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Managerial Pay (Cadrisme) and the Post Keynesian Growth Model

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Abstract

This paper examines the effects of managerial pay on the Post Keynesian model of growth and distribution. Introducing managerial pay explains why economies may exhibit both wage- and profit-led characteristics in response to changed income distribution. Second, managerial pay undoes Pasinetti's (1961/2) theorem regarding the irrelevance of worker saving behavior for long run growth outcomes. Third, managerial pay links neo-classical Marxist theory with Post Keynesian growth theory. Neo-classical Marxists focus on why firms may choose inefficient production techniques. Similar logic carries over to Post Keynesian growth theory and firms may choose techniques that lower growth because they increase profits.

Keywords: Post Keynesian growth theory, managerial pay, neo-classical Marxism
JEL ref.: E12, E25, 040.

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Abstract

This paper examines the effects of managerial pay on the Post Keynesian model of growth and distribution. Introducing managerial pay explains why economies may exhibit both wage- and profit-led characteristics in response to changed income distribution. Second, managerial pay undoes Pasinetti's (1961/2) theorem regarding the irrelevance of worker saving behavior for long run growth outcomes. Third, managerial pay links neo-classical Marxist theory with Post Keynesian growth theory. Neo-classical Marxists focus on why firms may choose inefficient production techniques. Similar logic carries over to Post Keynesian growth theory and firms may choose techniques that lower growth because they increase profits.

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I Introduction

Post Keynesian growth theory emphasizes the significance of income distribution for growth, focusing on the functional distribution of income between profit and wages. The logic is that the profit rate affects capital accumulation, and the functional distribution of income also affects aggregate saving via the Kaleckian channel of differences in the propensity to save of worker and capitalist households.

However, Post Keynesian theory has largely over-looked the issue of the size distribution of income across households and its significance for growth. Recently, Palley (2005) has emphasized the significance of the managerial pay for the distribution of wage income and aggregate saving, and Lavoie (2009) has emphasized the implications of the fixed versus variable nature of managerial employment ("cadrisme") operating via the pricing behavior of firms.

The current paper provides a comprehensive treatment of the effect of managerial pay on the Post Keynesian model of growth and income distribution. It also shows how recognition of managerial pay provides a link to the extensive neo-classical Marxist literature on effort extraction (Bowles, 1985; Bowles and Gintis, 1990; Gintis, 1976; Skillman, 1991; Skillman and Ryder, 1993). That latter literature focuses on supply-side effects, identifying the role of managers and choice of technique in redistributing income rather than expanding income. The Post Keynesian model focuses on the demand-side, showing how managerial pay affects growth via differences in the propensity to save of workers and managers.

The paper shows how the distribution of wage income is a critical channel affecting growth and the distribution of wealth. Post Keynesians have largely focused on the functional distribution of income, yet U.S. data show that there have been larger changes in the wage distribution. If income distribution has been important for growth over past three decades, then its affect has likely operated via the wage distribution which is where change has been greatest.

II Empirical motivation

Figure 1 shows the breakdown of national income. The functional distribution of income determines the division of national income into capital and labor shares, which has been the traditional focus of Post Keynesian growth theory. However, there exists another layer of decomposition. The capital share can be decomposed into profit and interest, and this been a focus of the financialization literature (see for example Hein, 2008; Hein and van Treeck, 2007; Palley, 2008; Skott and Ryoo, 2007). The labor share can be decomposed into managerial and workers' pay. It is this latter decomposition that has been largely over-looked and is the focus of the current paper.

< Insert Figure 1 here >

Table 1 shows labor and capital shares of income by business cycle peak year for the period 1959 to 2006. The important feature is the capital share has been relatively stable over this fifty year period, fluctuating between a low of 26.1 percent in 1979 and a high of 31.7 percent in 1959. Between 1969 and 2006 the range of fluctuation was even narrower, lying between 26.1 and 29.6. With regard to labor's share, between 1959 and 2006 the range of fluctuation was 68.3 to 73.9 percent. Relative to the low of 68.3 percent, the top end of the range of fluctuation is just 8.2 percent higher than the low point.

< Insert Table 1 here >

Table 2 shows the distribution of family income between 1973 and 2006. The top fifth of families have increased their share of income from 41.1 percent in 1973 to 48.5 percent in 2006. The top end of the range of fluctuation is 18 percent higher than the bottom point of 41.1 percent. The bottom sixty percent of families saw their share of income decrease from 34.9 percent in 1973 to 28.6 percent in 2006. Relative to the bottom point of 28.6 percent the top end of the range of fluctuation is 22 percent higher.

< Insert Table 2 here >

The conclusion is that fluctuations in the distribution of family income have been proportionately larger than fluctuations in the functional distribution of income. That points to the need to take account of both the distribution of family income and the functional distribution of income.

Family income distribution covers all sources of income, including both profit and wage income. Changes in the functional distribution of income and the distribution of the wage bill both impact the distribution of family income. For the period 1973 to 2006, the gap between the high and low of the capital share was 3.5 percent points of national income (29.6 – 26.1). Over the same period, the gap between the high and low of the top fifth's share of family income was 7.4 points of national income (48.5 – 41.1). Suppose top fifth received all of the increase in capital income that would still only explain less than half of their increase in family income. The remaining half must therefore be explained by changes in the distribution of the wage bill.

This is where managerial pay enters. Wage income of the top fifth families can be thought of as managerial pay. The implication is that a substantial part of the increase in the family income of the top fifth came from an increase in their labor income or managerial pay. Since the overall labor share has decreased, that increase in top family wage income implicitly came at the expense of the wage income of the bottom eighty percent of families. Families in the bottom eighty percent of the family income distribution likely derive their income almost exclusively from labor income. These families have therefore been hit by two forces. First, they have been hit by the shift of income from labor to capital that has reduced the wage share and increased the profit share. Second, they have been hit by changes in the wage distribution that have shifted wage income to the top end of the wage distribution, benefitting managers. This pattern is exemplified by the explosion of CEO pay, which is described in Table 3. In 1973 the average U.S. CEO received twenty-seven times the compensation of the average worker. In 2006 that ratio was 275. It also fits with findings reported by Bebchuk and Grinstein (2005) that the pay for the top five officers of S&P 500 companies rose from 5 percent of corporate profits in the 1990s to over 10 percent in the 2000s.

< Insert Table 3 here >

We can now assemble the pieces. Post Keynesian growth theory focuses on the effects of income distribution on growth. Traditionally, that focus has been on the functional distribution of income. However, the functional distribution of income has been relatively stable, and it also overlooks other significant sources of fluctuation in the distribution of income that occur through changes in the distribution of the wage bill. Theoretically accounting for these wage bill effects can be accomplished by introducing managerial pay. This yields a more complete account of changes in income distribution, enabling a fuller identification of the role of income distribution in determining growth.

III Theoretical preliminaries: the benchmark Post Keynesian growth model

Introducing managerial pay has significant implications for the theoretical formulation of the canonical Post Keynesian growth model – the so-called neo-Kaleckian growth model. This section of the paper outlines that canonical model, and subsequent sections show how the model is changed by introduction of managerial pay.

The conventional neo-Kaleckian growth model without managerial pay has workers receiving profit and wage income while capitalists only receive profit income. The equations of the model are given by:[1]

(1) $I/K = S/K$

(2) $g = I/K = g(\pi, u)$ $\qquad g_\pi > 0, g_u > 0$

(3) $S/K = S(u, \pi, \beta_W, \beta_C, z)$ $\qquad S_u > 0, S_\pi > 0, S_{\beta C} < 0, S_{\beta W} < 0, S_z > 0$

(4) $u = Y/K$

(5) $\pi = \pi(\sigma, u)$ $\qquad \pi_\sigma > 0, \pi_u > 0$

(6) $\sigma = \sigma(m)$ $\qquad \sigma_m > 0$

[1] Full derivations are provided in Dutt (1990) and Palley (2009).

(7) $m = m(u, \psi)$ $\qquad m_u > 0, m_\psi > 0$

(8) $I/K = [1 - \beta_C]\pi$

where I = aggregate investment spending, K = capital stock, S = aggregate saving, g = growth rate, π = profit rate, u = rate of capacity utilization, σ = profit share, β_W = propensity to consume of workers, β_C = propensity to consume of capitalist households, z = share of capital stock owned by capitalists, m = mark-up on average unit labor costs, and ψ = business' real pricing power.

Equation (1) is the dynamic IS schedule describing investment – saving balance consistent with goods market equilibrium. Equation (2) determines the rate of growth which is equal to the rate of capital accumulation. The rate of accumulation is in turn determined by investment spending which depends positively on rate of profit and rate of capacity utilization.

Equation (3) determines the saving rate relative to the capital stock. Saving depends positively on the rate of capacity utilization, the rate of profit, the propensity to save of worker and capitalist households, and capitalists' ownership share of the capital stock. This last variable has been emphasized by Dutt (1990) and Palley (2009). An increase in capitalists' ownership share increases the proportion of profits going to capitalist households. That increases aggregate saving because capitalists have a lower propensity to consume and a higher propensity to save. An increase in capitalists' ownership share effectively transfers income from worker to capitalist households so that changing the distribution of wealth is yet another way of changing family distribution of income.

Equation (4) defines capacity utilization. Equation (5) determines the profit rate, which is a positive function of the profit share and capacity utilization. Equation (6) determines the profit share, which is a positive function of the mark-up. Equation (7) determines the mark-up which is a positive function of capacity utilization and business pricing power, denoted by the parameter ψ. Business pricing power captures both the degree of product market monopoly power as well as the bargaining strength of corporations relative to labor.

Lastly, equation (7) is the Kaldor (1956) – Pasinetti (1961/2) Cambridge equation. This equation is usually interpreted as determining income distribution. However, as shown in Dutt (1990) it actually determines the distribution of wealth ownership across capitalist and worker households. Its logic is easy to understand. To maintain their ownership share capitalists must finance zI of investment spending. That requires capitalists save $[1 - \beta_C]zP$, where zP is capitalists' share of profits (P). Ownership shares are in equilibrium when capitalists' saving equals their investment financing share. Equating their investment share with their saving and dividing by K then yields the Cambridge condition given by equation (7). However, the ownership share term (z) cancels out which may explain why the role of the distribution of wealth has been largely overlooked in the Post Keynesian growth literature.

Equations (1) – (7) can then be reduced to a three equation system given by:

(9) $g(\pi, u) = S(u, \pi, \beta_W, \beta_C, z)$ $\quad S_u > 0, S_\pi > 0, S_{\beta C} < 0, S_{\beta W} < 0, S_z > 0$

(10) $\pi = \pi(u, \psi)$

(11) $g(\pi, u) = [1 - \beta_C]\pi$

Equation (9) is the dynamic IS condition; equation (10) determines the profit rate; and equation (11) is the wealth ownership equilibrium condition. There are three endogenous variables: capacity utilization (u), the profit rate (π), and capitalists' ownership share (z).

The model can be viewed as having a short-run and long-run equilibrium. The short-run equilibrium corresponds to a situation in which goods market and income distribution is in equilibrium so that equations (9) and (10) are satisfied. The long-run corresponds to situation in which ownership shares are also in equilibrium so that (9), (10) and (11) are all satisfied simultaneously.

As usual in neo-Kaleckian growth models there are two different regimes corresponding to wage- and profit-led growth (Bhaduri and Marglin, 1990). In a wage-led regime an increase in the profit rate lowers aggregate demand (AD) and growth, with the adverse saving effect dominating the positive investment effect. In a profit-led regime the reverse holds so that an increase in the profit rate raises AD and growth.

Figure 2 shows the short run equilibrium in a wage-led economy. The northwest quadrant shows the IS schedule given by equation (9) and profit rate function given by equation (10). The profit rate function is labeled the PP function and it is positively sloped. The IS schedule is negatively sloped because the economy is wage-led. Consequently, a lower profit rate stimulates AD and raises capacity utilization sufficiently to increase investment spending. The slope of the IS is given by

$d\pi/du|_{IS} = [S_u - g_u]/[g_\pi - S_\pi] < 0$

Assuming the standard Keynesian multiplier stability condition holds, then $[S_u - g_u] > 0$. A wage-led economy involves the condition $[g_\pi - S_\pi] < 0$ while a profit-led economy involves the condition $[g_\pi - S_\pi] > 0$.

< Insert Figure 2 >

The intersection of the IS schedule and profit rate function (PP) determine the short run equilibrium profit rate and capacity utilization. The rate of growth is determined by equation (2) which is a positive function of the profit rate of profit and the rate of capacity utilization. The southwest quadrant shows iso-growth contours derived from equation (2), and moving in a southwesterly direction increases the growth rate. Using the 45^0 rays in the northwest and southeast quadrant maps the equilibrium capacity utilization – profit rate pair onto an iso-growth contour in the southwest quadrant, thereby determining the short run growth rate.

Long run equilibrium holds when equation (11) also holds. Equations (9), (10), and (11) can be reduced to a two equation system given by:

(12) $g(\pi(u, \psi), u) = S(u, \pi(u, \psi), \beta_W, \beta_C, z)$

(13) $g(\pi(u, \psi), u) = [1 - \beta_C]\pi(u, \psi)$

The endogenous variables are u and z. Equation (12) is the dynamic IS schedule while equation (13) is the ownership share equilibrium condition. Ownership shares are constant when equation (13) is satisfied.

The reduced model is represented in graphical form in Figure 3. The ownership share equilibrium condition is represented by the ZZ schedule. The slope of the IS schedule is negative and given by $dz/du|_{IS} = [g_u – S_u]/S_z < 0$ where $g_u = g_\pi\pi_u + g_u > 0$ and $S_u = S_u + S_\pi\pi_u > 0$. The IS is negatively sloped because a lower capitalist ownership share (z) increases AD, thereby expanding equilibrium capacity utilization. The slope of the ZZ is vertical in [u, z] space because the ownership share equilibrium condition is independent of z. Long run equilibrium capacity utilization is therefore independent of capitalist's ownership share.

< Insert Figure 3 here >

The dynamics of adjustment to long run equilibrium are as follows. If the goods market is in equilibrium, the economy slides down the IS schedule to point of intersection with ZZ schedule as shown in Figure 3. To the left of ZZ schedule, the profit share is low so that capitalists are saving less than the amount needed to maintain their ownership share and their share is decreasing. To the right of the ZZ schedule, the profit share is high so that capitalist saving is above that required to maintain their ownership share so that it is rising.

An alternative adjustment dynamic has both capacity utilization (u) and ownership shares (z) being slow moving state variables governed as follows:

(14) $\dot{u}/u = G(I/K - S/K)$ $\qquad G' > 0, G(0) = 0$

(15) $\dot{z}/z = H([1 - \beta_C]\pi(u, \psi) - I/K)$ $\qquad H' > 0, H(0) = 0$

The dot above the variable signifies the rate of change so that equation (14) determines the rate of change of capacity utilization, while equation (15) determines the rate of change of capitalists' ownership share. The stable version of this adjustment mechanism is shown in the phase diagram in Figure 4.

< Insert Figure 4 here >

The model can be used to determine comparative static effects of changes in exogenous parameters. For instance, consider a decrease in workers' propensity to consume (β_W). This shifts the IS schedule left but the ZZ schedule is unaffected. The result is a new equilibrium in which capitalists' ownership share is lower but capacity utilization is unchanged. This is Pasinetti's (1961/2) famous result regarding the irrelevance of worker saving behavior for growth. Worker saving behavior affects the distribution of wealth but it has no effect on growth. Given capitalists' propensity to save, there exists a unique profit rate such that capitalists' saving equals their investment financing obligations, and that profit rate determines a unique rate of capacity utilization.

IV Theoretical implications of managerial pay

We are now in a position to examine the effect of incorporating managerial pay into the neo-Kaleckian growth model, and doing so dramatically influences the model and can change all three equations ((9), (10) and (11)) of the model.

IV.a Managerial pay and the IS equation.

The first change concerns the IS schedule given by equation (9). Palley (2005) shows the introduction of managerial pay changes aggregate saving behavior, thereby changing the IS schedule.[2] Saving in the conventional neo-Kaleckian model determined as follows:

(16) $S/K = [Y - C_W - C_C]/K$

(17) $C_W = \beta_W\{W + [1 - z]P\}$

(18) $C_C = \beta_C zP$

Combining equations (16), (17) and (18) then yields

(19) $S/K = [Y - \beta_W\{[Y - P] + [1 - z]P\} - \beta_C zP]/K$

$= S(u, \pi, \beta_W, \beta_C, z) \qquad S_u > 0, S_\pi > 0, S_{\beta W} < 0, S_{\beta C} < 0, S_z > 0$

Once managerial pay is introduced worker and capitalist household consumption functions are given by

[2] Unfortunately, Palley's (2005) analysis is marred by mistakes on pages 210 and 215 where curves are shifted in the wrong direction.

(17.1) $C_W = \beta_W\{\theta W + [1 - z]P\}$ $\quad 0 < \theta < 1$

(18.1) $C_C = \beta_C\{[1 - \theta]W + zP\}$

(19.1) $S/K = [Y - \beta_W\{\theta[Y - P] + [1 - z]P\} - \beta_C\{[1 - \theta]W + zP\}]/K$

$= S(u, \pi, \theta, \beta_W, \beta_C, z) \quad S_u > 0, S_\pi > 0, S_\theta < 0, S_{\beta W} < 0, S_{\beta C} < 0, S_z > 0$

where θ = share of wage bill paid to worker households. Now, there is an additional effect on saving from the division of wage bill operating through the parameter θ. Increases in the share of the wage bill going to workers lower aggregate saving because workers have a higher propensity to consume than managers.

Introducing managerial pay changes the dynamic IS schedule given by equation (9), resulting in a new IS equation given by

(9.1) $g(\pi, u) = S(u, \pi, \theta, \beta_W, \beta_C, z) \quad S_u > 0, S_\pi > 0, S_\theta < 0, S_{\beta W} < 0, S_{\beta C} < 0, S_z > 0$

As shown in Figure 5, it does so by introducing a new channel for income distribution effects. The conventional model has just a wage – profit share channel that affects both saving and investment. Managerial pay introduces a wage bill division channel that only affects saving.

< Insert Figure 5 here >

Incorporating manager managerial pay into the neo-Kaleckian growth model enables it to account for both changes in the functional distribution and size distribution of income. For instance, an increase in managers' share of the wage bill will increase aggregate saving. In terms of Figure 2, that will shift the IS left leading to a lower rate of capacity utilization, a lower profit rate, and a lower growth rate.

Incorporating managerial pay also introduces an analytical twist. The conventional model has a distinction between wage- and profit-led economies. With managerial pay the model economy can have characteristics of both a wage- and a profit-led economy. Thus, an increase in the profit share can be expansionary because the economy is profit-led. At the same time, an increase in workers' share of the wage bill will be expansionary because workers have a higher propensity to consume than managers. This configuration may actually best approximate the U.S. economy which may be mildly profit-led (Gordon, 1997).

In the U.S. economy, the neoliberal period (late 1970s to the present) has been marked by an increase in both the profit share and the managerial pay share. The increase in the profit share may have mildly stimulated growth, while the increase in the managerial pay share has depressed growth.

IV.b Managerial pay and ownership equilibrium.

The introduction of managerial pay also changes the long run ownership equilibrium condition given by equation (10), and in doing so it undoes the Pasinetti (1961/2) theorem about the irrelevance of worker saving for income distribution. Now, not only does worker saving behavior affect the distribution of wealth, it also affects the profit rate, the rate of capacity utilization, and the rate of growth.

The conventional Cambridge equation given by

$$(20)\ g(\pi(u, \psi), u) = [1 - \beta_C]P/K$$

$$= [1 - \beta_C]\pi(u, \psi)$$

This condition is independent of the distribution of wealth so that there is no channel for worker saving to have an effect. With the introduction of managerial pay the Cambridge equation becomes

$$(21)\ g(\pi(u, \psi), u) = [1 - \beta_C]\{[1 - \theta]W + zP\}]/K$$

$= [1 - \beta_C]\{[1 - \theta][Y - P]+zP\}]/K$

$= S(u, \beta_C, \theta, z) \qquad S_u > 0, S_{\beta C} < 0, S_z > 0, S_\theta > 0$

The Cambridge condition is now affected by ownership shares. In terms of Figure 3, the slope of the ZZ schedule is positive in [u, z] space and given by $dz/du = [g_u - S_u]/S_z > 0$. Consequently, worker saving can affect equilibrium growth rate. This is illustrated in Figure 6. An increase in worker saving shifts the IS left, resulting in a new long run equilibrium with a lower capitalists' ownership share and lower capacity utilization, which lowers the profit rate and growth rate.

< Insert Figure 6 here >

Worker saving behavior now matters for growth, contrary to the Pasinetti theorem (1961/2). However, though workers can increase their ownership share by saving more, they cannot save their way to a faster growth rate. Indeed, the opposite holds. If workers increase their saving they actually lower the growth rate.

IV.c Managerial pay and the mark-up

The last issue is how the introduction of managerial pay affects the mark-up, the profit share, and the profit rate. This is an issue that has also been tackled by Lavoie (2009), though in that paper managerial pay is a proxy for fixed costs in general. Lavoie introduces target return pricing by firms and the possibility that managerial labor is a fixed cost. This makes it important to distinguish what effects are related to the mode of pricing and what effects are due to the nature of costs.

With regard to pricing there are two possible regimes. The first is the conventional pricing regime which can be termed "standard pricing" whereby firms set the mark-up on basis of competitive conditions in goods market and current labor bargaining conditions. That results in a variable mark-up and a variable profit rate. The second pricing regime is target return pricing that comes out of the theory of the Post Keynesian theory of the megacorp (Eichner, 1976). The basic idea is that firms select a mark-up to earn a target rate of profit. This results in a fixed profit rate and a variable mark-up. In analyzing the effects of alternative pricing regimes it is important to distinguish pricing versus cost structure effects. Table 4 shows there are four different cases to consider.

< Insert Table 4 here >

Case 1: Variable managerial input, standard pricing

Case 1 is the benchmark case and corresponds to the form of analysis used in the previous sections that introduced managerial pay effects into the IS and Cambridge equations.[3] The production and cost structure is as follows

(22) $Y = aN$ $\quad a > 0$

(23) $w_M = \alpha w$ $\quad \alpha \geq 1$

(24) $N_M = \gamma N$ $\quad \gamma > 0$

(25) $W = w_M N_M + wN$

(26) $p = [1 + m][1 + \alpha\gamma]w/a$

(27) $m = m(u, \psi)$ $\quad m_u > 0, m_\psi > 0$

where N = production workers, a = productivity of production workers, w_M = managerial real wage, w = production worker real wage, N_M = managerial employment, p = price level, and *w* = production worker nominal wage.

Equation (22) is the production function; equation (23) sets the managerial pay relative to the production worker wage; equation (24) sets managerial employment

[3] It is also the implicit structure in Palley (2005).

relative to production worker employment; equation (25) determines the wage bill; equation (26) determines the price level; and equation (27) determines the mark-up.

The production worker real wage, production worker wage share, real wage bill scaled by the capital stock, profit share, and profit rate are given by

(28) $w = w/p = a/[1+m(u, \psi)][1+\alpha\gamma] = w(u, a, \psi, \alpha, \gamma)$ $\quad w_u < 0, w_a > 0, w_\psi < 0, w_\alpha < 0, w_\gamma < 0$

(29) $\theta = wN/W = 1/[1 + \alpha\gamma] = \theta(\alpha, \gamma)$ $\quad \theta_\alpha < 0, \theta_\gamma < 0$

(30) $W/K = u - \pi$

(31) $\sigma = m/[1 + m] = \sigma(u, \psi)$ $\quad \sigma_u > 0, \sigma_\psi > 0$

(32) $\pi = \sigma u = \pi(u, \psi)$ $\quad \pi_u > 0, \pi_\psi > 0$

Equation (28) shows that the introduction of managerial labor reduces the real wage because it adds a layer of costs that raise prices given the production worker nominal wage. This holds for all four cases and it has important implications for AD in the short run Kaleckian model. With standard pricing, both production worker and managerial wages are counter-cyclical because the mark-up is pro-cyclical and a higher mark-up lowers real wages.

Workers' share of the wage bill is exogenously determined by the wage ratio (α) and the managerial employment ratio (γ). The total wage bill can be pro-cyclical or counter-cyclical, depending on the strength of the response of the mark-up to capacity utilization. If that response is small, the wage bill will be pro-cyclical. The mark-up, the profit share, and the profit rate have same form as in the conventional model so that introducing managerial pay has no effect on the profit rate function (equation (8)).

Instead, the effects of managerial pay operate through the IS schedule – as is so in all four cases.

The dynamic IS schedule is impacted via the effect of the managerial wage share on aggregate saving. Equation (29) shows that this share is affected by the conditions of production, thereby resulting in a new dynamic IS schedule given by

(9.2) $g(\pi, u) = S(u, \pi, \theta(\alpha, \gamma), \beta_W, \beta_C, z)$

$= S(u, \pi, \alpha, \gamma, \beta_W, \beta_C, z)$ $S_u > 0, S_\pi > 0, S_\alpha > 0, S_\gamma > 0,$

$S_{\beta W} < 0, S_{\beta C} < 0, S_z > 0$

Increases in the manager – worker wage ratio (α) and manager – worker employment ratio (γ) both increase aggregate saving and shift the IS schedule left.

Case 2. Variable managerial input, target-return pricing

The second case is when managerial employment is variable but firms adopt target-return pricing. In this case the structure of costs is the same as described by equations (23) – (25). Target-return pricing involves firms setting the mark-up to hit a desired profit rate of π^*. This implies the following

(33) $\pi = \pi^*$

(34) $\sigma = \pi^*/u$ $\sigma_u < 0$

(35) $m = \pi^*/[u - \pi^*] = m(u, \pi^*)$ $m_u < 0, m_{\pi^*} > 0$

The profit rate is constant, while the profit share and mark-up are both countercyclical. This is because given the fixed profit rate target, firms can lower their mark-up and profit share as capacity utilization increases.

The production worker real wage, production worker wage share, real wage bill, profit share, and profit rate are given by

$$(36)\ w = w/p = a/[1 + m(u, \pi^*)][1 + \alpha\gamma] = w(u, a, \alpha, \gamma, \pi^*) \qquad w_u > 0,\ w_a > 0,\ w_\psi < 0$$

$$w_\alpha < 0,\ w_\gamma < 0$$

$$(37)\ \theta = wN/W = 1/[1 + \alpha\gamma] = \theta(\alpha, \gamma) \qquad \theta_\alpha < 0,\ \theta_\gamma < 0$$

$$(38)\ W/K = u - \pi^*$$

Equation (36) shows the real wage and real wage bill are now pro-cyclical. This is due to target-return pricing which renders the mark-up counter-cyclical. The worker share of the wage bill remains constant and determined by the exogenous parameters α and γ. These changed behaviors regarding the cyclical behavior of the real wage and the wage bill are due to target-return pricing and not managerial pay. Thus, they would be present in a model with just target return pricing and without managerial pay.

The arguments of the dynamic IS schedule are unaffected by the introduction of target return pricing, and the IS schedule has the same functional form under standard pricing and target return pricing. However, target return pricing will tend to flatten the IS schedule because the real wage is pro-cyclical.

Finally, one problem with target return pricing is that it will be unstable in a profit-led regime. Target return pricing makes the PP function horizontal while the IS curve is positively sloped and steeper. Simple phase diagram dynamics show this to be an unstable combination. The logic is an increase in AD that increases capacity utilization leads to a decrease in the mark-up, which increases the real wage and further increases capacity utilization.

Case 3: Fixed managerial input, standard pricing

The third case is when firms engage in standard pricing and managers are a fixed factor of production. In this case, the structure of costs is given by

(39) $\mathrm{w}_M = \alpha \mathrm{w} \qquad \alpha \geq 1$

(40) $N_M = \Omega$

(41) $W = \mathrm{w}_M\Omega + \mathrm{w}N$

where Ω = fixed managerial labor. The production function and the mark-up remain determined by equations (22) and (27) respectively. The price level, production worker real wage, and production worker share of the wage bill are given by

(42) $p = [1 + m]\{wN + \alpha w\,\Omega\}/aN$

$= [1 + m(u, \psi)]\{1 + a\alpha\Omega/Y\}w/a$

$= [1 + m(u, \psi)]\{1 + a\alpha\Omega/uK\}w/a$

$= p(w, u, a, \alpha, \Omega) \qquad p_w > 0,\ p_u \gtrless 0,\ p_a < 0,\ p_\alpha > 0,\ p_\Omega > 0$

(43) $\mathrm{w} = w/p = a/[1 + m(u, \psi)]\{1 + a\alpha\Omega/uK\}$

$= \mathrm{w}(u, a, \alpha, \Omega) \qquad \mathrm{w}_u \gtrless 0,\ \mathrm{w}_a > 0,\ \mathrm{w}_\alpha < 0,\ \mathrm{w}_\Omega < 0$

(44) $\theta = \mathrm{w}N/[\mathrm{w}_M\Omega + \mathrm{w}N]$

$= \{Y/aK\}/[\alpha\Omega/K + Y/aK]$

$= u/\{a\alpha\Omega/K + u]$

$= \theta(u, a, \alpha, \Omega) \qquad \theta_u > 0,\ \theta_a < 0,\ \theta_\alpha < 0,\ \theta_\Omega < 0$

(45) $W/K = u - \pi$

(46) $\sigma = m/[1 + m] = \sigma(u, \psi)$

(47) $\pi = \sigma u = \pi(u, \psi)$

The real wage can be pro- or counter-cyclical. On one hand there is the fixed factor scale effect that produces pro-cyclical real wages: on the other hand there is the pro-cyclical mark-up effect that generates counter-cyclical real wages. The worker share of the wage bill is strictly pro-cyclical because managers are a fixed factor so that their share of the wage bill falls as capacity utilization rises. The profit share and profit rate behave as in the standard model.

With regard to the growth model, the PP schedule is unaffected by the introduction of fixed managerial costs. Instead, these fixed costs exclusively affect the IS schedule via their effect on the division of the wage bill. The new IS schedule is given by

(9.3) $g(\pi, u) = S(u, \pi, \theta(u, a, \alpha, \Omega), \beta_W, \beta_C, z)$

$= S(u, \pi, \alpha, a, \Omega, \beta_W, \beta_C, z)$ $\qquad S_u \gtrless 0, S_\pi > 0, S_\alpha > 0, S_\Omega > 0,$

$S_{\beta W} < 0, S_{\beta C} < 0, S_z > 0$

The effect of capacity utilization on saving is now ambiguous. On one hand higher capacity utilization raises saving by raising the profit rate: on the other hand it raises workers' share of the wage bill which lowers saving. An increase in the scale of the managerial labor force (Ω) increases aggregate saving by raising managers' share of the wage bill. Lastly, an increase in labor productivity (a) increases aggregate saving by decreasing the share of the wage bill paid to production workers.

Case 4. Fixed managerial input, target return pricing.

The final case involves fixed managerial costs plus target return pricing, which is the case addressed by Lavoie (2009). The structure of costs is the same as in Case 3, while the profit rate, profit share, and mark-up are the same as in Case 2. The IS-PP model is described by

(9.4) $g(\pi, u) = S(u, \pi, \alpha, a, \Omega, \beta_W, \beta_C, z)$ $\qquad S_u \gtrless 0, S_\pi > 0, S_\alpha > 0, S_\Omega > 0,$

$S_{\beta W} < 0, S_{\beta C} < 0, S_z > 0$

(10.4) $\pi = \pi^*$

The IS schedule is the same as in Case 3 while the PP schedule is the same as in Case 2.

The real wage is unambiguously pro-cyclical because the fixed cost effect persists and it is now reinforced by a counter-cyclical mark-up. The profit rate is fixed, while the profit share is counter-cyclical. Since the PP schedule is horizontal, this case will also be unstable in a profit-led regime.

In sum, there is need to distinguish between the effects of target return pricing and the effects of fixed managerial costs. With target return pricing the profit rate is exogenously determined by the target. Target return pricing renders the mark-up and profit share counter-cyclical because firms lower the mark-up as capacity utilization increases so as to maintain their target. At higher rates of capacity utilization the target return can be supported by a lower mark-up. Because the mark-up is counter-cyclical, the real wage and wage share are pro-cyclical. All of these impacts would be present in a model with only variable production labor costs and no managerial labor costs.

Introducing managerial pay lowers the real wage because it introduces an additional layer of cost. However, if managers are a fixed factor this will contribute to making the real wage pro-cyclical because fixed managerial costs are spread over more output as capacity utilization increases. Fixed managerial input therefore amplifies the effect of target return pricing in making the real wage pro-cyclical. Increases in managerial pay always increase saving and lower growth regardless of whether managerial input is fixed or variable.

Fixed factors of production, including managerial overhead, clearly have implications for short run macroeconomics by affecting the cyclical properties of real wages. However, the relevance for growth theory is more doubtful as it is unlikely an economy can expand holding an input constant as in equation (39). Moreover, if a factor can be held constant there will be no balanced growth path. That suggests the fixed factor case is likely of little significance for growth theory, though it may be of considerable significance for short run macroeconomics.

V Managerial pay, neo-classical Marxism and the Post Keynesian growth model

The neo-classical Marxist literature begins with the observation that technology and the organization of production are not manna from heaven: instead, they are chosen by those controlling the production process (Noble, 1978). That makes the ownership of the firm critical, and firms may choose different production technologies depending on whether they are controlled by capitalists or workers.

From the neo-classical Marxist perspective (Bowles, 1985; Bowles and Gintis, 1990; Gintis, 1976; Skillman, 1991; Skillman and Ryder, 1993) this can give rise to important efficiency effects. In particular, capitalist owners of firms may choose production techniques that lower overall productivity but increase the profit share. Though output is smaller, the capitalist owners receive a larger share that more than compensates for the reduction in output.

Neo-classical Marxism focuses on the supply-side. However, the issue of choice of technique of production connects to the demand side and growth through its influence on income distribution. In terms of the Post Keynesian growth model with managerial employment, this connection can be captured as follows:

(48) $Y = aN$

(49) $N_M = \gamma N \qquad 0 < \gamma < 1$

(50) $a = a(\gamma) \qquad a_\gamma < 0$

(51) $m = m(u, \psi) \qquad m_u > 0, m_\psi > 0$

(52) $\psi = \psi(\gamma)$ $\psi_\gamma > 0$

(53) $\sigma = \sigma(m)$ $\sigma_m > 0$

Equation (48) is the production function. Equation (49) determines managerial employment as a share of production workers. Equation (50) determines the productivity of production workers. Equation (51) is the standard pricing mark-up. Equation (52) determines firms' bargaining power that affects the mark-up, and equation (53) determines the profit share.

Equations (48) – (53) constitute a modified version of the production structure examined in Case 1 with standard pricing and variable managerial input. The two changes are that worker productivity and firm bargaining power are now affected by the managerial input.

Neo-classical Marxists focus on the choice technology, which in the current instance concerns choice of the manager – production worker ratio, γ. The profit function for an individual firm is given by

(54) $\Pi = \sigma(m(u, \psi(\gamma)))a(\gamma)N$

Differentiating equation (54) with respect to γ yields the first order condition

(55) $d\Pi/d\gamma = \sigma_m m_\psi \psi_\gamma aN + \sigma a_\gamma N = 0$

Rearranging equation (55) then yields the condition

(56) $\sigma_m m_\psi \psi_\gamma/\sigma = - a_\gamma/a$

Firms choose a manager – production worker ratio, γ^*, such that the elasticity of the profit share with respect to the managerial labor ratio equals the elasticity of production worker productivity with respect to the managerial labor ratio.

This profit maximizing choice of managerial input is inefficient. Total output is given by

(57) $Y = a(\gamma)N$

Maximum output is obtained by setting $\gamma = 0$, which maximizes a. Consequently, a social planner aiming to maximize output would choose zero managerial input since its function in the current simple model is purely redistributive.[4] This type of inefficiency argument is emphasized in Gordon (1994, 1996) and also links with the idea of guard labor presented by Bowles and Jayadev (2004).

Moreover, the profit maximizing choice of the individual firm is not the global maximum. Thus, a profit maximizing central planner would solve

(58) $\max_{\gamma} \Pi = \sigma(m(u(\gamma), \psi(\gamma)))a(\gamma)N$

Subject to $N = D(u(\gamma), \sigma(m(u(\gamma), \psi(\gamma))))/a(\gamma)$

where D = aggregate demand. Differentiating equation (57) with respect to γ yields the first order condition

(59) $d\Pi/d\gamma = \sigma_m[m_u u_\gamma + m_\psi \psi_\gamma]D + \sigma D_\gamma = 0$

Rearranging equation (59) yields

(60) $\sigma_m[m_u u_\gamma + m_\psi \psi_\gamma]/ \sigma = - D_\gamma/D$

In a Keynesian world income distribution has externalities through its impact on saving and aggregate demand. Individual profit maximizing firms fail to take account of these externalities. Consequently, when they chose their managerial labor ratio they each ignore the effect of that ratio on income distribution, which in turn affects capacity utilization, the mark-up, and the profit share.

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[4] A positive efficient managerial input can be obtained if production worker productivity initially responds positively to managerial input but then turns negative. This requires $a_\gamma > 0$ for $\gamma \leq \gamma'$ and $a_\gamma < 0$ for $\gamma > \gamma'$.

From a growth standpoint the profit maximizing choice of managerial input is also inefficient. The rate of growth in the Post Keynesian model is determined as follows:

(61) $g = g(u(\gamma), \pi(\gamma))$ $\qquad g_u > 0,\ u_\gamma < 0,\ g_\pi > 0,\ \pi_\gamma > 0$

Maximizing g with respect to γ then yields the first-order condition

(62) $dg/d\gamma = g_u u_\gamma + g_\pi \pi_\gamma = 0$

The growth maximizing choice of managerial input in the Post Keynesian model is therefore different from the output maximizing choice of managerial input, which in turn is different from profit maximizing choice of managerial input. The logic of the neo-classical Marxist critique regarding control and choice of efficient technique therefore also carries over to Post Keynesian growth theory. Individual firms are likely to choose managerial input and pay structures that generate patterns of income distribution that result in lower aggregate growth.

VI Conclusion

There are significant theoretical and empirical reasons for taking account of managerial pay. At the theoretical level, Post Keynesian growth theory emphasizes the significance of income distribution for growth and that calls for taking account of both the distribution of the wage bill and the functional distribution of income. The former is affected by managerial pay. At the empirical level, changes in the size distribution of income have dominated changes in the functional distribution of income, reflecting larger changes in the wage distribution. This suggests changes in the wage distribution have been the principal channel whereby Post Keynesian theory would explain the pattern of growth of the past thirty years.

Introducing managerial pay into the neo-Kaleckian growth model enriches and substantially changes the model. First, it explains why economies may exhibit both wage- and profit-led characteristics in response to changes in income distribution. Thus, an economy can simultaneously be profit-led with respect to the functional distribution of income (profits versus wages) and wage-led with respect to redistributions of the wage bill.

Second, it undoes Pasinetti's (1961/2) theorem regarding the irrelevance of worker saving behavior for long run growth outcomes. This is because the capitalist/managerial class now has two sources of income so that changes in worker saving behavior, which change the distribution of profits across households, affect the level of profits capitalist/managers need to finance their ownership share of new capital.

Third, taking account of managerial pay provides a channel for linking neo-classical Marxist theory with Post Keynesian growth theory. Neo-classical Marxists have focused on the relation between control and choice of technique of production, arguing that firms may choose inefficient techniques because they maximize profits. That same logic carries over to Post Keynesian growth theory and firms may choose techniques of production that lower growth because they increase the profit share and total profits.

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Figure 1. The distribution of national income.

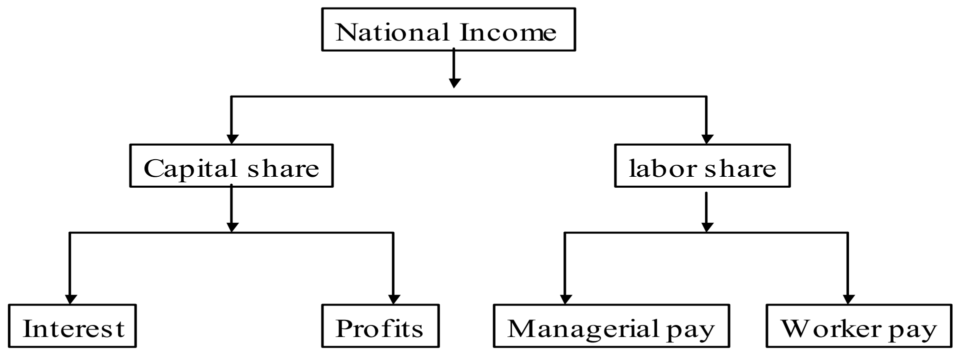

Table 1. Functional distribution of income.

Source: Mishel et al., 2009.

	1959	**1969**	**1973**	**1979**	**1989**	**2000**	**2006**
Labor	68.3%	72.3%	72.7%	73.9%	71.7%	72.3%	70.4%
Capital	31.7	27.7	27.3	26.1	28.3	28.7	29.6
Corporate profits	19.3	18.0	17.2	17.3	20.0	18.6	20.1
Proprietor's Profit	12.3	9.7	10.2	8.9	8.3	9.1	9.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 2. Distribution of family income.

Source: Mishel et al., 2009.

	Lowest fifth	Second fifth	Middle fifth	Fourth fifth	Top fifth
1973	5.5%	11.9%	17.5%	24.0%	41.1%
1979	5.4	11.6	17.5	24.1	41.4
1989	4.6	10.6	16.5	23.7	44.6
2000	4.3	9.8	15.4	22.7	47.7
2006	4.0	9.5	15.1	22.9	48.5

Table 3. Ratio of CEO Pay to average worker pay.

Source: Mishel et al., 2009

Year	1969	1973	1978	1989	2000	2006
Ratio	29	27	35	71	298	275

Figure 2. Determination of short run equilibrium in the wage-led case ($g_K^* > g_K^1$).

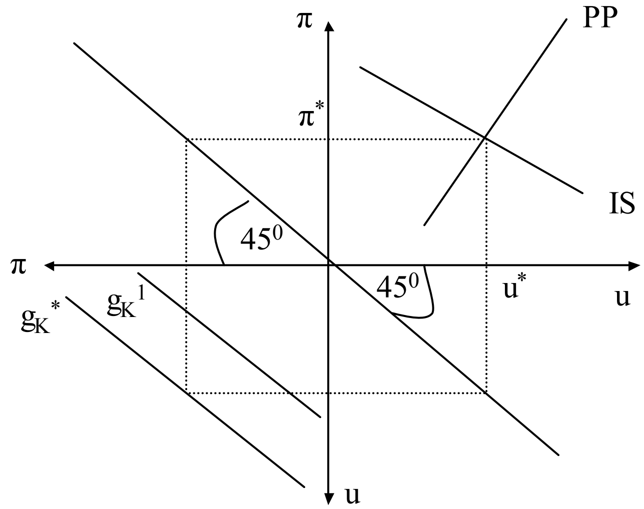

Figure 3. Determination of long run equilibrium in the unified Cambridge – neo-Kaleckian growth model.

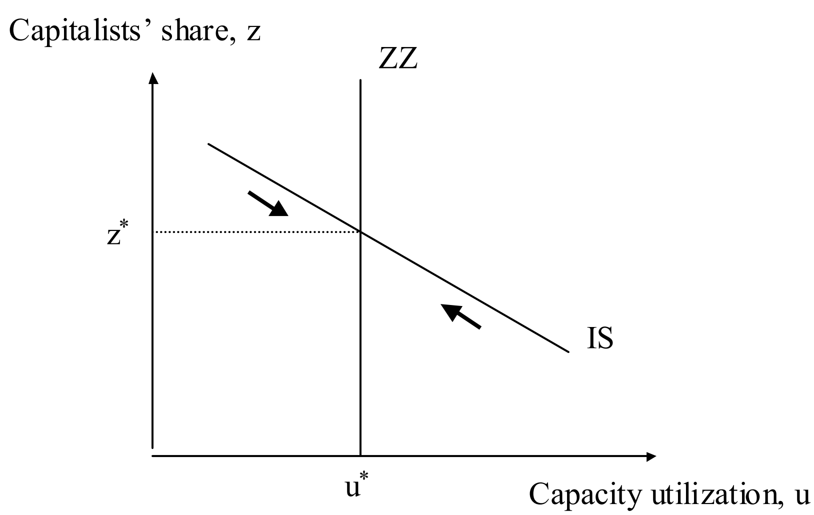

Figure 4. Phase diagram for the IS-ZZ Model

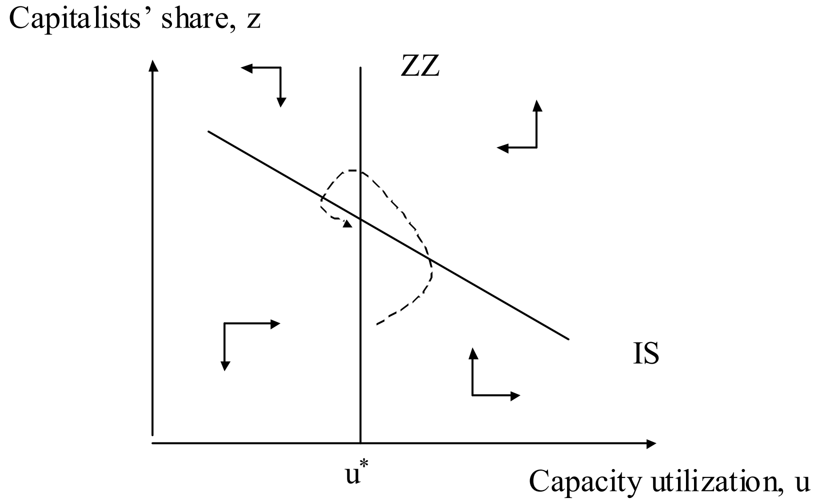

Figure 5. Channels of effect of changes in the distribution of income.

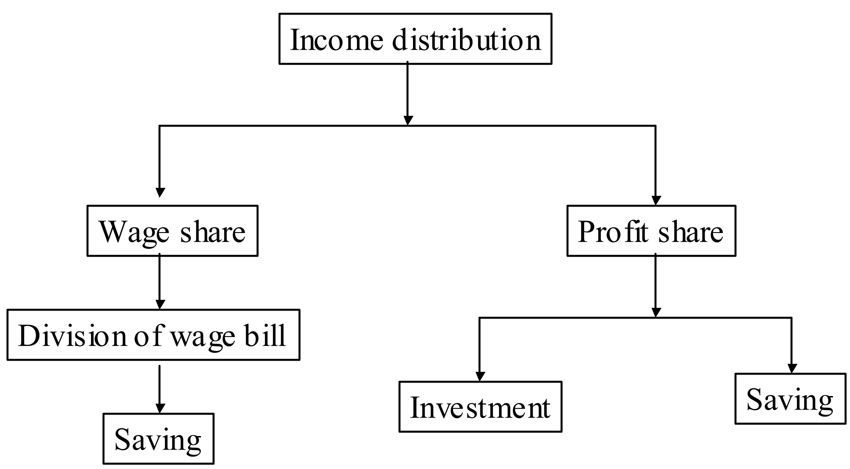

Figure 6. Effect of an increase in worker saving on long run equilibrium in the model with managerial pay.

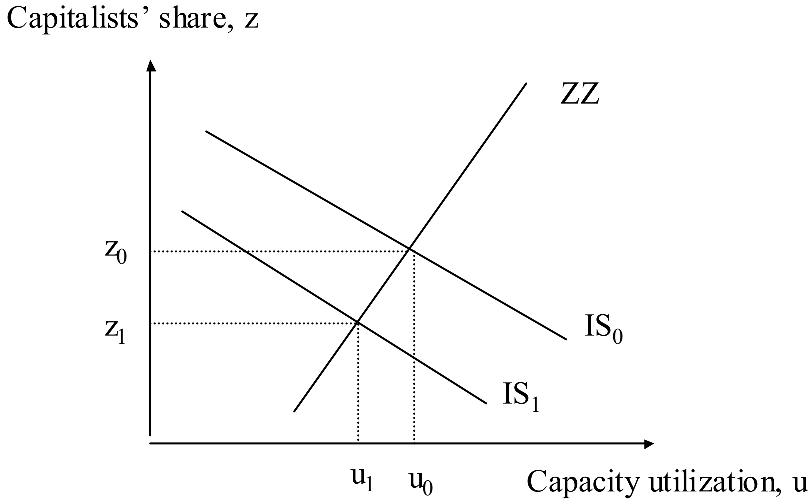

Table 4. Combinations of pricing strategies and cost structures.

		Pricing regime	
		Standard pricing	Target return pricing
Managerial input	Variable	Case 1	Case 2
	Fixed	Case 3	Case 4

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