

Three Controversies on Endogenous Money, Finance and the Multiplier: Classical Debate on Interest Rates in 1930s and Two Modern Controversies of 1980s and 1990s

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1. Introduction

Investment finance is an important issue in Keynesian and post-Keynesian theory. The debate concerning interest rates that Keynes undertook with Ohlin and Robertson following the publication of *The General Theory* actually concerned the subject of finance. In the 1980s, two controversies that were independent but reciprocally related were held by the post-Keynesians. The first debate was initiated by Asimakopulos (1983); it became heated because he denied the independence of investment from saving. The second one was a dispute started by Moore (1988), wherein he pointed out not only the contradiction between endogenous money and the income multiplier process, but also negated the multiplier process. These two controversies address the relationship between the multiplier process and finance, although in the debate in the 1930s over interest rates, the subject was the determination of interest rates, even as investment finance was the focus; thereafter, the finance motive was introduced. The three debates have close relationships, but the links therein are not simple and must be examined. Therefore, in this study, our aim is to elucidate the relationships among these three controversies.¹ Our conclusions are two-fold. First, the main issue of the debate triggered by Asimakopulos (1983) is almost the same as raised by Robertson in the controversy in the 1930s, and the endogenous money supply plays an important role in understanding the structure of the two controversies. Second, modern post-Keynesian debates have a close relationship and they illustrate investment finance from a different vantage. The remainder of this paper is organized as follows. In Section 2, we briefly examine the controversy in the 1930s on interest rates. Then, in Section 3, we investigate the

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¹ Although we discuss mostly the literatures up to 1990s in this study, the controversy on multiplier process continues. We will deal with the recent arguments in another study, but for the points which we omitted and the recent topics, see also footnote 11.

debate on the independence of investment from saving and consider the monetary and financial aspects of that debate. In Section 4, we examine the controversy concerning endogenous money supply theory and the multiplier process. We study the relationships among the three controversies, in Section 5. In the final section, we present our conclusions.

2. The Controversy on Interest Rates

Before examining the two post-Keynesian controversies, let us briefly investigate the debate on interest rates, as the basic framework that Keynes introduces in *The General Theory* is also important to post-Keynesian theory. Keynes developed the liquidity preference theory of interest rates—namely, that interest rates are not determined by the equalization of investment and saving but by the demand and supply of money, and that saving is produced by investment and no savings are required for investment finance. In this theory, the interest rate is defined as “the ‘price’ which equilibrates the desire to hold wealth in the form of cash with the available quantity of cash.” (Keynes, 1973a, p.167). In *The General Theory*, money supply is determined exogenously by the central bank, and liquidity preference—which is the demand for money—sets the interest rate. Liquidity preference is classified as a transaction motive that is required for daily transactions, a precautionary motive that is necessary for “security as to the future cash equivalent of a certain proportion of total resources” (Keynes, 1973a, p.170), and a speculative motive that is related to the possession of money as a means of storing assets.

2.1. Ohlin’s critique and the introduction of “finance motive”. Following the publication of *The General Theory*, many criticisms *vis-à-vis* liquidity preference theory appeared, and Keynes responded to some of those criticisms; this formed the basis of the debate concerning interest rates, mainly with Ohlin and Robertson. Ohlin (1937a, b) developed diverse arguments, but an important and relevant point is that finance in advance is necessary to the realization of investment. He points out clearly that “the cash and credit resources, which the firm has at its disposal at the beginning of a period and acquires during the period, provide an upper limit for its ability to buy, and that the expectations concerning them set a limit to its investment plans.” (Ohlin, 1937a, pp. 61, 62). This point seems to influence Keynes’s “finance motive.” Ohlin also emphasizes the relationship between the interest rate and real economy when he says that “Keynes’ construction... seems to regard the rates of interest as determined largely ‘outside’ the price system, or at least as having almost no connection with the system of mutually interdependent prices and quantities.” (Ohlin, 1937b, p. 227). Keynes replies to these points in “Alternative theories of

the rate of interest” (1937a).² First, he introduces finance demand for money, saying that “an investment decision (Professor Ohlin’s investment *ex ante*) may sometimes involve a temporary demand for money before it is carried out, quite distinct from the demand for active balances which will arise as a result of the investment activity whilst it is going on” (Keynes, 1973b, p. 207). He then explains the mechanism of finance demand as follows:

“Planned investment ... may have its ‘financial provision’ before the investment takes place; that is to say, before the corresponding saving has taken place. ... There has, therefore, to be a technique to bridge this gap between the time when the decision to invest is taken and the time when the correlative investment and saving actually occur. ... This service may be provided either by the new issue market or by the banks... if [the entrepreneur] accumulates a cash balance beforehand ... then an accumulation of unexecuted or incompletely executed investment decisions may occasion for the time being an extra special demand for cash. ...let us call this advance provision of cash the ‘finance’ required by the current decisions to invest.” (Keynes, 1973b, pp. 207-8).

This is Keynes’s definition of “finance”—in other words, finance is the cash required beforehand for investment, and this demand for finance is thus introduced. In liquidity preference theory, money demand determines the interest rate, but the newly introduced finance demand also affects the interest rate. “Now,” says Keynes, “a pressure to secure more finance than usual may easily affect the rate of interest through its influence on the demand for money ... But ‘finance’ has nothing to do with saving.” (Keynes, 1973b, p. 209). Therefore, Keynes admits the possibility of increasing the interest rate by increasing the finance demand. Ohlin refutes Keynes’s reply, but the main argument is almost identical to that in Ohlin (1937a, b). He makes two points. First, the price of credit, —namely, the interest rate—is determined by the supply and demand of credit, as well as by the price of commodities. Second, the direct relationship between the interest rate and the real system of economy is stressed (Ohlin, 1937c, pp. 423-7). Keynes makes a counter-critique, mainly in response to Ohlin (1937c), in “The ‘ex-ante’ theory of the rate of interest” (1937b). In that paper, his contention is basically same as that in *The General Theory*, but with modifications that address Ohlin’s critique. The entrepreneur needs additional demand for liquidity, —namely, cash in the time between the plan for and execution of investment.

“On the contrary, the finance required during the interregnum between the intention to invest and its achievement is mainly supplied by specialists, in particular

² Keynes substantially replied only to Ohlin (1937a, b).

by the banks, which organize and manage a revolving fund of liquid finance. For 'finance' is essentially a revolving fund. It employs no savings. ... As soon as it is 'used' in the sense of being expended, the lack of liquidity is automatically made good and the readiness to become temporarily illiquid is available to be used over again. Finance covering the interregnum is... necessarily 'self-liquidating' for the community taken as a whole at the end of the interim period." (Keynes, 1973b, p. 219).

He then explains investment finance, saying that the new finance flow necessary for current *ex-ante* investment is supplied by finance that is released by the current *ex-post* investment, and that if the flow of investment is made at the fixed rate, *ex-ante* investment flow will equal the *ex-post* investment flow. In this case, there is no change in the liquidity position. Therefore, Keynes points out, first, that the role of the bank in the finance process is important and, second, in the case that investment is made at the regular rate, if the spending for investment is executed, the banking system will not be illiquid. Third, he enquires into the case of increased investment flow and reaches "an important conclusion" (Keynes, 1973b, p. 220): when the liquidity preferences of the public and the banks are fixed, if the finance required for current *ex-ante* output is larger than the finance released by the current *ex-post* output, the interest rate will rise. This point is "the coping-stone of the liquidity theory of the rate of interest." (Keynes, 1973b, p. 220). Finally, Keynes emphasizes the role of the banking system:

"[T]he transition from a lower to a higher scale of activity involves an increased demand for liquid resources which cannot be met without a rise in the rate of interest, unless the banks are ready to lend more cash or the rest of the public to release more cash at the existing rate of interest. ... This means that, in general, the banks hold the key position in the transition from a lower to a higher scale of activity. ... The investment market can become congested through shortage of cash. It can never become congested through shortage of saving. This is most fundamental conclusions within this field." (Keynes, 1973b, p. 222).

Keynes's contention here is that, first, the role of the bank—which organizes and manages finance—is emphasized. Second, in the case of a fixed rate of investment flow, if the finance is actually expended, banks do not become illiquid. Third, in the case of increased investment flow, unless the banking system supplies money in an accommodative fashion, the interest rate will increase not because of a shortage of saving, but because of a shortage of cash. Thus, Keynes's finance motive is introduced in the above-stated context, and his intention seems to be the defense of liquidity preference theory.

2.2. Robertson's critique and the illiquidity of banking system. Robertson made a position critical of *The General Theory*, but as to interest rates, he criticized "Alternative theories of the rate of interest" (1937a).³ His criticism was similar to Ohlin's and was clearly based on the loanable funds theory of interest rates. He also comments on "The 'ex ante' theory of interest rate".⁴ His main argument is that "within a few pages Mr. Keynes appears to give three different accounts of the process by which, and the moment at which, the illiquidity taken on itself by the banking system in the provision of what he calls 'finance' is cancelled." (Robertson, 1938, p. 315). Keynes's reply (Keynes, 1938) is that "the demand for cash, due to the requirements of 'finance', is automatically at an end as soon as the finance is expended." (Keynes, 1973b, p. 230). Although Keynes does not concede to Robertson's critique, the possibility of the illiquidity of the banking system relates to modern post-Keynesian controversies, and we will discuss it later.

3. The Debate on the Independence of Investment from Saving

3.1. Investment finance and multiplier process. Almost one half-century later, Asimakopulos (1983) criticized the complete independence of investment from savings, and triggered an active controversy.⁵ Asimakopulos points out that "[t]he availability of finance for firms was seen as an important precondition for both Kalecki and Keynes for the independence of investment from saving, an independence that was at the centre of their visions of the factors determining the levels of output and employment." (Asimakopulos, 1983, p. 222). He started from this precondition and undertook a critique of both Kalecki and Keynes:⁶

"Both Keynes and Kalecki emphasized that it was investment, through its effects on income ... that resulted in the equality between planned investment and saving that was in the desired relation to income. ... neither writer paid sufficient attention to the time required for this equality to be achieved, for the full multiplier effects of a higher level of investment to be worked out. Keynes even appeared at

³ Robertson leveled criticism in his review article (1936), but this paper scarcely dealt with the issue of interest rates. Therefore, in the current study, we refer only to Robertson (1937, 1938).

⁴ In "The 'ex-ante' theory of the rate of interest" (1937), Keynes replies only to Ohlin; Robertson's critique is not mentioned.

⁵ For a survey of this controversy, see Cottrell (1994); additionally, de Carvalho (1996) summarizes and classifies replies for Asimakopulos (1983). For the theoretical background and methodology of Asimakopulos, see Harcourt (1995), Davidson (1995), and Kregel (1995).

⁶ Asimakopulos (1983) also refers to Kalecki, but in the current study we discuss only Keynes. In addition, most of the post-Keynesian criticism of Asimakopulos (1983) comments solely on Keynes.

times to confuse the definitional equality between saving and investment with the equilibrium relation between the two.” (Asimakopulos, 1983, p. 222).

He contends that the time required for the full multiplier effects is ignored, but his detailed attack on Keynes is related to “the finance requirements of an increase in investment decisions in ... [The] *General Theory*.” (Asimakopulos, 1983, p. 225). He specifically deals with the prerequisite of short-term finance for the investment decision of a firm, as had been already discussed in Keynes’s paper “The ‘ex ante’ theory of the rate of interest.” In that paper, Keynes expresses “the most fundamental of my conclusions within this field”—namely, that the “investment market can become congested through [a] shortage of cash,” and “it can never become congested through [a] shortage of saving.” (Keynes, 1973b, p. 222). Asimakopulos comments on this conclusion, because “in stating that ‘the lack of liquidity is automatically made good’ as soon as the investment expenditure is made, Keynes is assuming implicitly that the full multiplier operates instantaneously.” (Asimakopulos, 1983, p.227). His contention is similar to those of Ohlin and Robertson, in that in the multiplier process, investment may be constrained by saving.

3.2. Critique of Asimakopulos (1983). Thus, Asimakopulos denied the complete independence of investment from saving, and raised an intense debate; however, most of the criticism arose from the perspective of the multiplier process and the real economic system. Only a few studies treat the multiplier process from the monetary side: Trevithick (1994) points out that Kahn already refers to this contention in his multiplier paper published in 1931.⁷ Kahn actually states that “the intelligent co-operation of the banking system is being taken for granted. ... If the increased circulation of notes and the increased demand for working capital that may result from increased employment are made for occasion for a restriction of credit, then any attempt to increase employment ... may be rendered nugatory.” (Kahn, 1972, p.3). The criticism leveled by Richardson (1986) is one from the monetary perspective. The main point of this comment is that “what is missing in Asimakopulos’s treatment is a proper appreciation of the services of a modern banking system.” (Richardson, 1986, p.192). He then explains his point by using a balance sheet of the banking system (Table 1). The liabilities of the banking system is total only \$100 million in deposits; in assets, there are \$90 million in loans and \$10 million in free reserves or cash. If \$10 million of new investment is planned and financed in the same amounts as new loans from the banking system, and if the loans are made from the cash that the bank holds, the loans outstanding become \$100 million and

⁷ Although Trevithick (1994) certainly emphasizes the monetary side of the multiplier process, the position of Robertson and Asimakopulos was accepted.

the bank's liabilities remain constant. If \$10 million of new investment is actually spent, other firms will receive this spending. This receipt of spending means there will be \$10 million in increased deposits, because it is assumed that all receipts are deposited to the banking system. Therefore, in the balance sheets of the banking system, there are \$110 million of deposits on the liabilities side, and \$100 million of loans and \$10 million of free reserves on the assets side (Table 2). Thus, there are no liquidity shortages in the banking system, and this process occurs regardless of the time required for the multiplier process.

Table 1 (unit: million \$)				Table 2 (unit: million \$)			
Assets		Liabilities		Assets		Liabilities	
Loans	90	Deposits	100	Loans	100	Deposits	110
Cash	10			Cash	10		

Chick (1997) discusses Keynes's multiplier process and finance, and also refers to Asimakopulos (1983) and Richardson (1986). She examines Keynes's post-*The General Theory* papers and resumes Keynes's argument that he dealt only with the case of cash being required between the plan for and execution of investment, and that no cash is necessary in the case of overdraft. She asserts that "The question thus shifts to the willingness of the banks to become less liquid. This line of reasoning Keynes denied, on the grounds that once the money is returned to the banking system liquidity is restored. This position is explained by Richardson (1986)." (Chick, 1997, p. 174). Chick considers Asimakopulos's opinion similar to Robertson's position. Although she basically concedes to Keynes and Richardson, she also provides some criticism. If money is spent, then certainly money refluxes to the banking system and liquidity is restored. "This restores $(100 - x)$ per cent of liquidity, where x is the (percentage) reserve ratio, but [it] does not restore it 100 per cent, because the loan portfolio and the level of deposits have risen." (Chick, 1997, p.175). Chick's evaluation basically appears to be accurate. To verify the assessment, we modify the numerical example of Richardson (1986) and illustrate by using balance sheets (Table 3). At the first stage, the liabilities of the banking system total only \$100 million in deposits; in assets, there are \$80 million in loans and \$10 million in free reserves or cash, as well as \$10 million in reserve, assuming that the reserve ratio is 10- per cent. If \$10 million of new investment is planned and financed in the same amounts as the new loans from the banking system, in this case, the free reserve becomes zero; this is because the free reserve is loaned and the reserve is constant, for

the volume of deposits does not vary. If \$10 million of new investment is actually spent, we assume that this spending is refluxed to the banking system as \$10 million in deposits. The total deposits then become \$110 million, and the required reserve is \$11 million. The loans increase by \$10 million and now becomes \$90 million in total. Therefore, because the free reserve is \$9 million, liquidity is \$9 million and only restores to 90 per cent (Table 4). Chick insists that although the position of Keynes and Richardson is not completely valid, their claim is basically reasonable, since the actual reserve ratio is low.

Table 3 (unit: million \$)				Table 4 (unit: million \$)			
Assets		Liabilities		Assets		Liabilities	
Loans	80	Deposits	100	Loans	90	Deposits	110
Reserve	10			Reserve	11		
Cash	10			Cash	10		

3.3. Endogenous money and the debate on the independence of investment from saving. There are few studies that treats the relationship between the controversy raised by Asimakopulos (1983) and endogenous money supply theory, but Wray (1988), Cottrell (1994), and Pollin (1997) are valuable exceptions.⁸ Wray (1988) tries to establish the relationship between endogenous money supply theory and Kalecki's surplus approach in connection with profit expectation and investment-saving relation, and he refers to the debate on the independence of investment from saving: "As the money supply is endogenously determined, the advancement of loans cannot, by itself, place pressure on the interest rate. ... However, there is no reason to conclude that the act of supplying loans should cause interest rates to rise unless one assumes an exogenously determined money supply." (Wray, 1988, p.141). Wray clearly denies the increased pressure on the interest rate in the case of an endogenous money supply, and criticizes Asimakopulos (1983). Wray (1988) summarizes Asimakopulos's argument, saying that "while sufficient saving may actually exist, it may be in the hands of those who do not want to hold long-term bonds in order to hold these bonds." (Wray, 1988, p.141). Wray refutes Asimakopulos's point by using the argument of Davidson (1986), that long-term finance is

⁸ De Carvalho (1996) refers to criticism by Kregel (1984, 1986) of Asimakopulos (1983), and also substantially introduces endogenous money supply. For instance, "[b]anks could accommodate the need for financial resources without exercising any pressure on interest rates, independently of the multiplier or of the behavior of savers" (de Carvalho, 1996, p. 322).

guaranteed before an investment project even starts. He then considers the possibility of the case that “a loan is required to fund the increase in investment” or “some of the investment expenditure leaks from the banking system as hoards.” (Wray, 1988, p.141). In the latter case, the shortage of funds by the leakage is financed by an endogenous money supply from the central bank or foreign sources. Either way, “the length of time it takes for the multiplier to operate is irrelevant.” (Wray, 1988, p.142). Thus, Wray criticizes Asimakopulos’s claim, but he already shows that the multiplier process and the endogenous money supply do not contradict each other, even before Moore went on to negate the multiplier process in his book on the endogenous money supply (Moore, 1988). Cottrell (1994) mainly discusses the controversy *vis-à-vis* the relationship between the multiplier process and the endogenous money supply, which we will examine in the next section; however, he also criticizes Asimakopulos (1983). Cottrell introduces the endogenous money supply and examines Keynes’s case of “congestion” in the investment market: “Thus the true villain of the piece is the liquidity constraint (as Keynes argued) and the authentic Keynesian response is to call on the central bank to provide more funds, not to call for greater saving.” (Cottrell, 1994, p.323). Pollin (1997) discusses the independence of investment from saving, and supports Keynes’s position that “the private intermediaries could still increase their lending if they were willing to accept a temporary decline in their own liquidity.” (Pollin, 1997, p.316). He explains the reason for the temporary illiquidity of the banking system, saying that “the liquidity would rise again, even before the completion of the multiplier, when the recipients of the autonomous investment funds deposited those funds with an intermediary.” (Pollin, 1997, p. 316). He confirms the temporary decline of liquidity by using balance sheets and referencing Richardson (1986); his conclusion is identical to that of Chick (1997). He then points out the similarity between Kaldor (1939) and Asimakopulos (1983) and criticizes their claim,⁹ saying that “Kaldor and Asimakopulos are thus assuming an upward slope to the loan supply schedule.” (Pollin, 1997, p. 319). He introduces the “‘structuralist’ approach to endogenous money,” and with this approach, “attention has been devoted to specifying the channels whereby the quantity and price of credit emerge as significantly independent both of central bank policy interventions and prior saving flows. This degree of independence results from the innovative portfolio behavior of intermediaries and the nonfinancial public.” (Pollin, 1997, p. 322). The main assertion of structuralists

⁹ Kaldor (1939) is also referenced by Asimakopulos (1983); Asimakopulos (1983) appreciates not only Kaldor (1939), but also Robertson.

is that in the modern financial structure, liquidity that temporarily falls is available from the financial market, and active financial innovation yields new financial commodities as market liquidity.¹⁰ Therefore, Pollin (1997) introduces endogenous money concerning the subject of the saving constraint, and he criticizes Asimakopulos (1983).

4. Controversy on the Endogenous Money Supply and the Multiplier Process

Whereas in endogenous money supply theory money is first demanded for investment and supplied endogenously, the multiplier process is examined as a case of increasing investments, in the Keynesian tradition. The multiplier process is generally considered from the vantage of the real economy, but monetary aspects of the process have not been sufficiently studied. Moore (1988) was the first to examine the relationship between the multiplier process and investment finance in endogenous money supply theory; however, because the multiplier process is criticized in his book, this work stirred controversy. In this section, we study the controversy triggered by Moore (1988).¹¹

4.1. Critique by Moore(1988) regarding multiplier theory. Moore wrote a book that deals first with the full-scale framework of the endogenous money supply; however, this work diverges from orthodox post-Keynesian theory, in that it denies liquidity preference theory (Moore, 1988). As for the multiplier process, he criticizes that, too. He investigates the role of credit money in the macro economy, and introduces his original concepts. Moore considers the case of deficit spending in monetary economy: “*Ex post*, aggregate demand must always equal aggregate supply. The question arises, How do aggregate income and aggregate demand increase?” (Moore, 1988, p. 295). Deficit spending requires money in an amount that exceeds what the spender receives, and according to Moore, “There are only two possible source of this money: 1. A drawing down in the total of previously accumulated

¹⁰ For the “structuralism” of endogenous money supply theory, see Wray (1990) and, Pollin (1991).

¹¹ With respect to the endogenous money supply approach, not only Moore but also monetary circuit theorists disclaim the multiplier process. For more on monetary circuit theory, see Deleplace and Nell (1996a), Schmitt (1996), and Parguez (2008). The reason behind critiques of the multiplier differs from those behind Moore’s, and those critiques argue that “within a single period of production, the multiplier is indeed necessarily equal to unity.” (Rochon, 2008, p. 168). However, Rochon (2008) asserts the compatibility of the multiplier process with monetary circuit theory: “its value may increase over the course of several periods of production, depending precisely on the role of the banking system in renewing existing credit or granting new credit.” (Rochon, 2008, p.168).

As for recent studies of the multiplier process, see Gnos and Rochon (2008).

money balances ... [and] 2. Newly created money balances.” (Moore, 1988, p. 295). Thus, credit money is created to finance deficit spending, and he investigates this case. He then introduces a new concept. Following the creation of credit money, bank deposits occur. “The accumulation of bank deposits by sellers of goods and services may be regarded as convenience lending.” (Moore, 1988, p. 298). This is also the mechanism behind the non-occurrence of an excess supply of money. He also examines the relationship between the traditional idea of “hoarding” and “convenience lending.” “Hoarding” is “the accumulation of money balances by economic units.” (Moore, 1988, p. 329). Unlike in a commodity money economy,

“in credit money economies ... A decision to accumulate additional credit money balances, that is, to hoard, does not reduce aggregate demand when the money is newly created. Instead hoarding or ‘convenience lending’ provides the finance for the accompanying increase in aggregate demand by deficit-spending borrowing units. ... The accumulation of credit money balances rather reflects the increased convenience lending. Whenever the stock of credit money grows, ‘hoarding’ denotes an increase in ‘convenience lending’ to the banking system.” (Moore, 1988, pp. 330-1).

Moore (1988) denies the Keynesian multiplier process that equalizes aggregate supply and demand. His contention is as follows. He examines the case of increasing investment and asserts that if the velocity of money is stable, the supply of credit money will increase through increased aggregate demand; he also asserts that deficit spending is financed by credit expansion:

“All increases in investment spending, whether financed internally or externally, from nonbanks or banks, are thus accompanied by equal increases in saving in the same period, either volitional or convenience. It follows that the equality of planned investment and planned saving does not occur through the adjustment of income, as the Keynesian income-multiplier approach asserts. ... The Keynesian multiplier process is thus fundamentally flawed.” (Moore, 1988, p. 312).

If the investment is financed by increased bank borrowing, when the deposit balance increases “convenience saving,” it is also increased in a synchronized fashion. Therefore, investment creates an equal amount of saving in the finance process. However, says Moore, “Keynes’s multiplier argument requires that income continue to increase until planned saving rises to equal the new, larger level of planned investment. ... Keynesian analysis never addresses the issue of how planned spending in excess of current income is financed.” (Moore, 1988, p. 312). Therefore, if income grows, the aggregate demand in the next period will exceed the current aggregate demand and economic units to create deficit spending. This net deficit spending

must be financed by the increased bank credit and the increase in newly created money.

“But the *ex post* reconciliation of *ex ante* difference does not occur through the income-multiplier process as described by Keynes. ... The net accumulation of money balances that finances the increase in investment spending involves a concurrent increase in convenience saving, quite independent of any increase in income resulting from the ‘multiplier’ effects of increased deficit spending. Total savings and investment are continuously equated *ex post*, not through income adjustment and unplanned inventory accumulation or decumulation *à la* Keynes, but through increases in convenience lending to the banking system as bank deposits rise with increases in bank advances.” (Moore, 1988, p. 314).

The reason that Moore negates the multiplier process is that, on the assumption of an endogenous money supply, the equality of investment and saving is achieved in the process of investment finance; however, this equality has no relation to the multiplier process.

4.2. Criticism of Moore(1988). Moore’s (1988) attack on the multiplier process stirred controversy.¹² First, let us discuss Cottrell (1994), who indicates in the opening of his paper that the simple Keynesian multiplier is realized with a horizontal LM curve that corresponds to a perfectly endogenous money supply. He then points out similarities with the classical controversy on the identity of saving and investment. In that controversy, says Cottrell,

“although actual investment and saving ... are indeed identically equal, nonetheless ‘planned’ or ‘intended’ (or *ex ante*) *I* and *S* are not identical, and must be brought into equality by means of some mechanism or other - ... the level of income in Keynesian theory. Surely, one cannot seriously maintain that the saving-investment identity ... poses any problem for the theory of the multiplier.” (Cottrell, 1994, p. 114).

Cottrell also levels criticism while referencing the already cited argument of Moore (1988, p. 314). If the *ex post* identity of investment and saving is defined, says Cottrell, there is no need to equalize investment and saving by any *ex post* mechanism, but planned investment and planned saving must be equalized.¹³ Subsequently, Cottrell investigates Moore’s concept of “convenience lending.” In the

¹² Following the controversy, Moore (1994) did not change his criticism of the multiplier; however, in his later study (2008), he presents a different reason: “if economies are complex systems, change is continual, and economies have no tendency to approach any future position of ‘equilibrium’ or balance where all change ceases.” (p. 121).

¹³ Cottrell (1994, p.118) also points out that the claim of Moore (1988) is confusing.

process of making a large investment, inventory may be broken into, or deposits may temporarily increase because of a transitory reduction in the propensity to consume; nonetheless, the “‘convenience lending’ or ‘convenience saving’ noted by Moore is simply the monetary counterpart to these effects.” (Cottrell, 1994, p. 118). In other words, convenience lending and convenience saving represent the accumulation of a continuous flow of deposits in a fixed period of time in the multiplier process, and they are merely an ephemeral phenomenon. Therefore, Cottrell (1994) concludes that the multiplier process and the endogenous money supply do not contradict on another. Dalziel (1996) also criticizes Moore (1988), based on Cottrell (1994). The hallmark of this critique is that the multiplier process and revolving fund theory of Keynes are connected; on this issue, he refers to the debate triggered by Asimakopulos (1983).

5. Endogenous Money and Finance

We first investigated the controversy on the interest rate; we then examined the debate on the independence of investment from saving. With regard to the debate triggered by Asimakopulos (1983), a few studies deal with the financial side of the debate; nonetheless, their attempt to investigate the relationship between Asimakopulos’s critique and the endogenous money supply is insufficient. In this section, we first discuss the finance motive and the debate on the independence of investment from saving, in relation to endogenous money; second, we deal with the controversy *vis-à-vis* the multiplier process and endogenous money. Finally, we consider the link between the two controversies and draw conclusions.

5.1. Finance motive, investment finance, and the endogenous money supply.

Before we examine Asimakopulos’s critique, we need to investigate the relationship between the finance motive and the endogenous money supply, because in standard interpretations, liquidity preference theory and endogenous money are not compatible. Although in *The General Theory*, an exogenous money supply is certainly assumed, the finance motive was introduced to the interest-rate debate after *The General Theory*, and it is generally appreciated in relation to endogenous money in the post-Keynesian tradition. The role of the bank is emphasized in the papers published after *The General Theory*, as already discussed; Chick (1997) argues that Keynes (1937a, b) and Richardson (1986) are almost correct, and that Robertson (1938) and Asimakopulos (1983) are basically erroneous, as we already confirmed in section 2. Although Chick’s contention appears to be legitimate, an exogenous money supply or fixed money supply is assumed. However, if we suppose an endogenous money supply, certainly, the liquidity of the banking system is restored

to the amount save for the reserve ratio, but if the central bank endogenously supply the necessary volume of liquidity shortage, the shortage of liquidity will not be troublesome for the banking system. This means that in the debate following the publication of *The General Theory*, Keynes emphasized the role of the bank and implicitly assumed an endogenous money supply, and that the illiquidity of the banking system that Robertson and Asimakopulos argues is resolved in the case of an endogenous money supply.¹⁴

5.2. Multiplier process and endogenous money. We affirmed that Moore's (1988) argument regarding the incompatibility of the multiplier process and the endogenous money supply is not correct; in the process of investment finance, the multiplier works out simultaneously with the endogenous money supply. In endogenous money supply theory, money is usually supplied in an accommodative fashion, so that the illiquidity of the banking system is promptly resolved. However, there is the case in which the central bank does not supply money endogenously, in times of tight financial policy. In such a case, a shortage of liquidity may be induced, but theorists of structural endogeneity of money argue that it is possible for the banking system, to some extent, to supplement the shortage of liquidity by issuing debt that features a low reserve ratio; in this way, the illiquidity of the banking system can be avoided. Another case of illiquidity of the banking system would occur in times of financial crisis, but this is an exceptional case wherein financial authorities would intervene in the market to preclude a system collapse. Therefore, given the assumption of an endogenous money supply, the liquidity of the banking system basically does not run short, except in cases of tight monetary policy and a "credit crunch" in times of financial crisis, and investment is not constrained by saving.

5.3. The relationship between the two controversies and endogenous money. We have examined the rather complicated relationship among the two controversies, which we will now discuss in detail. First, the interest-rate debate in the 1930s has a close link to the argument of Asimakopulos (1983), and it also becomes connected with the controversy concerning the multiplier process and the endogenous money supply. Asimakopulos's critique is fundamentally identical to Robertson's, with the argument being that a shortage of liquidity is alleviated by saving. Moore (1988) considers the process of investment finance without the multiplier process, supposes another process similar to the multiplier process, and depicts the financial side of investment based on an endogenous money supply. Dalziel (1996) points

¹⁴ De Carvalho (1996) also points out the importance of the banking system in liquidity preference theory.

out the connection between Moore's negation of the multiplier and the debate on the independence of investment from saving. Thus, it is clear that Moore's critique and the controversy in the 1930s *vis-à-vis* the interest rate have a certain connection, and that the problem that Moore raised is on the "flip side" of the issue of Keynes and Asimakopulos. Second, in the debate triggered by Asimakopulos (1983), he argues that in the multiplier process, the illiquidity of the banking system is caused by a shortage of saving, but we reach the conclusion—in line with Richardson and Chick—that on the assumption of an endogenous money supply, the shortage of liquidity is supplied in an accommodative fashion. On the other hand, in the controversy on endogenous money and the multiplier process, Moore (1988) states that in the case of an endogenous money supply, the equality of investment and saving is not attained through the multiplier process; however, Cottrell (1994) points out that Moore's notion of "convenience saving" is a temporary phenomenon, —namely, the monetary counterpart in the multiplier process—and he shows that an endogenous money supply and the multiplier process are not incompatible in the case of investment finance. Thus, in both controversies, while assuming an endogenous money supply, the investment finance multiplier process does not lead to inconsistency. Third, both debates seem to describe the same phenomenon from each distinct side. Moore's conception of "convenience saving" is actually applicable to the controversy triggered by Asimakopulos, because in the claim of Richardson (1986), if investment spending is actually executed, the deposit that is equal to the lending will reflux to the banking system, and this deposit must be "convenience saving."

6. Conclusions

In this study, we examined three controversies—namely, the controversy on interest rates, in the 1930s; the controversy on the independence of investment from saving; and the controversy on the multiplier process and the endogenous money supply. We also investigated the relationships among these debates and endogenous money. Our conclusions are two-fold. First, in the 1930s controversy on the interest rate, Robertson indicated the possibility of the illiquidity of the banking system; this critique is identical to that of Asimakopulos (1983). In both debates, investigations into the financial and monetary side that support the identity of investment and saving or the multiplier process have been insufficient, but considering that the endogenous money supply is the normal case, the shortage of liquidity in the banking system is dissolved and the investment is not constrained by saving. Second, the modern post-Keynesian controversy describes the same phenomenon from different sides, and it is natural that we consider the relationship between the two

debates by using the framework of endogenous money supply theory. In the critique of Asimakopulos (1983) and the subsequent controversy, the possibility within the multiplier process of illiquidity in the banking system is questioned, and if we assume an endogenous money supply, it does not become important issue. On the other hand, in the debate raised by Moore (1988), the disputed point is whether or not the multiplier process conflicts with the endogenous money supply; the key outcome of the controversy is that the multiplier process is consistent with the endogenous money supply; that debate is found to discuss the other side of the process from Asimakopulos's critique.

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