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Hicks on Hayek, Keynes, and Wicksell[1]

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Abstract

Sir John Hicks had a ringside seat at the combative debate between Hayek, Keynes, and Sraffa in the early 1930s. Hayek, Hicks's colleague at the London School of Economics from 1931 to 1935, had launched a scathing attack on Keynes's *Treatise on Money* (1930) in *Economica*. In the immediate aftermath Hicks admitted that " ... after the thunderstorms of recent years it is with diffidence and even apprehension that one ventures to open one's mouth on the subject of money …". Nevertheless, Hicks did open his mouth and take up his pen on this subject both at the time and afterwards. His "A Note on the *Treatise"* (1967) was a significant contribution helping later readers to gain some understanding of the issues. One objective of this paper, therefore, is to reintroduce Hicks' arguments to a modern audience. When the topic of "Keynes versus Hayek" comes up for discussion today, the precise timeline of the events of 80 years ago is blurred. Importantly, Hayek did not offer a critique of Keynes's most influential book, the *General Theory of Employment Interest and Money* (1936). The question therefore arises as to what it was that engaged Hayek specifically about the *Treatise,* and not about Keynes's better-known book? A second main focus of this paper is an attempt to answer this question. These are sorts of issues about which Marc Lavoie and Mario Seccareccia have written throughout their careers.

Introduction

Sir John Hicks had a ringside seat at the famous and combative debate between Hayek, Keynes, and Sraffa in the early 1930s. Hayek (1931a, 1932) who was Hicks's colleague at the London School of Economics (LSE) from 1931 to 1935, had launched a scathing attack on Keynes's *Treatise on Money* (1930) in the journal *Economica*. Given the provocation, Keynes (1931)

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replied in kind. Sraffa (1932a, 1932b) came to Keynes's defense. In the immediate aftermath Hicks (1935, 46) admitted that:

> (a)fter the thunderstorms of recent years it is with diffidence and even apprehension that one ventures to open one's mouth on the subject of money.

Nevertheless, Hicks did open his mouth and take up his pen on this subject both at the time and for years afterwards. His "A Note on the *Treatise"* (Hicks, 1967b) was a significant contribution towards helping later readers to be able to gain some understanding of the issues. One objective of this paper, therefore, is to reintroduce Hicks' arguments to a modern audience.

When the topic of "Keynes versus Hayek" comes up for discussion today, the precise timeline of the events of 80 years ago is often left very blurred. Hayek did not, in fact, offer a critique of Keynes's most influential book the *General Theory of Employment Interest and Money* (1936). In retrospect, Hayek (1994, 89-98) conceded that this omission may well have been a tactical mistake, but still gave no real indication of what such a critique might have been. The question therefore arises as to what it was that engaged Hayek specifically about the *Treatise on Money* and not about Keynes's better-known book? Another main focus of this paper, therefore, is an attempt to answer this question. These are sorts of issues about which Marc Lavoie and Mario Seccareccia have written throughout their careers (see, for example, Lavoie 1997, 2006, 2014, Lavoie and Seccareccia 1988, Seccareccia 1990, 1997, 2004).

One point that has often been mentioned in the literature is the apparent inconsistency between the core theory chapters of the *Treatise* on the "Fundamental Equations" (chapters 9 and 10), and the policy analysis and historical illustrations in the rest of the two-volume work.[4] In the pure theory chapters the level of output was assumed to be constant. It was this assumption which was inconsistent with the, less formal, analysis of changes in output and employment in the applied sections of Keynes's book. If Hayek's main complaint was along these lines he would have been essentially correct, but then (presumably) the debate could have been finished and done with very quickly indeed. There must surely be more to it than this?

One clue may be Keynes's emphasis in the *Treatise* on sectoral price levels, specifically on the relative prices of investment goods and consumption goods. This was in addition to his

[4] See Seccareccia (2004) for a detailed discussion of the various other models that are to be found in the different parts of the *Treatise* and, thereby, whatever element of continuity there was between the *Treatise* and the *General Theory* in this respect.

much better-known analysis of the aggregate price level. The former aspect of Keynes's discussion must have seemed to Hayek to trespass directly on his home turf. To explain the theory of the business cycle due to Mises (1934) and Hayek (1935) had tried to combine the so-called "Austrian" theory of capital with a Wicksell-type monetary theory, in order to generate a theory of the business cycle that was based precisely on changes in inter-temporal prices. In the Austrian theory the interest rate differentials originally postulated by Wicksell (1898) were thought to have "real" effects on the economy (that is, on the business cycle), and not only on the aggregate price level - as had been the case in Wicksell. Keynes's own attempt at a Wicksell-type theory in the *Treatise* which did not allow for these real effects, but nonetheless did pay some attention might therefore have been seen as a direct challenge to the newly-emerging Austrian theory. In short, it was the "Wicksell Connection" (as Leijonhufvud later called it) which was present in the *Treatise*, but had disappeared entirely by the time of the *General Theory* that, *circa* 1930, seems most definitely to have caught Hayek's full attention (Leijonhufvud 1981, 151-60).

To press their case Hayek, and others, had no compunction in directly accusing Keynes of ignorance of the German-language literature. But, whatever the truth about Keynes's scholarship in reality the theory presented in the *Treatise* was much closer to the original Wicksellian model than was that of the Austrians. In *Interest and Prices* Wicksell (1898) had focused mainly on aggregate price level effects and did not allow for changes in output. Keynes in the *Treatise* had changes in both relative prices and the aggregate price level. However, in the pure theory sections of the book, at least, Keynes did not allow for real effects. We should recall that in 1930/31 Keynes was a very senior figure in the economics profession whereas Hayek, sixteen years Keynes's junior, has yet to make his way.[5] From Hayek's point of view Keynes high profile effort must have seemed a bitter pill to swallow, and even to seriously threaten the whole basis of his own approach.

Hicks's "A Note on the Treatise" (1967)

[5] Hayek first came to England as a Visiting Professor in 1931/32. He was appointed Tooke Professor of Political Economy at the LSE in 1932, a chair which he then held until 1949. The LSE itself was a much younger academic institution than was Cambridge University, having been founded by the Fabian socialists Beatrice and Sydney Webb only in 1895.

As mentioned, a compelling argument made by Hicks in 1967 (Hicks 1967b, 189-90) was that Keynes's *Treatise on Money* (1930) needed to be "translated" for the benefit of the readers of that time. This was because of the great change in macroeconomic theory in the intervening decades much of it due to Keynes and Hicks themselves. Today; however, another fifty years have passed by and it seems clear that the issue needs to be addressed once again for a 21st century audience. There are still problems comparing the notation used by Hicks in 1967 to that now common in twenty-first century macroeconomics textbooks[6]. Indeed, some eighteen years after the *Critical Essays in Monetary Theory*, Hicks himself had recognized the difficulty. In his *Method of Economic Dynamics* (1985, 55-6), for example, he had made a brief attempt to:

> … restate his [Keynes's] analysis in *General Theory* notation … (emphasis added).

That discussion; however, involved a much less detailed treatment than in the 1967 paper. In our view, therefore, it remains the case that a first requirement for a modern audience is to restate Hicks's 1967 interpretation of Keynes in full using what is, by now, a much more familiar notation.

In something like the modern textbook-type notation, therefore, Keynes's notion of "real income" in the *Treatise* might be written as:

(1) $$Y = C + I$$

where Y stands for real output or real GDP, C for real consumption expenditure, and I for real investment spending. As already discussed according to Hicks, and others, the main flaw of the *Treatise,* and the main difficulty in understanding Keynes's argument, was the fact that both the level and composition of this "real" magnitude were assumed to be held constant in the formal theoretical treatment. This was also the conclusion reached by Keynes's close colleagues in the famous "circus", the group which retrospectively discussed the *Treatise* at Cambridge University in the early 1930s (Smithin 2018).

As Y, C, and I are supposed to be stated in real terms then, according to modern ideas, there must also exist an equilibrium aggregate price level which we will label, P, such that:

(2) $$Y = PY/P$$

[6] In Hicks (1967b, 195), to take just one example, the symbol for real investment spending is actually "*C*" which usually means "consumption" in a modern textbook. It is this kind of thing that is so very confusing for the modern reader..

Keynes was also very interested in what would happen to the sectoral price levels, specifically P_C and P_I, that is, the price levels of consumption goods and of investment goods respectively - when *out* of equilibrium. One of the useful innovations made by Hicks in the 1967 paper which Keynes had not thought of was to conceive of the disequilibrium sectoral prices as being index numbers relative to some base. On this interpretation and in a plausible notation for the money value of consumption,goods out of equilibrium, we could write:

(3) $$P_C C = C + \Pi_C$$

Similarly, for the disequilibrium money value of investment goods;

(4) $$P_I I = I + \Pi_I$$

where the symbols Π_C and Π_I stand for what Keynes called the "windfall profits" ,expressed in money terms, in each sector.

It follows that there must also be a *disequilibrium* overall aggregate price index P', as distinguished from the equilibrium price index P, given by:

(5) $$P' = (P_C C + P_I I)/(C + I)$$

Next, using equations (3) and (4) equation (5) can alternatively be re-written:

(6) $$P' = 1 + (\Pi_C + \Pi_I)/(C + I);$$

or, alternatively defining total profits as $\Pi = \Pi_C + \Pi_I$:

(7) $$P' = 1 + \Pi/Y$$

Therefore, according to equation (7), the disequilibrium aggregate price level depends on the ratio of total windfall profits (Π) to income (Y).

The Fundamental Equation(s)

Keynes had a very idiosyncratic definition of savings. The volume of savings, S, was assumed to depend only on income (in Keynes's specific sense of equilibrium income) and for some reason not on the windfall profits. Thus, if following Hicks (1967b, 196), we initially assume that there is no consumption out of profits, and letting the symbol s_Y stand for the marginal propensity to save out of (Keynes's definition of income:

(8) $$P_C C = Y - s_Y Y,$$

and/or;

(9) $$P_C C = Y - S$$

which finally could be re-written as:

(10) $$P' = (P_C C + P_I I)/Y$$

The causal factor in Keynes's analysis is actually the "dollar" amount (pounds sterling for Keynes, Hicks and Hayek) of $P_I I$, that is, the money value of investment spending. As Hicks (1967b, 196) explains:

> By far the most important of ... [the behavioural assumptions] ... is that the value of investment is considered independently of the ... (other) ... flow magnitudes; so far as they are concerned it is exogenous.

We can denote this money value of investment as I', such that:

(11) $$I' = P_I I,$$

Then, using equation (6):

(12) $$P' = (Y - S - I')/Y,$$

From this last expression it is then possible to move directly on to a very straight-forward version of Keynes's *second* "fundamental equation" from the *Treatise.* Hicks explains that the *first* fundamental equation, that in Keynes had to do with the price level of investment goods, is already subsumed in the second. *The* fundamental equation therefore, according to Hicks, in modern notation is:

(13) $$P' = 1 + [(I' - S)/Y]$$

The argument of equation (13) is simply that if the money level of investment is greater than money savings this will cause the aggregate price level to rise (and *vice versa*). It is clear that the analytical device that allows the two magnitudes to differ is Keynes's special/idiosyncratic definition of investment and savings. Moreover, comparing equations (13) and (7) we might also note that $\Pi = I' - S$.

Keynes's Use of Wicksell's Natural Rate Concept

Having thus introduced Hicks's interpretation of Keynes' basic argument we now turn to the question of how Wicksell's concept of the natural rate of interest which was so important to Hayek, might be debated in this framework.

Contrary to Hayek, Smithin (1994, 2003, 2009, 2013) has consistently argued that Wicksell's (1898, xxv) notion of the "natural rate of interest" is bogus. Moreover, this is far from being a question of historical importance only. The same idea, albeit under different names, such as the equilibrium rate of interest, has survived and thrived in 21st century "micro-based"

macroeconomics - essentially by various sleights of hand. For example, in the ubiquitous dynamic general equilibrium (DGE) model, an unobtrusive device that does the trick is the assumption of a constant rate of time preference that fixes the real rate of interest for all time. However, the argument falls apart as soon as it is allowed that the rate of time preference can indeed change (Kam 2000, 2005, Smithin 2013). In our view the survival, or revival, of the Wicksellian natural rate in late 20th and early 21st century mainstream macroeconomics is one of the main reasons - although there are many others - why that body of theory has been so noticeably unsuccessful.

Nevertheless, Keynes *did* introduce Wicksell's idea into the *Treatise* eighty-five years ago. The natural rate in Keynes (1930) is defined as simply the interest rate at which the money of investment equals the money rate of saving, or $I' = S$. Thereby, Keynes's argument of 1930 turns out to be quite recognizably "Wicksellian" in terms of basic monetary theory. The argument is that if the actual rate of interest is below the natural rate, the value of investment I' will be greater than savings S. According to equation (13), the price level will then rise. Similarly, if the actual rate of interest is above the natural rate, there will be deflation.

As discussed, Hayek accused Keynes of not properly understanding the German-language literature, including Wicksell's contribution and, even more particularly the so-called Austrian capital theory of the early twentieth century due to von Mises (1934) and Hayek (1935) himself. In retrospect this argument was entirely disingenuous. It has much more frequently been the case that "Wicksell-type" arguments (Smithin 1994, 59-64) have confined themselves to the impact on either the price level or the inflation rate, rather than on the structure of capital. Moreover, the basic monetary-theoretic ideas pre-date the work of Wicksell himself by nearly a century having been fully anticipated by Thornton (1802), in an English language work entitled *The Paper Credit of Great Britain.*[7] This much was eventually recognized even by Hayek (1939) himself, in a long introduction to a reprint of Thornton's book that was published in the late 1930s. In fact, only occasionally in the history of economic thought before Keynes's *General Theory* (1936), do there seem to have been forays into thinking about the real effects of changes in interest rates. Ironically, the Keynes of the *Treatise on Money* was actually in the first camp,

[7] Hicks (1967a) had also made an interesting commentary on the work of Thornton just as he had done on that of both Keynes and Hayek. See also Smithin (1996).

whereas the Hayek of *Prices and Production* was one of the very few in the latter.[8] As Hicks (1967b, 204) put the point:

> … Wicksell plus Hayek said one thing, Wicksell plus Keynes said quite another.

But the reason that Hayek said something different to Keynes clearly has much to do with Hayek's (1931, 130) claim that:

> … the ideas of Wicksell … are a *necessary* outgrowth of the most elaborate theory of capital we possess, that of Bohm-Bawerk … (emphasis added)

If Hayek is talking about specifically about Wicksell's original ideas on money this is not correct. It is admittedly true as noted, for example, by Lindahl (1958, 14-17) that even before the publication of *Interest and Prices* Wicksell had been interested in, and written about, the capital theory of Bohm-Bawerk an Austrian school precursor of von Mises and Hayek. Also, Wicksell did explicitly refer to Bohm's theory in the preface of *Interest and Prices* (Wicksell 1898, xxv-xxvi). Crucially; however, the purpose of this reference seems to be only to establish the basic idea of a non-monetary natural rate to his (Wicksell's) own satisfaction. It did not play any greater role than this in the monetary analysis, and there was no detailed exposition of capital theory in the book. Moreover, Austrian capital theory is not actually a necessary condition for there to be a natural rate of interest in monetary theory. A theoretical natural rate can also emerge easily from neoclassical capital theory, with the exactly same implications for monetary theory. For further discussion of these points the reader can consult Kam (2000, 2005), Kam, Smithin and Tabbasum (2017), and Smithin (2013a, 185-8).

The von Mises/Hayek version of Austrian capital theory had moved on from a strict Wicksellian position to suggest that the most important effect of a misalignment of interest rates, (for example, in the downward direction) was "over-investment" in real capital equipment, not just an increase in the money value of investment spending. The supposed over-investment would then eventually have to be painfully undone in the course of a depression. This was the essence of the Austrian explanation of the business cycle. But Hicks (1967c) in a paper entitled

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[8] There is no evidence that Wicksell himself was aware of the work of Thornton, or of any other precursors such as Joplin. However, the main point is that these ideas were certainly not new in the late nineteenth and early twentieth centuries. Nor, of course, were they (anything like) new more than 200 years after Thornton, at the time of the "new consensus" of the early twenty-first century.

“The Hayek Story” had also provided a number of cogent arguments as to why Austrian business cycle theory turned out to be unconvincing as an explanation of real world events, at least to most observers, This was also famously the view of Friedman (1974). In the actual historical circumstances in which it was first presented, the Austrian narrative was indeed perceived even as dangerous to the very survival of the capitalistic economic system of the day. It came across as a sort of economic "catch-22", with the implication that there were no policy actions whatsoever that could be taken to alleviate a bad situation. By the time of the *General Theory* Keynes eventually offered an alternative solution that was much less pessimistic which alone is probably enough to account for the popularity of the *later* Keynes theory, and the eclipse of Austrian economics. It must once again be stressed; however, that in the early 1930s at the time of the “thunderstorms” the solution provided in the *General Theory* was not actually, the issue. The Keynes theory of the earlier time, the theory of the *Treatise on Money,* was, in fact even more strictly Wicksellian than the Austrians in its focus on the traditional theoretical themes of monetary economics.

In the original critique of Keynes Hayek (1931, 122) was quite explicit that he was dealing only with the pure theory part of Keynes argument. He was interested in the issues of “how profits arise”, and whether or not they are a “purely monetary phenomenon”. He actually agrees with Keynes’s general intuition that “profits are the mainspring of the system” (Hayek, 1931, 124). So, the debate was not about how changes in profits eventually affect employment or growth which focus would have addressed the burning policy questions of the day, but rather what are the conditions needed for profits to be generated in the first. From this point of view all that Keynes’s fundamental equations were really doing was to put forward a theory of how it is that profits come about and the role of investment spending (on Keynes’s own special definition) in generating them. Hayek, in 1931, was only objecting to this type of argument, and purposely shied away from any and all discussion of “practical applications” or “practical [policy] proposals” (Hayek 1931, 122). His expressly stated intention was to focus on what he saw as “the central … [theoretical] … difficulties”.

To return briefly to Hicks, it should be admitted that he finally ended up with a much more flexible interpretation of what is meant by both “Keynesian” and “Wicksellian” theory than is implied by the foregoing. Hicks was at some pains to state that he was:

> ... by *no means* implying that Wicksell *himself* said the last word

> in the elaboration of his ideas … (Hicks, 1967b, 201, emphasis added).[9]

The work of such writers as Mrydal (1939) and Robertson (1934) was cited as having provided such an elaboration and therefore (presumably or supposedly) as having been being "more genuinely (sic) Wicksellian … [than Keynes in 1930] …" (Hicks 1967b, 201).[10] Hicks was always a champion of Robertson. However, we should note that in effect (for example, in the quote about Hayek's and Keynes's differences reprinted above) he has *already* conceded that such a judgement depends entirely on what we take Wicksell's main point to have been.

Widow's Cruse/Danaid Jar

The following passage from the *Treatise on Money* (1930, 125) has always been puzzling:

> Thus profits, as a source of capital increment for entrepreneurs, are a widow's cruse which remains undepleted however much of them may be devoted to riotous living.

This is evidently a biblical allusion. A few lines later there is a classical reference to the "Danaid Jar", reflecting the opposite situation of a vessel which can never be filled up, no matter how much is poured into it.

The implication of these references is simply that in some circumstances there can be consumption out of profits after all. If there is indeed some consumption out of profits, then;

(14) $$P_C C = (1 - s_Y)Y + (1 - s_\Pi)\Pi$$

where s_Π is the propensity to save out of windfall profits. Next recall that:

(15) $$Y + \Pi = P_C C + P_I I.$$

Then, from (12), and given that $I' = P_I I$, we obtain:

(16) $$Y + \Pi = Y + \Pi - s_Y Y - S_\Pi \Pi + I'$$

which reduces to:

(17) $$I' = S + s_\Pi \Pi,$$

and, re-arranging:

[9] We are indebted to Kam Hon Chu for reminding us of this important caveat to Hicks's position. However; from the point of view of later economic theory, it could alternatively be argued that Keynes's original work in the *Treatise* was actually superior to that of either Wicksell or the early twenty-first century neo-Wicksellians of the "new consensus", in at least one important respect. Originally Keynes had allowed for "spontaneous" changes in money wages to affect the price level (that is, for cost-push inflation). In the exposition in the present paper this point has not been emphasized because of Hicks's (otherwise useful) index-number device.

(18) $$\Pi = (I' - S)/s_{\Pi};$$

Finally, using (7) we can arrive at a modified version of the fundamental equation:

(19) $$P' = 1 + [(I' - S)/s_{\Pi}]$$

This is almost the same as the original fundamental equation in equation (13), but it now includes a "multiplier". Hicks was of the opinion that this was a significant finding, from the perspective of the history of economic thought, given the key role that was played by the concept of the multiplier in Keynes's later *General Theory*.

What about the "unchanged increment to wealth"? According to Hicks, Keynes can make this particular claim because he (Keynes) is implicitly deflating by P_I, the value of which is not affected by consumption out of profits. "He might .... have explained" is Hicks's (1967b, 199) wry comment. In short, the real increment to wealth is simply:

(20) $$I = I'/P_I = P_I I/P_I$$

In the end; however, these several questions about the different assumptions that can be made, different terminology and so forth, do not materially affect the basic underlying analysis. As already argued in detail the main point at issue is the dispute about the Wicksellian *bona fides* of Keynes's approach. In a passage that served to emphasize precisely this issue, Smithin (2013, 125-32) went through the exercise of deriving a modern neo-Wicksellian model from the so-called "micro-foundations". The original purpose of the exercise was to demonstrate to graduate students, and others, the many and various pitfalls of the micro-foundations approach itself. After much mathematizing the Wicksell-type model as so constructed finally came down to:

(21) $$Y = Y^N$$

(22) $$p = [1/(1-\gamma)](r^N - r_j), \qquad 0 < \gamma < 1$$

Thus the conclusion was that in such a model the level of output, Y, is always at its natural value Y^N. This is the so-called "full employment" level of output which is also supposedly the same rate as that which would prevail in a barter exchange economy. The other result was that if the base real policy rate, that is r_j, is too low relative to Wicksell's natural rate r^N (which in modern optimization models, as discussed, is identified with the rate of time preference) there will be inflation and *vice versa.* As explained by Barrows and Smithin (2009, 254-8) and Smithin (2013, 130-2) the r_j are actually the *different* values that could possibly be taken by the intercept term in a Taylor rule (Taylor 1993) or similar, as perceived and acted on by the central bank authorities themselves. The point is ultimately that tedious exercise of working through the micro-

foundations really adds nothing new at all to what are, by now, very familiar theoretical propositions. Smithin's (2013, 131-2) comment on all this was as follows:

> The historically-minded reader will note that the model in … [(21) – (22)] … is only a [very] marginal advance from the position already reached by Keynes (1930, 121-44) in chapter 10 of his *Treatise on Money*.

This is an unbelievably small reward for what has now been nine decades of intensive mathematical research in academia. At the end of the day all of this "busy-work" was, quite simply, a large waste of time and effort.

Conclusion

This paper has returned to Hicks's schematization of 1967 in order (a) to further up-date that approach using still more modern notation, and (b) thereby to demonstrate the explicitly Wicksellian nature of Keynes's analysis in the *Treatise on Money*. It seems quite clear that it was the latter point which had attracted Hayek's attention all those years ago. However, by the time of the *General Theory*, Keynes (1936, 245) was careful to explicitly repudiate the natural rate concept, before then going on to offer his own detailed theory of changes in output and employment. In Keynes's own words:

> (I)t was a mistake to speak of the natural rate or to suggest …[it]... would yield a unique value for the rate of interest irrespective of the level of employment…I am no longer of the opinion that the concept of the natural rate of interest has anything useful or significant to contribute to our analysis."

This seemed to Hayek to represent a complete change in the basis of Keynes's argument. Indeed, he later openly admitted to either a disinclination or inability to pursue the matter any further (Hayek 1994, 90-91).

References

Barrows, D. and J. Smithin (2009), *Fundamentals of Economics for Business* (second edition), Toronto and Singapore: Captus Press and World Scientific Publishing.

Friedman, M. (1974), 'Comments on the critics', in R.J. Gordon, (ed.), *Milton Friedman's Monetary Framework: A Debate with his Critics*, Chicago: University of Chicago Press.

Hayek, F.A. von (1931), 'Reflections on the pure theory of money of Mr. J. M. Keynes', *Economica*, reprinted in B. Caldwell (ed), *Contra Keynes and Cambridge: Essays Correspondence,* Indianapolis: LibertyPress, 1995, pp. 121-46.

Hayek, F.A. von (1932), 'Reflections on the pure theory of money of Mr. J.M. Keynes (continued)', *Economica,* reprinted in B. Caldwell (ed), *Contra Keynes and Cambridge, Essays, Correspondence*, ed. Indianapolis: Liberty Press, 1995, pp. 174-97.

Hayek, F.A. von (1935), *Prices and Production* (second edition), reprinted by Augustus M. Kelley, New York: 1967.

Hayek, F.A. von (1939), 'Introduction', in *An Inquiry into the Nature and Effects of the Paper Credit of Great Britain* by Henry Thornton, reprinted by Augustus M. Kelley: New York, 1991, pp. 11-63.

Hayek, F.A. von 1994, *Hayek on Hayek: An Autobiographical Dialogue*. S. Kresge and L. Wenar (eds.), Chicago: University of Chicago Press.

Hicks, J. (1935), 'A suggestion for simplifying the theory of money', *Economica,* reprinted in *Money, Interest and Wages: Collected Essays on Economic Theory:* vol. II, Oxford: Basil Blackwell, pp. 46-63.

Hicks, J. (1967a), 'Thornton's *Paper Credit* (1802)', in *Critical Essays in Monetary Theory*, Oxford: Clarendon Press, pp. 174-88.

Hicks, J. (1967b), 'A note on the *Treatise*', in *Critical Essays in Monetary Theory*, Oxford: Clarendon Press, pp.189-202.

Hicks, J. (1967c), 'The Hayek story', in *Critical Essays in Monetary Theory*, Oxford: Clarendon Press, pp. 201-15.

Hicks, J. (1985), *Methods of Dynamic Economics*, Oxford: Clarendon Press.

Kam, E. (2000), *Three Essays on Endogenous Time Preference, Monetary Non-Superneutrality and the Mundell-Tobin Effect,* PhD thesis in Economics, York University, Toronto.

Kam, E. (2005), 'A note on time preference and the Tobin effect', *Economics Letters* (89)1, 127-32.
.

Keynes, J.M. (1930), *A Treatise on Money* (2 vols), reprinted in D. Moggridge (ed), *Collected Writings* vols. *V* and *V1,* London: Macmillan, 1971.

Keynes, J.M. (1931), 'The pure theory of money: a reply to Dr. Hayek', *Economica*, reprinted in B. Caldwell (ed.), *Contra Keynes and Cambridge, Essays, Correspondence*, Indianapolis: LibertyPress, 1995, pp. 147-58.

Keynes, J.M. (1936), *The General Theory of Employment Interest and Money*, reprinted by Harcourt Brace, London: 1964.

Lavoie, M. (1997), 'Loanable funds, endogenous money, and Minsky's financial fragility hypothesis', in A.J. Cohen, H. Hagemann and J. Smithin (eds.), *Money, Financial Institutions and Macroeconomics*, **N**orwell, MA: Kluwer Academic Publishers.

Lavoie, M. (2006), 'Endogenous money: accommodationist', in P. Arestis and M. Sawyer (eds.), *A Handbook of Alternative Monetary Economics*, Cheltenham: Edward Elgar.

Lavoie, M. (2014), *Post-Keynesian Economics*, Cheltenham: Edward Elgar.

Lavoie, M. and M. Seccareccia (1988), 'Money, interest and rentiers: the twilight of rentier capitalism in Keynes's `*General Theory*', in O.F. Hamouda and J. Smithin (eds.), *Keynes and Public Policy after 50 Years,* Aldershot, Edward Elgar, pp. 145-158.

Leijonhufvud, A. (1981), *Information and Coordination: Essays in Macroeconomic Theory*, Oxford University Press: New York.

Lindahl, E. (1958), 'Introduction: Wicksell's life and work', in *Knut Wicksell: Selected Papers on Economic Theory*, New York: Augustus M. Kelley, 1969, pp. 9-48.

Mises L. von (1934), *The Theory of Money and Credit,* reprinted by Liberty Classics, Indianapolis: 1980.

Myrdal, G. (1939), *Monetary Equilibrium*, London: W. Hodge.

Robertson, D. (1934), 'Industrial fluctuation and the natural rate of interest', *Economic Journal,* reprinted in *Essays in Monetary Theory*, London: P.S. King, 1940, pp. 83-91.

Seccareccia, M. (2004), 'Aspects of a new conceptual integration of Keynes's *Treatise on Money* and the *General Theory*: logical time units and macroeconomic price formation', in R. Arena and N. Salvadori, (eds.), *Money, Credit and the Role of the State: Essays in Honour of Augusto Graziani*, Aldershot: Ashgate Publishing Company, pp. 285-312.

Seccareccia, M. (1990), 'The two faces of Neo-Wicksellianism in the 1930s: the Austrians and the Swedes', in D. Moggridge (ed.), *Perspectives in the History of Economic Thought,* vol. IV, Aldershot: Edward Elgar, pp. 137-54.

Seccareccia, M. (1997), 'Early 20th century heterodox monetary thought', in A.J. Cohen, H. Hagemann and J. Smithin (eds.) *Money, Financial Institutions and Macroeconomics*, Norwell, MA: Kluwer Academic Publishers.

Smithin, J. (1994), *Controversies in Monetary Economics: Ideas, Issues and Policy,* Aldershot: Edward Elgar.

Smithin, J. (1996), 'Hicks on Keynes and Thornton', *Canadian Journal of Economics* (29)1, S235-41.

Smithin, J. (2003), *Controversies in Monetary Economics: Revised Edition*, Cheltenham: Edward Elgar.

Smithin, J. (2009), *Money, Enterprise and Income Distribution: Towards a Macroeconomic Theory of Capitalism,* London and New York: Routledge.

Smithin, J. (2013), *Essays in the Fundamental Theory of Monetary Economics and Macroeconomics.* Singapore: World Scientific Publishing.

Smithin, J. (2018), *Re-thinking the Theory of Money, Credit and Macroeconomics: A New Statement for the Twenty-First Century*, Lanham, MD: Lexington Books.

Sraffa, P. (1932a), 'Dr. Hayek on money and capital', *Economic Journal*, reprinted in *Contra Keynes and Cambridge, Essays, Correspondence*, Bruce Caldwell, (ed) 198-209, Indianapolis: Liberty Press, 1995, pp. 198-209,

Sraffa, P. (1932b), 'A rejoinder', *Economic Journal*, reprinted in *Contra Keynes and Cambridge, Essays, Correspondence*, Bruce Caldwell (ed), Indianapolis: LibertyPress, 1995, pp. 223-5.

Taylor, J. (1993), Discretion versus policy rules in practice. *Carnegie-Rochester Conference Series on Public Policy* 39: 195-214.

Wicksell, K. (1898), *Interest and Prices: A Study of the Causes Regulating the Value of Money,* reprinted by Augustus M. Kelley, New York: 1965.