POST KEYNESIAN INTEREST RATE RULES AND MACROECONOMIC PERFORMANCE: A COMPARATIVE EVALUATION

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Abstract

Post Keynesians advocate two distinct approaches to monetary and interest rate policy. The activist approach sees interest rates moved counter cyclically to ensure strong growth and low employment. The parking-it approach, however, favors setting real or nominal rates at specific levels and changing them only sparingly. In this paper, the authors evaluate the impact on macroeconomic performance of three variants of this latter approach – the Smithin Rule, the Kansas City Rule and the Pasinetti Rule.

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New Consensus macroeconomics has come under considerable criticism from post Keynesians, especially regarding the quasi-disappearance of fiscal policy as a credible policy tool (Arestis and Sawyer (2003, p. 3). Post Keynesians have sought to develop alternatives to the New Consensus, by either amending the basic framework or proposing alternatives that downgrade monetary policy and rely more on the use of Keynesian fiscal policy. One area of research that has recently emerged centers on the role of the rate of interest.

In a recent symposium, we argued (see Rochon and Setterfield, 2007) that there are two approaches to monetary policy emerging in post Keynesian theory, what we label respectively the ‘activist’ and the ‘parking-it’ approaches. We defined the former as post Keynesians who, while advocating the use of fiscal policy, also believe in the ability of central banks to fine-tune economic outcomes (output and unemployment, and perhaps even inflation) and regulate business cycles through changes in the rate of interest (see Moore, 1988; Palley, 1996; 2006, 2007; Fontana and Palacio-Vera, 2006). While critical of inflation targeting, activists believe that another, albeit real, target is acceptable, such as output, capacity utilization, investment or growth (see Epstein, 2003), and that interest rates can be used to achieve this target.

For advocates of the parking-it view, however, the monetary policy dominance that has characterized central bank policy in the last twenty-five years or so, had disturbing consequences for output and employment: the rate of interest is foremost a distributive variable operating on the distribution of income. Hence, monetary policy is not an appropriate tool for regulating aggregate output. As such, the rate of interest should be ‘parked’ at a given level, and fiscal policy used to achieve macroeconomic
objectives (see Smithin, 2007; Wray, 2007; Lavoie and Seccareccia, 1999) or even to achieve some control of inflation:1 “fiscal policy is, in theory, capable of achieving full employment at some target inflation rate. It is not clear what advantage monetary policy has, besides the fact that target interest rates can be easily altered every month or even every week. Indeed, by bringing back fiscal policy as the main tool to affect aggregate demand, monetary policy would now have an additional degree of freedom to set the real interest rate, which is a key determinant of distribution policy ” (Godley and Lavoie, 2007, p. 96-97).

There are similarities between the two approaches: both are well-rooted in the endogenous money literature, both largely reject the central bank focus on inflation targeting and the mainstream discussion of the transmission mechanism (Rochon and Setterfield, 2008). Indeed, both approaches accept the cost-push view of price dynamics, although the parking-it view is more explicit with respect to the conflict-driven nature of inflation. As such, both approaches question the validity of central bank policy in fighting inflation.

Despite these similarities, important differences exist concerning the specific nature of the transmission mechanism of monetary policy (see Rochon and Setterfield, 2008) and over the use of interest rates in regulating the real economy.

The purpose of this paper is to further explore the three variants of the parking-it rules (the Smithin Rule, the Kansas City Rule and the Pasinetti (or Fair Rate) Rule), and their respective views regarding rentiers. Indeed, each rule has important and different distributional implications. In this paper, however, we are interested in exploring the
implications of these rules for other macroeconomic outcomes, along with their effects on
the capacity of the authorities to pursue non-distributinal policy objectives using non-
monetary policy interventions. In other words, we introduce a new criteria by which to
evaluate the relative merits of the three rules – an exercise that, in turn, will hopefully
contribute to the process by which post-Keynesians make an informed choice between
the three rules when confronting what we call the “Smithin question”: in the absence of a
Wicksellian natural rate, exactly what, according to post-Keynesian theory, should the
long run/equilibrium rate of interest be?2

A Positive Post-Keynesian Contribution to Monetary Policy Analysis

While activists reject the use of interest rates in fighting inflation, they nonetheless argue
that they remain a viable tool of stabilization policy provided another target is chosen.
Inflation targeting is associated with high costs in terms of unemployment and growth:
“in many countries, inflation targeting has generated significant costs – slow growth,
sluggish employment and high real interest rates – while, yielding, at most, minor
benefits” (Epstein, 2003, p. 1). Yet, central banks could replace inflation targets with real
targets, such as employment (Epstein (2003), or even investment and real GDP. Fontana
and Palacio-Vera (2006) favour an asymmetrical approach to central banking, whereas
Palley (2007) prefers targeting the MURI (minimum unemployment rate of inflation).
Overall, these approaches are consistent with the belief that the rate of interest can and
should be used to “fine tune” real variables.
According to the parking-it view, the costs of inflation targeting regimes are certainly high, but given the imprecise nature of the transmission mechanism, the use of interest rates for macro stabilization – irrespective of the target at hand – is ill advised: monetary policy is an ineffectual tool for fighting not only inflation, but unemployment as well. The precise nature of the transmission mechanism is too complex to ensure that changes in the interest rate always have their desired effects on unemployment, capacity utilization or growth. Monetary policy is best avoided as an instrument of stabilization policy. Proponents of the parking-it approach therefore favour downgrading monetary policy altogether in favour of fiscal policy.

Within the parking-it approach, however, there are three distinct views, what we called the Smithin Rule, the Kansas City Rule and the Fair or Pasinetti Rule. While there are some obvious differences between these rules, they all amount in part to an incomes policy for rentiers rather than for workers or entrepreneurs.

According to the Smithin Rule, the central bank should keep real interest rates very low, close to zero. The Kansas City Rule recommends setting the nominal rate at zero: “In the modern floating exchange rate economy, this [the euthanasia of the rentier] is done by setting the overnight interest rate at zero, with other rates established above this to reward risk-taking” (Wray, 2007). Both of these rules propose keeping real or nominal rates close to zero, redistributing real income away from rentiers, in the tradition of Keynes’s ‘Euthanasia of the Rentier’. The Fair Rate – or Pasinetti – Rule, however, recommends setting the real rate equal to the rate of growth of labour productivity, seeing rentiers as a ‘necessary evil’ (Lavoie, 1996, p. 537), where monetary policy becomes neutral regarding income distribution: the fair rate of interest “stems from the principle
that all individuals, when they engage in debt/credit relations, should obtain, at any time, an amount of purchasing power that is constant in terms of labour (a labour theory of income distribution)” (Pasinetti (1981, p, 174).

The fair rate of interest thus maintains the purchasing power, in terms of command over labour hours, of funds that are borrowed or lent, and preserves the intertemporal distribution of income between borrowers and lenders. The fair rate of interest, in real terms, should be equal to the rate of increase in the productivity of the total amount of labour that is required, directly or indirectly, to produce consumption goods and to increase productive capacity. … In an economy where the rate of profit remains constant, this growth rate would simply equal the growth rate of real wages. With price inflation, the fair rate of interest would be equal to the average rate of wage inflation, i.e., the growth rate of overall productivity plus the rate of price inflation” (Lavoie, 1999, p. 4).

Despite their differences, all three versions of the parking-it approach consider the rate of interest as a distributive variable, and characterize monetary policy as essentially an incomes policy for rentiers, with the monetary transmission mechanism acting through changes in the distribution of income, both in the short run and long run. As Lavoie (1996, p. 536) explains, “the rate of interest is an important determinant of the distribution of income between social classes and presumably between individuals.”

A Post-Keynesian Monetary Macroeconomic Model

In this section, we outline the four main components of the structural model that we will use to compare and contrast the macroeconomic consequences of the various Post Keynesian interest rate rules. The model builds on and develops in greater detail some of the key features in Rochon and Setterfield (2007).
Inflation and the distribution of income

We model inflation as a conflicting claims process. Specifically, we write:

\[ w = \mu[(\omega_w - \omega) + q + p^e] \quad , \quad 0 < \mu < 1 \]  \[1\]

\[ p = \varphi(\omega - \omega_F) + w - q \quad , \quad 0 < \varphi < 1 \]  \[2\]

\[ \omega_w = f(g) \quad , \quad f' > 0 \]  \[3\]

where \( w \) is the rate of growth of nominal wages, \( \omega_w \) is the target wage share of workers, \( \omega \) is the actual wage share, \( q \) is the rate of growth of labour productivity, \( p^e \) and \( p \) denote the expected and actual rates of inflation, \( \omega_F \) is the target wage share of firms, \( \mu \) denotes the relative power of workers in the wage bargain, \( \varphi \) is the rate of growth and \( \phi \) is a reflection of the “monopoly power” of firms vis-a-vis the goods market (specifically, their ability to increase prices in excess of increases in unit labour costs).

Equation [1] describes the rate of growth of nominal wages as increasing in the rates of productivity growth and expected inflation, and the difference between workers’ target wage share and the actual wage share (the former representing the distributional aspirations of workers which, at any given level of productivity, can be associated with a perceived “fair” value of the real wage). Equation [2] states that inflation varies in equal proportion to the rate of growth of unit labour costs \((w - q)\), and is also influenced by any discrepancy between the actual wage share and firms’ target wage share. The assumption that \( 0 < \mu, \varphi < 1 \) means that there is an absence of full indexation in both wage and price setting behaviour. This is consistent with the existence of limitations to both the bargaining power of workers vis-a-vis firms in the wage bargain, and the “monopoly power” of firms in product markets. Finally, equation [3] endogenizes workers’ target wage share, describing the latter as varying directly with the rate of growth.
Given the rates of growth of output and productivity, steady state equilibrium requires that \( p = p^e \) and \( \omega = \bar{\omega} \) which, from the definition of the wage share, implies that \( p = w - q \). Using the second of these equilibrium conditions in conjunction with \([2]\), we get:

\[
\omega^* = \omega_F \tag{4}
\]

where henceforth an asterisk (*) denotes an equilibrium value. Using both of our equilibrium conditions with the result in \([4]\), and using equation \([1]\), we get:

\[
w^* = \frac{\mu}{1 - \mu} (\omega_w - \omega_F)
\]

Given \([3]\) and that \( p = w - q \), it follows that:

\[
p^* = \Omega (f(g^*) - \omega_F) - q^* \tag{5}
\]

where \( \Omega = \mu/(1 - \mu) \). Equations \([4]\) and \([5]\) state the equilibrium wage share and rate of inflation, respectively, based on the workings of the conflicting claims inflation process in equations \([1]\)–\([3]\).

**Economic growth**

Our description of economic growth is based on a neo-Kaleckian model of the form:\(^6\)

\[
g = \gamma + \gamma_u u + \gamma_r (r - i\lambda) \tag{6}
\]

\[
g^* = s_x r \tag{7}
\]

\[
r = \frac{(1 - \omega)u}{v} \tag{8}
\]
where $u$ is the rate of capacity utilization, $r$ is the gross rate of profit, $i$ is the nominal interest rate, $\lambda$ is the ratio of corporate debt to the aggregate capital stock (assumed constant in the short run), $g^s$ is the rate of growth of savings, $v$ is the (fixed) capital-output ratio and $g$ is as previously defined. Equation [6] describes growth as increasing in the rates of capacity utilization and “enterprise” profits – that is, gross profits minus the amount paid by firms (to rentiers) to service outstanding debts.\(^7\) Hence the notion that “interest rates do matter” is captured by their impact on the distribution of gross profits between capitalist and rentiers (which is itself consistent with our conception of the interest rate as an intrinsically distributional variable) and hence investment behaviour. Equation [7], meanwhile, is the familiar Cambridge equation, while equation [8] is true by definition.\(^8\)

Using the equilibrium condition $g = g^s$ to combine equations [6]—[8], and recalling the result in [4], we get:

$$u^* = \frac{(\gamma - \gamma^* i^w \lambda)\psi}{(s_x - \gamma_r)(1 - \omega_F) - \gamma u v} \quad [9]$$

Note that an economically meaningful solution to [9] (where $u^* > 0$), now requires both $s_x > \frac{\gamma u v}{1 - \omega_F} + \gamma_r$ (the familiar neo-Kaleckian condition) and $\gamma > \gamma^* i^w \lambda$, which is specific to the variant of the neo-Kaleckian growth model used here. It arises by virtue of the distinction between gross and enterprise profits in the construction of the investment function in [6].

Substituting [9] into [6] and solving for the equilibrium rate of growth, we arrive at:
\[ g^* = \frac{s_z (1 - \omega_F) (\gamma - \gamma_i \lambda)}{(s_z - \gamma_r) (1 - \omega_F) - \gamma_a v} \]  

It should be noted that it follows from [9] and [10] that:

\[ \frac{\partial u^*}{\partial (1 - \omega_F)} \frac{\partial (s_z - \gamma_r) (1 - \omega_F) - \gamma_a v}{\partial (s_z - \gamma_r) (1 - \omega_F) - \gamma_a v} < 0 \]

and:

\[ \frac{\partial g^*}{\partial (1 - \omega_F)} \frac{\partial (s_z - \gamma_r) (1 - \omega_F) - \gamma_a v}{\partial (s_z - \gamma_r) (1 - \omega_F) - \gamma_a v} < 0 \]

In other words, the growth regime is stagnationist and wage-led. This implies that our modification of the investment function in [6] in order to distinguish between gross and enterprise profits, and the consequent introduction of the interest rate into this investment function, does not alter the fundamental response of the neo-Kaleckian model to reductions in the wage share. Note that the comparative static results above are guaranteed as long as the conditions for an economically meaningful solution to [9] hold – i.e., as long as \( \gamma > \gamma_i \lambda \) and \( s_z > \frac{\gamma_a v}{1 - \omega_F} + \gamma_r \) (since it follows from this last condition that \( s_z > \gamma_r \) given \( \gamma_a, v, (1 - \omega_F) > 0 \) by definition).

**Technical progress**

We model technical progress as:

\[ q = q(g) , \quad q' > 0 \]

where \( q' > 0 \) captures a Verdoorn effect: increased economic growth results in dynamic increasing returns and hence faster productivity growth. Linearizing this technical
progress function and evaluating the resulting expression at the equilibrium rate of growth, we get:

$$q^* = \alpha g^*, \quad \alpha_g > 0 \quad [11]$$

Note that:

$$\frac{\partial q^*}{\partial (1-\omega_F)} = \alpha_g \frac{\partial g^*}{\partial (1-\omega_F)} < 0$$

since $$\frac{\partial g^*}{\partial (1-\omega_F)} < 0$$ as previously demonstrated. In other words, the dynamics of productivity growth are also wage-led.$^{10}$

**Monetary policy**

Monetary policy is modelled in terms of the following interest rate operating procedure (IROP), which encompasses the three Post Keynesian “benchmark” interest rate rules discussed earlier:

$$i = \beta_p p + \beta_q q \quad [12]$$

where:

Fair Rate (Pasinetti) rule: \(\beta_p = \beta_q = 1\)

Smithin rule: \(\beta_p = 1, \beta_q = 0\)

Kansas City rule: \(\beta_p = \beta_q = 0\)

It follows that the equilibrium nominal interest rate can be written as:

$$i^* = \beta_p p^* + \beta_q q^* \quad [13]$$
Model solution and comparative statics

First, let us introduce the simplifying assumption that \( f' = 0 \) in equation [3]. In other words, following Palley (1996), we work with a version of the conflicting claims inflation model in which both wage share targets are exogenous. Note that, absent this assumption, combining equations [5] and [11] would yield:

\[
p^* = \Omega(f(g^*) - \omega_f) - \alpha_g g^*
\]

from which it follows that:

\[
\frac{\partial p^*}{\partial g} = \Omega f' - \alpha_g
\]

The sign of this last expression is indeterminate. If \( \Omega f' > \alpha_g \) – i.e., if faster growth causes a larger increase in wage inflation than in productivity growth – then the rate of growth of unit labour costs will rise and so will inflation. This can be considered a traditional Phillips curve result. However, if \( \Omega f' < \alpha_g \), then faster growth will reduce the rate of growth of unit labour costs and hence inflation. Setting \( f' = 0 \) simply forces this latter result. And setting \( f' = 0 \) does affect some (although interestingly, by no means all) of the results derived in this paper.\(^{11}\) Nevertheless, we persist with the assumption in the interests of expediency, and defer full exploration of the endogenous wage target case to further research.

Bearing in mind the simplifying assumption introduced above, our complete model can now be summarized as follows:\(^{12}\)

\[
p^* = \Omega(\omega_p - \omega_f) - q^*
\]  

[5']

\[
g^* = \frac{s_p(1-\omega_f)(\gamma - \gamma_0')}{(s_p - \gamma_f)(1-\omega_f) - \gamma_u \nu}
\]  

[10]
\[ q^* = \alpha g^* \]  \hspace{1cm} [11] \\
\[ i^* = \beta_p p^* + \beta_q q^* \]  \hspace{1cm} [13]

We can find the general equilibrium rates of growth, inflation and interest under various assumptions about the values of \( \beta_p \) and \( \beta_q \). Substituting [13] into [10] yields:

\[ g^* = \frac{s_x(1-\omega_r)(\gamma - \gamma_r \lambda[\beta_p p^* + \beta_q q^*])}{(s_x - \gamma_r)(1-\omega_r - \gamma_r \nu)} \]  \hspace{1cm} [14]

Substituting [14] into [11] and solving for \( q^* \) yields:

\[ q^* = \frac{\alpha g s_x(1-\omega_r)(\gamma - \gamma_r \lambda \beta_p p^*)}{(1-\omega_r)(s_x[1 + \alpha_g \gamma_r \lambda \beta_q] - \gamma_r - \gamma_r \nu)} \]  \hspace{1cm} [15]

We now have two equations ([5'] and [15]) in two unknowns \((p^* \text{ and } q^*)\). From equation [15], we have:

\[ \frac{dq^*}{dp^*} = \frac{-\alpha g s_x(1-\omega_r)\gamma_r \lambda \beta_p}{(1-\omega_r)(s_x[1 + \alpha_g \gamma_r \lambda \beta_q] - \gamma_r - \gamma_r \nu)} \leq 0 \]

and:

\[ \frac{d^2 q^*}{dp^*} = 0 \]

In other words, \( q^* \) is decreasing in \( p^* \) at a constant rate (except when \( \beta_p = 0 \) – as in the Kansas City rule – when \( q^* \) is invariant with respect to \( p^* \)). The intuition for this (potentially) inverse relationship between \( q^* \) and \( p^* \) is straightforward: as inflation rises,
the rate of interest goes up, and the rate of growth falls (eq. 10). This reduces the rate of productivity growth in [11].

Meanwhile, note that by re-arranging [5'], we can write:

\[ q_p^* = \Omega(\omega_w - \omega_r) - p^* \]  

[5'']

where \( q_p^* \) denotes the rate of productivity growth consistent with the equilibrium rate of inflation in [5']. We now assume that:

\[ \frac{dq_p^*}{dp^*} > -1 = \frac{dq_q^*}{dp^*} \]

and:

\[ \Omega(\omega_w - \omega_r) > \frac{\alpha_g s_s (1 - \omega_r) \gamma}{(1 - \omega_r)(s_s [1 + \alpha_g \gamma, \lambda \beta_q] - \gamma_r) - \gamma_u \nu} \]

These assumptions are sufficient to ensure the existence and stability of the general equilibrium values of \( p \) and \( q \) (\( p' \) and \( q' \) respectively) depicted in Figure 1. Utilizing the assumptions made above, Figure 1 plots the “growth frontier” in equation [15] together with the “inflation frontier” in [5''] to derive \( p' \) and \( q' \). It also utilizes equation [13] to show the derivation of the general equilibrium interest rate \( i' \). In this way, Figure 1 illustrates the derivation of the general equilibrium rates of growth, inflation and interest from the structural model summarized at the start of this section.

[FIGURE 1 GOES HERE]

Figure 1 does not faithfully represent any of the monetary policy regimes described above, all of which involve specific values of \( \beta_p \) and \( \beta_q \). By introducing
specific values of these parameters, we will modify the form of the growth frontier and thus compare the macroeconomic consequences of the various IROPs.\textsuperscript{13}

We begin with the Pasinetti rule, where that $\beta_p = \beta_q = 1$. Substituting this information into [15] yields:

$$
q^*_{n} = \frac{\alpha_s s_{\pi} (1 - \sigma_F)(\gamma - \gamma, \hat{\lambda} p^*)}{(1 - \sigma_F)(s_{\pi}[1 + \alpha_s \gamma, \hat{\lambda} - \gamma, - \gamma_a v)} [15']
$$

from which it follows that:

$$
\frac{dq^*_{n}}{dp^*} = \frac{-\alpha_s s_{\pi} (1 - \sigma_F)\gamma, \hat{\lambda}}{(1 - \sigma_F)(s_{\pi}[1 + \alpha_s \gamma, \hat{\lambda} - \gamma, - \gamma_a v)} < 0
$$

Having established these results, it is useful to proceed directly to the specification of the growth frontier consistent with the Smithin rule. The latter stipulates that $\beta_p = 1$ whereas $\beta_q = 0$. Substituting into [15] now yields:

$$
q^*_{s} = \frac{\alpha_s s_{\pi} (1 - \sigma_F)(\gamma - \gamma, \hat{\lambda} p^*)}{(1 - \sigma_F)(s_{\pi}[1 + \alpha_s \gamma, \hat{\lambda} - \gamma, - \gamma_a v)} [15'']
$$

from which it follows that:

$$
\frac{dq^*_{s}}{dp^*} = \frac{-\alpha_s s_{\pi} (1 - \sigma_F)\gamma, \hat{\lambda}}{(1 - \sigma_F)(s_{\pi}[1 + \alpha_s \gamma, \hat{\lambda} - \gamma, - \gamma_a v)} < 0
$$

Notice that the denominators of both [15’’] and its first derivative are smaller than those of [15’] and its derivative. This means that, compared with the Pasinetti growth frontier, the Smithin growth frontier is both steeper and has a larger intercept term. Formally, if we define the intercept term of the generic growth frontier in equation [15] as:
\[ \Psi = \frac{\alpha \gamma \alpha + \omega - \omega}{(1 - \omega_0)(\gamma x^{1 + \alpha \gamma \lambda \beta \omega} - \gamma x^{1 - \gamma_0})^2} \]

it follows that:

\[ \frac{d\Psi}{d\beta_\gamma} = \frac{-[\alpha \gamma \alpha + \omega - \omega]^2 \gamma \lambda \beta \omega}{((1 - \omega_0)(\gamma x^{1 + \alpha \gamma \lambda \beta \omega} - \gamma x^{1 - \gamma_0}) - \gamma_0 \gamma x^{1 - \gamma_0})^2} < 0 \]

At the same time, it follows from the first derivative of \[15\] that:

\[ \frac{d^2 q^*}{dp^* d\beta_\gamma} = \frac{[\alpha \gamma \alpha + \omega - \omega]^2 \beta_\gamma}{((1 - \omega_0)(\gamma x^{1 + \alpha \gamma \lambda \beta \omega} - \gamma x^{1 - \gamma_0}) - \gamma_0 \gamma x^{1 - \gamma_0})^2} > 0 \]

for \( \beta_\gamma \neq 0 \). On the basis of these results, Figure 2 depicts the comparative macroeconomic outcomes that result from the use of the Pasinetti and Smithin rules.

[FIGURE 2 GOES HERE]

As is clear from Figure 2 (and equation \[13\]), for any \( q^* > 0 \), the interest rate is always higher under the Pasinetti rule. Figure 2 also suggests that growth will be higher and inflation will be lower with the Smithin rule. This makes intuitive sense: since the Smithin rule involves a lower interest rate \textit{ceteris paribus}, it will stimulate growth and, as a result, lower inflation.\(^{14}\) However, some caution is needed when interpreting the result shown in Figure 2. This is because as inflation and hence the interest rate rises, the rate of growth falls faster with the Smithin rule; with the Pasinetti rule, rising inflation pushes up the interest rate depressing the rate of growth which, in turn, ameliorates the increase in interest rates and their negative effect on the growth rate. This is the substance of the
steeper growth frontier that arises in the case of the Smithin rule. The upshot of all this, as illustrated in Figure 3, is that for values of \( \psi \) sufficiently small, growth will be higher and inflation will be lower with the Pasinetti rule.\(^{15}\) From equations [15’] and [15’’], it can be shown that where the \( q^*_H \) and \( q^*_S \) growth frontiers intersect, we will observe:

\[
p^* = \frac{\gamma}{\gamma, \lambda}
\]

and:

\[
q^* = 0
\]

In other words, both \( q' \) and \( q'' \) in Figure 3 are negative, and the situation illustrated in this Figure is that of an economy in recession.\(^{16}\)

In short, the Pasinetti rule is the “high growth, low inflation” monetary policy rule during a recession (as in Figure 3), whereas the Smithin rule plays the same role in a positive growth environment (as in Figure 2). This result suggests that we can have “co-operative” or “conflictive” monetary policy regimes over the course of the cycle, as a result of the choice between the Pasinetti and Smithin rules. For example, suppose that the economy is in recession, so that the Pasinetti rule is the “high growth, low inflation” monetary policy rule. If the distributional purpose of monetary policy is to maintain the rentier class, then we have a co-operative monetary policy regime: both the distributional purpose of monetary policy and the maintenance of high growth and low inflation require use of the Pasinetti rule. However, if the distributional purpose of monetary policy is to euthanize the rentier, then we have a conflictive monetary policy regime. This time, the various objectives of policy makers regarding the distribution of income and the rates of
growth and inflation call for the use of different IROPs – the first purpose being better served by the Smithin rule, the second by the Pasinetti rule.\textsuperscript{17}

We now turn to consider the Kansas City rule. This stipulates that $\beta_p = \beta_q = 0$ which, upon substitution into [15], yields:

$$q_{KC}^* = \frac{\alpha s (1-\omega_F)\gamma}{(1-\omega_F)(s - \gamma_F) - \gamma u v}$$  \hspace{1cm} [15’’’]

with:

$$\frac{dq_{KC}^*}{dp} = 0$$

With the Kansas City rule, then, the growth frontier becomes horizontal – equilibrium productivity growth is constant at the rate that would emerge from [15’’’] with $p = 0$, regardless of the rate of inflation. As a result of this, the Kansas City rule always yields the highest rate of growth and the lowest rate of inflation, regardless of the value of $\psi$.\textsuperscript{18}

The intuition behind this result is straightforward. By minimizing the value of the nominal interest rate, the Kansas City rule results in higher growth and hence lower inflation than either the Pasinetti or Smithin rules, both of which give rise to higher interest rate regimes. Formally, as long as $\Omega(\omega_p - \omega_F) > \Psi$ (as was assumed earlier) so that the general equilibrium rate of inflation is positive, the Kansas City rule will always be the “high growth, low inflation” interest rate rule for two reasons. First, $\Psi_{KC} = \Psi_s > \Psi_H$ always. Second, whilst the interest rate increases and the growth rate decreases with inflation under the Smithin and Pasinetti rules, the rates of interest and growth are invariant with respect to inflation under the Kansas City rule. The results described above are illustrated in Figure 4 below.
Non-monetary policy interventions

We now consider how the models in the previous sub-section, featuring the various different IROPs that can be derived from equation [13], respond to non-monetary policy interventions. We begin with the impact of a fiscal policy designed to stimulate growth. Referring back to the description of the growth process in equations [6]—[8], if we define $\gamma$ in equation [6] as the ratio of the government budget deficit to the aggregate capital stock, then the fiscal policy we are contemplating can be captured as $d\gamma > 0$.

Inspection of the generic growth frontier in [15] reveals that $\gamma$ is a determinant of the intercept but not the slope of this frontier in $q, p$ space. Recall that we have already defined the intercept term of this generic growth frontier as:

$$
\Psi = \frac{\alpha_s s_x (1 - \omega_x) \gamma}{(1 - \omega_x) (s_x [1 + \alpha_s \gamma_r \lambda \beta q] - \gamma_r) - \gamma_u \nu}
$$

It follows that:

$$
d\Psi = \frac{\alpha_s s_x (1 - \omega_x)}{(1 - \omega_x) (s_x [1 + \alpha_s \gamma_r \lambda \beta q] - \gamma_r) - \gamma_u \nu} > 0
$$

Note that the result immediately above holds regardless of the value of $\beta q$ (given the familiar neo-Kaleckian condition for an economically meaningfully solution to equation [9], as stated earlier). In other words, regardless of the precise form of the IROP, a fiscal stimulus $d\gamma > 0$ will always displace the growth frontier in Figure 1 in such a way as to raise growth. Note, however, that:
In other words, the size of the derivative $d\Psi/d\gamma$ will be greater when $\beta_q = 0$ (as in the case of the Smithin and Kansas City rules) than it will be when $\beta_q = 1$ (as in the case of the Pasinetti rule). The intuition behind this result is straightforward. With either the Smithin or Kansas City rules, the interest rate is invariant with respect to changes in productivity growth ($\beta_q = 0$ in [13]). However, with the Pasinetti rule, $\beta_q = 1$, as a result of which a fiscal stimulus that raises growth will cause an increase in the interest rate which will decrease the rate of growth. In short, there is partial crowding out of fiscal policy, brought about by the behaviour of the interest rate, that is unique to the Pasinetti rule. As a result, the direct effect on growth of a fiscal stimulus $d\gamma > 0$ of any given size will be reduced if monetary policy is conducted in accordance with this rule.

But this is not the end of the story. Because inflation varies inversely with growth in [5'] (as captured by the negative slope of the inflation frontier in Figure 1), any increase in growth brought about by the direct effect of $d\gamma > 0$ described above will be accompanied by a second, indirect effect on growth resulting from a fall inflation and the rate of interest – as long as $\beta_p \neq 0$. In other words, the total effect on growth of $d\gamma > 0$ is given by:

$$\frac{dq_i^*}{d\gamma} = \frac{\partial q_i^*}{\partial \gamma} + \frac{\partial q_i^*}{\partial p^*} \frac{dp^*}{dq^*}$$

or:

$$\frac{dq_i^*}{d\gamma} = \frac{\partial \Psi_i}{\partial \gamma} + \frac{\partial q_i^*}{\partial p^*} \frac{dp^*}{dq^*}$$
for $i = H, S, KC$. Evaluating this derivative for each of our three interest rate rules, we obtain:

\[
\frac{dq_i^*}{d\gamma} = \Psi_i' + \left( \frac{-\alpha_g s_\pi (1-\omega_p) \gamma, \lambda}{(1-\omega_p)(s_\pi[1+\alpha_g \gamma, \lambda]-\gamma_r)-\gamma_u v} \right)(-1) = \frac{\alpha_g s_\pi (1-\omega_p)[1+\gamma, \lambda]}{(1-\omega_p)(s_\pi[1+\alpha_g \gamma, \lambda]-\gamma_r)-\gamma_u v}
\]

Inspection of these three derivatives reveals that the net marginal impact on growth of a stimulative fiscal policy is unambiguously greatest under the Smithin rule. However, it is impossible to produce a determinate rank ordering of the derivatives $dq_H^*/d\gamma$ and $dq_{KC}^*/d\gamma$. Whether or not we will observe $dq_H^*/d\gamma > dq_{KC}^*/d\gamma$ depends on whether or not the positive impact of $\beta_p \neq 0$ on the numerator of $dq_H^*/d\gamma$ outweighs the positive impact of $\beta_q \neq 0$ on the denominator of $dq_H^*/d\gamma$.\(^{19}\)

Having discussed the impact of fiscal policy, we now turn to consider the conduct of an incomes policy designed to curb inflation. Referring back to the structure of the inflation process summarized in equation \([5']\), it is clear that an incomes policy designed to reduce the rate of inflation at any given rate growth can act on any (or some combination) of the parameters $\Omega, \omega_w$, or $\omega_F$. In what follows, we will consider an incomes policy of the form $d\Omega < 0$. Note that, although $\Omega$ varies directly with the relative power of labour in the wage bargain, this type of incomes policy need not involve “zapping labour”. Hence although $d\Omega < 0$ could be achieved by essentially coercive means (by limiting the ability of workers to bargain collectively, for example, or by
increasing workers sense of employment and income insecurity – on which, see Setterfield (2006a, 2006c)), it could also be achieved co-operatively. For example, workers might agree to deliberately forego the use of what then becomes a latent degree of bargaining power as a result of their participation in a “social bargain” or “limited capital-labour accord” of the type described by Cornwall (1990) and Bowles et al (1990).

Consider, then, the impact of $d\Omega < 0$ on $[5^\text{st}]$. It follows from this last equation that:

$$
\frac{dq_p^*}{d\Omega} = (\omega_w - \omega_r) > 0
$$

Interpreted literally, this result states that an incomes policy that reduces $\Omega$ will decrease the rate of productivity growth necessary to achieve any given rate of inflation. Or in other words, inflation will now be lower at any given rate of productivity growth: the incomes policy will shift the inflation frontier first depicted in Figure 1 to the left.

It is clear from equation [15] that the growth frontier is invariant with respect to the value of $\Omega$, regardless of the precise form of the IROP. Intuitively, then, the effect of $d\Omega < 0$ will depend chiefly on the slope of the growth frontier, something that is dependent on the form of the IROP. This is illustrated in Figure 5 below.

[FIGURE 5 GOES HERE]

Figure 5 illustrates the marginal impact of an incomes policy on growth and inflation outcomes for all three of the monetary policy regimes discussed above. As the inflation frontier shifts left, growth remains constant under the Kansas City rule (because of the constancy of the interest rate that this rule imposes), and inflation falls from $p_{KC}$ to $p'_{KC}$. With the Pasinetti rule, however, the same incomes policy raises growth (from $q_{H}$ to...
because reducing inflation lowers the interest rate under this rule. At the same time,
the increase in growth amplifies the reduction in inflation brought about by the original
incomes policy by reducing the rate of growth of unit labour costs. As such, inflation falls
(from \( p_a \) to \( p_a' \)) by a greater amount than under the Kansas City rule. Finally, the
incomes policy will stimulate growth by a greater amount under the Smithin rule (from
\( q_s \) to \( q_s' \)), since, as explained earlier, there is no partial crowding out of the growth-
stimulating effects of a fall inflation with the Smithin rule. At the same time, this means
that the fall in inflation bought about under the Smithin rule (from \( p_s \) to \( p_s' \)) is still
greater than that observed under the Pasinetti rule. In sum, the exercise illustrated in
Figure 5 designed to illustrate the marginal impact on macroeconomic performance of an
incomes policy designed to reduce inflation produces a simple rank ordering of results:
the beneficial impact of the policy on both inflation and growth increases monotonically
as we move from the Kansas City to the Pasinetti to the Smithin interest rate rules.\(^{21}\)

Figure 5 also serves to illustrate two further salient points. First, it demonstrates
that under some Post Keynesian IROPS (specifically, the Pasinetti and Smithin rules), a
policy of inflation targeting can benefit real economic performance.\(^{22}\) This is because
reducing inflation will automatically reduce the rate of interest under these rules, and thus
boost growth. Per the results of the exercise in Figure 5, we can see that the growth-
enhancing effects of inflation targeting will be greater under the Smithin rule than they
will be under the Pasinetti rule. Second, a successful incomes policy can trigger a switch
in the “high growth, low inflation” monetary policy rule. This is illustrated in Figure 5,
wherein the Pasinetti rule is the “high growth, low inflation” rule initially, but the shift in
the inflation frontier causes the Smithin rule to become the “high growth, low inflation”
rule subsequently. This, in turn, means that an incomes policy such as that depicted in Figure 5 can transform a conflictive monetary policy into a cooperative monetary policy (or vice versa), depending on the (assumed given) distributional ambitions of the policy authorities.

Conclusion

This paper has examined the macroeconomic consequences of three post Keynesian ‘benchmark’ interest rate rules, according to which interest rates (real or nominal) are ‘parked’ at some specific value and changed only infrequently. Each of these rules is consistent with an explicit distributional objective vis a vis the role of the rentier class in a capitalist society, and argues against what Rochon and Setterfield (2007) call the monetary policy dominance of macroeconomic policy.

The paper sheds light on the question as to which of the three rules “does best”, in terms of their capacities to promote desirable (high growth, low inflation) macroeconomic outcomes and to assist the growth and inflation targeting objectives of the policy authorities. As has been made clear at various junctures, some of the results derived may be sensitive to the assumed exogeneity of wage targets in the inflation process. Further exploration of this sensitivity is clearly warranted. Nevertheless, together with consideration of their distributional impacts, the exercise in this paper represents a first step towards comparative evaluation of three prominent Post Keynesian interest rate rules. It is hoped that this will contribute to the process of choosing amongst these rules.
and, in so doing, providing an answer to the “Smithin question”: what is the appropriate benchmark rate of interest in a Post Keynesian economy in which there is no natural rate of interest?

**Footnotes**

1. This does not imply of course that interest rates are fixed indefinitely. Rather, they are changed only infrequently. See Rochon and Setterfield (2007) for a discussion.

2. Needless to say, the model developed below by no means exhausts the process of evaluation. For example, it does not capture the potential impact of the three interest rate rules on corporate finance – in particular, the extent to which firms rely on either debt or new equity to finance investment, and the effects of this on economic growth. We leave this and other extensions of the type of assessment exercise undertaken in this paper to future research.

3. See Lavoie (1992, chpt.7) and Burdekin and Burkett (1996) for surveys of the conflicting-claims approach to the analysis of inflation.

4. See Setterfield (2006a) for further discussion of both this equation and other features of the specific conflicting-claims model stated above.

5. Firms’ target wage share remains exogenous, because as demonstrated below, it is determined by a target rate of return evaluated at normal rates of capacity utilization and interest – all of which are taken as given in the short run.


7. See Setterfield (2006b) for further discussion of equation [6].

   Note that, given \( \lambda \), enterprise profits in equation [6] are sensitive to variations in the gross rate of profit in real terms \( (r) \) and the nominal rate of interest \( (i) \). To see how this relationship arises, begin by writing:

\[
\Pi_E = \Pi - \Pi_R
\]

where \( \Pi_E \) denotes enterprise profits, \( \Pi \) denotes gross profits and \( \Pi_R \) denotes payments to rentiers (all in nominal terms). Suppose further that \( \Pi_R = iD \), where \( D \) is the nominal stock of debt. We can therefore write:

\[
\Pi_E = \Pi - iD
\]

Dividing through by the nominal value of the capital stock \( (PK) \) yields:
\[
\frac{\Pi_E}{PK} = \frac{\Pi}{PK} - \frac{iD}{PK}
\]

or:

\[
\frac{\Pi_E / P}{K} = \frac{\Pi / P}{K} - \frac{iD / P}{K}
\]

which we can write as:

\[r_E = r - i\lambda\]

where \(r_E\) denotes the real rate of enterprise profits or what is better thought of as the “real cash flow rate”. (We are grateful to Marc Lavoie of the University of Ottawa for drawing this last point to our attention.) What equation [6] suggests is that increases in the nominal interest rate squeeze firms’ cash flows (by redistributing income towards rentiers) and hence impede their ability to accumulate – an intrinsically Keynesian result, since it involves a monetary variable affecting a real variable. Equation [6] is thus consistent with the empirical evidence of, inter alia, Fazzari et al (1988), which demonstrates the impact of cash flow on investment expenditures.

8. On the basis of [8] and the definition of \(r^E\) in the previous endnote, it can be shown that:

\[\omega_F = 1 - \frac{v(r^T_E + i_n\lambda)}{u_n}\]

where \(r^T_E\) is the target real cash flow rate and \(i_n\) and \(u_n\) are normal rates of interest and capacity utilization, respectively. Note that \(\omega_F\) is thus invariant not only to \(g^*\) (as previously asserted), but also to changes in the actual value of the interest rate. There is, therefore, no “cost push channel” of monetary policy in the model developed in this paper, whereby changes in the rate of interest affect the mark up and hence prices. See Setterfield (2006b) for further discussion.

9. See McCombie and Thirlwall (1994, chpt.2) for discussion of the Verdoorn effect.

10. A simple extension of equation [11] would involve writing:

\[q^* = \alpha_w(1 - \omega_F) + \alpha_g g^*\]

where \(\alpha_w < 0\) captures a Marx effect, whereby increasing the wage share (and thus squeezing profits) induces labour-saving technical change by firms in an effort to restore profitability (see, for example, Foley, 2003, chpt. 2). The
implications of this extension are not explored in what follows, but note that the expression above does imply that:

\[
\frac{\partial q^*}{\partial (1 - \omega_f)} = \alpha_w + \alpha_g \frac{\partial g^*}{\partial (1 - \omega_f)} < \alpha_g \frac{\partial g^*}{\partial (1 - \omega_f)}
\]

In other words, addition of a Marx effect would amplify the wage-led dynamics of technical change.

11. It does, of course, imply that it is impossible for the policy authorities to influence the equilibrium rate of inflation using the “traditional” lever of deflationary monetary policy. However, this, in and of itself, involves no loss of generality in what follows: as has already been made clear, we are not interested in specifying monetary policy reaction functions that aim to deflate the economy in the pursuit of lower inflation.

12. Recall that the equilibrium wage share, as determined in equation [4], has already been incorporated into the equations re-stated here.

13. As discussed by Rochon and Setterfield (2007), the three different IROPs described in the previous section have different implications for the position of the rentier class in society, with the Horizontalist rule defining a “fair” return for rentiers and the other two rules seeking the euthanasia of the rentier. Thus we already know that the three rules have different distributional implications. We are now looking to see whether they have different effects on growth and inflation outcomes, and on the capacity of the authorities to pursue other policy objectives using non-monetary policy interventions. In other words, we are introducing a second criteria by which to evaluate the merits of the three rules.

14. Recall that faster growth will unambiguously reduce inflation because of our earlier assumption that \( f^* = 0 \). As demonstrated in endnote 11, were we to assume that the target wage share of workers varies directly with the rate of growth, it is possible that faster growth would ultimately lead to higher rather than lower inflation. Note that this would, in turn, lead to a partial crowding out of the growth bonus associated with a switch to the Smithin rule, since higher inflation would promote an increase in the interest rate which would reduce the rate of growth. (This would necessarily be a partial crowding out effect, of course, since the rise in the interest rate is predicated on a higher rate of inflation which requires an increase in the growth rate.) In short, relaxing the assumed exogeneity of workers’ target wage share has the capacity to modify the sign of the effect on inflation of switching from the Horizontalist to the Smithin interest rate rule. But it will only modify the size of the effect on growth of the same switch between interest rate rules.

15. Once again, relaxing the assumed exogeneity of workers’ target wage share may modify the sign of the effect on inflation but only the size of the effect on growth
of switching from the Smithin to the Horizontalist interest rate rule in the economy depicted in Figure 3.

16. The Kaleckian model of growth developed earlier can be used to produce a reasonable facsimile of conditions of recession if we allow for a fall in the value of $\gamma$ (which will cause a fall in the value of $\psi$, shifting both the $q_H^*$ and $q_S^*$ schedules down, as in Figure 3) such that $\gamma < \gamma^* \lambda$, and if we also posit that this situation is reflected in $(1 - \omega_F) < 0$ in the short run (in other words, the wage bill exceeds total income so that firms are making losses). Under these conditions, we will observe $r < 0$ in [8], $u^* > 0$ in [9] and $g^* < 0$ in [10]. It follows from this last result that $q^* < 0$ in [11]. The latter result can be associated with labour hoarding as growth turns negative, rather than technical regress due to a “reverse” Verdoorn effect.

17. Of course, the same distinction between conflictive and co-operative monetary policy regimes can arise in the positive growth environment depicted in Figure 2.

18. Relaxing the assumed exogeneity of workers’ target wage share may modify the sign of the effect on inflation of switching from the Horizontalist or Smithin rules to the Kansas City interest rate rule. But it will have no effect on the equilibrium growth rate associated with the Kansas City rule. This is because, with the Kansas City rule, there is no negative feedback from inflation to the rate of growth operating via the rate of interest (which is constant), and hence no partial crowding-out effect. In other words, regardless of the slope of the inflation frontier, the Kansas City rule is unambiguously the “high growth” interest rate rule.

19. Note that these results will be affected by the slope of the inflation frontier. Specifically, suppose that $f' \neq 0$ gives rise to the result $dp^*/dq^* > 0$, so that the direct effect of $d\gamma > 0$ on growth raises rather than lowers inflation and hence the rate of interest. Then the net marginal impact on growth of a stimulative fiscal policy will be greatest under the Kansas City rule and least under the Pasinetti rule, with the Smithin rule falling somewhere in between.

20. The impact on the interest rate is omitted for the sake of simplicity.

21. Note that relaxing the assumption that $f' = 0$ may reverse the ranking of inflation results reported above, if it gives rise to a positively-sloped inflation frontier.

22. It should be noted that by “inflation targeting”, we mean only the credible commitment of the policy authorities to achieving a clearly stated target rate of inflation. Our definition of inflation targeting is thus more general than that associated with authors such as Mishkin (2002, p.361), for whom it also has specific implications for monetary policy and for the policy priorities of the central bank.
References


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Figure 1: General Equilibrium
Figure 2: Macroeconomic Outcomes Under the Horizontalist and Smithin Rules
Figure 3: The Horizontalist and Smithin Rules in a Recession
Figure 4: The Horizontalist, Smithin and Kansas City Rules Compared
Figure 5: The Macroeconomic Consequences of an Incomes Policy