Global financial flows in Kaleckian models of growth and distribution: A survey

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Introduction

Kaleckian models of growth and distribution were developed in the early 1980s to account for an alternative view regarding the relation between (functional) income distribution and economic growth. Contrary to the arguments prevalent in the mainstream, and even within post-Keynesian authors such as Joan Robinson and Nicholas Kaldor (in their works in the 1950s and early 1960s), early Kaleckian authors argued that higher real wages were associated with *higher*, not lower, rates of economic activity and capital accumulation (Rowthorn 1981, Dutt 1984, Amadeo 1986). Later work tended to nuance this corollary, by emphasizing the double role of wages, both as a source of (consumption) demand and as a cost to producers, affecting in contradictory ways their profitability. This argument was reinforced by the impact of rising wages on international competitiveness (Bhaduri and Marglin 1990).[i]

Together with Bhaduri and Marglin's work, Blecker (1989) ignited a rich literature that included and discussed the impact of distributive changes (in mark-ups, wages, and income policies) on the balance of trade performance and its implications for the possibility of coexistence of rising real wages and higher economic growth.[ii] In order to understand this impact, it is very important to know the *source* of rising real wages: if it is due to increasing *nominal* wages, then it is likely to have a detrimental impact on external competitiveness and economic activity, while if the reason behind is a fall on mark-ups, then it is likely that the balance of trade improves along aggregate demand.

This insight was taken over by Von Arnim (2011) and Cassetti (2012) to explore alternative income policies while maintaining the main corollary of Kaleckian models, that rising real wages need not be detrimental to capital accumulation and economic activity.

Notwithstanding the extensive literature on open-economy Kaleckian models, up until recently all the analyses concerned solely the balance of trade, and tended to ignore international financial flows. Even otherwise detailed analyses of the impact of devaluations on income distribution and economic growth, such as Blecker (2011) and Ribeiro et al (2017), consider only transmission channels through the balance of trade. In recent decades, however, global financial flows have increased more than global GDP (Akyûz 2014, Bortz and Kaltenbrunner 2018). Developing countries, in particular, have experienced a surge in corporate external indebtedness (Chui et al 2016, Bruno and Shin 2017), most of it denominated in a foreign currency.

The gap in the literature has narrowed in recent years, however, and this chapter surveys the different lines adopted to try to include capital account factors into Kaleckian models. Most of these new works deal with net capital flows, i.e. with the capital account balance considered as a whole. There are some recent articles, however, that explore the effects of *gross* financial flows on their own, i.e. rising corporate/public indebtedness without paying too much attention to the external *assets* of said economy.

The chapter is structured as follows. Next section will describe the first model, to our knowledge, that combined the impact on economic growth of changes to income distribution *and* the current account balance, developed by La Marca (2005, 2010). Section three will review Köhler (2017), who analyses external debt sustainability in a fixed-exchange rate regime along different demand regimes. Section four describes Guimaraes Coelho and Pérez Caldentey (2018)'s model, which mixes Minskyan

insights regarding the dynamics of the (external) leverage ratio of an economy with a Kaleckian model of growth and distribution. Finally, section five presents the work of Bortz, Michelena and Toledo (2018, 2019) that looks at the impact of exogenously-driven external inflows on economic activity and income distribution, mediated by their impact on the exchange rate and balance sheets.

The (net) capital account makes its entry

Up to La Marca (2005, 2010), open-economy Kaleckian models dealt only with the balance of trade, without including in their analyses the necessary counterpart to imbalances in foreign trade: the accumulation of external assets or liabilities, and the flow of corresponding interest or dividend payments. The articles by La Marca are, to the best of my knowledge, the first attempts to include net foreign assets/liabilities as a dependent variable with feedback effects with income distribution and capacity utilisation, the traditional proxy for aggregate demand in Kaleckian models. Both models are very similar, and we will focus on the 2010 paper.

Before describing the model in full and its corollaries, there are two characteristics that put the model in context. First, like traditional Kaleckian models, there is no convergence in the long run to any measure of a "normal" rate of capacity utilisation. Second, and very important to keep in mind for the rest of this chapter, the net accumulation of foreign/assets and liabilities depends on the performance of the current account, and notably on the trade balance. There is no "capital flows driving the current account" story in this model.

The model is composed of households, firms, government and the rest of the world. The only financial assets/liabilities are equities (assets of households, liabilities of firms) and net foreign assets/liabilities (held by firms and the rest of the world). Government budget is balanced at all times. As per almost all Kaleckian models, La Marca's has a

distribution block and an aggregate demand (capacity utilisation) block, to which he adds a block describing the dynamics of net foreign asset/liabilities. Let's go block by block.

Kaleckian models typically assume an imperfect-competition, mark-up-over-costs setting. [iii] Costs in La Marca's model comprise wage-labour and imported inputs. The profit rate is a residual of sales over costs, and it is equal to the profit share times capacity utilisation. The profit share and the real exchange rate are negative related to the wage share. In truth, rising wage costs are passed *partially* to prices (exchange rate) and partially into lower profits (via mark-up reduction), according to the price-elasticity of exports. To sum up the distribution block, we must show how the wage share itself moves.

La Marca adopts a Phillips curve-type of approach. Workers target a wage share that moves with changes in capacity utilisation, with a certain adjustment speed. Equations (1) and (2) reproduce equations (8) and (9) of La Marca (2010).

$$\dot{\psi} = \tau(\psi^* - \psi) \tag{1}$$

$$\dot{\psi} = \tau(le^{(1+ulk)} - \psi) \tag{2}$$

ψ represents the wage share, and ψ^* the target wage share, which varies with changes in capacity utilisation u, fixed labour productivity l and the capital to labour supply ratio k, also constant in the model.

Capacity utilisation adjusts to discrepancies between planned investment, savings and the current account. In a traditional Kaleckian fashion (after Bhaduri & Marglin 1990), planned investment depends on the profit share and capacity utilisation. Equation (3) reproduces equation (11) of La Marca (2010):

$$g = \alpha\pi u + \gamma \tag{3}$$

Where g is the investment rate, α is the sensitivity of investment to changes in the profit share π and capacity utilisation, and γ is an exogenous investment component. Savings are composed of different items, in turn. Households save out of wage income, out of dividend payments, and out of capital gains (their equity holdings). Firms have retained earnings, a proportion of their profitability and interest revenues/payments. If we lump together retained earnings plus the saved portion of dividends plus the saved portion of capital gains, we obtain the following equation (4), which replicates equation (13) of La Marca (2010):

$$\sigma = s_p\,(\pi u + j\xi b) + s_h \psi u \qquad (4)$$

Where σ is the savings rate normalized by the capital stock, s_p is the combined (households and firms) propensity to save out of firms profits and s_h is the propensity to save out of wage income. Firms profits include production related profitability and interest revenues (payments) on external assets (liabilities), measured by the rate of return j, accumulated net assets/liabilities b and the real exchange rate ξ.

Capacity utilisation then adapts to close the gap between planned investment, savings and the current account, that is excess demand. The latter includes exchange-rate-sensitive and insensitive components within the net exports. Grouping the exchange-rate sensitive components under z (notably, price-sensitive imports and exports, and the domestic value of interest returns/payments), capacity utilization changes at the following rate (which replicates equations 15 and 16 of La Marca (2010)):

$$\dot{u} = \lambda(g + z - \sigma)$$

or

$$\dot{u} = \lambda\{[(\alpha - s_p)\pi - s_h\psi - \xi a]u + \gamma + \xi^{\eta} x + (1 - s_p) j\xi b\} \qquad (5)$$

The parameters that make their first appearance are ξa (the exchange-rate sensitive component of imports, use as intermediate inputs) and $\xi^{\eta} x$ (the exchange-rate sensitive

component of exports, with a price-elasticity η). It is assumed that s_p is sufficiently larger that α, assuring the stability of the dynamic equation. It is easy to see that, if s_p is smaller than one, then $\frac{\partial \dot{u}}{\partial b}$ is positive. *That means that if the economy is a net creditor (b >0), capacity utilization will increase, and vice versa if the country is a net debtor, i.e. in this open-economy setting the model only allows for a debt-burdened regime,* unlike Hein (2014), for instance. Later we will review variants that allow for the existence of both debt-led and debt-burdened regimes

The profit-led or wage-led character of the system depends on the reaction of investment, savings and the trade balance to changes in the wage-share. A high price-elasticity of exports η makes the system more profit-led. But there is an additional impact, coming from the net creditor-debtor position of the economy. If the economy is a net-creditor, then a real appreciation (coincident with greater wage-share) reduces the stream of income denominated in domestic currency from interest revenues, and a depreciation (falling wage-share) increases that same flow. *That means, if b is positive, the economy is more likely to be profit-led, and vice versa.*

But how do net assets/liabilities evolve? As mentioned before, net asset/liabilities accumulation in La Marca's model is a function of the imbalance between domestic savings, investment, net exports and interest revenues/payments. After compiling and substituting the relevant variables and equations, foreign-priced assets/debt is ruled by the following equation, which replicates equation (18) of La Marca (2010):

$$\dot{b} = \frac{(s_p - \alpha)\pi u + s_h \psi u - \gamma}{\xi} - (g - s_p j)b \qquad (6)$$

It is easy to see that, as long as savings react stronger than investment to increments in capacity utilisation, $\frac{\partial \dot{b}}{\partial u}$ will be positive. It is also readily clear that a condition for stability is that $g > s_p j$, so that increasing foreign assets stimulate investment more than

savings, and the imbalance is reverted. This condition also causes that, for sufficiently high-levels of b and ψ, $\frac{\partial \dot{b}}{\partial \psi}$ is positive.

La Marca focuses his attention on the case of an export-led economy, which is expected to be a net creditor and a profit-led demand regime. With this conditions, and with the classical savings pattern of no savings by workers and s_p = 1 by firms, the model is able to replicate Goodwin (1967)-type cycles, with interactions between capacity utilisation and the wage-share, which further impact on the exchange rate and net external asset accumulation.

La Marca (2010, p. 146) stresses that different outcomes can be obtained with different extensions of the model, that incorporate other social and economic institutions and policy orientations. In this sense, the model sets a precedent for further work, which took some time to develop.

External debt sustainability and devaluations

Köhler (2017) follows a different approach. The objective of his model is to analyse external debt sustainability and to evaluate how a devaluation may kick external debt out of that stable path, when that debt is denominated in a foreign currency. In the model firms can borrow both from domestic banks and from international lenders, so that strong negative balance sheet effects on firms may counteract the positive impact of a devaluation on the trade performance.

The goods market is depicted in a usual Kaleckian fashion. Prices are set with a mark-up over (labour) costs. The mark-up determines the profit share and the wage share. The real exchange rate may affect the mark-up in either direction, according to the bargaining power of capital and labour, as in Blecker (2011).

Firms may borrow from domestic banks (B) or from foreign lenders (eB^f), while banks accept deposits from foreign investors (D). While Köhler assumes that B^f is always

positive, it can be the case that B becomes negative, and even that $eB^f + B < 0$, in which case domestic banks would actually have a *creditor* position with the rest of the world, and a *debtor* position with regards to firms.

Let us call λ the ratio of external indebtedness to the nominal capital stock ($\frac{eB^f}{pK} = e_r\lambda$), τ the ratio of domestic debt to the capital stock ($\frac{B}{pK}$) and r the profit rate ($\frac{R}{pK}$). Savings arise out of profits minus interest payments, as in equation (7):

$$s = \frac{S}{pK} = r - i^f e\lambda - i\tau = \frac{\pi u}{v} - i^f e\lambda - i\tau \qquad (7)$$

Investment depends, as in most Kaleckian models, on capacity utilisation and the profit share. But also the external-debt-to-capital ratio exercise a depressing influence on investment. Due to currency mismatch, devaluations may end up deteriorating the balance-sheet of firms:

$$g = \frac{I}{K} = g_o + g_1 u + g_2 \pi - g_3 e_r \lambda \qquad (8)$$

The balance of trade, in turn, reacts to domestic and foreign capacity utilisation, and to the real exchange rate:

$$b = \frac{NX}{pK} = b_o u^f + b_1 e_r - b_2 u \qquad (9)$$

However, it is *not* assumes a priori that the influence of the real exchange rate will be positive, i.e. whether b_1 is greater than zero. It may or may not, depending on whether the Marshall-Lerner Condition holds or not. The usual Keynesian stability condition, in turn, requires that savings and the balance of trade react stronger to changes in capacity utilisation than investment.

In this short-term model, external debt has detrimental impact on the equilibrium levels of capacity utilisation and growth, the intensity of the impact depending on the reaction of investment to external debt g_3. External debt can also counteract the eventually

positive impacts of real devaluations on capacity utilisation, if the Marshall-Lerner Condition holds.

So far, this is a traditional short-run Kaleckian model. But in the medium-run, the external-debt-to-capital ratio becomes and endogenous variable. This rises up the question of how do firms fund their investment plans. They have three alternatives: either through retained earnings, through domestic debt or through foreign debt. Debt The latter is somewhat cheaper than the former, because of a liquidity premium usually charged on domestic borrowing ρ_0. Lenders are also concerned about booming debt, and increase their lending rates accordingly, though the sensitivity of domestic and external rates can be different:

$$i = i_B^f + \rho_0 + \rho_1 e_r \lambda \tag{10}$$

$$i^f = i_B^f + \rho_1^f e_r \lambda \tag{11}$$

There are a couple of issues to keep in mind. Debt dynamics is not only affected by retained earnings and investment funding, but also with the repayment of principal and interest. Second, in the model, there is a preferential order with regards to the sources to fund investment and interest payments: retained earnings and external debt borrowing take primacy with regards to domestic debt, which accommodates any difference between required funds, retained earnings and external debt.:

$$B = pI - R + ei^f B^f + iB - e\dot{B}^f \tag{12}$$

The reason behind is that external debt is usually cheaper than domestic borrowing, as mentioned in equations 10-11.Third, external currency amounts to a *proportion* of total investment, but that proportion is not constant. In fact, it changes with the difference in the relative costs of both types of borrowing. In linear terms, we have:

$$e\dot{B}^f = (\phi_0 + \phi_1 e_r \lambda) pI \tag{13}$$

Where ϕ_0 includes the liquidity premium ρ_0 and ϕ_1 the relative sensitivity of domestic and external rates to rising external indebtedness. The dynamics of the ratio is explained by equation 14:

$$\frac{d(\frac{eB^f}{pK})}{dt} = e_r\dot{\lambda} = \frac{e\dot{B}^f}{pK} + e_r\lambda(\widehat{e_r} - g) = g^*[\phi_0 + e_r\lambda(\phi_1 - 1)] \quad (14)$$

The last part of equation (14) makes use of the fact that $\widehat{e_r}$ is equal to zero (because the exchange rate is fixed and inflation is assumed away), that g reached its short-run equilibrium value g^*, and of equation (13).

The other state variable is the domestic-debt-to-capital ratio τ. As said in equation 12, domestic debt accommodates the differences between financial needs (investment and interest payments), retained earnings and external debt. The equation describing the dynamics is:

$$\left(\frac{\dot{B}}{pK}\right) = \dot{\tau} = \frac{\dot{B}}{pK} - \tau g - \tau\hat{p} \quad (15)$$

Making use of equation12, equations 10 and 11 for the interest rates, equation 13 for the dynamics of external debt, and noting again that inflation is assumed away, we obtain 15':

$$\dot{\tau} = \tau\left(i_B^f + \rho_0 + \rho_1 e_r\lambda - g^*\right) + g^*(1 - \phi_0 - \phi_1 e_r\lambda) + \left(i_B^f + \rho_1^f e_r\lambda\right)e_r\lambda - r^* \quad (15')$$

Now we have a two-dimensional dynamic system on $e_r\dot{\lambda}$ and $\dot{\tau}$:

$$\begin{bmatrix} \frac{\partial e_r\dot{\lambda}}{\partial e_r\lambda} & \frac{\partial e_r\dot{\lambda}}{\partial \tau} \\ \frac{\partial \dot{\tau}}{e_r\lambda} & \frac{\partial \dot{\tau}}{\partial \tau} \end{bmatrix} = \begin{bmatrix} J_{11} & J_{12} \\ J_{12} & J_{22} \end{bmatrix}$$

Calculations are easier once we realise J_{12} is zero. So we are interested in the signs of J_{11} and J_{22}, both of which have to be negative in the surroundings of equilibrium for stability purposes. The sign of J_{11} is negative if:

$g^{**}(\phi_1 - 1) < 0$

So, as long as the equilibrium growth rate is positive, and domestic rates are not *too* sensitive to external indebtedness (low value of ϕ_1), then external debt is stable. What is the reasoning behind this relation between *domestic* rates and *external* indebtedness? It may be the case that, concerned by high external indebtedness, foreign investors leave the country and the central bank is forced to increase interest rates, therefore increasing the financial needs of firms. This is the instability case. In normal times, as long as money flows in, J_{11} is negative.

In turn:

$$J_{22} = i_B^f + \rho_0 + \frac{\rho_1 \phi_0}{1 - \phi_1} - g^{**}$$

For stability, the equilibrium growth rate must be greater than domestic interest rate, the usual condition for public debt sustainability. In this model, however, things might be somewhat out of the control of central banks: a shock to the liquidity premium might send the system into unstable territory. Also a high debt ratio ($\frac{\rho_1 \phi_0}{1 - \phi_1}$) and high sensitivity of domestic rates to the steady state external debt ratio (ρ_1) may complicate the stability of domestic debt.

An interesting question Kôhler (2017) addresses is the effect of currency devaluations on the sustainability of external debt. As long as a devaluation stimulates capital accumulation, the effect will reinforce the stability of the system. But if they depress investment (say, because they are strongly contractionary), the effect is the opposite, even if the balance of trade improves. In that sense, the wage-led or profit-led nature of the demand (and growth) regime has an important bearing on the results of the model. Debt crises out of devaluation episodes can also happen even when the balance of trade moves into surplus.

External flows and financial instability

The primordial role of growth in any debt sustainability analysis is in part related to the importance of sales revenues and internal financing for "healthy" balance-sheet positions. Kalecki (1971) underscored the relevance of internal finance as one of the majour constraints on investment, while Minsky (1986) reflected on the tendency of firms to rely increasingly on external financing (debt), which would lead to financial fragility. Lavoie and Seccareccia (2001), however, doubt that this "Financial Instability Hypothesis", which could be valid at the firm level, still holds at a macroeconomic level. They warn of a possible fallacy of composition. In the upward phase of the cycle, as firms fund their increasing investment with borrowing, so will aggregate profits increase; while in a downturn, though firms try to decrease their leverage, aggregate profits will fall, making the whole effort futile. The argument is known as the "paradox of debt".

Guimaraes Coelho and Perez Caldentey (2018, GCPC from now on) develop an interesting Kaleckian model that is flexible enough to accommodate both regimes, while including the possibility of credit rationing due to increased liquidity preferences of financiers. In an open economy setting that focuses on emerging economies, the possibility of financing current account deficits depends on the availability of external financing in foreign currency. The financial needs are measured, in GCPC model, by the current account deficit, which is in turn influenced by the international liquidity, the technological gap and income distribution, among other factors.

In order to review the open-economy model, it is convenient to do a quick summary of the mechanisms it presents in a closed-economy setting. The open-economy version is just an expansion of the former.

As it is usually the case in Kaleckian models, the key innovation lies in the investment function. The one presented by GCPC is as follows:

$$g^i = a_0 + a_1 h + a_2 u + a_3 IF + a_4 f_b \quad (16)$$

Where h is the profit share, u is the capacity utilisation rate, IF captures the influence of internal funds on investment, and f_b captures the influence of external finance, mostly banking finance in this closed-economy model. How do these last two variables behave? What is the economic intuition behind them?

Internal funds capture the difference between gross profits and the cost of debt. The major point that GCPC try to convey is that the sensitivity of gross profits and the cost of debt to cyclical fluctuations may be different, depending on whether the financial fragility hypothesis holds, or whether the paradox of debt holds. The equation is as follows:

$$IF = \alpha_1 hKu - \alpha_2 i\theta u \quad (17)$$

In this setting, K represents the capital stock, i represents the interest rate and θ represents the leverage ratio. If $\alpha_1 hK$ is greater than $\alpha_2 i\theta$, then internal funds would respond stronger than indebtedness to the business cycle (captured by u) and the paradox of debt. If the other case holds, then internal funds decrease as the economy grows, and we are in the financial instability hypothesis scenario. This is reflected on the sign of the differential $\frac{\partial IF}{\partial u}$: if positive the paradox of debt holds, if negative the financial instability hypothesis does. What about external finance? The following equation captures its behaviour:

$$f_b = b_1 - b_2 d_0 \frac{\partial IF}{\partial u} h \quad (18)$$

b_1 captures the liquidity preference of banks: the lower the preference, the higher the value of b_1. d_0 is a dummy variable that captures the phase of the business cycle. If the cycle is in the upward phase, d_0 is worth 1, while if we are in the downward phase d_0 is

worth zero, meaning a cease of external financing. The other crucial variable is $\frac{\partial IF}{\partial u}$. If its sign is positive (a paradox of debt case), then in the upward phase of the cycle bank borrowing falls, as firms are more reliant on internal financing to fund investment (and therefore a greater importance of sales revenue, and consumption). If the sign of $\frac{\partial IF}{\partial u}$ is negative, then as the cycle progresses firms demand more and more borrowing, driving most units towards speculative and Ponzi positions.

So there are four possible scenarios, on top of the wage-led or demand-led nature of the demand regime: a) an expansionary scenario where the paradox of debt holds; b) an expansionary scenario where the financial instability hypothesis holds; c) a downward scenario with paradox of debt; and d) a downward scenario with the financial instability hypothesis.

GCPC make some assumptions to arrive at only two "equilibrium" capacity utilisation rates, for the upward and the downward phase of the cycle, respectively.[iv] However, the wage- or profit-led nature of the demand regime is affected by the validity of either the paradox of debt or the financial instability hypothesis. Why? In the upward phase under a paradox of debt scenario, firms become more sensitive to internal finance (and therefore consumption) than to external lending. Therefore, under a paradox of debt scenario the economy is more likely to be wage-led, in the upward phase; while if the financial instability hypothesis holds, the economy is more profit-led. But the exact opposite happens in a downward phase, which by assumption involves a shortage of external funding. In this case, the fact that firms are *less* sensitive to *falling* sales revenues and internal funding (as in the financial instability hypothesis scenario) makes the demand regime more wage-led, and vice versa in the paradox of debt scenario. But how do we include capital flows in this story?

Some considerations are due at this point. First, GCPC take the current account balance as the measure of external financing. Second, this finance is partly explained by the liquidity conditions in international markets (again, through the b_1 parameter in equation 18). Third, the current account balance is also affected by the technological gap and income distribution, though the latter is not determined a priori. If redistribution benefits workers, their import demand will rise, but that of capitalist will fall. GCPC assume that the latter effect will prevail, because of the capitalists' high demand for luxury goods.[v]

There are some equations therefore to include and some to modify. First, equation (18) now has to include the determinants of the current account. GCPC use the ratio of income elasticity of exports and imports, weighted by the state of capacity utilisation:

$$f_b = b_1 - b_2 d_0 \frac{\partial IF}{\partial u} h + b_3 \frac{e}{\pi} u \qquad (18')$$

Where e is the income elasticity of exports, and π is the income elasticity of imports. But as we said, GCPC postulate that the majour determinants of that ratio are the technological gap and income distribution:

$$\frac{e}{\pi} = x_1 + x_2(1-h) + x_3 T \qquad (19)$$

Where T captures the technological gap, and $(1-h)$ represents the wage share. If we replace (19) into (18'), we get (18''):

$$f_b = b_1 - b_2 d_0 \frac{\partial IF}{\partial u} h + b_3 x_1 u + b_3 x_2 (1-h) u + b_3 x_3 T u \qquad (18'')$$

And then substitute it into the investment equation (16).

The logic regarding the nature of the demand-regime in this open economy setting remains virtually unchanged when compared to the closed economy framework. A paradox of debt scenario, in the upward phase of the cycle, attaches greater influence to internal funds over external lending, making the economy more wage-led, and the opposite with the financial instability hypothesis. The eventual illiquidity in

international financial markets, in a downward phase, would make the financial instability hypothesis case a more wage-led regime, because in this scenario firms would be *less* sensitive to *falling* internal resources.

GCPC model is a step forward in the sense that it includes the effects of changes in international liquidity conditions, and analyses different "financial regimes". However, it is still locked in the analysis of net capital flows. The next model to review breaks with that cage.

Gross financial flows, income distribution and growth

Bortz, Michelena and Toledo (2018, BMT from now on) try to integrate the analysis of three "stylised facts" of the last decades: a rise in global financial flows; an increase in income inequality; and a slowdown of global growth compared to the post-war period. The model recognizes the importance of *gross* financial flows (Ahmed & Zlate), particularly through their influence on firms' balance sheets. The main features of BMT can be summarized in a few equations.

First, given that financial flows have a much higher order of magnitude than trade flows, the model takes for granted that the nominal exchange rate moves with financial flows, which are reflected in the (public and private) external debt *d* (normalized by the capital stock):

$$\hat{E} = \omega\hat{d} \tag{20}$$

Second, as for the drivers of financial flows, BMT distinguish endogenous and exogenous factors, or "pull" and "push", as they are called in the literature (Calvo et al 1996). Among the former, the state of aggregate demand is identify as a preponderant variable (Nier, Sedik and Mondino 2014; Yildirim 2016), and BMT use capacity utilisation as a proxy variable. Regarding "push" factors, which are the main determinants of global financial flows[vi], BMT adopt a literature which identifies

heterogeneous agents in the foreign exchange market, usually called "chartists" and "fundamentalists".[vii] The former follow the short-term movement of the exchange rate, which is usually influenced by interest-rate differentials. The latter follow some rule, which in this model is determined by the difference between external indebtedness and some assessed, conventional, tolerable indebtedness level, called d^*. This is represented in equation (21):

$$\hat{d} = d_u u + \mu(i - i^f) + (1 - \mu)(d - d^*) \quad (21)$$

The second major axis refers to income distribution. The model, just like La Marca's, captures wage-setting and price-setting behaviour by workers and firms, respectively. They both have a wage-share target, which may not be mutually compatible. In particular, the wage-share targeted by firms are influenced by their external borrowing costs. Now, there is a thing with rising indebtedness and its impact on the exchange rate. On the one hand, the volume of borrowing (and its cost in foreign currency) rises. But on the other hand, the exchange rate appreciation makes it cheaper to borrow abroad, and therefore the costs measured in domestic currency fall. Though BMT say that they believe the first effect will prevail (the build-up of debt), the movement of the wage-share targeted by firms takes into account both counteracting tendencies:

$$\psi_f = -d_1 d(\delta - \omega) \quad (22)$$

Where ψ_f is the wage-share targeted by firms; d_1 is the share of private external debt over total external debt; δ captures the impact of rising external debt, and ω captures the effect of the exchange rate appreciation. As mentioned, BMT believe that, though in the short-run it may be the case that ω is greater than δ, in the medium to long-run the experience tells us that the opposite is more likely to happen. Therefore, the "normal" impact of rising external (private) debt on income distribution is to lower the wage share.

The same counteracting forces influences productive investment. Rising debt volumes may put pressure on firms' balance sheet and restrict investment, but an appreciating exchange rates makes external borrowing more attractive, on top of lowering the costs of imported capital goods. On top of capacity utilisation and the profit share, the investment function accounts precisely for those forces:

$$g_f = g_0 + g_u u + g_\pi \pi + g_i d_1 d(\delta - \omega) \tag{23}$$

These configurations of income distribution and effective demand can give rise to alternative distributive, financial and demand regimes, which are summed up in Table 1 (which replicates Table 4 of BMT (2018)).

Table 1: List of alternative regimes

Derivative	Regime	Mathematical Expression	Meaning
$\frac{\partial \hat{\psi}}{\partial d}$	*Exchange-rate driven*	$\frac{\partial \hat{\psi}}{\partial d} > 0$	Wage-share reacts positively to increments in foreign indebtedness.
	Debt-service driven	$\frac{\partial \hat{\psi}}{\partial d} < 0$	Wage-share reacts negatively to increments in foreign indebtedness.
$\frac{\partial \hat{u}}{\partial d}$	*Debt-led*	$\frac{\partial \hat{u}}{\partial d} > 0$	Economic activity reacts positively to increments in foreign indebtedness.
	Debt-burdened	$\frac{\partial \hat{u}}{\partial d} < 0$	Economic activity reacts negatively to increments in foreign indebtedness.
$\frac{\partial \hat{u}}{\partial \psi}$	*Wage-led*	$\frac{\partial \hat{u}}{\partial \psi} > 0$	Economic activity reacts positively to increments in the wage share.
	Profit-led	$\frac{\partial \hat{u}}{\partial \psi} < 0$	Economic activity reacts negatively to increments in the wage share.

Source: Bortz, Michelena and Toledo (2018, p. 9).

The reaction of the wage share to movements in external debt can be called the distribution regime; debt-led or debt-burdened are characteristics of the financial regime, and wage-led or profit-led are alternative demand regimes. But which combination of these regimes is stable? Table 2 (which replicates Table 5 of BMT) lists all the possibilities, together with the equilibrium value of capacity utilisation in each of the demand regimes.

Table 2: Stable Regime Combinations

Case	$\frac{\partial \hat{\psi}}{\partial d}$	$\frac{\partial \hat{u}}{\partial d}$	Equilibrium capacity utilization
NORMAL	-	-	Wage-led: Higher
			Profit-led: Lower
STRANGE	+	+	Wage-led: Higher
			Profit-led: Lower
CONCILIATING-DEBT	+	-	Wage-led: Higher
			Profit-led: Lower

Source: Bortz, Michelena and Toledo (2018, p. 9).

What BMT call the "normal" regime is the combination of a debt-service driven distribution regime with a debt-burdened financial regime. In this case, increments in external debt lead to falling wage-share and falling aggregate demand, which is exacerbated if the demand regime is wage-led, mainly due to rising debt service payments and its pass-through to prices.

The "strange" case is the combination of an exchange-rate driven distribution regime (in which rising debt causes strong exchange rate appreciations and rising wage-share) with a debt-led financial regime (in which external borrowing is cheaper and stimulates investment).

The "conciliating-debt" regime, finally, is a peculiar combination of an exchange-rate driven distribution regime and a debt-burdened financial regime. In this case, the exchange rate appreciation rises the wage share, but is not enough to stimulate aggregate demand (mainly because of the deteriorating trade balance).

The model can be accommodated to include income policies. In an extension of the model, BMT (2018) presents the feature of a Tax-based Income Policy (TIPs), in which the government sets targets for the wage-share, and imposes them through marginally-increasing tax rates on workers and firms.[viii] Therefore, the wage share is less sensitive

to exchange rate movements and to external debt fluctuations. The nature of the distribution regime does not change, but its magnitude shrinks, both for the exchange-rate driven or the debt-service driven. The economy is more likely to be wage-led, however, in the case of progressive taxation.

One could also extend the model to incorporate some government-spending rule, as do Bortz, Michelena and Toledo (2019). With an anti-cyclical government spending rule the paradox of thrift is still maintained, but its impact is substantially mitigated. When the rule takes into account fluctuating international financial conditions, government spending becomes more pro-cyclical, leading to periods of "excessive" spending and "excessive" austerity. In sum, the model is flexible enough to accommodate different features and policies.

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[i] A revision of Kaleckian models of growth and distribution can be found in Blecker 2002), Hein (2014) and Bortz (2016), among others. Lavoie (2014, chapter 6) reviews several topics addressed through extended versions of Kaleckian models.
[ii] A revision of this literature can be found in Köhler (2017, p. 489-490). See as well Lavoie (2014, pp. 532-540).
[iii] See Lavoie (2014, chapter 3) for a detailed exposition and related references.
[iv] They assume that, in an upward scenario with paradox of debt, the increase in b_1 will overcome the negative effect on external finance of rising internal funds $\frac{\partial IF}{\partial u}$, as can be seen in equation 18.
[v] Carrera et al (2016) find opposing results for a sample of 60 countries, including 35 emerging economies. One could only speculate, but the diffusion of consumption patterns through new communication outlets in the last decades may have homogenized consumption patterns across different social classes.
[vi] Among others, see Forbes and Warnock (2012), Ahmed and Zlat (2014), Aizenman et al (2016) and Bruno and Shin (2017).
[vii] Among others, see Frankel and Froot (1990), Harvey (1993), Lavoie and Daigle (2011), and Chutasripanich and Yetman (2015).
[viii] A similar logic would apply if the government opts for a subsidy policy instead of a tax policy.