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can the theory explain recent empirical trends?

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Abstract

The paper examines some trends in the distribution of income that have prevailed in the last two decades, in particular the opposite tendencies to a fall in the wage share and an increase in the profit and rent share. Moreover both profit rates and real interest rates have increased in OECD countries. Some theoretical models are examined to see whether they may explain those tendencies. The focus is on models in the Keynesian-Kaleckian tradition. In those models it is possible, for some combinations of parameters, that an increase in real interest rates may lead to an increase in profit rates. Unfortunately, however, those values of parameters which would be required and which correspond to assumptions on the behaviour of agents, do not reflect historical values. Thus, though Kaleckian-Keynesian models may offer an explanation of these trends, this explanation does not seem to apply to the recent history of OECD countries. Another strand of literature is also examined which goes back to Sraffa and the monetary theory of distribution. The two approaches are compared. The paper also looks for the possibility of a synthesis.

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1 Introduction

In the last years a mounting empirical literature has shown that in almost all countries similar trends in the distribution of income have prevailed. In particular there is a tendency over the world to a falling wages share and a rising profit share from the beginning of the Eighties onward. This trend in the profit share is stopping an opposite tendency to the fall both in the share and in the rate which was present in the two decades before. The evidence on income shares is more abundant while the data on profit rates are less widespread given the difficulty of calculating them. However in some works it has been ascertained a parallel movement in the profit rates and interest rates both rising in the last twenty years. These data are all subject to measurement problem for the wage share is difficult to define particularly in developing countries in which the share of informal work is high. Since data on the wage share cover usually only the formal economy since between formal profit and wage share there is an undetermined share of mixed income it is difficult to use these data without serious doubts on their meaning. Moreover in most cases this tendency to rise in both profit rates and interest rates has been accompanied by a fall in the rate of growth of the capital stock.

Various theoretical explanations have been attempted starting from different approaches. The neoclassical theory has tried to relax the assumption of perfect substitutability between factors of production which was responsible for the constancy of the income shares. However old and new doubts on the foundations of such theory and on its concordance with reality have been raised (see Rada and Taylor (2005), Felipe and Fisher (2004). This approach will not be discussed in the present work. Other approaches are the Keynesian-Kaleckian model and the monetary theory of production. They will be discussed to evaluate both their theoretical consistency and their potential to explain the empirical trends in income share, profit and interest rates, capital accumulation. A mix of both traditions has also been recently attempted by introducing a interest rate elastic mark-up in models of Kaleckian type.

The main problem with the use of Kaleckian-Keynesian models to explain these trends in distribution is that the possibility of a similar movement in both interest rates and profit rates is linked to some values of parameters such as the elasticity of saving with respect to rentiers' income and the dependency of investment on interest rate which are quite different from those estimated with statistical data. Moreover the main message of those models is that a higher interest rate usually cause through falling demand lower profit rates and lower growth. This contrasts with the evidence of high profit and interest rates on one side and slower output growth on the other side.

Whether the monetary theory of production approach may be better suited to deal with these findings is an open question and whether a synthesis between the two may be useful is another interesting question to answer too.

The plan of the work is the following. In the first section some data on the trends in income distribution will be given. In the second and third sections respectively the two approaches will be discussed, in particular how well they suit empirical results. In the last section the question of a possible synthesis will be answered.

2 Empirical trends in the distribution of income.

There is a wide literature that reports on the change in the distribution shares happened in the last twenty years with a passage from a fall in the rate of profit to an increase in it, with the turning point occurring in the end of the seventies or the start of the eighties (see Cornia (2004), Diwan Dumenil e Levy (2005), Harrison (2002).the trend is less intense in developed versus developing countries. In the latter countries being the share of informal work high and rising the fall in the wage share and the consequent increase in the profit share may be overestimated (see Gollin). There is also evidence on the rise in real interest rates almost everywhere in the last twenty years. So far there is not so much evidence on the relation between profit and wage rates presumably because of the difficulty of measuring in a reliable way the profit rate. Some limited evidence on the parallel movement of real interest rates and profit rates on one hand and on the opposite movement of profit rates and wage rates on the other has been collected, at least for some OECD countries (see Nardozzi ed. 2002).

Nardozzi (2002) runs a regression having as dipendent variable the yield on capital and as independent variable the real long term interest rate. The panel is balanced and covers the period 1970-1999. The countries are Usa, Uk, France, Canada, Germany, Holland, Italy, Spain.

The results of estimation are the following:

Rate of interest		
Estimate with restrictions on co-efficients		
FGLS	1.3 (8.8)	
3SLS	2.3 (6.3)	
Country specific estimations-FGLS		
Rate of interest		
Usa	1.9 (3.5)	
UK	1.3 (5.1)	
Canada	-1.1 (-0.9)	
Germany	0.4 (0.5)	
Holland	5.0 (12.8)	
France	0.6 (2.0)	
Italy	1.7 (6.1)	
Spain	0.2 (0.8)	

Source: Nardozzi (2002).

The results of the regression of the remuneration of capital on rate of interest and real wage are the following:

Rate of interest	
Country specific FGLS	
Usa	-0.5 (-1.6)
Usa	0.9 (3.6)
Canada	-3.5 (-3.9)
Germania	-0.6 (-0.7)
Olanda	1.0 (2.4)
Francia	0.5 (1.5)
Italia	1.0 (3.0)
Spagna	-0.1 (-0.5)
Real wage	
Usa	-0.5 (-2.9)
Usa	-0.8 (-11.4)
Canada	-1.7 (-5.5)
Germania	-1.1 (-13.2)
Olanda	-0.3 (-3.0)
Francia	-1.2 (-13.1)
Italia	- 0.7 (-5.6)
Spagna	-1.2 (-14.3)
Rate of interest	
With restrictions on coefficients	
FGLS	0.5 (3.7)
3SLS	1.6 (6.9)
Real wage	
FGLS	-0.8 (20.8)
3SLS	-0.6 (-9.6)

The variables considered are from OCSE Economic Outlook the real interest rate is long term government bonds the deflator is Private consumption deflator, rates of return on capital in the business sector is equal to the ratio of the share of value added which goes to capital and the gross capital stock, the compensation per employee in the business sector for salary per worker.

Hein and Ochsen (2003) work out a Kaleckian-Keynesian model and calculate the conditions at which an increase in the interest rate should cause an increase in the profit rate. It turns out the derivative is positive if the expression 1 - s - T is positive where s is the propensity to save out of rentiers' income and t is the elasticity of investment to the interest rate. They estimate the value of these parameters for different periods and different countries (Uk, Usa, Germany and France) and they obtain contrasting results. In general it does not seem that the estimation of the value of these parameters supports the evidence on the parallel movement of interest and profit rates. Moreover the result is the same even for countries, which show roughly the same values for the propensity to save out of interest income.

Nardozzi (2002), though referring to the monetary theory of distribution as the theoretical framework within which the econometric exercise has been carried out, says clearly that the estimated equations are not the reduced form of any model whatsoever.

Other works referring to single country such as France and Italy confirm the picture of interest and profit rates both rising and capital stock falling (see Clevenot and Mazier 2005, Dumenil and Levy 2005). Evidence of a parallel movement of both interest and profit rates with falling capital accumulation can be also found for other developing country such as Turkey, India and some Latin American countries (see the country studies in Cornia ed. 2004).

The stylized facts of the last twenty years almost everywhere (except USA perhaps) that emerge from the previously quoted studies are the following (see Hein and Ochsen (2003) Nardozzi ed 2002, on France Clevenot e Mazier 2005, on Italy Levrero and Stirati 2004))

    a) Fall in the wage rate and in the wage share.
    b) Rise in the profit rate and in the profit share.
    c) Increase in rentier's income share (various definitions).
    d) Fall in the rate of growth of capital.

Neoclassical explanations of these facts deal with changes in the proportions of production factors employed and in particular with the falling capital/labour ratio (see Harrison 2005). A limited elasticity of substitution between factors of production may explain why the shares are moving instead of being constant (see Bertoli 2004). We neglect this branch of research in the rest of the paper because we share the old and new doubts on the working of that theory (see Felipe and Fisher 2003, Taylor and Rada 2005). So in the next sections I will deal with the Kaleckian-Keynesian models of distribution and with the monetary theory of production to evaluate whether they may be useful tools to explain the stylized facts mentioned above.

3 Money and distribution in Kaleckian-Keynesian models with money.

In this section we will discuss the determinants of distribution in macroeconomic models belonging to the Kaleckian-Keynesian tradition. In particular it will be asked whether the trends in distribution and capital accumulation that has been shown in the last section might be explained by making use of the models in this tradition. These models usually consists of the Cambridge equation for saving supplemented by equation for the rate of growth of saving and investment, which in equilibrium must be equal, if the goods market is in equilibrium. Different specifications of the investment function have been used with slightly different results on the values of the equilibrium endogenous variables. More recently monetary variables and explicitly distributive shares have been introduced in these models to account for the increasing importance of debt and monetary variables in the real world and to ask the question on how they matter for equilibrium values. In order the models by Hein – Ochsen (2003), which introduces debt and interest payments on debt in the model, by Dutt (1991), which uses an interest elastic mark-up and a slightly different model by the author of this work with an interest elastic mark-up and a different specification of the investment function without debt will considered. In particular it will be asked which are the conditions under which a parallel movement of the interest rate and of the profit rate will occur in each of these simple models and whether those conditions are ruling now. In brief we will attempt to establish whether the predictions of these models are reliable descriptions of real events.

3.1 The model by Hein-Ochsen (2003)

In this paragraph we will report the model by Hein-Ochsen (2003) and show under what conditions in this model there may be a parallel movement of the interst rate and of the profit rate. In particular it will shown what is required in order to get a positive sign for the derivative of the profit rate with respect to the interest rate.

The aggregate supply and demand model on which this explanation of distribution is based consists of three equations; the first one is the old Cambridge equation for saving determined by the profit share and the rate of growth of the economy. The second one is a definition of profit as depending on the profit share the capacity utilization and the capital output ratio. The demand affect the profit rate and the profit share through the variable capacity utilization. The capacity utilization is endogenous since investment

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is a positive function of capacity utilization, demand and the profit share while at the same time being a negative function of the interest rate. The endogenous variables in the model are therefore capacity utilization u the rate of growth of saving and investment and the profit rate. Once one gets the equilibrium values for the endogenous variables one can get the effects of a higher interest rate on them by calculating the derivatives.

(1) $r = \frac{\Pi}{K} \times \frac{Y}{Y^e} \times \frac{Y^e}{K} = \frac{hu}{v}$

(2) $\sigma = \frac{S}{K} = \frac{\Pi - Z + s_z Z}{K} = r - (1 - s_z)i$

(3) $g = \frac{1}{K} = \alpha + \beta u + \tau h + \theta i$

(4) $g = \sigma$

The equilibrium value of the variable profit rate is:

(5) $r^e = \frac{\frac{h}{v}((1-s_z+\theta)i+\alpha+\tau h)}{\frac{h}{v}-\beta}$

The derivative of the rate of profit with respect to the interest rate is:

(6) $\frac{dr}{di} = \frac{\frac{h}{v}(1-s_z+\theta)}{\frac{h}{v}-\beta}$

According to the values of the parameters in the investment and saving function the author describes four regimes with different responses of the endogenous variables to exogenous changes. So far we are concerned with the derivative of the interest rate with respect to the profit rate. This derivative may assume positive sign in the third and in the fourth regime, in which, the effect of the rise in the interest rate on capacity utilization is positive too. As we can see in equation (6) the derivative may positive if the propensity to save out of interest is lower than 1 and suitably small.

The denominator of the expression in (6) is considered positive for stability conditions to hold. So the sign depends only on the sign of the numerator. Though the investment function depends on the profit share the parameter linking investment to the profit share does not appear in the derivative. The important parameters are instead the interest elasticity of investment and the value of the propensity to save out of interest payments.

The intuition behind this result is that an increase in interest rate if gives rise to an increase in effective demand will increase both capacity utilization and the profit rate. This is entirely different from the idea that the increase in the real long term interest rate increases the long run normal rate of profit, which does not depend upon demand conditions but only on the competition among firms. The long run normal rate should not depend on capacity utilization while the realized rate of profit does (see Pivetti 1991 and Pivetti

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2004). Moreover the adjustment to the long run normal rate of profit may involve changes in the structure of production, which require time (see Ciocca 2002 and Tropeano 2005b), while the effect of the change in the capacity utilization on the realized profit rate is immediate.

3.2 The model by Dutt (1991)

Another study, which introduces monetary variables in a model of macroeconomic equilibrium, and investigates the effects of changes in these monetary variables on distributive shares is Dutt (1991).

Though the object of the model is to assess the effects of financial liberalization the analytical structure is very similar to the previous one except for a different specification of the investment function and the absence of debt and interest payments. The mark-up in this model would depend on the interest rate because firms would fix it by looking at a desired level of real wage. A higher interest rate would cause a downwards revision of their desired real wage and a rise in the profit share. In this model real wages are rigid in the short run while they are flexible in the long run (for a critical appraisal of this model see Tropeano 2005a). In this respect the model by Dutt is nearer to the Sraffian idea of a long run normal rate of profit.

Equilibrium in the goods market requires as usual equality of saving and investment. The saving function in Dutt (1990) is:

(7) $g_S = s(1 - Va)u = g_I$

Savings are equal to the saving propensity multiplied by profits (the complement to 1 of the real wage V and a capital output ratio) and capacity utilization.

Investment is a function of the capacity utilization u, ad of the profit rate r and of the real interest rate i+P

(8) $g_I = \alpha + \beta u + \tau(r - i + P)$

Where the rate of profit at full capacity is defined as:

(9) $r = \frac{1 - Va_0}{a_1}$

In this model V is the real wage, while a is the capital-output ratio. In this model the trick to make the profit rate depend on the mark-up is to assume that firms have a desired level of real wage and that a rise in the interest rate will raise it too. In the short run the real wage is fixed. In the long run it depends, according to a dynamic adjustment equation, on the difference between actual and desired real wage. This means that the

real wage V depends on the interest rate and the rate of profit r does it too. In this model a higher real wage will push the savings curve down by redistributing income towards workers who do not save and by reducing the real interest rate. At the same time it pushes the investment curve up by increasing the rate of inflation and reducing the real rate of interest. In the short run an increase in the interest rate will cause a shift upwards of the investment curve down and the savings curve up. The result will be a fall in the capacity utilization and in the rate of accumulation. In the long run, being also the wage dependent on the interest rate, the negative effect on capital accumulation is greater than in the short run. In the short run the effect on the rise in the interest rate on the rate of profit and on capacity utilization is due to the assumption made by Dutt of a market for financial funds of classical type with saving responding positively to an increase in interest rate. Thus an increase in interest rate would increase the propensity to save out of profits and, under the assumption that only capitalists save, push up the saving curve. The negative effect on investment will push down the investment curve thus leading to a new equilibrium with a lower utilization and a lower growth.

Graph 1: The effect of a rise in the interest in the short run in Dutt (1991).
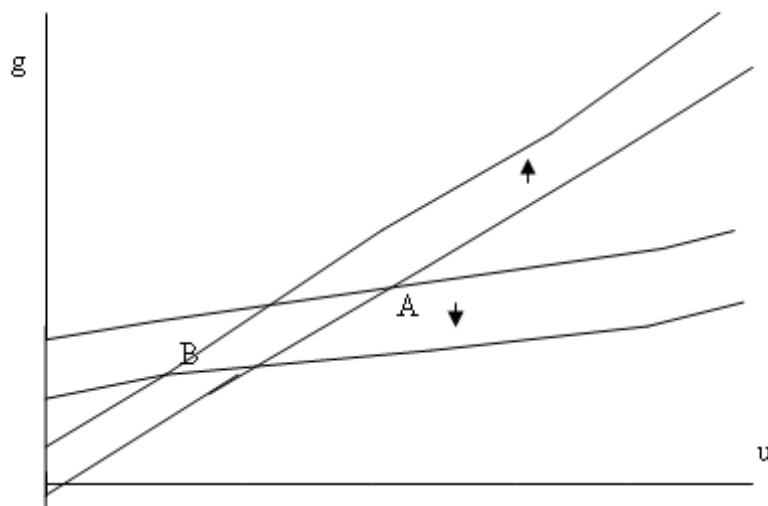
In Dutt (1991) the main mechanism through which monetary changes

affect distribution in the short run are changes in propensity to save of capitalists while changes in the interest elastic mark-up are a factor that reinforces the first effect in the long run.

3.3 A simple model without debt and with an interest elastic mark-up.

In what follows we build a different version of the same model to isolate the effects of a change in the interest elastic mark-up from other influences on the rate of profit. We use the same model as Hein-Ochsen (2003) but we take out debt and interest payments and we directly include the effect of an interest elastic mark-up in the short run, unlike Dutt (1991).

The model consists of the following equations.

(10) $g = \frac{1}{K} = \alpha + \beta u + \tau h + \theta i$

The rate of profit is defined in the usual way:

(11) $r = \frac{\Pi}{K} = \frac{\Pi}{Y} \times \frac{Y}{Y^e} \times \frac{Y^e}{K} = \frac{hu}{v}$

In the equation for savings there is no more the debt. Thus savings are simply the profits of capitalists.

(12) $S = s_c h u$

(13) $h = h(i)$

The derivative of the profit share h with respect to the interest rate i is positive. This derives from the idea that a higher normal rate of interest calls for a higher profit rate.

In this simplified model. However, the effect of the change in the interest rate on the rate of profit is uncertain depending on the values of the parameters as in the Hein-Ochsen model (2003). The derivative will be of course different in so far as it includes both direct and indirect effects of the rise in i on r . If the profit share were not interest elastic the derivative would be:

(14) $\frac{dr}{di} = \frac{\frac{h}{v}\theta}{\frac{h}{v}-\beta}$

The parameter θ is negative since is the elasticity of investment to the interest rate. The numerator of the derivative is negative while the denominator is positive since for stability to hold it must be positive. This expression however does not consider that the profit share h depends itself on the interest rate. In the case with interest elastic mark-up the equilibrium level of the profit rate is the following

(15) $r = \frac{(h(i)/v)[\theta(i)+\alpha+\tau h(i)]}{(h(i)/v)-\beta}$

The derivative is:

(16) $\frac{dr}{di} = \frac{\{(h'(i)/v)[\theta(i)+\alpha+\tau h(i)]+(h(i)/v)[\theta'(i)+\tau h'(i)]\}[(h(i)/v)-\beta]-(h'(i)/v)(h(i)/v)[\theta(i)+\alpha+\tau h(i)]}{[(h(i)/v)-\beta]^2}$

By assuming that :

(17) $\theta(i) < 0$

and

(18) $\theta(i) = \theta < 0$

we can rewrite the equation (7) and simplifying we get the following expression:

(19) $\frac{dr}{di} = -\theta\left(\frac{h'(i)}{v}\right)\beta - \alpha\beta\frac{h'(i)}{v} + \frac{(h'(i))^2}{v^2}\tau h'(i)$

From (10) by simplifying we get:

(20) $\frac{dr}{di} = -\theta - \alpha + \left[\frac{h'(i)}{v}\right]\tau$

Since we know that the parameter $\theta < 0$ then two out of three parts in (11) are surely positive.

We know however that for stability to hold it must be true the following expression:

(21) $\frac{h(i)}{v} > \beta$

From (12) it follows that:

(22) $\frac{h(i)}{v\beta} > 1$

The positive sign of the derivative would thus depend on a lower value of α, the intercept of the investment function, and a higher value of h(i) and τ. Being the last parameter the elasticity of investment with respect to the profit share, the parallel movement of the interest rate and of the profit rate is linked to the assumption of an economy which is profit led.

3.4   Some critical remarks.

In Hein-Ochsen (2003) the results of an increase in the interest rate are either higher profits and capital accumulation or lower profits and capital accumulation. The effects on both distribution and capital accumulation will depend on aggregate demand changes and are always in the same direction. The re-

sult of a positive correlation of profit rate and real interest rate when it has been obtained depends on the coefficients relative to the saving propensity out of financial rents and on the value of the parameters in the saving and investment function. The empirical fact of higher interest rates and profit rates should be accompanied by higher capital accumulation and increase in demand and this, in turn would happen only if the propensity to save out of rentier's income is low. If, however, both interest rates and profits rates rise in a context of falling accumulation, falling aggregate demand and high propensity to save out of rentiers' income, the model would not be very helpful to explain these facts.

This picture does not fit with the finding that, except for the United States, the profit rate and the interest rate both rise and that the capital accumulation however proceeds at a slower pace than before. Moreover, if in most cases the propensity to save out of rents has been found to be almost unity (see Hein-Ochsen 2003), the case of a positive link between profit rate and interest rate depending on the propensity to save out of rents being low is automatically excluded.

In Dutt (1991) the interest rate changes affect positively savings and thus lower equilibrium output.

The high sensitivity of savings to investment is very doubtful both in theory and in practice. (see Tropeano 2005b)

In the model with interest elastic mark-up but without debt developed above the positive effect of the interest rate on accumulation would also depend, under certain assumptions, on the high elasticity of investment with respect to the profit share. This means that the economy should be profit led. However the ratio of investment to profits has been steadily declining in the last decades (see Stockhammer 2004, Clevenot and Mazier 2005). Thus this assumption does not fit well the experience of many countries in the last two decades.

In conclusion the assumptions required by all these models to warrant a positive effect of the interest rate on the profit rate are all hardly to be found in reality. Moreover, even if these assumptions were fulfilled, the scenario with such a positive relationship would go along with an increase in capital accumulation.

In the next section we will give an account of what the monetary theory of distribution is and how it could be applied to explain the same empirical trends discussed in the first section.

4 What does the monetary theory of distribution say?

The monetary theory of distribution would suit well the empirical trends previously outlined in so far as it assumes that a rise in the exogenously given money rate of interest would raise the rate of profit as well. The reasoning however is microeconomic and concerns the normal values rather than realized values of the rate of profit. Since data on profits are realized ex post data one could argue that the first ones cannot be measured. The models we have dealt with in the last section were concerned with realized ex post data on the rate of profit. The big difference is that realized data depend on aggregate demand, capacity utilization and so on, while the same does not hold with normal values. Many have argued indeed that normal profit rates do not depend on the conditions of accumulation (Pivetti, Garegnani , Park among others). Moreover the convergence between rate of interest and normal rate of profit should hold for new investment rather than for the yield of the stock of capital inherited form the past. In what follows I will give an exposition of what the monetary theory of production says about the convergence between money interest rates and normal rates of profit by drawing on Pivetti (1991).

Pivetti (1991) defines the normal rate of profit as determined by the interest rate plus the remuneration for risk and trouble in each branch of production. The consequences for the theory of distribution are the following. Classical economists thought that the real wage would be fixed by institutional factors (mainly subsistence levels); profits were then defined as what remains of the product after having taken off wages, just a residual. On the contrary, according to Pivetti, the wage rate would be a residual depending on the normal profit, which must be at least equal to the long run money rate of interest.

Pivetti's (1991) starting point is Sraffa's theory of the determination of prices. The analysis is microeconomic for it regards static price determination theory. He is referring to Ricardo's notion of natural prices. This theory defines the natural price as the price, at which, in each sphere of production, what remains of the value of the product after deducting wages and the replacement of means of production, is sufficient to remunerate the risk and trouble and to pay interest at a uniform rate.

In the classical system, the real wage is considered fixed by institutional factors and prices are expressed in terms of a *numeraire*, which is the price of a money-commodity. Pivetti (1991) rewrites the system by considering the real wage as a residual, the rate of interest as fixed by monetary policy

decisions and the money wage rate as given by bargaining between workers and capitalists. The system of 2k + 2 equations now determine k + 1 prices, the normal rates of profits in each sphere of production and the real wage (see Pivetti, 1991, p.71). The price level thus depends on the money wage and on the money rate of interest, if the technique of production is given. The rate of interest thus becomes the regulator of the ratio of money prices to money wages. This in turn requires that lasting changes in the rate of interest are not associated with opposite movements in the normal profits of enterprise as percentages of the capital employed. This is not unreasonable, Pivetti argues, if the profits considered are normal profits as a percentage of the capital employed while actual profits may and do move contrarily to the interest rate.

As for the theories explaining the rate of profit by the degree of competition, Pivetti argues that the rate of profit logically comes first with respect to the profit margin; further, he argues that it must be explained under the assumption of perfect competition. In deciding whether to invest their capital for a long time, entrepreneurs must look at whether this investment pays more as a percentage of capital invested than the yield of an investment in long-term securities. Thus, the mark-up would depend on the rate of profit and the capital-output ratio, while in Kalecki the rate of profit depends on the mark-up, on the degree of competition (see Pivetti, 1991, ch.10). Pivetti (1991) argues instead that monopoly elements may explain a rate of profit which is higher than the normal one, but do not explain its normal level. The role of competition is to establish the level of the normal rate of profit in each production sector exactly at the level of the money rate of interest plus some compensation for entrepreneurial effort. A rise in money interest rates would cause an increase in profit rates, *if monetary wages and the technique of production are considered as given.*

The difficulties in applying this theory in the present historical context is that technology has rapidly changed after the introduction of the ICT revolution and that contrarily to the long period ahead there is a tendency towards the flexibility of nominal wages. Moreover since in practice a increase in the interest rate means an increase in the mark-up, the industries in the traded goods sector cannot allow themselves to do it because of the international competition. The process which leads to a new higher profit rate, both ex ante and ex post, though the ex post one may be different because of aggregate demand considerations may be different in different sectors.

Thus a way in which the new normal rate of profit could adjust to a changed value of the rate of interest is by either introducing innovations in the technique of production or by lowering wages.

Thus aiming at a higher profit margin may cause unemployment and a fall

in aggregate demand which may in turn cause a fall in realized profitability. There could be a change in the structure of production with many investment going to the most profitable sectors such as finance and services. For example both the market share and the share of value added to total output of these branches have increased with respect to traditional manufacturing activities.

Dumenil and Levy (2005) show that on both the rate of profit calculated as net product minus labour costs divided by the stock of capital and the rate of profit as registered in balance sheets of the business sector. The first measure shows for USA and an average of three European countries Germany, France and Uk shows a decline which ends in the middle of the 80s with a recover which lasts until now. If however another measure of profit is used, namely the net product minus the cost of labour and business and profits taxes divided by net worth (assets minus debt) then the trend is rather different for the European countries with only a modest recovery after the beginning of the eighties. If real interest rates are subtracted from the profit then it is still lower showing a declining trend from the Seventies onward. They show further that if the profits of the private business sector are split into non financial and financial corporations, very different trends for the two series emerge; the first is declining while the second one is rising. This fact should, according to Dumenil and Levy (2005), lead to a capital flow from the non financial sector to the financial one, which has indeed happened. This might be a practical example of adjustment to a new long run normal profit rate.

In other historical examples the pursuit of a higher profit rate has led to investment in rationalization without increasing the rate of capital accumulation. In this case an increase in the rate of profit over capital invested may be compatible with a constant aggregate demand. The pursuit of higher profits by lowering wages would have repercussions on aggregate demand by lowering it and thus realized profits. In small open economies however this problem could be solved by engaging in exports promotion (see Blecker , 1996 and Tropeano, 2005).

The interaction between Sraffian normal prices in the long run and Keynesian aggregate demand in the short run might follow different routes according to the strategies chosen to reach a higher profit rate. Thus aggregate macroeconomic models, both with classical and Keynesian closures, may fail to pick up these structural changes and their macroeconomic repercussions.

Since the data we have regard the rate of profit of the whole stock of capital, both old and new, they may just reflect different conditions. Thus constant or falling rates of profit on old capital may live together with rising profit rates on newly invested capital. If the required rate of profit, which follows the rise in the money rate of interest, is very high then only a few

investments may be eligible to be realized. This in turn would mean a fall in aggregate demand and in the ex post rate profit rate; this however would hit in different ways profit rates which are already divergent. An empirical study that proves a convergence between the stock exchange yield and the return on new capital has been made by Shaikh (1995). A more reasonable way to test the concordance between the new interest rate and the realized ex post rate of profit on new investment is to look at the incremental profit rate, that is the rate of change in profit divided by the value of investment. Shaikh (1995) carries out this exercise for the United States and finds out that the trend of the incremental rate of profit closely follows that of the stock exchange yields. He argues however that the real part of the economy is driving towards higher financial yields rather than the other way around. The incremental rate of profit is the change in the rate of profit divided by the investment. It is an ex-post measure but it could, in the opinion of the writer, be used to trace the possible movements of the real rates in the process of adjustment to the new normal rate of profit.

The tendency towards higher profit rates should persist in so far as the investment would be directed towards the sectors, which for different reasons show an expected profitability higher than the long run rate of interest. This would fit the data both on Europe and developing countries though perhaps not USA.

One could assume that the new higher profit rates required by the regime shift in the finance field will be lower or higher due to utilization ratio and so on but they will undoubtedly be higher than the old ones corresponding to lower interest rates.

5 Is a synthesis of these two approaches possible and/or desirable?

In the last two sections we have shown how in Keynesian-Kaleckian model it has been introduced the idea that the rate of profit may be fixed exogenously by the rate of interest. We have seen in the first and second sections that the main results drawn from these models on the determinants of distribution do not fit well with the stylized facts on the trends in distribution and capital accumulation prevailing in the last decades. In the third section we have reassessed the content of the monetary theory of production focusing on its being microeconomic in nature rather than macroeconomic. Thus to deal with macroeconomic issues on the determinants of distribution it must be embedded in a macro model or more generally context. The attempt made

by Kaleckians, though interesting, has failed to interpret recent events. Another attempt that has been made in the past has been that of incorporating that theory in a classical context. This amounts to have the rate of profit determined by monetary policy and the classical assumptions about saving and investment still valid. In practice this means that if the rate of profit following an increase in interest rates rises so profits and saving too do. If saving is invested since entrepreneurs are supposed to save and invest all their savings then the accumulation of capital should accelerate. The picture would be the following: higher interest and profit rate, higher profits, lower real wages and higher capital stock and growth. The Keynesian orthodoxy would have argued the other way around with higher rates of interest higher rates of profit lower real wages and lower capital accumulation and growth. In turn the lower aggregate demand would have lowered profits in the long run. Some attempts to reconcile the two views have been made with either a Keynesian world in the short run and a classical one in the long run (see Dumenil Levy) or others with a complicated traverse in which Keynesian results in the long run would still prevail (see Lavoie 2003).

The main problem is that the normal rate of profit is defined as an expected ex ante magnitude while the data we use are ex post data on realized profits. One then to make sense of this has to assume that in some way the increase in the required rate of return will affect ex post results. A possibility is to us the notion of average rate of profit and average normal capacity utilization as opposed to the notion of normal ones. The normal values would not depend on the accumulation of capital while the average ones do (see Park 1997 , Garegnani 1992, Pivetti 2004). In particular if the rate of profit average is an average of the prices of different capital goods produced at different times then a change in the normal rate which induces changes in the type of capital equipment used or in the sectors where capital is invested should be reflected in the increase in the average rate of profit since the last values of new produced capital goods would carry a higher profit than before. This approach would allow for different sectors growing at different rates and not converging towards a unique steady state equilibrium rate.

In particular if in the sector producing capital goods more innovative technology are introduced this would cause a fall in their prices and also in recorded investment. If in the sector producing consumption goods a higher mark-up would be simply imposed as a consequence of the higher normal rate then this would mean a lower real wage and a higher profit rate and share of profits. In the latter case however ex post realized profits would be negatively affected by the changes in distribution leading to a lower rate of utilization. If a lower rate of utilization is not maintained for ever this would mean a reduction in investment growth.

The new realized rate of profit would then be higher than the average of the last t -1 periods, though it may be lower than the normal one, but the falling utilization rate would call for an adjustment in the production capacity in the long run. This means that observed data on realized profits should show an upward trend. In particular if the rise in the money interest rate or in the yield of financial assets is very big with respect to the average of the past it may happen that not so may investment opportunities are available that give that yield, the consequence is a decline in physical investment and an increase in financial investment. In the long run however a Keynesian closure may be envisaged if the process both through rationalization in traded sectors and lower real wages in non traded ones lead toa fall in aggregate demand.

This would fit the situation in most European countries, particularly in Italy, where the conditions in different sector are totally different. In the sector producing capital goods the gross profit rate has increased thanks to investments in rationalization with a tendency for the prices of those goods to decrease. On the contrary in sectors producing consumption goods the mark-up has increased and the profit rate as well while real wages have fallen (see Levrero and Stirati (2004) Prezioso (2005)).The reduction in real wages has contributed to the stagnation in output growth.

If one just wants to use an accounting framework (see Rada Taylor 2005) without theoretical assumptions embedded in it then one has to assume that at least in some disequilibrium, though long lasting, situation the rate of growth of capital may be lower than the profit rate. The closure of the model may be seen in reality and will presumably depend on the evolution of the financial type of capitalism that has developed in the last part of the twentieth century.

A sort of two regimes may be distinguished. Under no change in expected long run interest rate f.e. low interest rate for decades stable monetary policy no capital flows then the long run normal profit rate does not change so changes in monetary policy variables that are assumed to be reversed in the future cause changes in the realized profit margin without causing structural changes in the structure of production. In this case the Keynesian- Kaleckian model would apply.

If however almost everything changes, as it has happened from the Seventies onward with a break in the routine of low real interest rate, then the normal rate will be revised and the idea, belonging to a monetary theory of production, of an adjustment of the actual profit rates towards the new long run normal one, may apply. The advantage of using the last approach is that it can be reconciled with the available evidence on falling rate of growth of capital since it does not necessarily work through the fall in investment and aggregate demand.

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This could well apply both to the different responses of distribution variables to interest changes found in the empirical part of Hein-Ochsen (2003) and to the evidence on some OECD countries found in Nardozzi (2002).

6 Conclusions

The empirical trends to be explained are a falling share of wages, a rising share of profits and a rising profit rate in the context of a slowdown of capital accumulation and output growth.

Keynesian-Kaleckian models which include monetary variables have tried to do the job. The trouble with them is that, usually, higher profitability goes parallel to higher aggregate demand and output growth. They can be also used to show the opposite that higher interest rates may cause higher profit rates but the conditions at which this might happen do not seem to apply to the evolution of economic relations in the last two decades.

We have seen that it would be necessary a high propensity to consume out of rents and, if the mark-up is elastic to the interest rate, also a high elasticity of aggregate demand with respect to the profit share. This contrasts with the clear picture emerging from the data of rising profitability and falling capital accumulation. Thus the inclusion of an interest elastic mark-up in a Kaleckian model does not seem to solve the problem. Moreover there are problems of logical consistency for the normal rate of profit is an ex ante measure of expected profitability while the rate of profit, as determined by the mark-up, is an ex post measure of the same magnitude.

Attempts to reconcile models with demand led features with Sraffian prices have been made. Since they tend to retain demand conditions prevailing even in the long run they are not able to explain the set of stylized facts listed above.

The options left are then two. The first one is to go back to a model which retains in the long run classical features, which is supply led, but allows for demand conditions to matter in the short-medium term. The second one is to give a different interpretation of the monetary theory of production, which does not consist simply in a mark-up which is interest elastic.

If the assumption of a fixed technique of production and of rigid nominal wages are dropped then the pursuit of a higher rate of profit may lead to a restructuring in the structure of production with flows of capital from less profitable to more profitable sectors. This process however would happen in different ways in different countries according to the institutional differences prevailing in each of them. It could lead for example to an outflow from the traditional manufacturing sectors to finance and service sectors. It could

also lead to a delocalisation of production to foreign countries where wages are lower. It could also cause different reactions among the firms belonging to the same productive branch. Some of them could react by improving technology while others by reducing nominal wages. There would be no unique investment function as in aggregate macro models. Of course all these changes may have repercussions on demand and may lead to fluctuations in aggregate demand which in turn cause realized profits to be less than expected ones. This process may well be compatible with a slowdown in capital accumulation.

The evidence of rising rates of profits and interest rates and falling rate of accumulation plus slow growth in output may be explained in a framework where the rate of growth of the capital stock may be different from the rate of profit. If an exogenous rate of profit, determined by monetary factors, is introduced in a model where the growth rate of capital in equilibrium must be equal both to savings and to the rate of profit multiplied for the capital stock, it follows that the new higher profit rate must coincide with an accelerated rate of accumulation of capital. In equilibrium then a higher profit rate must be accompanied by higher capital growth. If it is assumed that realized rates of profits do not converge towards the level they should have in a steady state growth path, then the average levels of the realized profit rates in different sectors may increase, following an increase in the normal level, without an increase in capital accumulation.

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