Chapter 5

Heterodox growth theories I: Cambridge equation model and the neo-Kaleckians[1]

Introduction

Most non-orthodox economists share what Nicholas Kaldor called the 'Keynesian Hypothesis'—the idea that investment is, in both the long run and the short run, independent of the savings that would be forthcoming from the normal utilisation of productive capacity (Garegnani, 1992, p. 47). Some heterodox economists, however, maintain that the Keynesian Hypothesis applies only to the short run, a position similar to that held by mainstream Keynesian economists. Keynes showed that within the limits of the existing capacity utilisation, it is investment that determines savings rather than the other way around. The outcomes of the capital theory controversy have reinforced this conclusion (Garegnani, 1978–79). How to extend the Keynesian Hypothesis to the long run is the object of this and next chapters.

As seen, modern growth theory begun with the Harrod-Domar model (Chapt. 2). The mainstream way out from the troubles with this model was based either on the neoclassical factors' substitution mechanisms. Solow's neoclassical growth model, however, is a natural victim of the capital theory controversy. The first generation of heterodox growth models took a resorted to a different adjustment mechanism. This set of models that we will simplify under the Cambridge equation label - the distribution of income between wages and profits is adjusted so that the actual growth rate of the economy adapts to that decided by entrepreneurs. The capitalists thus decide both the accumulation rate and the distribution. Such a strong power attributed to capitalists did not seem too realistic, especially in the light of the social struggles of the 1960s and 1970s.

[1] This chapter draws from Cesaratto (2015).

5.1. The Cambridge equation model and its critics

5.1.1. The model

Heterodox economists often distinguish between the propensity to save of capitalists (s_c), generally considered high, and that of workers (s_w), generally considered lower. The reasons for this difference are obvious. The average propensity of the economy is therefore equal to the weighted average of the two propensities; the weights are the income shares that go respectively to profits (P/Y) and wages (W/Y):

$$s = s_c\, P/Y + s_w\, W/Y.$$

For simplicity's sake, it is sometimes assumed that $s_w = 0$ - a hypothesis often referred to as "classical": in a simplified way, we refer to the idea of classical economists that workers' wages tend to the historically determined subsistence level. In our stylised exposition of the Cambridge equation model (or Cambridge model for short) we shall make this assumption. This implies that the aggregate supply of capacity saving, sY, depends on the profit share since: $s = s_c\, P/Y$.

The Cambridge model consists of three equations:

$$S = s_c\, P = s_c\, (P/K)K = s_c\, r_n K \qquad (5.1)$$

$$I = \bar{I} \qquad (5.2)$$

$$S = I \qquad (5.3)$$

Equation (5.1) shows that capacity saving depends on profits, (since profits are the only source of savings), in particular on the normal profit rate r_n.

Equation (5.2) is the investment function. Usually this is at the core of a growth model since the explanation of investment is what distinguishes any model. In equation (5.2) we assume that investment is determined by exogenous “animal spirits”, i.e. the feelings perceived by entrepreneurs about future demand trends. This is not a very analytical explanation of investments, but let us accept this one for now.

Equation (3) is the equilibrium condition: along a “normal” growth path (with a normal degree of capacity utilisation) investment must absorb capacity saving (saving forthcoming from a normal output, that is from output when capacity is normally utilised).

Substituting equations 5.1 and 5.2 in 5.3 we get:

$$s_c\, r_n K = \bar{I}\,,$$

and since by definition $I = \Delta K$,

$s_c\, r_n = \frac{\overline{\Delta K}}{K}$, or:

$$g_k = s_c\, r_n \qquad (5.4)$$

which is the Cambridge equation.

The salient feature of the Cambridge equation is in the idea that the rate of accumulation g_K decided by the entrepreneurs, given the capitalists' propensity to save, determine the normal rate of profit, and therefore the wage rate. Income distribution thus becomes endogenous and subordinated to the rate of accumulation. To understand how, let us assume that capacity is fully utilised. Suppose next that entrepreneurs become more optimistic and desire a higher rate of capital accumulation, deciding a higher level of investment financed out of credit creation.[2] The larger investment expenditure would compete with the existing nominal consumption expenditure from the given nominal wages. The result is that capacity would be transferred from the wage-goods to the capital-goods sector. As a result, wage-goods become more expensive and real wages fall. The larger production of capital goods thus leads to a shift in income distribution from (real) wages to profits. This is necessary for the macroeconomic adjustment to the higher accumulation rate decided by the entrepreneurs. Higher profits, which are the source of saving, will in fact generate a higher saving supply necessary to accommodate the larger level of investment. In terms of equation [1], g_K is the independent variable that, given s_c, determines r_n. So if $g_k^1 > g_k^0$, then $r_n^1 > r_n^0$.

In other words, entrepreneurs decide, on the basis of their animal spirits, the rate of accumulation; the economy will only be able to proceed in equilibrium if capacity savings conform to the highest level of investment; the higher investment spending is such that income distribution changes as to achieve this adjustment. The idea is that because of the larger investment expenditure, aggregate nominal demand and therefore, given full capacity utilisation, prices will be higher. However, since both nominal wages and nominal consumption spending are given, real wages and nominal consumption will fall, leaving space for the larger investment desired by the entrepreneurs. In synthesis, if capitalists invest more (financed by banks) and compete with workers for capacity output, this creates inflation.[3] As a consequence, real wages fall and the profit share and the normal

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[2] See Chapt. X.

[3] Prices of both consumption and investment goods may rise; however, while nominal wages are given, nominal investment spending is not since banks can expand their loans until the capitalist have realized their investment plans.

profit arte rise generating the required extra-saving. Capitalist have their cake, and eat it too (see Appendix 1).

Note that hidden behind the Cambridge equation there is the Harrodian warranted rate equation:

$$g_k = s_c\, r_n = s_c\, P/K = g_k = s_c\, \frac{P/X_n}{K/X_n} = \frac{s_c P/X_n}{v_n} = \frac{s}{v_n} = g_w$$

This is not surprising: Harrod-Domar warranted growth equation is an equilibrium condition that must be fulfilled in order that the economy grows with investment equal to capacity saving. Any equilibrium growth path, independently from the theory, must respect that equation. In the original Harrod-Domar formulation, however, g_w is rigid, and if $g_a \neq g_w$ the economy diverges from equilibrium. Instead, according the the Cambridge equation – and supposing we start from a given normal path $g_k^0 = g_w^0$ – if capitalist decide to grow faster, then $g_k^1 = g_a > g_k^0 = g_w^0$. What happens next is that s rises, due to the rise of r_n,[4] and we have a new warranted rate: $g_k^1 = g_w^1$. So it is the warranted rate that converges to the actual rate decided by the capitalists. The model is therefore stable.

Box che esponga per sommi capi i principali esponenti e modelli. J. Robinson, i due Kaldor, Pasinetti.

5.1.2. The criticism

To begin with, the Cambridge equation is not a fully-fledged demand-led model insofar as saving adjusts to investment through a change in income distribution and not, as in subsequent truly demand-led models, through the adjustment of productive capacity to aggregate demand. The model is, however, respectful of the Keynesian Hypothesis as investment is independent of saving. It is also respectful of Kalecki's aphorism that "workers spend what they earn, while capitalist earn what they spend". Indeed, profits are determined by the investment decisions of capitalists.[5]

From an empirical point of view, the association of higher growth rates and falling real wages is not particularly robust. If anything, real wages tend to rise during periods of faster accumulation and higher labour demand, as a consequence of the greater workers' bargaining power; while they tend to

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[4] Recall that in the "classical hypothesis" of $s_w = 0$, $s = s_c(P/Y)$.

[5] Per memoria: 'Thus capitalists, as a whole, determine their own profits by the extent of their investment and personal consumption ... capitalists as a whole do not need money in order to achieve this' (Kalecki, 1971, p. 13).[1]The first part of the above quotation will be recognised as Kalecki's well-known aphorism that capitalists 'get what they spend', that they cannot decide to earn more, they can decide only to spend more. Workers can neither decide to earn more, nor spend more than they earn: they 'spend what they get'. (da Kregel in libro Sebastiani)

fall during downswings when the 'industrial reserve army' increases (e.g. Garegnani 1992: 63; Lavoie 2006: 111-2; Hein et al. 2008: 11-2).

For the Classical-Keynesian approach of Sraffa and Garegnani, the profit rate is determined by the relative bargaining power of the social classes. The social bargaining power is of course related to the rate of accumulation but any automatism from the rate of accumulation to distribution is firmly rejected (and it would go anyway in the opposite direction of that predicted by the Cambridge equation).

In addition, critics of the Cambridge equation also singled out the capacity of capitalism to accommodate an upsurge of capital accumulation by resorting to a fuller rate of utilisation of productive capacity without the necessity of changes in income distribution: a larger profit share can be obtained by extracting extra-profits from the given capacity without reducing real wages. Rowthorn (1981) has been particularly influential among the former group of economists; Garegnani (1992) among the second.

Following Steindl (1952) and Kalecki (e.g. 1970), Rowthorn (1981, p. 1) explains the underutilisation of capacity by referring to the idea of a 'monopolistic economy which is operating well below full capacity.' In such an economy, 'prices are relatively inflexible and firms respond to a change in demand by varying the amount they produce. When demand is depressed firms respond by reducing the amount they produce, whilst keeping their prices constant. This reduction in output has no effect on real wage rates, but it does reduce both the level of capacity utilization and the rate of profit' (ibid.). Symmetrically, in the case of an investment upsurge, 'there is no need to reduce real wages, and the extra profits required to stimulate investment can be generated simply by increasing output and bringing idle capacity into use' (ibid, p. 2). What is more, a fuller capacity utilisation may accommodate higher 'total profits … despite the fact that real wages have increased' (ibid.). In synthesis, in his seminal work of the neo-Kaleckian tradition Rowthorn argues that through a variable degree of capacity utilisation a higher rate of accumulation is consistent with higher rates of profits and wages. We shall consider the neo-Kaleckian models from the next section.

Sraffian economists have also relied on the variability of the degree of capacity utilization to criticise the Cambridge model (see Appendix 2). Their idea is that a higher rate of capital accumulation is accommodated in the short period through a higher degree of capacity utilisation. In the longer run, when the new plants begin to operate, on the one hand the degree of capacity utilisation tends again to normal and, on the other hand, the higher accumulation rate is accommodated by the higher rate of growth of capacity savings forthcoming from the larger installed capacity. So in the long run expected aggregate demand leads economic growth by determining an adjustment of output capacity. For Sraffian economists labour population is also not a constraint to growth, as in neoclassical economics. Their idea is that the working population adapts itself to the necessities of accumulation through, for instance, migration flows or the variations in the degree of utilisation of the labour reserve army. The Sraffian supermultiplier model is developed in Chapter 7.

5.2. The first-generation neo-Keleckian models

5.2.1. A variable degree of capacity utilization

The Cambridge equation model assumes that the normal degree of capacity utilisation corresponds to full capacity output X_f, that is $u_n = 1$ (100% of capacity utilisation). This is why a rise in the investment decisions determines a pressure of demand on output (assumed at full capacity) and an inflation process that, given nominal wages, leads to a higher profit share and capacity savings.

In general, however, firms normally wish some spare capacity, that is $X_n < X_f$ to meet peaks of demand, so not to let customers unsatisfied. Let us then assume that the normal output level is lower than full capacity output, that is $X_n < X_f$. It follows then that the normal degree of capacity utilization is lower than one, $u_n < 1$, where $u_n = \frac{X_n}{X_f}$. Let us also define the actual degree of capacity utilisation (u_a) as the ratio of actual over full capacity output: $u_a = \frac{X_a}{X_f}$.

The existence of spare capacity gives the growth model a degree of flexibility to accommodate changes in the accumulation rate decided by the entrepreneurs. If they decide to grow faster because, say, they have become more optimistic, then this wish can be put up by a larger actual degree of capacity utilisation. This was not possible in the Cambridge model in which capacity was fully utilised.

Also this model conforms to the Kaleckian dictum that "workers spend what they earn, while capitalist earn what they spend" as profits are determined by the investment decisions of capitalists.

5.2.2. A simplified neo-Kaleckian model

We make the classical saving hypothesis again, i.e. $s_w = 0$.

The model has four equations:

$$S = s_c P_a = s_c (P_a/K)K = s_c r_a K \qquad (1\ 5.5)$$

$$I = \bar{I} \qquad (2\ 5.6)$$

$$r_a = \frac{\pi_a}{v_n} u_a \qquad (3\ 5.7)$$

$$S = I \qquad (4\ 5.8)$$

Equation (1 5.5) shows that the supply of capacity saving depends on the capitalists' propensity to save times their actual profits P_a or, after little manipulation, on the actual profit rate r_a times the give capital stock. Equation (2) shows that investment is determined by exogenous "animal spirits".

Equation (3 5.7) explains the actual profit rate as the ratio of the actual profit share π_a on the normal capital coefficient, times the actual degree of capacity utilisation. Therefore, given the profit share and v_n, a higher u_a leads to a higher r_a. Equation (3) is easily obtained from the definition of the actual profit rate after simple manipulation:

$$r_a = \frac{P_a}{K} = \frac{P_a / X_f}{K / X_f} \frac{X_a}{X_a} = \frac{P_a / X_a}{v_n} \frac{X_a}{X_f} = \frac{\pi_a}{v_n} u_a$$

Finally, equation (4 5.8) is the equilibrium condition between investment and saving. Notably here we do not refer to *normal* capacity saving, those relative to a normal degree of capacity utilisation, but to the *actual* saving supply, whatever the actual degree of capacity utilisation.

By easy substitutions we obtain:

$$g_K = s_c r_a = s_c \frac{\pi_a}{v_n} u_a \qquad (5.9)$$

which is the neo-Kaleckian warranted rate equation.

Also in this model capitalists decide the accumulation rate. Given their marginal propensity to save, the profit share and the capital coefficient, the level of capacity savings adjusts to investment through a change in the rate of capacity utilisation u_a, which is the accommodating variable. For instance, if capitalists decide to grow faster, given capacity, the higher demand for investment and the consequent higher aggregate demand lead to a higher degree of capacity utilisation. This implies that a larger output is obtained from the given capacity; more specifically larger actual profits are obtained from the given capital stock, what entails a higher actual profit rate. The larger amount of actual profits is the source of the larger saving supply necessary to accommodate (without inflation) the larger investment decisions taken by the capitalists.

5.2.3. The simplified neo-Kaleckian model in growth terms

The simplified version of the canonical model can usefully be re-exposed as follow, by simply dividing by K equations (1 5.5), (2 5.6) and (4 5.7) above (e.g. Lavoie 2006: 114-119).[6] We have again four equations:

$$g_s = s_c r_a \qquad [3\ 5.10]$$

$$g_i = \alpha \qquad [4\ 5.11]^{7}$$

$$r_a = \frac{\pi}{v_n} u_a \qquad [5\ 5.12]^{8}$$

$$g_s = g_i \qquad [5\ .13]$$

Equation (5.10), the saving equation, expresses the rate of growth permitted by capacity saving as a function of the saving rate and of the actual profit rate. Equation (5.11) expresses the rate of growth of the capital stock as a function of the long term growth α of sales expected by firms (Lavoie 2006: 115). Equation (5.12) states that the *actual* profit rate is a function of the actual rate of capacity utilisation, given the profit share π and the desired or normal capital coefficient v_n.[9] Equation (5.13) is the equilibrium condition between the rate of growth permitted by capacity saving ($g_s = S/K$) and the one desired by the entrepreneurs ($g_i = I/K$). [10] The unknowns are g_s, g_i, r_a and u_a.

By substituting equation [5 5.12] in [3 5.10], we obtain:

$$g_s = \frac{s_c \pi}{v_n} u_a \qquad [3'\ 5.14].$$

[6] The model refers to the seminal contributions by Rowthorn (1981) and more particularly to that by Amadeo (1986).

[7] g_i è definito altrove nella dispensa g_k.

[8] Equation (5.12) is easily obtained from the definition of the actual profit rate: $r_a = \frac{P}{K} = \frac{P/X_f}{\frac{K}{X_f}\cdot\frac{X_a}{X_a}} = \frac{P/X_a}{\frac{K}{X_f}} \cdot \frac{X_a}{X_f} = \frac{\pi}{v_n} u_a$, where P is the sum of profits, X_a is actual aggregate income and X_f is the full capacity aggregate income.

[9] Note that the desired capital coefficient v is defined as $v_n = K/Y_f$. It could also be defined in term of Y_n by remembering that: $v_n = K/Y_f = K/Y_n(1+x)$, so that v defined in terms of Y_n would be: $v_n^{'} = v_n(1+x)$.

[10] As in all macroeconomic models the long run goods markets equilibrium is where the rate of growth of the capital stock is equal to the rate of growth of capacity saving. The *Keynesian Hypothesis* implies that, outside equilibrium, it is the latter that adjusts to the former.

The long-run goods-market equilibrium is where $g_s = g_i$,[11] that is, equating equations [3' 5.14] and [4 5.11], where:

$$\alpha = \frac{s_c \pi}{v_n} u_a \qquad [3'' \ 5.15]$$

This is the neo-Kaleckian warranted rate equation (the equation is similar to (5.9) but now the investment decisions of the entrepreneurs are expressed in terms of desired rate of growth).

5.2.4. A provisional warranted rate

Recalling that since $s = s_c \pi + s_w \omega$, where ω is the wage share (*W/X*), and recalling that we assumed $s_w = 0$, equation [3'' 5.15] can be written as $\alpha = \frac{s}{v_n} u_a$ which reminds the Harrod-Domar warranted rate equation. In Harrod-Domar, however, $u_a = u_n = u_f = 1$. Here the presence of u_a in the "equilibrium" growth rate makes this rate rather spurious as long as firms want to re-establish a normal degree of capacity utilisation: rather than a long period dynamic equilibrium equation (5.15) seems to identify a temporary equilibrium that will change if u_a changes.

The provisional value of u_a, the one which accommodates the desired rate of growth α, is given by:

$$u_a = \frac{\alpha v_n}{s_c \pi} \qquad (5.16)$$

Equation (5.16) show that in the neo-Kaleckian model the degree of capacity utilization is function of the desired rate of growth.

Equations (3' 5.14) and [4 5.11] can be drawn in the space *g-u*, as shown in the top part of figure (5.3). The capacity-saving growth function [5.14], indicated as g_s, is an increasing function of u_a. This is so because a higher degree of capacity utilisation increases the amount of profits extracted by any given level of the capital stock, raising the actual profit rate and the saving supply. For the sake of the argument, in drawing the picture we suppose that at the intersection A the equipment is normally utilised (u_n we shall call 'old normal'). In the bottom part of the figure we drew equation [5 5.12] denominated profit curve (PC). In correspondence to u_n we find the normal profit rate r_n^0. Suppose then that the long term growth expectations grow from α to α'. This leads to a higher rate of capacity

[11] As in all macroeconomic models the long-run goods markets equilibrium is where investment is equal to (normal) capacity saving, here both expressed in terms of the capital stock so that g_i is the rate of capital accumulation and g_s the rate of accumulation permitted by capacity savings).

utilisation $u_a = u_n^1$, that following the spirit of these models (Hein et al. 2008; 2010; 2011; Lavoie 2003), can be taken as the "new normal" ©. Notably, the higher capacity savings corresponding to the new accumulation pattern are brought about by the higher actual (or "new normal") profit rate, $r_a = r_n^1$ corresponding to the higher utilisation rate. In this way, by making the rate of capacity utilisation endogenous, the instability problems met by Harrod are removed.

Observe that the initial equilibrium in A is a Harrodian equilibrium, i.e. A is the only warranted growth rate consistent with growth with the original, exogenous normal rate of capacity utilisation. In actual, there is no reason why what capitalists consider as the normal rate of capacity utilisation u_n should change. However, to abandon the concept of an exogenous normal rate of capacity utilisation is essential for the neo-Kaleckians to sustain the Keynesian Hypothesis that in the long as well as in the short run it is saving that adjusts to investment. The variable utilization rate is the parameter that allows this adjustment. On the other hand the new u_a must be taken as the "new normal" to avoid an Harrodian instability.[12]

We shall see later that, adding confusion to arbitrariness, to show the Keynesian 'thrift paradox' in this model, the neo-Kaleckians will retain an exogenously given notion of "normal degree" of capacity utilization and an endless attempt of entrepreneurs to restore u_n.

[12] It will be recalled that the Harrodian instability was precisely the result of the attempt of firms to restore an exogenous normal degree of capacity utilization.

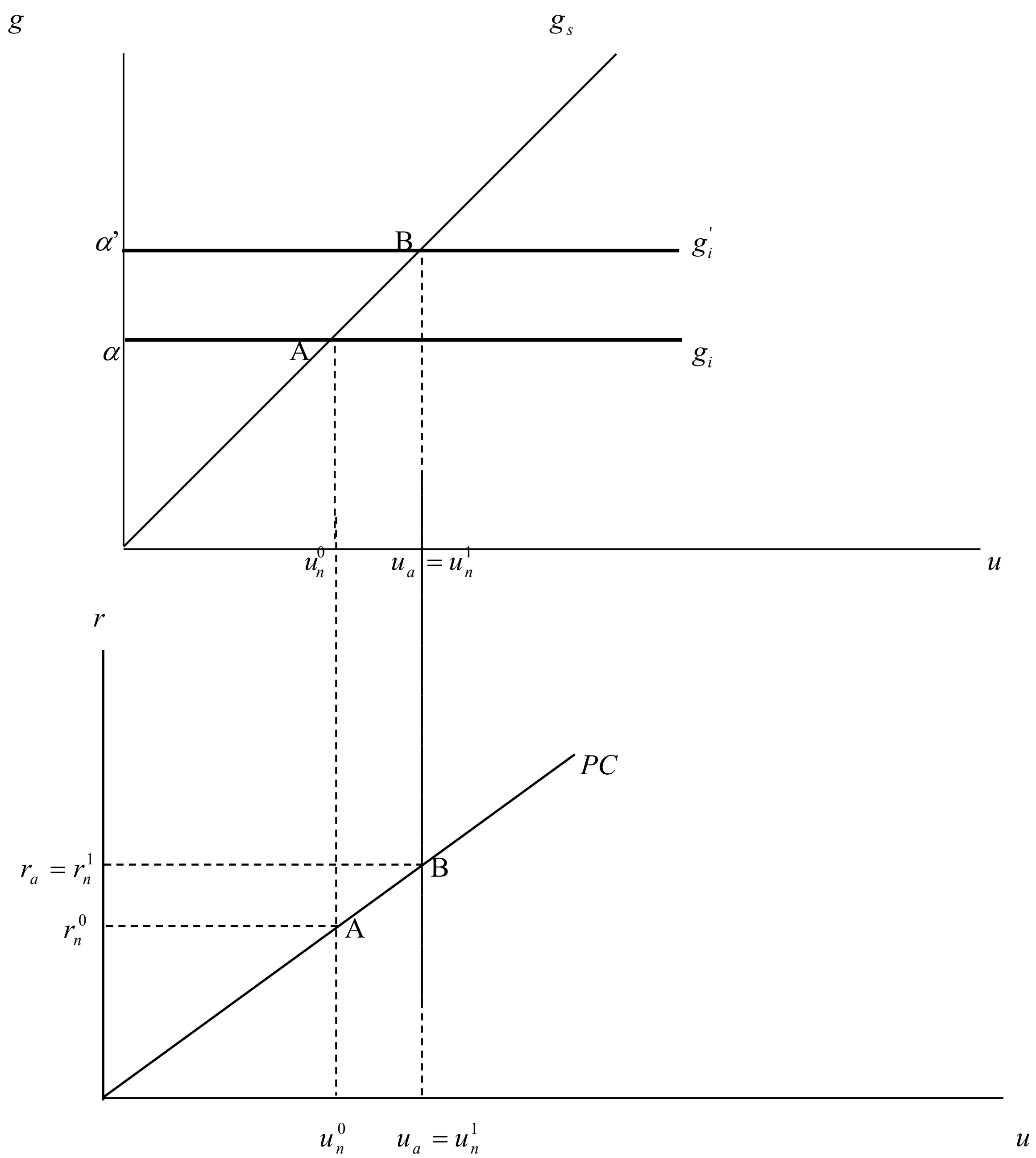

Figure 5.3 – The simplified neo-Kaleckian model

5.2.5. What is actual is normal: the 'new normal'

In view of the above, the neo-Kaleckian model would just appear as a curious Harrod-Domar model in which the warranted rate is determined by and is actually equal to the actual rate, whatever this might be: $g_W = g_a = s/v_a$. The actual capital coefficient and related degree of capacity utilisation associated to this peculiar "new normal" warranted rate are by hypothesis at their "new normal" level.

Equation [3'' 5.15] can be rewritten as:

$$\alpha = \frac{s_c \pi}{v_n / u_a} \qquad (5.17)$$

Recall from above that $v_a = \frac{v_n}{u_a}$ (since $\frac{K / X_f}{X_a / X_f} = \frac{K}{X_a}$). By imposing that "what is actual is normal", we might redefine the denominator on the right-hand side of equation (5.17) as the "new normal" capital coefficient $v_a = v_{nn} = \frac{v_n}{u_a}$. The neo-Kaleckian "new normal" warranted rate is then $g_W = \frac{s_c \pi}{v_{nn}} = \alpha$ or, given that $s = s_c \pi$, $g_W = \frac{s}{v_{nn}} = \alpha$.[13] We are back to the Harrod-Domar model. However, while in that model the warranted growth rate is unique in so far as it was governed by two exogenous parameters, now any actual growth rate desired by capitalists is a warranted rate. The economy grows at a rate determined by the 'animal spirits' and, following Hegel's spirit that 'what is real is rational', the normal capital coefficient is whatever the actual coefficient is, so the actual rate is the "new normal" rate (or vice versa).

5.2.6. Comparison with the Cambridge Equation model

When capitalists decide to grow faster, the extra-savings necessary to keep the economy along a (dynamic) equilibrium path would derive from a higher *normal* profit rate, and from a higher degree of capacity utilisation and a higher *actual* profit rate according, respectively to the Cambridge model and to the neo-Kaleckian approach.

To compare the two solutions, it is useful to illustrate the Cambridge model in growth terms as we have done in Sect. 5.2.3 with the neo-Kaleckian model. By simply dividing by *K* the equations (5.1), (5.2) and (5.3) we obtain:

$$g_s = s_c r_n \qquad [6\ 5.18]$$

$$g_i = \alpha \qquad [7\ 5.19]$$

$$r_n = \frac{\pi}{v_n} \qquad [8\ 5.20]$$

The Cambridge model is graphically represented in figure 5.4 that can easily be compared to figure 5.3. As said, in this model there is a unique normal degree of capacity utilisation equal to full capacity.

[13] We may alternatively assume that given v_n, the entrepreneurs consider any u_a they obtain as the "new normal", that is $u_a = u_{nn}$, so that the warranted growth rate can be written as $g_W = u_{nn} s_c \pi = \alpha$.

A rise in the long run expectations from α to α' causes a change in income distribution, a rise of the profit share π in equation [8 5.20] and an upward rotation of the corresponding g_s and *PC* curves, as shown by figure 5.4. The new equilibrium is thus again characterised by a higher normal profit rate set in correspondence to a normal degree of capacity utilisation.

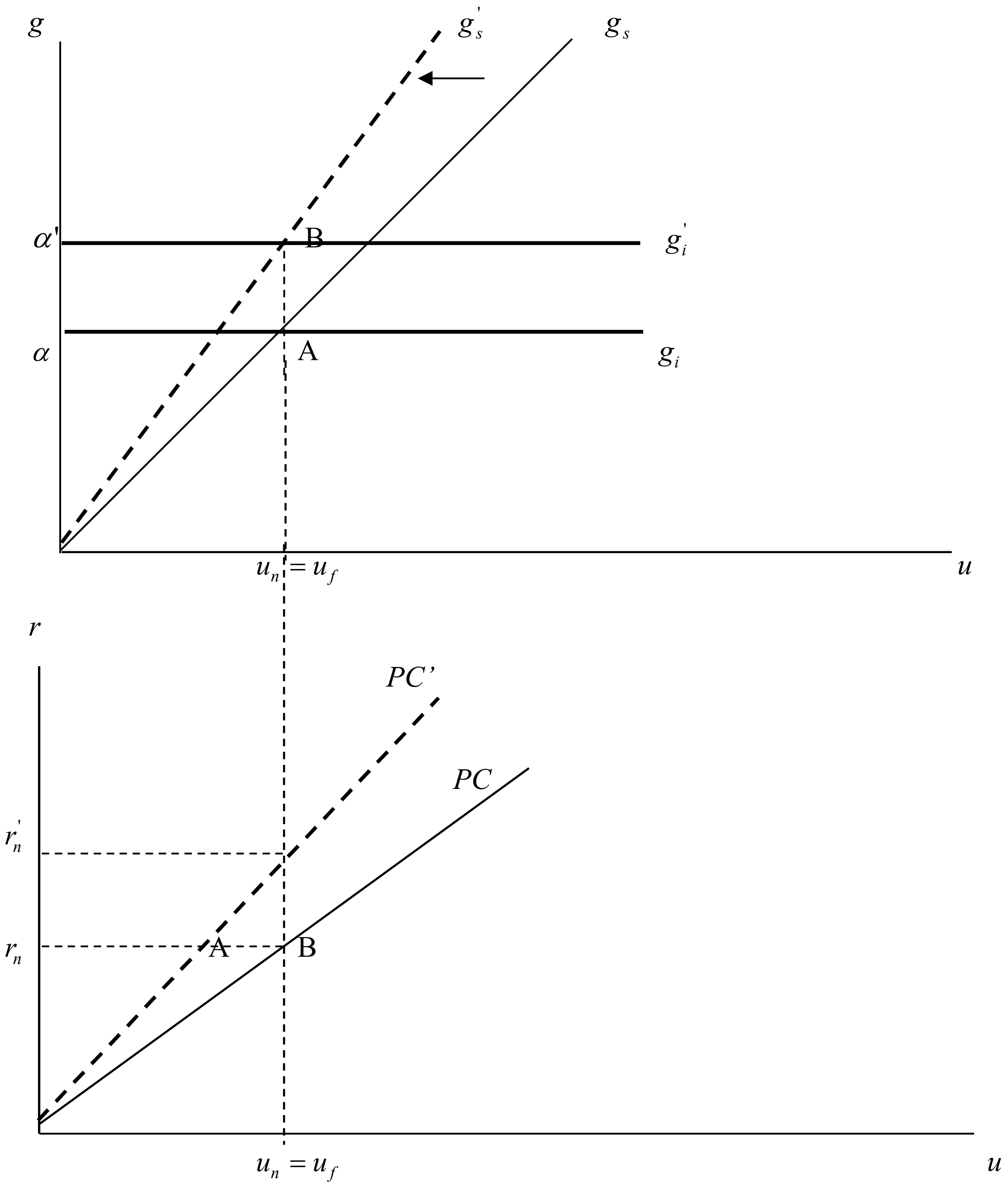

Figure 5.4 – Adjustment in the Cambridge equation model

Keynes the neo-Kaleckian. Kregel (1980) reports that in the correspondence with Harrod on the warranted rate equation Keynes, characteristically, muted position repeatedly: 'Keynes first applauds (...), then redefines (...), then admits he has misunderstood (...), and finally rejects (...) the concept of a warranted rate of growth' (ibid, p. 103 (11)). To rebut the notion of warranted rate, in a letter to Harrod, in 1938 Keynes' introduces that of "temporary warranted rate" (ibid, pp. 108-9), a concept that closely reminds the neo-Kaleckian "new normal" equilibria. As shown below in Sect. 5.2.11, neo-Kaleckians actually refer to 'provisional', 'conventional' or 'aspirational' notions of degree of capacity utilisation (e.g. Hein, Lavoie & van Treeck 2011, 2012).

Thus Kregel sums up Keynes's thesis and Harrod's negative reaction:

The argument against Harrod's instability proposition is then completed by the suggestion that the "temporary warranted rates should be substituted for the actual rates" **(…)** so that the system could move from the "normal" to a "temporary warranted rate which is in fact the warranted rate so long as the actual rate of investment is maintaining its excess over the normal, warranted rate of investment" (…). Thus, each equilibrium rate is stable and the system may move among them. …

Harrod rejects this argument, however, by noting that since the expectations to be satisfied will be different for each of the additional equilibrium rates they will not then be exactly the same as the expectations associated with the initial or "normal" warranted rate. Therefore, even though there may be 'temporary' rates at which, in relation to the initial or "normal" rate, entrepreneurs will be satisfied, they will be "more than satisfied" in relation to the expectations required for the 'normal' warranted rate. Thus expectations associated with the 'normal' rate are not "exactly" satisfied, and "you do not get over production in the ordinary sense, . . . when actual departs from warranted, the stimulated change in conduct does not bring about adjustment. On the contrary, it leads to greater maladjustment'' (…).

Keynes is forced to respond **"**I agree that I had not precisely grasped your definition of warranted. My point of definition is met by explaining that by warranted you mean exactly warranted" (…).

5.2.7. Absence of the Thrift Paradox: Joan Robinson solution

It can be noted that in both approaches, Cambridge and neo-Kaleckian, a higher marginal propensity to save has no effect of long-term growth, although it affects, respectively, the normal profit rate in the first model (bringing it down since a lower profit share is required to generate capacity savings equal to investment), or the degree of capacity utilisation in the second (depressing it through the effect of the higher saving propensity on the standard Keynesian multiplier and aggregate demand). The

Keynesian thrift paradox, a negative effect of a higher saving propensity on the rate of growth, would therefore be absent in these model. [14]

Considering the Cambridge model first, according to Lavoie (2006: 109-11; 2003: 60-1) and Hein et al. 2008: 10) a solution was advanced by Joan Robinson in this respect. Following Joan Robinson, investment is assumed to be positively sensible to the level of the normal profit rate, say:

$$g_i = \alpha + \beta(r_n) \qquad (5.21)$$

Suppose next that, for instance, if s_c falls. This implies that capitalists want to consume more without, however, reducing the investment decisions. Given a fully utilized productive capacity, the additional consumption demand from capitalists determine a rise of the prices of wage-goods and, given nominal wages, a fall of real wages. Correspondingly, the quantity of profits P and rate of profits r_n both rise.[15] Given the investment function (5.21), the higher r_n leads to higher investment and growth. The idea that the normal rate of profits has a direct influence on investment will be found in other heterodox models. We shall be extremely critical of this idea.

As we shall shortly see, in order to prove an inverse relation between the saving propensity and the rate of growth, the neo-Kaleckian model relies on the dependence of investment on the discrepancy between the actual and the normal degree of capacity utilisation. For instance, if s falls, higher aggregate demand increases u_a above u_n. Investment would consequently rise in order to restore a normal degree of utilization. In this way, however, the notion of normal degree of utilization which left by one door has come back through another. Moreover, the new provisional equilibrium would be Harrodian instable, unless the new u_a is considered as the new normal degree of capacity utilization. So, from an initial rejection of the notion of normal degree of capacity utilization, neo-Kaleckians have more than one! The situation is even more convoluted as we shall show by considering a slightly more complex neo-Kaleckian model.

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[14] That higher growth should be associated with a lower saving rate is controversial. The empirical evidence (e.g. Cesaratto 2010: 4-8 for a quick glance) predominantly suggests a *positive* relation between the rate of growth and the saving rate ($S/X = I/X$). This is embarrassing for the standard Solowian model (see Chapt. 3, Sect. ???) and, more importantly for the present paper, it discredits the neo-Kaleckian attempt to demonstrate the thrift paradox in a growth context. The puzzle is solved once the autonomous components of aggregate demand are introduced with the ensuing distinction between the marginal (s) and the average (S/X) propensities to save. It will be shown in Chapter 6 below that while a lower s has a positive *level* effect on output, a higher growth rate is necessarily associated to a higher average propensity to save.

[15] The model implicitly assumes that the capitalists' decisions to spend both for investment and consumption goods can rely on endogenous money creation by banks and are therefore almost unlimited. Again capitalist get what they spend while workers spend what they earn.

5.2.8. A 'canonical' neo-Kaleckian model

A 'canonical' *NK* model (Lavoie 2006: 114-119; Hein et al. 2008: 2) includes a slightly more complex investment function. It consists of four equations:

$$g_s = s_c r_a \qquad [2\ 5.22]$$

$$g_i = \alpha + \beta(u_a - u_n) \qquad [3\ 5.23]$$

$$r_a = \frac{\pi}{v_n} u_a \qquad [4\ 5.24]$$

$$g_s = g_i \qquad [5\ .25]$$

Three equations are the same of the simplified model of Sect. 5.2.3. The exception is equation (3 5.23) which expresses the rate of growth of the capital stock as a function both of the expected long-term growth rate of sales α, and of the gap between actual and normal capacity utilisation under the hypothesis that 'each firms strives to return to normal capacity utilisation' (Lavoie 2006: 115). Like in the simplified model, the unknowns are g_s, g_i, r_a and u_a.

Similarly to the simplified model, by substituting equation [4 5.24] in [2 5.22], we get:

$$g_s = \frac{s_c \pi}{v_n} u_a \qquad [5\ 5.26].$$

The long run goods market equilibrium is where $g_s = g_i$, that is where, equating equations [5 5.25] and [3 5.23],

$$u_a = \frac{\alpha - \beta u_n}{s_c \pi / v_n - \beta}. \qquad [6\ 5.27]$$

Equation [6 5.27] shows that u_a is the variable that adjusts the growth of capacity saving to that of the capital stock.

Equations [3 5.23] and [5 5.26] can now be drawn, respectively indicated as g_s and g_i, in the space *g-u*, as shown in the top part of figure 5.5.[16] Also the investment growth function [3 5.23] is now an increasing function of *u*. This is so because a higher actual degree of capacity utilisation induces firms to invest more in order to restore a normal degree of capacity utilisation. As in figure 5.2, equation (5.14) is represented as the *PC* curve in the bottom part of figure 5.5. In drawing figure 5.5 we

[16] In the original figure (Lavoie 2006: 118) appears also another function called ED that we omit for simplicity. Note that the intercept of equation [3 5.23] is $\alpha - \beta u_n$.

supposed again, for the sake of the argument, that the initial equilibrium A is an Harrodian equilibrium in which equipment is normally utilised ($g_W = s_C \pi / v_n = s / v_n = \alpha$).[17]

On this basis, neo-Kaleckian authors extend the Keynesian *paradox of thrift* to a dynamic setting. Suppose that a rise in real wages causes a fall of the profit share π (Lavoie 2006: 114-9). Consequently, the social propensity to save would also fall given that it depends on the profit share. This causes a rightward rotation of both g_s and *PC* curves in figure 5.5. At the initial growth rate $g_i^0 = \alpha$, the higher demand for consumption goods leads to a higher degree of capacity utilisation u_a^0 (point B). At the constant growth rate α, the new rate of utilization u_a^0 would need to be such that the realized rate would still be equal to r_n, because with no change in the saving and growth rates, the equation $g_w = s_c r_a$ needs to hold, and hence there would be no change in the realized rate of profit. In practice, the higher rate of extraction of profits out of a given capital stock precisely counterbalances the fall in the profit share, so that the resulting *actual* profit rate is equal to the initial (normal) one. The higher u_a leads then to a higher growth rate of investment - the investment function becomes $g_i^1 = \alpha + \beta(u_a^0 - u_n)$ - and to an even higher rate of utilisation until a new equilibrium is reached in correspondence to u_a^1 (point C). At u_a^1 the realised profit rate is also higher than the initial (normal) one. The paradox of thrift would hold in a growth context, since a lower saving rate leads to a higher growth rate. [18]

These authors single out also of a 'paradox of costs': 'A higher real wage, and therefore higher costs of production, leads to a higher long-period [actual] profit rate. In other words, a *reduction* in the gross costing margin of each individual firm ultimately leads to a *higher* [realised] profit rate for the economy as a whole' (Lavoie 2006, p. 117, original italics, our squared parentheses)). The possibility of *wage-led* growth looks in sharp contrast not only with the "Cambridge" inverse relation between real wages and growth rates, but also with the Classical economists' inverse relation between real wages and the *normal* profit rate.

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[17] In point A $u_a = u_n$ and normalising normal capacity utilisation ($u_n = 1$), equation (6 5.27) boils down to $\alpha = s / v_n$.

[18] See above footnote n. 13.

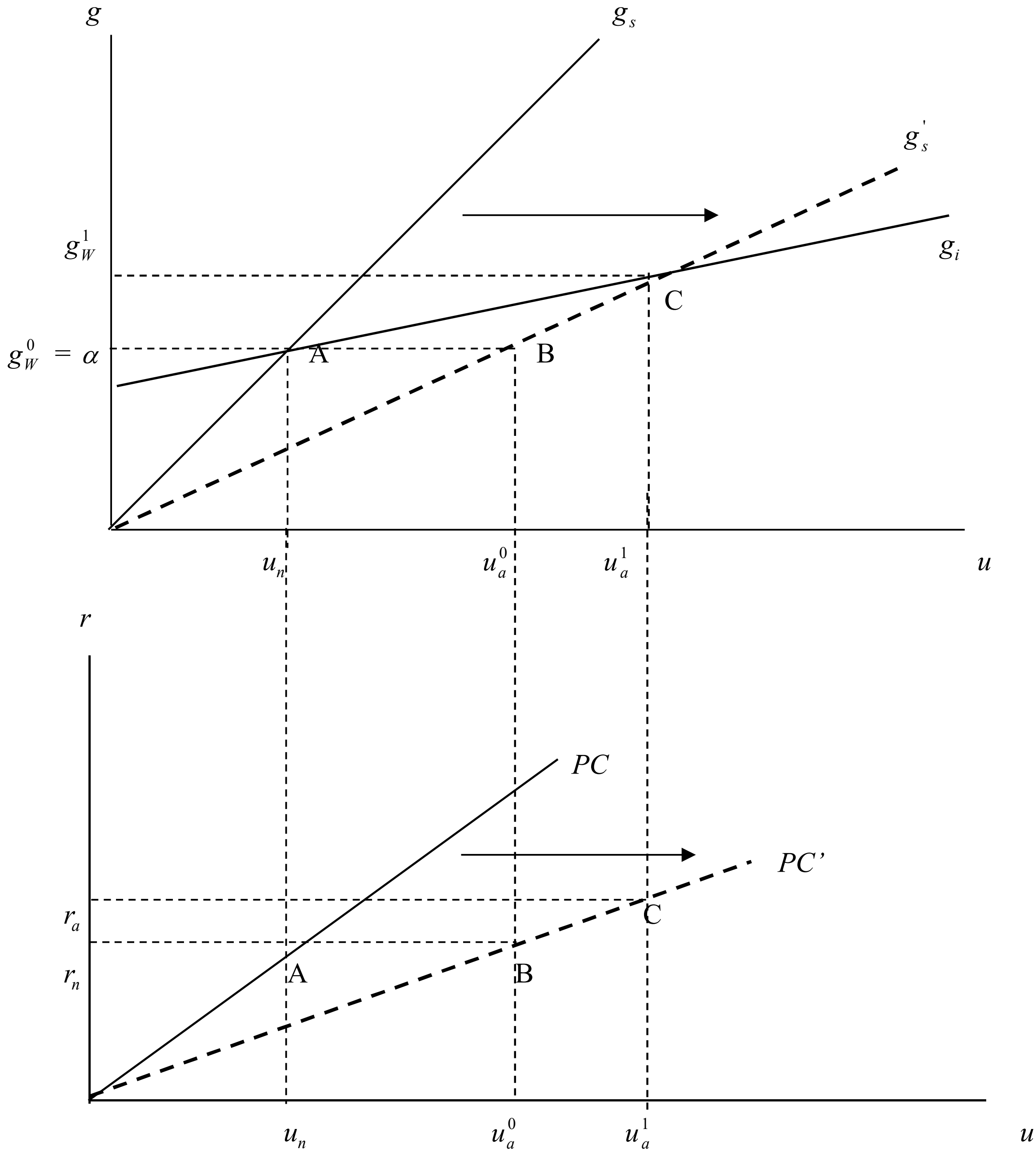

Figure 5.5 – The “paradox of thrift” in the canonical neo-Kaleckian model

The neo-Kaleckian economists utilise the “paradox of costs” to explain cooperative capitalism that, in their view, characterised the so called-golden age of full employment capitalism in the 1950s and 1960s. In their view, a higher wage growth would stimulate consumption and investment; in turn this would lead to a higher actual degree of capacity utilisation and actual profit rate. So we get the best of any possible word: both higher real wages and actual profit rate. Moreover, through the investment function (5.23) we had also higher growth.

5.2.9. What is actual is normal: the 'new normal'©

Assume we are in point C of figure 5.5. From eq. (6 5.27) we get: $\frac{s_c\pi}{v_n/u_a^1} = \alpha + \beta(u_a^0 - u_n)$ or, given that $s = s_c\pi$ and $v_a^1 = v_n / u_a^1$, $\frac{s}{v_a^1} = \alpha + \beta(u_a^0 - u_n)$.[19] Suppose that capitalists consider the degree of capacity utilization corresponding to C as the 'new normal', that is $u_a^1 = u_{nn}$. We might next redefine the denominator on the right-hand side as the 'new normal' capital coefficient

$$v_a^1 = v_{nn} = \frac{v_n}{u_a^1} = \frac{v_n}{u_{nn}},^{20}$$

and obtain a warranted growth rate equal to

$$g_W = \frac{s_c\pi}{v_{nn}} = \alpha + \beta(u_a^0 - u_n)$$

or, given that $s = s_c\pi$,

$$g_W = \frac{s}{v_{nn}} = \alpha + \beta(u_a^0 - u_n).$$

The growth rate is determined by the 'animal spirits' (α)in combination with their ceaseless effort to restore the 'old normal' utilisation rate u_n; as suggested by Hein, Lavoie& van Treeck (2012, p. 144), however, the latter effort becomes a stable component of the growth rate that might usefully be redefined as $\alpha^1 = \alpha + \beta(u_a^0 - u_n)$ so that $g_w = \alpha^1$. As Hein et al. (2008, p. 7; repeated in 2011a, p. 6, and 2011b, p. 592) explain:

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

---

[19] Recall that, in general, $v_a = \frac{v_n}{u_a} = \frac{K / X_f}{X_a / X_f} = \frac{K}{X_a}$.

[20] Note that $v_{nn} = v_a$ since $v_{nn} = \frac{v_n}{u_a} = \frac{K / Y_n}{Y_a / Y_n} = K / Y_a$. Similarly, Shaikh (2009, p. 475) defines v_{nn} as a 'desired-as-situational' capacity utilisation rate.

$\Delta\alpha = \theta(u_a - u_n)$, $\theta > 0$

The reason for this is that in equation [3 5.23] the α 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 utilization is consistently higher than the normal rate ($u_a > u_n$), this implies that the growth rate of the economy is consistently above the assessed secular growth rate of sales ($g_a > \alpha$). 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 α parameter in the investment function.'[21]

There are serious consistency problems here, however. As noted before, the initial equilibrium A of figure 5.5 is a Harrod equilibrium, i.e. α is the only growth rate consistent with normal capacity utilisation ('normal growth').[22]

So abandoning the notion of normal capacity utilization is essential in order for the neo-Kaleckians to sustain the Keynesian Hypothesis of the independence of investment from normal capacity saving. But we see now that they cannot abandon it completely if they want to demonstrate the thrift paradox, which entails going to point C. The equilibrium at C, however, will be lasting only if some reason exists to take u_a^1 as the 'new normal' rate of capacity utilisation u_{nn}.[23]

But then, why should capitalists want to recover the 'old normal' u_n? So, it is not precise to say that neo-Kaleckians do not retain the notion of normal degree of capacity utilization: in fact they have two notions, the traditional exogenous and the endogenous "new normal".

The problem is that if they don't keep both, the term $\beta(u_a^0 - u_n)$ would disappear from the investment function and the economy return to point B, with the consequence that the 'thrift paradox' is not demonstrated. In other words, neo-Kaleckians must maintain that while in C capitalists redefine a "new normal" utilisation rate $u_a^1 = u_{nn}$, at the same time the latter still want to

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[21] Hein et al. write this – as we shall shortly see – to illustrate the allegations of instability moved to the *NK* model. However, what they really aim to is sustain the possibility of a long run equilibrium in point C in which the readjustment $\beta(u_a^0 - u_n)$ is embodied in a 'new normal' expected growth rate α^1 with a 'new normal' degree of capacity utilisation $u_a^1 = u_{nn}$.

[22] That in point A the actual growth rate desired by the entrepreneurs was equal to the Harrodian warranted rate was indeed a fluke we adopted "for the sake of the argument".

23

fill the gap $(u_a^0 - u_n)$. On the other hand, if capitalists do not consider $u_a^1 = u_{nn}$ the economy will explode shifting to points D, E etc., as we shall shortly see (figure 5.6). In actual, why does the economy just not stop in B, as neo-Kaleckians believe that any new prevailing degree of capacity utilisation is considered the "new normal"?

5.2.10. The stability issue

Hein et al. (2008; 2011a; 2011b; **2012**; see also Lavoie 2003) are aware of the problems and note that once the adjustment term $\beta(u_a - u_n)$ is introduced in the investment function (3 5.23) the Harrod instability problems resurface. As seen in the former quotation, Hein at al. argue that once the adjustment is allowed for 'the parameter α gets shifted as long as the actual and normal rates of capacity utilization are unequal: $\Delta\alpha = \theta(u_a - u_n)$.' The quotation thus continues:

> … This is illustrated with the help of Figure [5.6]. Once the economy achieves a long-run solution with a higher than normal rate of utilization, say at $u_a^0 > u_n$, (after a decrease in the propensity to save …), the constant in the investment function moves up …, thus pushing further up the rate of capacity utilization to u_a^1 and u_a^2, with accumulation achieving the rates g_1 and g_2, 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 [C]) will not be sustainable and will not last'.

Figure 5.6 elaborates Hein and his co-authors' (2011a, Fig. 5; 2011b: Fig. 3) own presentation of the instability dynamics. The economy starts from point A where $g_s^0 = g_i^0$ and $g_i^0 = \alpha$. As before, for the sake of the argument, we assume that in A u_n and r_n prevail (which is to say that a Harrodian warranted rate rules there). After a rise of real wages and a fall in the propensity to save, the g_s functions shifts downwards and the economy provisionally goes to B. At B the higher demand for wage-goods is satisfied by a higher u_a, while the accumulation rate is still $g_i^0 = \alpha$. Supposing that capitalists try to restore u_n, the economy moves along a new investment function $g_i^1 = \alpha + \beta(u_a^0 - u_n)$ to reach point C. Following the suggestion of Hein, Lavoie & van Treeck (2012, p. 144) that 'entrepreneurs … make a new, higher, assessment of the trend growth rate of sales, thus making use of a larger α parameter in the investment function', the new investment function becomes $g_i^2 = \alpha^1 + \beta(u_a^1 - u_a^0)$, where $\alpha^1 = \alpha + \beta(u_a^0 - u_n)$, and a new provisional equilibrium is reached in D. There, though, a new investment function $g_i^3 = \alpha^2 + \beta(u_a^2 - u_a^1)$ prevails, where $\alpha^2 = \alpha^1 + \beta(u_a^1 - u_a^0)$, and so on and so forth. In general: $g_i^t = \alpha^{t-1} + \beta(u_a^{t-1} - u_n)$.

As we have noted, the neo-Kaleckians would like to locate their ‘new normal’ growth path in C (see, e.g. fig. 5.2 in Lavoie 2006) assuming that $u_a^1 = u_{nn}$. But if we suppose that entrepreneurs interpret whatever the rate of capacity utilisation happens to be as the ‘new normal’, we would be begging the question of why they have not taken u_a^0 (corresponding to point B) as the ‘new normal’, that is $u_a^0 = u_{nn}$; on the other hand, if we take $u_a^1 = u_{nn}$ then the adjustment term $\beta(u_a^0 - u_n)$ would disappear from the investment function and the economy returns to point B. If the economy stops at B, then a fall in the saving propensity would have no effect on the growth rate, that is, the thrift paradox would not have been proved in the dynamic context. However, if capitalists do not assume $u_a^1 = u_{nn}$ and we allow them to adjust capacity to restore the ‘old normal’ u_n, there is no reason why they should stop at C, or D etc.

Some rationalisations for the endogenity of the normal degree of capacity utilization suggested by neo-Kaleckian authors are examined in the next section.

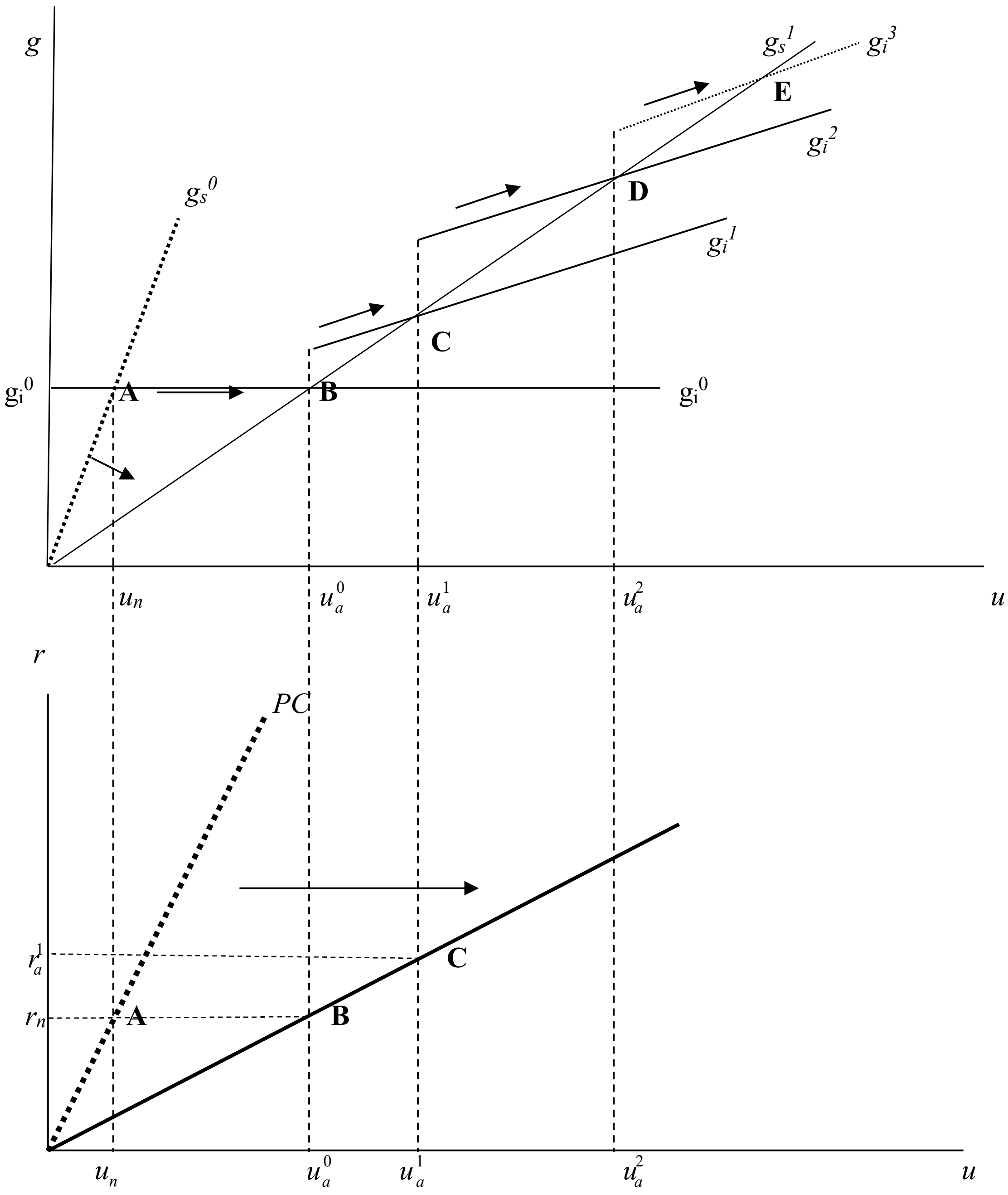

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Figure 5.6

In summation, the neo-Kaleckians acknowledge that once adjustment of capacity is allowed, Harrod instability does reappear (the economy would move to C, D, etc). To avoid instability, they introduce the ad hoc assumption that entrepreneurs take the actual degree of capacity utilisation as the 'new normal'. A second ad hoc device, to demonstrate the paradox of thrift, is to assume, without justification, that entrepreneurs select u_a^1 (point C) and not u_a^0 (point B) as the new normal.

Finally, let us provide an economic explanation of the neo-Kaleckians' contortions. These are due to the fact that wages are an *induced* component of aggregate demand, and as such they cannot be the *primum movens* of growth. By creating a never-resolved discrepancy between u_a and u_n, however, a rise of real wages may affect growth; but the weakness of the trick is patent. (Compare this result with the effect of a rise of real wages in the Sraffian supermultiplier context in Sect.).

The policy implications of the neo-Kaleckian approach and, more specifically its interpretation of the Golden Age of capitalism, will be discussed in the next Chapter after the critical illustration of the Bhaduri-Marglin model which is a sort of generalization of the neo-Kaleckian model.

5.2.11. Neo-Kaleckian justification of provisional (new normal) equilibria (Pariboni)

Some justifications for the endogenity of the normal degree of capacity utilization are provided by Hein, Lavoie & van Treeck (2011, 2012). Not very persuasively, they refer to 'provisional', 'conventional' or even 'aspirational' notions of the degree of capacity utilisation.

(a) To begin with, Hein et al. (2011b, pp. 7-8 and section 4) quote approvingly the notion of 'provisional equilibrium' (when $u_a \neq u_n$) by Chick and Caserta (and Dutt): 'Hence … firms may be quite content to run their production capacity at rates of utilization that are within an acceptable range of the normal rate of utilization. Under this interpretation, the normal rate of capacity utilization is more a conventional norm than a strict target.' They also recall arguments by Park, J.Robinson and Koutsoyiannis (ibid, pp. 16-7) according to which 'managers are *satisficers*, rather than maximizers'. These arguments simply forget that the tendency to a normal degree of capacity utilisation (and to a normal profit rate) takes place 'at the margin' on new gross investment (while a quasi rent is yield on the existing capital stock). This is the traditional method shared, say, both by Marx and Marshall (Cesaratto 1995).

(b) A second argument that: 'if goals are not met the firm readjusts downwards its aspiration levels', is simply 'not credible'. On *new investment* firms expect u_n, unless they deliberately make wrong investment decisions to perpetuate $u_a \neq u_n$!

(c) The further argument that 'the long-run endogeneity of the utilization rate helps to reconcile the conflicting claims of capitalists and workers.' (ibid, p. 16) is discussed in section 4.

(d) Cardoso and Crespo (2012) convincingly criticise the 'curious' proposal by other neo-Kaleckians (Lima and Carvalho, and Blecker are quoted) 'who proposed the insertion of compensating unproductive expenditures in order to balance the disproportions between the installed productive capacity and the aggregate demand. In this way, they guarantee that the rate of capacity utilization does not explode' (ibid, p. 9). There would be, of course, 'no plausible economic justification for any unproductive expenditure… to grow at the exact degree which guarantee that aggregate demand will be modified at the same rate of the installed capacity'. Moreover with 'this treatment these expenditures can no longer be considered as real autonomous expenditures, since in fact they become endogenous in the model' (ibid, p. 10). We may thus safely conclude that the neo-Kaleckians have not persuasive arguments to prove the endogeneity of u_n (see also Skott 2012: 13, 16).

5.2.12. The inconsistent trinity

As seen above, there is a *prima facie* convergence between the neo-Kaleckian and Sraffian critiques of the Cambridge equation in admitting margins of flexibility in the degree of capacity utilization. While, however, neo-Kaleckian economists rely upon steady-states models without normal capacity utilisation by the neo-Kaleckian authors, we have found this route flawed.

In summation, we may draw the inconsistency growth triangle (figure 5.7) defined by the three corners:

(i) the Keynesian Hypothesis of investment independent of exogenously given capacity saving; (ii) the classical supposition of an exogenously given income distribution; and (iii) a long-run normal degree of capacity utilisation.

The Harrod-Domar model takes distribution as exogenously determined and the notion of normal utilization but discards the Keynesian Hypothesis; the Cambridge model retains the Keynesian Hypothesis but dispenses with exogenous distribution; neo-Kaleckians get rid of normal utilization.

We shall see in chapter 7 that Sraffian supermultiplier approach discards the Harrodian context that underlies the trilemma.

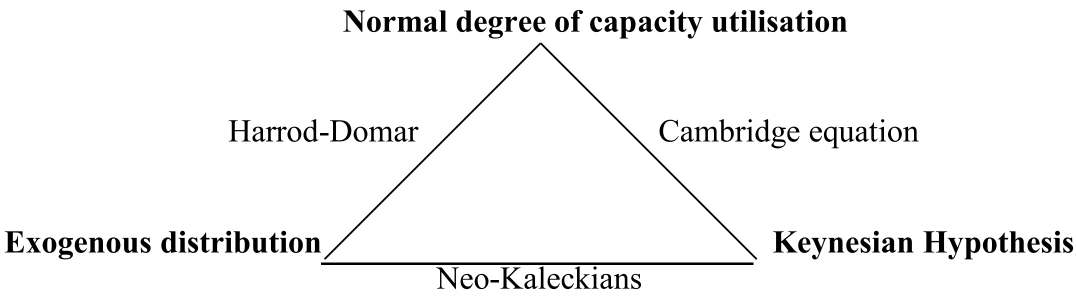


Figure 5.7 – The inconsistent triangle

5.2.13. Synthesis: Comparing Normal Paths

It may be helpful to summarise the differences between the four approaches to growth theory we have been discussing.

- *Harrod:* $g_w = (s/v_n)$

  The equilibrium growth path is characterised by 'strict uniqueness' and instability. Economic policy may stimulate growth by increasing s and keep instability at bay through economic planning (not a good *positive* theory).

- *Solow:* $sy^* = (\delta + n)k^*$

  The equilibrium growth path is stable. Stability relies on the marginalist factors' substitution mechanism that are proved flawed by the results of the capital theory controversy.

- *The Cambridge equation:* $g_w = \alpha = r_n s_c$

  Changes in r_n provide flexibility and stability whenever 'animal spirits', the unexplained origin of growth, change.

- *The neo-Kaleckian model:* $g_w = \alpha + \beta(u_a - u_n) = s / v_{nn}$ or $\alpha^1 = s / v_{nn}$ where v_{nn} is the 'new normal' capital coefficient.

A flexible u_a provides the necessary cushion against the instability due to changes in ‘animal spirits’, the unexplained origin of growth; no clear role for economic policies (but support to cooperative capitalism).

Appendix 1: The Cambridge model and the wage-profit curve: a graphical illustration

We may provide a graphical illustration of the Cambridge equation model.

On the basis of Classical distribution theory there is an inverse relation between the (normal) profit rate and the real wage. Take a standard system of Classical price equation

$$[(a_{11}p_1 + a_{21}p_2) + wl_1](1+r) = p_1$$
$$[(a_{12}p_1 + a_{22}p_2) + wl_2](1+r) = p_2$$
$$w = a_{1w}p_1 + a_{2w}p_2$$
$$p_1 = 1$$

From this system an inverse relation between w_r and r_n is obtained called wage-profit curve (see…).

In the right-hand side of figure 5.1 a we draw the Cambridge equation, that is the relation between the accumulation rate decided by the entrepreneurs and the normal profit rate, given the marginal propensity to save of capitalists. In the left-hand side of figure 5.1 we draw the wage-profit curve (note that this curve is drawn for a normal degree of capacity utilisation). The causal direction goes form the right to the left as Cambridge equation associates different normal levels of the profit and wage rates (left hand side) to each growth rate decided by the entrepreneurs (right hand side

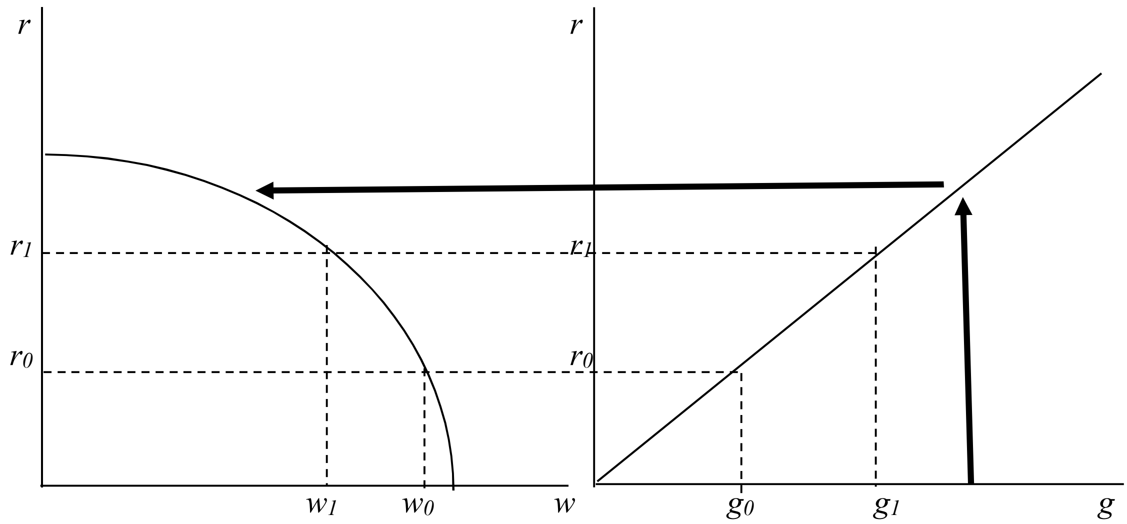


Figure 5.1 – The Cambridge equation model

Appendix 2 - Sraffians on the degree of capacity utilization

Sraffian authors distinguish between full, normal and actual degrees of capacity utilisation - by contrast Rowthorn differentiated full and actual degrees only. The normal degree of capacity utilisation is defined as $u_n = Y_n^e / Y^f$ where Y_n^e is the expected normal output when capacity is originally installed and Y^f is the capacity installed, with $Y_n^e < Y^f$ (in general). The main reason why entrepreneurs install additional capacity over average expected output is to be able to meet sudden peaks of demand and not let unsatisfied customers to turn to competitors (e.g. Ciccone 1986: 27). The normal degree of capacity utilisation u_n thus depends both on expected normal output and on the expected amplitude of the trade cycle peaks. Given the expected *proportional* width of the economic fluctuations, that would define the proportional *spread x* above Y_n^e, full capacity is then determined as $Y^f = Y_n^e(1+x)$, and $u_n = 1/(1+x)$. Given x, if actual average output Y_a turns out different from Y_n^e, the actual degree of capacity utilisation $u_a = Y_a / Y_f$ will be different from the (desired) u_n. Capacity will then tend to adjust in order to realise $u_a = u_n$.

Observe that if $u_a > u_n$, that is $X_a / X_f > X_n / X_f$, then $X_a / K > X_n / K$, that is $1/v_a > 1/v_n$ and finally: $v_n > v_a$. Observe also that $v_a = \frac{v_n}{u_a}$ since $\frac{K/X_f}{X_a/X_f} = \frac{K}{X_a}$.

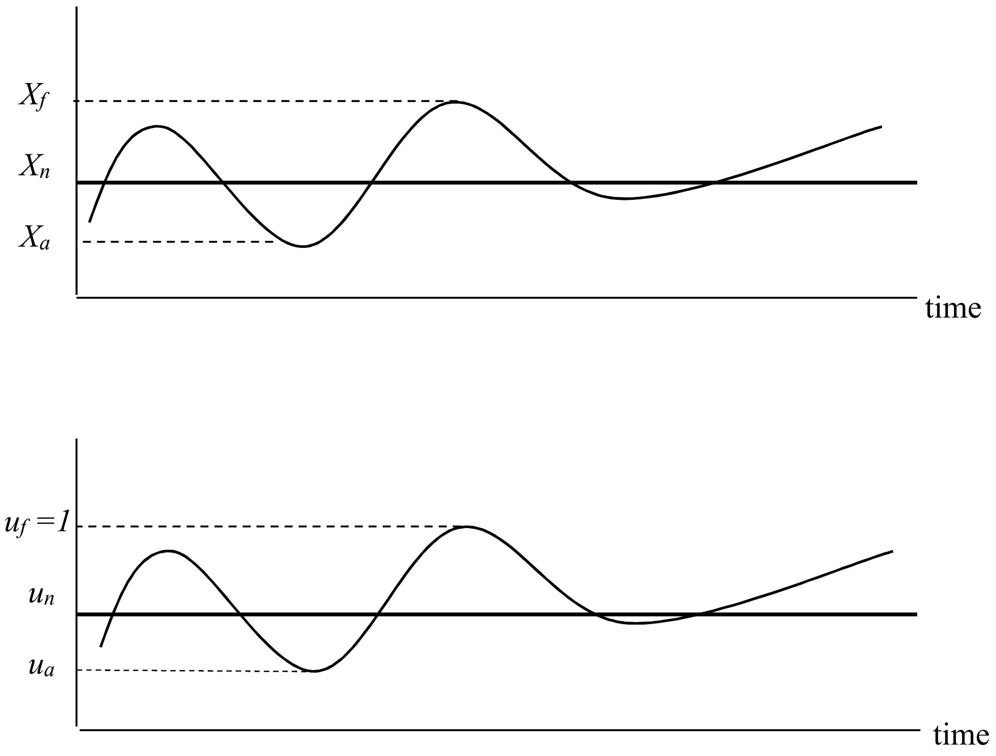


Figure 5.2

A normal degree of capacity utilisation is an essential feature of the Sraffian *theory of normal prices and distribution*, that is production prices are defined for a normal degree of capacity utilisation. On the other hand, according to Sraffian economists this does not imply that for normal prices to prevail capacity must constantly be normally utilised. That is, on the one hand 'long-period prices …are the prices determined on the basis of conditions of production that can be defined as normal, and hence a particular degree of utilization of capacity, which we can also indicate as "normal"' (Ciccone 1986: 24). On the other hand, *Sraffian* economists reject the idea that, on average over relevant stretches of time, capacity is normally utilised (ibid.) or "fully adjusted" to effective demand (Vianello 1985). How to reconcile the two stances?

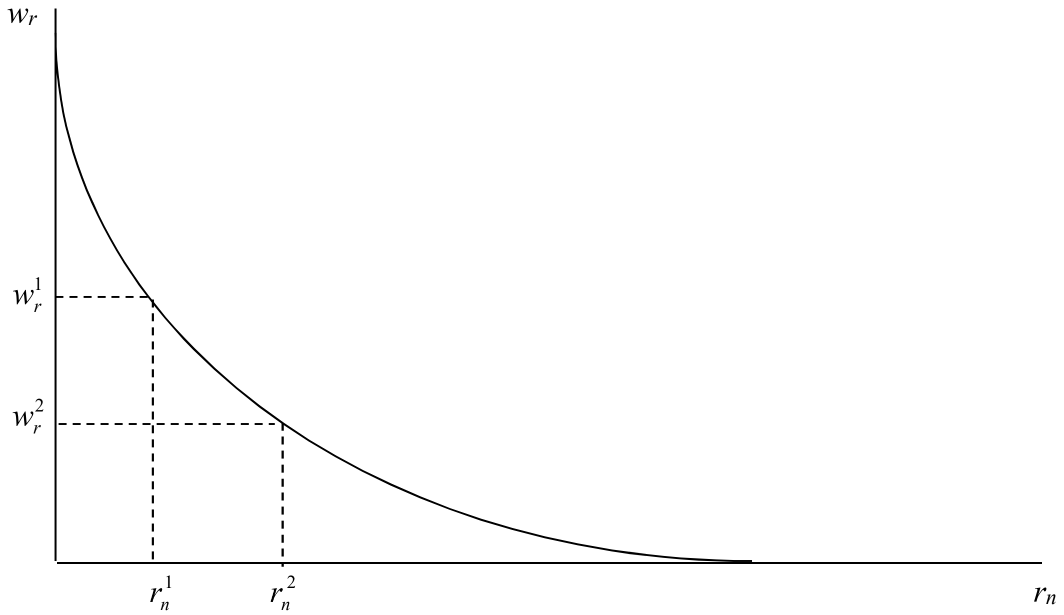
Assume that in one industry effectual demand - the demand of the commodity at its normal price - rises, so that the market price p_m is larger than the normal price p_n. Firms in the industry would rise the degree of capacity utilisation to meet the higher effectual demand thus re-establishing p_n. As Ciccone (2011: 77) explains: the adjustment of p_m to p_n would take place at an actual degree of capacity utilisation u_a which is different from the normal degree u_n, so that also the actual profit rate r_a would be different from the normal one r_n. In the meanwhile the process of adjustment of capacity to the new level of effectual demand would take place and the rate of profit that firms *expect* on the newly installed equipment is the *normal* rate of profits. So Sraffian economists may conclude that not only through capital mobility - as the Classical economists tended generally to assume -, but also through variation of u, the gravitation of p_m to p_n is quite a rapid and effective process, while the normal rate of profits (and related u_n) is prevailing 'at the margin', as a guide to the investment decisions of firms.[24] The effective (micro) gravitation of prices and distribution towards the long period positions would thus be less demanding and faster than the (macro) full adjustment of aggregate capacity which is more likely to be frustrated by subsequent changes of long-run aggregate demand. (as Ciccone puts it, full-adjustment would happen only in a period that is longer than the long-period itself).

Summing up, the *Sraffian economists* hold that the emergence on normal prices, and of a normal rate of profit on the newly installed equipment is consistent with the absence of a full adjustment of aggregate capacity to a normal utilisation rate. ~~Therefore, also for Sraffian economists a market economy has the ability to accommodate, through the variability of the degree of capacity utilisation, variations in the accumulation rate decided by the entrepreneurs.~~

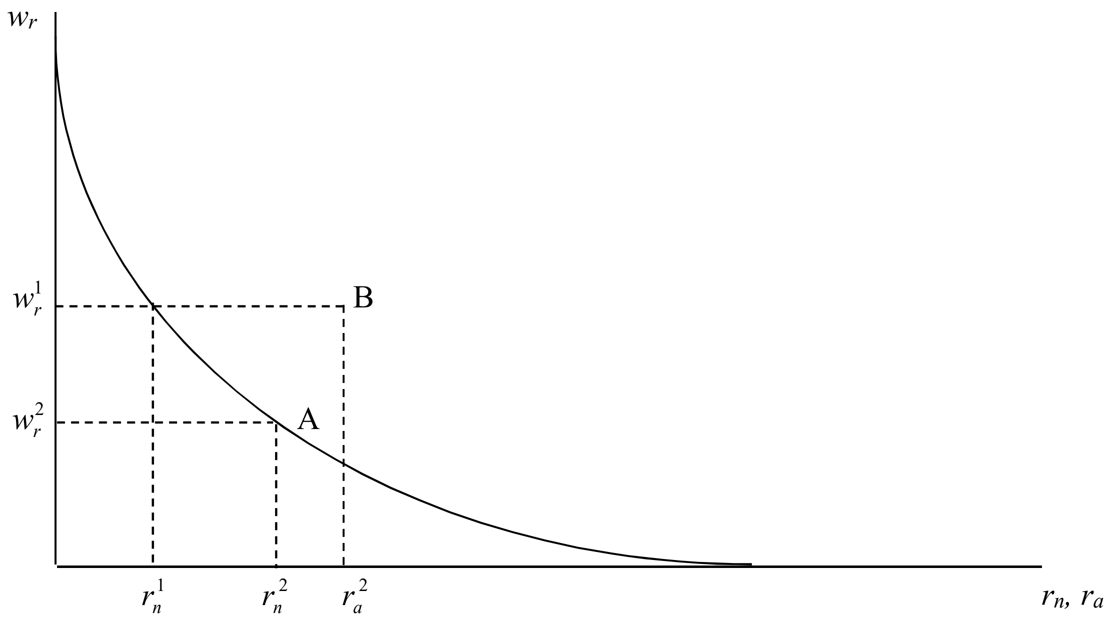
[24] A reference to the concept of dominant technique (that we find in Ricardo, Marshall) is also useful. A new, cost minimizing technique in one industry does not affect normal prices until it is sufficiently widespread to affect prices. This technique, say, would be initially adopted by one firm that, at prices p_n^0 would obtain extra-profits. Then imitated by others, if possible, when they replace worn-out equipment: at that point competition would lead prices would fall and the extra-profits disappear: the new technique has become *dominant* in the determination of the new p_n^1. Part of firms may have not convenience to adopt it as long as they can extract "quasi-rents" from the obsolete equipment. So both in this case and in that on a normal degree of capacity utilisation (which is a form of dominant technique), it is not necessary that all the industry is "fully adjusted".

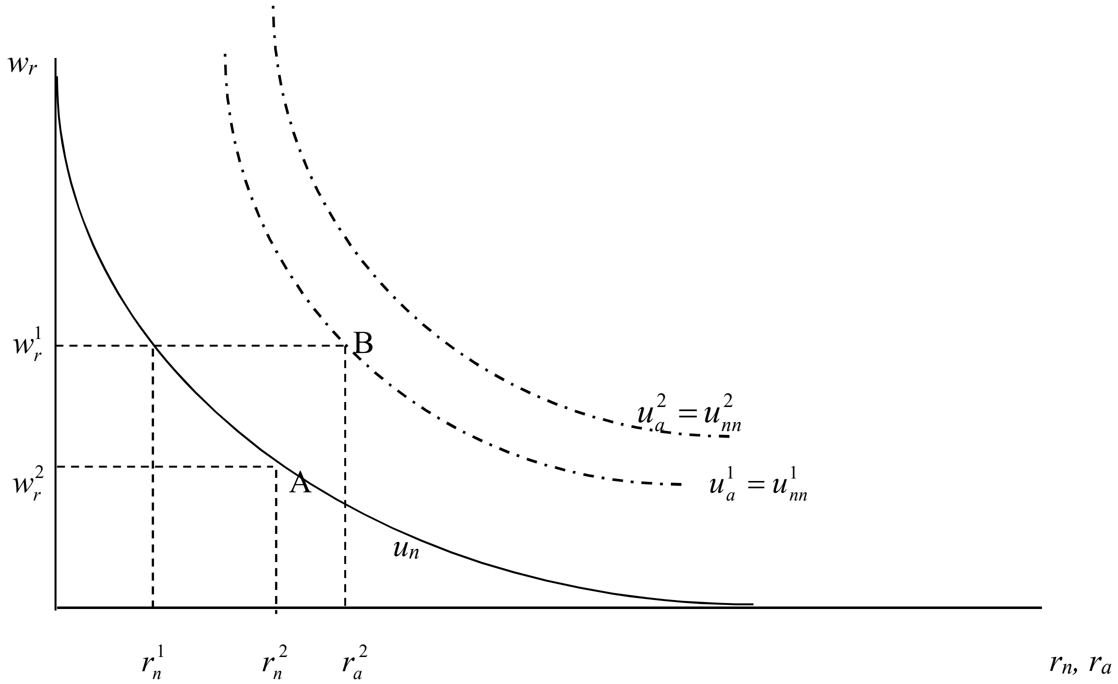
Appendix 3 – The neo-Kaleckian model and the wage-profit curve: a graphical illustration

In the Classical Distribution Theory there is an inverse relation between the (normal) profit rate and the real wage under the assumption of a normal degree of capacity utilisation, as it should be in long-period theories.

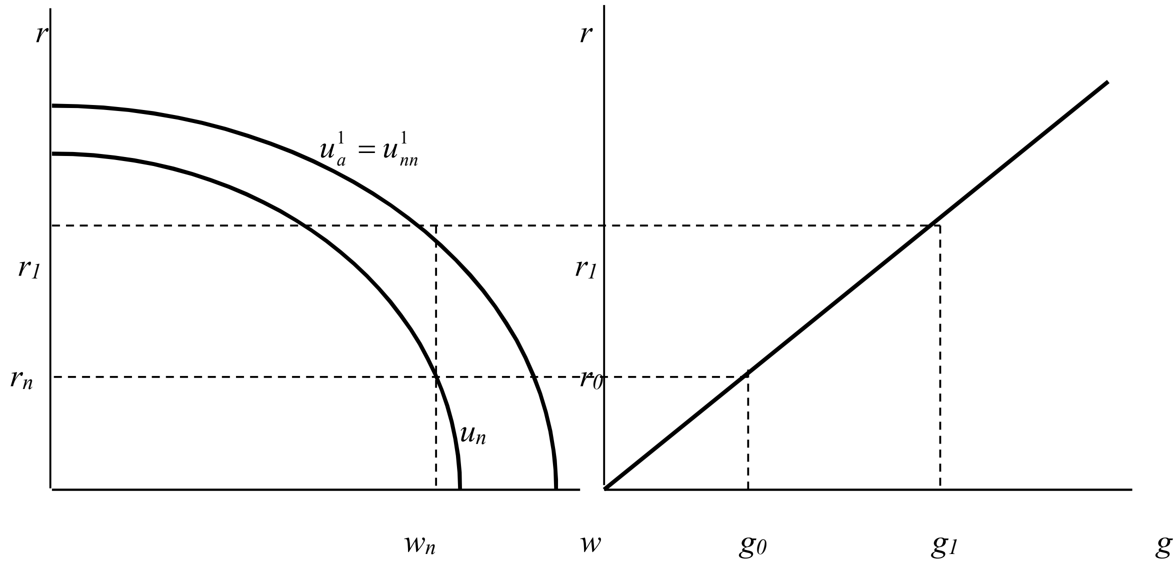


The neo-Kaleckian idea is that through a higher *actual* degree of capacity utilisation, a higher real wage is consistent with a higher *actual* profit rate, as in point B compared to point A, for instance.





It is as if we had different wage-profit curves each defined for an actual = "new normal" degree of capacity utilisation (indeed, each u defines a new technique in use). In terms of the figure we used in the case of the Cambridge model:



The figure shows that the higher growth rate g_1 is consistent with an unchanged wage rate w_0 if we redefine the wage-profit curve for a new normal u_{nn} rate of capacity utilisation

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