Robertson anticipated the themes we are discussing: "Bank money originates in loans made by the banks to those who are engaged in productive enterprise…. The twin processes of real saving and the creation of bank money are seen in this instance to be proceeding concurrently, bound together by real though invisible and unconscious ties" (ibid, pp. 75, 79). The "invisible and unconscious ties" that links ex-ante credit to ex-post saving will become, a decade later, visible with the income multiplier (although Robertson later moved away from the innovative path he had set with Keynes.). After Wicksell, the almost unbound possibility of banks to create loans was also proper to the Scandinavian tradition. As Wicksell (1906 [1935], p. 194) put it: "Banks are not, like private persons, restricted in their lending to their own funds or even to the means placed at their disposal by savings. ... With a pure credit system the banks can always satisfy any demand whatever for loans and at rates of interest however low, at least as far as the internal market is concerned."

[5] In an article a few years ago, Bailly (1992, pp. 110-2) expresses - referring to de Boissieu and Parguez - the same concern that Keynes must have perceived, that the concept of "finance" could rehabilitate the traditional version of the theory of loanable funds and the natural interest rate:

> Thus, the purpose of "finance" would be to substitute, at least temporarily, a credit currency, provided by banks, for household savings. The substitution is in principle provisional, since the enterprises are supposed to capture household savings by selling their products and, thus, to be able to repay the "finance" advances. …. In other words, with regard to current production, "finance" would rigorously have the same function as previously constituted savings....Whereas the loan fund originates from prior savings, the "finance" would be purely and simply created by the banks. B. Ohlin's assertion that the interest rate is determined by the equilibrium of ex-ante savings and ex-ante investment was not, in fact, contradicted by Keynes. By conceiving "finance" as they do, C. de Boissieu and A. Parguez reinforce the thesis of B. Ohlin. (our translation)

interest rate. Be this as it may, Keynes's concept of "finance" is extremely relevant for a monetary theory of effective demand and demand-led growth and deserves further analysis.

2. Finance: one step forward, two steps back.

Keynes calls "finance" the "advance provision of cash… required by the current decisions to invest" (Keynes 1973e [1937], p. 208). Finance is necessary since "[p]lanned investment …may have to secure its 'financial' provision before the investment takes place; that is to say, *before* the corresponding saving has taken place" (Keynes 1973e [1937], p. 207, original emphasis). According to Keynes, finance is provided either by banks or by the decumulation of financial wealth by the investor, but it is easier if we focus on bank's financing only (as it does Keynes 1973f [1937], p. 219).[6] Finance fills the

> gap between the time when the decision to invest is taken and the time when the correlative investment and saving actually occur … But 'finance' has nothing to do with saving. At the 'financial' stage of the proceedings no net saving has taken place on anyone's part, just as there has been no net investment. 'Finance' and 'commitments to finance' are mere credit and debit book entries, which allow entrepreneurs to go ahead with assurance. (Keynes 1973e [1937] pp. 208-9).

Partially incidentally, Keynes also makes an important distinction between "short-term finance during the period of producing the investment" (1973f (1937), p. 217) and long-term funding through which the investor "can eventually fund his short-term obligations by a long-term issue on satisfactory conditions" (ibid). After Paul Davidson (1986) and Augusto Graziani (1990, pp. 14-5) let us call short-term finance "initial finance," and long-term funding "final finance." We shall return on this distinction.

Having said so, Keynes is adamant about clarifying that, through the concept of finance, he is not walking the same side of the road as Ohlin's and Robertson's flexible loanable funds. To mark the distinction, he begins by widening the finance object to include the support of the *production* of both investment and consumption goods – rather than of investment spending. Demand for

[6] For Keynes investment may also be financed by the issuing of new bonds (Keynes 1973e [1937], p. 208). However, as Rochon (1997, p. 284) notices: "In arguing that the new issue market is a source of fresh finance, Keynes is remaking the argument [by Ohlin] of ex-ante saving determining ex-ante investment since the corresponding saving is produced only once investment has taken place." The case of investment financed out of accumulated financial wealth is dealt with in Cesaratto and Di Bucchianico (2021, p. 7).

"finance" is thus associated with activity levels rather than investment (1973h [1938], p. 233). Investment finance is thus "only a special case of the finance required by any productive process" (Keynes 1973e [1937], p. 208). Keynes presumably regards production decisions either of capital or of consumption goods as taken in advance based on orders or of expected demand.[7] "Finance [is] required during the interregnum between the intention to invest [the order] and its achievement [the payment] is mainly supplied by specialists, in particular by the banks" (Keynes 1973f [1937], p. 219). Nonetheless, as can also be noticed from the last quotations, most of the time, Keynes focuses upon investment and not general production, which is not surprising give the centrality of investment in Keynes's and, in fact, in any theory of output level and growth.

Also, for Keynes, finance takes the nature of a "revolving fund" - a sort of baton in a relay race: if we take an economy with a constant investment or production level, the same amount of banks' money is necessary from period to period to permit the investment or production decisions (Keynes 1973e [1937] 209 CW; Keynes 1973f [1937], p. 219). Only if investment or production is increasing, "extra finance involved will constitute an additional demand for money" (Keynes 1973e [1937] , p. 209).[8]

The fence around finance is finally completed by including it, as said, in the liquidity preference theory as a fourth, additional motive to demand money. In this way, Keynes intended to isolate finance from the alternative Ohlin-Robertson's flexible version of loanable fund theory.

Keynes also underlines the possible rigidity of banks' supply of finance, to prevent full employment investment from being made. This rigidity, an expression of a rigid money supply, manifests itself through an increase in the interest rate against an increase in demand for money for finance. Only

> if the banking system chooses to make the finance available and the investment projected by the new issues actually takes place, the appropriate level of incomes will be generated out of which there will necessarily remain over an amount of saving exactly sufficient to take care of the new investment. (Keynes 1973e [1937], p. 210)

As well known, Keynes is resolute to clarify that it is not the scarcity of potential savings that prevents investment, but the scarcity of liquidity, so that

[7] On production to order and production in advance, see Casaburi and Minerva (2011).

[8] Keynes seems even dismissive about the nature of finance as loans indicating that the term just "mean the cash temporarily held by entrepreneurs to provide against the outgoings in respect of any impending new activity… the fact that cash may *in certain conditions* be obtained by means of a bank loan implies that cash is not the same thing as a bank loan" (Keynes, J.M. 1973h [1938], p. 229, original emphasis).

> banks hold the key position in the transition from a lower to a higher scale of activity. If they refuse to relax, the growing congestion of the short-term loan market or of the new issue market, as the case may be, will inhibit the improvement, no matter how thrifty the public purpose to be out of their future incomes. On the other hand, there will always be exactly enough ex-post saving to take up the ex-post investment and so release the finance which the latter had been previously employing. The investment market can become congested through shortage of cash. It can never become congested through shortage of saving. This is the most fundamental of my conclusions within this field. (Keynes 1973f [1937], p. 222).

Keynes, however, does not explain the origin of the possible banks' resistance to expanding investments. He concedes that increased investment (or more generally production) and demand for finance would not lead to an increase in the interest rate in the case of overdraft facilities, since in this case, banks' loan supply is perfectly elastic at the given interest rate:

> Thus to the extent that the overdraft system is employed and unused overdrafts ignored by the banking system, … the transition from a lower to a higher scale of activity may be accomplished with less pressure on the demand for liquidity and the rate of interest (Keynes 1973f [1937], p. 223).

The refuge Keynes finds in the liquidity preference theory and in the obstacles that myopic monetary authorities or rigidities in the prevailing opinions about the normal level of the interest rate may put in the way to full employment can be seen as a defensive move, but a short-sighted, for two reasons (for which we refer to Garegnani 1983).

Both a myopic behavior of monetary authorities and the interest rate rigidities cannot be considered lasting circumstances.[9] Secondly, as Wicksell's celebrated analysis of economic fluctuations had shown, also traditional loanable fund theory (flexible or not) relied on monetary policy mistakes, or

[9] All the more so given the "conventional" nature of the interest rate in Keynes, heavily influenced by the power of monetary policy to change the prevailing market conventions. Robertson criticizes Keynes' interest rate theory of being hung on itself. The preference for liquidity, and therefore the determination of the current interest rate, is in fact anchored by Keynes to the prevailing opinion about what the long term expectations of the subjects would consider to be the normal interest rate (so the normal rate depends on the prevalent opinions about what the prevailing expectations about the normal rate are): "in making interest depend on l.p. [long period], and l.p. on expectations about the behaviour of interest, we are in danger of going round in a circle" (Robertson 1936b, p. 98). Robertson (1936a, p. 168) refers of a great influence of Sraffa on his review to *General Theory*. Indeed, on p. 203 of Sraffa's copy of the *General Theory*, now stored at Trinity College (Cambridge), there appears in the margin to a passage in chapter XV where Keynes states that the interest rate should be taken "as a highly conventional, rather than a highly psychological, phenomenon," a note in Italian by Sraffa himself which says: "È così che si fa una 'teoria'" — "That's how a 'theory' should be made". The comment is generally considered sarcastic.

delays of monetary authorities to accommodate changes in the real fundamentals, to explain those fluctuations (lack of credit and not lack of potential saving, may deter full employment investment in this theory as well as in the case of Keynes' finance). Criticism of traditional theory in the filed of monetary theory is deemed to fail, concluded Garegnani (1983, p. 61). This is so since, contrary to the opinion of Keynes that "they [traditional economists] regard the rate of interest as a non-monetary phenomenon" (letter to Hicks, March 1937, in Keynes J.M. (1973i, p. 80), traditional theory, or at last its Wicksellian component, developed a monetary theory of economic fluctuations. As much as Keynes's own, this theory attributed the existence of disequilibrium to monetary policy errors.[10]

3. Keynes' limits and rescue

To sum up, finance is placed by Keynes as part of the liquidity preference theory as a defense from the threat of the flexible loanable fund theory. In this way, except for overdraft loan contracts, banks' flexibility to meet the demand for finance at the given interest rate becomes limited by the same forces that, in the *General Theory*, restricted the adjustments of the interest rate necessary to full employment. Garegnani (1983) shows that, however, Keynes's attempt to defend through the liquidity preference theory the most innovative part of the *General Theory*, the saving-investment adjustment via the income multiplier, failed. The ultimate cause of Keynes' weakness lies in the acceptance of the negative interest rate elasticity of investment demand, which leads him to seek obstacles to full employment in monetary policy rigidities. However, analytical criticism of the traditional investment demand curve is possible only after Sraffa (1960) and Garegnani (1960). Unfortunately, the need to fence the most innovative parts of the *General Theory* relying on monetary theory led Keynes to limit his potential innovativeness in the monetary field.

On closer inspection, if Keynes had thoroughly accepted:

(i) the idea that the banking system has the power to satisfy the demand for credit endogenously - as he admitted in the case of overdraft - and that

[10] Keynes more than Wicksell remained in the precincts of the quantitative theory of money (Moore 1988, pp. 172-6; Rochon 1997, p. 279). Rather than short-sightedness, the search of monetary policy rigidities held Keynes in those confines. Rochon (1997, pp. 288-9) shows that in his last years the great economist progressively freed himself from the monetary model of the *General Theory* letting the monetary authorities full capacity to fix the interest rate.

(ii) little would impede banks to lend at the natural interest rate driving the economy toward full employment,

the innovative message of the *General Theory*, the possibility of unemployment equilibria, would have collapsed. Ohlin and Robertson would have won, hands down. Therefore, almost grudgingly, Keynes admits the endogenousness of bank credit through the notion of "finance" but inserting it into the theory of preference for liquidity in which the elasticity of money supply and the interest rate are supposedly rigid.

In this regard, and in view of enhancing the conversation among post-Keynesian economists, it is particularly important to underline the convergence in this field of the modern father of endogenous money, Basil Moore (1988 p. 249), and Garegnani (1983) where the former notes the limits of Keynes' defense strategy:

> Keynes appeared to be resting his case for a less than full employment equilibrium non on the proposition that a full-employment rate of interest does not exist, but rather on the proposition that there is no mechanism to ensure that the rate of interest will automatically attain full –employment equilibrium level.

Moore (ibid, p. 236) notes in this regard the inadequacy of the liquidity preference theory:

> Any purely monetary theory of the rate of interest, such as the liquidity preference theory, thus appears to be left "hanging by its own bootstraps" when presented as a long-run theory. This was precisely the charge leveled at Keynes by Dennis Robertson.[11]

It is not by coincidence, therefore, that Moore (ibid, p. 236) refers to criticism of the theory of capital:

> Unfortunately for the Wicksellian theory [of the natural interest rate], it has recently been shown incontrovertibly that the conclusions of a one-commodity (corn) model cannot be generalized to a multicommodity model.

It is the very concept of natural interest rate that can thus be demolished, making the exogenous monetary determination of the interest rate truly possible, without being afraid of falling back into the loanable fund theory.

Freed from the shackles of marginalist theory, Keynes' notion of finance can be developed, and this is what post-Keynesian analysis has done through the notion of endogenous money. In contrast to

[11] See footnote 6 above.

the original "verticalist" version of finance advanced by Keynes, modern post-Keynesians propose a horizontalist version which is also by now accepted by many central bank economists and even by mainstream economists (Deutsche Bundesbank 2013, McLeay & Ryland 2014, Jakab & Kumhof 2015). (Incidentally, this confirms again that mainstream economics must be defeated on the real side, the existence of the natural interest rate, and not in the monetary side on which it has recently eventually converged with the post-Keynesian monetary theory). According to the horizontalists view, banks create banks' money by a stroke of a pen. At the same time, the central bank accommodates all the reserve demand at the policy interest rate of its choice. In terms of monetary policy, endogenous money is accompanied by the eventual breach of the reserve doctrine that, under the influence of the quantitative theory of money, wrongly attributed monetary targeting to central banks. Bindseil (2004) shows that, although this view prevailed for most of the twentieth century, de facto central banks never abandoned interest rate targeting.[12]

In the next pages, we shall discuss how to insert finance in a post-Keynesian macroeconomic model. In this context, we shall also deal with the residual role of the liquidity preference theory.

4. Finance and the post-Keynesian theory of output levels

We shall focus upon two directions in which Keynes's finance has been embodied in a post-Keynesian theory of output. The first and most known is monetary circuit theory; the second, still mostly potential approach, is the monetary demand-led theory of output and growth based on the supermultiplier model (e.g., Freitas and Serrano 2015; Cesaratto 2015).

4.1. Initial and final finance in the monetary circuit

Among a vast literature, we shall refer here to two versions of the monetary circuit (Rochon 1999, p. 8), the first by Augusto Graziani and the second by Parguez and Seccareccia (2000). Cesaratto (2017) was rather critical with the former approach to which Marc Lavoie (1999) seems to refer. In this version of the monetary circuit, production decisions are autonomously taken by firms. For "these decisions to be realized, *initial* finance (working capital) must be provided by the banking sector" (Lavoie 1999, p. 106, original emphasis). Deposits are employed "*to pay wages and other costs*" and therefore transferred to households which either consume or save them (ibid). The part

[12] For a modern description of monetary policy see Disyatat (2008) and Fullwiler (2017). Not all post-Keynesian authors agree over the horizontality of the money supply function, see Deleidi (2020) for a recent discussion.

that is consumed returns to firms, which can thus redeem part of their short-term debt with banks. This is often named reflux (the initially created money is destroyed). Regarding the saved part of wages, "theorists of the monetary circuit often make the following implicit assumption: firms will issue new bonds whenever households wish to keep part of their newly acquired money deposits in the form of bonds or other similar financial assets… In other words, *final* finance obtained by issuing securities will allow firms to reimburse … bank loans" (ibid, p. 107, original emphasis).

This short summary of Graziani-Lavoie's monetary circuit raises more than one perplexity. We let aside the vexata quaestio of where profits are realized in the circuit, given that aggregate demand consists of wage-consumption (see Cesaratto 2017), and focus on the following shortcomings:

1) In this theory, production decisions are taken in a vacuum, and effective demand does not play any role; the model is, to say the least, a-Keynesian.
2) Saving decisions are not explicitly modeled as the result of investment decisions and of income multiplier; in fact, the role of investment (or of autonomous demand) is not specified.
3) Firms issue securities to collect savings and redeem the initial residual finance to banks; although not explicitly stated, it is presumed that firms finance in this way investment in unsold stocks. Hence, *final finance* - that is to say, the financial resources obtained by firms from the securities that drain households' savings - does not fund capital accumulation but inventories. This does not sound like a satisfactory analysis of capital accumulation - see Rochon (1999, pp. 12-15) for the spread of this questionable point of view among circuitists.[13]
4) Given the short-period equilibrium reached in point 3, it is not clear where the economy will tend in the longer run.[14]

[13] Robertson was critical of a similar proposition that could be found in Keynes' *Treatise*, see Cesaratto (2016). Similar concerns about the circuit were raised long ago by Wray (1991, p. 959) who notes that "the sales of new paper to capture worker saving [sic] merely represents the 'pecuniary accountancy' of inventory accumulation" and asks (sarcastically?): "Are the 'animal spirits' of capitalists better stimulated by sales of consumer goods or by sales of paper?".

[14] Two references to Davidson (1986) and Dalziel (1996) that Lavoie (1999) produced in support of this version of the circuit are out of place given that neither the two authors cite the monetary circuit nor their stories can be called in support of it. Quite the opposite, we believe that they provide correct developments of Keynes's concept of finance within a monetary demand-led theory of the level and growth of output (as shown in Cesaratto 2017, Cesaratto and Di Bucchianico 2021 and in section 4.2 below).

The investment role is better specified in the second version of the monetary circuit as presented by Parguez and Seccareccia (2000). In this model, banks finance both the production of consumption and (gross) investment goods. Consumption out of wages (suppose workers do not save) allows the producers of consumption goods to recover the production expenses, to return bank's loans, and realize profits too: "Consumption goods are usually acquired when income earners spend their income which is initially financed by money creation. This credit money created to finance income should permit the generation of the new output and the realization of the value of a share pertaining to articles of direct consumption" (ibid, p. 108). (In a sense, the Graziani-Lavoie version of the circuit stops here). Bank's credit would, however, also finance the demand for investment goods, and this also permits the producers of capital goods to recover their production expenses, return bank's loans, and realize profits:

> the value of the share devoted to future consumption or investment must also be realized by loans entailing creation of money that would finance the acquisition of newly-produced equipment goods…. If credit were restricted to the financing of wages, the value of equipment goods would not be realized in accordance with the initial expectations of firms (and banks). The newly-created money would lead to the creation and monetary validation only of articles of current consumption, and not of the capital goods… (ibidem).

In final, in "this process, the sellers of both sectors realize their money profits and the monetary circuit is now completed with the flux matching the reflux of credit money." (ibid, p. 109).

Still, we may note a lack of coordination between investment and consumption in this model (in practice, the absence of the Keynesian multiplier). Concerning investment, we also note a duplication of financing, demand, and production. As indicated in the next section, insights to amend these flaws can be found in Davidson (1986) and Dalziel (1996), which permit a more organic organization of the concepts of initial and final finance (but also of *production financing* versus *final demand financing*) that monetary circuitists have derived from Keynes' post-*General Theory* papers.

4.2. Toward a monetary demand-led theory of output

Davidson (1986) is an inspiring attempt to combine the two couples initial finance *vs.* final finance (or funding) and production financing *vs.* final demand financing within the context of the Keynesian income determination theory (the multiplier).

He starts from an investment decision, as it sounds correct in a Keynesian effective-demand context.[15] While traditionally Keynesian economists have implicitly assumed that banks finance the investing firm (demand or spending financing),[16] Davidson welcomes Keynes's suggestion that banks support the production-to-order costs of the manufacturer of the investment good (initial finance). Leaving some details apart – for which we refer to Cesaratto 2017) – the investment good's production generates a corresponding value of savings through the income multiplier. The investing firms will collect these savings through an investment bank[17] that issues securities. This final finance funds long-term the purchase of the investment good. Once received the payment, the equipment producer returns the short-term debt to the bank (reflux). While one can find a monetary circuit in this story – money is initially created, circulated, and finally destroyed – we find it substantially different from the monetary circuit narrative and more consistently Keynesian (for an earlier support to this version of the circuit, see Wray, 1991, pp. 957-8).

Initial finance can, of course, concern, as Keynes and the circuitists assert, all production decisions, not just the production of investment goods. Indeed, most production is in advance of demand or orders, and banks' financing is better regarded to support current production decisions rather than final demand. While this is fully explored in Cesaratto (2017) and Cesaratto and Di Bucchianico (2021), we want to underline a difference here between initial finance concerning investment and consumption goods, respectively. While the former implies, as in Davidson's example, the generation of saving that funds the investment (final finance), this is not the case of initial financing of the production of consumption goods. In the former case, it is funding that ultimately permits the restitution of initial finance. In the second case is the sale of the product.

Dalziel (1996) does not consider the distinction between initial financing of, respectively, production or spending but moves with the traditional assumption that initially, finance supports investment

[15] Investment is an autonomous component of aggregate demand in the short period, given productive capacity. According to the supermultiplier analysis (Serrano and Freitas 2017), in the longer run investment is explained by the expected rate of growth of aggregate demand; this is in turn explained by the exogenously given pattern of its autonomous, non-capacity creating components. In recent years, starting from Allain (2015) and Lavoie (2016), autonomous demand-led growth models have become increasingly popular also among authors belonging to the Kaleckian tradition (see e.g. Nah and Lavoie 2017, 2019; Fiebiger and Lavoie 2019; Hein 2018; Allain 2019; Hein and Woodgate 2020) and, more in general, within the post-Keynesian community (see, among others, Dutt 2019; Palley 2019 and Fazzari et al. 2020).

[16] As seen, this is the hypothesis made also by Parguez and Seccareccia (2000).

[17] An investment bank is a financial institution that do not create money but intermediate savings.

spending. He distinguishes, however, between initial and final finance. Figure 2 taken from Dalziel (1996, p. 229) is a simple representation of Davidson's story.

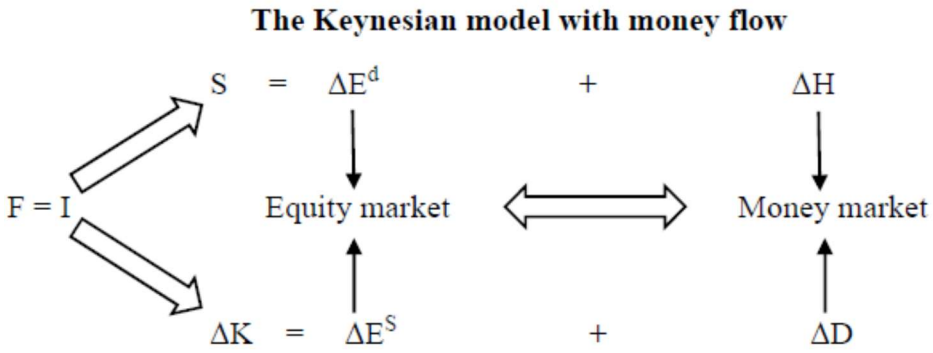


Figure 2

In figure 2, *F* is initial finance. In the drawing, initial finance (*F*) converts, on the one hand, in real investment (ΔK) and, on the other, in saving (through the income multiplier process). In turn, saving can be held by households either in the form of equities or long-term assets (ΔE^d) (thus sharing the property or funding of the new capital goods) or hoarded (ΔH) in sight deposits. Symmetrically investing firms fund (or final finance) invest either by issuing equities ΔE^s (that may be used to redeem part of the initial debt with banks, a *reflux* in the monetary circuit theory's terminology) or by taking out a long-term debt ΔD, transforming part of the initial short-term loans in long-term credits. In the latter case, banks intermediate savings, transforming sight deposits in long-term loans, but this is only an ex-post role concerning maturity transformation.

Both Davidson and Dalziel still restrict their analysis to the consumption and investment case. Cesaratto and Di Bucchianico (2021) extend this analysis to the autonomous components of demand in a supermultiplier framework. According to this work's authors, this theoretical construction provides a consistent and satisfactory demand-led theory of output level and growth, with a non-ancillary role for debit-credit relations and financing decisions. However, these are mostly implicit, not fully formalized, and in the background of most contributions along these lines. On the other hand, the monetary circuit fully explores the monetary and financial side but does not provide in itself, as we have tried to argue above, a completely convincing theory of output determination

along Keynesian lines. Stock-flow consistent (SFC) models[18] can represent, in this sense, a flexible analytical tool to systematize the convergence between several strands of the post-Keynesian research agenda by building upon a monetary infrastructure inspired by the monetary circuit and combining it with a fully-fledged demand-led output determination. Due to their flexible nature, SFC models are compatible with alternative closures when it comes to the production-demand interaction, and in recent years, a new wave of works has been trying to incorporate the main conclusions of supermultiplier-inspired models.[19]

5. And thou liquidity preference theory?

Fig. 2 shows that two parallel choices have taken place. On the top, savers allocated savings in a certain proportion between securities and hoarding (deposits); on the bottom, investors collect funding (final finance) issuing securities or relying on banks' long-term loans in another proportion. What does make these double choices consistent? After Howells (1997, p. 429), we may call it the "reconciliation problem."[20] The question sparked some controversy that also has implications for another question: what about the liquidity preference theory after endogenous money?

Two positions emerged in the debate: Kaldor and Trevithick (1981), Moore (1988), and Lavoie (1999) believe that the problem does not arise in the sense that either new deposits are used to pay back previous debts or are willingly held by households. Howells (1995) and Arestis and Howells (1996) maintain that the final portfolio composition of savings will result from an adjustment in the relative interest rates on the various assets.

More specifically, for Kaldor and Trevithick (1981, p. 7), new deposits will simply disappear through a 100% reflux since new deposits will automatically be used to repay previous debts (the reflux theory is defended by Lavoie 1999). The objection of Howells (1995) and Arestis and Howells (1996)

[18] After pioneering works in the 40s and subsequent decades, the full development of this approach is due to Wynne Godley and Marc Lavoie (e.g., Godley and Lavoie, 2007). See Caverzasi and Godin (2015), Nikiforos and Zezza (2017) and Carnevali et al. (2019) for thorough surveys of the literature.

[19] See e.g. Brochier and Macedo e Silva (2019), Deleidi et al. (2019) and Vieira Mandarino et al. (2020).

[20] Actually, Howells' reconciliation problem is limited to the question of reconciling the amount of new deposits created by banks by granting new loans and the desire of households to hold them: "the demand for the loans that create the deposits originates in the desire of deficit units to spend in excess of income …. By contrast, the decision to hold (i.e., not to spend) the newly create deposit is a portfolio decision. Furthermore, it is a decision made by different people (…) from those concerned with borrowing." (1995, p. 92).

(echoing Victoria Chick and Allin Cottrell) is that those who hold debts with the banking system (e.g., businesses) do not necessarily coincide with those who receive savings (e.g., households):

> Automatically is the keyword. It is a reasonable assumption that those with overdrafts who have receipts in excess of payments will use the excess to reduce their debt and this will ("automatically") reduce the quantity of new deposits that are actually created. The problem is, not everybody has an overdraft (Howells 1995, p. 93)

Reflux is, therefore, a possibility, but not "the end of the monetary story" (Cottrell, quoted by Howells 1995, p. 94)

Moore (1988) puts forward a second argument, claiming that those who realize new savings in the form of deposits consider them as "windfull yields" (the expression is from Howells 1995, p. 100). Therefore, they will happily hold them, at least as a first approximation, as deposits. "Convenience lending" is defined by Moore (1988, p. 298).[21] Howell's objection is that convenience lending is only plausible as "staging post," until people decide the final savings allocation.

Howells (1995) and Arestis and Howells (1996) suggest that part of the new deposits (savings), more than liquidity preference, shall be used to purchase securities.[22] This will result in a double movement of rates and flows. First, because of the appreciation of securities, there will be a decrease in the securities market's interest rate compared to both the rate received on deposits (which could be zero) and the interest rate on bank loans. Secondly, these interest rate movements will mean, on the one hand, that as the interest rate on securities falls, the demand for deposits increases so that a new balance is achieved in the allocation of savings (a greater share of the increased availability of deposits is now welcomed). On the other hand, companies will be attracted by the fall in interest rates in the financial market to replace bank financing with securities financing.[23] In short, both the demand and supply of securities are likely to rise, leading to a new

[21] "Whenever spending units borrow from a bank to finance their deficit expenditures, a concurrent increased in unplanned convenience lending to the banking system will occur so long as bank deposits increase. The net accumulation of money balances that finances the increase the increase in investment spending involves a concurrent increase in convenience saving, … Total savings and investment are continuously equated ex-post … convenience lending to the banking system as bank deposits rise with increases in bank advances" (Moore 1988, p. 314).

[22] Part of liquidity is anyway absorbed by the higher demand for money for transactions due to the greater income.

[23] Alternatively, banks may satisfy the public appetite for securities issuing certificates of deposits, as argued by Lavoie (1999, p. 111) after Joan Robinson; or they may finance firms creating deposits in exchange of

balance between households' portfolio choices and the supply of financial assets (deposits and securities). Firms will use the proceeds of the issue of new securities to repay the bank loans previously contracted, giving rise to a Kaldorian "reflux mechanism" that is, however, not automatic.

The reshuffling of interest rates is also alluded to by Davidson (1986, pp. 108-110). His results are somehow opposite to those of Arestis and Howells, but they depend on the opposite initial hypothesis. Arestis and Howells start from households' needs to reallocate part of their savings from deposits to securities, leading to lower interest rates. In Davidson (1986, p. 108-10), investing firms fund investment (final finance) issuing new securities (see above section 4.2). In this case, they might have to raise the interest rate they offer to induce savers to part with liquidity. In Arestis and Howells, households are offered an excess of deposits. In Davidson, an excess of securities, so the balance between the asset allocation of household and the asset supply by commercial and investment banks is reached by opposite interest rate movements.

Can we find here a new space for liquidity preference theory? According to post-Keynesian monetary theory, the central bank decides the short-term base interest rate that accommodates all the demand for liquidity accruing at that rate. Does liquidity preference theory matter in determining the wider spectrum of interest rates over a variety of assets, differentiated by risk and maturity? Lavoie (1996, pp. 293-4) says yes. He quotes in this regard Daw and Daw (1989), who points out

> Liquidity preference, then, in practice determines the difference between the interest rate on liquid deposits and on less liquid substitutes. The monetary authorities set the rate at the short-term end of the spectrum; liquidity preference (along with other considerations) determines the mark-up to long term... An interest rate set by the monetary authorities is consistent with varying rates on bank loans, depending on the state of liquidity preference. (…) Indeed the liquidity preference concept can be expressed in its broadest form as a preference for a liquid asset over any illiquid assets, be they bonds, shares, commercial or industrial loans, or capital goods (ibid, pp. 148-9).

Interestingly, Daw and Daw also associate the liquidity preference pattern to economic fluctuations looking at "*the broad sweep of the cycle as being characterized by falling liquidity preference in upswings and rising liquidity preference in downswings*" (ibid, p. 158). Lavoie (1996, p. 292) goes so far to argue (relying on Kregel) that it "*is in this sense that liquidity preference and the theory of*

securities, which are later sold to the public to satisfy their liquidity preference (Chick and Dow 2002, pp. 591-2).

effective demand are the two sides of the same coin." The risk we see in this is to explain the pattern and fluctuations of effective demand by relying on the subjective factors that, at least for most post-Keynesian economists, surround the vagaries of liquidity preference (as an example, see a section in Lavoie 1996, pp. 290-2 significantly titled "Liquidity preference and animal spirits"). We believe that real scientific progress is only made by basing the explanation of subjective factors on objective events, for instance, the prevailing monetary and fiscal policies and the state of social conflict.[24]

One final question is whether the role of liquidity preference in determining the practical structure by risk and maturity of interest rates, especially of longer-term rates, those most influential on consumption and government spending, relegates the short-term base interest rate set by the monetary authorities to marginal role. As Lavoie (1996, pp. 294) notes,

> This would be a revised instance of the liquidity trap, where the central bank would manage to get the base rate down, but without any impact on other interest rates.

A sort of vindication of Keynes! However, Lavoie (ibid p. 295) believes that it is not so; that is, monetary authorities maintain the power to influence longer-term interest rates. Quoting Joan Robinson, he writes:

> where long term rates would be high relative to short rates, financial operators would come to realize that substantial profits can be made by borrowing short and lending long. Eventually, unless "the authorities" nerves are shaken by the ferocious growls with which the bears have been deafening them all this time', the convention enshrined in the base rate should prevail, and the liquidity premium should be back to its normal level.

It is a great relief to read a leading post-Keynesian economist linking the determination of interest rates to objective policy choices. In summation, he writes (ibidem):

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[24] As to the psychological waves of optimism and pessimism, D.H. Robertson (1915, p. 9) rejected any subjective explanation of trade cycles based on the "state of confidence" arguing that:

> Granted that [the entrepreneurs'] states of mind are immediately responsible for industrial dislocation, it does not follow that they are spontaneously generated; it seems only natural, in absence of proof, to give him the benefit of the doubt, and assume that they are at least induced, however irrationally, by external facts. Hence this objection also to the search for such facts fall to the ground.

In spite of the intimacy to Keynes, the early heterodox Robertson appears in this regard quite distant from what Keynes later named "animal spirits," something that, in our opinion, should be expunged from heterodox economics. Robertson, like Sraffa, did not like subjectivism in economics.

> the liquidity preference of banks and of the public determines neither the base rate nor the bond rate; rather it determines the spread between the lending rate and the base rate, or between the bond rate and the base rate, the latter being set by the central bank.

In this way, one may conclude, a role is left to liquidity preference without falling back to Keynes's self-referential determination of the "normal" interest rate. [25]

Conclusions

We moved from Ohlin's (1937a, 1937b) comments on the *General Theory* that led Keynes to tackle the question of banks' financing of investment, neglected in his book. To this aim, he introduced the innovative concept of "finance." In actuality, however, Keynes did not exploit the concept's potentialities in the direction of a full endogeneity of money creation and interest rate targeting by the central bank. It is likely that he felt that this direction would have exposed him to be trapped by the Scandinavian flexible version of loanable fund theory, that Keynes (correctly) judged old wine in new bottles. He was thus led to include finance within the liquidity preference theory - itself part of a defensive strategy with its self-referential notion of normal interest rate and residuals of the

[25] Bertocco (2005 pp. 502-3 and p. 509) proposes a similar double stage view:

> we can describe the consequences of a rise in the propensity to invest by distinguishing two phases. In the first phase, the interest rate being constant, firms will increase their demand for credit. Banks will finance firms by creating new money. When firms purchase investment goods, banks will record an increase in the flow of credit and a corresponding increase in the flow of deposits. The investment goods demand financed by bank credit permits the realisation of the income level predicted by the multiplier theory and a savings flow equal to that of investment. The flow of savings so generated causes a change in the stock of wealth (…). In the second phase, the problem arises of the choice of the composition of wealth. Given [the bond rate], the increases in income and wealth triggered by an expansion in investments causes an increase in the demand for money (…). Naturally, this increase in money demand is not necessarily equal to the increase in deposits which corresponds to the flow of financing granted by banks to firms; wealth owners will eliminate the disequilibrium on the money market by exchanging deposits for [securities]. These examples show us which conditions might ensure that the money created by banks to finance firms is absorbed by wealth owners.
>
> …we have identified two phases in the working of a monetary economy. In the first phase banks exert a key influence over the level and composition of investment. … The multiplier establishes a level of aggregate income at which the flow of savings is equal to the flow of investment spending; this savings flow corresponds to the variation in wealth. In the second phase the problem arises of the choice of the composition of wealth, which can be dealt with by the liquidity preference theory.

(In his model Bertocco assumes that the wealth owners' appetite for bonds is satisfied by the issue by banks of certificates of deposits; in the quotation, we substituted "certificates of deposits" with "securities").

(exogenous) quantity theory of money. In this way, "finance" and the potentialities of the distinction between initial finance (financing) and final finance (funding) were lost.

Basil Moore (1988) did not miss, along with Garegnani (1983), the decisive role of the outcomes of the capital theory controversy to get out from this stalemate.[26] These outcomes allow eliminate the marginalist demand curve for investment and the very notion of natural interest rate and free monetary theory by these theoretical chains. Unfortunately, these results were not available to Keynes.

After a brief criticism of Graziani's (a-Keynesian) monetary circuit theory but more sympathetic to Parguez and Seccareccia's version, the article underlined the central role of initial and final finance in a monetary, demand-led theory of output. In this regard, we share the same spirit of Rochon's (2008, p. 174) statement that "the existence of the multiplier depends on the 'co-operation of the banking system', as Kahn puts it." But more than that, we agree with Rochon (ibid, p. 173) that: "Capitalist economies… are not barter economies, and they are more than mere money economies: they are debt economies." We also agree with the circuitist flux-reflux stance that money that "is initially injected into the system is eventually returned to firms, from which they can reimburse their initial debt toward the bank. Money flows through the system, changes hands, but ultimately returns to its point of departure" (ibidem). Our proviso is that this is exactly true only for initial (short-term) financing of production – in which reflux destroys money and debt. Drawing inspiration from Davidson (1986), Dalziel (1986), and Wray (1991), initial financing of investment and autonomous demand is instead transformed into final finance (or funding), i.e., the long-term debt between the parties remains and can be a source of cyclical debt crises.[27] We believe that the supermultiplier's theoretical framework, which emphasizes the role of autonomous debt-financed components of demand, enhances the monetary and debt nature of the capitalist economy (Pariboni 2016). This approach's Kaleckian root is evident in the coincidence of the autonomous components with the Luxembourg-Kalecki external markets (Cesaratto 2015, Pérez-Montiel and

[26] Borio and Dysiatat (2011, p. 7; 2015, pp. 10-11) are a modern example of marginalist economists sharing the endogenous money view. They move ahead Ohlin's flexible loanable fund theory. They believe that banks finance investment by creating money, and that saving are the result of the income multiplier. At the same time, they believe that the economy is in equilibrium only if bank lending is granted at the (Wicksellian) natural interest rate.

[27] Creditors include private individuals who have bought long-term debt securities, but also banks that carry out maturity transformation. Indebtedness includes foreign debt financed by mercantilist countries "vendor finance" strategy.

Pariboni 2021). All in all, we find a convergence of different streams of post-Keynesian thought on a common monetary theory of demand-led growth feasible and fruitful.

The paper finally relied on some post-Keynesian literature to find a subsidiary role for liquidity preference theory in determining the structure of interest rates, given the short-term base rate set by the monetary authorities.

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