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DEMAND POLICIES FOR LONG RUN GROWTH: BEING KEYNESIAN BOTH IN THE SHORT AND IN THE LONG RUN?

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Demand policies for long run growth: being Keynesian both in the short and in the long run?

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Abstract. Is there any role for macroeconomic, demand policies in sustaining a process of long run growth? The very idea of a process of demand-led growth is usually rejected not only by the orthodox scholars belonging to the neo-classical tradition, but also by some neo-Ricardian and neo-Marxist authors. In a sense, this idea is attacked from both sides of the political spectrum. Indeed, it is generally believed that long run growth is a supply-side story, a matter of efficiency and factors accumulation.

However, according to some post-Keynesian, neo-Kaleckian and structuralist scholars (Chick and Caserta, Dutt, Lavoie), the neo-Ricardian and neo-Marxist idea that "normal" rates of profit and capacity utilisation are centres of gravitation attracting an economy in a long run, fully adjusted position must be rejected. These authors show that, under plausible conditions, in the steady state equilibrium the degree of capacity utilisation is fully endogenous. Hence, demand policies and Keynesian perspectives are not purely short run issues, but affect the long run, steady state equilibrium of the economy. It must be stressed, however, that to get this result - the preservation of the key characteristic of the Kaleckian model of growth and distribution - the neo-Kaleckians and the neo-Keynesians have to make strong and very specific assumptions.

The central message of this paper is that these specific assumptions are not needed to defend the Kaleckian view. All what is needed is a less demanding theory of flexible mark-ups in an open economy. It will be shown formally, through the help of a simple model, that shifting the emphasis from the conflict between workers and capitalists over the shares of domestic product to the infra-capitalistic conflict between domestic and foreign firms over market shares preserves the Kaleckian vision of the long run while at the same time providing a more general description of modern, globalised and oligopolistic economies.

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1. The paradox of costs and the long run determination of the rate of capacity utilisation

The two most important results of the Kaleckian models of distribution and growth are the paradox of thrift (an increase in the propensity to save decreases the rate of accumulation even in the long run) and the paradox of costs (higher real wages may be associated with higher rates of accumulation even in the long run). Hence, higher rates of accumulation may be accompanied by higher real wages even without technical progress. For this Kaleckian result to be possible, the rate of capacity utilisation must be endogenous in the long run. To see why, just start from the national accounts of a closed economy, where the value of aggregate output is equal to the sum of wage costs and realised profits on capital:

$$PY = wL + rPK$$

where P is the price of the only good produced by the economy, w is the money wage, r is the rate of return on capital (the rate of profit), L and K are, respectively, the amount of labour and capital employed in the economy.

Let b = L/Y the input-output labour coefficient (the inverse of labour productivity) and u = Y/K a proxy for the rate of capacity utilisation. The national accounts' cost decomposition may be thus rewritten as:

$$r = u\left[1 - (\frac{w}{P})b\right] \tag{1}$$

It is easy to see from equation (1) that when the rate of capacity utilisation is considered to be exogenous in the long run and there is no technical change, a higher rate of profit requires a lower real wage. If a plausible, positive relation between the rate of capital accumulation and the rate of profit is added, it follows that the paradox of cost can never hold.

How can the rate of capacity utilisation be made endogenous in the long run? After all, several neo-Ricardian and Sraffian (Park, 1997; Vianello, 1985; Kurz, 1996; Garegnani 1992; Garegnani and Palumbo, 1998; Ciampalini and Vianello, 2000) as well as Marxist (Duménil and Levy, 1999; Auerbach and Scott, 1988) authors have claimed that in the long run the realised rate of profit and the realised rate of capacity utilisation must be equal to their "normal" values, otherwise a model lacks logical consistency in that the steady state of the economy is not a final, fully adjusted position where no economic mechanisms are at work to change such a long run configuration. This argument may be sketched following Lavoie (2002), whose contribution is an extremely clear illustration of how the post-Keynesians and the neo-Kaleckians interpret and criticise the Sraffian/neo-Ricardian/Marxist view we have just mentioned. Consider a modern, industrial

economy where the product market is not perfectly competitive and prices are fixed by firms according to the usual mark-up rule:

$$P = (1+m)wb$$

where m is the mark-up rate over variable costs. According to this formula, total profits are equal to mwbY. Imagine now that firms have some target rate of return, or "normal" (standard) rate of profit in their minds and let us call it r_s. The target profit bill is therefore equal to r_sPK. Assuming, for the sake of the argument, that firms have also a normal (standard) rate of capacity utilisation in their minds, u_s, the target profit bill may be rewritten as r_sPY/u_s. By solving $mwbY = r_sPY/u_s$ we get the mark-up rate consistent with the normal rates of profit and capacity utilisation and may rewrite the pricing formula as:

$$P = \left[\frac{u_s}{u_s - r_s} \right] wb \qquad (2)$$

Combining equations (1) and (2)[1] we get the relation among realised and standard rates of profits and capacity utilisation

$$r = r_s(u/u_s) \qquad (3)$$

from which it is clear that when the realised rate of capacity utilisation is equal to its normal value, the actual rate of profit is then equal to the target, standard rate of profit. In other (and to our purpose more important) words: if firms are able, or powerful enough at least in the long run, to fix prices so as to realise their target rate of return ($r = r_s$), then the rate of capacity utilisation will be in the end equal to its *predetermined*, normal or standard value and no room will be left for the paradox of costs to hold. The point made by Sraffian/neo-Ricardian/Marxist authors is precisely that in the long run there are major economic forces guaranteeing the convergence of r to r_s. For instance: when the realised rate of profit is higher than the target rate of return ($r > r_s$), firms will revise upward their target, i.e. they will increase the mark-up rate incorporated in the pricing formula (2). Under plausible conditions, this will depress aggregate demand and reduce the *realised* rate of profit. This process will go on until the equality $r = r_s$ is restored and a fully adjusted position is reached.

But are firms powerful enough to fix prices so as to realise their target rate of return?

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[1] Of course a meaningful model requires that $u_s > r_s$, which must be always true since this inequality simply says that there must be some worker employed in the production process (the wage share must be positive).

2. The neo-Kaleckian theory of inflation and the resurgence of the paradox of costs

Neo-Kaleckian authors have tried different routes to face the Sraffian/neo-Ricardian/Marxist critique and preserve the basic insights of the Kaleckian macro model of growth and distribution. Chick and Caserta (1997) argue that the very notion of "long run" is irrelevant to the understanding of real economies and show that the Kaleckian results hold in the "medium" run, which according to them is the relevant time frame to be considered. But this is a way of avoiding rather than solving the problem posed by the Sraffian/neo-Ricardian/Marxist critique. Dutt (1997) describes an economic system with heterogeneous firms, each of them with two different levels of "normal" capacity utilisation (high and low). But this is a someway *ad hoc* assumption and the (Kaleckian) results of the model do not rest on a solid, general and less naive ground. Lavoie (1992, 1995, 2002, 2003) tries a couple of solutions. On the one hand, he makes endogenous the normal degree of capacity utilisation and he shows this is a way of preserving the main results of the Kaleckian macro model. But, as observed by Commendatore (2004), he does so at the price of a conspicuous loss of the Keynesian nature of the model, since accumulation decisions are determined by a given set of initial conditions. On the other hand, Lavoie suggests Kaleckian results may be salvaged by putting into the picture the inter-class, distributive conflict between capitalists and workers, i.e. the structuralist theory of inflation based on social conflict. This is a point to be explored more in-depth, since it will open the way to the core message of this paper, i.e. a new, different answer to the Sraffian/neo-Ricardian/Marxist critique.

According to Lavoie, the rate of return that firms *actually* incorporate into the pricing rule may be different from the rate of return they *desire* because of workers' strength. Workers and firms have conflicting claims on the domestic social product and the rate of return actually incorporated into the pricing rule comes out of a bargaining process. Firms are capable to incorporate their desired rate of return into the pricing rule if and only if the workers lack any bargaining power, which is not the case in a modern capitalist economy. So, a theory of conflict inflation is the device used by neo-Kaleckian authors to re-establish the possibility for the paradox of cost to hold in a long run equilibrium. In order to ease later discussion, let us summarise (and someway simplify) this neo-Kaleckian argument[2] through the help of a straightforward formalisation:

$$g = sr \tag{4}$$

$$g = g_o + g_1 u + g_2 r \tag{5}$$

$$r = r_s (u / u_s) \tag{6}$$

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[2] For a complete analysis see Lavoie (2002)

where g is the rate of capital accumulation (the rate of growth of the capital stock) and s the (fixed) propensity to save of the capitalists out of their income. Equation (4) simply says that in this closed economy with no government there is no saving out of wage income. Equation (5) is the traditional structuralist investment function[3]: the intercept term is a proxy for the state of business confidence ("animal spirits"); g_1 and g_2 are positive coefficients attached to the rate of capacity utilisation (firms want to maintain a desired level of excess capacity) and to the rate of profit. The last term makes sense in that financial markets are imperfect and therefore higher profits enhance investment by both increasing corporate savings and reducing borrowers' and lenders' risk and thereby permitting easier access to external finance. The system (4)-(6) can be easily solved in its three unknowns, g, r and u. The solutions are:

$$u^* = \frac{g_0 u_s}{r_s(s - g_2) - g_1 u_s}$$

$$r^* = \frac{g_0 r_s}{r_s(s - g_2) - g_1 u_s} \qquad (7)$$

$$g^* = \frac{s g_0 r_s}{r_s(s - g_2) - g_1 u_s}$$

where the usual condition for a positive and stable solution

$$r_s(s - g_2) - g_1 u_s > 0 \qquad \text{(C1)}$$

is assumed to be met. This is not the end of the story. The neo-Kaleckian arguments goes on by adding to solutions (7) a theory of how r_s is determined. According to this theory – the theory of conflict inflation - r_s, which is now to be interpreted as the rate of return *actually* incorporated into the pricing formula, is not exogenous, but depends on two elements: the target rate of return *desired* by firms, r_{sf}, and the target rate of return desired by workers or unions, r_{sw}. The conflicting claims of capitalists and workers translate into a wage-price spiral that may push the economy onto an inflationary path. In general, it can be written $r_s = f(r_{sf}, r_{sw})$, since the rate of return actually incorporated into the pricing formula will come out of a bargaining process whose final outcome depends on the relative strength of workers and capitalists. If one combines this theory of conflict inflation - $r_s = f(r_{sf}, r_{sw})$, where $f_{rsf} > 0$ and $f_{rsw} > 0$ - with solutions (7), then a new solution is found

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[3] The arguments of the investment function have been a subject of contention in the Keynesian/Kaleckian debate, especially after the seminal work of Marglin and Bhaduri (1990). However, this is not the focus of this paper and,

for the unknowns of the system. In particular, a new solution r** will be found for the rate of return and nothing guarantees that r** = r_{sf}. If this equality does not hold, the solution at hand cannot be labelled as a "fully adjusted" position, since the discrepancy between the actual rate of return and the firms' target rate of return will induce firms to adjust the latter. Lavoie (2002) suggests the following adjustment rule:

$$\dot{r}_{sf} = j\,(r** - r_{sf}) \tag{8}$$

where $j > 0$ is the speed of adjustment and a dot over a variable indicates as usual its time derivative. Now, the point to be stressed is that the adjustment process underlying equation (8) involves the firms' target rate of return rather than the rate of return actually incorporated into their pricing strategy, simply because the latter is not autonomously decided by the firms, but determined by the conflicting interaction between firms and workers. Equation (8) describes a stable adjustment process: each time that r** > r_{sf}, r_{sf} will go up; then r_s will do the same and the realised rate of profit, r**, will diminish without ambiguity since, as can be seen using (7),

$$\frac{\partial r^{**}}{\partial r_s} = \frac{-g_0 g_1 u_s}{\left[r_s(s - g_2) - g_1 u_s\right]^2} < 0 \tag{9}$$

At the end of this process, therefore, we will have r** = r_{sf}; in general, however, it will be $r** \neq r_s$. In other words: at the end of the adjustment process the economy is in a long run, steady state position since there is no more reason for the firms to revise their target rate of return, but this steady state position is not a "fully adjusted" one. Given that $r** \neq r_s$ then, according to (6), $u** \neq u_s$: in this long run position the rate of capacity utilisation is endogenous, the paradox of costs might hold even in the long run and, reversing Duménil and Lévy (1999) suggestion, being Keynesian both in the short- and in the long-term becomes possible.

This neo-Kaleckian argument is interesting and powerful. However, it seems to me it relies too heavily on a theory of inflation which implicitly entails an assumption of "passive" money, i.e. a conduct of monetary policy where the central bank passively adjusts money supply to the needs of the conflicting parties[4]. Of course, this could be true (think of Italy in the seventies or some Latin

despite every possible investment function can be defended only up to a point, a function like (5) helps make later discussion clearer.

[4] Alternatively, it might be argued that the conflict theory of inflation does not entail any assumption of accomodating monetary policy simply because, as claimed by the neo-Keynesians, money supply is endogenous. However, this is an extremely controversial issue in economic theory and many economists would object that, despite the endogeneity of

American countries during their hyper-inflation episodes), but this is not generally true and most probably is not true for the two economic giants of the world, the US and the EU[5].

In this paper we will try to understand whether the possibility for the paradox of costs to hold in the long run can be reaffirmed through a different route, in some way a more general route than those proposed by Chick and Caserta, Dutt and Lavoie. A story of conflict, again, but this time the conflict we want to stress is not the conflict between capitalists and workers over the shares of domestic social product, but the conflict among domestic and foreign firms over the shares of national market. According to this view, domestic firms are unable to incorporate their desired rate of return into the pricing formula because of foreign competition.

3. Flexible mark-up in an open economy

According to Kalecki the puzzle of "economic imperialism" could be solved by noting that

> The capitalists of a country which manages to capture foreign markets from other countries are able to increase their profits at the expense of the capitalists of the other countries (Kalecki [1954], 1991: 245)

However simplistic[6], this view paves the way to a different theory on how the rate of return actually implemented into firms' pricing strategy, r_s, is determined. Indeed, as clearly pointed out by Blecker (1999), Kalecki's theory of mark-up pricing can be extended to an economy exposed to international competition. Basically, international competition affects the rate of return actually implemented by firms in two ways. First, a greater exposure to international competition reduces the degree of concentration of a given industry (an "industry" being now defined on a larger scale) and therefore is likely to reduce r_{sf}, the firms' own target. Second, international competition changes the way firms react to an increase of the wage rate (or a reduction in labour productivity), preventing them from passing through the entire wage increase (productivity reduction) into a higher price. Formally, we would need a theory according to which $r_s = f(r_{sf}, z)$, where z is an index of competitiveness defined as follows:

$$z = \frac{eP^f}{wb} \tag{10}$$

where e is the nominal exchange rate, P^f is the foreign price and w and b have already been defined. The meaning of z is self-evident: any increase in z means a higher degree of competitiveness of the

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the money multiplier, the monetary authorities can still control the supply of money because the value of the multiplier is a relatively stable function of some known variables.

[5] The Federal Reserve and the Eurpean Central Bank conduct monetary policies of opposite sign, but they are both *actively* pursuing their (different) own objectives.

domestic economy, whilst any reduction provokes a loss of competitiveness. The theory we are looking for has been developed by Blecker (1999) and used by this author to discuss short run issues (indeed, as we are going to see, this theory is not expressed in terms of target pricing and standard rates of capacity utilisation and profit). On the contrary, we are discussing a long run, steady-state issue and this is why Blecker's argument will be slightly modified and then complemented in order to adapt it to our purposes. Let us have first a look at Blecker's argument.

The aforementioned two ways in which international competition affects mark-ups and distributive shares may be captured by a price adjustment equation (for the sake of convenience it is expressed in natural logarithms and, as usual, a "hat" over a variable indicates its growth rate) like the following:

$$\hat{P} = c(\ln w - \ln w^f) + q \ln r \tag{11}$$

In this equation, w represents the wage share in total income; w^f is the wage share targeted by firms (a target in terms of wage share is equivalent to a target in terms of mark-up rate); r is the real exchange rate, defined as the ratio between the domestic currency price of imports and the price of domestic production (eP^f/P); finally, c and q are positive parameters representing speeds of adjustment. Equation (11) postulates that 1) firms decide to increase their price when the actual wage share exceeds their target (which means that the actual profit share falls short of their target), which is a very reasonable assumption and 2) firms react positively to variations in the real exchange rate (the reason will become apparent in a moment). Now, it is definitionally true that the real exchange rate equals the product between the index of competitiveness and the wage share, i.e. $r = zw$. Equation (11) can be therefore rewritten as

$$\hat{P} = c(\ln w - \ln w^f) + q(\ln z + \ln w) \tag{12}$$

In a steady state without labour productivity growth (and, when imports of non-competitive intermediates are taken into account, without variations in the relevant technical coefficients) the distributive shares and the real exchange rate must be constant. Hence, assuming that P^f is given, in the steady state it must be $\hat{P} = \hat{w} = \hat{e}$. In order to concentrate on the issue of international competitiveness and infra-capitalist conflict over market shares (rather than inter-class conflict over product shares), let us assume that w is fixed and then its growth rate is nil. As a consequence, price

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[6] According to this view a trade surplus is always expansionary, which of course may not be the case (think of a trade surplus due to a fall in import demand during a recession).

inflation must be nil as well in the steady state. At this point it is easy to solve (12) to get the (logarithm of the) steady state value of the wage share:

$$\ln w = \frac{c \ln w^f - q \ln z}{c + q}$$

from which we can express the steady state wage share as a function of the wage share targeted by firms and the index of competitiveness:

$$w = w(w^f, z) \qquad \partial w / \partial w^f > 0 \quad \text{and} \quad \partial w / \partial z < 0 \tag{13}$$

This is the kind of theory we were looking for, a theory such that $r_s = f(r_{sf}, z)$. To see why, just note, going back to equation (2)[7], that

$$w = \frac{u_s - r_s}{u_s},$$

from which it follows that, given a standard (normal, target) rate of capacity utilisation, a) a steady state of the wage share is equivalent to a steady state of the rate of return actually incorporated into the firms' pricing strategy (r_s) and b) a firms' target expressed in terms of the wage share (w^f) is equivalent to a firms' objective expressed in terms of targeted rate of return (r_{sf}). Hence, we can write

$$r_s = f(r_{sf}, z) \qquad \text{with} \quad \partial f / \partial r_{sf} > 0 \quad \text{and} \quad \partial f / \partial z > 0 \tag{14}$$

In words: the steady state value of the actual rate of return implemented into firms' pricing strategy varies positively with both the desired target rate of return and the index of competitiveness. Imagine for instance that a negative productivity shock occurs (b increases and consequently z falls): this will squeeze the actual target rate of return since domestic firms won't pass through the entire labour productivity reduction into higher prices to avoid a contraction of their market shares.

4. Steady states and fully adjusted positions in an open economy

In order to discuss the issue of the possibly endogenous determination of the degree of capacity utilisation in the long run, the theory expressed by equation (15) must be now inserted into the broader framework of a fully determined open economy model of growth and distribution. The long run equilibrium of such an economy can be described by the following system of six equations:

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[7] Nothing relevant would change by putting into the picture imported raw materials. Hence, they will be assumed away for the sake of simplicity.

$$g = sr + t(\boldsymbol{r}, u) \tag{15}$$

$$g = g_o + g_1 u + g_2 r \tag{16}$$

$$r = r_s (u / u_s) \tag{17}$$

$$r_s = \boldsymbol{a}.r_{sf} + \boldsymbol{b}.z \tag{18}$$

$$z = \boldsymbol{r}.u_s /(u_s - r_s) \tag{19}$$

$$t(\boldsymbol{r}, u) = 0 \tag{20}$$

The equations from (15) to (17) are nothing but the open economy version of equations (4)-(6). Of course, as it can be seen from (15), saving supply must now include the current account deficit per unit of capital (expressed in domestic currency), t. In the long run, however, the current account deficit must be zero, as stated by equation (20). As usual, the current account deficit is supposed to be a positive function of the degree of capacity utilisation ($t_u > 0$) and a negative function of the real exchange rate[8] ($t_r < 0$). Equation (18) is the linear version of (14), our theory of the endogenous determination of r_s. Of course, it must be $\boldsymbol{a} > 0$ and $\boldsymbol{b} > 0$. Equation (14) has been made linear for the sake of simplicity: none of the conclusions of this paper are affected by this simplifying assumption and, as the reader can easily check, the linear formulation (18) guarantees that the elasticities of r_s with respect to both r_{sf} and z are positive and less than one, as one should expect them to be. Finally, equation (19) comes from (2) and the definitions of the real exchange rate and the index of competitiveness:

$$\boldsymbol{r} = \frac{eP^f}{P} = \frac{eP^f}{\dfrac{u_s}{u_s - r_s}.wb} = \frac{u_s - r_s}{u_s}.z$$

It is interesting to look at equations (18) and (19) together. Equation (18) establishes that the pricing strategy adopted by domestic firms is affected by the international competitiveness of the economy;

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[8] The Marshall-Lerner condition is assumed to be met. The reader should also be made aware that treating the index of competitiveness as an endogenous variable, as we do, implies that the ratio (e/w) must also be considered endogenous (foreign prices and labour productivity are taken as given). Either the nominal exchange rate or the nominal wage (or both) must therefore be determined endogenously by the system, which is likely to be the case in this long run model of growth and distribution. In other words: we know from our analysis in section 3 that once the economy is in the steady state the rate of growth of money wages must be the same as the rate of growth of the nominal exchange rate, but this does not prevent these two variables from growing at different rates in the traverse from one steady state to the other.

equation (19) says that obviously the opposite must be true as well: the international competitiveness of the economy depends on the pricing strategy of domestic firms. As we shall see, this loop introduces a non-linearity into the system (15)-(20) without compromising, however, the possibility of getting a single, determined solution.

The system describes a long run equilibrium for the economy at hand in that the equations from (15) to (20) must hold in the long run and not necessarily in the short; in particular, the current account is balanced in the long run and the rate of return actually implemented into firms' pricing strategy takes the value given by equation (18) only in the long run, when the process described in section 3 has fully deployed its effects. However, such an equilibrium is not necessarily neither a steady state nor a fully adjusted position. Indeed, in general, in the equilibrium of the system (15)-(20) it will be $r^* \neq r_{sf} \neq r_s$, having denoted with r* the *realised* rate of profit. We can follow Lavoie (2002) and assume that when there is a discrepancy between the realised rate of return, r*, and the target rate of return desired by firms, r_{sf}, the latter adjust their target according to the same rule illustrated before (see (8)):

$$\dot{r}_{sf} = \boldsymbol{j} \ (r^* - r_{sf}) \tag{21}$$

In words: when firms see they are realising higher (lower) profits than expected (better: than targeted), they revise their target upward (downward). Here the interesting point is to see whether the adjustment rule (21) implies the convergence between r* and r_{sf} and a steady state like the one illustrated in Figure 1 may actually materialise. If it does, then it will be possible to conclude that we do not need a theory of conflict inflation to reject the idea of a normal or standard rate of capacity utilisation that an economy must necessarily reach in a "fully adjusted" position. An arguably more general theory of flexible mark-ups in an open economy may do the same job. Before coming to this stability issue, however, let us represent diagrammatically the equilibrium of the system (15)-(20). Indeed, such a system is completely simultaneous and its solution can hardly be found out explicitly. A graphical representation may illustrate the points at stake much more clearly.

[FIGURE 1 TO BE PUT HERE]

In the North/East (NE) quadrant the sub-system (15)-(17) is represented, with the profit-cost (PC) curve representing equation (17) and the effective demand curve (ED) representing the sub-system

(15)-(16). The PC curve is steeper than the ED curve since (C1) is assumed to be met. In the South/East (SE) quadrant the CB curve represents all the combinations (r,u) such that the current account is balanced, i.e. equation (20). Of course, an increase in the degree of capacity utilisation, which stimulates imports, must be compensated by a real devaluation to maintain the external balance. In the South/West (SW) quadrant the 45 degree-curve is used to move the equilibrium value of the real exchange rate from the SE to the North/West (NW) quadrant. The real exchange rate (RER) curve represents the relation between the real exchange rate and the index of competitiveness as established by equation (19). Finally, in the NW quadrant the competitiveness curve (CO) relates the index of competitiveness and the rate of return (the rate *actually* incorporated into firms' pricing strategy) according to equation (19), whereas equation (18) is represented by the actual rate of return curve (ARR). Of course, for a long run equilibrium of this open economy to exist, the ARR and CO curves must intersect. The condition for such an intersection to occur is

$$(u_s - \mathbf{a}.r_s)^2 - 4\mathbf{r}.\mathbf{b}.u_s \geq 0 \tag{C2}$$

(C1) and (C2) constitute the set of restrictions that have to be met in order to guarantee the existence of the equilibrium. Figure 1 must be read as follows: the intersection between the ARR and CO curves at point E determines the equilibrium value of z and r_s; once r_s is known, the slope of the PC curve can be established and the PC-ED intersection at point E in the NE quadrant determines the equilibrium values of r, the realised rate of profit, and u, the degree of capacity utilisation. The equilibrium value of u must then be associated with an equilibrium value for the real exchange rate on the CB curve in the SE quadrant. Finally, the equilibrium value for the real exchange rate and the RER curve in the SW quadrant determine an equilibrium value for the index of competitiveness, z, that must be coherent with the value determined by the ARR-CO intersection in the NW quadrant[9].

In the equilibrium illustrated in Figure 1 it is, by construction, $r_{sf} = r^* \neq r_s$. In other words: that equilibrium is a steady state, a long run position from which there is no incentive to move. Still, the rate of capacity utilisation is endogenous and may thus be affected even in the long run by some kind of demand policy (shifts of the ED curve). So, let us try to understand at which conditions a steady state like the one illustrated in Figure 1 is (locally) stable.

The adjustment rule (21) implies that a sufficient (but not necessary) condition for stability is

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[9] The reader may easily check that there is no problem of multiple equilibria in this model, since a point like F in Figure 1 does not constitute an equilibrium. If it did, it would be associated with an equilibrium value of the real exchange rate different from the intercept of the CO curve, which is a contradiction.

$$\frac{\partial r^*}{\partial r_{sf}} < 0 \, .$$

Through very tedious but simple manipulations, we get an expression for the relevant derivative (see the Appendix, point sub 1), for the details):

$$\frac{\partial r^*}{\partial r_{sf}} = \frac{-g_1 \boldsymbol{a} u t_r (u_s - r_s)}{t_r [(u_s - r_s) - \boldsymbol{b} z] \{(s - g_2) r_s - g_1 u_s\} - [(s - g_2) \boldsymbol{b} u t_u u_s]} \tag{22}$$

Given our assumptions, the numerator of this expression is always positive (remember that the current account deficit responds negatively to a real devaluation); hence, a sufficient condition for the stability of the steady state is

$$\boldsymbol{b} z - (u_s - r_s) < \frac{\boldsymbol{b} u u_s t_u (s - g_2)}{t_r [g_1 u_s - (s - g_2) r_s]} \tag{C3}$$

To understand the meaning of this sufficient condition note that

$$\frac{\partial r}{\partial r_{sf}} = \frac{\partial r}{\partial r_s} \cdot \frac{\partial r_s}{\partial r_{sf}}$$

and since the first derivative on the right hand side is always negative[10] (see equation (9)), the sign of $(\partial r / \partial r_{sf})$ will only depend on the sign of $(\partial r_s / \partial r_{sf})$. The latter, as the reader may easily check using the same technique exposed in the Appendix, is positive if and only if (C3) is met. So, imagine that the economy is in an equilibrium out of the steady state where, for instance, $r^* > r_{sf}$. We know from the adjustment rule (21) that r_{sf} will rise. But, on top of this mechanics, what will happen to the price level? What are the consequences of increasing r_{sf}? Will the actual mark up increase or decrease? The rise of r_{sf} puts a *direct upward* pressure on r_s (look at equation (18)) and the price level; but the associated loss of competitiveness exerts an *indirect downward* pressure on r_s and the price level. The sufficient condition for the stability of the steady state says that the direct and upward pressure dominates: there will be an increase in the price level and, due to lower real

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[10] The fact that dr/dr$_s$ < 0 implies that this model is "stagnationist" (Marglin and Bhaduri, 1990). A higher r$_s$, i.e. a higher price level, reduces the real wage, which in turn depresses consumption demand (since the propensity to consume of the workers is higher than that of the capitalists). The reduction in consumption demand, given the form chosen for the investment function, is greater than the increase in investment demand. Hence, the fall of aggregate

wages, a reduction in the aggregate demand will result (see footnote 10). Hence, according to the traditional Kaleckian/Keynesian argument, the realised rate of profit will go down and the equality between r* and r_{sf} will be finally restored. It may be interesting to note that one reason why (C3) could not be met is a low sensitivity of imports to the activity level and/or a strong sensitivity of exports to the real exchange rate. In this case, the direct and positive pressure on the price level induced by the rising r_{sf} would prompt a serious deterioration of the current account, the competitiveness effect would dominate and at the end of the story r_s and the price level would shrink.

Having clarified the issue of the stability of the steady state, we can now try to understand whether in this open economy Kaleckian framework the paradox of costs may still hold. In other words: starting from a given steady state, is it possible by increasing the real wage to get a new steady state characterised by a higher growth rate? To answer this question, note from equation (2) that the real wage may be written as

$$\frac{w}{P} = \frac{u_s - r_s}{bu_s} \tag{23}$$

from which it is clear that

$$\frac{\partial(w/P)}{\partial u_s} > 0 \Leftrightarrow \frac{\partial r_s}{\partial u_s} < \frac{r_s}{u_s}.$$

Since this condition is always met (see the Appendix, point sub 2)), we can increase u_s to study the long run impact of an increase in the real wage. The first step to evaluate such an impact consists in the assessment of the variation of the realised rate of profit induced by a higher real wage (see the Appendix, point sub 3)):

$$\frac{\partial r}{\partial u_s} = \frac{-t_r g_1 u r_s \{ \boldsymbol{b} \boldsymbol{r} u_s + (u_s - r_s)[(u_s - r_s) - \boldsymbol{b} z] \}}{u_s (u_s - r_s) \{ [g_1 u_s - r_s (s - g_2)] t_r [(u_s - r_s) - \boldsymbol{b} z] + u \boldsymbol{b} u_s t_u (s - g_2) \}} \tag{24}$$

Using (19) it can be immediately checked that the numerator of this expression is always positive. Hence, the relevant condition for (24) to be positive is

demand and the associated reduction of the realised rate of profit. We will see that this stagnationist feature does not

$$bz - (u_s - r_s) < \frac{buu_s t_u (s - g_2)}{t_r [g_1 u_s - r_s (s - g_2)]} \qquad (25)$$

which is exactly (C3), the sufficient condition for the stability of the steady state. So: when condition (25) is met, the steady state of the system is stable and an increase in the real wage will make the realised rate of profit grow. The degree of capacity utilisation and the growth rate of the economy will be higher as well (just look at equation (A1) in the Appendix and the investment function (16)). This new equilibrium is not yet a new steady state. Indeed, the higher rate of profit will be such that $r > r_{sf}$ and, as we know, firms will revise upward their target rate of return, r_{sf}. But, given that (25) holds, the system is stable and $(\partial r / \partial r_{sf}) < 0$: the realised rate of profit will go down and the equality between r and r_{sf} will be finally restored at an higher level than in the original steady state. So, in the new steady state the realised rate of profit, the rate of capacity utilisation and the rate of growth of the capital stock will be all higher than before. The paradox of costs may well hold in this open economy Kaleckian framework.

Does this mean that in such a framework the paradox of costs *always* hold? If it did, this would impoverish the model a lot, since an hopefully general model should leave room to a more standard, negative long run relation between the real wage and the growth rate. Suppose that the sufficient condition for the stability of the steady state is violated and instead

$$bz - (u_s - r_s) > \frac{buu_s t_u (s - g_2)}{t_r [g_1 u_s - r_s (s - g_2)]} \qquad (26)$$

holds. We know that in such a circumstance $(\partial r / \partial u_s) < 0$ and a *lower* real wage increases the realised rate of profit, the rate of capacity utilisation and the rate of growth. However, this is not enough to say that that the standard, negative long run relation between real wages and growth may actually materialise in this economy. To this purpose we have to show that, despite (25) does not hold and $(\partial r / \partial r_{sf}) > 0$, the model is still stable. This will force us to look at the *necessary* condition for the stability of the steady state, i.e. $(\partial r / \partial r_{sf}) < 1$. From (22), this condition amounts to

$$bz - (u_s - r_s) > \frac{buu_s t_u (s - g_2) - t_r g_1 au(u_s - r_s)}{t_r [g_1 u_s - r_s (s - g_2)]} \qquad (27)$$

imply that the paradox of costs *necessarily* holds.

which is not necessarily implied by (26). However, it is straightforward to see that (26) and (27) may well coexist and in this case the model has a stable steady state where the paradox of costs does not hold. We can therefore conclude that under some parametric conditions and starting from some equilibria, the model is stable and the paradox of costs does not apply; instead, under other parametric conditions and starting from other equilibria, the model is stable but the paradox of costs holds. Briefly: this post-Keynesian model is sufficiently general, it does not imply necessarily the validity of the paradox of costs and therefore its essential conclusion – the preservation of the main result of the Kaleckian model, i.e. the endogenous determination of the degree of capacity utilisation in the long run – may be taken seriously.

5. Conclusion

In this paper I have tried to argue that the preservation of the key characteristic of the Kaleckian model - the endogenous determination in the long run of the degree of capacity utilisation - we do not need neither very specific assumptions concerning the notions of "long run" and "normal" degree of capacity utilisation nor a time- and country-specific theory of inflation based on the conflicting claims between workers and capitalists. A less demanding theory of flexible mark-ups in an open economy may do the job. This theory has also some degree of generality, since the open economy Kaleckian model that has been proposed does not imply as a necessary result the validity of the paradox of costs, which is just a *possibility*. Shifting the emphasis from the conflict between workers and capitalists over product shares to the infra-capitalistic conflict between domestic and foreign firms over market shares preserves the Kaleckian vision of the long run - i.e. a theory of demand-led growth - while at the same time providing a more convincing description of modern, globalised and oligopolistic economies.

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Appendix

1) Calculating $\dfrac{\partial r}{\partial r_{sf}}$

To study the stability of the steady state equilibrium for the system (15)-(20) we have to calculate the derivative of r, the realised rate of profit, with respect to r_{sf}, the rate of return targeted by firms. To this purpose, just totally differentiate the system (15)-(20):

$$(s - g_2)dr - g_1 du = 0 \tag{A1}$$

$$du = \frac{u_s}{r_s}dr - \frac{u}{r_s}dr_s \tag{A2}$$

$$dr_s = \mathbf{a}dr_{sf} + \mathbf{b}dz \tag{A3}$$

$$dz = \frac{u_s}{u_s - r_s}d\mathbf{r} + \frac{z}{u_s - r_s}dr_s \tag{A4}$$

$$t_{\mathbf{r}}d\mathbf{r} + t_u du = 0 \tag{A5}$$

Using (A5), (A4) can be rewritten as:

$$dz = \frac{z}{u_s - r_s}dr_s - \frac{t_u u_s}{t_{\mathbf{r}}(u_s - r_s)}du \tag{A6}$$

Now insert (A6) into (A3) to get:

$$dr_s = \frac{\mathbf{a}(u_s - r_s)}{(u_s - r_s) - \mathbf{b}z}dr_{sf} - \frac{\mathbf{b}t_u u_s}{t_{\mathbf{r}}[(u_s - r_s) - \mathbf{b}z]}du \tag{A7}$$

Then insert (A7) into (A2):

$$du = \frac{u_s t_{\mathbf{r}}[(u_s - r_s) - \mathbf{b}z]}{r_s t_{\mathbf{r}}[(u_s - r_s) - \mathbf{b}z] - \mathbf{b}uu_s t_u}dr - \frac{\mathbf{a}ut_{\mathbf{r}}(u_s - r_s)}{r_s t_{\mathbf{r}}[(u_s - r_s) - \mathbf{b}z] - \mathbf{b}uu_s t_u}dr_{sf} \tag{A8}$$

Finally, by putting (A8) into (A1), one gets expression (22) of the text.

2) Calculating $\dfrac{\partial r_s}{\partial u_s}$

The calculation of this derivative follows, *mutatis mutandis*, the same procedure used for $\dfrac{\partial r}{\partial r_{sf}}$. By total differentiation of the system (15)-(20) one gets:

$$(s - g_2)dr = g_1 du \tag{A9}$$

$$dr = (u/u_s)dr_s + (r_s/u_s)du - (r_s u/u_s^2)du_s \tag{A10}$$

$$dr_s = \boldsymbol{b}dz \tag{A11}$$

$$dz = \frac{u_s}{u_s - r_s}d\boldsymbol{r} + \frac{z}{u_s - r_s}dr_s - \frac{\boldsymbol{r}r_s}{(u_s - r_s)^2} \tag{A12}$$

$$t_{\boldsymbol{r}}d\boldsymbol{r} + t_u du = 0 \tag{A13}$$

By applying to the system (A9)-(A13) the same technique of successive substitutions used to solve (A1)-(A5), it can be written that

$$\frac{\partial r_s}{\partial u_s} = \frac{r_s}{u_s} \cdot \frac{\boldsymbol{b}uu_s t_u (s - g_2) - \boldsymbol{b}zt_{\boldsymbol{r}}[g_1 u_s - r_s(s - g_2)]}{t_{\boldsymbol{r}}[g_1 u_s - r_s(s - g_2)][(u_s - r_s) - \boldsymbol{b}z] + \boldsymbol{b}uu_s t_u (s - g_2)} \tag{A14}$$

Now, the second factor on the right hand side of (A14) is always less than one since the inequality

$$\boldsymbol{b}uu_s t_u (s - g_2) - \boldsymbol{b}zt_{\boldsymbol{r}}[g_1 u_s - r_s(s - g_2)] < t_{\boldsymbol{r}}[g_1 u_s - r_s(s - g_2)][(u_s - r_s) - \boldsymbol{b}z] + \boldsymbol{b}uu_s t_u (s - g_2),$$

after tedious but straightforward substitutions, reduces to $(u_s - r_s) > 0$, which is always true. Hence,

$$\frac{\partial r_s}{\partial u_s} < \frac{r_s}{u_s} \quad \Rightarrow \quad \frac{\partial (w/P)}{\partial u_s} > 0$$

3) Calculating $\dfrac{\partial r}{\partial u_s}$

This time the job is almost already done. Just use again the system (A9)-(A14) and apply the usual substitutions. This will lead to equation (24) of the text.

Figure 1: the steady state of the open economy