Harrodian instability and the 'normal rate' of capacity utilisation in Kaleckian models of distribution and growth – a survey[#]

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Abstract

Starting from potential Harrodian instability in the Kaleckian distribution and growth model we survey Kaleckian reactions put forward to avoid or to cope with this instability. We show that, contrary to the position taken by the critics of the Kaleckian model, this model is capable of maintaining an endogenous rate of capacity utilisation, the paradox of thrift and the paradox of costs in the long run, even if the problem of Harrodian instability arises. We conclude that Kaleckian models are more flexible than their Harrodian and Marxian critics suppose when attacking the simple textbook version.

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1. Introduction

The Kaleckian model of growth, as initially suggested by Del Monte (1975), then independently put forward by Dutt (1984) and Rowthorn (1981), and further discussed and put into context by Taylor (1983) and Amadeo (1986), has progressively become quite popular among heterodox economists concerned with macroeconomics and effective demand issues. The model, in its simplest versions, is made up of three equations that involve income distribution, saving, and investment. One of the reasons of its success is that the model, in contrast to the old Cambridge growth model, avoids contradictions as it moves from the short run to the long run. In particular, the model has shown that short-run macroeconomic paradoxes, such as the paradox of thrift or the paradox of costs, whereby a decrease in the propensity to save or an increase in real wages leads to an increase in output, could be extended to the long run, as reflected by an increase in growth rates and an increase in realised profit rates. These macroeconomic paradoxes rely on an endogenous rate of capacity utilisation in both the short run and in the long run.

As the Kaleckian model has become the source of an ever-growing literature, some authors have started to doubt its relevance, by questioning the global stability of the model (see recently in particular Dallery (2007), Skott (2008A, 2008B, 2010), Allain and Canry (2008)). Two types of stability can be distinguished: Firstly, Kaleckians usually assume *Keynesian stability*, that is, they assume that changes in rates of utilisation have a larger impact on the saving function than they do on the investment function. Secondly, Kaleckians believe that the problem of *Harrodian instability*, which might arise in the medium to long run, even in the presence of Keynesian stability, can be avoided through various mechanisms. In particular, Kaleckians typically treat the rate of capacity utilisation as an accommodating variable not only in the short run but also in the medium and long run. This feature of the model has been questioned from the very beginning, mainly by some Sraffian and Marxist trained authors (e.g. Committeri (1986), Auerbach and Skott (1988), Duménil and Lévy (1995)). Their complaint is that, at least in the long run, there ought to be some mechanism bringing back the actual rate of capacity utilisation towards some 'normal rate', or to the target rate from the perspective of the firm. The main point is that if the rate of capacity utilisation is higher (lower) than its normal, or standard, rate in the long run, then the rate of accumulation cannot remain constant, and must drift up (down). In this view, the long-run Kaleckian (pseudo) equilibrium is not sustainable. The critics of the Kaleckian model have, therefore, suggested different mechanisms which contain Harrodian instability in the medium to long run and make the economy adjust to an exogenous normal rate of capacity utilisation. Clearly, in these approaches the paradox of thrift and the paradox of costs vanish in the long run. We have closely examined these alternative approaches in a companion paper (Hein et al. (2009)) and have been unconvinced by the arguments advanced in support of these alternatives.

By contrast, the purpose of the present paper is a constructive one. Starting from potential Harrodian instability in the Kaleckian model we survey Kaleckian mechanisms that have been put forward to avoid or to cope with this instability. We will show that, contrary to the position taken by its critics, the Kaleckian model is capable of maintaining the paradox of thrift and the paradox of costs in the long run.

The paper is organised as follows. In Section 2 we present the basic model framework and briefly discuss the implications of (short-run) Keynesian and (long-run)

Harrodian instability within this framework. In the remainder of the article, we focus on the issue of Harrodian instability. Section 3 outlines those Kaleckian approaches which question the notion of a normal rate of utilisation – and thus the necessity of any adjustment of the actual rate of capacity utilisation to the normal rate –, and which therefore deny the problem of Harrodian instability altogether. Section 4 deals with a recent approach accepting the idea of a normal rate of capacity utilisation but arguing that firms may have other, potentially more important, targets so that neither an adjustment towards the utilisation target nor Harrodian instability should be expected. In the following sections we discuss approaches which accept the equality of actual and normal rates of capacity utilisation in long-run equilibrium, but argue that the normal rate may become endogenous to the actual rate. Whereas the model discussed in Section 5 focuses on the behaviour and expectations of entrepreneurs, Section 6 discusses the effects of applying monetary policies as a stabiliser in the face of Harrodian instability. Section 7 summarises and concludes.

2. The basic model and the implications of Keynesian and Harrodian instability

We start by recalling the three equations of a simple Kaleckian growth model for a closed private economy:

$$r = \frac{mu}{v} = \frac{r_n u}{u_n}, \tag{1}$$

$$g^s = s_p r, \qquad s_p > 0, \tag{2}$$

$$g^i = \gamma + \gamma_u (u - u_n), \qquad \gamma, \gamma_u > 0. \tag{3}$$

Equation (1) is the distribution or pricing equation, which says that the realised net profit rate r depends on the realised rate of capacity utilisation u, on the gross profit margin m, and on the capital to capacity ratio v. The same distribution equation can also be rewritten in terms of the normal profit rate r_n and the normal rate of capacity utilisation u_n. The saving function g^s is the standard classical saving equation, which assumes away saving out of wages, with a propensity to save out of profits equal to s_p. Finally, equation (3) is the investment function, where the rate of capital accumulation is said to depend on a parameter γ, which can be interpreted as some trend rate of growth of sales, and on the deviation of actual from normal capacity utilisation. Thus, whenever the rate of capacity utilisation is above its normal rate, firms attempt to bring back capacity towards its normal rate by accumulating capital at a rate that exceeds the assessed trend growth rate of sales. But unless there is some kind of fluke, the actual and the normal rates of capacity utilisation will differ in this Kaleckian model without any further adjustment. That is the reason why u_n is omitted from the investment function in many simple versions of the Kaleckian model.

For the goods market equilibrium of the model ($g^s = g^i$) the following utilisation rate (u^*) is obtained from equations (1) – (3):

$$u^* = \frac{\gamma - \gamma_u u_n}{s_p \frac{m}{v} - \gamma_u} \quad . \tag{4}$$

Keynesian stability in this model requires that investment is not too sensitive to changes in the rate of capacity utilisation. The slope of the investment function must be smaller than that of the saving function, which means that condition (5) needs to be fulfilled:

$$s_p \frac{m}{v} > \gamma_u . \tag{5}$$

The issue of short-run stability can be seen in two ways. One possibility is to assume a disequilibrium mechanism, whereby the level of output is given in the ultra-short period, with firms adjusting the level of output to the disequilibrium in the goods market, that is the discrepancy between desired investment and saving. Thus firms increase the degree of capacity utilisation whenever aggregate demand exceeds aggregate supply, in which case we have:

$$\Delta u = \mu(g^i - g^s), \qquad \mu > 0 . \tag{6}$$

Another way to see Keynesian instability is to imagine a pure adjustment process, assuming that firms are always able to adjust production to sales within the period, thus assuming that the goods market is in equilibrium in each period. It can also be conveniently assumed that firms make their investment decisions on the basis of an expected rate of capacity utilisation u^e, which is set at the beginning of the investment period (Amadeo (1987)). In this case, the investment function needs to be slightly modified to:

$$g^i = \gamma + \gamma_u\left(u^e - u_n\right), \quad \gamma, \gamma_u > 0 . \tag{3A}$$

The rate of utilisation that will be realised in each period will thus be u^K, such that:

$$u^K = \frac{\gamma + \gamma_u(u^e - u_n)}{s_p \frac{m}{v}} . \tag{7}$$

The expected rate of utilisation may thus be unequal to the short-period equilibrium rate, so that we can envisage an adjusting mechanism, such that:

$$\Delta u^e = \theta(u^K - u^e), \qquad \theta > 0 . \tag{8}$$

With Keynesian stability, as illustrated with Figure 1, the economy will be brought towards the equilibrium utilisation rate in equation (4).

INSERT FIGURE 1
INSERT FIGURE 2

Figure 2 illustrates Keynesian instability. Entrepreneurs overestimate the equilibrium rate of capacity utilisation ($u^e > u^*$), but the realised short-run rate of utilisation is even higher than the overestimated rate ($u^K > u^e$), so that entrepreneurs are induced to raise the expected rate of utilisation even more, thus moving away from the long-run equilibrium u^*.

Whereas Keynesian instability arises when the investment function is steeper than the saving function, in our simple Kaleckian model, Harrodian instability arises because the γ parameter of the investment function is unstable and rises (decreases) whenever the rate of capacity utilisation exceeds (is below) its normal rate. Thus one may have simultaneously Keynesian stability and Harrodian instability. Formally, critics of the Kaleckian model represent Harrodian instability as a difference or a differential equation, where the change in the rate of accumulation is a function of the discrepancy between the actual and the normal rates of capacity utilisation (Skott (2008B), Skott and Ryoo (2008)).

$$\Delta g^i = \theta(u^* - u_n), \qquad \theta > 0 . \tag{9}$$

But what this really means in terms of our little Kaleckian model is that the parameter γ gets shifted as long as the actual and normal rates of capacity utilisation are unequal:

$$\Delta \gamma = \theta(u^* - u_n), \qquad \theta > 0 . \tag{10}$$

The reason for this is that in equation (3) the γ parameter can be interpreted as the assessed trend growth rate of sales, or as the expected secular rate of growth of the economy. When the actual rate of utilisation is consistently higher than the normal rate ($u^* > u_n$), this implies that the growth rate of the economy is consistently above the assessed secular growth rate of sales ($g^* > \gamma$). Thus, as long as entrepreneurs react to this in an adaptive way, they should eventually make a new, higher, assessment of the trend growth rate of sales, thus making use of a larger γ parameter in the investment function.

Equation (10) may be interpreted as a slow process. In words, after a certain number of periods during which the achieved rate of utilisation exceeds its normal rate, the investment function starts shifting up, thus leading to ever-rising rates of capacity utilisation, and hence to an unstable process. This is illustrated with the help of Figure 3. Once the economy achieves a long-run solution with a higher than normal rate of utilisation, say at $u_1 > u_n$, (after a decrease in the propensity to save in Figure 3), the constant in the investment function moves up from γ_0 to γ_2 and γ_3, thus pushing further up the rate of capacity utilisation to u_2 and u_3, with accumulation achieving the rates g_2 and g_3, and so on. Thus, according to some of its critics, the Kaleckian model gives a false idea of what is really going on in the economy, because the equilibrium described by the Kaleckian model (point B) will not be sustainable and will not last.

INSERT FIGURE 3

In what follows, we assume that entrepreneurs react with enough inertia to generate Keynesian stability.[1] When rates of utilisation rise above their normal rates (or fall below their normal rates), entrepreneurs take a wait and see attitude, not modifying their parametric behaviour immediately, until they are convinced that the discrepancy is there to stay. Thus, in what follows, we consider that the main issue at stake is the problem of Harrodian instability and we will deal with different Kaleckian responses and solutions in turn.

[1] This assumption is similar to what Skott (2008A, 2008B) assumes in his critique of the Kaleckian investment function and in his alternative Harrodian model.

3. Questioning the uniqueness of the normal rate of utilisation and thus the necessity of any adjustment

In our model we have assumed that there exists a given and unique normal rate of capacity utilisation, or a given target rate of utilisation perceived by firms when making investment decisions. However, not all post-Keynesians would agree that normal or target rates of utilisation are unique. Neither would all post-Keynesians agree that economic analysis must be conducted under the restriction that some mechanism brings back the economy towards normal rates of utilisation.

Chick and Caserta (1997), among others, have argued that expectations and behavioural parameters, as well as norms, are changing so frequently that long-run analysis, defined as fully-adjusted positions at normal rates of capacity utilisation, is not a very relevant activity. Instead, they argue that economists should focus on short-run analysis and what they call medium-run or provisional equilibria. They are defined as arising from the equality between investment and saving, or between aggregate demand and aggregate supply. These short-run and medium-run equilibria are what we have defined as the u^K and u^* equilibrium values of the rate of utilisation in Section 2.

There is another post-Keynesian way out, to avoid the need to examine mechanisms that would bring rates of utilisation back to their normal value. As pointed out by Palumbo and Trezzini (2003, p. 128), Kaleckian authors tend to argue that ‘the notion of “normal” or “desired” utilisation should be defined more flexibly as a range of degrees rather than as a single value’. Hence, according to Dutt (1990, pp. 58-60) and Lavoie (1992, pp. 327-332, pp. 417-422), firms may be quite content to run their production capacity at rates of utilisation that are within an acceptable range of the normal rate of utilisation.[2] Under this interpretation, the normal rate of capacity utilisation is more a conventional norm than a strict target. If this is correct, provisional equilibria could be considered as long-run fully-adjusted positions, as long as the rate of capacity utilisation remains within the acceptable range. Indeed, John Hicks himself seems to have endorsed such a viewpoint. He points out that:

> ‘The stock adjustment principle, with its *particular* desired level of stocks, is itself a simplification. It would be more realistic to suppose that there is a range or interval, within which the level of stock is “comfortable”, so that no special measures seem called for to change it. Only if the actual level goes outside that range will there be a reaction.’ (Hicks (1974, p. 19))

Also, as long as rates of utilisation remain within the acceptable range, firms may consider discrepancies between the actual and the normal rates of utilisation as a transitory rather than a permanent phenomenon. As a consequence, the Harrodian instability mechanism, which would induce firms to act along the lines of equation (10), with accelerating accumulation when actual utilisation rates surpass the normal rate, might be very slow, getting implemented only when entrepreneurs are persuaded that the discrepancy is persisting. Given real-world uncertainty and the fact that capital decisions are irreversible to a large extent, firms may be very prudent, so that the Harrodian instability may not be a true concern in actual economies.

A further point needs to be made. Some authors, such as Skott (1989A) have argued that if firms behave along profit-maximizing lines, there will be a unique profit-maximizing rate of capacity utilisation (for a normal profit rate), corresponding to the

[2] See also our discussion in Section 6.

optimal choice of technique. Now, as Caserta (1990, p. 151) points out, reserve capacity can be understood in at least two different meanings. Kurz (1986), who is often cited as a reference for those insisting on normal capacity use, studies reserve capacity in the first sense, meaning the duration or the intensity of operation of a plant during a day. What Kaleckians have in mind is instead idle capacity, as defined in statistical surveys of capacity use. They believe that each plant or segment of plant is operated at its most efficient level of output per unit of time;[3] however, some plants or segments of plants are not operated at all. Firms are cost minimisers, but they have little control over the rate of capacity utilisation as defined here.[4] It is telling to note that Kurz (1994, p. 414), when studying reserve capacity in the second sense, concludes that 'it is virtually impossible for the investment-saving mechanism … to result in an optimal degree of capacity utilisation'. He even adds that 'it is, rather, expected, that the economy will generally exhibit smaller or larger margins of unutilised capacity over and above the difference between full and optimal capacity'. Elsewhere, Kurz (1993, p. 102) insists that 'one must keep in mind that although each entrepreneur might know the optimal degree of capacity utilisation, this is not enough to insure that each of them will be able to realise this optimal rate'.[5]

This being said, although we believe the above statements represent strong arguments, we do not wish to 'sweep the problem of the long run relevance of Kaleckian models under the carpet' (Commendatore, (2006, p. 289)). As noted by Palumbo and Trezzini (2003, p. 128), 'changing the definition of normal utilisation appears to be just a step towards abandoning the steady state', a concept that is certainly dear to most economists, including a number of heterodox ones. We therefore recognize the relevance of the concerns of those economists who object to provisional Kaleckian equilibria as the final word. These critics of the Kaleckian model argue that the normal rate of capacity utilisation is a stock-flow norm (Shaikh (2009)), linking the stock of capital with the production flow, and that entrepreneurs should act in such a way that the norm ought to be realised. There are however other norms that are not necessarily realised, despite the best efforts of economic agents. For instance, the propensities to save out of income and wealth determine a wealth to income stock-flow norm for consumers, but this norm is never *exactly* achieved in a growing economy (Godley and Lavoie (2007, p. 98)). Neither is the inventories-to-sales ratio. Thus it is not a foregone conclusion that norms ought to be realised in the long run within a coherent framework. A similar issue is picked up in the next section in more detail, before we discuss other mechanisms, which rather argue that the normal rate of utilisation becomes endogenous to the actual rate.

4. Goods and labour market reactions stabilise the system I: Firms have multiple targets the realisation of which may be mutually exclusive

As seen above and as we discuss in more detail in Sections 5 and 6 below, many Kaleckians question the uniqueness of the normal rate of capacity utilisation. However, critics of the Kaleckian model (e.g. Auerbach and Skott (1988), Skott (2008A), Shaikh (2009)) have repeatedly argued a) that the normal rate of capacity utilisation should be treated as a definite target for firms and b) that deviations from this target should not affect the target itself. Skott (2008A, p. 11) maintains that 'adjustments in the target would only

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[3] As Eichner (1976, p. 29) puts it : 'From basic engineering studies … it will be determined what is the most efficient size crew to operate the machinery, together with the most efficient quantity of raw materials to be fed into or through it'.

[4] Cf. Lavoie (1992, p. 328).

[5] This passage is translated from the French.

be justified if the experience of low actual utilisation make firms think that low utilisation has now become optimal'.

However, another line of response to the 'Harrodian challenge' is possible and has initially been considered by Lavoie (1992, pp. 417-421, 2002, 2003). It has recently been spelled out more explicitly and extended by Dallery and van Treeck (2010). The idea is to treat the normal rate of capacity utilisation as a fixed target of firms, while recognizing that firms also have various other important objectives, the realization of which may not necessarily coincide with the realization of the utilisation target. Hence, firms need to trade off the utilisation rate target with other targets.

Dallery and van Treeck (2010) start out by structuring their discussion of conflicting claims by different stakeholders of the firm in terms of target rates of return. Two conflicts surround the target or normal profit rate. The first conflict involves shareholders and managers, who oppose each others in the determination of the accumulation policies of firms. This conflict arises from the notion of a growth-profit trade-off faced by the individual firm: fast expansion can only be obtained at the cost of lower profitability, due to the costs involved with discovering new products, entering into new markets, etc. (Penrose (1959), Wood (1975), Lavoie (1992, pp. 114-116)). As is traditionally assumed in the post-Keynesian theory of the firm (Galbraith (1967), Wood (1975)), managers mainly seek growth, as a means to ensure the firm's survival by increasing its power and limiting uncertainty. By contrast, shareholders seek profitability, for intuitive reasons. Because they hold diversified portfolios, they are not really committed to the long-term perspectives and the survival of individual firms (Crotty (1990), Stockhammer (2005-6)).

The target rate of return of firms can be derived as a weighted average of the profitability target formulated by shareholders, r^T_H, and the profit rate, r^T_M, that corresponds to the growth target formulated by managers, for a given technology and a given growth-profit trade-off. We thus have:

$$r_F^T = \delta_1 r_H^T + (1-\delta_1) r_M^T , \qquad 0 \le \delta_1 \le 1. \tag{11}$$

Based on these considerations, a general investment function can be formulated:

$$g^i = \gamma_0 - \gamma_1 r_F^T - \gamma_2 \lambda + \gamma_3 u , \tag{3B}$$

where the rate of accumulation depends negatively on the debt ratio λ and on the rate of return r^T_F being required of firms, and positively on the rate of capacity utilisation.

Dallery and, van Treeck (2010) consider two polar cases. In the first constellation, shareholders are fully dominant (δ_1 = 1 in equation (11)) and investment is fully constrained by the shareholders' preference for profitability and by demand conditions (γ_2 = 0 in equation (3B)). In the second constellation, managers are fully dominant ($\delta_1 = 0$) and growth is the primary objective, while being constrained by the availability of finance, which is influenced by the debt ratio and by demand conditions ($\gamma_1 = 0$).

The second conflict around the target rate of return involves firms (shareholders and managers) on the one hand, and workers on the other. It concerns the distribution of income between profits and wages. Applying the standard framework for target-return pricing, firms achieve the normal rate of profit r_n, whenever the rate of capacity utilisation is at its normal level u_n (here assumed to be exogenous). This is clearly seen in equation (1):

$$r = r_n u / u_n \,. \qquad (1)$$

However, because workers have some bargaining power, firms are not able to incorporate their profitability (or accumulation) target, given by $r^T{}_F$, into prices. Rather, the rate of return actually incorporated into prices, denoted by r_n, results from a compromise between firms and workers. The rate r_n is not the target rate of return of firms; rather it is the rate of profit that firms would manage to achieve if their sales were to correspond to production at the normal rate of capacity utilisation. This newly-defined normal rate of profit is given as follows:

$$r_n = \delta_2 r_F^T + (1-\delta_2) r_W^T \,, \qquad 0 \le \delta_2 \le 1 \,. \qquad (12)$$

where $r^T{}_W$ is the target rate of return of workers, which reflects in fact a real wage target. Underlying this formula are the standard price and wage equations, with assumed lags:

$$\hat{p} = \Psi_1 \left(r_F^T - r_n \right) + \Psi_2 \hat{w}_{-1} \qquad (13)$$

$$\hat{w} = \Omega_1 \left(r_n - r_W^T \right) + \Omega_2 \hat{p}_{-1} \,. \qquad (14)$$

where $\hat{p}$ is price inflation, $\hat{w}$ is the nominal wage inflation, Ψ_1 and Ψ_2 are indicators of the bargaining power of firms, and Ω_1 and Ω_2 indicate the bargaining power of workers.

Obviously, it can be seen by inspecting equations (1) and (12) that only one of two targets, either the utilisation target u_n or the target rate of return of firms $r^T{}_F$ generally can be achieved, while the other target will not. Sales corresponding to the normal rate of capacity utilisation, at $u = u_n$, allow the realisation of the profitability objectives of the firms ($r = r^T{}_W$) if and only if there is no conflict over income distribution ($r_n = r^T{}_F = r^T{}_W$). As soon as workers have some bargaining power ($\delta_2 < 1$) and $r^T{}_F > r_n > r^T{}_W$, firms have to operate at rates above the normal rate of capacity utilisation ($u > u_n$) in order to reach their profitability objective ($r = r^T{}_F$).

It should not be surprising that in a complex and conflictual economic system, objectives may not all be realised even in long-run equilibrium.[6] However, it also follows from the analysis above that the profitability (accumulation) target of firms and the income distribution target of workers can be partly reconciled with each other, as long as the rate of utilisation is treated as an accommodating variable. The reason for this is that the two profit rates given by $r^T{}_F$ and r_n are of a very different nature. While the realisation of $r^T{}_F$ depends on aggregate demand conditions, r_n can be translated into a profit or wage share

[6] Skott (2008B, p. 10) argues against the adjustment of normal to actual utilization, as discussed in Section 5 below, by means of the following analogy. 'Imagine that over a period I am late for class every day because of a series of minor mishaps (a flat tire one day, followed by a snow storm the next day, road works, a traffic accident at a key intersection, ...). I do not respond to this unfortunate string of events by adjusting my planned arrival time in the way suggested by Lavoie: I may have been late for class (have had too little actual 'commuting capacity') because of unforeseen shocks but that does not make being late seem desirable. In this simple example, nothing prevents me from adjusting my departure time in the direction that I consider optimal (disregarding random shocks; the phone may ring just as I'm about to leave or ...), and by leaving earlier I should get to class on time.' Whatever the validity of this analogy, one may easily imagine a situation where students will adjust, by also arriving late, so that both students and the professor will arrive at the same time. Moreover, it may be that the professor systematically arrives late for class not as a result of minor mishaps or unforeseen shocks, but rather because he or she is prevented from choosing an ideal departure time due to conflicting and equally important objectives, which may be enforced by other individuals.

that is independent of demand. The aggregate demand constraint results from the combination of equation (3B) with a saving function that incorporates retained earnings, such as equation (2A).

$$g^s = s_f r + s_z (1 - s_f) r \,, \tag{2A}$$

where s_f is the retention ratio of firms, and s_h is the propensity to save of rentier households.

Given our assumption that managers seek to maximise growth, while shareholders are primarily interested in the rate of profit, we may treat $r = r^T_F$ as the long-run equilibrium condition, and propose two alternative equilibrium adjustment processes:

$$\Delta r_F^T = \rho_1 (r^* - r_F^T)\,, \tag{15}$$

$$\Delta s_f = - \rho_2 (r_F^T - r^*)\,. \tag{16}$$

Equation (15) has been proposed by Lavoie (1992, p. 490). Dallery and van Treeck (2010) have argued that it may be relevant for a manager-dominated firm, where firms maximise growth and 'shareholders play a purely passive role' (δ_1 = 0), as was traditionally assumed in the post-Keynesian theory of the firm (Lavoie (1992, p. 107)). In such a case, when firms observe that actual profitability increases as a result of higher demand, they adjust their target rate of return upwards because a higher profit rate is needed to finance a higher accumulation rate. Throughout this process, firms claim a larger profit share (mark-up), but their preference for higher growth also requires an increase in the rate of utilisation, due to real wage resistance by workers. As noted by Lavoie (2002, 2003) and Missaglia (2007, p. 79), the adjustment process described by equation (16) is stable because $dr / dr_s < 0$ as long as the propensity to consume out of wages is higher than out of profits and the economy is wage-led.

By contrast, equation (16), may be relevant for the second constellation, namely that of the shareholder-dominated firm (δ_1 = 1). In this case, firms formulate a profitability target (rather than an accumulation target), and shareholders firmly expect this target to be met. According to equation (16), when the actual profit rate is below the target, managers will react by increasing the share of profits distributed to shareholders (dividends, share buybacks), given by (1-s_f), where s_f is the retention rate.[7] An intuitive explanation is that managers aim to support shareholder value and to signal to shareholders that they are confident with regards to the future profit opportunities of firms. As shown by Dallery and van Treeck (2010), this will, under certain conditions,[8] boost the actual profit rate, because of the increased consumption out of profits. In this case, although the rate of profit is a predetermined variable, the utilisation rate remains endogenous in the long run.

INSERT FIGURE 4

[7] Charles (2008) also suggests that the retention ratio of firms should be treated as an endogenous variable. There, managers target some level of the retention ratio in order 'to preserve their financial autonomy' (p. 9). When debt increases, managers cut dividends and increase their retention ratio in order to control uncertainty. In equation (16) above, the causality is reversed: under the pressure of shareholder value orientation, managers are obliged to distribute more dividends by means of increasing debt.

[8] In the presence of strong liquidity constraints, an increase in the distribution of profits may have overall contractionary effects and may thus further depress demand and hence profitability, thereby rendering the mechanism in equation (16) unstable.

For the sake of illustration, Figure 4 sketches the dynamics of the system with the adjustment mechanism given by equation (15) (see Lavoie (2003, pp. 68-69), Dallery, van Treeck (2010)). For simplicity, we start from a situation in which the real wage rates desired by firms and by workers coincide, as shown on the left-hand side of the graph, where the $\hat{w}$ and $\hat{p}$ curves intersect on the vertical axis (so that $\hat{p}$ = 0). This implies that the target rate of return initially assessed by firms, called r^T_{F1}, and the target rate of return embodied in the pricing formula, called r_{n1}, are equal. We have the triple equality: $r^T_W = r^T_{F1} = r_{n1}$. The profits cost curve corresponding to this situation is shown on the right-hand side of the graph. It derives from equation (1) and is denoted as PC(r_{n1}) in the Figure. The effective demand curve derives from the condition that the growth rate of saving (equation (2)) and the accumulation of real capital (equation (3)) must be equal in equilibrium. We can suppose that the initial conditions, from the effective demand point of view, were such that the target rate of return incorporated into prices was being realised at the standard rate of capacity utilisation u_n, i.e. $r_{n1} = r_1$** (as shown by the curve ED_1).

Suppose now that there is a sudden increase in demand, as shown by the shift of the ED curve from ED_1 to ED_2. Under the new demand conditions, the actual rate of capacity utilisation is u_2, and the actual rate of profit is r_2. The actual rate of profit r_2 is thus much higher than the target rate of return $r^T_{F1} = r_1$**. In the interpretation provided by Dallery and van Treeck (2010), managers realise that a higher accumulation rate becomes possible, but that, seen from the financing side, this requires a permanently higher profit rate. Then, by adjusting their target rate of return upwards, along the lines of equation (15), they claim a larger profit share, but their preference for higher growth also requires an increase in utilisation: firms' quest for growth (market shares) and the distributional struggle with workers supersede concerns about the optimal utilisation rate.[9]

In terms of Figure 4, the associated adjustment process can be described as follows. To begin with, as firms revise their estimate of what the target rate of return is, a discrepancy arises between the real wage rate targeted by firms and the real wage rate targeted by workers. This will induce wage and price inflation, while the actual real wage rate becomes different from the real wage targeted by firms. Secondly, a similar wedge arises between the target rate of return assessed by firms and the target rate of return incorporated into prices. Thirdly, as real wages fall, the actual rate of profit falls. There is thus a convergence between the realised rate of profit, which falls, and the target rate of return assessed by firms, which rises. At the end of this convergence process, firms are assessing a target rate of return of r^T_{F2}. Because of the bargaining power of labour, inflation occurs at a rate of $\hat{p}_2$. The new profits cost curve PC(r_{n2}) is such that the actual rate of profit r_2** and the target rate of return assessed by firms r^T_{F2} are equated. The adjustment process of the target rate of return has led to a new rate of capacity utilisation u_2**, which is different from the standard rate of utilisation u_n. The rate of capacity utilisation in the long-run position is thus still endogenous, despite the presence of an adjustment mechanism in equation (15). Similar illustrations are possible when equation (16) is taken as the adjustment mechanism.

The main conclusion of this subsection is that in a world where different groups within the firm have different objectives, the equality of actual and normal rates of capacity utilisation should not be treated as the (only possible) long-run equilibrium condition. On the contrary, the long-run endogeneity of the utilisation rate helps to reconcile the conflicting claims of capitalists and workers. As shown by Lavoie (2002,

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[9] Of course, there may be some maximum utilisation rate that managers are willing to accept.

2003) and Dallery and van Treeck (2010), the paradox of costs may indeed hold in the type of model discussed in the present section.

5. Goods and labour market reactions stabilise the system II: Entrepreneurs adjust their assessment of the normal rate of capacity utilisation

While Marxist or classical economists would argue that the actual rate of capacity utilisation needs to tend towards the normal rate, a possible alternative is to reverse the causality of the mechanism, and argue instead that the normal rate of capacity utilisation tends towards the actual rate. As Park (1997, p. 96) puts it, 'the degree of utilisation that the entrepreneurs concerned conceive as "normal" is affected by the average degree of utilisation they experienced in the past'. Indeed, Joan Robinson has herself argued that normal rates of profit and of capacity utilisation were subjected to adaptive adjustment processes, as the following quote shows:

> 'Where fluctuations in output are expected and regarded as normal, the subjective-normal price may be calculated upon the basis of an average or standard rate of output, rather than capacity. [...] profits may exceed or fall short of the level on the basis of which the subjective-normal prices were conceived. Then experience gradually modifies the views of entrepreneurs about what level of profit is obtainable, or what the average utilisation of plant is likely to be over its lifetime, and so reacts upon subjective-normal prices for the future.' (Robinson (1956, pp. 186-190))

We can imagine various adaptive mechanisms that take into account both the flexibility of the normal degree of capacity utilisation and the Harrodian instability principle. One possible mechanism deals only with the investment function, and was investigated by Lavoie (1995A, pp. 807-808, 1996). The γ parameter in investment function (3) is often interpreted as the secular growth rate of the economy, or the expected growth rate of sales. Firms are then interpreted as speeding up accumulation, relative to this secular growth rate, when current capacity utilisation exceeds the target, thus trying to catch up. One would also think that the expected trend growth rate is influenced by past values of the actual growth rate. With normal rates of capacity utilisation also being influenced by past actual rates, the two dynamic equations are given by:

$$\Delta u_n = \sigma(u^* - u_n), \qquad \sigma > 0, \tag{17}$$

$$\Delta\gamma = \beta(g^* - \gamma), \qquad \beta > 0. \tag{18}$$

Making the proper substitutions, these two equations get rewritten as:

$$\Delta u_n = \frac{\sigma(\gamma - \alpha u_n)}{\alpha - \gamma_u}, \tag{17A}$$

$$\Delta\gamma = \frac{\beta\gamma_u(\gamma - \alpha u_n)}{\alpha - \gamma_u}. \tag{18A}$$

with $\alpha = s_p m/v$, and hence the differential function relevant to the perceived growth trend is:

$$\Delta\gamma = \frac{\beta\gamma_u}{\sigma}\Delta u_n\,. \tag{18B}$$

INSERT FIGURE 5

We now have a continuum of equilibria, such that $\Delta u_n = \Delta\gamma = 0$, shown in Figure 5, and which corresponds to the long-run equilibrium:

$$g^{**} = \gamma^{**} = \alpha u_n{}^{**} = s_p \frac{m}{v} u_n{}^{**} \tag{19}$$

With a decrease in the propensity to save s_p, or with a decrease in the profit margin m, the continuum of long-run equilibria rotates downward, and two cases arise. When dynamic equations (17) and (18) describe a stabilizing process, the normal rate of utilisation and the perceived growth trend rise up to a point such as A_S in Figure 5. *The paradoxes of thrift and of costs thus still hold, even in the fully-adjusted positions*. The dynamic process, however, may be unstable, as shown by arrowhead A_U. The process will be stable provided the transitional path has a smaller slope than that of the new demarcation line, that is provided we have $d\gamma/du_n = \beta\Omega\gamma_u/\sigma < \alpha$, which means that $s_p m/v > (\beta/\sigma)\gamma_u$. If the Keynesian stability condition given by equation (5) holds, then a sufficient condition for dynamic stability is simply $\sigma > \beta$. In other words, the Harrodian instability effect, represented by equation (18) which tells us that entrepreneurs will raise their expectations about future growth rates whenever current realised growth rates exceed the current trend estimate, must not be too large.[10]

An interesting characteristic of the present model is that it features what Setterfield (1993) calls *deep endogeneity*. The new fully-adjusted position depends on the previous fully-adjusted position. Very clearly, it also depends on the reaction parameters during the transition or traverse process, and hence we may also say that it is path-dependent, leading Lavoie (1995A, p. 807) to speak of a ‘possibility devoid of definite solutions’.[11] In contrast to what Commendatore (2006, p. 289) claims however, we *do not* believe that ‘the Keynesian nature of the analysis is severely reduced’ with the adoption of these dynamic equations. An increase in the animal spirits of the entrepreneurs or in their expectations with regards to the future growth of sales would be reflected in an upward shift of the γ parameter, which would drive the economy along the B arrow in Figure 5.

A few other similar models, with an endogenous normal rate of capacity utilisation, have been constructed. Dutt (1997) has equations that turn out to be similar to equations (17A) and (18A), but they are based on an entry deterrence mechanism.[12] Lavoie (1996, 2010) also considers a model where the mechanisms of equations (17) and (18) are extended to the pricing equation, a suggestion that seems to be approved by Park (1997). A two-sector version is investigated by Kim (2006), who finds that the paradox of thrift still holds. Perhaps the most complete model is that of Cassetti (2006), where the trend growth rate γ, the normal rate of capacity utilisation u_n, and the normal profit rate r_n are all endogenised, reacting to their past values, while in addition the rate of capital scrapping

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[10] This is an assumption ususally made by Sraffian authors, for instance Committeri (1986, p. 179).

[11] Kaldor (1934, p. 125), who from the beginning was unhappy with comparative static analysis, defines path-dependent equilibria as ‘indeterminate’ equilibria. Unstable equilibria in his terminology are ‘indefinite’ equilibria.

[12] Dutt’s (1997) mechanism is criticized by Skott (2008A, p. 13), who questions the sign of equation (17A) and whether a differential equation is relevant to an entry deterrence strategy.

gets speeded up as long as the actual rate of capacity utilisation lies below its normal rate.[13] Cassetti also finds path-dependence effects, with the saving paradox prevailing, while the paradox of costs may or may not occur in fully-adjusted positions.

Another Kaleckian model with endogenous normal rates of utilisation is that of Commendatore (2006), which involves non-linear changes in profit margins in a discrete-time framework. Commendatore shows that, at least for some parameter values, the average rate of utilisation will be quite different from the initial normal rate of utilisation, with aggregate demand thus playing an important role even in the long run. This is thus the lesson that can be drawn from all these models with endogenous normal rates of capacity utilisation: high animal spirits and low propensities to save do have a positive long-run effect on the economy, while the paradox of costs may or may not hold.

6. Monetary policies may stabilise the system – but will feed back on the normal rate of utilisation

So far, we have looked at various mechanisms explaining why firms themselves may be quite willing to perceive the rate of capacity utilisation as an endogenous, accommodating variable. However, a common idea in the literature is that the level of economic activity will also be constrained by the actions of the monetary authorities in their aim to control inflation. In this section we discuss why, even under such circumstances, there are reasons to believe that the rate of capacity utilisation will remain an endogenous variable in the medium to long run.

Duménil and Lévy (1999), in their critique of the Keynesian/Kaleckian model, have introduced monetary policies in order to bring back the economy to a pre-determined normal rate of capacity utilisation which they associate with price stability. Upward (downward) deviations from the normal rate trigger rising (falling) inflation. Their model generates Keynesian/Kaleckian results in the short run, but Classical results in the long run when the adjustment towards the normal rate has taken place. The paradox of thrift and the paradox of costs are thus rejected for the long run. The Duménil and Lévy model, as shown by Lavoie (2003) and Lavoie and Kriesler (2007), is strongly reminiscent of the New Consensus model (NCM), where properly conducted monetary policy is the means by which the economy is brought back to potential output. As we have discussed in our companion paper (Hein et al. (2009)), the Duménil and Lévy model contains a whole lot of problems.

First, it has to be assumed that a deviation of u from u_n is indeed associated with rising or falling inflation. Duménil and Lévy do not present any precise rationale for this.[14] If we assume that inflation is of the conflicting claims type, their analysis supposes a rising

[13] Cassetti's equation can be said to be based on an argument of Steindl (1979, p. 6), according to which 'a high growth rate and high utilisation will tend to retard withdrawal of equipment … a low growth rate and utilisation will lead to some premature withdrawal of equipment'. Similarly, Allain and Canry (2008) argue that low rates of capacity utilization will lead to more bankruptcies, which entail extensive capital scrapping and hence a reduction of the available capacity. As a result, demand will be spread over a reduced available capacity (that of the surviving firms), thus tending to reduce the discrepancy between measured rates of capacity utilization and their normal value. In addition, as argued by researchers in behavioural economics, normal rates of capacity utilization may act as an attractor. When measures of rates of capacity utilization arise from surveys, there may be a tendency for firms to give answers that do not stray too far from what they consider to be the 'normal' value.

[14] On the one hand, Duménil and Lévy argue that in their view changes in prices are a function of supply-demand disequilibria. On the other hand, they consider their analysis as 'reminiscent of Joan Robinson's inflation barrier' (Duménil and Lévy (1999, p. 699)) which indicates that they consider inflation to be the outcome of unresolved distribution conflict.

Phillips curve in unexpected inflation and employment/utilisation space. The normal rate of utilisation is hence associated with what others have dubbed to be a NAICU (a non-accelerating inflation rate of capacity utilisation, as in Corrado and Mattey (1997)), in analogy with the NAIRU (non-accelerating inflation rate of unemployment), or else a SICUR (a steady-inflation capacity utilisation rate, as in McElhattan (1978)) or a SIRCU (a stable inflation rate of capacity utilisation, as in Hein (2006B)). However, if the Phillips curve has a horizontal segment, the NAICU, or the normal rate of utilisation can take a range of potential values. Within this range, the normal rate is determined by the goods-market equilibrium and is hence endogenous with respect to the actual rate of utilisation – therefore, this adds to the Kaleckian arguments regarding the non-uniqueness of the normal rate discussed in Section 3.[15]

Second, if there is a rising Phillips curve it has not only to be assumed that the monetary authorities are able to apply their monetary policy instrument, the short-run nominal interest rate, in the required way and that this has the required effects on aggregate demand and capacity utilisation in order to bring about an adjustment of capacity utilisation towards the normal rate. It has also to be assumed that monetary policy interventions have no adverse feedback effects on the NAICU or the normal rate. This latter issue will now be discussed extending our simple model framework. It will be seen that, from a Kaleckian perspective, interest rate policies may have rather complex effects on both actual and normal utilisation, which only reinforces our contention from the previous sections that the long-run utilisation rate should not be seen as a predetermined variable.

In order to capture the effects of unexpected inflation and changes in the interest rate as monetary policy instrument to fight inflation, we have to modify our small Kaleckian model, now made up of the following three equations:[16]

$$r = \frac{m}{v}u = \frac{r_n}{u_n}u, \quad \frac{\partial m}{\partial i\lambda} \geq 0, \frac{\partial r_n}{\partial i\lambda} \geq 0, \tag{1A}$$

$$g^s = (r - i\lambda) + s_z i\lambda = \frac{m}{v}u - i\lambda(1 - s_z), \qquad 0 \leq s_z \leq 1, \tag{2B}$$

$$g^i = \gamma + \gamma_u(u - u_n) - \gamma_z i\lambda, \qquad \gamma, \gamma_u, \gamma_z > 0. \tag{3C}$$

Equation (1A) includes the possibility that the mark-up of firms and hence the normal rate of profit may be elastic with respect to real interest payments relative to the capital stock, i.e., the product of the real interest rate i and the debt-to-capital ratio λ. This interest payments elasticity arises in the long run, because the mark-up on variable costs has to cover interest costs. For the short run we may still consider the mark-up to be interest inelastic due to slow adjustment of the target mark-up. The real interest rate is given by the nominal interest rate, mainly determined by central bank policies, corrected for inflation.

Saving function (2B) arises from the distinction between the retained profits of firms, which are saved by definition, and saving out of rentier income. We assume that the capital stock is financed by accumulated retained earnings, on the one hand, and by bond issues, held by rentier households, on the other. The saving rate in equation (2B) is therefore given by the rate of profit minus rentier income, plus saving out of rentier

[15] See Hein (2006A, 2006B, 2008, pp. 133-167), Hein and Stockhammer (2009, 2010) and Kriesler and Lavoie (2007) for models incorporating a Phillips curve with a horizontal segment.

[16] See Hein (2006A, 2006B, 2008, pp. 133-167) and Hein and Stockhammer (2009, 2010) for more elaborated models.

income, each in relation to the capital stock. Rentiers' saving depend on interest payments and the propensity to save out rentier income s_z.

Finally, the Kaleckian investment function, now given by equation (3C), has been modified by introducing the negative effect of interest payments by firms. Following Kalecki's (1937, 1954, pp. 91-95) 'principle of increasing risk', distributed profits have a negative effect on the investment of firms because they diminish their internal means of finance for long-term investment, and also reduce their access to external finance, due to incomplete capital markets.

From equations (2B) and (3C) we obtain the goods-market equilibrium rate of utilisation, which is given by:

$$u^* = \frac{\gamma - \gamma_u u_n + i\lambda\left(1 - s_z - \gamma_z\right)}{\frac{m}{v} - \gamma_u}. \tag{20}$$

Furthermore, a simple conflicting-claims model of inflation can be described by the following equations:

$$m_F^T = m_0 + m_1 i\lambda, \qquad m_0 > 0,\ m_1 \geq 0, \tag{21}$$

$$1 - m_W^T = \omega_0 + \omega_1 u, \qquad \omega_0 > 0,\ \omega_1 \geq 0, \tag{22}$$

$$u_n = \frac{1 - \omega_0 - m_0 - m_1 i\lambda}{\omega_1}. \tag{23}$$

The target profit share $m^T{}_F$ in equation (21) is given by mark-up pricing, with the mark-up being interest inelastic in the short run, but interest elastic in the long run. If there is no economy-wide incomes policy internalizing the macroeconomic externalities of wage setting at the firm or industry level, the workers' target wage share 1-$m^T{}_W$ in equation (22) increases with the rate of employment, which, for simplification, we assume to move in step with the rate of capacity utilisation.[17] For claims to be consistent, the rate of utilisation needs to be at a certain level, which we can call the normal rate of utilisation u_n, as described by equation (23), implying a NAICU. To further simplify the analysis, we assume adaptive expectations and also that firms set prices once nominal wages have been agreed upon in the labour market. The latter assumption implies that firms can always realise their income distribution target (as in Duménil and Lévy (1999)).

INSERT FIGURE 6

The upper part of Figure 6 shows the well known goods-market equilibrium; in the middle part, we have the target wage shares of firms 1-$m^T{}_F$ and of workers 1-$m^T{}_W$; and the lower part of the Figure shows the modified Phillips curve with the effects of capacity utilisation on unexpected inflation, i.e., the change in inflation. With the goods market equilibrium at $u^*{}_0$ = u_n (point A), income claims of firms and workers are mutually consistent and unexpected inflation is zero. If we start from this position and assume a decline in the propensity to save out of rentier income, the g^s curve in the upper part of Figure 6 shifts downwards and the goods-market equilibrium moves to $u^*{}_1$ (point B). Income claims are no longer consistent, and inflation accelerates (with adaptive expectations we have positive

[17] For a more detailed treatment of the relationship between capacity utilisation and employment in a similar model see Hein and Stockhammer (2010).

unexpected inflation in each period). Further on, unexpected inflation will feed back on the goods-market equilibrium in the short run. With a given nominal interest rate, unexpected inflation will reduce the real interest rate, and with credit and bonds not indexed to changes in inflation, the debt-to-capital ratio will decline. Taken together, unexpected inflation reduces the real interest payments relative to the capital stock $i\lambda$. This redistribution in favour of firms and at the expense of rentiers will affect the goods-market equilibrium. In Figure 6, both the g^i and the g^s curves will now shift upwards, so that whether this leads to a higher or lower rate of capacity utilisation u^* depends on the parameter values. From equation (20), we obtain the short-run effect of a change in the real interest-capital ratio on the goods-market equilibrium:

$$\frac{\partial u^*}{\partial i\lambda} = \frac{1 - s_z - \gamma_z}{\frac{m}{v} - \gamma_u}. \qquad (20')$$

Assuming Keynesian stability to hold ($\frac{m}{v} > \gamma_u$), we get: $\frac{\partial u^*}{\partial i\lambda} < 0$, if $1 - s_z < \gamma_z$. Therefore, if the propensity to consume of rentiers ($1-s_z$) falls short of the interest-elasticity of investment γ_z, the income redistribution at the expense of rentiers and in favour of firms associated with unexpected inflation will stimulate aggregate demand, and u^* will move farther away from u_n. This 'normal case' (Lavoie (1995B)) with respect to the demand effects of redistribution between firms and rentiers is shown in Figure 6:[18] The upward shift in the g^i curve will exceed the upward shift in the g^s curve, and the goods market equilibrium will move to u^*_2 (point C), triggering again unexpected inflation, and so on. In this 'normal case', the Duménil and Lévy (and the NCM) monetary policy rule, raising the nominal interest under control of the central bank, is likely to be successful in bringing down the economy back to u_n. This is because there is no upper limit to the real rate of interest that can be imposed by the monetary authorities, who can hike up nominal interest rates as high as they please. As can be seen in Figure 7, the increasing real interest payments in relation to the capital stock force both curves, g^i and g^s, to shift downwards, with the shift in g^i exceeding the one in g^s. Finally, the economy will be back at u_n but at a lower equilibrium accumulation rate (g^*) (at point D).

INSERT FIGURE 7

But this is not where the story ends. We need to go beyond the short run, and consider the medium- to long-run effects of changes in the real interest rate induced by monetary policy reactions geared towards stabilising the system. Take Figure 7 and suppose that monetary policies have successfully brought back the economy to $u_{n1} = u^*_0$ (point D) in the short run. However, since real interest rates and real interest payments relative to capital have increased, firms will raise their target mark-ups in the medium to long run. This shifts their

[18] Theoretically, also a 'puzzling case' (Lavoie (1995B)) might arise, in which redistribution in favour of firms and at the expense of rentiers has contractionary effects on aggregate demand and capacity utilisation. In this case we have: $1 - s_z < \gamma_z$. However, empirically, the 'normal case' seems to prevail. Hein and Ochsen (2003) find the normal case to prevail in France and Germany from the early 1960s until the mid 1990s, and Hein and Schoder (2009) obtain the 'normal' case for Germany and the US for the period 1960 until 2007, each from time series estimations of a Kaleckian model. Argitis (2009) presents panel estimation results for annual data of 11 West European countries, Canada and the US in the period 1981-2003 which show that the share of interest income of banks in GDP has a negative effect on aggregate demand growth - whereas the wage share has a positive impact.

target wage share downwards, reduces the NAICU and the normal rate of capacity utilisation, and shifts the Phillips curve upwards, as can be seen in Figure 7. From equation (23) we get:

$$\frac{\partial u_n}{\partial i\lambda} = -\frac{m_1}{\omega_1} < 0 . \qquad (23')$$

Redistribution in favour of profits will also affect the goods market equilibrium. Inserting equations (21) and (23) into equation (20) and calculating the long-run effects of a change in the $i\lambda$ ratio on the equilibrium rate of utilisation yields an expansion of equation (20'):

$$\frac{\partial u^*}{\partial i\lambda} = \frac{(1 - s_z - \gamma_z) + m_1\left(\frac{\gamma_u}{\omega_1} - \frac{u}{v}\right)}{\frac{m_0 + m_1 i\lambda}{v} - \gamma_u} . \qquad (20'')$$

Since we assume m_1 to be zero in the short run, but positive in the long run, we obtain a long-run effect on capacity utilisation (the second term in brackets in the numerator) – on top of the short-run effect (the first term in brackets in the numerator). This long-run effect via redistribution at the expense of labour may be positive or negative – depending on the values taken by the parameters γ_u and ω_1 and depending on initial conditions (u*). Only by accident will the new goods market equilibrium u^*_3 (point E) in Figure 7 therefore be equal to the new normal rate u_{n2}, and further central bank interventions may be required. Graphically, this second-round effect of a rise in the real interest rate (the increased profit share and a reduced normal rate of utilisation), amounts to an upward shift of the investment function and a counter-clockwise rotation of the saving function in Figure 7. This is not the place to elaborate further on the complex interactions between the goods-market equilibrium (u*) and the normal rate (u_n) triggered by unexpected inflation and generated by monetary policy interventions.[19] What is important for our present purpose, is that the normal rate of utilisation as understood by Duménil and Lévy gets modified by monetary policy interventions. The normal rate is hence endogenous to the actual rate, albeit in an indirect and complex way, and the paradoxes of costs and thrift might be maintained.[20]

7. Conclusions

The purpose of the present paper has been to examine the role of Harrodian instability in Kaleckian distribution and growth models. We have distinguished three types of mechanisms designed to deal with this particular type of instability: A first group of Kaleckian authors denies the uniqueness of the normal rate of utilisation. According to

[19] In Hein (2006A, 2008, pp. 153-167) these interactions are analysed in more detail and different cases are distinguished: a joint equilibrium $u_n = u^*$ by sheer luck; constant, converging or diverging oscillations of u_n and u*; or monotonic decline of both u_n and u*.

[20] If the normal rate is understood as an inflation barrier or a NAICU, there are further endogeneity channels with respect to actual utilisation which become effective also in the absence of monetary policy interventions, as the discussion on the endogeneity of the NAIRU has made clear: labour market persistence mechanisms, wage aspirations and conventional behaviour, as well as the effect of investment in fixed capital on the target profit share of firms (Hein and Stockhammer (2010)).

these approaches, expectations and behavioural parameters, as well as norms, are changing so frequently in the real world that long-run analysis, in terms of fully-adjusted positions at normal rates of capacity utilisation, is not a very relevant exercise. Although this may be a vital point, we have argued that in a sense it skirts the Harrodian challenge. We have therefore discussed a second type of response to this challenge, which argues that a normal or target rate of utilisation may be only one of several targets of the firm, which may be mutually exclusive, so that the adjustment of the economy towards a pre-determined normal rate of utilisation should not be expected for the long run. Finally, we have identified a third type of mechanism, implying that the normal rate of utilisation becomes endogenous with respect to the actual rate of utilisation through different channels. One reason is that the firm's perception of the trend rate of growth and of the normal rate of utilisation may be path-dependent and hence be affected by both past actual rates of growth and capacity utilisation. In addition, introducing monetary policies as stabilizer in a conflicting claims inflation framework with Harrodian instability yields another channel of endogeneity of the normal rate of utilisation, understood as a non-accelerating-inflation-rate-of-capacity-utilisation (NAICU). The review of these approaches has shown that major results of the Kaleckian model can be retained in a more complex setting than the one provided by the simple textbook model. The Kaleckian model is capable of maintaining the paradox of thrift and the paradox of costs in the long run, even if the problem of Harrodian instability is included.

Although we do not pretend that our review so far has been exhaustive, we hope to have shown that the summary statements that claim that one may be 'Keynesian in the short run' but needs to be 'Classical in the long run', as Duménil and Lévy (1999) as well as Shaikh (2009) argue, are rather premature. It also seems premature to argue, as Skott (2010) does, that 'the current dominance of the Kaleckian model (…) is unfortunate' for post-Keynesian and Structuralist macroeconomics. Kaleckian models are more flexible than the Classical and Marxian critics suppose when attacking the simple textbook version. Deviations of actual from normal rates of utilisation and behavioural as well as political responses towards this deviation can be included into these models without necessarily doing away with an endogenous rate of utilisation, the paradox of thrift and the paradox of costs in the long run.

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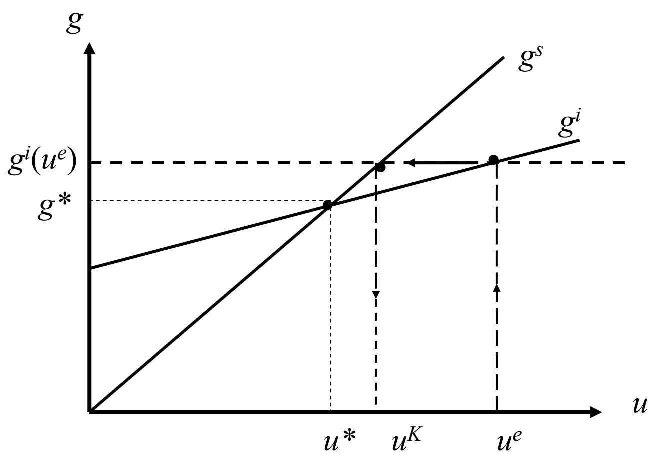
Figure 1



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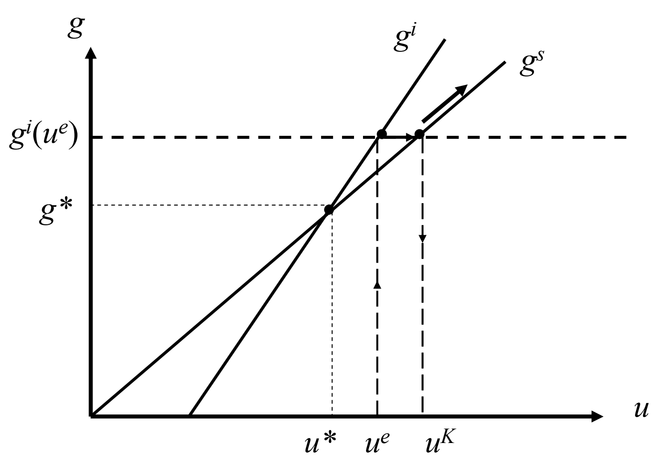

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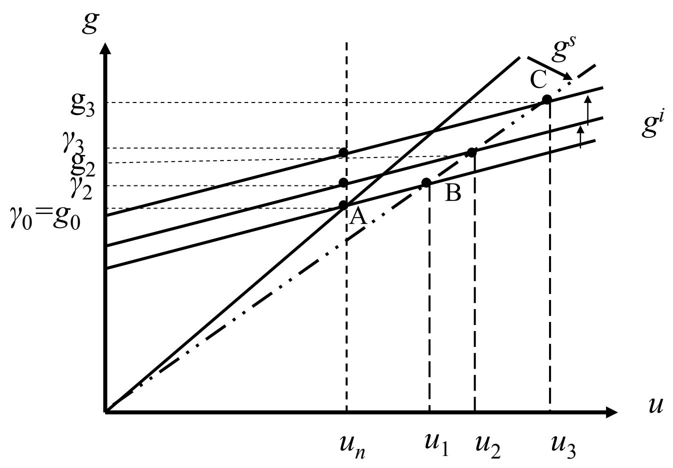

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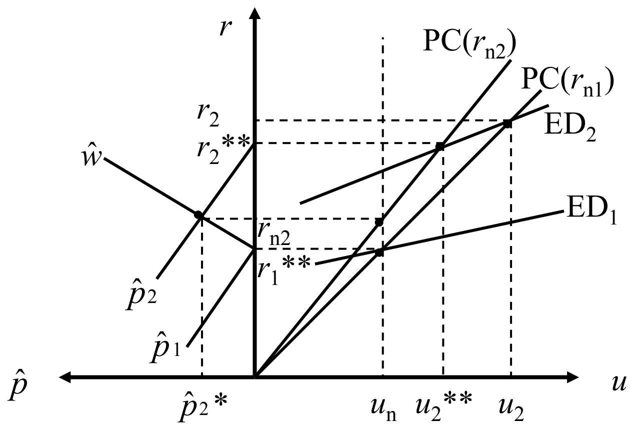

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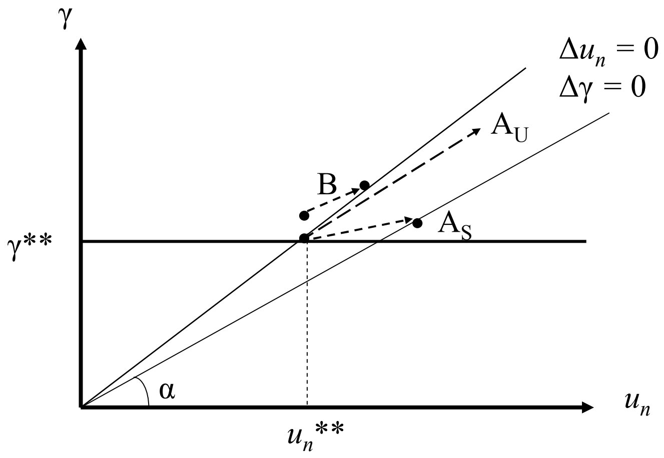

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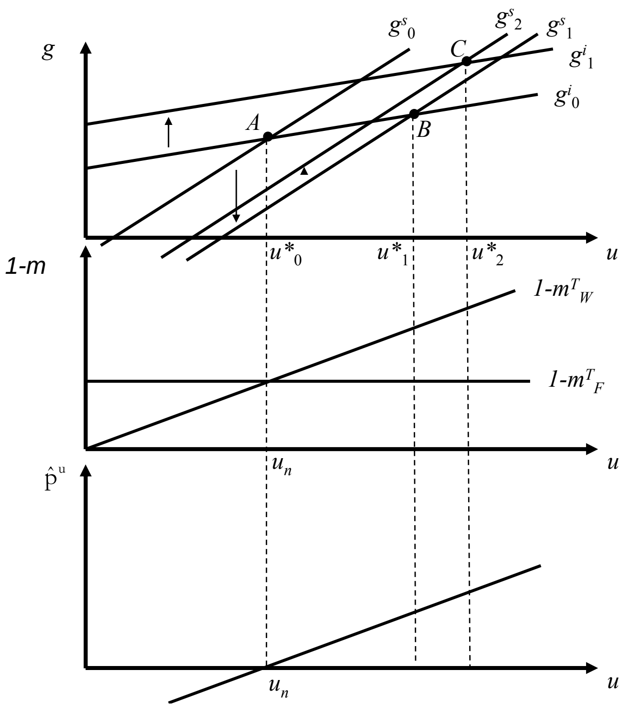

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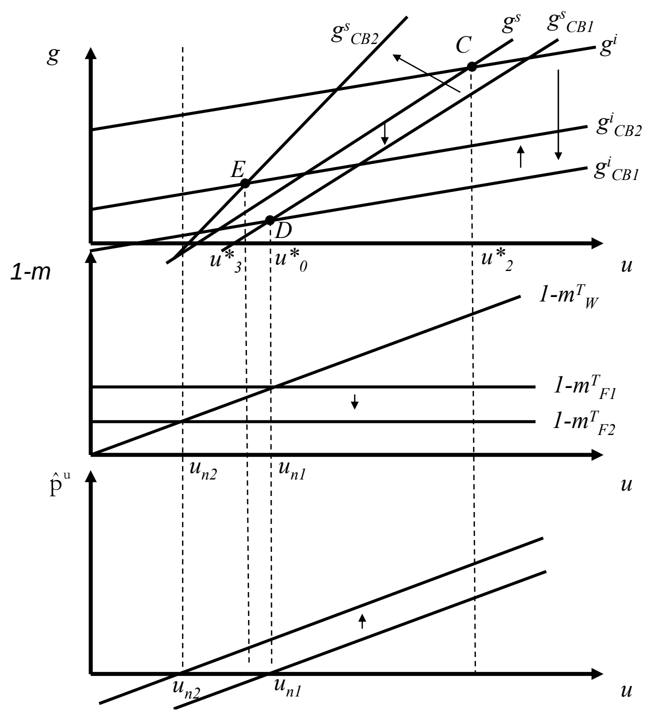
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