2019

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Working Paper

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Working Paper 2019-11

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Abstract

Much of the recent interest in the relationship between growth and distribution has focused on advanced economies and neglected issues of development and structural transformation. The purpose of this paper is to make a contribution to this gap by arguing that, even in the short-run, some of the conclusions from neo-Kaleckian models may not be robust to developing country contexts with extreme income inequality and correspondingly polarized patterns of consumption. This argument is supported by a review of, amongst other, Kalecki's writing on development and a two-sector model building on Razmi et al (2012). The paper can be interpreted as a call for greater consideration of structural heterogeneity in extending the analysis of advanced economies to developing economies and as a caution against calls for general aggregate demand policy, in this case shifts in income distribution, to address structural transformation problems.

JEL Classification: O1, O4, E1, B3

Keywords: Growth and distribution, Kaleckian models, Development, Structural change, Kalecki

* I thank Peter Skott, Esra Nur Ugurlu, Marc Lavoie, Carol Heim, Arslan Razmi, Daniele Girardi, participants in the 2016 New School-UMass Graduate Workshop and participants in the Analytical Political Economy workshop at the University of Massachusetts, Amherst for helpful comments on earlier drafts of this paper. Any remaining errors are my own.

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1. Introduction

This paper addresses whether the theoretical conclusions from neo-Kaleckian models, specifically regarding the proposal of 'wage-led growth' are robust to developing country contexts where the pattern of consumption is extremely polarized across class or income groups. Advocates for wage-led growth argue for the growth enhancing effects of greater equality of income between workers and capitalists. These arguments have received great interest in macroeconomic debates in recent years, mainly in the heterodoxy, but amidst sections of the mainstream too, in light of the concerning explosion of income inequality and stagnant growth rates in many advanced economies. However, amidst these recent debates, there has been little discussion regarding the relevance of wage-led growth to the developing country context. Particularly, there seems a relative gap in the literature regarding the implications of advocacy for the policy proposals most closely associated with neo-Kaleckian models for structural change. Insofar as neo-Kaleckian models, in their one-sector nature, disregard interrelations between economic sectors of distinct significance to projects of economic development, there are limitations on these models as a basis for assured policy recommendations in dual-economies. Hence, this paper has two principal elements: 1) it speaks to a gap in the contemporary literature on distribution and growth and 2) it seeks to assess the compatibility of an important heterodox discourse with a central objective of all underdeveloped countries. Part of the aim of this paper, without wishing to resort to exegesis, is to bring some of Kalecki's criticism of the relevance of crude demand-side policy as a stimulus to development to the fore.

The central argument of this paper is that contemporary Kaleckian arguments have less explanatory power in contexts where domestic production is in important senses oriented away from domestic wage-goods consumption[1]. A version of this argument was made outside of the of the recent Kaleckian analytical tradition by De Janvry & Sadoulet (1983) and it is the purpose of this paper to bring this argument to enhance the recent debate on Kaleckian models. The main contribution of this paper is the repurposing of the model in Razmi et al (2012) to bring De Janvry & Sadoulet's (1983) argument to the contemporary discussion about distribution and growth. The

[1] The South African economy, considering its extreme polarization in income distribution and export-oriented minerals sector, may be a relevant example of this.

paper shows that neo-Kaleckian theory may not be robust to countries with extreme polarization in the distribution of income. This conclusion is relevant to macro-policy debates in countries like Brazil and South Africa – countries where a welcome desire to lessen income inequality may have at times been mistaken as a tool for stimulating growth and development.

2. Kaleckian models, Kalecki and 'Disarticulation'

2.1 The neo- and post-Kaleckian model

In setting out the basic form neo-Kaleckian model used for articulation of the 'wage-led growth' discourse, we will refer to Lavoie (2014) and Hein (2014). Lavoie outlines four core dimensions of a Kaleckian model of distribution and growth: 1) an investment function, depending on the rate of utilisation, amongst other; 2) mark-up pricing; 3) a discrepancy between the propensity to save out of wages and the propensity to save out of profits, with the latter being greater than the former; 4) the rate of utilisation is assumed to be below full capacity and the absence of a labour constraint (Lavoie, 2014: 360). Appendix 1 sets out the canonical neo- and 'post-Kaleckian' framework in full.

2.2 Kalecki on development

In exploring the consistency of Kalecki's own view on distribution and growth in developing country contexts with the policy conclusions derived from one-sector models such as the neo and post-Kaleckian, Ghosh (2011) provides useful insights. Ghosh points out that Kalecki, when interrogating the differences between advanced and emerging capitalist economies, had fundamentally different diagnoses of the principal cause of unemployment in these two contexts. She suggests that Kalecki held the problem in developed countries to relate to issues of inadequate effective demand, whereas in developing countries Kalecki understood as key, structural issues related to capital shortage (Ghosh, 2011: 6). This view of Kalecki's view on development is corroborated by Sawyer who argues that a "first and basic theme expressed by Kalecki (e.g. Kalecki, 1975, Chapter 1) is that the cause of unemployment in underdeveloped countries… is seen to result from the shortage of capital equipment rather than from a deficiency of effective demand" (Sawyer, 1985: 213) (Sachs, 2004: 166). Another way of depicting this would be to characterize the principal problem in developing countries as not stemming from unutilised capacities but rather insufficient capacities. Indeed, Lavoie (2014) notes that Kalecki made a similar claim to Robinson that "unemployment in most developing countries is not due to a

deficiency of effective demand, but rather to a deficiency of equipment. Keynesian remedies can be effective as a solution to a problem of under-utilisation of capacity, but it is evident that they cannot create a capacity that doesn't already exist" (Lavoie, 2014: 278 [quoted from Pizano, 2009: 96]).

For Ghosh, the problem of demand-side policies bringing about inflationary pressure became fundamental to all of Kalecki's work on development. This view was held simultaneously (and by implication, compatibly) with an acceptance that there may be deficient effective demand and underutilised capacities in a given underdeveloped economy. Support was given by the idea that underdeveloped (and even semi-industrialised) economies were characterized by a high income-elasticity of demand for wage goods like foods, yet the supply of these goods in these countries is characterized by low elasticity (Lopez and Assous, 2010: 184). Hence, the problem of potential inflationary pressure in the process of economic development is not articulated as a 'monetary' problem for Kalecki (Sachs, 2004: 171). Interestingly, for discussion of the model that will be proposed later as an alternative schema, Lopez and Assous reference Kalecki's work on Israel in 1951, where he emphasized that although there may be considerable unused capacity in parts of the industrial sector, strong constraints exist on the ability to stimulate domestic consumption of goods from this advanced sector (Lopez and Assous, 2010: 184).

The essential macroeconomic issue in developing economies was, according to Kalecki, thus expressed as how to achieve expanded productive capacity through increasing investment. In characterizing some of the most significant aspects of Kalecki's views on development, Sachs (2004) emphasizes Kalecki's view that "the rate of growth of labour productivity... is the foundation for both economic and social progress and improvement in living standards, provided the gains in productivity are equitably distributed within the society" and that "industrialization is the principal leverage of structural transformation for an underdeveloped economy" (Sachs, 2004: 176). This is supported by Kalecki (1955), where it was noted that the growth of real wages will be best supported by such a process insofar as it implies an increase in food prices to a lesser extent than the decrease in price of industrial goods precipitated by the productivity growth-enhancing accumulation of capital (assuming workers consume enough industrial goods that the end result will be an increase in their real wages) (Kalecki, 1955: 9). Although, this contrasts slightly with Lopez and Assous (2010) where Kalecki is quoted as supporting the notion that in the context of

small internal demand, industrialization has to be outwardly oriented, unless sufficiently high investments stimulate demand for consumption goods (Lopez and Assous, 2010: 176-177).

To assess the terms under which Kalecki may have derived conclusions about the applicability of aggregate demand policy to stimulate development, Kalecki (1955) is instructive. Here he attempts to set out a two-sector model, producing investment and consumption goods respectively. The first constraint Kalecki seems to derive stems from a failure for supply of consumption goods to expand in a corresponding fashion to an increase in demand (through the assumption of operation at full capacity in the consumption goods sector), bringing about 'forced savings' as the price of these consumer goods increase, pushing up saved profits and pushing down real wages (Kalecki, 1955: 4). Particularly, Kalecki makes note of the potential in developing country contexts for the supply of food to suffer from a rigidity which may give rise to inflation under stimulus of demand-side policies. The second scenario Kalecki considers entails, in contrast to the previous scenario, the assumption of excess capacities such that increased demand for consumption goods can be met and hence the output of the consumption goods sector grows in response to increases in consumption demand (Kalecki, 1955: 5). These are quite basic schemas for assessing the effect of demand side stimulus in a developing country context, but they suggest an awareness that the structural features of developing countries have the prospect to alter the relevance of demand side policies in these contexts.

This point can be elaborated upon by considering the different circumstances under which a demand-side policy can bring about demand for goods other than industrial consumption goods. In general, it seems that Kalecki derived an inverse relationship between investment and real wages in the development process because of the aforementioned issue regarding inelastic supply of wage-goods. In more concrete terms, a central aspect of Kalecki's work on the relationship between distributional considerations and investment decisions suggests "accumulation is funded by reductions in the real wage" (Fitzgerald, 1990: 196). The inverse relationship between development and more even income distribution is also partly explained by Kalecki's view that productivity gains in the industrial sector are likely to occur amidst a tendency towards increased concentration in the process of economic development (Kalecki, 1955: 10).

Some of the analysis offered by Kalecki reflected upon in the paragraphs above is tied to the assumption of inelastic supply in the consumption goods sector, which may not be relevant to

today's semi-industrialized economies. However, Kalecki's interest in the effect of the demand side exogenous shock on demand for the industrial good and his use of a two-sector approach will serve as motivation for some of the analysis below.

The account of Kalecki's approach to development presented above leads us to two central propositions. First that Kalecki made a distinction between his analysis of advanced countries and underdeveloped countries and that at the very least his analysis was not insensitive to the effect of economic structure on the applicability of demand-side policies. Second, there were dominant themes in the way he expressed divergent conditions in advanced and developing countries. He made special note of issues related to an insufficient stock of capital for the latter set of countries, rather than unutilised capacity and deficient demand as behind underdevelopment. As such, it appears that Kalecki may have, in contrast to neo-Kaleckians, placed strong qualifications on the use of redistribution as a tool for economic development in underdeveloped countries. In support for this thesis, Fitzgerald (1990) argues that Kalecki explicitly dissents from the "underconsumptionist thesis that market size limits industrial growth in developing economies [and that] increased investment will generate matching demand for consumer goods from the wages fund" (Fitzgerald, 1990: 185).

In Kalecki's own words, "'in the course of economic development, there will be a tendency towards increased concentration in industry, a rise in the degree of monopoly… [where] the final result will be a shift in distribution of income from wages and agricultural incomes to industrial profits'" (Fitzgerald, 1990: 185 [quoted from: Kalecki, 1976: 50]). Without wishing to unnecessarily or falsely evoke the 'authority' of Kalecki, this account of Kalecki's view on development seem to stand in opposition to the assumed generalized applicability contemporary Kaleckians in their broad-brush advocacy for wage-led growth.

2.3 Two-sector models and 'social disarticulation'

Some of these issues have received recognition in development theory after Kalecki. In this section we will review existing literature which makes use of or comments on two-sector models, with an eye to assess the role for wage-led growth and policies that principally aim to stimulate demand in developing-country contexts. The purpose of this section is two-fold: firstly, to outline critical takes on one-sector Kaleckian models and secondly to outline literature that feeds into the positive contribution of the model in section 3.

Two-sector models have played an important role in the development of growth theory in general, as Trigg (2006) has pointed out, but the dual-sector model has a special importance for development theory in particular. Dutt (1996) illustrates this point somewhat, arguing that the one-sector Keynesian "model abstracts from all supply constraints that were argued to be relevant for LDCs, because it assumes that excess capacity always exists, that there is only one input (and no skilled labour, working capital, and infrastructure), there is only one sector (thereby ruling out agricultural constraints), and that we have assumed a closed economy, which makes foreign exchange constraints irrelevant" (Dutt, 1996: 130).

Taylor and Arida (1988) similarly point out the significance of a multi-sectoral approach. Within this commentary Taylor and Arida make an important observation relevant to Kaleckian demand-stimulus arguments in the developing country context. They point out that "if industrialization beyond production of simple goods like food and textiles is to occur… then income concentration to sustain demand for more sophisticated commodities is unavoidable under present social conditions" (Taylor and Arida, 1988: 167). This theme was important to Latin American Structualism. A good example of this is De Janvry and Sadoulet's aforementioned (1983) paper. Their central innovation was to formalize the idea that when the consumption pattern of the working class was profoundly distinct from the upper classes, and if production in what we might refer to as 'the key growth sector' is geared overwhelmingly to demand from the upper classes, growth of key sectors requires increasing inequality (De Janvry and Sadoulet, 1983: 278). In characterizing this dynamic the authors coined the term 'social disarticulation'. An illustrative example, if in the extreme, is where the key sectors of the economy produce only luxury goods, which are not consumed out of wage income by workers. In this case, a redistribution towards wage earners does not support a Kaleckian 'accelerator effect'. The analysis developed by De Janvry and Sadoulet referred directly to Kalecki, but the analytical model they developed differs significantly from what is referred to as 'Kaleckian' today, insofar as it, amongst other, lacked any reference to functional income distribution (preferring the inclusion of some measure of wage inequality) and the investment function lacks reference to utilisation and the profit-share in its argument.

It is worth going into more detail on De Janvry and Sadoulet (1983), given its importance to the central argument of this paper. They argue that "equitable growth can only occur if either

(1) the distribution of income is within a threshold of inequality that insures sufficient participation of workers' wage income to the final demand for the key growth sectors of the economy… or (2) the choice of key growth sectors is such that an important part of their market is located in workers' wage income" (De Janvry and Sadoulet, 1983: 278). These authors contrast their case of social disarticulation, where labour is exclusively a cost to capital, with Kalecki (1968), where wages are reported to make up the largest proportion of demand for all sectors within the economy, and therefore, in full employment, "steady-state growth requires that any increase in the productivity of labor in the sphere of production must be matched by an increase in real wages in the sphere of circulation", implying the dual nature of labour as both a cost and a necessity to capital's interests (De Janvry and Sadoulet, 1983: 279). De Janvry and Sadoulet use a model built on two sectors (a non-capitalist, traditional, wage-goods sector and a capitalist, modern sector, also producing capital goods), where capital accumulation is confined to the latter sector (by definition, since the traditional sector does not have capital). In the model there are three agents: workers, managers and capital (the former two who save a proportion of their income, the latter who saves all of their income). Investment is directed at the modern sector principally.

The dynamic analysis of the authors shows the possibility of three types of growth: 1) Where the investment structure implies the modern sector is the 'key growth sector' and the income structure suggests the economy is suited to a process of 'unequalising industrialisation' (typically observed in developing countries) (De Janvry and Sadoulet, 1983: 293). 2), Where social articulation has occurred and the modern sector is the key sector, suggesting the economy is suited toward a more egalitarian distribution of income (a situation observed in advanced countries, where wages are high enough to support consumption of modern sector goods). The authors add that less-developed countries might still fit in this category and that "the poorer the country, the more egalitarian the 'articulating' threshold in the distribution of income is" (meaning, the poorer the country, the higher the level of equality required for the economy to be articulated) (De Janvry and Sadoulet, 1983: 294). In the third and final case, equalizing growth can be achieved through making the traditional sector the key growth sector, but this requires investment to be shifted to this sector to meet equilibrium conditions (De Janvry and Sadoulet, 1983: 295). As investment rises in this sector, incomes rise and, provided Engel's Law, which suggests that as incomes increase the proportion of income dedicated to consumption of food declines, consumption shifts from the traditional sector to the modern sector.

Harris (1996) develops similar analysis in rejecting a structurally invariant theoretical approach to economic development, in his critique of the appropriateness of Keynesian theory as a basis for development policy. Principally, this critique is founded on two views: 1) that the economic structure of developing countries is characterized by disarticulation, 2) states in developing countries lack the economic sovereignty required for the implementation of Keynesian policy (Harris, 1996: 158). It is the former view which is of most direct relevance for this paper. Harris puts forward this idea with reference to the idea that Keynesian models implicitly assume an integrated and articulated economy. Harris contrasts these models with dual-economy 'Kaleckian and Lewis-type models', which show that "if import substitution is ruled out and the modern sector's principal markets are external, it is not responsive to domestic demand management, and an expansionary shock to the modern sector does not generate multiplier type demand and output increases in a positive feedback with the backward sector because of their segmentation" (Harris, 1996: 160).

A common thread in the frameworks commented on above regards their emphasis on the importance of heterogeneous economic structure in discussing distribution and growth dynamics. In support of this, Ocampo (2014) is helpful in emphasizing the extent to which "rapid economic growth in developing countries is the result of the reallocation of labor towards high-productivity activities subject to increasing returns to scale" (Ocampo, 2014: 22, 9).[2] Hence, Ocampo distinguishes between 'balloon' views of economic growth (whereby increased factors of production and flows of technological change evenly and steadily inflate aggregate GDP) to his preferred view that per capita GDP growth is associated with frequent altering of the sectoral composition of output (Ocampo, 2014: 7). This is also partly in line with De Janvry and Sadoulet's aforementioned attempt to problematize the extent to which there is a coincidence of interests between more even income distribution and increased demand for the 'key growth sectors' of the economy. The following section stressing an alternative model for assessing the effect of a redistribution on economic development, is built around evaluating the effect of a redistribution towards workers on two sectors, provided a 'disarticulated' pattern of consumption. The complementarity between the forthcoming section and ideas outlined in this section can be found in the relevance of the argument in De Janvry & Sadoulet (1983) to the model in section 3.1.

[2] It should be mentioned that this type of perspective has a history particularly in the Kaldorian tradition.

3. Model

3.1 A 'disarticulated' Kaleckian model

This section will outline an alternative model (to the neo and post-Kaleckian model) for assessing the effect of a redistribution on growth in an underdeveloped economy. Using and slightly modifying Razmi et al (2012)[3], it will set out what could be described as a Kaleckian model of disarticulation. It has the more specific goal of serving as a basis for assessing the effect of a change in distribution on capital accumulation (given the importance of capital accumulation to economic development).

Y_N	Output in the non-tradable sector
A	Labour coefficient
L_N	Employment in the non-tradable sector
w_N	Nominal non-tradable sector wage
v	Worker bargaining power
p_N	Non-tradable sector price level, in domestic currency
p_T	Tradable sector price level, in foreign currency
θ	Mark-up
Y_T	Output in the tradable sector
w_N	Nominal tradable sector wage
ω	Real wage across both sectors, in terms of non-traded goods
u	Capacity utilisation
b	Capital coefficient
K	Capital stock
q	Real exchange rate
e	Nominal exchange rate
C_N	Domestic demand for non-tradable goods
α	Share of capitalist and landlord consumption on non-tradable goods
h	Real exchange rate coefficient
C_T	Domestic demand for tradable goods
$\frac{I}{K}$	Accumulation rate
z	Animal spirits
γ	Utilisation coefficient
ρ	Tradable sector profit share coefficient
X	Exports
p_T^*	International price of tradable goods
p_k	Price of capital goods, imported
d	Wage premium
τ	Fiscal policy (subsidies, tariffs)

[3] For brevity in this section, some expressions unchanged from the full model outlined in Razmi et al (2012) can be found in an appendix at the end of this paper.

$$\omega_N = \frac{w_N}{p_N} = vA; 0 < \nu \leq 1 \quad (1)$$

Equation 1 gives the real wage in the non-tradable sector.

The tradable sector real wage is equal to the non-tradable sector real wage. This assumption is made for simplicity.

$$\omega_T = \frac{w_N}{p_N} = \omega_N \quad (2)$$

The variable capturing worker bargaining power, *v*, is the primary exogenous variable in this model while the other distributional variables can be understood as endogenous. Worker bargaining power may be influenced by policy.

$$C_N = vAL_N + vAL_T + (1 - s)(\alpha)[qubK - vAL_T + AL_N - vAL_N] \quad (3)$$

Equation 3 gives demand for non-tradable goods. It is assumed that workers spend all of their income on consumption of non-tradable goods. Meanwhile, capitalist and landlords save, and consume both non-tradable and tradable goods. As such, demand for non-tradable goods is a function of the total wage payment to workers in each respective sector (the first two terms) and a function of profit income from capitalist and landlords multiplied by the consumption rate $(1 - s)$ and the share of capitalist consumption of non-tradable goods.

Equation 4 gives the proportion of capitalist and landlord expenditure on non-tradable goods, depending positively on the real exchange rate (q).

$$\alpha = hq = h(1 + \theta)vA \quad (4)$$

Equation 5 gives pricing in the tradable sector. Prices are marked up on the real wage. The inclusion of mark-up pricing allows for two possible scenarios after the exogenous variable *v* is increased in the model: 'Case 1', where the mark-up declines as a result of the increase of *v*, in order to maintain q and α constant and 'Case 2', where the mark-up is constant, implying an increase in q and α. The implications of these two scenarios will be explored on in the analysis at the end of this section.

$$ep_T = (1 + \theta)vAp_N \quad (5)$$

Demand for tradable goods excludes worker consumption demand, reflecting De Janvry & Sadoulet's 'disarticulation' argument. The complete exclusion of worker consumption for tradable goods is a strong assumption, but one that allows for a simple inclusion of Engel's Law.[4]

$$C_T = (1-s)(1-\alpha)[qubK - vAL_T + AL_N - vAL_N]/q \quad (6)$$

In the short run, export demand is not assumed to be perfectly elastic, instead the level is predetermined and the growth of exports can be understood to depend on the tradable good's international competitiveness:

$$\hat{X} = f\left(\frac{ep_T}{p_T^*}\right), \text{f'} < 0 \quad (7)$$

Meanwhile, the profit-share and utilisation rate both positively relate to the accumulation rate:

$$\frac{I}{K} = f(z, u, \pi_T) = f\left(z,\ u, \left(1 - \omega\frac{L_T}{qY_T}\right)\right);\ f_u > 0, f_{\pi_T} > 0 \quad (8)$$

$$\frac{I}{K} = z + \gamma u + \rho\pi_T \quad (9)$$

With additional equations and equilibrium condition (set out in full in the appendices), we can solve the model for equilibrium values of utilisation, output and investment and do the following comparative static exercises:

We can now look at the effect of an increase in *v* in 'Case 1' (where q and α are constant):

$$\frac{\partial Y_N^*}{\partial v} = \frac{ubK}{(1-v)^2}\left[\frac{vA}{a} + \frac{\alpha(1-s)q}{1-\alpha(1-s)}\right] + \left[\frac{ubK}{(1-v)}\right]\frac{A}{a} > 0 \quad (10)$$

Taking exports and the share of capitalist and landlord expenditure on non-tradable goods as fixed, the derivative of tradable sector output with respect to *v* gives the following.

$$\frac{\partial Y_T^*}{\partial v} = 0 \quad (11)$$

[4] In principle, agricultural goods can be tradable but the working assumption here is that agricultural wage goods are produced by small-scale producers incapable of entering international markets due to a lack of standardization and quality control, for example.

Below the accumulation rate is derived with respect to *v*. This result is core to the analysis that will be derived from the model.

$$\frac{\partial(\frac{I}{K})^*}{\partial v} = \frac{-\rho A L_T}{q Y_T} < 0 \tag{12}$$

We can now look at the effect of an increase in *v,* taking θ as constant ('Case 2'), by incorporating definitions of α and q that includes their relationship to *v* (from equations 7, 8 and 9):

As can be seen immediately below, the effect of an increase in *v* on non-tradable output becomes less clear when the mark-up is assumed to be constant. An intuitive explanation will be provided in the analysis below.

$$\frac{\partial Y_N^*}{\partial v}$$
$$= \frac{ubK}{(1-v)^2}\left[\frac{1}{h(1+\theta)} + \frac{h(1+\theta)v^2A^2(1-s)(1+\theta)}{[1-h(1+\theta)vA](1-s)}\right]$$
$$+ \left[\frac{ubK}{(1-v)}\right]\left[\frac{2h(1+\theta)^2vA^2(1-s)\{[1-h(1+\theta)vA](1-s)\} + h^2(1+\theta)^3v^2A^3(1-s)^2}{\{[1-h(1+\theta)vA](1-s)]\}^2}\right] \tag{13}$$

The effect of an increase in *v* on output in the tradable sector, when the mark-up is constant, has a negative sign, as can be seen below.

$$\frac{\partial Y_T^*}{\partial v} = \frac{-XhA(1+\theta)(1-s)}{s} < 0 \tag{14}$$

An increase in *v* also negatively effects the accumulation rate when the mark-up is constant.

$$\frac{\partial(\frac{I}{K})^*}{\partial v} = -\frac{\gamma XhA(1+\theta)(1-s)}{bKs} < 0 \tag{15}$$

Having set out the model above and key results, we can now evaluate the effect of an increase of the bargaining power of workers (*v*) in the model. There are two broad scenarios under which this can be done: 'Case 1', where an increase in *v* underlies a reduction in the mark-up (q and α remain constant) and 'Case 2', where the mark-up is constant (q and α increase with ep_T). In the first case, output in the non-tradable sector increases while output in the tradable sector remains unchanged. While the rate of utilisation remains unchanged, the tradable sector is not completely unaffected

since the tradable sector profit share declines as a result of an increase in v. As a result, the rate of accumulation is negatively affected by the increase in v. This result is mathematically confirmed by equation 12.

In Case 2, when the mark-up is constant, the effect of an increase of v on non-tradable output is not immediately clear. However, one would expect output to increase by a greater extent than in Case 1 since the proportion of capitalist and landlord expenditure on non-tradable goods (α) would increase, in addition to the wage bill (all of which goes to consumption of non-tradable goods). In contrast, the consequences for tradable sector output are clearly negative, as equation 14 shows. The assumption of a constant mark-up implies an increase in v raises ep_T, which increases q and as a result α. In such a circumstance, utilisation is negatively affected by an increase in α, as follows from Appendix 4, while the profit share in the tradable sector remains unchanged. The combination of these factors stands to have a total effect that unambiguously influence the accumulation rate negatively (equation 15).

It is important to note that, in contrast to simple one-sector neo-Kaleckian models, the 'disarticulated' model presented here precludes the prospect of direct class conflict in the sense usually outlined in models of the former variety. Where an increase in mark-up mechanically reduces the real wage in standard Kaleckian models, in a disarticulated model an increase in the tradable sector mark-up has no direct effect on the real wage in either sector. Distributional conflict would reappear in the model if workers consumed tradable goods.

In summary, as follows intuitively, a redistribution towards workers (underlined by an increase in the main distributional variable of interest in this model, v) brings about an increase in consumption expenditure on non-tradable goods, as these are the goods workers purchase exclusively. It is expected that an increase in v would particularly increase non-tradable output when the mark-up is constant, because of how α is determined. For simplicity, we assume no capital is used in this sector, as such output is increased in this sector through greater use of labour. Even though capital is excluded from this sector, we broadly have the conditions for 'wage-led' output growth in this sector after a redistribution since nothing in this model suggests the possibility of increased consumption demand being mitigated by lowered rates of accumulation (since there is no accumulation of capital in this sector) nor worsened export performance (since this is the non-tradable sector, where production is exclusively for domestic consumption).

However, in contrast to the non-tradable sector, the tradable sector exhibits a tendency toward 'profit-led growth', with the increase in v negatively affecting the profit share (in Case 1) and negatively affecting the rate of utilization (in Case 2). Output remains unchanged in this sector when v increases (unless the mark-up is constant, in which case output declines, since α increases). The core finding from this model, which ties into the literature review, is that the rate of accumulation declines in both cases.

How does this differ from the results that follow from standard neo-Kaleckian models? Since we have a sectoral disaggregation where one sector can exhibit wage-led and the other profit-led tendencies the aggregate character of the economy is left ambiguous. Stimulating the wage share with minimum wages or other policies that strengthen the bargaining power of workers can have adverse implications for structural change by harming advanced sector activity considering the absence of an accelerator effect to greater wage-demand.

3.2 Long run issues

Interest in questions of macroeconomic development necessitates a view on the long run. The principal aim of this paper is to illustrate the lack of robustness of even short-run Kaleckian conclusions to 'disarticulated' contexts. However, the model outlined above can be used to derive positive conclusions about development too. In the long run we assume capital is utilized at the level chosen by firms and net exports are zero. Further, the price of tradable goods is internationally given, so any increase in v necessarily lowers the tradable sector profit-share (there is no scope for the mark-up to remain constant). Under these conditions the prospects for 'wage-led growth' are further diminished. Positive effects of redistribution on utilization fail to arise now not only because of 'social disarticulation', but also because utilization rests at a 'desired rate' and there is limited space for capitalists in the tradable sector to maintain their profit-share in the aftermath of increased worker bargaining power. However, industrial policy and interest rate policy interventions can still be implemented to mediate conflict between capital and labour to ensure the interests of this sector are promoted. Unlike in the simple Kaleckian context, in the disarticulated context it is possible to stimulate the profit-share without reducing the real wage.

4. Conclusion

The main policy conclusion that can be derived from this paper is negative insofar as this paper

outlines constraints on the applicability of 'wage-led' strategies in developing countries, where the economic structure fits a 'disarticulated' pattern. To put the central analysis derived above more clearly, the lack of worker consumption for manufactures negatively impacts on the space for wage-led industrialization. One way of presenting the negative claim about the applicability of 'wage-led' strategies in developing countries in terms of a positive claim is to argue for the importance of industrial policies.

There are some strong limitations on the analysis derived from this paper insofar as the model relies on a still imprecise distinction between two sectors. A more comprehensive model would be required to assess completely the relationship between distribution and growth in a particular underdeveloped economy. Notably, the model presented in section 3.1 fails to distinguish clearly between sectors as diverse as, on the one hand, manufacturing and mining (that fall into the tradable sector) and, on the other hand, services and subsistence agriculture (that fall into the non-tradable sector). For the purpose of this paper however, the model serves as a sufficient basis for raising questions about the applicability of neo-Kaleckian models, particularly in developing country contexts.

What this paper has principally aimed to establish was three-fold: 1) A review of Kalecki's views on development and assessment of the compatibility of these views with the contemporary Kaleckian literature. 2) Setting forward an alternative framework which captures constraints on the applicability of the policy insights from neo-Kaleckian models in developing country contexts. 3) Analysis of what policy conclusions follow from the above parts.

With respect to the broader implications of these insights, it should firstly be emphasized that none of the arguments presented in this paper present an argument in favour of inegalitarian distribution of income. That said, the debate about macroeconomic policy in developing countries has to take careful stock of the implications of policy within frameworks including structural heterogeneity. Alongside careful interrogation of the implications of policy, tactical use of rhetoric regarding 'wage-led growth' may be useful, but it may be problematic if their use precedes this interrogation. The consequences may be harmful to the prospects of realizing alternatives to the orthodoxy if they 1) result in inappropriate policies that harm the economy and damage the credibility of heterodox thought, 2) if they channel the heterodoxy's focus from the genesis of

more fruitful lines of enquiry and 3) if the public debate shifts toward instrumentalising social outcomes of intrinsic value to their growth consequences, as Skott (2016) has emphasized.

In summary of the central conclusion of this paper, to achieve development (structural transformation), merely leveraging aggregate demand policy (in this case, shifts in income distribution) is insufficient. This insufficiency is underlined by one sector models in general and calls for 'wage-led growth' in particular.

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Appendix 1

π	Profit share
θ	Mark-up
r	Profit rate
u	Rate of capacity utilisation
v	Capital-capacity ratio
g_s	Saving function
$\frac{I}{K}$	Accumulation rate
s	Saving (out of profits)
α	Animal spirits
γ	Impact of utilisation on investment

$$\pi = \theta/(1+\theta) \quad (18)$$

In this model, a rise in the mark-up captures a decline in the real wage. Changes in the mark-up are treated as exogenous in this model.

$$r = \pi u/v \quad (19)$$

$$g_s = sr = s\pi u/v \tag{20}$$

$$\frac{I}{K} = \alpha + \gamma u \tag{21}$$

The model is solved for a goods market equilibrium by equating the saving and investment functions, such that they intersect, provided the Keynesian stability condition, which specifies that the slope of the saving function is greater than the slope of the investment function:

$$s\pi > v\gamma u \tag{22}$$

This implies that the responsiveness of saving to a change in utilisation has to be greater than the responsiveness of investment to a change in utilisation.

The equilibrium value of the rate of utilisation is found as:

$$u^* = \frac{\alpha}{\frac{s\pi}{v} - \gamma} \tag{23}$$

$$\left(\frac{I}{K}\right)^* = \alpha + \frac{\gamma\alpha}{\frac{s\pi}{v} - \gamma} \tag{24}$$

$$g_s^* = \frac{(s\pi\alpha)/(\frac{s\pi}{v} - \gamma)}{v} \tag{25}$$

Core to this model is the assumption that a homogenous output is produced for both consumption and investment purposes.

In summary then, the basic model is a useful formulation because it outlines the inverse of the 'paradox of thrift', since a lower propensity to save becomes expansionary and induces a growth of consumption demand, utilisation and as a result investment (Hein, 2014: 254):

$$\frac{\partial u^*}{\partial s} = \frac{-\alpha\pi/v}{(s\pi - \gamma)^2} < 0 \tag{26}$$

$$\frac{\partial\left(\frac{I}{K}\right)^*}{\partial s} = \frac{-\gamma\alpha\pi/v}{(\frac{s\pi}{v} - \gamma)^2} < 0 \tag{27}$$

The model also allows for an illustration of the inverse of the 'paradox of costs' by highlighting the ability of higher real wages to bringing about higher rates of capacity utilization, improved growth rates and higher profit rates.

$$\frac{\partial u^*}{\partial \pi} = \frac{-\alpha s\frac{1}{v}}{(\frac{s\pi}{v}-\gamma)^2} < 0 \quad (28)$$

$$\frac{\partial \left(\frac{I}{K}\right)^*}{\partial \pi} = \frac{-\gamma\alpha(s\frac{1}{v})}{(s\pi-\gamma)^2} < 0 \quad (29)$$

This model thus establishes the prospects for 'wage-led growth' (exclusively, by precluding the possibility of 'profit-led growth') since capital accumulation is primarily a function of the rate of utilisation. Hence, the neo-Kaleckian model has no space for the potential negative effects of a reduced profit share of income on investment. As we will see below, the possibility of 'profit-led growth' was highlighted by Bhaduri and Marglin (1990) in the 'post-Kaleckian model'. Their extension essentially updates the investment function to include the effect of changes in the profit share on investment. There is now the possibility of an invalidation of the underconsumptionist investment function expressed in the neo-Kaleckian model (Bhaduri and Marglin, 1990: 379).

$$\frac{I}{K} = \alpha + \gamma u + \rho\pi \quad (30)$$

Solving the model for the equilibrium rate of utilisation (using the saving function of the neo-Kaleckian model) we get the following:

$$u^* = \frac{\alpha+\rho\pi}{\frac{s\pi}{v}-\gamma} \quad (31)$$

$$(\frac{I}{K})^* = \alpha + \gamma(\frac{\alpha+\rho\pi}{\frac{s\pi}{v}-\gamma}) + \rho\pi \quad (32)$$

If we derive this with respect to the savings rate, we see that the paradox of thrift still holds:

$$\frac{\partial u^*}{\partial s} = \frac{-(\alpha+\rho\pi)\pi/v}{(\frac{s\pi}{v}-\gamma)^2} < 0 \quad (33)$$

$$\frac{\partial (\frac{I}{K})^*}{\partial s} = \frac{-\gamma(\alpha+\rho\pi)\frac{\pi}{v}}{(\frac{s\pi}{v}-\gamma)^2} < 0 \quad (34)$$

However, the paradox of cost no longer necessarily holds, since the derivative of the equilibrium utilisation rate with respect to changes of the profit share is no longer necessarily negative, as in the neo-Kaleckian model (equations 11 and 12):

$$\frac{\partial u^*}{\partial \pi} = \frac{\rho - s\frac{u}{v}}{\frac{s\pi}{v} - \gamma} \quad (35)$$

$$\frac{\partial (\frac{I}{K})^*}{\partial \pi} = \frac{\gamma(-\gamma\rho - \alpha s\frac{1}{v})}{(s\frac{\pi}{v} - \gamma)^2} + \rho \quad (36)$$

This shows the possibility of two regimes: a 'stagnationist regime' (wage-led regime), where investment is weakly responsive to changes in the profit share, and an 'exhilarationist regime' (profit-led regime), where the capitalist class responds more strongly to changes in the profit share (Bhaduri and Marglin, 1990: 381-382).

Appendix 2[5]

$$Y_N = AL_N \quad (37)$$

Since the non-tradable sector is not particularly capital intensive, for simplicity capital is assumed not to be a factor of production in this sector. There are constant returns to labour.

We assume utilisation at an actual rate below full capacity in the short-run, which enters the production function as follows.

$$Y_T = aL_T = ubK \quad (38)$$

$$Y_N = C_N \quad (39)$$

The equilibrium condition for the non-tradable sector is given by the above equation (non-tradable output equals demand for non-tradable goods).

Using the equilibrium condition for the non-tradable sector:

$$Y_N = C_N \quad (40)$$

Equation 7 gives the real exchange rate, defined as the relative price of tradable goods to non-tradable goods, in terms of domestic currency.

[5] Variables used in appendices 2-5 are defined in a table in section 3.1.

$$q = \frac{ep_T}{p_N} \tag{41}$$

Exports are predetermined in the short-run, but by assumption, all tradable sector produce that is not consumed domestically is exported in the long-run:

$$X = Y_T - C_T \tag{42}$$

Aggregate output in the model, in terms of non-tradable goods, can be found through the following equation:

$$Y = Y_N + qY_T \tag{43}$$

Finally, aggregate domestic demand (also in terms of non-tradable goods) is given by:

$$C = C_N + qC_T + q\frac{p_K}{p_T}I \tag{44}$$

Using the equilibrium condition for the non-tradable sector:

$$Y_N = C_N \tag{45}$$

And solving for Y_N gives the following equilibrium value of non-tradable output (a proof can be found in Appendix 3) and employment:

Appendix 3

$Step\ 1: AL_N = vAL_N + vAL_T + (1-s)(\alpha)[qubK - vAL_T + AL_N - vAL_N]$
$Step\ 2: AL_N = vAL_N[1-\alpha(1-s)] + vAL_T[1-\alpha(1-s)] + \alpha(1-s)[qubK] + \alpha(1-s)AL_N$
$Step\ 3: \frac{AL_N}{[1-\alpha(1-s)]} = vAL_N + vAL_T + qubK\frac{\alpha(1-s)}{[1-\alpha(1-s)]} + AL_N\frac{\alpha(1-s)}{[1-\alpha(1-s)]}$
$[L_T = \frac{ubK}{a}, from\ equation\ 38]$
$Step\ 4: \frac{AL_N}{[1-\alpha(1-s)]} = vAL_N + ubK\left[\frac{vA}{a} + \frac{\alpha(1-s)q}{[1-\alpha(1-s)]}\right] + AL_N\frac{\alpha(1-s)}{[1-\alpha(1-s)]}$
$Step\ 5: \frac{AL_N}{[1-\alpha(1-s)]}[1-\alpha(1-s)] = vAL_N + ubK\left[\frac{vA}{a} + \frac{\alpha(1-s)q}{[1-\alpha(1-s)]}\right]$
$Step\ 6: AL_N(1-v) = ubK\left[\frac{vA}{a} + \frac{\alpha(1-s)q}{[1-\alpha(1-s)]}\right]$
$Step\ 7: Y_N^* = \frac{ubK}{(1-v)}[\frac{vA}{a} + \frac{\alpha(1-s)q}{[1-\alpha(1-s)]}]$

Appendix 4

$Step\ 1: ubK = X + C_T$
$Step\ 2: ubK = X + (1-s)(1-\alpha)[qubK - vAL_T + AL_N - vAL_N]/q$
$Step\ 3: u = \frac{X}{bK} + (1-s)(1-\alpha)u - \left(\frac{vA}{q}\right)\left(\frac{L_T}{bK}\right)\left((1-s)(1-\alpha)\right) + \frac{AL_N}{qbK}(1-v)((1-s)(1-\alpha))$
Step 4: $u[1-(1-s)(1-\alpha)] = \frac{X}{bK} + \frac{AL_N}{qbK}(1-v)\left((1-s)(1-\alpha)\right) - (\frac{vA}{q})(\frac{L_T}{bK})((1-s)(1-\alpha))$
$[\frac{L_T}{bK} = \frac{u}{a}, from\ equation\ 38]$
$Step\ 5: u[1-(1-s)(1-\alpha)] = \frac{X}{bK} + \frac{AL_N}{qbK}(1-v)\left((1-s)(1-\alpha)\right) - (\frac{vA}{q})(\frac{u}{a})((1-s)(1-\alpha))$
$Step\ 6: u[1-(1-s)(1-\alpha)] = \frac{X}{bK} + \frac{AL_N}{qbK}(1-\alpha)(1-s)(1-v)$
$[L_N = \frac{ubK}{A(1-v)}[\frac{vA}{a} + \frac{\alpha(1-s)q}{1-\alpha(1-s)}], from\ equation\ 37\ and\ step\ 7\ of\ Appendix\ 3]$
$Step\ 7: u[1-(1-s)(1-\alpha)] = \frac{X}{bK} + u\left[\frac{vA}{qa} + \frac{\alpha(1-s)}{1-\alpha(1-s)}\right](1-\alpha)(1-s) - \frac{vAu}{qa}(1-\alpha)(1-s)$
$Step\ 8: u[1-(1-s)(1-\alpha)] = \frac{X}{bK} + u[\frac{\alpha(1-s)}{1-\alpha(1-s)}](1-\alpha)(1-s)$
$Step\ 9: u\left[1-(1-s)(1-\alpha)\left(1+\frac{\alpha(1-s)}{1-\alpha(1-s)}\right)\right] = \frac{X}{bK}$
$Step\ 10: u[1-\left(\frac{(1-s)(1-\alpha)}{1-\alpha(1-s)}\right)] = \frac{X}{bK}$
$Step\ 11: u\left[\frac{s}{1-\alpha(1-s)}\right] = \frac{X}{bK}$
$Step\ 12: u^* = \frac{X[1-\alpha(1-s)]}{bKs}]$

Appendix 5

For the purposes of deriving further policy conclusions, a simple extension to the model, incorporating a tradable sector union wage premium, can be included here:

$$C_N = vAL_N + dvAL_T + (1-s)(\alpha)[qubK - dvAL_T + AL_N - \omega L_N] \quad (46)$$

The wage in the tradable sector is no longer equal to the wage in the non-tradable sector, which has implications for the demand for non-tradable goods equation.

$$C_T = (1-s)(1-\alpha)[qubK - dvAL_T + AL_N - vAL_N]/q \quad (47)$$

Likewise, the union wage premium enters the equation for demand for tradable goods.

$$\pi_T = 1 - dvA\frac{L_T}{qY_T} \quad (48)$$

The profit share in the tradable sector also undergoes a minor alteration, which has implications for the accumulation rate equation defined below.

$$\frac{I}{K} = f(z, u, \pi_T) = f\left(z,\ u, \left(1 - dvA\frac{L_T}{qY_T}\right)\right);\ f_u > 0, f_{\pi_T} > 0 \quad (49)$$

The equation depicting mark-up pricing also undergoes a minor alteration.

$$ep_T = (1 + \theta)dvAp_N \quad (50)$$