

Smithin, John

## Article

Interest rates, income distribution and the monetary policy transmissions mechanism under endogenous money: what have we learned 30 years on from Horizontalists and Verticalists?

European Journal of Economics and Economic Policies: Intervention (EJEEP)

## Provided in Cooperation with:

Edward Elgar Publishing

*Suggested Citation:* Smithin, John (2020) : Interest rates, income distribution and the monetary policy transmissions mechanism under endogenous money: what have we learned 30 years on from Horizontalists and Verticalists?, European Journal of Economics and Economic Policies: Intervention (EJEEP), ISSN 2052-7772, Edward Elgar Publishing, Cheltenham, Vol. 17, Iss. 3, pp. 381-398, <https://doi.org/10.4337/ejeep.2020.0058>

This Version is available at:

<https://hdl.handle.net/10419/277493>

### Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

### Terms of use:

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



<https://creativecommons.org/licenses/by/4.0/>

# Interest rates, income distribution and the monetary policy transmissions mechanism under endogenous money: what have we learned 30 years on from *Horizontalists and Verticalists*?

John Smithin

Professor Emeritus of Economics and Senior Scholar, York University, Toronto, ON, Canada

*This paper suggests that the near-optimal setting of the real policy rate of interest (the real overnight rate in Basil Moore's home country of Canada) is zero. This will achieve as close an approximation as possible to a fair distribution of income in a particular sense. It will also promote financial stability, inflation stability, high growth, full employment and higher real wages.*

**Keywords:** Basil J. Moore, endogenous money, income distribution, monetary policy transmissions mechanism, zero interest rate policy (ZIRP), zero real policy rate (ZRPR)

**JEL codes:** B12, B22, B26, E13, E43, E58

## 1 INTRODUCTION

The famous volume by Basil J. Moore, *Horizontalists and Verticalists* (1988a) was decades ahead of its time in its insights about the theory of endogenous money, the theory of monetary policy, and the 'relationships between the central bank and the commercial banks' (Kam/Smithin 2012: 547). As a direct result of his work, and although Moore himself was in favour of an activist monetary policy,<sup>1</sup> the case for a 'park it' stance on interest rates (Rochon/Setterfield 2007/2008; 2011/2012) is much more firmly established today than it was 30 years ago.

This paper will argue that the near-optimal setting of the real policy rate of interest, in a regime which has either flexible exchange rates or a fixed but adjustable exchange rate,<sup>2</sup> is zero. A zero real policy rate (ZRPR) will achieve as close an approximation as possible to a fair distribution of income in a particular sense. It will also promote financial stability, inflation stability, high growth, full employment and higher real wages. The notion of fairness employed here differs only slightly from that attributed by Lavoie/Seccareccia (2004; 2016)

1. I am grateful to Louis-Philippe Rochon for reminding me of this point.

2. This caveat is crucial. The various policy options are not available to a jurisdiction with an irrevocably fixed exchange rate or embedded in a currency union. See, for example, Smithin (2016a; 2016b; 2018), Tymoigne/Wray (2015) and Wray (2012).

Received 10 May 2019, accepted 15 November 2019

to Pasinetti (1980/1981; 1981).<sup>3</sup> It is less generous than was Pasinetti to the so-called rentier interests.<sup>4</sup> However, it stops well short of Keynes's (1936) 'euthanasia of the rentier'.

Strictly speaking, the genuine economy-wide optimum would be that the market real rate of interest on money would be zero. However, this may not be achievable in practice for a variety of reasons including the influence of Keynesian liquidity preference. Nonetheless, empirically the real market rate of interest and the real policy rate are closely related via the transmission mechanism of monetary policy (Collis 2016; 2018a), and this circumstance is the basis for the argument that the ZRPR would be a near-optimum. That is, it will achieve the closest approximation possible to the optimum in any given set of circumstances.

The present proposal differs from the zero interest rate policy (ZIRP), put forward by the modern monetary theory (MMT) school, in that it focuses on real rather than nominal rates of interest. The two proposals are nonetheless similar in spirit. There are two main reasons, however, for preferring the ZRPR to ZIRP. The first is that, *unlike* a ZIRP, a ZRPR is conducive to inflation stability. The second is that a ZIRP in itself is unable to achieve the putatively fair distribution of income. In what follows, this paper first discusses the question of inflation stability in Section 2, and then moves on to an examination of the distributional issues in Sections 3, 4, 5, 6 and 7.

## 2 COMPARISON OF THE ZRPR AND THE ZIRP IN TERMS OF INFLATIONARY OR DEFLATIONARY INSTABILITY

The discussion of inflation stability will be based on the following equations drawn from the 'alternative monetary model' (AMM) set out in Smithin (2013; 2018):

$$p = p_0 - \lambda(r - r_{-1}) + w - a \quad 0 < \lambda < 1 \quad (1)$$

$$i = m_0 + m_1 i_0 \quad 0 < m_1 < 1 \quad (2)$$

$$r = i - p_{+1}. \quad (3)$$

Equation (1) is the inflation equation. This is not arbitrary and includes a reasonably comprehensive accounting of the various possible influences on inflation including changes in productivity, cost-push effects, and parameters of both the money demand and endogenous money supply functions. These demand and supply parameters are able to fully take into account the impact of Keynesian liquidity preference, both in the sense of the 'bullishness' and 'bearishness' of the *Treatise on Money* (Keynes 1930) and also that of the 'speculative demand' of *The General Theory* (Keynes 1936). In the notation used here, the symbol  $p$  stands for the rate of inflation,  $r$  for the real rate of interest on money,  $w$  for the natural logarithm of the average real wage rate per employed person, and  $a$  for the natural logarithm of average labour productivity. The parameter  $p_0$  is an

3. Pasinetti's 'fair' rate of interest would have 'the nominal rate of interest ... equal to the rate of growth of labour productivity plus the rate of inflation' (Lavoie/Seccareccia 2016: 211).

4. The term *rentier* was originally used in seventeenth- and eighteenth-century France to denote the recipients of agricultural '*rentes*'. Since the early twentieth century, mainly under the influence of Keynes (1923; 1936) himself, it has come to mean almost exclusively the recipients of interest income. Cf. the title of my book, *Macroeconomic Policy and the Future of Capitalism: The Revenge of the Rentiers and the Threat to Prosperity* (1996), written in the aftermath of a period of very high real rates of interest on money.

inverse measure of the state of bearishness on both sides of the money market, whereas  $\lambda$  is effectively the interest elasticity of money demand in a speculative theory of the demand for money, such as that in *The General Theory*.<sup>5</sup> Equation (2) is the monetary policy transmissions mechanism expressed in nominal terms, where  $i$  is the nominal market rate of interest on money,  $i_0$  is the nominal policy rate,<sup>6</sup>  $m_1$  is the pass-through coefficient, and  $m_0$  is the average commercial bank mark-up between deposit and lending rates.<sup>7</sup> Equation (3) is simply the usual definition of the real interest rate on money.

From equations (1), (2) and (3) we can derive the following relationship between the real rate of interest on money and the expected inflation rate:

$$r = m_0 + m_1 r_0 - (1 - m_1) p_{+1}. \quad (4)$$

There is thus a negative relation between the expected inflation rate and the real rate of interest on money (Kam 2000; 2005; Smithin 2013; 2018), which is nothing other than the historical ‘forced saving effect’ (Hayek 1932; 1991), or the twentieth-century ‘Mundell–Tobin effect’ (Mundell 1963; Tobin 1965).

Next, consider the likely consequence of a ZIRP. The implication is that the nominal policy rate of interest should be set at zero, or:

$$i_0 = 0. \quad (5)$$

If we then apply equation (5) to (1), (2) and (3), this will result in the following dynamic expression for inflation:

$$p = p_0 + w - a + \lambda(p_{+1} - p). \quad (6)$$

Lagging one period and rearranging then yields the following difference equation in inflation:

$$p = [(1 + \lambda)/\lambda] p_{-1} + (1/\lambda)(p_0 + w - a). \quad (7)$$

This is unstable as the coefficient  $[(1 + \lambda)/\lambda]$  is greater than one.

I had originally made this argument in two papers published in 2016 (Smithin 2016a; 2016b) intended as a commentary on an exchange between two prominent members of the MMT school, Tymoigne/Wray (2015), and their ‘critics’ as represented by Palley (2015a; 2015b). Since then, the relevance of this result for evaluating the ZIRP in the given context has not been disputed. At the same time, however, I also made an assertion that an alternative *real* interest rule would suffice to promote both inflation stability and general economic stability, an argument that I have consistently been making for the past 25 years, initially in Smithin (1994).<sup>8</sup> It was not perhaps strictly pertinent to the exchange between Tymoigne/Wray and Palley (as neither camp advocates a real interest-rate rule), but nonetheless seemed to be in place as an aside to the main discussion. To my surprise

5. Collis (2016; 2018a) provides time series for an empirical proxy for  $p_0$  in both Canada and the USA, and also estimates of  $\lambda$  in both countries.

6. The policy rate used to be called the ‘overnight rate’ in Canada.

7. Once again Collis (2018a) provides empirical estimates of each of the latter two parameters.

8. For the purposes of this paper, it is important to note that the claim is not, and never has been, that a real rate rule would promote low inflation or any particular target for inflation. That would be beyond the competence of the central bank, unless they are also willing to severely compromise the performance of the real economy.

this last statement has attracted some attention and debate, for example in Krohn (2019) and Watts (2016; 2018). Watts has noticed that in the circumstances under discussion the simplest possible version of the real rate rule (a rule of the form  $r_0 - p_{+1} = x$ ) will also fail to achieve the goal of inflation stability.<sup>9</sup>

Watts's contention is correct in this particular case, but the problem is easily remedied by the adoption of only a slightly more sophisticated real rate rule, which nonetheless has the effect of stabilizing the target real policy rate at the desired level of zero. This result is generalizable to other specifications of both the inflation equation and the real interest-rate rule, but is not an available option when a nominal rate of interest is the target.

To see both sides of the argument, note that, in the case where the target real policy rate is zero and the term  $r'_0$  stands for the target itself, the simplest version of the real rate rule would be as follows:

$$r_0 = r'_0 = i_0 - p_{+1} = 0. \quad (8)$$

Using (8) in (4) and (1), the following difference equation in expected inflation emerges:

$$p_{+1} = [(1 + \lambda)/\lambda]p + (1/\lambda)(p_0 + w - a). \quad (9)$$

And, as Watts has shown, this dynamic process has precisely the same stability issues as that examined in equation (7) above. It is unstable. However, only a slight modification to the real rate rule eliminates the difficulty. The specific rule which works in the present case is:

$$r_0(t) = r'_0 + [(1 - m_1)/m_1]p_{+1}. \quad (10)$$

This applies for any specified target value of  $r'_0$ , but here we are particularly interested in the case where the target is zero. That is:

$$r'_0 = 0. \quad (11)$$

Next, using (10) and (11) in equation (5), it can be shown that:

$$\lambda(r - r_{-1}) = \lambda[m_0 + (1 - m_1)p_{+1} - (1 - m_1)p_{+1} - m_0 - (1 - m_1)p + (1 - m_1)p] = 0. \quad (12)$$

Therefore, the second term on the right-hand side (RHS) of equation (1) above disappears and the inflation rate will converge to:

$$p = p_0 + w - a. \quad (13)$$

This is a comprehensive theory of *equilibrium* inflation for an economy with endogenous money as in the framework originally theorized by Basil Moore (1979; 1988a), involving cost-push factors, conflict inflation and productivity changes, as well as the money demand and supply parameters mentioned above. In equation (13) the demand and supply parameters are summed up in the term  $p_0$ , here representing Keynes's residual notions

9. The actual implementation of such a rule would likely involve using the currently observed inflation rate, or the lagged inflation rate, as a 'proxy for' the expected rate of inflation, as in the original Taylor rule (Taylor 1993: 202). Alternatively, it might plausibly be argued that the central bank's own expectations of inflation are likely to drive inflation expectations generally, and that they should use their own in-house forecast of inflation in implementing the rule.

of bullishness versus bearishness from the *Treatise* (the speculative demand for money, from *The General Theory*, having now been eliminated by the real rate rule itself).

### 3 THE FUNCTIONAL DISTRIBUTION OF INCOME

The theory of income distribution set out in Smithin (2009; 2012; 2013; 2018) is based on the idea that there should be three categories in the functional distribution of income, namely wages, entrepreneurial profit, and interest, rather than just a two-way split between wages and the return to capital in one sense or another. The latter concept of income distribution has, of course, been prevalent in both Marxian economics (via the notion of exploitation), and also in contemporary mainstream economics.<sup>10</sup>

The alternative synthetic theory of profit, as differentiated from both interest and wages, may be derived from the following two equations:

$$PY = \Pi + (1 + i_{-1})W_{-1}N_{-1} + (1 + i_{-1})P_{-1}U_{-1} \quad (\text{nominal revenue}) \quad (14)$$

$$Y = AN_{-1}. \quad (\text{production takes time}) \quad (15)$$

The basic premise in this formulation is a one-period production lag, which is the simplest possible specification to conveniently introduce the crucial element of time. The symbol  $Y$  is taken to stand for the level of output that is sold currently but was actually produced in the previous period, and  $P$  is the current price level. The term  $PY$  therefore stands for nominal revenue, in the case of an individual firm, or for nominal GDP in aggregate. For theoretical consistency the various nominal quantities, such as  $\Pi$  (money profits),  $W_{-1}N_{-1}$  (the lagged nominal wage bill), and  $P_{-1}U_{-1}$  (nominal user cost), should be taken as referring to actual flows of funds rather than the imputed values provided by the statisticians.<sup>11</sup> The term  $U_{-1}$  is a concept similar to Keynes's (1936) notion of 'user cost', whence the symbolism is derived, or to what Marx called 'constant capital' (Sweezy 1970). Thus  $P_{-1}U_{-1}$  represents the money value of the amounts of raw materials and physical capital equipment used up during the production process. The nominal interest charge, levied on both the nominal wage bill and nominal user cost, is based on the nominal interest rate prevailing at the start of the production period,  $i_{-1}$ . The basic reality, that production takes time, thus accounts both for the interest charge and also explains the necessity for entrepreneurs to form expectations of future sales receipts before they decide to undertake production.

Although the formulation in (15) only explicitly shows a relation between output and labour input, it by no means ignores the other so-called factors of production. The contributions of the various machines, technical knowledge, raw materials and so forth are rolled up in the catch-all term  $A$ . What emerges is perhaps best described as a 'virtual labour theory of production' (Smithin 2012) rather than a labour theory of value. It is intended as a rival, or antidote, to the familiar 'AK' model of late twentieth-century neo-classical growth economics (Jones 1998), a framework in which the  $A$  stands *not* for the intelligible concept of labour productivity, but for the (frankly) completely unintelligible notion of the productivity of capital, somehow defined. The specification used in this

10. The three-way split, on the other hand, corresponds much more closely to Keynes's ideas on income distribution as put forward in the *Tract on Monetary Reform* (Keynes 1923: 5–32), and also in *The General Theory* (Keynes 1936, 372–377).

11. Typically the data provided in the national income and product accounts are not 'stock–flow consistent'. On this point see, for example, Godley/Lavoie (2007), Lavoie (2014) and Wray (2012).

paper therefore accepts without reservation Keynes's (1936: 41) view that it is best to restrict attention to 'quantities of [real] money-value and quantities of employment' rather than to attempt the quixotic task of attaching concrete meaning to the ill-defined notion of the 'capital stock',  $K^{12}$  (my interpolation).

The next step in deriving the profit theory is to introduce two more definitions, namely:

$$s' = \Pi/[W_{-1}N_{-1}(1 + i_{-1})] \quad (16)$$

$$k' = P_{-1}U_{-1}/W_{-1}N_{-1}. \quad (17)$$

The first of these is similar to the 'rate of surplus value' in Marx, but with the addition of an interest charge on what Marx would have called 'variable capital' (Sweezy 1970: 63–71). The second definition similarly relates to another well-known Marxian notion, that of the 'organic composition of capital' (and/or to the more familiar capital–labour ratio from neoclassical economics). There is some danger, of course, in using these expressions from Marxian economics, as they are likely to attract the ire of commentators from both the left and the right of the political spectrum, each for their own reasons. Nonetheless it is difficult to avoid using these sorts of expressions entirely. Most other economic traditions simply lack the relevant terminology, and have failed to grapple with the inherently difficult question of 'where profits come from' (Collins 1986: 22).

In any event, given the definitions in (16) and (17), equation (14) can be rewritten as:

$$PY = (1 + s' + k')(1 + i_{-1})W_{-1}N_{-1}. \quad (18)$$

Finally, let the symbol  $K$  now stand not for capital but for the gross entrepreneurial mark-up, such that  $K = k' + s'$ . This mark-up includes an allowance both for depreciation on physical capital, and also for the rate of surplus value. It is a gross mark-up in that sense, but it is net of the overall nominal interest charge. Thus equation (18) becomes:

$$PY = (1 + K)(1 + i_{-1})W_{-1}N_{-1}. \quad (19)$$

The money value of output is concisely expressed as a multiple of the original investment in the nominal wage bill. The multiplying factor covers the three main elements in the accounting scheme – namely the interest charge, depreciation on fixed capital, and entrepreneurial profit.

We can now take natural logarithms of each variable where  $k$  (not the same as  $k'$ ) =  $\ln(1 + K)$ , and also employ the frequently used approximation (for example) that  $\ln(1 + i) = i$ . From (19) this will yield:

$$\ln P = k + i_{-1} + \ln W_{-1} - \ln A. \quad (20)$$

Next subtract  $\ln P_{-1}$ , the natural logarithm of the lagged price level, from both sides of the equation, and rearrange. The result is:

$$k = \ln A - [i_{-1} - (\ln P - \ln P_{-1})] - (\ln W_{-1} - \ln P_{-1}), \quad (21)$$

12. As no real meaning can be given to an expression like  $Y = AK$ , in the text below we will be free to appropriate the term  $K$  to stand not for capital, but for the aggregate business mark-up (and also to retain the symbol  $A$  to stand for labour productivity).

where the term in square brackets, namely  $i_{-1} - (\ln P - \ln P_{-1})$ , is the lagged nominal interest rate *minus* the expected inflation rate at time  $t_{-1}$ . It is the lagged real interest rate,  $r_{-1}$ . Also, let lower-case  $w_{-1}$  stand for the natural logarithm of the lagged average real wage rate, and lower-case  $a$  for the natural logarithm of labour productivity. The basic theory of profit can then be written more simply as:

$$k = a - r_{-1} - w_{-1}. \quad (22)$$

This is an adding-up theory expressed in terms of logarithms or percentages. It states that the natural logarithm of the gross aggregate mark-up factor is equal to the natural logarithm of labour productivity *minus* both the lagged real interest rate and the natural logarithm of the lagged average real wage rate. In equilibrium, the theory of income distribution is thus:

$$k = a - r - w \quad (23)$$

or:

$$a = k + r + w. \quad (24)$$

Expressed in terms of logarithms/percentages, the natural logarithm of labour productivity resolves into three components, not two. These are profit, the real rate of interest and real wages.

#### 4 NUMERICAL ILLUSTRATIONS OF THE CONCEPTS OF EXPLOITATION AND USURY

The next obvious question that arises is how we might put some ‘actual numbers’, from a ‘real economy’, into this expression? To see how this might be done, suppose that in the national income and product accounts of a given economy for a certain year, real GDP (correctly measured as a flow of funds) is one trillion constant dollars. Also, that the number of persons counted as being employed is 10 million. Further that the labour share in the distribution of income is 55 per cent. Thus we have:

$$Y = \text{real GDP} = 1 \text{ trillion constant dollars} \quad (25)$$

$$N = \text{employment} = 10 \text{ million persons.} \quad (26)$$

Average labour productivity will be:

$$A = \text{average labour productivity} = Y/N = 10\,000. \quad (27)$$

And the average real wage rate per employed person is:

$$W/P = \text{average real wage} = 5500. \quad (28)$$

A next step would be to work out a measure for the average real rate of interest in the economy as a whole, which, however, is not necessarily such an easy task as it might sound. Fortunately, Collis (2016; 2018a) has recently provided a detailed discussion of the various alternative methods by which such calculations may be attempted with real world data, and a careful evaluation of the merits of the different approaches in empirical practice. Therefore, to cut a long story short, we can here suppose for the sake of argument



that the necessary calculations work out to the relatively high level of  $r = 0.15$ . Thus, also taking natural logarithms of (27) and (28), we now have:

$$a = \ln A = 9.2 \quad (29)$$

$$w = \ln(W/P) = 8.6 \quad (30)$$

$$r = 0.15. \quad (31)$$

Given these levels of real wages and real interest rates, the natural logarithm of the average entrepreneurial mark-up factor  $(1 + K)$  is  $\ln(1 + K) = k = 0.45$ . That is:

$$k = a - r - w = 9.2 - 0.15 - 8.6 = 0.45. \quad (32)$$

As already shown in equation (24) above, an alternative way of writing equation (32) would be to put the term  $a$  on the left-hand side (LHS) of the expression and move the other terms over to the RHS. The resulting expression then explains how the natural logarithm of labour productivity is split between entrepreneurial profit, interest and wages, and may be normalized by dividing through by  $a$  itself. This gives:

$$1 = k/a + r/a + w/a. \quad (33)$$

The resulting ratios are the various measures of income relative to the natural logarithm of average labour productivity. They thus represent one measure, among others, of how much output there actually is in existence at any point in time which is then available to be distributed. I have not been able to discover any established mathematical terminology for these concepts, and so, in Smithin (2018), I coined the term ‘logarithmic shares’, or  $(\ln)$ shares, to stand for the three ratios. The most important point about them is not the name or the label, but that together they always sum to unity. Given the assumed numbers from equation (32) the result is:

$$1 = 0.05 + 0.02 + 0.93. \quad (34)$$

↑ ↑ ↑  
firm( $\ln$ )share rentier( $\ln$ )share wage( $\ln$ )share

Perhaps, at least at first sight, this new concept of  $(\ln)$ shares may not seem to shed much light on the practical ‘struggle for income distribution’ as experienced by the participants themselves. For example, the  $(\ln)$ share of labour in equation (34) is 0.93, whereas we know that the actual labour share in GDP is 55 per cent. Due to the mathematical properties of logarithms, small changes in the  $(\ln)$ shares always translate into large changes in the actual percentage shares, and vice versa. Nonetheless, and as we will see, this way of putting things does turn out to be useful in defining what is actually meant by the various normative concepts that typically arise in the discussion of the functional distribution.

Consider, for example, the familiar Marxian notion of ‘exploitation’. In the present context, we can see that Marxian exploitation will occur whenever:

$$k + r > 0. \quad (35)$$

On the other hand, if  $k + r = 0$ , there is no exploitation, and:

$$a = w. \quad (36)$$

This therefore would be a case where the whole value of the output accrues to those who are (supposed by Marx to be) the actual producers.

Similarly, given the initial assumptions about fairness, we are also able to define the concept of usury, which was a staple of the historical literature on money and banking. The word ‘use’ is an archaic synonym for interest, and the notion of usury would come into play whenever the rate of interest charged on loans on money was deemed to be excessive in some sense. Historically, usury laws have actually been passed in several jurisdictions limiting the amount of interest that may be charged for any financial transaction. Evidently, in order for this concept to be operational there has to be some method of determining what is, and what is not, excessive. In terms of our current notation the case can be made that there will be usury whenever the real interest rate,  $r$ , is greater than zero. That is, if:

$$r > 0. \quad (37)$$

If so, there would be no usury when

$$r = 0. \quad (38)$$

And we would therefore have:

$$a = k + w. \quad (39)$$

Now the total income available is divided solely between the entrepreneurs and the workers. In this case, contrary to Marxism, the economic function of entrepreneurship continues to be recognized as well as that of labour. However, the recipients of interest income, the so-called rentiers, are allowed only to preserve, not to increase, the real value of previously accumulated financial/monetary holdings<sup>13</sup> – without taking on further ‘risk’. Otherwise, they will not be able to participate in, or to take any share of, the returns to current production.

## 5 IS THE OPTIMAL REAL RATE OF INTEREST ON MONEY ZERO?

Given the above discussion, perhaps the answer to this question is yes? It is true that starting with a succinct statement more than 25 years ago in *Controversies in Monetary Economics* (Smithin 1994), and then subsequently in many other places, I have usually argued central banks should pursue a monetary policy that sets a target for the real policy rate of interest at a ‘low but still positive’ level (ibid.: 188). Given the transmissions mechanism of monetary policy as described, under normal circumstances this will still feed through to a relatively low (but also positive) real market rate of interest on money. The basis for the argument must therefore be, in the first place, that lower real interest rates, even if non-zero, do promote economic growth. Second, and as already shown above, any real target for the real policy rate, even if it is greater than zero, would at least *stabilize* the inflation rate. These sorts of statements, however, were always meant only to be taken in the spirit of pragmatic policy advice. I have not usually given any precise quantitative target for the real policy rate of interest.

The ethical argument now introduced, however, is based on the idea that, to the extent that the current wealth holdings of rentiers have arisen from past receipts of either wages

13. This in turn will raise further questions about the original source of their income and its legitimacy. If the original source of the income was indeed either wages or entrepreneurial profit only, the ethical argument would be watertight. However, to the extent that the past income was acquired by either usury or financial speculation, this would raise difficult issues of political economy for any transitional regime.

or profits (and only from those sources), they are legitimate. Therefore, subject to the caveat in footnote 9, fairness would indeed entail that their owners are entitled to preserve the real value of any past gains due solely to their own efforts – and this means a real interest rate of at least zero. On the other hand, there is no argument from the point of view of fairness for them to share in the proceeds of current income generated by the work effort, entrepreneurial activity and risk-taking of others and, therefore, for the real rate of interest to rise above zero. To use the language introduced above, usury should not be allowed. The effective real rate of interest on money should be  $r = 0$ .<sup>14</sup> And, in turn, in the case considered here, this requires that the target for the real policy rate should be:

$$r'_0 = [(1 - m_1)/m_1]p - (m_0/m_1). \quad (40)$$

If this can be achieved, and continuing to assume that  $a = 9.2$  and  $w = 8.6$  as before, the natural logarithm of the average mark-up factor across all firms will be increased from the level of 0.45, previously calculated, to now stand at 0.60. That is:

$$k = a - r - w = 9.2 - 0.0 - 8.6 = 0.6. \quad (41)$$

Given the new value of  $k$  we can then once again rearrange and normalize the distributive equation to obtain the following results for the  $(ln)$ shares:

$$1 = \underset{\substack{\uparrow \\ \text{firm}(ln)\text{share}}}{0.07} + 0.00 + \underset{\substack{\uparrow \\ \text{wage}(ln)\text{share}}}{0.93}. \quad (42)$$

There is now no rentier share. It has fallen to zero. The other  $(ln)$ shares have either increased, in the case of the entrepreneurs, or remained the same in the case of labour.

It is interesting to note that there is a definite family resemblance between the above argument and the rules of so-called 'Islamic banking' as these have been described, for example, by Arnold (2014). This notion of Islamic banking is usually understood to be a code of conduct for bankers who wish to comply with certain religious requirements in their business dealings. In this sort of discourse, there is a basic or underlying presumption that charging interest for loans of money is somehow unethical, as opposed to the receipt of income earned from entrepreneurial profits and wages. Therefore, rules are set down for business and financial dealings which, in one way or another, are able to avoid interest charges entirely. This is *not* exactly so in the current argument, because it is not possible always to avoid a nominal interest charge. If the real interest rate is to be set to zero, the nominal interest rate must always be equal to the inflation rate, and therefore the nominal interest rate must be positive whenever the inflation rate is positive. The main difference from the overtly religious argument is thus whether it is a nominal or real interest rate that is set to zero. Notice, however, that with a zero real rate there is still *no real* income actually being received by the rentiers, regardless of the inflation rate. The final result therefore seems to be well within the spirit, if not the letter, of

14. Strictly speaking, in the present context this rule should apply only to the 'risk-free' real deposit rate at the commercial banks. The mark-up between the deposit and lending rates, on the other hand, which is included in the definition of  $r$  in equation (4), represents the return to bank lending *per se*. It is more in the nature of (a special case of) entrepreneurial profit – as marked-up over the actual real return to money holdings – rather than interest or 'use'. However, in the illustrative calculations to follow, based on previous work, this distinction is neglected. In practice this makes only a minor difference to the value of the hypothetical aggregate mark-up.

the law of religious proscriptions.<sup>15</sup> It also seems important to stress, once again, that with a zero real rate of interest, as opposed to a zero nominal rate, the rentiers are not actually being euthanized as Keynes had predicted they would be (or perhaps thought that they should be?). They are still able to preserve in full the value of any financial holdings acquired from previous work effort or entrepreneurial effort.

## 6 IS THE OPTIMAL NOMINAL POLICY RATE OF INTEREST ZERO?

One of the negative consequences of setting the nominal policy rate itself at a level of zero (a ZIRP) has already been discussed above. It was found that a nominal interest-rate peg of any kind, not just zero, will lead to inflationary (or deflationary) instability. Following the discussion in the previous section, however, in addition to the issue of instability there is another important problem. This is that a zero nominal interest rate will not be distributionally neutral, even as regards those sources of income regarded as legitimate.

Consider first the inflationary case, and suppose that at the current point in time the inflation rate is 14 per cent or  $p = 0.14$ . Treating the currently observed inflation rate as a 'proxy for' expected inflation (Taylor 1993), the real interest rate is then given by the following expression:

$$r = m_0 + m_1 r'_0 - (1 - m_1)p. \tag{43}$$

But, as  $i_0 = 0$  by assumption, this further reduces to:

$$r = m_0 - p. \tag{44}$$

Thus the effective real rate of interest on money in our example (recalling note 15) is equal to the mark-up between the lending rates and deposit rates in commercial banks less the inflation rate. With  $p = 0.14$  and if (say)  $m_0 = 0.02$ , we will have:

$$r = 0.02 - 0.14 = -0.12. \tag{45}$$

The real rate of interest is therefore negative at -12 per cent. If we also have  $a = 9.2$  and  $w = 8.6$ , as before, the (natural logarithm of) the average entrepreneurial mark-up factor will thus be increased to  $k = 0.72$ :

$$k = a - r - w = 9.2 + 0.12 - 0.86 = 0.72. \tag{46}$$

And, the relative ( $\ln$ )shares come out to:

$$1 = 0.08 - 0.01 + 0.93. \tag{47}$$

↑ ↑ ↑  
 firm( $\ln$ )share    rentier( $\ln$ )share    wage( $\ln$ )share

In this case the workers are holding their own but the rentier ( $\ln$ )share is negative. What is actually going on is that 'resources are being transferred', as a neoclassical economist would say,

15. Similar ideas have also been present in many other religious traditions besides that of Islam. The latter is simply a convenient example because it is a tradition which has a very large number of adherents worldwide at the present time and is therefore much discussed in the contemporary news media, including the financial and business media. Another example, but with far less contemporary relevance, would be that of medieval Catholicism in the scholastic period. On this latter topic see, for example, Hayes (2017).

from the holders of financial capital to business firms. In effect, the firms are profiteers from inflation just as described by Keynes (1923) in the relevant passage from the *Tract on Monetary Reform*. And, what is worse, from the point of view of the rentiers, recall that the system is unstable. The situation will continue to worsen as time goes by. The inflationary case therefore does lead to the ‘euthanasia of the rentier’. Pace Keynes, however, this does not represent an ethically defensible position, at least from the point of view of fairness set out above.

Next consider the deflationary case, and suppose alternatively that the price level is currently falling at a rate of 16 per cent per annum ( $p = -0.16$ ). In this situation, even though the nominal interest rate remains zero, the actual market real rate of interest on money will now be positive, at  $r = 0.18$ . The average entrepreneurial mark-up therefore falls to  $k = 0.42$ :

$$k = 9.2 - 0.18 - 8.6 = 0.42. \quad (48)$$

Now the ( $ln$ )shares will be:

$$1 = 0.05 + 0.02 + 0.93. \quad (49)$$

↑ firm( $ln$ )share   
 ↑ rentier( $ln$ )share   
 ↑ wage( $ln$ )share

The resources are now being transferred to the holders of financial capital from business firms. This is a clear example of a process I called ‘the ‘revenge of the rentiers’ (Smithin 1996). Again the system is unstable, and the situation is only going to get worse – now from the point of view of Main Street. The boot is on the other foot. Business will eventually be euthanized and with it the entire economy. In this particular example, if the rate of deflation does eventually proceed to an order of magnitude above 60 per cent, the average business mark-up turn negative. Firms in the aggregate, and on average, will all be making losses. With a 68 per cent rate of deflation, for example:

$$k = 9.2 - 0.70 - 8.6 = -0.10. \quad (50)$$

I would say that this is the very essence of the process of deflation and depression.

Taking the inflationary and deflationary cases together the conclusion must be that the ZIRP is not the optimal setting of the monetary policy instrument, either from the point of view of stability or of income distribution. Far from it.

## 7 THE ‘NEAR OPTIMALITY’ OF THE ZRPR

Conversely, we have suggested that the ZRPR is at least a near-optimal monetary policy. Perhaps the use of the word ‘near’ is a little over-optimistic, but it is difficult to come up with a better alternative. What can be shown is that this policy will achieve the closest possible approximation to the optimum attainable in practice. To see the argument, suppose that a central bank does decide to set a real target for the policy rate, but not a target of zero, as in my previous pragmatic advice about a low but still positive real rate. They might set a target for the real policy rate of something like 1.5 per cent. That is:

$$r_0 = 0.015. \quad (51)$$

In this case the actual real rate of interest on money in the market would be given by:

$$r = m_0 + m_1 0.015 - (1 - m_1)p. \quad (52)$$

Hopefully this would also turn out to be a low real rate of interest, but we cannot be quite sure. The overall levels of interest rates in the marketplace also depend on the parameters  $m_0$  and  $m_1$ , and on the inflation rate  $p$  (and thereby on liquidity preference, etc.). Although such a rule can be defended on pragmatic grounds (as I have done in the past) it cannot be optimal in any of the senses in which economists typically use the term. As we have seen, optimality *per se* requires a ‘risk-free’ market real rate of interest of zero.

How would the situation differ from the above if, instead of settling for the rule in (52), the central bank went still further and actually implemented the ZRPR? In this case the general level of the real market rate of interest,  $r$ , would turn out be:

$$r = m_0 - (1 - m_1)p. \quad (53)$$

Again, this market rate would not itself be zero except by accident. It may well turn out to be positive, or even negative on occasion, depending always on the values of  $m_0$ ,  $m_1$  and  $p$ . Perhaps it would still be fairly low, but the important point to notice, comparing equations (52) and (53), is that, in (53), the positive term  $m_1 0.015$  (in general  $m_1 x$ ), from (52), is missing. In any given set of circumstances, therefore, and for a positive starting value of  $r$ , the real rate of interest on money will always be closer to the distributionally neutral value of zero than in equation (52). This is the basis for the suggestion that a ZRPR is the closest approximation to the optimum solution attainable in practice. (As it is a real target, the ZRPR performs just as well on the grounds of inflation stability as any other real rate rule).

## 8 CONCLUSION

It can certainly be argued that Basil Moore’s (1988a) *Horizontalists and Verticalists* was instrumental in establishing the principle of the endogeneity of the money supply for a wide audience, notwithstanding important precursors such as Kaldor (1982), and also the French economist Jacques Le Bourva in the 1960s (Lavoie 1992a; 1992b). This conclusion is not at all disturbed by the subsequent debate within the post-Keynesian camp between the ‘horizontalists’ and ‘structuralists’ (Dow/Dow 1989; Fontana 2003; 2004; Rochon 1999; Rochon/Rossi 2017; Smithin 2017; 2018; Wray 1990). In that debate the principle of endogeneity itself was not at stake. Rather, the discussion was about issues in the transmissions mechanism of monetary policy. In particular, the question of whether factors such as liquidity preference can operate to drive a wedge between the policy rate and the market rate of interest on money at any time, even in the presence of endogenous money. Naturally, Moore’s horizontalism also carried the implication that the actual instrument of monetary policy must be a nominal interest rate of one sort or another, most likely the nominal policy rate of interest. By 2014 even the Bank of England, for example, seemed finally to accept these two principles, as described in an article by staff members in a *Quarterly Bulletin* of that year (McLeay et al. 2014).

A further important implication of Moore’s work (Moore 1988b) was that the level of the *real* policy rate of interest, and also the volatility of interest rates in general, are as important in their effects on income distribution as on other economic variables, such as the growth rate and the inflation rate. And, since the publication of Moore’s book, these issues have indeed been addressed over a long period of time by such authors as Komlos (2019), Lavoie/Seccareccia (1988; 2016), Palley (1997; 1998), Rochon/Seccareccia (2018), Rochon/Setterfield (2008), Seccareccia (2019) and Smithin (1996; 2009; 2013; 2018).

We have seen this ‘struggle over income distribution’ play out dramatically in real time over the past 30 years and more. There has been much commentary, for example, about the large changes in the observed concentration of income beginning in the 1980s and 1990s, around the same time Basil Moore was writing. This was the ‘revenge of the rentiers’ mentioned above. Income was redistributed to rentiers by high real interest rates *per se*, and also via frequent changes in real rates during this period (thus giving many opportunities for financial speculation). A ZRPR would not only have avoided this episode, but also much of the subsequent history.

After the mid 1990s, interest rates did begin to fall, but the distribution of income, and particularly the position of labour, did not improve. This was essentially because any increases in real wages would have required rapid economic growth, a relationship noted long ago by Adam Smith (1776 [1981]), but revived only recently in academic circles in the guise of the so-called ‘wage curve’ or ‘wage function’ (Atesoglu/Smithin 2006; Blanchflower/Oswald 1994; Collis 2016; 2018a; 2018b; Smithin 1997; 2005; 2009; 2013). Unfortunately, a return to rapid economic growth after the revenge of rentiers was ruled out, essentially for political reasons, and with support from *both* ends of the political spectrum – albeit with different rationales.<sup>16</sup> In the present context, the role played by economic policies derived primarily from mainstream economic theory requires particular attention (Komlos 2019; Rochon/Seccareccia 2018; Smithin 2018). Concepts such as the ubiquitous vertical long-run Phillips curve, and questionable ideas about so-called ‘natural rates’ of growth, unemployment and interest have militated against any form of policy intervention which might have improved the situation.

This paper has argued that the optimal real rate of interest on money holdings is actually zero. This would mean zero rentier income in real terms (although *not* the euthanasia of the rentier), and would also eliminate financial speculation based on real interest-rate changes in the bond and other financial markets. Even if a zero real rate on money is not achievable in practice, a ZRPR – a zero real policy rate – represents a goal that is the closest attainable approximation to the optimum. With this sort of monetary policy in place, the way would then be open for further expansionary policies, for example on the fiscal side,<sup>17</sup> that would increase growth, reduce unemployment, and thereby increase the average real wage rate.

Keynes’s original policy recommendations from *The General Theory* specifically mentioned a policy of ‘loan expenditure’, defined as ‘a convenient expression for the net borrowing of the public authorities on all accounts whether on capital account or to meet a budgetary deficit’ (Keynes 1936: 128–129). Logically, this might include either direct increases in the ratio of government spending to GNP, or cuts in the average tax rate. It would *not*, however, involve the typical ‘tax and spend’ policies which have become familiar in the past 70 years or so, and have quite wrongly been identified with Keynesian economics ever since the introduction of the mistaken notion of the ‘balanced budget multiplier’ in the first edition of Samuelson’s influential textbook in 1948 (Samuelson 1964). In fact, the balanced budget multiplier is negative (Smithin 2018).

As growth proceeds it is true that, in some circumstances, the mark-up earned by entrepreneurial business will likely be falling in the aggregate and on average. This is not quite the same thing as Marx’s ‘falling rate of profit’, but is a similar sort of idea. Many years

16. For example, concern over inflation on the ‘right’ and radical environmentalism on the ‘left’. The latter movement, in turn, harks back to Malthusian concerns about scarce resources from 200 years ago, and thereby neatly intersects with some traditional themes in mainstream economics.

17. The point was made above that in order for *any* policy – monetary, fiscal or otherwise – to work there must be a floating exchange-rate regime. Or, at least, the nominal exchange rate should be ‘fixed but adjustable’.

ago, in the first flush of the Keynesian era, Michał Kalecki (1971) for one was apparently quite concerned by the possible reaction of ‘business leaders’ to continued economic prosperity, for this reason. He argued that the industrialists would ultimately take steps via the political process to bring the expansion to an end, even to the extent of forming ‘a powerful block ... between big business and the rentier interests’ (Kalecki 1971: 144). As against this, however, the advantage of thinking about income distribution in terms of a three-way split between profit, wages *and* interest – rather than the usual two – is to make clear the typically different motivations of the entrepreneurial and financial interests (‘Main Street’ versus ‘Wall Street’, or Bay Street, or the City).<sup>18</sup> The real question to be asked and answered, it seems, is whether or not the various individual entrepreneurial entities should actually care about a falling mark-up in the aggregate. It will not fall to zero, and the firms/entrepreneurs are therefore all still ‘making money’, individually and collectively. Keynes (1936: 374) was clear that there are ‘valuable human activities which require the motive of *money-making* and private wealth ownership ...’ (emphasis added). However, he went on: ‘... it is not necessary for the stimulation of these activities that the game should be played for such high stakes as at present’ (ibid.). This shows that Keynes does seem to have had the typical disdain of the comfortably situated upper-middle-class intellectual for the mere ‘money-making’ activities on which the rest of society depends, but he was surely right in principle.

With the rentier position settled, the remaining class struggle between entrepreneurs and workers would then boil down to conflict over the intercept term in the wage function (Collis 2016; 2018a; 2018b; Smithin 2009; 2013; 2018).<sup>19</sup> If the employers can collectively/politically take action to push this down (for example, via the sponsorship of restrictive labour legislation, or some form of economy-wide lockout), it would be possible to increase the aggregate mark-up via this route. But this must come at the expense of everyone else. There will be a bad economy, political unrest, war even,<sup>20</sup> and ultimately the firms themselves will be by no means secure. *Provided there is sufficient effective demand* – which was one of the main points Keynes was trying to make in *The General Theory*, and thus deserves emphasis – it would make much more sense for them simply to innovate at the individual firm level, to try to preserve their competitive position in that way. If this were indeed to happen on an economy-wide scale, there would then be increases in both wages and profits. Meanwhile, the existing real financial position of the rentiers is maintained.

## ACKNOWLEDGEMENTS

I would like to thank David Barrows, Kam Hon Chu, Orsula Constantini, Robert Dimand, Nina Eichacker, Giuseppe Fontana, Omar Hamouda, John Komlos, Gregory Krohn, Steven Pressman, Noemi Levy, Louis-Philippe Rochon, Mario Seccareccia, Mark Setterfield, Martin Watts and two anonymous referees for helpful comments and suggestions which have improved this paper. Any remaining errors and omissions are my sole responsibility.

18. The title of a work by Geoffrey Ingham which, like Moore’s volume, was published in the 1980s, was *Capitalism Divided? The City and Industry in British Social Development* (Ingham 1984). This title neatly encapsulates the underlying argument.

19. One specification of an empirical wage function in Collis (2018a) was (for example)  $w - t = h_0 + h_1 y_{-1} - h_2 q$ , where  $t$  is the average tax rate and  $q$  is the natural logarithm of the real exchange rate. The intercept term  $h_0$  represents the ‘sociopolitical power of labour’.

20. Kalecki’s original article, cited above, was actually published during World War II, in 1943.



## REFERENCES

- Arnold, G. (2014): *The Financial Times Guide to Banking*, London: FT Publishing.
- Atesoglu, H.S., Smithin, J. (2006): Real wages, productivity and economic growth in the G7, 1960–2002, in: *Review of Political Economy*, 18(2), 1–11.
- Blanchflower, D.G., Oswald, A. (1994): Estimating a wage curve for Britain 1973–90, in: *Economic Journal*, 104(426), 1025–1043.
- Collins, R. (1986): *Weberian Sociological Theory*, Cambridge, UK: Cambridge University Press.
- Collis, R. (2016): An examination of Canadian macroeconomic data, Manuscript, York University, Toronto.
- Collis, R. (2018a): *Three Essays on Monetary Macroeconomics: An Empirical Examination of the Soundness of the Alternative Monetary Model and Monetary Policy in Canada*, PhD Thesis in Economics, York University, Toronto.
- Collis, R. (2018b): A sustainable deficit? Evidence from Canada of how monetary policy impacts fiscal sustainability, Manuscript, York University, Toronto.
- Dow, A.C., Dow, S.C. (1989): Endogenous money creation and idle balances, in: Pheby, J.D. (ed.), *New Directions in Post Keynesian Economics*, Aldershot, UK and Brookfield, VT: Edward Elgar Publishing, 147–164.
- Fontana, G. (2003): Post Keynesian approaches to endogenous money: a time framework explanation, in: *Review of Political Economy*, 15(4), 293–314.
- Fontana, G. (2004): Rethinking endogenous money: a constructive interpretation of the debate between horizontalists and structuralists, in: *Metroeconomica*, 55(4), 367–385.
- Godley, W., Lavoie, M. (2007): *Monetary Economics: An Integrated Approach to Credit Money, Income, Production and Wealth*, London: Palgrave Macmillan.
- Hayek, F.A. (1932): A note on the development of doctrine of ‘forced saving’, in: *Quarterly Journal of Economics*, 47(1), 123–133.
- Hayek, F.A. (1991): Introduction, in: Hayek, F.A. (ed.), *An Inquiry into the Nature and Effects of the Paper Credit of Great Britain* by H. Thornton, New York: Augustus M. Kelley, 11–63.
- Hayes, M. (2017): Keynes’s liquidity preference and the usury doctrine: their connection and continuing relevance, in: *Review of Social Economy*, 75(4), 400–416.
- Ingham, G. (1984): *Capitalism Divided? The City and Industry in British Social Development*, London: Macmillan.
- Jones, C.I. (1998): *Introduction to Economic Growth*, New York: W.W. Norton.
- Kaldor, N. (1982): *The Scourge of Monetarism*, Oxford: Oxford University Press.
- Kalecki, M. (1971): Political aspects of full employment, in: *Selected Essays on the Dynamics of the Capitalist Economy 1933–1970*, Cambridge, UK: Cambridge University Press, 138–145.
- 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, in: *Economics Letters*, 89(1), 137–142.
- Kam, E., Smithin, J. (2012): A simple theory of banking and the relationship between commercial banks and the central bank, in: *Journal of Post Keynesian Economics*, 34, 545–549.
- Keynes, J.M. (1923): *A Tract on Monetary Reform*, London: Macmillan.
- Keynes, J.M. (1930): *A Treatise on Money*, vol. I, London: Macmillan.
- Keynes, J.M. (1936): *The General Theory of Employment, Interest and Money*, London: Macmillan.
- Komlos, J. (2019): Reaganomics: a watershed moment on the road to Trumpism, in: *The Economist’s Voice*, Author’s copy, 21pp.
- Krohn, G. (2019): Personal correspondence, April.
- Lavoie, M. (1992a): *Foundations of Post-Keynesian Economic Analysis*, Aldershot, UK and Brookfield, VT: Edward Elgar Publishing.
- Lavoie, M. (1992b): Jacques Le Bourva’s theory of endogenous credit money, in: *Review of Political Economy*, 4(4), 436–446.
- Lavoie, M. (2014): *Post Keynesian Economics: New Foundations*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing.

- Lavoie, M., Seccareccia, M. (1988): Money, interest and rentiers: the twilight of rentier capitalism in Keynes's *General Theory*, in: Hamouda, O.F., Smithin, J. (eds), *Keynes and Public Policy After Fifty Years, Vol. II: Theories and Method*, Aldershot, UK and Brookfield, VT: Edward Elgar Publishing.
- Lavoie, M., Seccareccia, M. (eds) (2004): *Central Banking in the Modern World: Alternative Perspectives*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing.
- Lavoie, M., Seccareccia, M. (2016): Income distribution, rentiers, and their role in a capitalist economy, in: *International Journal of Political Economy*, 45, 200–223.
- McLeay, M., Radia, M., Thomas, R. (2014): Money creation in the modern economy, in: *Bank of England Quarterly Bulletin*, Q1, 14–27.
- Moore, B.J. (1979): The endogenous money stock, in: *Journal of Post Keynesian Economics*, 2(1), 49–70.
- Moore, B.J. (1988a): *Horizontalists and Verticalists: The Macroeconomics of Credit Money*, Cambridge, UK: Cambridge University Press.
- Moore, B.J. (1988b): Keynes's treatment of interest, in: Hamouda, O.F., Smithin, J. (eds), *Keynes and Public Policy After Fifty Years, Vol. II: Theories and Method*, Aldershot, UK and Brookfield, VT: Edward Elgar Publishing, 123–129.
- Mundell, R. (1963): Inflation and real interest, in: *Journal of Political Economy*, 71(3), 280–283.
- Palley, T.I. (1997): The institutionalization of deflationary monetary policy, in: Cohen, A.J., Hagemann, H., Smithin, J. (eds), *Money, Financial Institutions and Macroeconomics*, Boston: Kluwer Academic Publishers, 157–173.
- Palley, T.I. (1998): *Plenty of Nothing: The Downsizing of the American Dream and the Case for Structural Keynesianism*, Princeton, NJ: Princeton University Press.
- Palley, T.I. (2015a): Money, fiscal policy and interest rates: a critique of modern money theory, in: *Review of Political Economy*, 27(1), 1–23.
- Palley, T.I. (2015b): The critics of modern money theory (MMT) are right, in: *Review of Political Economy*, 27(1), 45–61.
- Pasinetti, L. (1980/1981): The rate of interest and the distribution of income in a pure labor economy, in: *Journal of Post Keynesian Economics*, 3(3), 170–182.
- Pasinetti, L. (1981): *Structural Change and Economic Growth*, Cambridge, UK: Cambridge University Press.
- Rochon, L.-P. (1999): *Credit, Money and Production: An Alternative Post-Keynesian Approach*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing.
- Rochon, L.-P., Rossi, M. (eds) (2017): *Advances in Endogenous Money Analysis*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing.
- Rochon, L.-P., Seccareccia, M. (2018): The ineffectiveness of monetary policy: an income distributive approach, Paper presented at the conference 'The Political Economy of Income Distribution', Laurentian University, Sudbury, ON, October.
- Rochon, L.-P., Setterfield, M. (2007/2008): Interest rates, income distribution and monetary policy dominance: Post Keynesians and the 'fair' rate of interest, in: *Journal of Post Keynesian Economics*, 30(1), 13–42.
- Rochon, L.-P., Setterfield, M. (2008): The political economy of interest-rate setting, inflation, and income distribution, in: *International Journal of Political Economy*, 37(2), 5–28.
- Rochon, L.-P., Setterfield, M. (2011/2012): Models of growth and distribution with conflict inflation and Post Keynesian nominal interest rate rules, in: *Journal of Post Keynesian Economics*, 34(3), 497–520.
- Samuelson, P.M. (1964): *Economics: An Introductory Analysis*, 6th edn, New York: McGraw-Hill.
- Seccareccia, M. (2019): From the age of rentier tranquility to the new age of deep uncertainty: the metamorphosis of central bank policy in modern financialized economies, in: *Journal of Economic Issues*, 53(2), 478–487.
- Smith, A. (1776 [1981]): *An Inquiry into the Nature and Causes of the Wealth of Nations*, Indianapolis: Liberty Fund.
- Smithin, J. (1994): *Controversies in Monetary Economics: Ideas, Issues and Policy*, Aldershot, UK and Brookfield, VT: Edward Elgar Publishing.

- Smithin, J. (1996): *Macroeconomic Policy and the Future of Capitalism: The Revenge of the Rentiers and the Threat to Prosperity*, Cheltenham, UK and Brookfield, VT: Edward Elgar Publishing.
- Smithin, J. (1997): An alternative monetary model of inflation and growth, in: *Review of Political Economy*, 9(4), 395–409.
- Smithin, J. (2005): The real rate of interest, the business cycle, economic growth and inflation: an alternative theoretical perspective, in: *Journal of Economic Asymmetries*, 2(2), 1–19.
- Smithin, J. (2009): *Money Enterprise and Income Distribution: Towards a Macroeconomic Theory of Capitalism*, London: Routledge.
- Smithin, J. (2012): Profit, interest, and wages, in: Cate, T. (ed.), *Keynes's General Theory After Seventy-Five Years*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing, 306–324.
- Smithin, J. (2013): *Essays in the Fundamental Theory of Monetary Economics and Macroeconomics*, Singapore: World Scientific Publishing.
- Smithin, J. (2016a): Endogenous money, fiscal policy, interest rates and the exchange rate regime: a comment on Palley, Tymoigne and Wray, in: *Review of Political Economy*, 28(1), 64–78.
- Smithin, J. (2016b): Endogenous money, fiscal policy, and the exchange rate regime: correction, in: *Review of Political Economy*, 28(4), 609–611.
- Smithin, J. (2017): Interest rate determination and endogenous money, in: Rochon, L.-P., Rossi, M. (eds), *Advances in Endogenous Money Analysis*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing, 262–281.
- Smithin, J. (2018): *Re-thinking the Theory of Money, Credit and Macroeconomics: A New Statement for the Twenty-First Century*, Lanham, MD: Lexington Books.
- Sweezy, P.M. (1970): *The Theory of Capitalist Development: Principles of Marxian Political Economy*, New York: Modern Reader Paperbacks.
- Taylor, J. (1993): Discretion versus policy rules in practice, *Carnegie–Rochester Series on Public Policy*, 39, 64–78.
- Tobin, J. (1965): Money and economic growth, in: *Econometrica*, 33(4), 671–674.
- Tymoigne, E., Wray, L.R. (2015): Modern money theory: a reply to Palley, in: *Review of Political Economy*, 27(1), 24–44.
- Watts, M. (2016): Fiscal policy and the Post Keynesians, Paper presented at the AHE annual conference, Glasgow, Scotland, July.
- Watts, M. (2018): The merits of economic modelling: an application to interest rate policy, Manuscript, University of Newcastle, NSW.
- Wray, L.R. (1990): *Money and Credit in Capitalist Economies: The Endogenous Money Approach*, Aldershot, UK and Brookfield, VT: Edward Elgar Publishing.
- Wray, L.R. (2012): *Modern Money Theory: A Primer on Macroeconomics for Sovereign Monetary Systems*, London: Palgrave Macmillan.