

Keynes, Sraffa and the Emergence of the General Theory

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ABSTRACT *This paper considers the question of whether Sraffa had any significant influence on Keynes's thinking in the period of preparation of The General Theory. Questioning the negative view expressed by Pasinetti (2007), we suggest there is a strong possibility that Sraffa, in introducing the idea that there exist as many 'natural' rates of interest as there are commodities that can be lent or borrowed, was instrumental in pointing Keynes to a way of escape from the traditional 'productivity and thrift' conception of the rate of interest; this new line of thought Keynes developed into the liquidity preference explanation of interest on money.*

1. Introduction

In his important recent study of *Keynes and the Cambridge Keynesians*, Luigi Pasinetti (2007) considers how the interests and contributions of the younger generation of economists of 1930s Cambridge connected with Keynes's own pioneering work. This paper challenges Pasinetti's judgment that there was a mutual lack of influence of Keynes and Sraffa on each other's economics.

In discussing the relationship between Keynes and Sraffa, Pasinetti (2007, p. 164) concludes that it is 'difficult to think of problems on which one might trace a direct influence of Keynes on the development of Sraffa's economic thought'. And, as regards any influence of Sraffa on Keynes, he is similarly doubtful:

[Keynes] was passing from the *Treatise* . . . to the *General Theory*. If we consider the most important among Keynes's contributions—the principle of effective demand, the macro analysis of consumption, the crucial role of investments and of expectations, the relationship between investment and savings, the liquidity preference function, etc—nothing of this suggests that Sraffa may have had any significant role in their development. The only parts of the *General Theory* that may be directly linked up with Sraffa's ideas are Chapter 16 ('Sundry Observations on the Nature of Capital') and the hints at the 'own rates of interest' [in Chapter 17], explicitly attributed to Sraffa by Keynes. Yet these

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are secondary aspects, within the theoretical context provided by the *General Theory* or with reference to its immediate policy implications.

It . . . is difficult to find clear evidence supporting the view of relevant influence, on scientific grounds, of Keynes on Sraffa, and at the same time it is equally difficult to find clear evidence of a substantial influence of Sraffa on Keynes.

It is somewhat curious that Pasinetti, despite noting Sraffa's influence on Chapter 17 of the *General Theory*, dismisses any Sraffian influence on Keynes's work as having to do only with secondary matters. The critical question is whether Sraffa's striking proposition, advanced in his 1932 review of F.A. Hayek's *Prices and Production* (1931a), to the effect that there exist as many 'natural' rates of interest as there are tradable commodities had a significant impact on Keynes's thinking, just at the time when the latter had lost faith in the traditional 'productivity and thrift' analysis and was searching for an alternative theory of interest. A common perspective denies, either explicitly or tacitly, a Sraffian influence on Keynes's thinking on interest and money. The present paper aims to make the case that, contrary to Pasinetti's verdict, there is good reason to think that ideas introduced by Sraffa (1932) in the course of the celebrated Keynes-Hayek-Sraffa exchange made a significant contribution to the development of the macroeconomic model advanced in the *General Theory*.

Pasinetti is not alone in doubting any important influence of Sraffa on Keynes. Alvin Hansen (1953) famously dismissed Chapters 16 and 17 of *The General Theory* as a 'detour which could [have been] omitted without sacrificing the main argument', remarking specifically of Chapter 17, that 'not much would have been lost had it never been written'. Several other commentators, in discussing the evolution of Keynes's thinking from the *Treatise* to the *General Theory*, pass over, without comment, the question of possible influence on the part of Sraffa, other than to mention the contribution of the Cambridge 'circus', of which Sraffa was a member, in moving Keynes forward from the *Treatise*. Thus, for instance, Keynes's first biographer Roy Harrod (1951, pp. 435–436), after describing Sraffa's review of Hayek's *Prices and Production* as being 'of unusual acidity', says nothing about the review's possible influence on the development of Keynes's ideas. Likewise Donald Moggridge (1993, pp. 551–570) provides a careful chronology of the stages by which Keynes arrived at the final formulation of the *General Theory*, but has no comment on any Sraffa contribution, and in fact says nothing as to how Keynes may have come to his new treatment of interest. Neither do Paul Davidson (2007), R.F. Kahn (1984), Murray Milgate (1982), H.P. Minsky (1975), or Don Patinkin (1976, 1982) throw any light on this matter in their studies of the development of Keynes's analysis. The list can be extended: Clarke (1988), Dimand (1988), and Shackle (1967) all writing on the development of Keynes's thinking on the rate of interest, draw no connection to Sraffa. Maclachlan (1993) sees a tenuous link.

Lord Skidelsky (1992, p. 458) does hint at the possibility of an important Sraffian influence on Keynes's thinking. In discussing progress towards the *General Theory*, Skidelsky notes that 'Keynes appropriated Sraffa's construct of commodity rates of interest for his own purposes in chapter 17'. Of course, that in itself is a comment that Pasinetti could have made, but Skidelsky does go on

to imply that Keynes drew something of substance from the Sraffa-Hayek confrontation, developing ‘a distinction between interest as the “price of money” and the “natural rate” (though he abandoned the term) as the “price of capital”’. ‘Hayek’s role in the Keynesian Revolution,’ Skidelsky continues, ‘was thus to force out of [Keynes] the logical distinction between a “money” and a “real exchange” economy.’ A critical distinction, certainly, but we demur that Hayek’s role could surely have been no more the passive one of supplying the subject of Sraffa’s critique, which was instrumental in enabling Keynes to draw a distinction impossible to make while adhering to the traditional ‘productivity and thrift’ theory.

Even when Chapter 17 and the Sraffa connection are the focus of attention (as in Barends & Caspari, 1997; Kurz, 2010; Lawlor, 2006; Mongiovi, 1990; Ranchetti, 2001) it is seldom appreciated that Sraffa’s influence was not limited to that relatively esoteric chapter, but is reflected in Keynes’s whole treatment of interest on money. There are two exceptions. In his discussion of Sraffa’s commodity rates of interest, Kurz (2007, pp. 196–197) writes that ‘Keynes was very pleased with Sraffa’s performance, not only because it had effectively countered the assault on his intellectual project launched by Lionel Robbins and his circle, but also because it had drawn his attention to a concept on which Keynes thought he could erect his novel edifice’. Barends & Caspari (1997) also explicitly link Keynes’s theory of interest to Sraffa’s commodity rates. They make the point (Barends & Caspari, 1997, p. 289) that ‘[u]sing the notion of own-rates, Keynes ... abandoned the Wicksellian concept of a unique natural rate. Instead, he focused on the money rate of interest’. These observations are in accord with the argument of this paper. In what follows we shall argue that, by highlighting interest on money as a phenomenon distinct from interest on other assets, Sraffa’s novel treatment of interest could have been instrumental in setting Keynes on the path of developing his own liquidity preference explanation of the nature of interest on money, and, beyond that, his thesis that a ‘monetary production economy’ operates in a significantly different way from a ‘real exchange economy’.

Thus, while we do not dissent from Pasinetti’s suggestion that Keynes had no discernible impact on Sraffa’s economics, the opposite claim—that Sraffa had no significant influence on the development of *The General Theory*—is far from certain.

2. Background: The Keynes – Hayek – Sraffa Debate

The exchange over monetary theory between Hayek (1931b) and Keynes (1931) occasioned an intervention by Sraffa that, we shall see, had significant consequences for *The General Theory*. Keynes, irritated by Hayek’s review of the *Treatise*, responded sharply with a blistering attack on *Prices and Production* (Hayek, 1931a). Hayek’s book, Keynes (1931, p. 394) wrote:

seems to me to be one of the most frightful muddles I have ever read, with scarcely a sound proposition in it beginning with page 45, and yet it remains a book of some interest, which is likely to leave its mark on the mind of the reader. It is an extraordinary example of how, starting with a mistake, a remorseless logician

can end up in Bedlam. Yet Dr Hayek has seen a vision, and though when he woke up he has made nonsense of his story by giving the wrong names to the objects which occur in it, his *Khubla Khan* is not without inspiration and must set the reader thinking with the germ of an idea in his head.

Keynes nevertheless allows that there is something in common between his and Hayek's conceptions, namely the Wicksellian/Marshallian theory that macroeconomic fluctuations result from a discrepancy between the 'natural' and the 'money' rates of interest. Keynes accepts Hayek's comment that he neglects to explain the natural rate of interest, and he agrees with Hayek that 'a clear account of the factors determining the natural rate of interest ought to have a place in a completed *Treatise on Money*. . .'. We note that at this point Keynes, evidently still thinking in terms of the model of the *Treatise*, has no objection to the concept of a natural rate of interest.

An extended correspondence between Keynes and Hayek in December 1931 and January 1932 failed to clarify matters to Keynes's satisfaction. In January he writes in frustration to Piero Sraffa and Richard Kahn: 'What is the next move? I feel that the abyss yawns—and so do I. Yet I can't help feeling that there is something interesting in it' (Keynes, 1973a, p. 265). At this point Sraffa comes to the rescue. His article 'Dr Hayek on Money and Capital' was published in March 1932 issue of the *Economic Journal*.

Sraffa, perhaps because he was more familiar with Austrian economics, had considerably more success than Keynes in penetrating the obscurities of Hayek's book, and was able to reveal both the intended sense of the Hayek story and the deficiencies of the analysis. Sraffa argued that Hayek's account of the working of a monetary economy was fundamentally inadequate because, having introduced hidden assumptions that effectively neutralised money, Hayek had so confused himself that he failed to recognise the real source of the disturbances he was depicting.¹

In the course of this critique, Sraffa introduced the concept of 'commodity rates of interest'. Recognition of the existence within the system of numerous commodity or 'natural' rates of interest completely undermines the interpretation of macroeconomic fluctuations as symptomatic of a difference having emerged between a *unique* 'natural' rate of interest—the supposed role of which was to equate saving and investment—and the 'money' or actual 'market' rate as institutionally set by the banking system. If, as Sraffa revealed, there exist as many natural rates as commodities traded, and in disequilibrium conditions these may all be different, it makes no sense to recommend, as the means of eliminating disequilibrium, that the banks should set their lending rate equal to a, notionally unique, natural rate. Furthermore, from this perspective, the rate of interest on money is just one of many interest rates (these being the price of delayed delivery or forward selling of anything in which forward trading is possible), and not essentially different in character from any other rate of interest. That view is of course

¹'As Voltaire says, "You can kill a flock of sheep with incantations and a little arsenic"' (Sraffa, 1932, p. 49).

sharply at odds with conventional understanding of the rate of interest on money as no more than a reflection of the unique natural rate determined by ‘productivity and thrift’.

3. Towards the General Theory

Did this discovery by Sraffa of a new concept of interest contribute to Keynes’s intellectual progress from the *Treatise* to the *General Theory*? Keynes’s views on interest certainly altered soon after the Hayek interlude. Within a year, even before the end of 1932, Keynes had formulated the essential, and fundamentally revolutionary, structure of the *General Theory*.

Keynes (1973b, p. 85) later described to Harrod how the key elements of his new ‘monetary theory of production’ fell into place:

To me, the most extraordinary thing regarded historically, is the complete disappearance of the theory of demand and supply for output as a whole, i.e. the theory of employment, *after* it had been for a quarter of a century the most discussed thing in economics. One of the most important questions for me, after my *Treatise on Money* had been published, was suddenly realising this. It was only after I had enunciated to myself the psychological law that, when income increases, the gap between income and consumption will increase,—a conclusion of vast importance to my own thinking but not apparently, expressed just like this, to anyone else’s. Then, appreciably later, came the notion of interest as being the meaning of liquidity preference, which became quite clear to my mind the moment I thought of it. And, last of all, after an immense lot of muddling and many drafts, the proper definition of the marginal efficiency of capital linked one thing up with another.

From the surviving materials reproduced in the *Collected Writings* it is clear that Keynes’s thinking on this matter evolved quickly. In what follows we shall assess Sraffa’s influence on that process.

3.1. *The Starting Point: The Rate of Interest in the Treatise*

In the *Treatise*, Keynes (1930, I, pp. 176–177), writing on the role of the rate of interest in relation to variations of the price level, describes the supposed natural rate–money rate adjustment mechanism:

Wicksell conceives of the existence of a ‘natural rate of interest’, which he defines as being the rate which is ‘neutral’ in its effect on the prices of goods, tending neither to raise nor to lower them, and adds that this must be the same rate as would obtain if in a non-monetary economy all lending was in the form of actual materials. It follows that if the actual rate of interest is lower than this prices will have a rising tendency, and conversely if the rate is higher. . . . [I]f we define Wicksell’s natural rate of interest as the rate at which saving and the value of investment are in equilibrium . . . then it is true that, so long as the money rate of interest is held at such a level that the value of investment exceeds saving, there will be a rise in the price level of output as a whole above its cost of production, which in turn will stimulate entrepreneurs to bid up the rates of earnings above their previous level, and this

upward tendency will continue indefinitely so long as the supply of money continues to be such as to enable the money rate to be held below the natural rate as thus defined.

We can therefore surmise that, at the time of his completing the *Treatise* (late summer 1930) Keynes subscribed to the doctrine that the role of the rate of interest was to equate savings and investment, and that the key practical rule for macroeconomic stability was that the authorities should keep the actual or market rate of interest—the rate to which agents responded—closely in view, and intervene as necessary to maintain its equality with the (notional) natural rate. While this conception allows for the occurrence of unemployment in conditions of disequilibrium—occasioned by a divergence of the market rate from the natural rate—the focus of the analysis is on the determination of the price level, with the tacit presumption that the equality of the market and natural rates implied not only price stability but a normal full-employment level of activity.

3.2. *Progress towards the General Theory, 1930–32: Rejection of ‘Productivity and Thrift’*

Donald Moggridge (Keynes, 1973a, p. 343) has remarked on ‘the speed with which Keynes began to slough off the old skin of the *Treatise*.’ Against a background of criticism that the *Treatise* ought to have taken into account output changes as well as price changes, Keynes came to recognise the multiplier as the mechanism that equilibrates saving and investment.² As early as his Chicago lectures in June 1931 Keynes was making the point that

[a] given deficiency of investment causes a given decline of profit. A given decline of profit causes a given decline of output. Unless there is a constantly increasing deficiency of investment, there is eventually reached, therefore, a sufficiently low level of output which represents a kind of spurious equilibrium. There is also another reason for expecting the decline to reach a stopping-point. ... [A]s soon as output has declined heavily, strong forces will be brought into play in the direction of reducing the net volume of saving.

Progress is evident also from Keynes’s correspondence with R.F. Kahn in September 1931, in which Keynes envisages equilibrium being reached ‘short of full employment’ via output changes, and no mention is made of an equilibrating role for the rate of interest (see Keynes, 1973a, pp. 373–375). By the autumn of 1931, Keynes, aware of the deficiencies of the *Treatise*, had, as Moggridge (1992, pp. 535–536) put it, ‘started to work it out all over again.’ At this time Keynes’s attention seems to have been focused on the issue of income expenditure equilibration. Keynes’s Cambridge lectures in the Easter term of 1932 included the follow-

²The device had recently been formulated by Kahn (1931). Macroeconomic adjustment via quantity changes was debated by the ‘circus’ during the first half of 1931. James Meade contributed a demonstration that equilibrium requires that the ‘leakages’ from the circular flow into various ‘pockets’ must sum to the value of the initial disturbing change in investment—‘Mr Meade’s relation’.

ing proposition: 'Whenever there is a change in income, there will be a change in expenditure in the same direction but less in amount' (Keynes, 1979, p. 39). Traces of the multiplier concept can be found in these lectures, and by now Keynes had also grasped the idea that equilibration of investment and saving was achieved via income rather than interest rate changes (Clarke, 1988, pp. 260–261).

In his notes for the book that was to supersede the *Treatise*, Keynes (1973a, pp. 386–387) makes the point that in a downturn private sector expenditure will tend to decline more slowly than income receipts, so that

[w]e may reasonably rely upon a point of equilibrium being reached eventually at which . . . there is no reason for any further decline in the short period. . . . The reader will notice that, apart from factors of which we have not yet taken account, there is no presumption whatever that the equilibrium output will be anywhere near the optimum output. The essence of the above process is that the real income of the community has to be forced down to a level at which the rate of saving is not so excessive relatively to investment at the current rate of interest as to produce a crescendo of business losses and the closing down of plant.

The first of 'the factors not yet taken into account'—the possibility that downward adjustment of money wages in the face of high unemployment—is dismissed as unlikely to remedy the situation.

The second factor is the 'adjustability of the rate of interest'. On this issue, Keynes is equally definite and equally negative.

The 'automatic' forces, upon which it has been customary to rely in the long run, can be analysed . . . as follows. On the one hand we have the fact that, as output, and consequently the community's real income, declines, the proportion of earnings which is saved will also decline. On the other hand as output and prices decline, the proportion of the stock of money to income will (under some, but not all, monetary systems) tend to increase. This growing relative abundance of money will, unless the general desire for liquidity relatively to income is capable of increasing without limit, lead in due course to a decline in the rate of interest. And, although the decline in the rate of interest may be prevented for a time by various 'bearish' factors from exercising a favourable influence on investment, sooner or later it will do so. Thus we may expect to reach a point at which, with saving declining and investment increasing, the turn of the tide comes, whereupon the recovery will feed on itself just as the depression had fed on itself, real and money incomes will rise and savings will rise thus supporting the higher level of investment—so the argument runs—until we are back again at optimum output. . . .

The point at which I withdraw reliance upon the above course of events appears when the recovery in output leads to an increase of savings. For there is no safeguard against savings increasing faster than they can be absorbed by investment, except a monetary policy deliberately aimed at making a rate of interest sufficiently stimulating to investment; and *under an 'automatic' system there is no certainty, or even possibility, of this.*

(1973a, pp. 394–396; emphasis added)

The notion of an automatically equilibrating interest rate mechanism has disappeared from Keynes's thinking. It is not just that a supposed mechanism is

‘sticky’: there is ‘no possibility’ of adjustment in that way; the mechanism simply doesn’t exist. Autonomous fluctuations of investment demand can result in the establishment of a low-employment equilibrium. Instead of interest changes ‘naturally’ ensuring equality of saving and investment at a satisfactory level of activity, the balance of saving and investment is achieved through a fall in income, which reduces the level of savings to the new low level of investment.

3.3. Progress towards the General Theory: Interest ‘in the Air’

As Keynes (1973b, p. 212) himself later described the situation, recognition that macroeconomic equilibrium is attained via changes in income rather than in the interest rate revealed a theoretical gap:

[T]he initial novelty [of my theory] lies in my maintaining that it is not the rate of interest, but the level of incomes which ensures equality between saving and investment. The arguments which lead up to this initial conclusion are independent of my subsequent theory of the rate of interest, and in fact I reached it before I had reached the latter theory. But the result of it was to leave the rate of interest in the air. If the rate of interest is not determined by saving and investment in the same way in which price is determined by supply and demand, how is it determined?

His first efforts to fill the gap led him into a cul-de-sac:

One naturally began by supposing that the rate of interest must be determined in some sense by productivity—that it was, perhaps, simply the monetary equivalent of the marginal efficiency of capital, the latter being independently fixed by physical and technical considerations in conjunction with the expected demand. It was only when this line of approach led repeatedly to what seemed to be circular reasoning, that I hit on what I now think to be the true explanation.

The stumbling block Keynes encountered in seeking to derive an alternative treatment of interest from traditional (Marshallian) sources was that in the corpus of conventional neoclassical theory notions of the rate of interest and what Marshall called ‘quasi-rent’ (the return on investment) were inextricably intertwined. The circularity of which Keynes complained manifested itself in attempting to account for the rate of interest as the price that equated the demand and supply of capital while at the same time determining the quantity of capital demanded for investment purposes by discounting the expected stream of quasi-rents (profits) by the rate of interest.³ Keynes thus came to appreciate that, in needing a replacement for the traditional theory of interest, he required an explanation of interest that succeeded in escaping the usual confused entanglement of the rate of interest and the return on investment.

With hindsight we can see that Keynes needed to differentiate clearly between the return yielded to the entrepreneur on investment and interest received

³In Keynes’s own words (1936, p. 184): ‘The marginal efficiency (productivity) of capital partly depends on the scale of current investment, and we must already know the rate of interest before we can calculate what this scale will be.’

by the supplier of loanable funds. It is likely that, at this stage of theoretical impasse, Piero Sraffa's review of Hayek played a vital and constructive part. If Keynes was still searching for a satisfactory solution to his problem regarding the rate of interest in early 1932, Sraffa's paper, introducing the notion of multiple 'natural rates', could not but have pointed the way to a solution. Sraffa's critique of Hayek not only confirmed, from a different theoretical perspective, the understanding already reached by Keynes that the conventional 'money rate–natural rate' story was untenable, but at the same time offered a new (to Keynes) conception of interest on money as 'a thing in itself'—the revealing phrase is Keynes's (1973a, p. 399). Viewed in this way, an independently determined rate of interest on money could evidently be compared, without circularity, against the investor's return on capital goods.

How did Keynes respond to Sraffa's article? The only hard evidence we have is that, in Chapter 17 of the *General Theory*, Keynes (1936, p. 223) specifically attributes the concept of 'own-rates' (his term for Sraffa's 'commodity rates'), which he was there employing, to Sraffa (1932). Given that both Keynes and Sraffa were well acquainted with the practicalities of forward trading, the acknowledgment suggests that Keynes was attributing to Sraffa a new theoretical interpretation of such operations. In taking on board this concept, Keynes was necessarily subscribing to a new conception of what interest is: he could not have acknowledged and accepted Sraffa's notion of commodity/own-rates without at the same time coming to understand that multiple 'natural' rates of interest existed, and that the rate on money was one such rate amongst others.

In other words, Keynes's Chapter 17 acknowledgment of Sraffa implies more than it might at first sight seem to mean. Keynes was not just acknowledging Sraffa as the source of the unfamiliar and rather exotic concept of own-rates; he was also implying far more. In adopting Sraffa's concept of multiple natural rates (including a money rate), he had—as he must have done—come to recognise that the rate of interest on money could be regarded as something quite distinct and separate from the rate of return on investment. This was a critical step towards the answer, although not in itself the complete answer, to Keynes's problem of explaining the rate of interest independently of the return on capital. Unless it can be shown that Keynes arrived at the idea of the existence of multiple 'natural' rates by some other route—and there is no evidence of that—we must conclude that Sraffa's concept did have a fundamental impact on Keynes's thinking.

3.4. *Progress towards the General Theory: Liquidity Preference*

While Sraffa himself offered no explanation of why interest should be paid on money, he had, we have argued, brought to Keynes's notice the revolutionary notion that the rate of interest on money was 'a thing in itself'—something to be explained on its own terms, quite distinct from the return on investment goods. We must now consider how Keynes arrived at the sudden inspiration that liquidity preference could provide the missing explanation. Given the difficulty of breaking free from the conventional framework of thought, it was a happy chance that Sraffa's critique of Hayek's theory posed the problem to Keynes in terms of an issue with which he was exceptionally well-equipped to

engage. In Sraffa's terminology, the 'commodity rate' on money meant the rate of interest on money in terms of money. The question therefore arises: why should anyone pay money to borrow money? Keynes, a monetary specialist with many years of reflection on human behaviour in the face of uncertainty, was well placed to hit upon the idea of interest as compensation for parting with liquidity. In a flash of lateral thinking, Keynes connected Sraffa's idea of a 'commodity' rate of interest on money with an understanding of behaviour under uncertainty, which was already part of his mental furniture. Liquidity preference naturally emerged as an explanation of interest on money.

The following well-known passage summarises Keynes's reasoning:

Money, it is well-known, serves two principal purposes. By acting as a unit of account, it facilitates exchanges without its being necessary that it should ever itself come into the picture as a substantive object. In this respect it is a convenience which is devoid of significance or real influence. In the second place, it is a store of wealth. So we are told, without a smile on the face. But in the world of the classical economy, what an insane use to which to put it! For it is a recognized characteristic of money as a store of wealth that it is barren; whereas practically every other form of storing wealth yields some interest or profit. Why should anyone outside a lunatic asylum wish to use money as a store of wealth?

Because, partly on reasonable and partly on instinctive grounds, our desire to hold money as a store of wealth is a barometer of the degree of our distrust of our own calculations and conventions concerning the future. Even though this feeling about money is itself conventional or instinctive, it operates, so to speak, at a deeper level of our motivation. It takes charge at the moments when the higher, more precarious conventions have weakened. The possession of actual money lulls our disquietude: and the premium which we require to make us part with money is the measure of the degree of our disquietude. (Keynes, 1937, pp. 215–216)

As we have seen, Keynes had by early 1932, come to realise that he needed a new theory of interest. But it was only 'appreciably later', as he himself described the sequence of events, that the solution emerged. While we cannot be sure when exactly Keynes 'hit upon' liquidity preference as the explanation of interest on money, what evidence we have suggests that this breakthrough most likely occurred *after* March 1932. By our reckoning, Keynes arrived at his new theory of interest sometime between the spring of 1932, when Sraffa's review appeared, and the beginning of the Michaelmas term in October.

During the summer of 1932, Keynes found more time to devote to economic theory than he had for several years. As reflected in surviving notes, theoretical progress continued (see Keynes, 1973a, pp. 381–407; 1979, pp. 48–57). Moggridge (in Keynes, 1973a, p. 343) observes that all the evidence from this period shows that 'in less than eighteen months after publishing the *Treatise*, [Keynes] was in hot pursuit of a new formulation integrating money and real variables.' Dates are a bit sparse here, but in a letter of 9 May 1932 to Joan Robinson, Keynes (1973a, pp. 377–378) refers to his 'half-forged' weapons. Keynes was at this time 'hard at work refashioning his approach' (Moggridge, in Keynes, 1973a, p. 380).

During the summer of 1932, changes in terminology, suggestive of a change in Keynes's approach to the rate of interest, begin to appear in his notes and drafts. In the earliest extant list of chapters of his new book he employed the term 'bearishness' in connection with the theory of the interest rate. But by the beginning of the Michaelmas term (October 1932), the draft list had been amended, with 'bearishness' replaced by 'liquidity preference'. Correspondingly, the title of his lecture series was altered from 'The Pure Theory of Money' (Easter term 1932) to 'The Monetary Theory of Production' for Michaelmas 1932.

Further evidence suggesting that it was subsequent to March 1932, but not all that long after, certainly before the end of the year, that Keynes had arrived at the essentials of the theory of money and interest that would be expounded in the *General Theory*, derives from his Michaelmas lectures and from two draft chapters which Moggridge (Keynes, 1973a, p.380) dates to the latter part of 1932.

Keynes's Michaelmas lectures supply clear evidence that his new monetary theory of interest was by then in place. 'Liquidity preference' was first revealed to the public in the middle of that term. Keynes's exposition, as recorded by R.B. Bryce, led up to the triumphant conclusion that 'in itself the rate of interest is an expression of *liquidity preference*' (quoted by Clarke, 1988, p. 263).⁴ The following passage from the 1932 draft indicates how far he had got:

We have found that the price complex of assets is given by their anticipated productivity taken in conjunction with the market rate of interest. This . . . is quite natural and as it should be. Moreover, since on my view the market rate of interest is a thing in itself, dependent on liquidity preference and the quantity of money, there is no longer any circularity in the method of valuing assets, such as exists so long as the rate of interest is supposed to be in some way the same thing as, or directly arising out of, the productivity of assets. (Keynes, 1973a, pp. 399–400)

Keynes's lecture on 14 November 1932 bears possible traces of Sraffa's influence:

On my view, there is no unique long-period position of equilibrium equally valid regardless of the character of the policy of the monetary authority. On the contrary there are a number of such positions corresponding to different policies. Moreover there is no reason to suppose that positions of long-period equilibrium have an inherent tendency or likelihood to be positions of optimum output. A long-period position of optimum output is a *special* case corresponding to a special kind of policy on the part of the monetary authority. (Keynes, 1979, pp. 54–57, emphasis in original)

He ends the lecture with the following summary of his argument:

[T]he generalised long-period theory is considerably more complicated than the traditional theory, which is best regarded as applying to a class of cases; and that

⁴Clarke cites the passage as 'Bryce notes, 31 Oct., 1932 (emphasis in original)'. Bryce was a Canadian graduate who was visiting Cambridge in 1932. A transcript of the notes Bryce made at those lectures, prepared by T.K. Rymes, is held in the Keynes Papers at King's College, Cambridge. For a published version, see Rymes (1989).

a clear distinction between *the rate of interest* as the expression of liquidity preference, *the expectation of quasi-rent* [returns on investment], and *the state of time preference* [the propensity to consume] as expressing the relation between the level and distribution of income and the propensity to spend, as being three different and separate concepts, is as important to a satisfactory long-period theory as it is to a short-period theory.

In this lecture, therefore, we find not only liquidity preference, but also the contention, later elaborated more fully in Chapter 17, that in a monetary production economy, asset choice in conditions of uncertainty need not be expected to produce a socially optimal state of affairs. The fact that this thesis is present, together with his new theory of interest, in this very early draft for Keynes's intended book, suggests that it was not a later 'add-on' to the basic model, but that the theory of interest together with its full (Chapter 17) implications for the operation of a monetary economy were, from the very first, integral elements of Keynes's vision. If these are both components of a single theoretical conception we may surmise that all elements of this package of linked ideas—and not just Chapter 17—equally reflect the liberating effects on Keynes's thought of the damage done by Sraffa to the conventional conceptual framework.

Within two years of the publication of the *Treatise*, Keynes's thinking had completely changed. By late 1932, all three key components of *The General Theory* were in place: (1) recognition of the possibility of equilibrium at less than full; (2) a conception of the rate of interest 'as a thing in itself' that is, as a monetary phenomenon—'the reward for parting with liquidity'—determined by liquidity preference relative to existing asset stocks; and (3) the determination of the value of assets, such as new capital goods, by discounting prospective returns at the going rate of interest (the rate of interest on money now being recognised as something distinct from the 'marginal efficiency of capital', with the relation between the two rates critical in determining the volume of investment and the equilibrium level of income).

4. Was Keynes's Route to the New Theory of Interest via Sraffa?

We have argued that Sraffa's novel insight played a significant part in guiding the direction of Keynes's thinking. In view of the general perception that Sraffa's influence was minimal, we ought to ask whether there is a plausible alternative explanation of how Keynes arrived at the liquidity preference theory of interest. We noted earlier that Shackle, Clarke and Dimand suggest that once productivity and thrift had been found wanting, Keynes moved directly to liquidity preference simply by recycling into the *General Theory* familiar old ideas—relating to 'bearishness' on the part of wealth-holders—which had featured in the *Treatise*. From this perspective, no Sraffian bridge was required to help Keynes cross the gap to a new treatment of interest.

It might at first sight seem unlikely that the liquidity preference theory of interest could have derived from the *Treatise*: one can search the whole two-volume text without coming across any recognition of interest as a *monetary* phenomenon. As a matter of fact (as Hayek pointed out) the *Treatise* contains

no proper analysis of the nature of ‘interest’: it is simply taken as understood that interest (the ‘natural’ rate) is a ‘real’ price representing the terms of exchange of consumption now against consumption later. Nevertheless, the point has been made that the traditional pre-*General Theory* monetary discussion, in the *Treatise* and elsewhere, contained elements which, with hindsight, can be interpreted in terms of liquidity preference.⁵ A particularly striking example is to be found in Keynes’s discussion of commodity trading in the *Treatise* (Keynes, 1930, II, pp. 128–129):

[I]t is not necessary that there should be an abnormal shortage of supply in order that a backwardation⁶ should be established. If supply and demand are balanced, the spot price must exceed the forward price by the amount which the producer is ready to sacrifice in order to ‘hedge’ himself, i.e. to avoid the risk of price fluctuations during his production period. Thus in normal conditions the spot price exceeds the forward price, i.e. there is a backwardation. In other words, the normal supply price on the spot includes remuneration for the risk of price fluctuations during the period of production, whilst the forward price excludes this.

Citing Keynes’s own account that ‘the notion of interest as being the measure of liquidity preference . . . became quite clear in my mind the moment I thought of it’, Clarke (1988, p. 263) comments that this recognition was ‘like a ripe apple falling off the tree . . .’ Clarke’s hypothesis is that once the standard interpretation of the natural rate as the equilibrator of saving and investment had been undermined by the multiplier concept of equilibrium attained via income changes, Keynes directly lighted on the hitherto unchristened notion of liquidity preference as providing the necessary new explanation of the rate of interest. ‘The significance of liquidity preference,’ Clarke (1988, p. 264, emphasis in original) writes, ‘was as a *theory of interest*, once the theory of interest was no longer conceived as equilibrating saving and investment.’

But this leaves unanswered the key question of how exactly Keynes got to that new theory. Indeed, Clarke’s interpretation of Keynes’s ‘revelation on the road to liquidity preference’ cannot be literally correct; for it is, as we have seen, an established fact that Keynes did *not* leap straight to liquidity preference.

⁵See, for example, Clarke (1988, pp. 263–264): ‘It is easy to find earlier adumbrations of the notion of liquidity preference—once one knows what to look for. Virtually any precautionary motive for holding money which an exhaustive treatment of the quantity theory might mention may seem to point in this direction. Here too ‘everything is to be found in Marshall’; and the *Treatise*’s reflections on bearishness can be read in the same way. Yet at this time—as his exchanges with Robertson before the Macmillan Committee show—Keynes did not make the connection which later struck him as so obvious.’

⁶‘Backwardation’ refers to the extent to which the price of a commodity for forward delivery is less than the spot price. In the *Treatise*, Keynes supposed that such a divergence between spot and forward prices is normal when there is uncertainty as to the future price. Sraffa (1932) however, with reference to full (Marshallian) long-run equilibrium (which was not Keynes’s concern in the *General Theory*), states that in equilibrium all the spot and forward prices will be equal to each other and the commodity rates will then all equal the rate of interest.

On the contrary, when he became aware of a problem with the traditional theory, he continued to muddle about with conventional Marshallian ideas before arriving at the solution that interest could be conceived of as payment for borrowing not ‘capital’, but money, and that such payment could be explained as ‘the reward for parting with liquidity’. Given Keynes’s Chapter 17 acknowledgment of Sraffa for the own-rate concept, the novelty of Keynes’s solution to the problem, and the difficulty he experienced in reaching the solution, it is probable that Keynes was helped towards a new view of interest by taking on board the novel conception of multiple ‘natural’ rates of interest, as proposed by Sraffa in his demolition of Hayek.

Of course, as Clarke and Shackle emphasise, the ideas about liquidity that are found in the *Treatise* reappear in the *General Theory*, but their transfer to the new theoretical framework does not seem to have been easily achieved. To get from productivity and thrift to liquidity preference a chasm had to be crossed. It was not merely a matter of finding a different theory of the rate of interest, a different *conception* of the nature and role of interest was required. The analysis of the *Treatise* is concerned with failure of the market rate to adjust to changes in the autonomous natural rate so as to maintain the value of new capital goods at a level consistent with a full-employment volume of investment. The ‘market rate’ was regarded not as something essentially different from the ‘natural’ rate, but as a sometimes imperfect reflection of the ‘natural’ rate, itself regarded as a ‘real’ phenomenon whose role was to equate saving and investment. Although adoption of the multiplier theory certainly implied a negative shock to the conventional wisdom regarding the rate of interest, that shock did not in itself provide an alternative treatment: the notion of ‘the rate of interest’ as a unique entity determined by ‘real’ forces remained to be overcome. This was one of the key old ideas ‘which . . . ramify into every corner of our minds’ which Keynes (1936, p. viii) struggled to escape.

To sum up: among the alternative hypotheses concerning how Keynes arrived at the liquidity preference theory, the most plausible, we have argued, is that Sraffa provided the crucial stepping-stone to Keynes’s new theory of interest. A considerable amount of circumstantial evidence points in this direction. The magnitude of the conceptual leap required to get from the well-established notion of the existence of one ‘natural’ rate of interest, determined by ‘real’ (non-monetary) factors, to a conception recognising many ‘natural’ rates, of which one was the rate on money *per se* was certainly substantial. Once the failure of the old theory of interest was recognised Keynes, on his own admission, experienced some difficulty in finding his way to a new theory. Sraffa’s critique of Hayek appeared, with a new interpretation of the nature of interest, just when Keynes was in need of something of the sort. Evidence of significant change in Keynes’s thinking about the rate of interest began to appear by the summer of 1932, soon after the appearance of Sraffa’s critique of Hayek’s theory. And finally, Keynes himself appears to confirm a link between his own theoretical progress and Sraffa’s 1932 paper. Keynes’s Chapter 17 acknowledgment of Sraffa as his source of the own-rate concept can plausibly be interpreted as an acknowledgment that he had found a new conception of interest in Sraffa’s critique of Hayek.

We surmise that Keynes’s theory of interest was reached via a three-stage process. First, the productivity and thrift theory is discredited when Keynes recog-

nises that changes of the level of income, not the rate of interest, are what ensure equality of savings and planned investment. Second, Piero Sraffa introduces the novel and stimulating idea that there exist as many 'natural' rates, including a rate on money, as commodities or assets which can be lent and borrowed; this points Keynes in a new direction. Third, Keynes proposes a theory that interprets interest on money as the reward for parting with liquidity. The concept of liquidity preference itself, however, was wholly Keynes's own contribution, representing an understanding that could only have emerged out of Keynes's lifetime contemplation of how decisions are made in an uncertain world.

5. Implications of a Monetary Theory of Interest

The realisation that interest on money could be understood as an independent variable, rather than as a dependent shadow of the rate of return on investment, must, we imagine, have had an enormously liberating effect on Keynes's thinking. As well as filling the gap left by the abandonment of 'productivity and thrift' (and at the same time resolving the capital valuation problem) it was surely this new perception of the nature of interest that opened the way to Keynes's vision of what he called a 'monetary production economy' as distinct from a 'real-exchange' system.⁷ Keynes, once equipped with the new perception that one form of interest was interest on money itself, must have then found it relatively straightforward, by applying his *Treatise* analysis of choice between money and other assets (involving 'bearishness'), to explain 'the price of money' rather than deviations of the market rate from the natural rate (see Maclachlan, 1993, p. 92).

In a (neoclassical) real-exchange economy, if, from a position of full employment, investment spending falls short of current saving, the rate of interest will decline, bringing saving and investment again into line. The falling interest rate discourages saving, so that consumption rises; hence total spending is maintained at the full-employment level, if not on the one sort of output, then on the other. By contrast, in the case of a monetary production economy, a reduction in investment need not be associated with an offsetting increase in consumption spending. There is no reason why the relationship between the prospective returns on investment, and the compensation demanded both by fund-holders, and by investors, for foregoing the security of holding wealth in liquid form, should necessarily permit sufficient investment to offset saving out of a full-employment level of income. If

⁷He explained the distinction thus: 'An economy, which uses money but uses it merely as a neutral link between transactions in real things and real assets, and does not allow it to enter into motives or decisions, might be called ... *a real-exchange economy*. The theory which I desiderate would deal, in contradistinction to this, with an economy in which money plays a part of its own and affects motives and decisions and is, in short, one of the operative factors in the situation ... The divergence between real-exchange economics and my desired monetary economics is, however, most marked, and perhaps most important when we come to the discussion of the rate of interest and to the relation between the volume of output and the amount of expenditure...' (Keynes, 1973a, pp. 408–411)

investment is to take place, prospective returns must offset the uncertainties and fears associated with commitment of resources to illiquid, potentially loss-making assets. If prospective returns are not sufficiently high, nothing can replace the attraction of non-produced liquid assets as a store of value. In the Keynesian monetary economy, the state of liquidity preference is a critically important independent determining factor.⁸ As Keynes (1936, p. 235) put it in chapter 17 of *The General Theory*, '[un]employment develops, that is to say, because people want the moon; —men cannot be employed when the object of desire (*i.e.* money) is something which cannot be produced and the demand for which cannot readily be choked off.'

6. Conclusion

Although in the 1930s Keynes and Sraffa were both seeking to expose the deficiencies of the received neoclassical theory, their particular projects did not overlap. Nevertheless they had a close intellectual relationship and, on occasion, each was able to assist the other (see Ranchetti, 2001). The surviving textual record does not allow us to establish with certainty how Keynes arrived at his new theory of interest. But the available evidence, direct as well as circumstantial, strongly suggests that Sraffa's critique of Hayek's *Prices and Production* pointed Keynes towards a new conception of multiple rates of interest, which enabled him to account for the rate of interest on money in terms of liquidity preference. The widely held view that Sraffa made no significant contribution to the development of Keynes's *General Theory* overlooks the real possibility that Sraffa's remarks on own rates of interest may have helped to guide Keynes's thinking in a fruitful direction at a critical juncture.

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⁸See Keynes (1973b, p. 103): 'the orthodox theory maintains that the forces which determine the common value of the marginal efficiency of various assets are independent of money ... and that prices move until the ... rate of interest falls into line with the common value of the marginal efficiency of other assets as determined by other forces. My theory, on the other hand, maintains that this is a special case and that over a wide range of possible cases almost the opposite is true, namely, that the marginal efficiency of money is determined partly by forces appropriate to itself, and that prices move until the marginal efficiency of other assets fall into line with the rate of interest'.

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