Long-run variation in capacity utilization in the presence of a fixed normal rate

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Abstract

We develop a generic Kalecki-Robinson model of growth that, subject to different closures, illustrates the different channels through which the economy can adjust to a change in demand conditions in the long run. The closures are shown to have different implications for the behaviour of the rate of capacity utilization and hence the way in which the economy achieves a "fully-adjusted position" in which the actual and normal rates of capacity utilization are equalized. Next, we assume that the normal rate of capacity utilization is exogenously fixed, but show that variation in the actual capacity utilization rate can nevertheless occur – at least within limits – without triggering "Harrodian instability". This result is shown to emanate from a discontinuity in the investment function that is grounded in Harrod's own macrodynamics, so that it is ultimately the combination of Harrodian and Kaleckian dynamics that gives rise to long-run variations in the actual rate of capacity utilization in the presence of a fixed normal rate.

JEL codes: E11, E12, O41
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1 Introduction

A substantial literature connects the relatively rapid growth of the US economy during the "Great Moderation" (1990-2007) to aggressive increases in household indebtedness (Palley,

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2002; Cynamon and Fazzari, 2008; Brown, 2008; Barba and Pivetti, 2009; Wisman, 2013; Setterfield, 2013). This is hypothesized to have offset the otherwise negative impact on consumption spending of stagnant wage growth and rising income inequality during the same period. According to this view, redressing the dramatic increases in income inequality that have characterized recent US experience is critical to restoring robust and sustainable growth in the US economy.

The analysis outlined above draws on a long-standing result in Post-Keynesian macrodynamics which shows that redistributing income away from wages is inimical to growth. The basis for this result is controversial, however. A necessary condition for growth to increase in response to a rise in the wage share of income is that the rate of capacity utilization is variable in the long run. According to Classical (Marxian) and neo-Keynesian growth theory, the rate of capacity utilization *cannot* vary in the long run, because it is anchored by a fixed "normal" rate of capacity utilization on which firms base their investment plans.[1] Post-Keynesians claim that capacity utilization *can* vary in the long run, even when there exists a normal rate of capacity utilization, because of "hysteresis" in the normal rate: the latter – understood as a historically-grounded rule of thumb – is thought to rise and fall with the actual rate of capacity utilization (Lavoie, 1995, 1996, 2010; Dutt, 1997, 2010; Cassetti, 2006; Commendatore, 2006).[2] Classical macroeconomists typically counter that the hysteresis argument contradicts the very purpose of the normal rate, so that the Post-Keynesian approach lacks proper behavioral foundations.

The purpose of this paper is to show how long-run variation in the capacity utilization rate can arise as the result of satisficing behavior on the part of firms, even when firms adhere to a

[1]This criticism of Post-Keynesian macrodynamics is longstanding. See, for example, Committeri (1986); Auerbach and Skott (1988).

[2]An alternative argument, advanced originally by Lavoie (1992, pp.417-21), Lavoie (2002, 2003) and developed by Dallery and van Treeck (2011), is that firms pursue multiple, potentially competing, objectives, and that this permits departure of the actual rate of capacity utilization from its normal rate even in the long term. See Hein et al. (2012) for a survey of the Post Keynesian responses to the Classical/neo-Keynesian position.

fixed (ahysteretic) normal rate of capacity utilization.[3] Essentially, this is because satisficing firms will tolerate – within limits – deviation of the observed values of variables from their preferred or target values without modifying their behavior. The argument advanced is not new, having previously been entertained by Dutt (1990, pp.58-60), Dutt (2010) and Lavoie (1992, pp.327-32, 417-22).[4] Beyond its further codification of the argument, the principle contribution of this paper is its association of variation in the capacity utilization rate within a certain range of the fixed normal rate with the thinking of Harrod.[5] Hence while the basic idea is often associated with Hicks (1974) (see, for example, Hein et al. (2012, p.16)), the satisficing behavior at its core is to shown to have Harrodian origins. It is therefore the combination of Harrodian and Kaleckian insights that furnishes variability in the capacity utilization rate even in the presence of a fixed normal rate. This is somewhat ironic, as Harrod is frequently associated with the neo-Keynesian position according to which a fixed normal rate prohibits long-run variation of the capacity utilization rate (Skott, 2010, 2012b; Skott and Ryoo, 2008).

The remainder of the paper is organized as follows. In section 2, we develop a generic Kalecki-Robinson model of growth that can be subject to different closures and that illustrate the different channels through which the economy can adjust to a change in demand conditions in the long run. The closures have different implications for the behaviour of the rate of capacity utilization and hence what is required in order for the economy to achieve a "fully-adjusted position", in which the actual and normal rates of capacity utilization are equalized. In section 3, we postulate an exogenously fixed normal rate of capacity utilization,

[3] Hein et al. (2012) associate this type of approach with questioning the notion of a normal rate of capacity utilization. As will become clear, it certainly questions the notion of a fixed normal rate of capacity utilization as a "knife-edge", departure from which will always and everywhere trigger behavioral change by firms.

[4] See also Hein et al. (2012, pp.146-8) for an overview of these contributions.

[5] We therefore take issue with Palumbo and Trezzini (2003, p.30, n.21) who, in their otherwise sympathetic approach to the ideas developed in this paper, associate Harrod (as well as subsequent thinkers) with the idea that "entrepreneurs react immediately to any change in the effective rate of growth – and thus to any over-utilization or under-utilization of capacity – by taking investment or disinvestment decisions that work to adjust the imbalance".

but show that variation in the actual capacity utilization rate can nevertheless occur – at least within limits – without triggering "Harrodian instability" (the tendency for investment spending and capacity utilization to interact in a self-reinforcing fashion in response to any initial discrepancy between the actual and normal rates of capacity utilization). The result is shown to emanate from a discontinuity in the investment function that is grounded in Harrod's own macrodynamics, so that it is ultimately the combination of Harrodian and Kaleckian dynamics that gives rise to long-run variations in the actual rate of capacity utilization even when the normal rate is exogenously fixed. Section 4 offers some conclusions.

2 The "Harrodian instability" debate: reconciling the actual and normal rates of capacity utilization

According to Hein et al. (2011, 2012), two of the major debates that surround Kaleckian macrodynamics are the issues of *Keynesian stability* and *Harrodian instability*. Keynesian stability requires that saving is more responsive to variations in capacity utilization than investment spending. Harrodian instability, meanwhile, involves the tendency for investment spending and capacity utilization to interact in a self-reinforcing fashion in response to any discrepancy between the actual and normal rates of capacity utilization. Assuring the absence of the latter in the long run requires reconciliation of the actual and normal rates of capacity utilization – i.e., achievement of a Classical "fully-adjusted" position. The question then becomes: is this achieved by movement of the actual capacity utilization rate towards a fixed normal rate, or accommodating adjustment of the normal rate of capacity utilization in response to variation in the actual rate?[6]

In order to explore this question in more detail, consider the following "generic" Kalecki-

[6] As will become clear below, the two types of adjustment need not be mutually exclusive. See also Hein et al. (2011, pp.595-6).

Robinson model:

$$g = \gamma_1 + \gamma_2 r \tag{1}$$

$$r = \pi u \tag{2}$$

$$g^s = s_\pi r \tag{3}$$

where g is the rate of accumulation, r is the rate of profits, π is the profit share of income, u is the rate of capacity utilization (proxied by the ratio of real output to the capital stock), g^s is the rate of accumulation consistent with goods market equilibrium (where, in a closed economy with no fiscally-active public sector, investment is equal to savings), γ_1 and γ_2 are parameters reflecting the animal spirits of firms, and s_π is the propensity to save out of profits. Equation (1) is a Robinsonian investment function relating the rate of accumulation to the rate of profit. Equation (2) is true by definition, although in the Kaleckian tradition it is commonly referred to as the "pricing equation" on the grounds that the profit share of income is determined by firms' choice of the mark up in a cost-plus pricing procedure. Equation (3) is the Cambridge equation relating the rate of accumulation necessary to equate saving and investment to the saving decisions of capitalist households.

Under the equilibrium conditions $g = g^s$, equations (1) and (3) yield:

$$r = \frac{\gamma_1}{s_\pi - \gamma_2}$$

Substituting equation (2) into this last expression yields:

$$\pi u = \frac{\gamma_1}{s_\pi - \gamma_2} \tag{4}$$

According to equation (4), as animals spirits and hence the parameter γ_1 vary, so, too, does $r = \pi u$. But which is the adjusting variable: π or u?

Consider first the "Robinsonian closure" $u = u_n$, where u_n denotes the normal rate of capacity utilization.[7] We assume initially that u_n, which is chosen by firms to insulate them from unforeseen variations in demand, can be taken as given. It therefore follows from (4) that:

$$\pi = \frac{\gamma_1}{(s_\pi - \gamma_2)u_n} \tag{5}$$

so that variations in animal spirits are absorbed by variations in the profit share according to:

$$\Delta\pi = \frac{1}{(s_\pi - \gamma_2)u_n}\Delta\gamma_1 \tag{6}$$

In equation (6), an initial improvement in animal spirits that causes investment to exceed savings creates excess demand in the goods market that bids up prices (the fixity of capacity utilization making quantity adjustment impossible).[8] As prices rise, the value of the real wage falls, effecting a change in the profit share of income (seen on the left hand side of equation (6)) consistent with the fact that $\pi = 1 - wa$ (where w is the real wage and a is the assumed fixed labour:output ratio). Notice that these adjustments are consistent with a rise in the *rate* of profit in equation 2, as the economy moves along the Classical wage/profit frontier given by $r = \pi u = (1 - wa)u_n$.

Now consider an alternative "Kaleckian closure" $\pi = \bar{\pi}$. The Kaleckian closure can be considered as emanating from the practice of mark-up pricing by firms, in which prices are set as a fixed mark up over average direct costs of production. Under the Kaleckian closure

[7] As noted by Hein et al. (2011, p.593), a hallmark of Cambridge models of distribution, including specifically those of Robinson (1956, 1962), is the assumption that the rate of capacity utilization does not vary between steady-state equilibrium configurations.

[8] Note that quantity adjustment through variation in the amount of labour employed is ruled out by assumption that variation in the capital:labour ratio is impossible in the absence of technological change. In other words, the supply side implicit in our generic Kalecki-Robinson model is characterized by a Leontieff production technology.

it follows from (4) that:

$$u = \frac{\gamma_1}{(s_\pi - \gamma_2)\bar{\pi}} \tag{7}$$

so that variations in animal spirits are absorbed by variations in the rate of capacity utilization according to:

$$\Delta u = \frac{1}{(s_\pi - \gamma_2)\bar{\pi}} \Delta\gamma_1 \tag{8}$$

In equation (8), an initial improvement in animal spirits that causes investment to exceed savings creates excess demand in the goods market that increases output, the fixity of prices implied by mark-up pricing making price adjustment impossible. This increase in output brings about the change in capacity utilization seen on the left hand side of equation (8)). Notice that these adjustments are consistent with a rise in the rate of profit in equation 2, as the Classical wage/profit frontier given by $r = \pi u = (1 - \bar{w}a)u$, where $\bar{w} = (1 - \bar{\pi})/a$, now rotate in response to a rise in u.

The two adjustment mechanisms associated with the Robinsonian and Kaleckian closures are depicted in Figure 1.

Note that adjustment mechanisms not mutually exclusive: can, in principle, observe both $\Delta\pi$ and Δu as a result of simultaneous adjustment of prices and quantities (Lavoie, 2010). This is depicted by the arrows illustrating movement away from both u_n and $\bar{\pi}$ in Figure 2.

But if adjustment in response to excess demand involves *any* lasting variation in u so that $u \neq u_n$ in the long run – i.e., the system does not achieve a Classical fully-adjusted position – then the system is vulnerable to Harrodian instability (see, for example, Hein et al. (2011, p.592)). According to this argument, any initial discrepancy between the actual and normal rates of capacity utilization will trigger an increase in investment (designed to increase capacity and hence resolve the discrepancy between the actual and normal rates of capacity

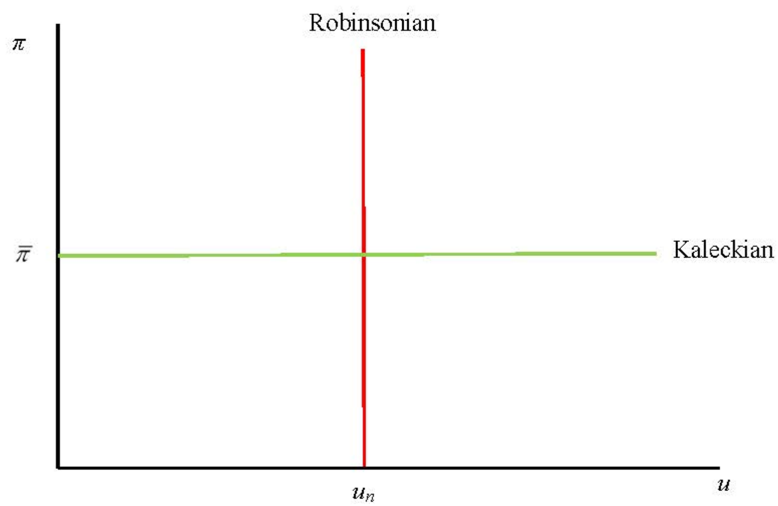

Figure 1: The Robinsonian and Kaleckian Adjustment Mechanisms

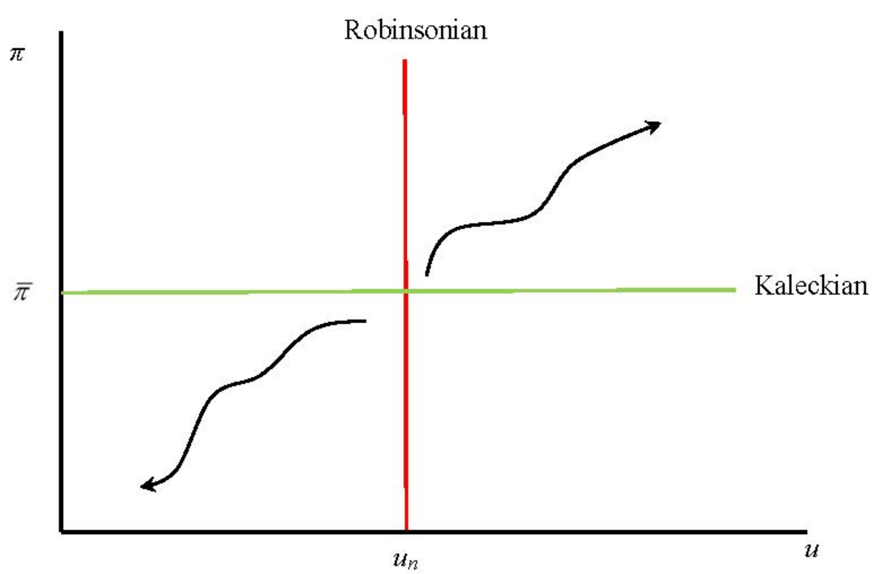

Figure 2: Simultaneous Price and Quantity Adjustment

utilization) that will further increase the actual rate of capacity utilization, and so on. In other words, investment spending and capacity utilization will interact in a self-reinforcing fashion – unless the discrepancy between the actual rate of capacity utilization and its normal rate is somehow resolved. In terms of the generic Kalecki-Robinson model developed in this section, under the Kaleckian closure, equation 8 describes not a once-over change in capacity utilization, but a cumulative series of changes in u and γ_1 in response to an initial change in animal spirits. The upshot of all this is that operating under the Kaleckian closure, the generic Kalecki-Robinson model provides an incomplete understanding of macrodynamics.

According to some Kaleckians (see, for example, Lavoie (1995, 1996); Dutt (1997, 2009)), the solution to this eventuality lies in first recognizing that the "Robinsonian closure" actually stipulates that $u_n = \bar{u}_n$. But suppose, instead, we write:

$$\dot{u}_n = \alpha(u - u_n) \tag{9}$$

Equation (9) not only suffices to ensure achievement of a fully adjusted position: it is also compatible with the Kaleckian closure (and hence long run variation in the rate of capacity utilization). Suppose that we begin with $u = u_{n1}$ in Figure 3. Now suppose that an improvement in animal spirits increases u in accordance with equation (7), so that $u > u_{n1}$. According to equation(9), this last result will increase the normal rate of capacity utilization itself until $u = u_n$ – which outcome is depicted at u_{n2} in Figure 3. The normal rate of capacity utilization can now be thought of as displaying hysteresis, as a result of which, following an initial increase in capacity utilization, the system attains a new fully-adjusted position at a permanently higher rate of capacity utilization.

Classical and neo-Keynesian authors remain unconvinced by the idea that u_n is hysteretic, however. According to Skott (2012b, pp.117-124), for example, equation (9) is mechanistic and lacks proper behavioral foundations. Hence if the purpose of u_n is to insulate firms

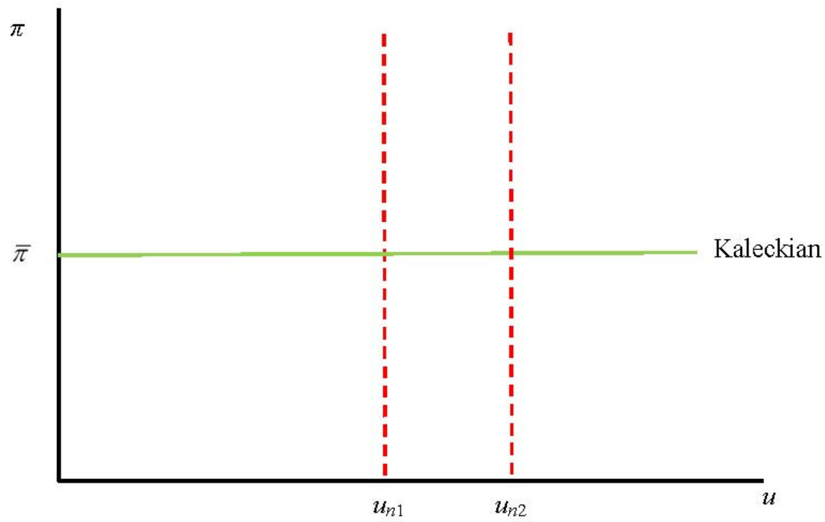

Figure 3: Hysteresis in the Normal Rate of Capacity Utilization

against the vagaries of demand conditions in an environment of uncertainty where it is also considered disadvantageous to lose sales (and hence relative firm size and hence monopoly power and hence control over the external market environment) for want of capacity, it makes no sense to allow u_n to vary in such an accommodating fashion in response to changes in u. Attainment of a fully adjusted position – and avoidance of Harrodian instability in the long run – must therefore be achieved by means other than adjustment of u_n.

Suppose, then, that we eschew equation (9) in favor of the "true" Robinsonian closure $u = \bar{u}_n$. Does this rule out long run variation in the rate of capacity utilization? In the following section, we will argue that it need not.

3 Kaleckian results: a Harrodian approach

Central to the argument advanced in this section is the claim that the contributions of Harrod (1939, 1948, 1973) himself are of crucial significance to debate about Harrodian instability in

Kaleckian macrodynamics.[9] Of particular importance is a feature of Harrod's analysis that distinguishes his instability principle from the (in)famous "knife edge" property attributed to it by Solow (1956) (on which see also see Asimakopulos (1991, pp.161-4) and Halsmayer and Hoover (2015)). As recounted by Asimakopulos (1991, pp.161), a subtle but important qualification to the operation of the instability principle involves the *reaction time* required for firms to respond to discrepancies between actual and expected events.[10] For Harrod (1939), departures of the actual from the warranted rate of growth that do not exceed the reaction time (six months) will not trigger changes in investment behavior. By the time of his reply to Robinson (1970), Harrod (1970) had expanded upon this theme, arguing that the *size* (as well as the *duration*) of discrepancies between actual and expected outcomes plays a central role in the operation of the instability principle, which is therefore less like a "knife edge" than a "shallow dome". Hence in his reply to Robinson (1970), Harrod writes:

> I have argued that an equilibrium growth path is normally unstable ... If it is on a knife-edge a very tiny push would serve to push it away; but it would also be an unstable equilibrium if it were at the top of a shallow dome. Then a much larger push would be needed to set it moving. (Harrod, 1970, p.740)

Harrod goes on to associate the size of this "larger push" with a variety of factors including conventions and various other factors associated with the formation of expectations, concluding that empirical study is required to ascertain the precise size of a "larger push". Harrod embellishes this thinking in his final book on macrodynamics, wherein he argues that:

> if they [deviations of the actual from the warranted rate] are of moderate dimensions, I would not suppose that they would bring the instability principle into operation. That is why I so much object to the knife-edge idea. It requires a fairly large deviation ... to bring the instability into play. (Harrod, 1973, p.33)[11]

[9] The analysis here draws on Setterfield (2015), who applies the same ideas to furnish an explanation of time variation in the size of the multiplier.

[10] Note that in Harrodian dynamics, discrepancies between actual and expected events can be associated with departures of the actual rate of growth from its warranted (equilibrium) rate, and hence departures of the actual rate of capacity utilization from its normal rate.

[11] In Harrod (1973, p.32), the preferred metaphor for the instability principle is a "grassy slope" rather than a "shallow dome".

The investment behavior envisaged by Harrod bears comparison to a satisficing heuristic of the sort envisaged by Simon (1955, 1956), in which explicit acknowledgment of the limits to their foresight means that firms are unlikely to be provoked into behavioral change by only modest and/or brief discrepancies between the actual and expected rate of growth, and hence the actual and normal rate of capacity utilization. Instead of adjustment resting on a "knife edge" created by a specific value of the normal rate, a rule of thumb is developed that specifies a tolerable interval of variation around the specific value. Variations in actual capacity utilization that lie outside this tolerable interval will attract attention and provoke behavioral change. Variations *within* the bounds prescribed by the interval will, however, be ignored. More generally, Harrod's thinking suggests that investment behavior is unlikely to vary continuously, but is instead susceptible to discrete variation depending on where macroeconomic outcomes lie with respect to the boundaries of conventionally-defined tolerable intervals around any expected, normal, or target value of a variable that is used to guide behavior in an environment of uncertainty.

What are the implications of these ideas for the Harrodian instability debate? The main claim advanced here and developed in what follows is that a mixture of standard Kaleckian macrodynamics and Harrod's "satisficing" approach to the revision of investment decisions provides a basis for understanding variation in the actual rate of capacity utilization even in the presence of a fixed normal rate.

In the Classical/neo-Keynesian tradition:[12]

$$\dot{g} = g(u - \bar{u}_n) \tag{10}$$

In other words, firms will increase their rate of accumulation in the event that $u > \bar{u}_n$ in an attempt to increase available capacity and so lower the actual rate of capacity utilization towards the normal rate. If this behavior has a larger effect on the supply side

[12]See Skott and Ryoo (2008); Dutt (2010); Skott (2012a).

(available capacity) than on the demand side (utilized capacity), then the actual rate of capacity utilization will automatically fall towards the normal rate and the economy will achieve a fully-adjusted position.[13] Otherwise, Harrodian instability will prevail, unless an auxiliary mechanism (such as the Robinsonian adjustment of prices and hence the profit share) reconciles the steady state equilibrium of the system with the fixed normal rate, $\bar{u}_n$.[14] Harrodian instability is illustrated in Figure 4 below, in which the g and g^s schedules are derived from substitution of equation (2) into equations (1) and (3) (as a result of which both g and g^s are depicted as functions of u). Starting at the fully adjusted position g^*, $\bar{u}_n$, an improvement in animal spirit displaces the g schedule upwards to g', establishing a new equilibrium at g', u'. In the canonical Kaleckian model, this would be the end of the story: g', u' would prevail as the new, long-term equilibrium of the system. But with the Classical/neo-Keynesian adjustment mechanism $\dot{g} = g(u - \bar{u}_n)$, there will be further upward shifts in the g schedule (to g'' and subsequently – as indicated by the arrow in Figure 4 – beyond). These shifts in the g schedule are the manifestation of Harrodian instability, the effects of which will continue unabated unless the operation of some other mechanism causes u to adjust towards $\bar{u}_n$.[15]

Suppose, however, that in the spirit of Harrod (and following Simon (1955, 1956)), firms are satisficers for whom there is a *range* of variation in u about $\bar{u}_n$ that is deemed acceptable,

[13] This is effectively what is achieved by the Hicksian stock-flow investment adjustment mechanism posited by Shaikh (2009). Hein et al. (2011) are critical of this adjustment mechanism on the grounds of its informational requirements: firms must correctly anticipate output growth in the next period, so that the model effectively involves myopic perfect foresight. It might be argued, however, that myopic perfect foresight is a plausible (and useful) first approximation of forecasting in heterodox macrodynamics (Flaschel et al., 1997). A more substantial criticism of Shaikh (2009) would appear to be that the Hicksian stock-flow investment adjustment mechanism "solves" the problem of Harrodian instability *by hypothesis*, since it posits (rather than demonstrates) that the spur to investment spending that results from $u > \bar{u}_n$ will cause capital capacity to grow faster than real output – i.e., that the supply-side effects of investment will always dominate the demand-side effects that result from multiplier-accelerator adjustments.

[14] A variety of other mechanisms have been proposed that achieve the same end. See Hein et al. (2011) for a survey.

[15] Of course, Harrodian instability may also be checked by the fact that we must observe $0 \leq u \leq 1$.

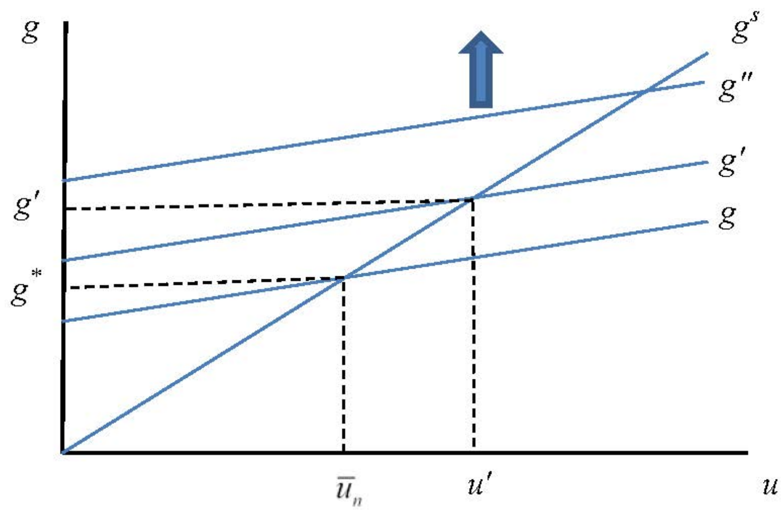

Figure 4: Harrodian Instability in the Kalecki-Robinson Model

so that variation in u within this range is thought unworthy of behavioral response.[16] Under these conditions, the Classical/neo-Keynesian response is modified so that:

$$\dot{g} = 0 \text{ if } |u - \bar{u}_n| < c \tag{11}$$

$$\dot{g} = (u - \bar{u}_n) \text{ otherwise} \tag{12}$$

where c is a conventional constant that corresponds to the "moderate dimensions" within which, per Harrod (1970, 1973), the model can depart from its equilibrium (fully-adjusted)

[16]Dutt (2010) motivates the same absence of behavioral response by appeal to Shackle's concept of potential surprise, according to which, under conditions of fundamental uncertainty, decision makers will tolerate some variation in actual events relative to expected events and deem only sufficiently large deviations of actual from expected events – that generate surprise – as worthy of behavioral response. Although he cites Harrod (1970, p.740) on the distinction between the dynamics of a knife-edge and those of a shallow dome, Dutt does not explicitly connect Harrod's thinking to Kaleckian dynamics in the case where the actual rate of capacity utilization deviates form the normal rate.

position without eliciting a behavioral response from firms. Effectively, the range of values $\bar{u}_n \pm c$ involves de facto treatment of the normal rate of capacity utilization as a *band* rather than a *point.* In terms of the simple Kalecki-Robinson model developed earlier, where variations in animal spirits are accommodated either through Δu (the quantity channel) or $\Delta\pi$ (the price channel), we now get:

$$\Delta u = \frac{1}{(s_\pi - \gamma_2)\bar{\pi}} \Delta\gamma_1$$

if $\bar{u}_n - c < u < \bar{u}_n + c$, and:

$$\Delta\pi = \frac{1}{(s_\pi - \gamma_2)u_B} \Delta\gamma_1$$

if $u = u_B = \bar{u}_n \pm c$.[17] These adjustments are illustrated by movement along the solid "Kalecki-Harrod" schedule in Figure 5. The result is a model in which there can be long-run variation in the rate of capacity utilization *a la* Kalecki – at least within limits imposed by the tolerable range of departures of u from $\bar{u}_n$ conjectured by Harrod – even in the presence of a fixed (ahysteretic) normal rate of capacity utilization guiding firms' investment behavior. This is illustrated in Figure 6. Once again, we begin at the fully adjusted position g^*, $\bar{u}_n$. An improvement in animal spirit that displaces the g schedule upwards to g' will once again establish a new equilibrium at g', u'. Since $u' < \bar{u}_n + c$, we will have $\dot{g} = 0$ from equation(11), so that g', $u' \neq \bar{u}_n$ will prevail as the new, long-term equilibrium of the system. When augmented by "proper" Harrodian dynamics, the results of the canonical Kaleckian model – including the paradox of costs – may once again prevail.[18]

[17] Recall that we are depicting long run outcomes, so that there is no possibility of observing $u > \bar{u}_n + c$ or $u < \bar{u}_n - c$. Adjustment to variations in animal spirits is accommodated by variations in capacity utilization only if $\bar{u}_n - c < u < \bar{u}_n + c$. At $u = \bar{u}_n \pm c$, all adjustment is accommodated through the price channel by $\Delta\pi$.

[18] Note that the result generated here is associated with a one-firm model. It seems plausible to conjecture that in a multi-agent framework, in which many, heterogeneous firms display the satisficing behavior described above, we are likely to observe $\bar{u}_{ni} \neq \bar{u}_{nj}$ and $c_{ni} \neq c_{nj}$ for any two forms i, j. The extent to which small variations between firms in $\bar{u}_{ni}$ and c_{ni} create larger long-run variability in *aggregate* capacity

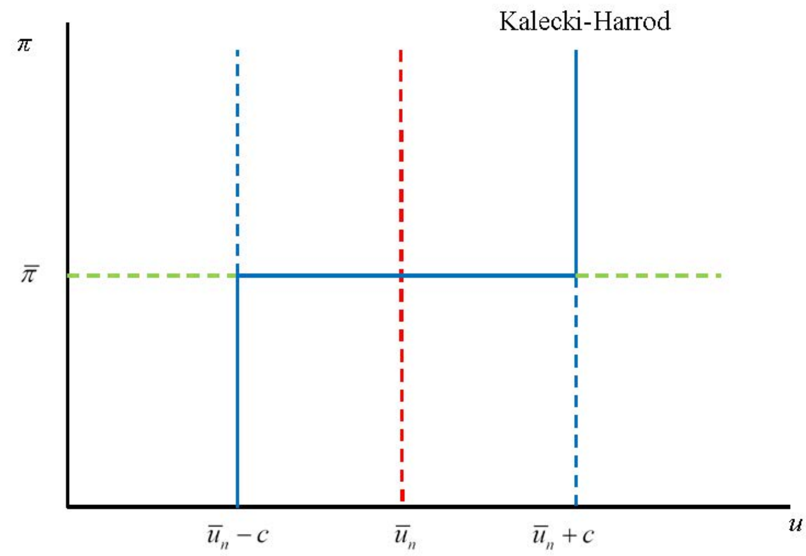

Figure 5: Kalecki-Harrod Growth Dynamics

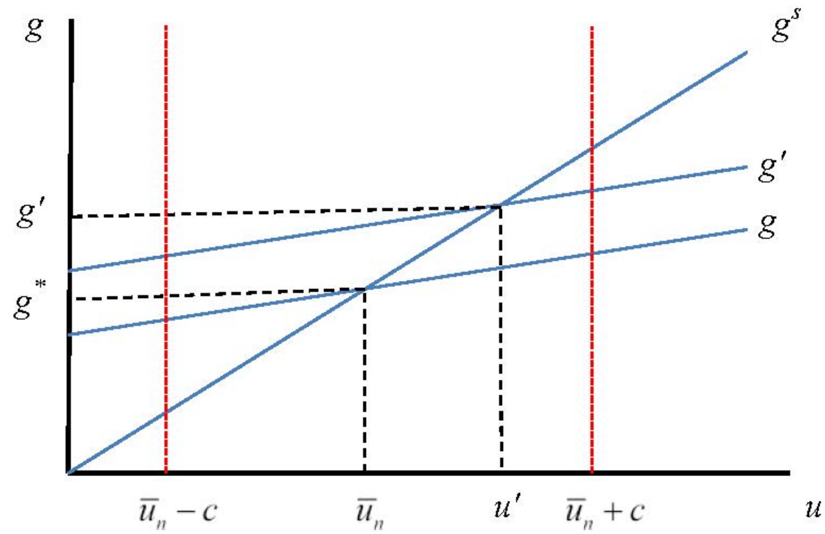

Figure 6: The Kalecki-Harrod Adjustment Mechanisms

4 Conclusion

This paper develops a generic Kalecki-Robinson model of growth that, subject to different closures, illustrates how the economy can respond, through either price- or quantity-adjustment channels, to a change in demand conditions in the long run. The closures have different implications for the actual rate of capacity utilization, and hence what (if anything) is required by way of additional adjustments if the economy is to achieve a "fully-adjusted position" where the actual and normal rates of capacity utilization are equalized. Next, it is assumed that the normal rate of capacity utilization is exogenously fixed. It is then shown that variation in the actual capacity utilization rate can nevertheless occur – at least within limits – without triggering "Harrodian instability", if the response of investment to discrepancies between the actual and normal rates of capacity utilization is discontinuous.

The behavioural argument advanced in support of the discontinuous investment function has a Harrodian pedigree, drawing on Harrod's own preferred treatment of his instability principle as being analogous to a "shallow dome" or "grassy slope" rather than a Solovian "knife edge". The argument therefore rests on a *Harrodian interpretation of Harrodian instability*. Put differently, the paper shows that it is the combination of (proper) Harrodian dynamics and Kaleckian dynamics that simultaneously becalms Harrodian instability – at least within the satisficing range of capacity utilization rates determined by $\bar{u}_n \pm c$ – and permits long run variability in the rate of capacity utilization despite the existence of a fixed normal rate.

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