

The relation between Keynesian monetary theory and demand-led growth: a Sraffian exploration

Sergio Cesaratto* and Riccardo Pariboni**
DEPS, University of Siena, Italy

This article integrates the Sraffian approach to demand-led growth theory with insights from Keynes's concept of finance and from the monetary circuit approach. The paper's first contribution is the extension of Garegnani's interpretation of Keynes's General Theory's originality and limitations to Keynes's 1937–1938 papers on 'finance.' In both cases, it is a question of freeing Keynes from the ties of Marginalist theory. Second, the paper identifies a complementarity between the Keynesian concept of finance, some insights from 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. Finally, the authors propose a subsidiary role for the liquidity-preference theory in the context of the determination of the structure of interest rates, given the short-term base rate set by monetary authorities.

Keywords: Keynes, finance, monetary circuit, effective demand, supermultiplier

JEL codes: B26, E12, E43, E50

1 INTRODUCTION

This paper integrates the Sraffian approach to demand-led growth theory with insights from Keynes's concept of finance and from the monetary circuit approach. To begin with, we extend Garegnani's (1983) well-known interpretation of Keynes's *General Theory's* originality and limitations to Keynes's 1937–1938 papers, in which the Cambridge economist introduced the concept of 'finance,' shedding new light on those papers. In both cases, it is a question of freeing Keynes from the ties of Marginalist theory. Second, after discussing some troubles of the monetary circuit, we identify a complementarity between the Keynesian concept of finance, some insights from 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). Finally, we suggest a subsidiary role for the liquidity-preference theory in the context of the determination of the structure of interest rates, given the short-term base rate set by monetary authorities. In synthesis, this paper provides a Sraffian account of the long road from Keynes's finance, through the monetary circuit, to a monetary theory of demand-led growth.

Ohlin's (1937a; 1937b) papers on *The General Theory* induced Keynes to reconsider the question of banks' financing of investment that he neglected in his opus

* Email: sergio.cesaratto@unisi.it.

** Email: riccardo.pariboni@unisi.it.

magnum. He did so by introducing the innovative concept of ‘finance.’ While this is well known, in a novel way we argue that, for defensive reasons, Keynes did not fully exploit the potentialities of the newly introduced concept toward a full endogeneity of money and interest-rate targeting by the central bank. On the contrary, he felt that this direction would have exposed him to capture by the Scandinavian approach, which Keynes (correctly) judged to be old wine in new bottles. He was thus led to relegate the ‘finance motive’ to a place within the boundaries of the liquidity-preference theory, with its self-referential notion of the normal interest rate and residuals of the quantity theory of money. However, after the results of the Cambridge capital controversies – the centrality of which for Post-Keynesian monetary theory was not missed by Basil Moore – the danger of capture of full money endogeneity by the flexible version of loanable-funds theory alluded to by Ohlin is averted, and with it the risk that full money endogeneity might undermine the principle of effective demand.

We then reconsider 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. More specifically, we take advantage of some insights from the monetary circuit to integrate the Sraffian supermultiplier approach, based on the driving role of the non-capacity-creating autonomous component of aggregate demand. The insights we refer to regard the idea that the economic circuit begins with money creation and is somehow closed by money destruction, and the related notions of initial and final finance. The rescue of the Keynesian concept of finance – once freed from the theoretical troubles evoked in our paper and inserted in an appropriate endogenous money framework – and the insights from the monetary circuit, will shed some light on the issue of autonomous components’ financing, an aspect that is often not explicitly discussed in the growth literature that adopts the supermultiplier. Relying on some Post-Keynesian contributions, our paper finally preserves 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.

All in all, this paper aims at a convergence of different streams of Post-Keynesian thought in the direction of a monetary theory of demand-led growth.

The article is structured as follows. Section 2 reconsiders Ohlin’s comments on *The General Theory* and Keynes’s reaction. Section 3 explores Keynes’s concept of finance, while Section 4 singles out Keynes’s monetary theory’s limits. Section 5 examines, respectively, the role of ‘finance’ in the monetary circuit and in a monetary theory of demand-led output level and growth. Finally, Section 6 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.

2 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 scale down the novelty of the liquidity-preference theory and to reaffirm the validity of the loanable-funds theory, albeit in a new guise. Keynes (1937a [1973], 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 monetary interest rate as the price-equalizing demand and supply of saving (Keynes 1937a [1973], pp. 201–202; Ohlin 1937b, p. 221).

To appreciate Keynes's preoccupations, let us recall two aspects of Ohlin's theory of the interest rate.

First, Ohlin adopts a *flexible* version of the loanable-funds theory in which the demand and supply of banks' credit do not precisely coincide with the demand and supply of saving.¹ More specifically, the *ex ante* demand and supply of credit, in gross terms, will have two components:

1. a gross component that includes the renewal of *existing credits* (the stock of credit in the economy), which is backed by accumulated savings; and
2. 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. (Ohlin 1937b, p. 224)

Focusing on the first 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. (Ibid., p. 224)

Ohlin's point is even clearer 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.' (Ibid., p. 221, emphasis in the original).²

1. By 'flexible' we refer to a version of the loanable-funds theory in which banks, *ex ante*, create credit '*ex nihilo*' and, *ex post*, intermediate savings, to distinguish it from its 'narrow' incarnation, where the credit flow originates from the savings/deposits intermediated by banks. However, as we will make clear in the remainder of this section, Keynes spotted that this 'flexible' loanable-funds approach suffers from a theoretical ambiguity, stemming from the presence of a sort of *noumenon* – the saving schedule – that ultimately appears to determine the quantity of credit supplied by banks.

2. Ohlin (1937b, p. 221) 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.' He later refers to the Wicksell notion of the natural interest rate 'corresponding to the marginal productivity of capital or of round-about methods of production in some

One cannot avoid finding – and possibly Keynes felt the same – a ‘Keynesian’ flavor in some of Ohlin’s arguments. Let us express this feeling in these terms: it is net investment, financed *ex ante* by newly created money, that *ex post* generates saving. In a letter to Ohlin, Keynes (1973, p. 184) 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 into this passage. It is one thing, in fact, to claim that saving and investment decisions are taken by unrelated agents, as Wicksell would concede; and another to claim that investment is independent of full-employment saving,³ which Wicksell does not acknowledge, since in his view they are brought in equilibrium by the natural interest rate (see, for example, Garegnani 1983, pp. 42–47).⁴

After reading Ohlin, Keynes certainly realized that, on the one hand, in *The General Theory* an important part of the story was not given enough relevance, namely investment financing (Keynes 1937c [1973], pp. 215–216) and the related role of banks (Moore 1988, p. 199; Rochon 1997, pp. 282 and 284). On the other hand, he possibly feared that such an important issue could rehabilitate, possibly disguised as flexible loanable-funds theory, the Marginalist determination of the interest rate ultimately based on the demand and supply of saving. This would have undermined the independent role of effective demand in the determination of output.⁵

Bohm-Bawerkian sense’ (ibid., p. 223). He is critical of this concept, which we instead assume as a 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.

3. We intend, here, savings forthcoming from the full employment of production factors. Contrary to the opinion, for example, of Servaas Storm (2020, p. 94), which is based on Keynes’s view (Keynes 1936 [1973], pp. 179–180) that there are many saving supply schedules, each for each level of real income, ‘the full-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, emphasis in the original) demonstrated.

4. Two well-known Wicksellian economists, Borio and Disyatat (2011, p. 7; 2015, pp. 10–11), maintain that banks finance investment by creating money, and that savings 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. Ohlin is not equally explicit, but Keynes perhaps suspected that a similar direction could be taken, thus bringing the novelty of *The General Theory* – that it is investment that determines savings – back into a traditional framework we named above the ‘flexible loanable-funds theory.’ This may be shown by Keynes’s attempt to relegate the ‘finance motive’ within the defensive straitjackets of liquidity-preference theory, as shown below.

5. That banks can create money is an idea Keynes shared for a long time. 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’ (Robertson 1922, pp. 75 and 79, emphasis in the original). The ‘invisible and unconscious ties’ that link *ex ante* credit to *ex post* saving will later become visible with the income multiplier (but in the meantime Robertson moved away from the innovative path he had set with Keynes). After Wicksell (1935 [1978], p. 194), the almost unbound possibility of banks to create loans was also proper to the Scandinavian tradition. The *Treatise* embraced this idea (see Keynes 1930 [1973], p. 25) and that of the exogeneity of the monetary interest rate as set by the central bank (with the intention of approximating the natural rate). Later, Keynes abandoned this scheme as incompatible with the possibility of equilibria with unemployment. Having accepted a demand curve for investment

Keynes quickly took advantage of a major ambiguity in Ohlin's approach. On the one hand, the latter pointed to the banking system's capacity to create *ex nihilo* credit-money. On the other hand, it echoed a standard loanable-funds theory in which the supply of credit depends ultimately on the supply of savings. Hence, Keynes denounced that behind Ohlin's *ex ante* credit demand and supply schedules, the traditional theory's *saving* supply and demand scheme 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. 224–225)

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 actuality 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 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 1937a [1973], pp. 205–206, emphasis in the original)

A simple figure may help to fix our ideas (Figure 1). 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

with negative elasticity with respect to the interest rate, those equilibria required rigidity in the interest rate. Although Ohlin had raised interesting issues, Keynes may have feared a possible return to the Wicksellian scheme of the *Treatise*. To be sure, in *The General Theory* Keynes also speaks of the net creation of credit by banks in favor of additional investment, but only in order to criticize the 'new-fangled view' that this 'allows investment to take place to which "no genuine saving" corresponds' (Keynes 1936 [1973], pp. 82–83). The multiplication process will in fact ensure the formation of the corresponding net savings.

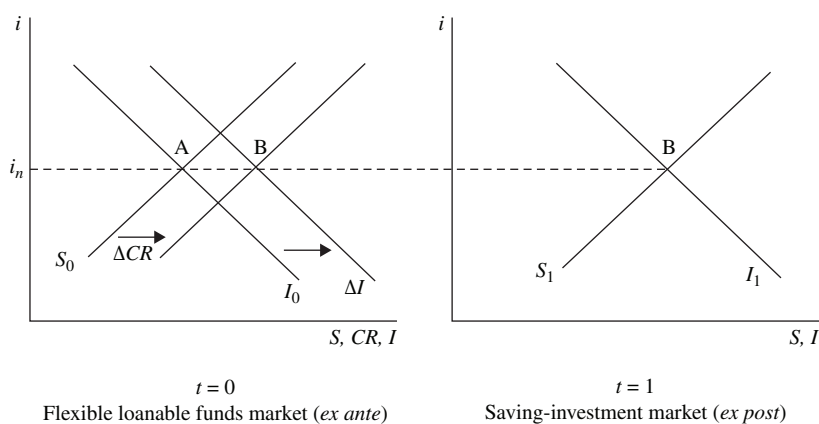


Figure 1 Flexible funds theory

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 $S_1 = S_0 + \Delta CR$.

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 the central bank, fixes the interest rate at the natural level (as shown in Figure 1), then the demand and supply of bank credit is nothing more than an *ex ante* manifestation of the balance between full-employment savings and investment, which, however, only shows itself *ex post*.

We may thus appreciate Keynes's preoccupation with not only having missed an important aspect of his 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-funds doctrine.⁶

The most obvious defense strategy for Keynes was to incorporate bank financing of investments, which he called the 'finance motive,' into the theory of liquidity preference. The 'finance motive' ('finance' for short) thus became the fourth reason why liquidity is demanded. Keynes's 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

6. We found an antecedent to our interpretation in Bailly (1992, pp. 110–112), who expressed 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' (our translation).

of the interest rate for ‘finance’ would instead encounter the same rigidities highlighted in *The General Theory* to the setting of a full-employment 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.

3 FINANCE: ONE STEP FORWARD, TWO STEPS BACK

Keynes calls ‘finance’ the ‘advance provision of cash ... required by the current decisions to invest’ (Keynes 1937a [1973], 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’ (ibid., p. 207, emphasis in the original). 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 banks’ financing only (as does Keynes 1937b [1973], p. 219).⁷ 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 1937a [1973], pp. 208–209)

Partially incidentally, Keynes also makes an important distinction between ‘short-term finance during the period of producing the investment’ (1937b [1973d], 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. 14–15), let us call short-term finance ‘initial finance,’ and long-term funding ‘final finance.’⁸ We shall return to this distinction later.

Having said this, 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 broadening the scope of application of the concept of finance, to include the support of the *production* of both investment and consumption goods – rather than of investment spending. Demand for ‘finance’ is thus associated with activity levels rather than investment (Keynes 1938 [1973], p. 233). Accordingly, investment finance is ‘only a special case of the finance required by any productive process’ (Keynes 1937a [1973c], p. 208). Keynes presumably regards production decisions either of capital or of consumption

7. For Keynes investment may also be financed by the issuing of new bonds (Keynes 1937a [1973], p. 208). Rochon (1997, p. 284) is critical of this view since it recalls the traditional argument of finance as the gathering of existing savings: ‘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.’

8. In the spirit of Keynes’s concept of finance, in this paper we argue that investment is *financed ex ante* by credit creation, and *ex post funded* by saving. In between, the Keynesian multiplier explains how saving adjusts to investment. An objection can be raised that investment is always equal to saving, implying that the Keynesian multiplier process is not really relevant to bring about this equality. This is correct as far as it goes. We defer to Dalziel (1996a, p. 117), who shows that, although true moment-by-moment in an accounting sense, the final equilibrium between saving and investment is realized only once the multiplier process is exhausted.

goods as taken in advance based on orders or of expected demand.⁹ ‘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 1937b [1973], p. 219). Nonetheless, as can also be noted from the last quotations, most of the time Keynes focuses upon investment and not general production, which is not surprising given the centrality of investment in Keynes, and, in fact, in any theory of demand-determined 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 1937a [1973], p. 209; 1937b [1973], p. 219). Only if investment or production are increasing, ‘extra finance involved will constitute an additional demand for money’ (Keynes 1937a [1973], p. 209).¹⁰

Finally, finance was included, as said, in the liquidity-preference theory as a fourth, additional motive to demand money. In this way, Keynes intended to isolate his notion of finance from the alternative Ohlin–Robertson flexible version of the loanable-funds 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 1937a [1973], p. 210)

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

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 1937b [1973d], p. 222).¹¹

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

9. On production to order and production in advance, see Casaburi and Minerva (2011).

10. Keynes even seems dismissive about the nature of finance as loans indicating that the terms 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 1938 [1973], p. 229, emphasis in the original).

11. Borio and Disyatat (see footnote 4) express themselves in striking similar terms: ‘In *ex post* terms, being simply the *outcome* of various forms of expenditure, saving does not represent the constraint on how much agents are able to spend *ex ante*. The true constraint on expenditures is *not saving, but financing*. ... And it is only once expenditures take place that income, investment, and hence saving, are generated’ (Borio and Disyatat 2011, p. 7, emphases added).

case of overdraft facilities, since in this case, banks' loans 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 1937b [1973], 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 of full employment can be seen as a defensive move, but a short-sighted one, for two reasons (for which we refer to Garegnani 1983).

To begin with, the myopic behavior of monetary authorities or the interest-rate rigidities cannot be considered lasting circumstances.¹² Second, as Wicksell's celebrated analysis of economic fluctuations had shown, traditional loanable-funds theory (flexible or not) also relied on monetary policy mistakes, or 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's finance). Criticism of traditional theory in the field of monetary theory is doomed 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 1973, p. 80), traditional theory, or at least its Wicksellian component, developed a monetary theory of the interest rate – albeit with the 'real' natural interest rate in the background, as a *noumenon*. As much as Keynes's own, this theory attributed the existence of disequilibrium to monetary policy errors.¹³

4 KEYNES'S LIMITS AND RESCUE

To sum up, the concept of finance is placed by Keynes within the liquidity-preference theory as a defense from the threat of the flexible loanable-funds theory. In this way, except for overdraft loan contracts, banks' flexibility to meet the demand for finance at

12. 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 (see Deleidi and Levrero 2021 for an updated evaluation of central banks' power to influence the interest-rate curve). Robertson criticizes Keynes's interest-rate theory as being too self-referential. 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 to a major influence from Sraffa on his review to *The 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 of 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.

13. Keynes more than Wicksell remained in the precincts of the quantitative theory of money (Moore 1988, pp. 172–176; Rochon 1997, p. 279). Rather than short-sightedness, the search for monetary policy rigidities held Keynes in those confines.

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's 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. Luckily, analytical criticism of the traditional investment demand curve is possible after Sraffa (1960) and Garegnani (1960). It is paradoxical that, in order to protect some of the most innovative parts of *The General Theory* (the reversal of traditional causality between savings and investment), Keynes relied on a monetary determination of the interest rate based on the liquidity-preference theory and related rigidities such as the liquidity trap. In fact, this (failed) defensive strategy impeded the development of true innovations in the monetary field, concerning endogenous money financing of investment and the central bank's control on the interest rate.

On closer inspection, if Keynes had thoroughly accepted:

1. the idea that the banking system has the power to satisfy the demand for credit endogenously – as he admitted in the case of overdrafts – and that
2. little would impede the central bank to pilot interest rates so as to drive banks' lending rates to the natural interest rate, thus leading 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 inserts it into the theory of preference for liquidity, in which the elasticity of the money supply and the interest rate are supposedly rigid.

In this regard, and in view of enhancing the conversation between 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's defense strategy:

Keynes appeared to be resting his case for a less than full employment equilibrium not 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.¹⁴

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.

14. See footnote 12 above.

It is the very concept of the natural interest rate that can thus be demolished. The result is twofold. On the one hand, the way is open to the exogenous monetary determination of the interest rate as 'ultimately subject to the policy of the monetary authorities' (Garegnani 1983, p. 63).¹⁵ On the other hand, the direction is open for a full use of the concept of finance, thus of the endogenous money theory, as a source of investment financing (now fully autonomous from the supply of savings and the natural rate) without the fear of being captured by the flexible version of the theory of loanable funds. Both aspects appear as the main tenets of Post-Keynesian monetary analysis (Lavoie 2020).

Freed from the shackles of Marginalist theory, Keynes's notion of finance can be developed, and this is what Post-Keynesian analysis has done through the notion of endogenous money. In contrast to the original 'Verticalist' version of money advanced by Keynes, modern Post-Keynesians propose a Horizontalist version that is also by now accepted by many central-bank economists and even by mainstream economists (Deutsche Bundesbank 2013; McLeay et al. 2014; Jakab and 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 on the monetary side on which it has recently eventually converged with Post-Keynesian monetary theory (for example, Bindseil and König 2013).¹⁶ According to the Horizontalist view, banks create banks' money by the 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 prescribed '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 the interest rate as the intermediate target of monetary policy.¹⁷

Over the next pages, we shall discuss how to insert the concept of finance into a Post-Keynesian macroeconomic model. In this context, we shall later deal with the residual role of the liquidity-preference theory.

15. Garegnani refers here to pages in which Keynes paves the way in this direction, where, for example, he talks about the effects on the rate of interest considered normal as a result of 'a modest pressure of persistence and consistency of purpose by the monetary authorities' (Keynes 1936, p. 204). Rochon (1997, pp. 288–289) shows that in Keynes's last years the great economist progressively freed himself from the monetary model of *The General Theory*, giving the monetary authorities full capacity to fix the interest rate.

16. The fact that the *critique* of Marginalism revolves around its real aspects is not to be confused with a diminution of the *positive* and central importance of the monetary side of Post-Keynesian accumulation theory. In other words, in spite of some convergence on endogenous money theory between some mainstream and Post-Keynesian economists, the former apply the correct monetary approach to the wrong real model, while the second magnify the relevance of endogenous money creation in relation to demand-led growth.

17. 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. A balanced assessment of the debate between 'Horizontalists' and 'Structuralists' that engaged Post-Keynesian economists in the 1990s is provided by Lavoie (1996). He concludes that 'these disagreements are mainly the result of differences in emphasis' (*ibid.*, p. 296) See also Deleidi (2020) for a recent discussion.

5 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 the monetary circuit theory; the second, still mostly potential approach, is the monetary demand-led theory of output and growth based on the supermultiplier model (for example, Freitas and Serrano 2015; Cesaratto 2015).

5.1 Initial and final finance in the monetary circuit

Although critical especially of its basic formulation by Augusto Graziani, we find in the monetary circuit two sources of inspiration for an integration of Post-Keynesian monetary theory and Sraffian insights into the theory of capital accumulation: the idea that the economic circuit begins with money creation and ends with money destruction; and the related concepts of initial and final finance (funding), which also evoke a life-cycle of endogenous money.

Among a vast literature, we shall recall here two well-known versions of the monetary circuit (Rochon 1999, p. 8), the first by Augusto Graziani and the second by Parguez and Seccareccia (2000). Marc Lavoie (1999) provides a summary of the former approach. In this basic 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, emphasis in the original). Deposits are employed 'to pay wages and other costs' and therefore transferred to households which either consume or save them (*ibid.*, emphasis added). The part 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, emphasis in the original)

This short summary of Graziani–Lavoie's monetary circuit raises more than one perplexity (Cesaratto 2022). We set aside the *vexata quaestio* of where profits are realized in the circuit, given that aggregate demand consists only 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 explicit role (Bertocco 2005, pp. 495–496); the model is, to say the least, a-Keynesian.
2. Savings are not explicitly presented as the result of investment decisions and of income multiplier; in fact, the role of investment (or of autonomous demand) is not specified. Rather than at a 'monetary theory of production,' we should aim at a monetary theory of demand-led output levels.
3. Firms issue securities to collect workers' savings and redeem the residual initial finance to banks (see the last quotation from Lavoie); 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.¹⁸

4. Given the short-period equilibrium reached in point 3, it is not clear where the economy will tend in the longer run.¹⁹

While Keynes's theory of effective demand does not play an explicit role in Graziani's version of the monetary circuit, this role is analysed more in detail 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 banks' 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 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:

[T]he 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 (ibid.).

Finally, 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 'initial finance' which concerns both the production and demand of new plants, a point that requires further clarification. As suggested in the next section, insights from Davidson (1986) and Dalziel (1996a) permit the concepts of initial and final finance – but also of *production financing* versus *final demand financing* – that Monetary Circuitists have derived from Keynes's post-*General Theory* papers to be further elucidated and consolidated.

18. Robertson was critical of a similar proposition that could be found in Keynes's *Treatise* (see Cesaratto 2016a). 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?'. See also Cesaratto and Di Bucchianico (2020).

19. Two references to Davidson (1986) and Dalziel (1996a) 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 are their stories 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 2020; and in Section 4.2 below).

5.2 Toward a monetary demand-led theory of output

Davidson (1986) is an inspiring attempt to combine the two pairs, 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 sounds correct in a Keynesian effective-demand context. While traditionally Keynesian economists have implicitly assumed that banks finance the investing firm (demand or spending financing),²⁰ Davidson welcomes Keynes's (and Circuitists') suggestion that banks support the production-to-order costs of the manufacturer of the investment good (initial finance). Leaving some details aside – 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 that issues securities. This final finance funds the purchase of the investment good long-term. Once the payment has been received, the equipment producer returns the short-term debt to the bank (reflux), thus closing a circuit that begins with the issue of money and ends with its destruction (see Wray 1991, pp. 957–958, for a similar view).

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 as supporting current production decisions rather than final demand. We in fact believe that a monetary theory of aggregate demand is not inconsistent with finance sustaining production rather than demand, as long as production decisions are explained by expected demand and orders, and not taken in a vacuum or on the basis of unexplained expectations.²¹

Dalziel (1996a) does not consider the distinction between initial financing of, respectively, production or spending, but moves with the traditional assumption that, initially, finance supports investment spending. He distinguishes, however, between initial and final finance. Figure 2, taken from Dalziel (1996b, p. 229) is a simple representation of Davidson's story.

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

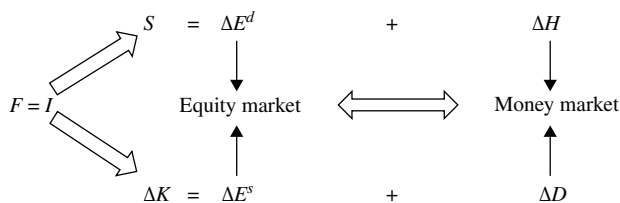


Figure 2 Initial and final finance in the Keynesian model with money flows

20. As we have seen, this is the same hypothesis made by Parguez and Seccareccia (2000).

21. Unfortunately, the coordination of financing of production versus financing of aggregate demand components is still rather neglected by the Post-Keynesian literature. Besides Davidson (1986), the exception is Cesaratto (2017); see also Toporowski (2020).

fund (or final finance) investment 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 (2020) extend this analysis to the autonomous components of demand in a supermultiplier framework, which can be considered as a promising way of embodying Keynes's notion of finance in a Post-Keynesian growth model.

5.3 Endogenous money and the supermultiplier

Models are a tool to help our explanation of a complex real world, and not an aim in themselves. In this regard we believe that the supermultiplier model – named 'Sraffian' by Franklin Serrano given its consistency with some of the main tenets of the classical surplus approach (Serrano and Freitas 2017) – provides a useful mental framework to think of demand-led growth in capitalist economies.²²

According to the model, in the long run the growth rates of GDP, productive capacity and demand are determined by the growth rate of non-capacity-creating autonomous expenditures (Serrano 1995), identified as those demand components that are (i) not financed by the income generated by production decisions; (ii) not systematically related to production; and (iii) not capable of affecting the productive capacity of the economy. The relative literature has explored different sources of autonomous demand. The original formulation emphasized autonomous consumption (*ibid.*). Recent studies investigate the sustainability of debt- (or wealth-) financed autonomous consumption (Pariboni 2016; Fiebiger and Lavoie 2019; Vieira Mandarino et al. 2020). Allain (2015) and Hein (2018) show that growth can be led by public expenditures, while preserving the long-term sustainability of public finance. Nah and Lavoie (2017) explore the stability conditions of export-led growth, while Freitas and Christianes (2020) and Hein and Woodgate (2021) study the interaction between autonomous consumption, government expenditures, and income distribution. The induced components of demand, on the other hand, contribute to determine the magnitude of the supermultiplier, which allows us to account for the indirect effects of autonomous expenditures on output through consumption and investment (and import, in the open-economy versions).

On the one hand, the supermultiplier allows the overcoming of some serious deficiencies of former heterodox growth models, such as the Cambridge equation and the

22. While investment is an autonomous component of aggregate demand in the short period, given productive capacity, according to the supermultiplier analysis, 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 (Serrano 1995). In recent years, starting from Allain (2015) and Lavoie (2016), autonomous demand-led growth models have become increasingly popular among authors belonging to the neo-Kaleckian tradition as well (see, for example, Nah and Lavoie 2017; 2019; Hein 2018; Allain 2019; Fiebiger and Lavoie 2019; Hein and Woodgate 2021) and, more generally, within the Post-Keynesian community (see, among others, Dutt 2019; Palley 2019; Fazzari et al. 2020).

Neo-Kaleckian models²³ (Cesaratto 2015; Serrano and Freitas 2017); on the other hand it picks up some Kaleckian (as well as Rosa Luxemburg's) insights into the role of 'external markets' to solve the problem of the realization of the social surplus that afflicts capitalist economies (Kalecki 1967). The autonomous components of aggregate demand, which in the supermultiplier model drive growth and coincide with Kalecki–Luxemburg's external markets, can be financed by purchasing power creation by banks, by accumulated wealth or foreign income.²⁴ This is true for autonomous consumption financed by consumer credit, for State spending, ultimately financed by the central bank (Nersisyan and Wray 2016), and for exports. Moreover, although the formal stability of growth models is a relevant issue (see Serrano and Freitas 2017), we tend to look at the supermultiplier framework not in steady-state terms but as a premise for the investigation of the instability of capitalism. By definition, external markets are fueled by debt creation, and the seeds of financial fragility and crisis can be traced here.²⁵ Regional patterns of autonomous-demand growth, debt, and crisis need to be studied in historical time (Morlin et al. 2021).

While we defer to other contributions for a more detailed analysis of the financial aspects of autonomous spending (Pariboni 2016; Cesaratto 2016b, 2017; Cesaratto and Di Bucchianico 2020; Vieira Mandarino et al. 2020), we underline here the integration in the supermultiplier approach of some of the original inspiring principles of the monetary circuit: that everything starts with money creation and ends with money destruction, and the related concepts of initial and final finance. As previously hinted at, we in fact believe that the supermultiplier provides a framework that allows a smooth and proper incorporation of Keynes's finance into the domain of Post-Keynesian growth theory. This incorporation is in fact not limited to investment, as in former Post-Keynesian models, but extended to other components of aggregate demand. More specifically, the supermultiplier emphasis on autonomous demand puts under the spotlight the purchasing power creation of banks, as a necessary prerequisite for growth. At the same time, the explicit distinction between autonomous and induced demand, and the inclusion of productive investment in the latter category, makes explicit which part of demand drives growth (non-capacity-creating autonomous spending) and which one follows it, either because it is funded by 'contractual income generated by production decisions in the circular flow of income' (Serrano et al. 2021, p. 5) as in the case of induced consumption, or because – even if credit-financed – it is strictly linked to the production requirements through the capital stock adjustment principle, as is the case for investment.

23. Indeed, in the supermultiplier there is no necessary relation between the economy's rate of growth and income distribution, contrary to what is postulated by the Cambridge equation model, where higher growth leads to redistribution in favor of profits. The supermultiplier also allows the overcoming of the most controversial issue related to the Neo-Kaleckian model, namely the divergence in equilibrium between the actual and the normal degree of capacity utilization (see Girardi and Pariboni 2019 for an extended discussion).

24. Obviously, productive investment can also be financed by endogenous credit-money, as autonomous demand, but it differs from the latter inasmuch as it still depends on the evolution of demand and it is systematically related to the production requirements. The case of investment financed out of accumulated financial wealth is dealt with in Cesaratto and Di Bucchianico (2020, p. 7).

25. An attempt to associate Luxemburg–Kalecki's external markets and the monetary circuit is made by Bellofiore and Passarella (2009). A connection between endogenous money creation and autonomous spending is, however, still missing in this paper.

6 IMPLICATIONS FOR LIQUIDITY-PREFERENCE THEORY

In the previous section we touched on the issue of the residual relevance, if any, of the liquidity-preference theory after endogenous-money theory. Figure 2 above shows that the initial creation of bank money to support an investment expenditure is followed by a double decision. In the upper part of the figure, savers allocated savings in a certain proportion between securities and hoarding (deposits); in the lower part, investors collect funding (final finance) issuing securities or relying on banks' long-term loans in another proportion. What makes these double choices consistent? After Howells (1997, p. 429), we may call it the 'reconciliation problem.'²⁶ The question sparked some controversy that also has implications for the fate of liquidity-preference theory after endogenous-money theory.

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 percent 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) (echoing Victoria Chick and Allin Cottrell) is that those who hold debts with the banking system (for example, businesses) do not necessarily coincide with those who allocate savings (for example, 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 'windfall 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).²⁷ Howells's objection is that convenience lending is only plausible as a 'staging post,' until people decide the final savings allocation.

26. Actually, Howells's 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 created deposit is a portfolio decision. Furthermore, it is a decision made by different people ... from those concerned with borrowing' (Howells 1995, p. 92).

27. 'Whenever spending units borrow from a bank to finance their deficit expenditures, a concurrent increase 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 in investment spending involves a concurrent increase in convenience saving Total savings and investment are continuously equated ex-post ... [as] convenience lending to the banking system as bank deposits rise with increases in bank advances' (Moore 1988, p. 314).

Howells (1995) and Arestis and Howells (1996) suggest that part of the new deposits (savings), in excess of liquidity preference, shall be used to purchase securities.²⁸ 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. Second, 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.²⁹ In short, both the demand and supply of securities are likely to rise, leading to a new 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 the opposite of Arestis and Howells's, 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, pp. 108–110), investing firms fund investment (final finance), issuing new securities (see Section 5.2 above). 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, while in Davidson they are offered an excess of securities, so the balance between the asset allocation of the 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? Palley (2017) says yes: in a context of multiple interest rates, 'the long-term bond rate is endogenous and determined by money supply as money demand conditions' and money demand is affected by 'the state of liquidity preference' (*ibid.*, p. 14). Palley also argues that liquidity preference should be considered an important divide between Structuralists, who embrace this feature of Keynesian monetary theory, and (early) Horizontalists,³⁰ who – according to Palley – would reject it, leading in this way to the exogeneity of long-term interest rates.

Also, Lavoie highlights the relationship between liquidity preference and the term structure of interest rates (Lavoie 1996, pp. 293–294). He quotes in this regard Dow and Dow (1989, pp. 148–149), who point 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

28. Part of liquidity is anyway absorbed by the higher transaction demand for money due to the greater income.

29. 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 for securities, which are later sold to the public to satisfy their liquidity preference (Chick and Dow 2002, pp. 591–592).

30. Later Horizontalists – to use Palley's terminology – would, by contrast, accept liquidity-preference theory.

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.

Interestingly, Dow and Dow 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 as to argue (relying on Kregel) that it ‘is in this sense that liquidity preference and the theory of 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. 290–292, 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.³¹

One final question is whether the role of liquidity preference in determining the practical structure of 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 a 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 believes that it is not so; that is, monetary authorities maintain the power to influence longer-term interest rates. Quoting Joan Robinson, he writes (*ibid.*, p. 295) that

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 the policy choices of the central bank. In summation, he writes (*ibid.*):

[T]he 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.

31. As to the psychological waves of optimism and pessimism, D.H. Robertson (1915 [1948], 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 falls to the ground.’ In spite of the intimacy with 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 (see Marcuzzo 2021).

In this way, one may conclude, a role is left for liquidity preference without falling back on Keynes's self-referential determination of the 'normal' interest rate.³²

7 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, Keynes introduced the innovative concept of 'finance.' In actuality, however, he 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-funds theory, which Keynes (correctly) judged to be old wine in new bottles and from which he already escaped after flirting with it in his *Treatise*. He was thus led to include the notion of finance within the liquidity-preference theory – itself part of a defensive strategy, with its self-referential notion of the normal interest rate and residuals of the (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), along with Garegnani (1983), did not miss the decisive role of the outcomes of the capital theory controversy to get out of this stalemate. These outcomes allow the elimination of the Marginalist demand curve for investment and the very notion of the natural interest rate and free monetary theory by these theoretical chains. Unfortunately, these results were not available to Keynes.

Although critical of Graziani's (a-Keynesian) monetary circuit theory – but more sympathetic to Parguez and Seccareccia's version – the article recovers some fundamental insights from these approaches underlying, in particular, the central role of initial and final finance in a monetary, demand-led theory of output. In this regard,

32. Bertocco (2005, pp. 502–503 and 509) proposes a similar double-stage view: '[W]e 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. ... [W]e 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').

we share the same spirit as 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' (ibid.). 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), Wray (1991), and Dalziel (1996a), initial financing of investment and autonomous demand is instead transformed into final finance (or funding), that is, the long-term debt between the parties remains and can be a source of cyclical debt crises.³³ 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 Luxemburg–Kalecki external markets (Cesaratto 2015; Pérez-Montiel and 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 to be 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.

ACKNOWLEDGMENTS

We are grateful to the editors and two anonymous referees for comments which helped us to clarify the exposition. We also thank Giancarlo Bertocco, participants at the 18th STOREP Annual Conference and in the 2021 International Workshop on Demand-Led Growth. The usual disclaimer applies.

REFERENCES

- Allain, O. (2015), 'Tackling the instability of growth: a Kaleckian–Harrodian model with an autonomous expenditure component,' *Cambridge Journal of Economics*, 39(5), 1351–1371.
- Allain, O. (2019), 'Demographic growth, Harrodian (in)stability and the supermultiplier,' *Cambridge Journal of Economics*, 43(1), 85–106.
- Arestis, P. and P. Howells (1996), 'Theoretical reflections on endogenous money: the problem with "convenience lending",' *Cambridge Journal of Economics*, 20(5), 539–551.
- Bailly, J.L. (1992), 'Nouvelles considerations sur le motif de "finance" de John Maynard Keynes,' *Economie Appliquee*, 65(1), 105–127.
- Bellofiore, R. and M. Passarella (2009), 'Finance and the realization problem in Rosa Luxemburg: a "Circuitist" reappraisal,' in J.F. Ponsot and S. Rossi (eds), *The Political Economy of Monetary Circuits*, London: Palgrave Macmillan, pp. 98–115.

33. 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.

- Bertocco, G. (2005), 'The role of credit in a Keynesian monetary economy,' *Review of Political Economy*, 17(4), 489–512.
- Bindseil, U. (2004), 'The operational target of monetary policy and the rise and fall of reserve position doctrine,' European Central Bank Working Paper Series No 372.
- Bindseil, U. and P.J. König (2013), 'Basil J. Moore's Horizontalists and Verticalists: an appraisal 25 years later,' *Review of Keynesian Economics*, 1(4), 383–390.
- Borio, C. and P. Disyatat (2011), 'Global imbalances and the financial crisis: link or no link?,' BIS Working Paper No 346.
- Borio, C. and P. Disyatat (2015), 'Capital flows and the current account: taking financing (more) seriously,' BIS Working Paper No 525.
- Casaburi, L. and G.A. Minerva (2011), 'Production in advance versus production to order: the role of downstream spatial clustering and product differentiation,' *Journal of Urban Economics*, 70(1), 32–46.
- Cesaratto, S. (2015), 'Neo-Kaleckian and Sraffian controversies on the theory of accumulation,' *Review of Political Economy*, 27(2), 154–182.
- Cesaratto, S. (2016a), 'When Robertson was Keynesian and Keynes Robertsonian: a discussion between D.H.R. and J.M.K. in the early 1930s and the problems with the monetary circuit theory – a note,' DEPS Working Paper No 732.
- Cesaratto, S. (2016b), 'The state spends first: logic, facts, fictions, open questions,' *Journal of Post Keynesian Economics*, 39(1), 44–71.
- Cesaratto, S. (2017), 'Initial and final finance in the monetary circuit and the theory of effective demand,' *Metroeconomica*, 68(2), 228–258.
- Cesaratto, S. (2022), Review of Lavoie (2020), *Contributions to Political Economy*, 41(June), advance access, available at: <https://academic.oup.com/cpe/advance-article-abstract/doi/10.1093/cpe/bzac017/6575475>.
- Cesaratto, S. and S. Di Bucchianico (2020), 'Endogenous money and the theory of long-period effective demand,' *Bulletin of Political Economy*, 14(1), 1–38.
- Chick, V. and S. Dow (2002), 'Monetary policy with endogenous money and liquidity preference: a nondualistic treatment,' *Journal of Post Keynesian Economics*, 24(4), 587–607.
- Dalziel, P. (1996a), 'The Keynesian multiplier, liquidity preference, and endogenous money,' *Journal of Post Keynesian Economics*, 18(3), 311–331.
- Dalziel, P. (1996b), 'The relevance of the Keynesian multiplier process after sixty years,' *History of Economics Review*, 25(1), 221–231.
- Davidson, P. (1986), 'Finance, funding, saving, and investment,' *Journal of Post Keynesian Economics*, 9(1), 101–110.
- Deleidi, M. (2020), 'Post-Keynesian endogenous money theory: horizontalists, structuralists and the paradox of illiquidity,' *Metroeconomica*, 71(1), 156–175.
- Deleidi, M. and E.S. Levrero (2019), 'The money creation process: a theoretical and empirical analysis for the United States,' *Metroeconomica*, 70(4), 552–586.
- Deleidi, M. and E.S. Levrero (2021), 'Monetary policy and long-term interest rates: evidence from the U.S. economy,' *Metroeconomica*, 72(1), 121–147.
- Deutsche Bundesbank (2013), 'The role of banks, non-banks and the central bank in the money creation process,' Monthly Report, April, No 13.
- Disyatat, P. (2008), 'Monetary policy implementation: misconceptions and their consequences,' BIS Working Paper No 269.
- Dow, A.C. and S.C. Dow (1989), 'Endogenous money creation and idle balances,' in J. Pheby (ed.), *New Directions in Post Keynesian Economics*, Aldershot, UK and Brookfield, VT: Edward Elgar Publishing, pp. 219–250.
- Dutt, A.K. (2019), 'Some observations on models of growth and distribution with autonomous demand growth,' *Metroeconomica*, 70(2), 288–301.
- Fazzari, S.M., P. Ferri, and A.M. Variato (2020), 'Demand-led growth and accommodating supply,' *Cambridge Journal of Economics*, 44(3), 583–605.
- Fiebigger, B. and M. Lavoie (2019), 'Trend and business cycles with *external markets*: non-capacity generating semi-autonomous expenditures and effective demand,' *Metroeconomica*, 70(2), 247–262.

- Freitas, F. and R. Christianes (2020), 'A baseline supermultiplier model for the analysis of fiscal policy and government debt,' *Review of Keynesian Economics*, 8(3), 313–338.
- Freitas F. and F. Serrano (2015), 'Growth rate and level effects, the adjustment of capacity to demand and the Sraffian supermultiplier,' *Review of Political Economy*, 27(3), 258–281.
- Fullwiler, S.T. (2017), 'Modern central bank operations: the general principles,' in L.-P. Rochon and S. Rossi (eds), *Advances in Endogenous Money Analysis*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing, pp. 50–87.
- Garegnani, P. (1960), *Il capitale nelle teorie della distribuzione*, Milano: Giuffrè.
- Garegnani, P. (1983), 'Notes on consumption, investment and effective demand,' in J. Eatwell and M. Milgate (eds), *Keynes's Economics and the Theory of Value and Distribution*, London: Duckworth, pp. 21–69.
- Girardi, D. and R. Pariboni (2019), 'Normal utilization as the adjusting variable in Neo-Kaleckian growth models: a critique,' *Metroeconomica*, 70(2), 341–358.
- Graziani, A. (1990), 'The theory of the monetary circuit,' *Économies et Sociétés*, 24(6), 7–36.
- Hein, E. (2018), 'Autonomous government expenditure growth, deficits, debt, and distribution in a neo-Kaleckian growth model,' *Journal of Post Keynesian Economics*, 41(2), 316–338.
- Hein, E. and R. Woodgate (2021), 'Stability issues in Kaleckian models driven by autonomous demand growth: Harrodian instability and debt dynamics,' *Metroeconomica*, 72(2), 388–404.
- Howells, G.A. (1995), 'The demand for endogenous money,' *Journal of Post Keynesian Economics*, 18(1), 89–106.
- Howells, G.A. (1997), 'The demand for endogenous money: a rejoinder,' *Journal of Post Keynesian Economics*, 19(3), 431–435.
- Jakab, Z. and M. Kumhof (2015), 'Banks are not intermediaries of loanable funds – and why this matters,' Bank of England Working Paper No 529.
- Kaldor, N. and J. Trevithick (1981), 'A Keynesian perspective on money,' *Lloyds Bank Review*, 108(January), 1–19.
- Kalecki, M. (1967), 'The problem of effective demand with Tugan-Baranowski and Rosa Luxemburg,' in M. Kalecki, *Selected Essays on the Dynamics of the Capitalist Economy 1933–1970*, Cambridge, UK: Cambridge University Press, pp. 146–155.
- Keynes, J.M. (1930 [1973]), *A Treatise on Money*, in J.M. Keynes, *The Collected Writings*, vols V and VI, London: Macmillan.
- Keynes, J.M. (1936 [1973]), *The General Theory of Employment, Interest, and Money*, in J.M. Keynes, *The Collected Writings*, vol. VII, London: Macmillan.
- Keynes, J.M. (1937a [1973]), 'Alternative theories of the rate of interest,' *The Economic Journal* (June), in J.M. Keynes (1973), pp. 201–215.
- Keynes, J.M. (1937b [1973]), 'The "ex ante" theory of the rate of interest,' *The Economic Journal* (December), in J.M. Keynes (1973), pp. 215–223.
- Keynes, J.M. (1937c [1973]), 'Ex post and ex ante, lecture notes,' in J.M. Keynes (1973), pp. 179–183.
- Keynes, J.M. (1938 [1973]), 'Comment on Mr. Keynes and "finance",' *The Economic Journal* (June), in J.M. Keynes (1973), pp. 229–233.
- Keynes, J.M. (1973), *The Collected Writings*, vol. XIV, part II, London: Macmillan.
- Lavoie, M. (1996), 'Horizontalism, structuralism, liquidity preference and the principle of increasing risk,' *Scottish Journal of Political Economy*, 43(3), 275–300.
- Lavoie, M. (1999), 'The credit-led supply of deposits and the demand for money: Kaldor's *Reflux Mechanism* as previously endorsed by Joan Robinson,' *Cambridge Journal of Economics*, 23(1), 103–113.
- Lavoie, M. (2016), 'Convergence towards the normal rate of capacity utilization in Neo-Kaleckian models: the role of non-capacity creating autonomous expenditures,' *Metroeconomica*, 67(1), 172–201.
- Lavoie, M. (2020), *Post-Keynesian Monetary Theory: Selected Essays*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing.
- Marcuzzo, M.C. (2021), 'Krishna Bharadwaj on expectations in economics,' Paper Presented at the 2021 Storep Annual Conference.

- McLeay, M., A. Radia, and R. Thomas (2014), 'Money creation in the modern economy,' Bank of England Quarterly Bulletin No 2014 Q1.
- Moore, B.J. (1988), *Horizontalists and Verticalists: The Macroeconomics of Credit Money*, Cambridge, UK: Cambridge University Press.
- Morlin, G., N. Passos, and R. Pariboni (2021), 'Growth theory and the growth model perspective: insights from the supermultiplier,' DEPS Working Paper No 869.
- Nah, W.J. and M. Lavoie (2017), 'Long-run convergence in a neo-Kaleckian open-economy model with autonomous export growth,' *Journal of Post Keynesian Economics*, 40(2), 223–238.
- Nah, W.J. and M. Lavoie (2019), 'Convergence in a neo-Kaleckian model with endogenous technical progress and autonomous demand growth,' *Review of Keynesian Economics*, 7(3), 275–291.
- Nersisyan, Y. and L.R. Wray (2016), 'Modern money theory and the facts of experience,' *Cambridge Journal of Economics*, 40(5), 1297–1316.
- Ohlin, B. (1937a), 'Some notes on the Stockholm theory of savings and investments I,' *The Economic Journal*, 47(185), 53–69.
- Ohlin, B. (1937b), 'Some notes on the Stockholm theory of savings and investments II,' *The Economic Journal*, 47(186), 221–240.
- Palley, T. (2017), 'The theory of endogenous money and the LM schedule: prelude to a reconstruction of ISLM,' *Brazilian Journal of Political Economy*, 37(1), 3–22.
- Palley, T. (2019), 'The economics of the super-multiplier: a comprehensive treatment with labor markets,' *Metroeconomica*, 70(2), 325–340.
- Parguez, A. and M. Seccareccia (2000), 'The credit theory of money: the monetary circuit approach,' in J. Smithin (ed.), *What is Money?*, London: Routledge, pp. 101–123.
- Pariboni, R. (2016), 'Household consumer debt, endogenous money and growth: a supermultiplier-based analysis,' *PSL Quarterly Review*, 69(278), 211–233.
- Pérez-Montiel, J.A. and R. Pariboni (2021), 'Housing is NOT ONLY the business cycle: a Luxemburg–Kalecki external market empirical investigation for the United States,' *Review of Political Economy*, doi: doi.org/10.1080/09538259.2020.1859718.
- Robertson, D.H. (1915 [1948]), *A Study of Industrial Fluctuation*, London: P.S. King and Son, reprinted in *Series of Reprints of Scarce Works on Political Economy No. 8*, London School of Economics and Political Sciences, London: Routledge.
- Robertson, D.H. (1922), *Money, with an Introduction by J.M. Keynes*, London: Nisbet.
- Robertson, D.H. (1936a), 'Some notes on Mr. Keynes' General Theory of Employment,' *Quarterly Journal of Economics*, 51(1), 168–191.
- Robertson, D.H. (1936b), 'Note from Robertson to Keynes,' in J.M. Keynes, *The Collected Writings*, vol. XIV, London: Macmillan, pp. 96–99.
- Rochon, L.-P. (1997), 'Keynes's finance motive: a re-assessment – credit, liquidity preference and the rate of interest,' *Review of Political Economy*, 9(3), 277–293.
- Rochon, L.-P. (1999), 'The creation and circulation of endogenous money: a circuit dynamique approach,' *Journal of Economic Issues*, 33(1), 1–21.
- Rochon, L.-P. (2008), 'The Keynesian multiplier: the monetary pre-conditions and the role of banks as defended by Richard Kahn's 1931 paper – a horizontalist re-interpretation,' in C. Gnos and L.-P. Rochon (eds), *The Keynesian Multiplier*, Abingdon, UK: Routledge, pp. 168–180.
- Serrano, F. (1995), *The Sraffian Supermultiplier*, PhD Dissertation, Faculty of Economics and Politics, University of Cambridge.
- Serrano, F. and F. Freitas (2017), 'The Sraffian supermultiplier as an alternative closure for heterodox growth theory,' *European Journal of Economics and Economic Policies: Intervention*, 14(1), 70–91.
- Serrano, F., F. Freitas, and R. Summa (2021), 'Non-capacity creating autonomous demand and induced investment under separable distribution: the supermultiplier theory and extensions of the supermultiplier model,' Mimeo, Instituto de Economia, UFRJ (Universidade Federal do Rio de Janeiro).

- Sraffa, P. (1960), *Production of Commodities by Means of Commodities*, Cambridge, UK: Cambridge University Press.
- Storm, S. (2020), 'Secular stagnation, loanable funds and demography: why the zero lower bound is not the problem,' in H. Bougrine and L.-P. Rochon (eds), *Economic Growth and Macroeconomic Stabilization Policies in Post-Keynesian Economics*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing, pp. 90–106.
- Toporowski, J. (2020), 'Credit, debt and distribution in the monetary theories of Augusto Graziani and Michał Kalecki,' *Annals of the Fondazione Luigi Einaudi*, 54(2), 311–326.
- Vieira Mandarino, G., C.H. Dos Santos, and A.C. Macedo e Silva (2020), 'Workers' debt-financed consumption: a supermultiplier stock–flow consistent model,' *Review of Keynesian Economics*, 8(3), 339–364.
- Wicksell, K. (1935 [1978]), *Lectures on Political Economy, Vol. II*, Fairfield: Augustus M. Kelley.
- Wray, L.R. (1991), 'Saving, profits, and speculation in capitalist economies,' *Journal of Economic Issues*, 25(4), 951–975.