CHAPTER 1

Class Conflict and the Cambridge Theory of Distribution

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1. Introduction

The relationship between income distribution and growth is a fundamental concern of economics. Ricardo regarded the explanation of income distribution as the central issue of economics, writing that "(determining) the laws which regulate this distribution is the principal problem in political economy" (Ricardo, 1821, p.5). Robinson was also deeply engaged with the question of income distribution. Her work on aggregate capital and the aggregate production function (Robinson, 1953-4) played a pivotal role in launching the Cambridge capital debates of the 1960s, which challenged the intellectual coherence of the marginal productivity theory of income distribution. Robinson's was also a lifelong admirer of Marx, and believed in the relevance of class and class conflict for economics and the determination of income distribution.

These twin concerns of Robinson contributed to the creation of an intellectual environment that launched the Cambridge theory of income distribution as an alternative to neoclassical marginal productivity theory. The Cambridge approach was originally developed by Kaldor (1956), and its key insight concerned the role of aggregate demand (AD) in determining income distribution. The core idea was that AD needs to adjust to the level of full employment output, and this is accomplished by adjustment in the pattern of income distribution. Pasinetti (1962) subsequently introduced class into the analysis, distinguishing between capitalists' and workers' income shares and the AD impact of their differential propensities to save.

However, though adding class to the determination of income distribution, Pasinetti's model is strangely devoid of class conflict in the traditional Marxian sense, that is, class conflict centered on the labor market and bargaining strength. In Pasinetti's framework class enters through behavioral propensities, with the propensity to save differing across classes. This chapter adds traditional labor market class conflict. It is in this sense that it brings class back to Cambridge.

The balance of the chapter is as follows. Section 2 describes the sociological structure of the economy and its relation to income distribution. Section 3 recapitulates the Cambridge Post Keynesian (CPK) theory of income distribution. Section 4 describes the Kaleckian extension of the CPK approach that includes less than

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full employment outcomes. Section 5 incorporates labor market class conflict into the extended Kaleckian CPK model, while Section 6 provides comparative statics and stability analysis. Section 7 introduces the issue of ownership and its relation to income distribution. Section 8 concludes the chapter.

2. The structure of the model

The key analytic contribution of this chapter is to distinguish the income distribution effects of labor market conflict from those of product market competition. Kaleckians have always recognized the significance of both labor market conflict and product market competition, but these two forces have been lumped together under the "degree of monopoly." The logic by which the paper disentangles labor market and product competition effects is illustrated in Figure 1, which shows the national income tree. National income consists of wages, paid to workers and managers, and profits. Managers are also identified as capitalists. Profits are partly retained by firms, and partly distributed as dividends to shareholders. Dividends are in turn shared between workers, who have part ownership, and manager-capitalist who own the rest of the firm.[2] The paper treats the division of income between wages and profits as being primarily influenced by the extent of product market competition, while the division of the wage bill is determined by labor market bargaining power.

Figure 1

The model makes several important theoretical innovations. First, it introduces managerial pay, an area that has taken on great significance with the CEO pay and share option explosion of the last twenty years. Second, the concern with distribution of the wage bill introduces a second margin for income distribution effects, supplementing the traditional Cambridge focus on the profit share. Third, in standard Kaleckian models of growth and income distribution the economy is either "stagnationist" or "exhilarationist."[3] An economy is defined as stagnationist if improved income distribution (a lower profit share) raises AD; it is exhilarationist if improved income distribution lowers AD. The presence of a wage distribution channel means that the economy can *simultaneously* exhibit stagnationist and exhilarationist tendencies.

This can be seen as follows: Shifts in the wage distribution among workers, with a constant profit share, can increase AD, so that the economy is stagnationist. However, increases in the profit share can increase investment, so that the economy can at the same time be exhilarationist. This combination may best describe the U.S. economy.[4]

At the policy level, the model identifies several locations on the income tree where policy can intervene. A major policy recommendation is that progressive policy focus on the distribution of the wage bill rather than the profit share. Progressive redistribution of the wage bill is always expansionary, whereas reducing profit share can be contractionary if the economy is exhilarationist. Second, the

[2]This departure from the classical savings assumption muddies the functional defintions of "workers" to be sure. The notion of what means to be a worker in this context, however, is beyond the scope of the chapter.

[3]This terminology is attributable to Baduhri and Marglin (1990).

[4]Gordon (1995) reports that the U.S. economy appears to have exhilarationist tendencies in that investment responds positively to the profit share, while consumption is impacted by income distribution variables.

model offers insight into the effects of changes in the business sectors' dividend retention ratio.

3. The Cambridge Post Keynesian (CPK) model revisited

The CPK approach to growth and distribution was pioneered by Kaldor (1956). The standard short run Kaleckian macroeconomic model (derived from Kalecki, 1942) is characterized by three features: (i) income distribution is exogenously given, (ii) income distribution influences AD, and (iii) the level of output then adjusts to equal the level of AD.[5] Putting the pieces together, the pattern of income distribution therefore influences the short run level of equilibrium income.

Kaldor (1956) reversed this reasoning. Instead of assuming income distribution to be exogenous, Kaldor took output as exogenously given and equal to its full employment level. Given that AD must still equal output, Kaldor argued that in the long run income distribution would adjust. Rather than having output adjust to income distribution, as in the short run Kaleckian model, income distribution adjusts to ensure a level of AD consistent with full employment income.

Assuming a positive propensity to save out of profit income and no savings out of wage income, the famous Cambridge equations for the profit share σ_Π and profit rate, r, are given by:

$$\sigma_\Pi = \frac{\Pi}{Y} = \frac{I}{s_\Pi Y}$$

$$r = \frac{\Pi}{K} = \frac{I}{s_\Pi K}$$

where Π is profits, Y is output, I is investment spending, K is capital stock, and s_Π = propensity to save out of profits. These equations constitute investment-saving balance (IS) equations in which income distribution has adjusted to ensure AD equals output.

The Kaldor model is illustrated in Figure 2 which shows the profit rate, r, as a function of the investment rate, I/K. The important feature of Kaldor's analysis is that it examines the special case where the investment rate is consistent with full employment output. This rate of investment is denoted I^*/K in the figure.

Figure 2

Pasinetti (1962) extended Kaldor's model by introducing two social classes, capitalists and workers. Like Kaldor, he too focused on the case of full employment steady-state growth. The key analytic contribution was to give a class structure to income distribution and savings behavior. The assumptions of the model are that capitalists receive just profit income, workers receive both profit and wage income, and capitalists have a higher propensity to save than do workers. Given these conditions, Pasinetti shows that the functional distribution of income and the profit rate depended exclusively on capitalists' propensity to save and the level of full employment investment spending. The simple logic of Pasinetti's result is that in equilibrium workers' and capitalists' ownership shares of the capital stock are constant. This means that the profits must adjust so that, given capitalists' propensity to save, capitalist saving exactly equals the share of investment they

[5] In the short run Kaleckian model the distribution of income is determined by the exogenously given mark-up.

must finance to maintain their ownership share. The equilibrium conditions may be restated as:

$$\sigma = \frac{I}{s_K Y} \tag{3.1}$$

$$r = \frac{g}{s_K} \tag{3.2}$$

where s_K = capitalists' savings propensity and $g = I/K$ for notational simplicity.

Pasinetti's model has been extended in several ways. The introduction of government saving leaves the result unchanged (Dalziel, 1991); so too does the introduction of life-cycle saving (Baranzini, 1982). However, the introduction of financial factors changes the model, and workers' propensity to save matters for steady-state income distribution. Palley (1996, 2002) shows that in a world with bank-created inside debt (i.e. an endogenous money world) the distribution of income depends on workers' saving propensity. This is because they pay interest on bank loans, which are costless to produce. This interest increases capitalists' incomes, necessitating a reduction in the profit share to maintain full employment investment-saving balance. Interestingly, the result does not hold in a loanable funds world in which capitalists make loans in the form of real resources that are transferred to workers. Palley (1997) also shows that in a model with money and an inflation tax, workers' saving also matters because they are taxed disproportionately on their money holdings.

4. The Kaleckian extension of the CPK model

The Kaldor-Pasinetti approach analyzes the determination of income distribution under the assumption of full employment. This is a strangely un-Keynesian assumption, since Keynes (1936) took pains to explain in *The General Theory* that he thought full employment was a special case.

Several authors (Rowthorn, 1981; Dutt, 1984, 1990; Lavoie, 1995) have contributed to development of a more general Kaleckian model of growth and income distribution that extends the CPK model. The important contribution of these authors is to introduce less than full employment conditions. These extended models involve adding an investment function equation, and a mark-up or real-wage equation. The mark-up and real-wage equations perform identical functions, namely determining the profit share. This last feature reveals how Kaleckian models have difficulty distinguishing the distributional impact of labor market conflict from product market competition. Labor market conflict and product market competition are conflated and work through the markup, which impacts the price level, the real wage, and the profit share.

The logic of these models is easily illustrated. Let price be a mark-up over average wage costs and given by

$$p = \frac{(1+m)w}{a}$$

where p is price, m is the mark-up, w is the nominal wage, and a = constant average product of labor, or labor productivity. In this case, the profit share can be shown to be

$$\sigma = \frac{m}{1+m} \tag{4.1}$$

Multiplying by the output-capital ratio, k, yields

$$r = \frac{mk}{1+m} \tag{4.2}$$

The output-capital ratio can also be expressed as a positive function of the rate of capacity utilization, u,so that we have $k = k(u), k' > 0$ In addition, the mark-up is assumed to be a positive function of capacity utilization as well and the exogenously given degree of product market competition, c, such that $m = m(u, c), m_u > 0, m_c < 0$. To this mark-up schedule is added a Kaleckian investment equation given by

$$g = \alpha_0 + \alpha_1 u + \alpha_2 r + \alpha_3 \sigma \tag{4.3}$$

Investment spending is a positive function of capacity utilization, the profit rate, and the profit share so that $\alpha_i > 0$. There has been much discussion of what constitutes appropriate specification of the investment function (see Lavoie, 1995). Drivers of investment spending might include capacity expansion, cost reduction, and technology adoption. The Kaleckian equation incorporates variables that legitimately influence all of these drivers. Capacity utilization is directly relevant to the need for capacity expansion; the profit rate affects firms' willingness to adopt new technologies; and the profit share can be thought of as a proxy for cash-flow effects that have been found to be empirically important in microeconomic firm-level based studies (Fazzari, Hubbard, and Petersen, 1988).

Substituting equations 4.1 into equation 4.3 yields

$$g = \alpha_0 + \alpha_1 u + \alpha_2 r + \alpha_3 \frac{m}{1+m} \tag{4.4}$$

Now substituting into the savings-investment balance 3.2 yields

$$r = \frac{\alpha_0 + \alpha_1 u + \alpha_3 m/(1+m)}{s_K - \alpha_2} \tag{4.5}$$

The full model Post Keynesian-Kaleckian growth model consists of equations 4.2 and 4.5. Equation 4.5 is a reformulated IS curve in which investment is endogenous and depends on capacity utilization and product market competition and is represented in (u, r) space in Figure 3. Equation 4.2 is the MM curve, a microeconomic profit rate equation that is derived from the pricing behavior and cost structure of firms. Together equations 4.2 and 4.5 jointly determine capacity utilization, u, and the profit rate, r. The slope of the IS schedule in (u, r) space is in principle ambiguous.[6] Figure 3 illustrates the model for the case where the IS is positively sloped $(s_K > \alpha_2)$. This is the more likely case given that the link between investment and capacity utilization is empirically weak. The mark-up equation is described by the MM schedule, and it is drawn as flatter than the IS reflecting the fact that empirical evidence suggests the mark-up is fairly stable over the business cycle. [7] The intersection of the IS and MM schedules corresponds to a (u, r) combination

[6]Differentiating equation 4.5 with respect to u we have:

$$\frac{dr}{du} = \frac{1}{s_K - \alpha_2}\left(\alpha_1 + \frac{\alpha_3 m_u}{1+m}\right)$$

where m_u is the partial of m with respect to u. This shows that the slope of the IS curve depends on whether $s_K > \alpha_2$.

[7]Domowitz *et al.* (1986) and Chirinko and Fazzarri (1994) find acyclical or pro-cyclical markups. Bils (1987) reports counter-cyclical mark-ups. When a real wage labor market closure (Dutt, 1992) is used instead of a product market closure, the mark-up is implicity assumed to be

for which the goods market clears (i.e. investment-saving balance holds), and for which the profit share and profit rate are consistent with the microeconomic pricing decisions of firms given a level of product market competition. The (u, r) solution in turn allows determination of mark-up, m from $m = m(u, c)$ the profit share σ in equation 4.1, the output-capital ratio, k,from $k = k(u)$ and the share of investment in output from equation 3.1.

Figure 3 illustrates some standard Kaleckian comparative static results.[8] An increase in capitalists' propensity to save shifts the IS left, lowering the equilibrium profit rate and rate of capacity utilization. An exogenous decrease in the level of competition increases the mark-up and shifts the MM schedule up. This also lowers the equilibrium profit rate and rate of capacity utilization.

In principle, the financial factors alluded to earlier, concerning worker borrowing of inside bank money and the inflation tax, can also be included. These factors affect the IS schedule by impacting overall saving, and they allow financial factors to affect the determination of the equilibrium profit rate and rate of capacity utilization. An increase in worker bank borrowing shifts the steady-state IS schedule down, and lowers the equilibrium profit rate and rate of capacity utilization. The reasoning is that workers pay interest on their debts that is distributed to capitalists who own the banks. This raises aggregate saving because of capitalists' higher propensity to save, necessitating a reduction in the profit rate which lowers investment and capacity utilization.

5. Bringing class back to Cambridge

Though having a class structure embedded in aggregate demand (the Pasinetti contribution), class conflict in the Kaleckian model is opaque. This is because it is made to operate through the mark-up, which in turn depends on the rate of capacity utilization. However, traditionally, class conflict over income distribution has been thought of as operating through the labor market.

One way of introducing labor market concerns is through an Okun's law relationship, whereby there is a monotonic negative relationship between capacity utilization and unemployment. In this case, the rate of capacity utilization can be thought of as a proxy for the unemployment rate, so that labor market class conflict operates indirectly through the rate of capacity utilization. This is the approach adopted by Dutt (1992) in a model in which workers' target real wage is affected by the rate of unemployment.

However, this approach effectively conflates capacity utilization and unemployment rate effects. In effect, worker-firm conflict over wages in the labor market is treated as identical to firm-firm competition over the mark-up in product markets. This is a problem that has always been present in the Kaleckian model. Product market competition and labor conflict are distinct economic forces that have differential impacts and work through different channels.

The distinction between the profit-wage functional distribution of income and the distribution of wage income, identified in Figure 1, provides an avenue for distinguishing between these two effects. The model that is developed below argues

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counter-cyclical since the real wage rises with capacity utilization. In effect, the MM schedule is negatively sloped rather than positively sloped.

[8]Because of the inherent ambiguity of the slope of the IS curve, these results are only illustrative.

that inter-firm competition affects the mark-up and the income shares, while labor market competition affects the distribution of the wage bill across workers and managers. Modeling this requires re-specifying the IS relation so that it includes managerial pay and thus introduce labor market conflict into the model. The logic is that labor market conflict affects the wage distribution, and the wage distribution in turn impacts on AD. The mark-up side of the model, as represented by the MM schedule, remains unchanged.

In addition to decomposing the wage bill into wages paid to workers and manager capitalists, the model also introduces profit retentions as a way of financing investment. Such retentions have firms saving on their own behalf to finance investment, and it can have important macroeconomic implications-yet, it has traditionally been ignored in Cambridge distribution theory analysis.

Aggregate income, wages, profit and ownership satisfy the following adding-up constraints:

$$Y = W + \Pi \tag{5.1}$$

$$W_W + W_K = W \tag{5.2}$$

$$\Pi_W + \Pi_K + R = \Pi$$

$$z_W + z_K = 1 \tag{5.3}$$

where W is the wage bill, W_W is the wage bill paid to workers, W_K is the wage bill paid to manager capitalists, Π_W is profits paid to workers, Π_K is profits attributable manager capitalists, R is corporate retained profits, z_W is workers' ownership share, and z_K is manager capitalists' ownership share. Profits distributed to workers and manager-capitalists are given by

$$\Pi_W = z_W(\Pi - R) \tag{5.4}$$

$$\Pi_K = z_K(\Pi - R) \tag{5.5}$$

Note that worker ownership of the capital stock has a critical impact on the overall distribution of income by affecting the distribution of profit, a feature that has been ignored in Cambridge models. It is an issue that is discussed further below. To these accounting relations is now added behavioral content. First, the ratio of workers' wage bill to that of manager capitalists is given by

$$W_W/W_K = \gamma \tag{5.6}$$

where γ is treated as parametric for purposes of comparative static analysis. In practice, this ratio depends on the state of technology which determines the ratio of non-supervisory to supervisory labor.[9] It also depends on bargaining power, union density, workers' militancy, labor market policies concerning employee rights at work, minimum wage laws, unemployment insurance compensation, and the scope of the social safety net. The effect of this distributive parameter is to create a channel for labor market distributional impacts that is separate and distinct from the impact of product market competition on the markup.

[9]Technology is usually viewed as exogenous. Neoclassical Marxists, such as Bowles and Gintis (1990) and Skillman (1991) emphasize that technology is endogenously selected by capital, which controls the production process. This choice influences the ratio of non-supervisory to supervisory workers, a feature emphasized by Gordon (1996).

The second behavioral relationship concerns firms' profit retentions. This is assumed to be governed by (13)

$$R = \beta(t, a)\Pi \tag{5.7}$$

where $0 < \beta < 1$and $\beta_t > 0$,where β is the retained profit ratio, t is the dividend tax rate, and a is an exogenous shift factor. The level of retention is a positive function of profits. In addition, the retained profit ratio is positively related to the dividend tax rate, as a higher tax encourages firms to hold on to profits.

The IS schedule for the expanded model is then given by

$$s_W[W_W + \Pi_W] + s_K(W_K + \Pi_K) + R = I \tag{5.8}$$

where s_W is workers' saving propensity, and R is level of retained profits. Using the relations given by 5.1,5.2, 5.3, 5.4,5.5,5.6 and 5.7 the IS schedule can be re-stated as

$$g = \bar{s}_0 k + \bar{s}_1 r$$

where $\bar{s}_0 = (s_W\gamma + s_K)/(\gamma + 1)$ and $\bar{s}_1 = [(1-\eta) + \eta\beta - (s_W\gamma + s_K)/(\gamma + 1)]$. The term $\eta = [1 - s_W(1 - z_K) - s_K z_K] > 0$ attaching to $\beta(t, a)$ is the net increase in aggregate saving coming from an increase in retained profit. Retained profits increase corporate saving, but they diminish household sector saving by reducing distributed profit income. Substituting equation 4.4, determining g, into this last equation, we have an IS schedule in (u, r) space given by

$$r = \frac{\alpha_0 + \alpha_1 u + \alpha_3 m/(m + 1) + k\bar{s}_0}{\bar{s}_1 - \alpha_2} \tag{5.9}$$

where $m = m(u, c)$ and $k = k(u)$. This equation is can be compared to the simple version above, equation 4.5. The critical feature of this IS curve is that it embeds the labor market conflict parameter γ in both $\bar{s}_0$ and $\bar{s}_1$,which affects AD. This is consistent with the logic of class conflict affecting AD, and is distinct from product market competition effects on the mark-up and profit share. Note, however, that these product market effects still enter through the term $\alpha_3 m/(1 + m)$ investment spending, per equation 4.3, is assumed to be positively related to the profit share. The slope of the IS schedule is still ambiguous, and more likely to be negatively sloped if investment is very sensitive to the profit rate (i.e. α_2 is large).

The full model now consists of equation 5.9, describing the IS schedule, and equation 4.2 describing the MM schedule. The general reduced forms for the $MM$and IS curves are given by

$$r = M(u; c^+)$$

and

$$r = I(u; \alpha_0^+, \alpha_1^+, \alpha_2^+, \alpha_3^+, c^+, \gamma^+, s_W^-, s_K^-, z_K^-, t^-, a^-)$$

The signs are the direction of shifts of each curve with respect to the indicated parameter. The graphical analogue of the model, under the assumption of a negatively sloped IS schedule, is the same as Figure 3.

Figure 3

6. Stability analysis, comparative statics, and policy

The stability of the model is analyzed in the appendix for the case where the IS is positively sloped in (u, r) space. The model can be either stable or unstable. Stability is affected by whether the economy is exhilarationist or stagnationist (see Bhaduri and Marglin, 1990). In the exhilarationist case, capacity utilization increases when the profit rate is above that needed for goods market equilibrium. In the stagnationist case, capacity utilization decreases when the profit rate is above that needed for goods market equilibrium. As shown in the appendix, stability also depends on the relative slopes of the IS (goods market) and MM (markup) equilibrium schedules.

Comparative statics analysis yields the following conclusions: An exogenous increase in investment, represented by an increase in the coefficient α_0, shifts the IS schedule up. Both the profit rate and capacity utilization rate increase. This is consistent with the standard Keynesian construction of the macro economy. Increases in the coefficients α_1, α_2, α_3, all of which increase the sensitivity of investment, also shift the IS up and result in a higher profit rate and higher rate of capacity utilization.

Increases in the propensity to save of capitalists or workers, s_W and s_K, shift the IS down. This lowers the profit rate and rate of capacity utilization. Increased saving is therefore contractionary, the standard Keynesian result.

Figure 4 illustrates the case of an exogenous increase in the level of product market monopoly power (i.e., a decrease in c) that raises the mark-up-perhaps brought about by a merger wave. This shifts up both the MM and IS schedules, so that the effect on the profit rate and capacity utilization is ambiguous. Note, the IS shifts up because investment is a positive function of the profit share. If this profit share effect on investment is weak (i.e. α_3 is small), the upward shift of the IS will tend to be small, and it is more likely that the profit rate and capacity utilization fall. This corresponds to a stagnationist construction of the economy, in which worsening of the functional distribution of income lowers AD and economic activity. Alternatively, if the profit share effect on investment is strong (i.e. α_3 is large), then the IS shift will be large and it is more likely that the profit rate and capacity utilization will rise. This corresponds to an exhilarationist construction of the economy, in which worsening of the functional distribution of income raises AD and economic activity by stimulating investment.

Figure 4

Figure 5 illustrates the effect in worker bargaining power which raises γ and shifts the wage distribution toward workers. This shifts up the IS schedule, leading to an unambiguous increase in the profit rate and capacity utilization.[10] Distinguishing the wage share from the distribution of wages is a critical policy distinction. Improving the distribution of the wage bill is always expansionary. This is because it positively impacts consumption, but has no impact on investment since the profit share and profit rate are left unchanged. As such, improving the wage distribution should be the principal focus of progressive macroeconomic policy. In contrast, increasing the wage share can be contractionary if the economy is exhilarationist in character.

Figure 5

[10]The necessary condition is that $s_W > s_K$.

Finally, from a theoretical perspective, distinguishing between the wage share and the distribution of the wage bill allows the economy to simultaneously exhibit stagnationist and exhilarationist characteristics. This contrasts with existing constructions of the Cambridge growth and distribution model which impose an either or condition. The labor conflict channel, operating through the wage distribution, is always stagnationist-so that shifts in the wage-bill toward workers are expansionary. However, investment may be exhilarationist, exhibiting a strong dependence on the profit share-so that shifts in the functional distribution from wages to profits raise investment and economic activity. This dual construction helps make sense of developments in the U.S. economy over the last twenty five years. Changes in the distribution of the wage bill, exemplified by the explosion of CEO pay, have been stagnationist and contractionary.[11] Side-by-side, shifts in the functional distribution of income toward profits may have been expansionary since there is some evidence that investment spending in the U.S. is exhilarationist–i.e. is positively influenced by the profit share (Gordon, 1995).

Increasing capitalists' ownership share, z_K, shifts the IS down so that the profit rate and capacity utilization fall unambiguously. This suggests that measures to change the distribution of wealth in a progressive direction, through wealth or inheritance taxes, may be expansionary. If saving falls in response to such taxes, this would make them even more expansionary. However, all bets are off if investment also falls in response to wealth and inheritance taxes. Then, they could be counter-productive and lower capacity utilization and growth. Lastly, consideration of ownership shares also suggests why worker pension plans can exert a long run favorable impact in that they shift ownership and profit income over to workers, thereby having a long run favorable impact on AD and the economy.

A final experiment concerns dividend taxes, t, and exogenous changes in firms' decisions about retained profit, as captured by the parameter a in equation 5.7 above. This experiment has implications for the debate over reducing double taxation of dividends. Increases in the dividend pay-out, resulting from lower taxes on dividends or a change in firms' decisions, shift the IS schedule up. They are therefore expansionary, raising the profit rate and capacity utilization. The economic logic of this effect is easily understood in terms of equation 5.8. Increased dividend payouts reduce firms' saving by a full dollar, but households only save a part of the increase in dividends. Consequently, aggregate saving decreases, and AD increases.

The above argument suggests that recent US tax changes reducing double taxation of dividends may be expansionary, to the extent they induce higher dividend payouts.[12] However, there is an important caveat to this. The justification for including the profit share, σ, in the investment function is that it proxies for some form of cash flow variable. In this case, the aggregate investment function is better stated as

$$g = \alpha_0 + \alpha_1 u + \alpha_2 r + \alpha_3 R/Y$$

with α_1, α_2, $\alpha_3 > 0$.

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[11] There adverse impact on AD has been offset by rising household borrowing. However, such borrowing is an unsustainable process, and the stagnationist impulse must eventually come out in full (Palley, 2002b).

[12] This argument is in addition to the fiscal stimulus argument, whereby lower dividend taxes raise the government budget deficit.

Investment therefore depends on retained profits as a share of GDP, rather than total profits. Now, if firms increase dividend payouts they will reduce investment spending. If α_3 is large (i.e. the economy is strongly exhilarationist), the net effect could be to shift the IS down and lower the profit and capacity utilization rates.

The second caveat concerns balance sheet effects that are not modeled in the paper. Changing dividend tax rates may just induce a shift between debt and equity financing, leaving net payments unchanged. In this case, there would be no change the net corporate retentions, and only the government budget would be impacted. This would result in larger budget deficits, which are expansionary. However, these issue push beyond the scope of the current paper which has not addressed the government sector and its relation to the household and corporate sectors.

7. Ownership

A last issue concerns that of ownership, which is relevant for income distribution because it affects the distribution of dividend income. This is an issue that is important to Cambridge distribution theory but has not been addressed. The above analysis was conducted on the basis of constant ownership shares (unchanged z_K and z_W), the traditional assumption of Cambridge theory. However, ownership is endogenous, and may change as part of the adjustment process.

The reason why ownership matters is simple. Cambridge theory emphasizes how income distribution adjusts to bring AD into alignment with output. There are two ways to do this. One is to change the profit share, which redistributes income between wages and profit. The other is to change the pattern of ownership, thereby changing the distribution of profit income between workers and capitalists.[13] Cambridge theory has always operated under the assumption that income distribution alone does the adjustment *via* a changed mark-up-that is by adjustment of the profit share. However, when there is investment-saving imbalance ownership shares will also be changing. If capitalists are saving too much and there is excess saving, then there ownership share will be rising. The reverse holds when workers are saving too much.

The process of changing ownership shares operates through background financial variables. Thus, if capitalists have excessive saving, these savings can be thought of as being directed to equity purchases. This drives up the price of equities and reallocates equity ownership to capitalists. Consideration of these financial effects is beyond the scope of the current paper. Instead, the intention is to point

[13]This claim is easily understood by examining the expression for AD in the standard Kaleckian model, given by

$$y^d = c_w wN + c_w z_w mwN + c_k z_k mwN + I + G$$

where w is the wage level, G is the level of government spending, c_i is the propensity to consume out of i = wage, investment and profit income and z_i are the capital ownership shares of workers and capitalists. Aggregate demand consists of worker spending out of wages, worker spending out of worker income, capitalist spending out of profit income, plus investment and government spending. In the Kaleckian macro model ownership shares and the mark-up are constant, and output adjusts to AD. In the Kaldor – Pasinetti model, output is fixed at potential, and AD adjusts to ensure balance. This can be done either by adjusting the mark-up (m) or by adjusting ownership shares (z_k, z_w).

out that saving patterns impact ownership shares, and ownership shares impact the distribution of income and aggregate demand.

The addition of ownership concerns introduces an additional steady-state equilibrium condition. Now, in steady-state, capitalists must be saving just enough to finance their share of investment, thereby maintaining their ownership share. This imposes the following steady-state ownership condition[14]

$$s_K[W/(1+\gamma) + z_K(P-R)] = z_K(I-R) \tag{7.1}$$

If capitalists receive no wage income the condition reduces to

$$s_K[z_K(P-R)] = z_K(I-R)$$

Dividing this last equation by Y solving for σ generates amended Pasinetti-style conditions for income distribution in an economy with corporate saving

$$\sigma = \frac{I}{s_K}Y + \frac{R(1-1/s_K)}{Y}$$

and multiplying by Y/K gives the profit rate, r

$$r = \frac{I}{s_K}K + \frac{R(1-1/s_K)}{K}$$

Corporate retentions, R, therefore reduce both the profit share and profit rate. The logic is that corporations are saving on behalf of capitalists, thereby reducing the need for profit income to finance investment. This simple derivation also illustrates how the Pasinetti conditions are in fact a form of steady-state ownership condition.

Appropriate substitution into equation 7.1 combined with simple algebraic manipulation yields

$$z_K = \frac{s_K k/(1+\gamma)}{(\alpha_0 + \alpha_1 u + \alpha_2 r + \alpha_3 m)/(1+m) - (1+s_K)(1-\beta)r}$$

where $k = k(u)$ and $m = m(u,c)$ as above. Expressed in general functional notation:

$$z_k = z(u; s_K^+, \beta^-, \gamma^-)$$

From a partial equilibrium standpoint, increases in capitalists' propensity to save increase capitalists' ownership share. Increases in workers share of the wage bill decreases their share, and increased firm profit retention ratios also decrease manager-capitalists' share. However, on top of this there are general equilibrium effects, because changes in ownership shares impact aggregate demand, capacity utilization and the profit rate that in turn feedback to influence ownership patterns. If an increase in capitalists' propensity to save drives down the profit rate and the utilization rate, this may induce negative manager-capitalist income effects that outweigh the effect of an increased propensity to save, so that the capitalist ownership share may fall. In other words, capitalists can conceivably save themselves out of ownership. This is the asset stock equivalent of the Kalecki's dictum that "workers spend what they earn, while capitalists earn what they spend."

[14]See appendix.

8. Conclusion: further issues and future research

The paper has expanded the CPK model of distribution to include a labor market conflict channel that is distinct from the product market competition channel. This labor channel works through conflict over distribution of the wage bill, whereas product market competition impacts the profit share. Kaleckians have long emphasized the significance of both product market competition and labor market conflict for income distribution. However, these two forces have been conflated in under the degree of monopoly, and the Kaleckian paradigm has not been able to disentangle them.

The addition of the new channel enriches the structure of the model, allowing it to simultaneously exhibit both stagnationist and exhilarationist tendencies. The model speaks to real world concerns in that there have been significant changes in the distribution of the wage bill, as well as changes in the functional distribution of income. Both types of change matter for macroeconomic outcomes, and the model captures both types.

The distinction between wage share and wage bill distribution has important theoretical and policy implications. At the theoretical level, it explains why economies can exhibit both stagnationist and exhilarationist characteristics. Redistribution of the wage bill to workers always raises AD and economic activity by raising consumption. However, lowering the profit share can retard activity by lowering investment spending. At the policy level, this suggests that progressive policy should focus on altering the distribution of the wage bill, rather than the profit share as has been the traditional focus. Redistribution from managers to workers is always expansionary. Redistribution from profits to wages is expansionary if the economy is stagnationist, and contractionary if it is is exhilarationist. In the latter case, this generates a growth versus equity trade-off. Unions may do a bit of both types of redistribution, that is from managers to workers, and from profits to the wage bill. This is strongly expansionary if the economy is stagnationist, but the effect is ambiguous if the economy is exhilarationist.

This dual stagnationist-exhilarationist characteristic also helps make sense of developments in the US economy over the last three decades. The deterioration of the wage distribution has reduced AD (though this effect has also been masked by increased household borrowing), but this has been offset by the positive impact on investment from a rising profit rate and profit share. This helps explain why some pessimistic macroeconomic prognostications regarding the effects of worsening income distribution have not been realized.[15]

Finally, the model also addresses sociological criticism of Pasinetti's model regarding its lack of a managerial capitalist class that draws income from both profits and wages. The fact that both classes now have two different sources of income also allows for reconciliation between the Kaldor-Kalecki approach to saving behavior, and that of Pasinetti. Kaldor and Kalecki assumed different propensities to save out of wage and profit income, a pattern of behavior that can be justified on behavioral rule of thumb grounds. People tend to consume most of their wages, while leaving their savings accounts to compound. Pasinetti emphasized different

[15]The effects of worsening income distribution may also have been masked by a series of non-repeatable adjustment mechanisms including consumer borrowing, a rising stock market, and disinflation that has reduced household mortgage burdens. These different channels of alleviation are examined in Palley (2002b).

propensities to save across classes, but classes saved at a common rate regardless of source of income. Now, it is possible to have behavioral rule of thumb saving within classes, and these rules can vary across classes. One possible configuration is $0 \leq s_{WW} \leq s_{KW} \leq s_{WK} \leq s_{KK} \leq 1$, where s_{WW} is worker propensity to save out of wage income, s_{KW} is capitalist propensity to save out of wage income, s_{WK} is worker propensity to save out of profit income, and s_{KK} is the capitalist propensity to save out of profit income.

On the hundredth anniversary of Joan Robinson's birth, the Cambridge approach to growth and income distribution remains as relevant as ever. Though mainstream economists may be in denial about the major features of capitalism, the CPK model is not. Looking to the future, there is need to for an empirical and analytic simulation agenda that builds on the theoretical framework provided by the Cambridge approach to growth and distribution. Such work could amplify the real world policy relevance of the Cambridge approach.

9. Appendix: Stability analysis for the IS-MM model.

The stability analysis for the two equation goods market-mark-up model are as follows. It is assumed that capacity utilization increases in response to excess demand in the goods market, and falls in response to excess supply. The profit rate adjusts *via* changes in the mark-up, and the mark-up falls through product market competition when above its equilibrium level. Conversely, it rises *via* product competition when below its equilibrium level.

These dynamics can be represented by the following adjustment equations

$$\dot{u} = \phi E(u, r)$$

$$\dot{r} = \psi M(u, r)$$

where ϕ and ψ are arbitrary adjustment constants. Note that $E_u > 0, M_u > 0, M_r < 0$ and E_r is indeterminate. These equations can be linearized around a local equilibrium, u^*, r^* as

$$\dot{u} = \phi E_u(u - u^*) + \phi E_r(r - r^*)$$

$$\dot{r} = \psi E_u(u - u^*) + \psi E_r(r - r^*)$$

The exhilarationist case corresponds to $E_r > 0$. Graphical analysis of stability for this case is provided in Figures A.1 and A.2. In Figure A.1 the MM curve is flatter than the IS curve, and the model is cyclically stable. There is some casual evidence that this configuration applies in the US, since investment spending has some exhilarationist tendencies, and firms' markup appears fairly constant over the business cycle.

The stagnationist case corresponds to $E_r < 0$. Graphical analysis of stability for this case is provided in Figures A.3 and A.4. In Figure A.3 the MM curve is flatter than the IS curve, and the model is saddle-path unstable. In Figure A.4 the MM is steeper than the IS, and the model may be cyclically stable or explosive.

10. References (dates are out of order)

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