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# Functional distribution and wage inequality in recent Kaleckian growth models

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## Functional distribution and wage inequality in recent Kaleckian growth models\*

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### Abstract

This contribution provides a review of recent considerations of wage inequality in Kaleckian models of distribution and growth. On the one hand, we address modelling approaches in which a distinction is made between managers and workers, where the salaries of the former are treated as overhead costs in a target-return pricing framework. Distribution between profits and wages, and between managers and direct labour, will thus depend on the level of economic activity, in particular in a short-run cyclical perspective. On the other hand, we review more recent Kaleckian models, which explicitly introduce wage inequality, but maintain the simple mark-up pricing approach, thus abstracting from explicit consideration of overhead costs. Explicitly or implicitly, these models rather adhere to a medium-run perspective. Finally, we provide a simple neo-Kaleckian distribution and growth model with wage inequality, which allows for different medium-run demand regimes in a stylized way.

**Keywords:** Functional income distribution, wage inequality, distribution, growth, Kaleckian models

**JEL classification:** E12, E25, D31

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## 1. Introduction

Traditionally, Kaleckian distribution and growth models have focused on the relationship between functional income distribution, i.e. wage and profit shares, and aggregate demand, capacity utilization, capital accumulation and growth. Neo-Kaleckian models, initially proposed by Rowthorn (1981) and Dutt (1984, 1987), have concluded that in a private closed economy aggregate demand and growth are wage-led, i.e. a higher wage share should raise capacity utilization and capital accumulation, and under some further conditions (i.e. no saving out of wages) also the rate of profit should rise (the famous paradox of costs), vindicating several of Kalecki's (1954, 1971) major messages with regard to distribution and growth in advanced capitalist economies. Post-Kaleckian models in the tradition of Bhaduri and Marglin (1990) and Kurz (1990) slightly modifying the investment function have shown, however, that profit-led regimes are possible in this Kaleckian modelling framework, too. The same conclusion has been drawn by Blecker (1989) adding international trade to the closed economy neo-Kaleckian models.<sup>1</sup>

The core of the theoretical and empirical debate on wage- or profit-led regimes,<sup>2</sup> based on post-Kaleckian distribution and growth models, has since then been about the relevance of the profit share in the investment function, as well as on the effects of redistribution on net exports, taking a Kaleckian/Kaldorian consumption function and thus a partially depressive effect of a lower wage share on consumption for granted.<sup>3</sup> However this approach has recently been questioned based on empirical observations in the US and other countries in the period before the Great Financial Crisis and the Great Recession, during which falling wage shares, and also rising wage dispersion, as well as rising inequality in personal or household income distribution, but rising instead of falling private consumption could be observed.

These observations have induced several post-Keynesians/Kaleckians to rethink the exclusive focus on functional income distribution in the earlier models and in the debate on wage- vs. profit-led demand and growth. Several amendments and overhauls have been proposed: the distinction between different types of capitalists (industrial capitalists vs. rentiers) and different types of workers (managerial vs. direct labour, or high wage vs. low wage workers) and their respective income shares and propensities to consume; the consideration of relative instead of absolute income effects on consumption; the inclusion of household debt and wealth effects into the consumption function; and the explicit consideration of wealth distribution for consumption. What these contributions have in common is that they provide several mechanisms through which the usual distributional effects on consumption contained in the Kaleckian/Kaldorian consumption function may be neutralised, or even reversed, in the short run or even in the long run of the models. We may thus observe a fall in the wage share, and hence a rise in the profit share, with a simultaneous rise in consumption dynamics and, depending on the model specification, also a rise in aggregate demand, capacity utilisation, capital accumulation and growth. These neutralising or compensating forces are thus able to turn an otherwise wage-led demand and growth regime into a profit-led regime – similar to what has been discovered earlier by Blecker (1989) with respect to the distributional effects on net exports, and by Bhaduri and

Marglin (1990) and Kurz (1990) with respect to direct distributional effects on private investment.

This contribution will provide a review of recent considerations of wage inequality in Kaleckian models of distribution and growth. Section 2 will address modelling approaches in which a distinction is made between managers and workers and the salaries of the former are treated as overhead costs in a target rate of return pricing framework. Distribution between profits and wages, on the one hand, and between managers and direct labour, on the other hand, will thus depend on the level of economic activity, in particular in a short-run cyclical perspective. Marc Lavoie has been the main recent contributor in this area of modelling approaches. Section 3 will then turn towards more recent Kaleckian models, which explicitly introduce wage inequality, but maintain the simple Kaleckian mark-up pricing approach, thus abstracting from explicit consideration of overhead costs and the related endogeneity of distribution between wages and profits or between managers and workers with respect to economic activity or capacity utilisation. Explicitly or implicitly, these models rather address a medium-run perspective beyond the cycle. Following the review of these approaches, Section 4 will provide a simple neo-Kaleckian distribution and growth model with wage inequality, which allows for different medium-run demand regimes in a stylized way. Section 5 will summarize and conclude.

## **2. Models with management overhead labour and target rate of return pricing**

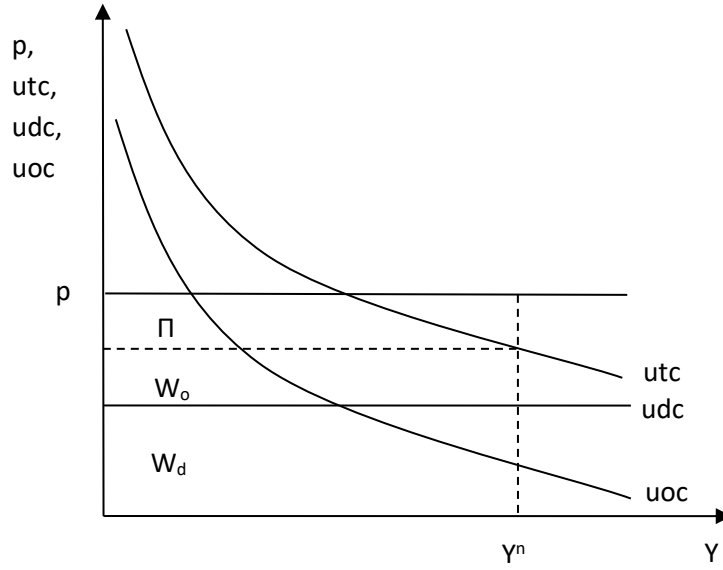
A straightforward way of introducing wage dispersion into Kaleckian models of distribution is to distinguish between direct labour, on the one hand, and indirect, overhead or managerial labour, on the other hand. Lavoie (2014, p. 323) has pointed out:

Among Kaleckians, Steindl (1952, p. 46; 1979, p. 3), Asimakopulos (1970; 1975), Harris (1974) and Rowthorn (1981) have popularized the relevance of indirect labour in economic analysis. It must be recognized, however, that few have walked in their footsteps when formalizing the economy: the list probably stops with the following authors: Myatt (1986), Kurz (1990), Nichols and Norton (1991), Dutt (1992), Lavoie (1995; 1996; 1996-97; 2009), and Palley (2005).

Recently, Marc Lavoie has been the main proponent of an approach treating management salaries as overhead labour in a target rate of return pricing framework. Therefore, we briefly outline the main characteristics of this type of model, following Lavoie (1995, 2009). Assuming a fixed coefficient production technology, the amount of direct labour will be proportional to output, whereas the amount of managerial labour will be proportional to potential output given by the capital stock. Therefore, although productivity of direct labour will be constant, productivity of total labour input, direct and indirect, will rise with the level of output. As can be seen in Figure 1, for a given wage rate for managerial labour, realistically assumed to exceed the given wage rate for direct labour, unit direct labour costs ( $udc$ ) will be constant, but managerial labour costs per unit of output ( $uoc$ ), and thus total unit labour costs ( $utc$ ), will decline with the level of economic activity and output. With the target rate of return pricing ( $p$ ) determining the mark-up at some target or normal rate of

capacity utilization or level of output ( $Y^n$ ), this model will thus imply the following observations when the level of output is rising, assuming everything else to be constant: first, a constant share of wages of direct labour in national income ( $W_d/pY$ ); second, a falling share of managerial salaries in national income ( $W_o/pY$ ); third, a falling share of managerial income in total labour income [ $W_o/(W_d+W_o)$ ]; fourth, a fall in the total labour income share [ $(W_d+W_o)/pY$ ]; and fifth, a rise in the profit share in national income ( $\Pi/pY$ ).

**Figure 1: Target rate of return pricing and distribution with direct and overhead labour**



The first important implication of this approach is hence that the total labour income share and the profit share turn endogenous with respect to aggregate demand, output and capacity utilization in a short-run cyclical perspective. We may thus observe rising profit shares and rising capacity utilization, and seemingly profit-led demand, without any direct causal effect of the former on the latter, but as joint results of some other forces affecting aggregate demand than changes in distribution (i.e. changes in the propensities to save out of different types of income, in ‘animal spirits’ with respect to investment, or in autonomous expenditures).

The second important implication of this approach is that the demand effects of changes in wage inequality in an otherwise neo-Kaleckian model will depend on whether the economy operates below or above the normal level of output or the normal rate of capacity utilisation, as shown by Lavoie (1995, 2009). An increase in the wage rate of managers relative to direct workers, and hence rising wage inequality, will raise unit overhead costs. In order to keep the target rate of return constant, higher unit overhead costs at the normal level of output will be passed on to consumers by means of raising prices. If the economy is operating below the normal level of output, this rise in prices will not fully compensate for the rise in unit overhead costs at that level of output. The total wage share will rise and the

profit share will fall, we will see a rise in aggregate demand, capacity utilization and capital accumulation, which then may or may not overcompensate the initial fall in the profit share.<sup>4</sup> Higher wage inequality will hence be associated with higher demand and growth. However, if firms operate above the normal level of output, the rise in prices to maintain the target rate of return at the normal level of output will more than compensate for the rise in unit overhead costs. The total wage share will fall and the profit share will rise, and we will see a fall in aggregate demand, capacity utilization and capital accumulation, which then may or may not overcompensate the initial rise in the profit share.<sup>5</sup> Higher wage inequality will hence be associated with lower capacity utilization, capital accumulation and growth. Therefore, the effects of rising wage inequality on economic activity and on functional income distribution will depend on the position of the economy in the trade cycle. Furthermore, due to the cyclical endogeneity of the wage and the profit share, we can conclude with Lavoie (2009, p. 389) that in a short-run, cyclical perspective, “in contrast to what seems to be an implicit assumption of a large number of empirical studies, the evolution of wage shares or profit shares is unlikely to be an appropriate indicator of the bargaining power of labour or of capitalists, unless one succeeds in taking adequate care of cyclical effects”.

### **3. Models with mark-up pricing and different types of workers**

A second type of models introducing wage inequality maintains the usual mark-up pricing approach abstracting from explicit consideration of overhead costs and the related distribution effects discussed above. These models, however, rather address a medium-run perspective beyond the trade cycle.

Palley (2005, 2015a, 2015b, 2017) has shown in a series of models that the introduction of a wage bill division between workers and managers can render the economy profit-led with respect to the profit share, but wage-led with respect to the workers' share of the wage bill. He also shows that a change in the wage-bill division, which affects personal income inequality, can also change the character of the regime (Palley 2017). Increasing the workers' share of the wage bill at the expense of the capitalists makes the economy more likely to be wage led for a given functional distribution of income. Similarly, if workers save and own part of the capital stock and thus receive part of the profits, the ownership shares of the capital stock may affect the regime: A higher ownership share of the workers has expansionary effects on aggregate demand, capital accumulation and growth, and thus makes the model more likely to be profit-led. This leads to the endogeneity of the wage-led vs. profit-led regime character, the division of the wage bill and the division of capital ownership. However, the basic assumption in these models is that the workers' propensity to save is smaller and independent of the managers' and capitalists' propensity to save (i.e. the absolute income hypothesis with respect to consumption prevails).

Another fashionable type of recent models has amended the traditional Kaleckian focus on functional income shares in the wage-led vs. profit-led debate by including wage dispersion together with interdependent consumption and financing norms of households. Wage inequality is often included by splitting workers into two separate classes, low-wage



and high-wage workers, where the former earns a fraction of the real wage rate of the latter (Detzer 2018, Kapeller and Schütz 2014, 2015, Kapeller et al. 2018). Other studies, however, have maintained the traditional two-class divide and assume that capitalists/rentiers also earn additional wage income, which is a multiple of workers' wage income (Kim et al. 2014, Kim et al. 2017, Setterfield et al. 2016, Setterfield and Kim 2016, Zezza 2008). By contrast, Belabed et al. (2018) model ten household income profiles corresponding to the ten deciles of the income distribution. In order to combine personal or wage inequality with interdependent social norms, these models expand the traditional Kaleckian consumption function: poor households emulate the consumption of richer households. The specific pattern of emulation varies across studies and is determined by emulation parameters, which depend on consumption norms. In this way, these models are related to Veblen's (1899) 'conspicuous consumption', Duesenberry's (1949) 'relative income hypothesis' and the 'expenditure cascades' proposed by Frank et al. (2014), and on financial norms of households and the credit system (Barba and Pivetti 2009, Cynamon and Fazzari 2008). Whereas in the traditional Keynesian/Kaleckian models a distributional shift favouring high income households (i.e. an increase of the profit share and/or wage dispersion) would cause a contraction of aggregate consumption, in the models mentioned here, the inclusion of consumption emulation allows for different outcomes. If the emulation effects are strong enough, they will lead to an increase in aggregate consumption, despite rising inequality, and will thus modify the resulting demand and growth regimes.

Kapeller and Schütz (2015) develop a simple neo-Kaleckian model including unconstrained consumer debt and rising wage inequality. In their model, a *consumption-driven profit-led regime* may arise if emulation effects are relatively strong and negative demand effects, stemming from workers' debt burden, are relatively small. Kapeller and Schütz (2014) and Kapeller et al. (2018) present stock-flow-consistent models in which rising wage inequality in the traditional Keynesian/Kaleckian case leads to a contraction of aggregate demand, while, when coupled with Veblenian debt-financed consumption emulation, and with a Minsky banking system with endogenously changing risk perceptions of banks, the rise in wage inequality can trigger a "Minsky-Veblen cycle". While rising wage inequality initially leads to an expansion of aggregate demand, banks' changing risk perceptions, due to increasing household indebtedness, eventually trigger a strong compression period that culminates into financial panic and finally leads to a sustained consolidation period. After this relatively stable period, it is assumed that risk perceptions behave in a 'Minskyian way', and thus the cycle repeats itself. In Setterfield and Kim (2016, 2017), based on Kim et al. (2014), workers emulate very affluent households' consumption by taking up debt. In their model, the extent to which indebted working households are managing their repayment obligations is important. If households treat saving as a residual, determined only after consumption and debt servicing ('pecking order'), the likelihood of an emerging consumption-driven profit-led regime increases. They show how the inclusion of emulation and debt-financed consumption, coupled with redistribution away from workers, can turn otherwise wage-led results of the neo-Kaleckian model into profit-led ones. In Setterfield and Kim (2016), they show how the financial stability (i.e. debt dynamics) of such

a regime depends on *whom* workers emulate, which is influenced by inequality within the top income quintile. Furthermore, in Setterfield et al. (2016), it is shown that whether or not borrowers follow the ‘pecking order’ has qualitative and quantitative effects on the financial stability of the model. Kim et al. (2017) extend these models through an employment rent framework that gives rise to a potential vicious circle between inequality and indebtedness, which can in turn affect the macroeconomic regime. Belabed et al. (2018) investigate the role of personal and functional income distribution and consumption emulation on household debt levels and current account balances in a Kaleckian three-country stock-flow-consistent model calibrated for China, Germany and the US. Their simulations suggest that rising household indebtedness and a rising current account deficit in the US can largely be explained by rising (top-end) personal income inequality, which led to strong debt-financed consumption emulation that was due to a facilitative institutional and regulatory environment. In contrast, they find that the rising current account surplus of China and Germany can partly be explained by a strong redistribution from the household sector to firms. Focusing instead on a single open economy, Detzer (2018) shows in a stock-flow-consistent model how rising inequality together with different consumption norms and financial regulations can lead to a ‘debt-led private demand boom’ or an ‘export-led mercantilist’ growth regime. He shows that the deregulation of the financial sector is central to the emergence of the debt-led private demand regime because it allows for consumption emulation desires of low income households, triggered by increasing wage dispersion, to be facilitated by required credit supply. Zezza (2008) explains the fall of the US saving rate in a stock-flow consistent model through wealth effects, stemming from capital gains on equities and housing, and by low income worker households imitating the consumption of high income earning capitalists. Carvalho and Rezai (2016) implement effects of wage inequality into a neo-Kaleckian model by making the propensity to save from wages directly dependent on a measure of wage inequality. However, they make the assumption that rising wage inequality always leads to a rising propensity to save out of wage income. Prante (2018) criticises this empirical argument and shows in a simple post-Kaleckian model that the macroeconomic effects of personal and functional income distribution can either dampen or reinforce each other, depending on the specific consumption and financing norms of an economy.

#### **4. A simple neo-Kaleckian distribution and growth model with wage inequality**

In this section, we will provide the introduction of wage inequality into a simple neo-Kaleckian distribution and growth model. For our simple model, we assume a closed private economy in which one good, which can be used for consumption and investment purposes, is produced with a constant coefficients production technology, i.e. with a constant capital-potential output ratio and a constant labour-output ratio. We abstract from overhead costs and overhead labour, as well as from the depreciation of the capital stock. Capitalists own the means of production and earn profits which are partly consumed and partly saved. Workers earn wages and the propensity to save out of wages may be positive, so that workers’ households also own part of the stock of wealth, earn capital income from this

wealth and benefit/suffer from positive/negative valuation effects related to this stock of wealth. Wealth dynamics and valuation effects are not explicitly modelled, but are taken to be exogenous in our model, with potential effects on workers' propensity to consume out of wage income. We assume that wages are unequally distributed across the model economy, mainly because of differentials in bargaining power of different types of workers, due to different skills, different degrees of unionization etc. Furthermore, we also assume that wage dispersion is positively associated with the profit share and negatively with the wage share in national income. In other words, if there is a fall (rise) in the overall wage share due to a fall (rise) in workers' and trade unions' bargaining power, we will assume that low-paid workers are affected more than proportionally. This seems to be a reasonable assumption given the medium- to long-run developments in several developed capitalist economies from the early 1980s until the Great Recession 2007-9 – the era of neo-liberalism and finance-dominated capitalism –, when a tendency of the labour income share to fall was associated with a rise in wage inequality and in wage dispersion, of course to different degrees in different countries (Glyn 2006, Tridico 2017).

The profit share ( $h$ ) in our model economy is determined by mark-up ( $m$ ) pricing on unit variable costs, which are assumed to be constant up to full capacity output. The mark-up is treated to be exogenous and determined by the degree of price competition in the goods market and by relative powers of capital and labour in the labour market.

$$1) \quad h = h(\bar{m}), \quad \frac{\partial h}{\partial m} > 0.$$

Wage inequality ( $\Gamma$ ) is affected by the profit share.

$$2) \quad \Gamma = \Gamma(h), \quad \frac{\partial \Gamma}{\partial h} \geq 0.$$

The propensity to save out of wage income ( $s_w$ ) is co-determined by wage inequality.

$$3) \quad s_w = s_{w0} - \eta \Gamma, \quad 0 \leq s_{w0} < 1.$$

If  $\eta < 0$ , we have a 'normal' or intuitional effects of rising inequality on consumption/saving out of wages due to absolute income effects. A rise in wage inequality will raise the average propensity to save out of wage income, because high wage earners have a higher propensity to save than low wage earners. However, if  $\eta > 0$ , we have 'puzzling' or counter-intuitional effects of rising inequality on consumption/saving out of wages, due to the persistence of basic needs of low income workers, relative income considerations, improved access to credit and/or wealth effects on consumption. Therefore, a rise in wage inequality will lower the average propensity to save out of wages and consumption out of wages will increase due to one, or a combination of, the effects mentioned above.

Saving is composed of saving out profits and saving out of wages, and hence determined by the propensity to save out of profits ( $s_{\Pi}$ ) and the sum of profits ( $\Pi$ ) and the propensity to save out of wages and the sum of wages ( $W$ ). The saving rate ( $\sigma$ ), normalizing saving by the capital stock, is hence affected by the rate of capacity utilization ( $u=Y/K$ ), the functional propensities to save out of different income types, functional income distribution, as well as wage dispersion which itself is a function of the profit share.

$$4) \quad \sigma = \frac{s_{\Pi}\Pi + s_W W}{K} = u \left[ s_{\Pi}h + (s_{W0} - \eta\Gamma)(1-h) \right], \quad s_{\Pi} > s_{W0} - \eta\Gamma.$$

We assume a simple neo-Kaleckian investment function, in which the rate of capital accumulation ( $g$ ), relating investment ( $I$ ) to the capital stock, is determined by animal spirits ( $\alpha$ ) and the rate of capacity utilization.

$$5) \quad g = \alpha + \beta u, \quad \alpha, \beta > 0.$$

We know that without considering the effects of wage dispersion or personal income distribution in the saving/consumption functions, with this investment function our model would only generate wage-led demand and growth results (Hein 2014, chapter 6, Lavoie 2014, chapter 6). The goods market equilibrium is given by the equality of investment and saving decisions:

$$6) \quad g = \sigma$$

The goods market equilibrium stability condition, which for our comparative exercises below we assume to be met, is:

$$7) \quad \frac{\partial \sigma}{\partial u} - \frac{\partial g}{\partial u} > 0 \quad \Rightarrow \quad s_{\Pi}h + (s_{W0} - \eta\Gamma)(1-h) - \beta > 0.$$

We thus obtain the following goods market equilibrium values for the rates of capacity utilization and capital accumulation:

$$8) \quad u^* = \frac{\alpha}{s_{\Pi}h + (s_{W0} - \eta\Gamma)(1-h) - \beta}.$$

$$9) \quad g^* = \frac{\alpha \left[ s_{\Pi}h + (s_{W0} - \eta\Gamma)(1-h) \right]}{s_{\Pi}h + (s_{W0} - \eta\Gamma)(1-h) - \beta}.$$

The effects of a change in the profit share on the equilibrium values are as follows:

$$8a) \quad \frac{\partial u^*}{\partial h} = \frac{-\alpha \left[ s_{\Pi} - (s_{w0} - \eta\Gamma) - (1-h)\eta \frac{\partial \Gamma}{\partial h} \right]}{\left[ s_{\Pi}h + (s_{w0} - \eta\Gamma)(1-h) - \beta \right]^2} = \frac{-u^* \left[ s_{\Pi} - (s_{w0} - \eta\Gamma) - (1-h)\eta \frac{\partial \Gamma}{\partial h} \right]}{s_{\Pi}h + (s_{w0} - \eta\Gamma)(1-h) - \beta},$$

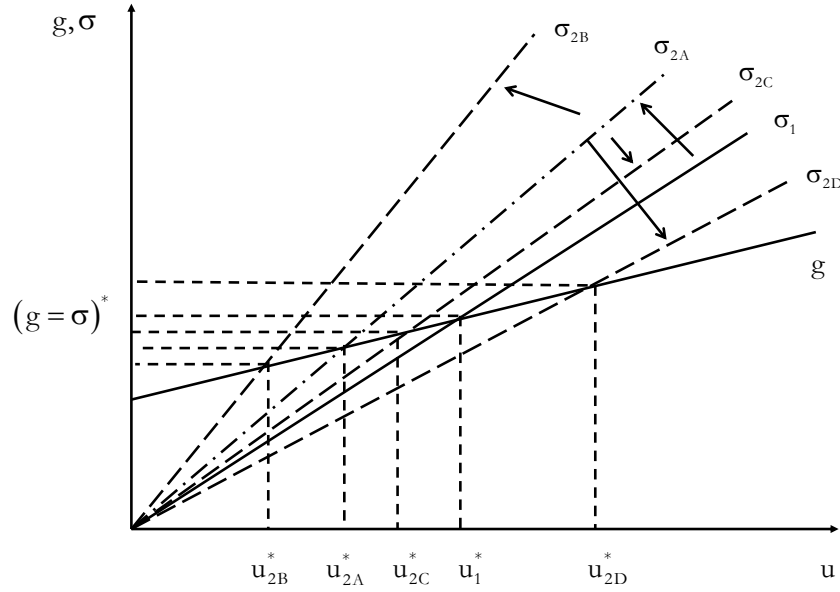
$$8a') \quad \frac{\partial u^*}{\partial h} > 0, \quad \text{if : } s_{\Pi} - (s_{w0} - \eta\Gamma) - (1-h)\eta \frac{\partial \Gamma}{\partial h} < 0,$$

$$9a) \quad \frac{\partial g^*}{\partial h} = \frac{-\beta\alpha \left[ s_{\Pi} - (s_{w0} - \eta\Gamma) - (1-h)\eta \frac{\partial \Gamma}{\partial h} \right]}{\left[ s_{\Pi}h + (s_{w0} - \eta\Gamma)(1-h) - \beta \right]^2} = \frac{-\beta u^* \left[ s_{\Pi} - (s_{w0} - \eta\Gamma) - (1-h)\eta \frac{\partial \Gamma}{\partial h} \right]}{s_{\Pi}h + (s_{w0} - \eta\Gamma)(1-h) - \beta},$$

$$9a') \quad \frac{\partial g^*}{\partial h} > 0, \quad \text{if : } s_{\Pi} - (s_{w0} - \eta\Gamma) - (1-h)\eta \frac{\partial \Gamma}{\partial h} < 0.$$

As can be seen in equations 8a) and 9a) and also in Figure 2, the effect of a rise in the profit share on the goods market equilibrium can be decomposed into the primary effect via a change in functional income shares and a secondary effect via induced changes in wage dispersion. The effects through changes in functional income distribution can be seen in the first terms in brackets in the numerators of equations 8a) and 9a). They show uniquely falling equilibrium rates of capacity utilization and capital accumulation in the face of a rising profit share, because we have assumed  $s_{\Pi} - (s_{w0} - \eta\Gamma) > 0$  to hold. In Figure 2 this primary effect is indicated by a counter clockwise rotation of the saving rate function from  $\sigma_1$  to  $\sigma_{2A}$  which means a downward shift of equilibrium capacity utilization from  $u^*_1$  to  $u^*_{2A}$  and a respective reduction in the equilibrium rate of capital accumulation and growth. Without any further effects our model economy would thus be clearly wage-led.

If there are further or secondary effects of changes in functional distribution on wage inequality, we may obtain different outcomes. If the rise in wage inequality, due to absolute income effects on consumption, causes a rise in the average propensity to save out of wage income ( $\eta < 0$ ), the depressing effect of a rising profit share on capacity utilization and capital accumulation will be reinforced, as can be seen in equations 8a) and 9a). In Figure 2, this effect means a further counter clockwise rotation of the saving rate function towards  $\sigma_{2B}$ , which causes a fall in equilibrium capacity utilization to  $u^*_{2B}$  and a respective reduction in the equilibrium rate of capital accumulation and growth. Capacity utilization, capital accumulation and growth become even more wage-led.

**Figure 2: Potential effects of a rise in the profit share**

However, if compensatory mechanisms with respect to workers' consumption are at work (basic needs, relative income concerns, credit availability, positive wealth effects), the average propensity to save out of wages may fall ( $\eta > 0$ ), and this may then dampen the decrease in equilibrium capacity utilization and capital accumulation or even reverse it, as is evident in equations 8a) and 9a). Looking at Figure 2, in the first case, this secondary effect rotates the saving rate function slightly clockwise towards  $\sigma_{2C}$ , so that the overall effect of a rise in the profit share and of redistribution on capacity utilization and capital accumulation is still negative, but less so than without these effects. Capacity utilization will only fall to  $u_{2C}^*$  and to the associated rate of capital accumulation and growth, so that the economy is still wage-led, but less so than without these effects. And with strong compensatory effects, as shown by the rotation of the saving rate function towards  $\sigma_{2D}$  and the higher equilibrium values at  $u_{2D}^*$ , a rise in the profit share and the associated increase in wage inequality will now show expansionary effects on capacity utilization, capital accumulation and growth. Our economy becomes seemingly profit-led. The results so far are still generating stable equilibria (i.e. the stability condition  $s_{\Pi}h + (s_{w0} - \eta\Gamma)(1-h) - \beta > 0$  is still met). However, if inequality rises by too much and/or the responsiveness of saving/consumption with respect to inequality is too strong, such that the slope of the saving rate function in Figure 2 becomes smaller than the slope of the accumulation rate function, we will observe cumulatively unstable processes.

Summing up, what this simple model shows is that taking into account personal income or wage distribution together with basic needs, relative income concerns, credit availability or wealth effects, a basically wage-led economy may turn seemingly profit-led. But do these modifications mean that the focus on functional income shares and the wage-

led vs. profit-led distinction in the basic Kaleckian models is useless? We do not believe so. Rising consumption in the face of falling wage shares and rising income/wage inequality is difficult to sustain due to the associated indebtedness problems, as found in several of the models which we have reviewed in Section 3. Therefore, at the end of the day, sustainable economic development has to rely on income financed consumption demand, and here functional income shares matter again. In fact, the concern with functional income distribution mirrors a basic contradiction with respect to the role of wages in a capitalist economy: Wages are costs for the individual firm, but also a main source of demand for the firm sector as a whole! But if absolute income effects dominate at the end of the day, this means that if the average propensity to save is to rise with wage inequality (which can be assumed in the long run), then it is not only income shares, but also wage dispersion which matter here. This consequence has an interesting policy implication, as Palley (2017) has pointed out: Even if an economy were profit-led via an investment channel, as in Bhaduri and Marglin (1990) and Kurz (1990), or via a net export channel, as in Blecker (1989), reducing wage dispersion would still be a reliable and sustainable way of boosting aggregate demand and growth, and may also have long-run positive effects on productivity growth, as argued by Lavoie (2014, Chapter 6.9).

## 5. Conclusions

In this contribution we have provided a review of recent considerations of wage inequality in Kaleckian models of distribution and growth. First, we have addressed modelling approaches in which a distinction is made between managers and workers and the salaries of the former are treated as overhead costs applying a target rate of return pricing framework. Distribution between profits and wages, on the one hand, and between managers and direct labour, on the other hand, will thus depend on the level of economic activity, in particular in a short-run cyclical perspective. Marc Lavoie has been the main recent contributor in this area of modelling approaches. Second, we have turned towards more recent Kaleckian models, which explicitly introduce wage inequality, but maintain the simple Kaleckian mark-up pricing approach. These models thus abstract from explicit consideration of overhead costs and the related endogeneity of distribution between wages and profits or between managers and workers with respect to economic activity or capacity utilisation. Explicitly or implicitly, these models rather address a medium-run perspective beyond the cycle. Here, we have focussed in particular on those models which include the effects of persistence of basic needs of low income workers, relative income considerations, access to credit and/or wealth effects on workers' consumption. Finally, we have provided a simple neo-Kaleckian distribution and growth model with wage inequality, which allows for different medium-run demand regimes in a stylized way whenever one, or a combination of the above mentioned effects on workers' consumption prevails. In this model, we may thus see rising demand and growth in the face of a falling wage share and rising wage inequality, and hence seemingly profit-led demand and growth. However, we have argued that even though rising wage inequality may be associated with rising demand and growth, this will be difficult to sustain due to the associated indebtedness problems. Therefore, at the end of the day, sustainable

development has to rely on income financed consumption demand, and thus income shares still matter. Furthermore, even if an economy were profit led via an investment or net export channel, reducing wage dispersion would still be a reliable and sustainable way of boosting aggregate demand and growth, and also of stimulating productivity growth.

## Notes

<sup>1</sup> See Hein (2014, Chapters 6-11) and Lavoie (2014, Chapter 6) for reviews of basic and more advanced Kaleckian distribution and growth models.

<sup>2</sup> On the history of this debate see Lavoie (2017).

<sup>3</sup> For summaries of empirical results see Hein (2014, Chapter 7) and the discussions by Blecker (2016) and Stockhammer (2017).

<sup>4</sup> According to Lavoie (2009), the profit share in the new equilibrium will be lower (higher) than in the initial equilibrium if the constant in the investment function representing ‘animal spirits’ is positive (negative).

<sup>5</sup> According to Lavoie (2009), the profit share in the new equilibrium will be higher (lower) than in the initial equilibrium if the constant in the investment function representing ‘animal spirits’ is positive (negative).

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