Household Credit, Consumption Behaviors and Institutions, and Sustainable Economic Growth

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1 Introduction

Household credit and consumption have become central to understanding recent macroeconomic topics, including economic growth, business cycles, financial crises, and widening income inequality. This was not always the case, as both mainstream and heterodox perspectives largely overlooked the macroeconomic role of household debt until the Great Recession of 2007. The widespread availability of household credit has transformed consumption into a crucial independent source of aggregate demand in the macroeconomy. The aim of this chapter is to delve into recent developments regarding the role of household debt and consumption within the framework of the neo-Kaleckian growth and distribution model (see chapter 3).

Within this context, the chapter emphasizes the significance of consumption and borrowing behaviors in understanding the relationship between growth and distribution, as well as sustainable growth in the neo-Kaleckian growth and distribution model. It further extends the discussion to the institutional dimension, exploring how different varieties of capitalism, in terms of distributional and welfare regimes, may influence household debt accumulation and sustainability of the system.

This chapter draws on the accumulated works of Setterfield and Kim (2016, 2017); Setterfield et al. (2016); Setterfield and Kim (2020). Section 2 outlines a model. Section 3 analyzes the implications of emulation-induced household borrowing and consumption on the relationship between growth and distribution in a static context. I also introduce the pecking order approach to the consumption function and compare that with the more conventional consumption function, highlighting the importance of how households treat debt servicing and saving. The discussion is then extended into a dynamic setting, examining the sustainability of debt accumulation in the context of different distribution regimes (Neoliberal and Golden Age) in the US. Section 4 further investigates this issue in the context of Varieties of Capitalism (Hall and Soskice, 2001). Finally, section 6 concludes the chapter with a brief discussion of future research directions.

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2 Model

For brevity, the chapter does not introduce accounting matrices although the model is stock-flow consistent. See Setterfield and Kim (2016) for such specifications. There are three type of agents, production and non-supervisory workers, supervisory workers, and capitalists, with two types of households, working and rentier households. Firms are characterized by the mark up pricing, the investment function, and the production function:

$$Y = min\{\kappa K, \lambda Min[N, M/\alpha]\} \tag{1}$$

where Y denotes real output, M denotes the number of managers, and $\alpha < 1$ denotes the ratio of managers to production workers given by the production technology. The fixed real wage earned by workers is assumed to be a fraction of the real wage of managers, or:

$$W_r = \phi W_p \tag{2}$$

where $\phi > 1$. Total real wage income is then:

$$\begin{aligned} W &= W_p N + W_r M \\ \Rightarrow W &= W_p N + \phi W_p \alpha N = (1 + \phi\alpha) W_p N \end{aligned} \tag{3}$$

If workers' wage share of total income is denoted as ω_p and managers' wage share as ω_r, we have the following relationship:

$$\omega_r = \phi\alpha\omega_p \tag{4}$$

The investment function is give by,

$$g_K = \kappa_0 + \kappa_r r \tag{5}$$

where, r, the gross profit rate, is $r = \pi u$.

The equations below summarizes the consumption side of model, which is the main focus of the analysis;

$$C = C_W + C_R + \dot{D} \tag{6}$$

$$C_W = c_W W_p N \tag{7}$$

$$C_R = c_\pi(\phi\alpha W_P N + \Pi + iD_R) \tag{8}$$

$$\dot{D} = \beta(C^T - C_W), \beta > 0 \tag{9}$$

$$C^T = \eta C_R \tag{10}$$

$$C_W = c_W(W_p N - iD_R) \tag{11}$$

where C denotes aggregate consumption by households, C_W and C_R are consumption out of current income by working and rentier households, respectively, $\dot{D}$ is borrowing by working

households to finance consumption independently of their wage income, Π is total profit income and i is the interest rate, D_R is a part of workers' total debt (D) that is owned by rentiers, and C^T is workers' consumption target. All variables are measured in real terms.

In this model, total consumption is divided into three components: consumption out of wage income by workers, consumption out of current income by rentiers, and borrowing by workers (equation (1)). The equations detail the factors influencing each component, including the marginal propensity to consume, managerial wage income, net profit income, interest income, and debt accumulation by worker households. A key behavior is that workers observe the consumption patterns of rentier households and seek to emulate rentier consumption. The emulation effects that inform the size of η can result from direct imitation of the most affluent households, or more indirectly through 'expenditure cascades' (Cynamon and Fazzari, 2008; Frank et al., 2014). Worker's borrowing in this model is driven by emulation effect, leading to increased debt-financed consumption. The emulation parameter, η, influences the target level of consumption and the extent of debt financing.

Note also the other key behavioral assumption, that we have two different consumption functions for workers emphasizing two different consumption behaviors, equations (7) and (11). The first consumption equation is based on the idea that workers' behavior conforms to a pecking order, according to which they first consume from current income, then service their debts, and finally treat saving as a residual determined by prior consumption and debt servicing outlays. The second equation is a more conventional treatment of debt servicing as an initial deduction from income, the remainder of which is then either consumed or saved. These consumption equations highlight differences in the order in which workers prioritize debt service payments.

3 Inequality, Consumption Behaviors, and Growth

This section explores the relationship between emulation induced household borrowing, consumption, and growth in a static setting. As described above, workers emulation desire relative to rentiers is the main motivation for worker households' borrowing. We also first adopt the consumption behavior based on the pecking order approach, equation (7). We investigate whether such behavior has implications for the relationship between growth and distribution, i.e., a wage-led economy and a profit-led economy.

Goods market equilibrium in our model can be stated as:

$$Y = C_W + C_R + \dot{D} + I \tag{12}$$

Substituting equations (5), (8), (9), and the pecking order consumption equation (7) into this equilibrium condition and normalizing all variables by the capital stock, we obtain the following reduced form expressions for the equilibrium rates of capacity utilization, profit and accumulation.

$$u = \frac{\kappa_0 + id_R c_\pi (1+\beta\eta)}{\{1 - [c_\pi(1+\beta\eta) + \kappa_r]\pi - \frac{[1-\pi][c_W(1-\beta)+c_\pi(1+\beta\eta)\phi\alpha]}{1+\phi\alpha}\}} \tag{13}$$

$$r = \frac{\pi[\kappa_0 + id_R c_\pi (1+\beta\eta)]}{\{1 - [c_\pi(1+\beta\eta) + \kappa_r]\pi - \frac{[1-\pi][c_W(1-\beta)+c_\pi(1+\beta\eta)\phi\alpha]}{1+\phi\alpha}\}} \tag{14}$$

Table 1: Comparative Statics: Pecking Order Consumption Function

	κ_0	π	i	d_R	η
u	+	?	+	+	+
r	+	?	+	+	+
g_K	+	?	+	+	+

Note: Positive d_R is assumed.

$$g_K = \kappa_0 + \frac{\kappa_r \pi[\kappa_0 + i d_R c_\pi (1+\beta\eta)]}{\{1 - [c_\pi(1+\beta\eta) + \kappa_r]\pi - \frac{[1-\pi][c_W(1-\beta)+c_\pi(1+\beta\eta)\phi\alpha]}{1+\phi\alpha}\}} \tag{15}$$

Table 1 reports the comparative statistic results for u, r and g_K. We first note that an increase in debt servicing leads to higher growth ($\partial g_K/\partial i, \partial g_K/\partial d_R > 0$). This observation appears contrary to conventional Keynesian logic, as it implies that the transfer of income from working households with a high marginal propensity to consume to rentier households with a low marginal propensity to consume stimulates faster economic growth. However, this apparent contradiction can be explained by the pecking order approach and emulation induced consumption adopted by working households. Since, according to the pecking order approach, debt-servicing comes after the consumption decision and is treated as a strict substitute for savings, the debt servicing by workers results in an income transfer that is not immediately spent or saved by working households but is directed towards rentier households. Subsequently, rentier households spend a portion of this transferred income, which furthermore, through the emulation effect, induces the worker households' consumption, aligning with the fundamental principles of Keynesian demand formation.

Note that given the form of the investment function:

$$\frac{\partial g_K}{\partial \pi} = \frac{\partial g_k}{\partial \pi} + \frac{\partial g_k}{\partial u}\frac{\partial u}{\partial \pi} = \kappa_r u + \kappa_r \pi \frac{\partial u}{\partial \pi} \tag{16}$$

Given that $\kappa_r u, \kappa_r \pi \gg 0$, the sign of $dg_K/d\pi$ depends on the sign of $du/d\pi$. From equation (13), we observe that:

$$\frac{du}{d\pi} \gtreqless 0 \iff \kappa_r(1+\alpha\phi) + c_\pi(1+\beta\eta) - c_W(1-\beta) \gtreqless 0 \tag{17}$$

The growth process can be either wage- or profit-led and borrowing and emulation incline the economy towards profit-led growth. To see this, note that in order for (17) to be negative and set up the possibility of wage-led growth, ($dg_K/d\pi < 0$ in (16)), we must observe:

$$c_\pi(1+\beta\eta) - c_W(1-\beta) < 0$$

$$\Rightarrow c_\pi - c_W + \beta(c_\pi\eta + c_W) < 0 \tag{18}$$

The shift of income redistribution towards profits is expected to hinder the formation of demand and impede growth through the consumption channel. Despite the initial assumption that $c_\pi - c_W < 0$, the inequality in (18) is not guaranteed due to the positive values of β and η introduced by borrowing and emulation behaviors. Consequently, the redistribution of income towards profits may paradoxically stimulate demand formation and foster growth through the consumption channel. This establishes what could be termed a "paradox of inequality," wherein, in contrast to conventional Keynesian principles, transferring income from workers with a high propensity to consume to rentiers with a low propensity to consume actually enhances consumption spending. This encapsulates the concept of consumption-driven, profit-led growth (Kapeller and Schütz, 2015; Setterfield and Kim, 2017): the growth dynamic is profit-led not because the impact of an increased profit share on growth, operating through the investment channel, outweighs its impact through the consumption channel, but rather because borrowing and emulation lead working households to more than compensate for the decrease in consumption out of current income (resulting from $c_\pi - c_W < 0$) by increasing their debt-financed autonomous consumption spending in an attempt to "keep up with the Joneses." In summary, irrespective of the corporate response, the household sector now plays a positive role in demand formation and growth in response to income redistribution towards profits.

3.1 Conventional Consumption Function

If we replace equation (7) with equation (11), representing more conventional consumption behavior, goods market equilibrium now implies:

$$u = \frac{\kappa_0 + id_R[c_\pi(1+\beta\eta) - c_W(1-\beta)]}{\{1 - [c_\pi(1+\beta\eta) + \kappa_r]\pi - \frac{[1-\pi][c_W(1-\beta)+c_\pi(1+\beta\eta)\phi\alpha]}{1+\phi\alpha}\}} \tag{19}$$

$$r = \pi u = \frac{\pi[\kappa_0 + id_R(c_\pi[1+\beta\eta] - c_W[1-\beta])]}{\{1 - [c_\pi(1+\beta\eta) + \kappa_r]\pi - \frac{[1-\pi][c_W(1-\beta)+c_\pi(1+\beta\eta)\phi\alpha]}{1+\phi\alpha}\}} \tag{20}$$

$$g_K = \kappa_0 + \frac{\kappa_r\pi[\kappa_0 + id_R(c_\pi[1+\beta\eta] - c_W[1-\beta])]}{\{1 - [c_\pi(1+\beta\eta) + \kappa_r]\pi - \frac{[1-\pi][c_W(1-\beta)+c_\pi(1+\beta\eta)\phi\alpha]}{1+\phi\alpha}\}} \tag{21}$$

Table 2 reports the comparative statistic results associated with this system for u, r and g_K. The servicing of debts sets up a flow of transfer payments from debtors to creditors that (ceteris paribus) is conventionally thought to create a deflationary drag in demand-led growth models.[1] This is because of the higher marginal propensity to consume of debtor households. But according to Table 2, $\partial g_K/\partial i, \partial g_K/\partial d_R \gtreqless 0$. The basis of this result is immediately obvious from inspection of the numerator of equation (21), from which it can be seen that:

$$\frac{dg_K}{di}, \frac{dg_K}{dd_R} \gtreqless 0 \iff c_\pi(1+\beta\eta) - c_W(1-\beta) \gtreqless 0 \tag{22}$$

[1]See, for example, Dutt (2005, 2006) and Hein (2012, chpt.5).

Table 2: Comparative Statics: Conventional Consumption Function

	κ_0	π	i	d_R	η
u	+	?	?	?	+
r	+	?	?	?	+
g_K	+	?	?	?	+

Note: Positive d_R is assumed.

The intuition for this result is that the redistribution of income from workers to rentiers brought about by increased debt servicing commitments has two effects on consumption spending, which are clearly revealed by writing:

$$c_\pi(1+\beta\eta) - c_W(1-\beta) = (c_\pi - c_W) + \beta(c_\pi\eta + c_W)$$

As in the equation (18), the expression $c_\pi - c_W < 0$ represents the conventional impact of debt servicing, redistributing income from high to low consumption households. The second term, $\beta[c_\pi\eta + c_W] > 0$, once again signifies an unconventional effect. It shows that as income shifts to rentiers due to debt servicing, it both boosts rentier consumption and widens the gap between total and worker consumption, leading to increased worker borrowing. In summary, increased debt servicing redistributes income, reducing current consumption but raising worker borrowing, resulting in an ambiguous overall impact on consumption and economic stimulation.

Additionally, as borrowing norms limit workers' pursuit of their consumption target (C^T), the expression tends toward $c_\pi - c_W < 0$ when $\beta \to 0$. Moreover, the impact of $\eta > 0$ on the expression suggests that consumption emulation by working households increases the likelihood of a positive impact. In conclusion, the interplay of borrowing and consumption emulation determines whether or not higher debt servicing payments stimulate the economy (see equation (22)).

Since the form of the investment function is unchanged, it remains the case that the sign of $dg_K/d\pi$ depends on the sign of $du/d\pi$ in equation (16). From equation (19):

$$\frac{du}{d\pi} \gtreqless 0 \iff [\kappa_0 + id_R(c_\pi[1+\beta\eta] - c_W[1-\beta])][\kappa_r(1+\alpha\phi) + c_\pi(1+\beta\eta) - c_W(1-\beta)] \gtreqless 0 \quad (23)$$

The equations reveals the impact on the properties of the growth process resulting from the borrowing and emulation behavior, this time given the assumption that working households treat debt-servicing as an initial deduction from income. It is essentially dictated by the impact of debt servicing on growth ($\partial g_K/\partial i, \partial g_K/\partial d_R$). If $c_\pi(1+\beta\eta) - c_W(1-\beta) > 0$, so that $\partial g_K/\partial i, \partial g_K/\partial d_R > 0$, this condition suffices to make $dg_K/d\pi > 0$. If debt servicing boosts the growth through emulation induced borrowing and consumption by working households as discussed above, the same mechanism insures consumption driven, profit-led growth.

4 Sustainability

This section expands upon the previous discussion to explore the dynamic setting and examines the impact of consumption and borrowing behaviors in the context of the distribution regimes of Neoliberalism and the Golden Age in the US. The focus is on understanding how distributional differences contribute to the sustainability of debt accumulation. The debt dynamics are succinctly summarized by the following equation:

$$\dot{d_R} = \frac{\beta(C^T - C_W) - \dot{D_W}}{K} - g_K d_R \tag{24}$$

In association with debt dynamics, we also specify d_{Rmax}, which is, given consumption behaviors, the maximum debt servicing payment that it is possible for workers to sustain. In the pecking order approach, workers are assumed to consume a conventional fraction of their gross wage income, and then use the residual to fund either debt servicing or current saving as the demands of the former allow. Such behavior means the following equation must be nonnegative, which we define that as a feasibility coefficient.

$$c = (1 - c_W)\omega_p u - i d_R \tag{25}$$

Equation (25) must satisfy $c \geq 0$ in order for working households to continue servicing their debts. By setting $c = 0$ we can identify the maximum net debt to capital ratio that workers can sustain as:

$$\begin{aligned} d_{Rmax} &= (1 - c_W)\omega_p u / i & (26)\\ &= \frac{(c_W - 1)\kappa_0 \omega_p}{i[-1 + \kappa_r \pi + c_W \omega_p (1 - \beta) + c_\pi (1 + \beta\eta)(\pi + \omega_p - c_W \omega_p + \omega_p \alpha \phi)]} & (27) \end{aligned}$$

Figure 1 depicts the dynamics. In Figure 1, d_{R1} represents the stable equilibrium. If $d_{Rmax} = d_{Rmax1}$, the economy will converge to the stable debt-to-capital ratio d_{R1} and sustain a steady-state growth rate as long as the initial debt-to-capital ratio, d_R, is less than or equal to d_{Rmax1}, ceteris paribus. However, if $d_{Rmax} = d_{Rmax2}$ and initially $d_R \leq d_{Rmax2}$, the stability of d_{R1} could eventually pull the debt-to-capital ratio above its maximum sustainable value. In other words, the consumption and borrowing behaviors become unsustainable, the economy is on an unsustainable path and will eventually experience a breakdown.

Alternatively, the debt dynamics with conventional consumption behavior can be associated with the following feasibility coefficient:

$$c = \omega_W u - i d_R \tag{28}$$

Equation (28) must again satisfy $c \geq 0$ in order for working households to continue servicing their debts. By setting $c = 0$ we can identify the maximum net debt to capital ratio that workers can now sustain as:

$$\begin{aligned} d_{Rmax} &= \omega_W u / i & (29)\\ &= \frac{\kappa_0(\pi - 1)}{i[c_\pi(1 + \beta\eta) + \kappa_r \pi - 1](1 + \phi\alpha)} \end{aligned}$$

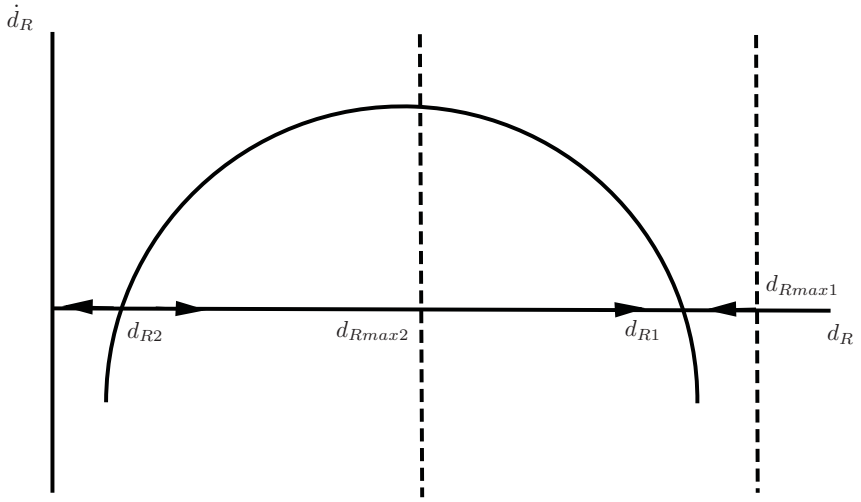

Figure 1: Debt dynamics: the "Pecking Order" case

The debt dynamics associated with conventional consumption functions are depicted in Figure 2, where d_{R2} represents the stable, steady-state debt-to-capital ratio. Ensuring that $d_R \leq d_{Rmax1}$ initially is sufficient for convergence to d_{R2} when $d_{Rmax} = d_{Rmax1}$. Under these conditions, the accompanying steady-state growth rate will be sustainable indefinitely, ceteris paribus. However, if d_{Rmax} is exceptionally low, as illustrated by d_{Rmax2} for instance, the growth process becomes unsustainable. In such a scenario, even if $d_R \leq d_{Rmax2}$ initially, convergence towards d_{R2} will eventually violate the feasibility condition $c \geq 0$, leading to a breakdown in the growth regime.

The comparison between figures 1 and 2 shows the importance of behavioral differences in the consumption function for debt dynamics. The visible difference in the dynamics between the graphs shows the possibility that the pecking order approach to consumption contributes to the instability of the system. We can investigate the difference further by performing a numerical analysis of key parameters.

The Golden Age and Neoliberal growth regimes in the US are distinguished. A key difference lies in income distribution. From 1943 to the late 1970s, all income classes saw approximately 3 percent annual income growth. However, in the 1970s, this changed. Between 1973 and 2006, the bottom 90 percent of households experienced a decline in average annual real income, while the top 1 percent saw a 3.2-fold increase (Palma, 2009, p. 841). Between 1979 and 2003, income gains for US families were predominantly concentrated at the top of the income distribution (Levine et al., 2010). This distinction is captured by three key distributional parameters (ω_r, ω_p, and π) between their Neoliberal values and their Golden Age values.

Closely related to distributional parameters in our model, another important set of parameters for our analysis are those associated with consumption emulation behavior. The

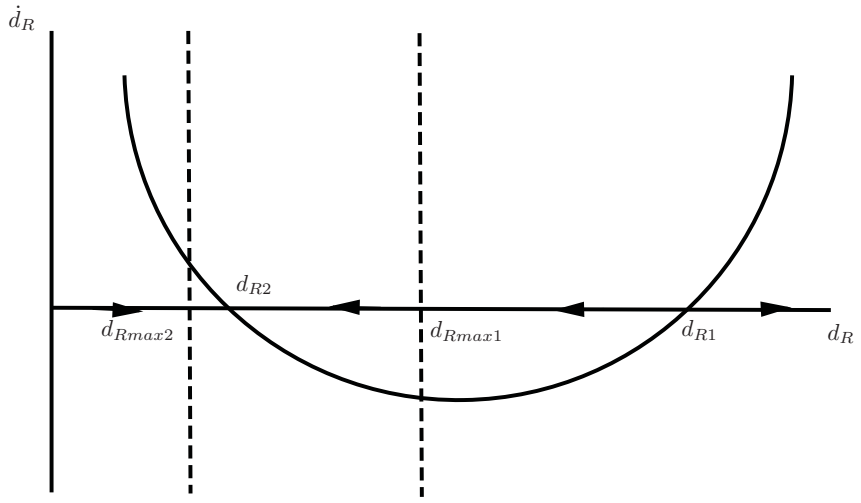

Figure 2: Debt dynamics: the "conventional" case

emulation propensity (η) for working households is determined by the formula:

$$\eta = \lambda\delta \tag{30}$$

Here, λ represents the emulation parameter, and δ is a scaling parameter, which reflects the ratio of consumption by the upper-middle class (capitalists and the working rich) to the consumption by the median rentier family. This ratio is approximated by the CEO pay to median rentier household income. The variability of δ over time captures shifts in income inequality within the top decile of the income distribution. This represents the impact of the consumption standards of the very affluent on the aspirations of working households. As previously mentioned, this influence can be direct, stemming from exposure to widely publicized celebrity lifestyles or the belief in upward social mobility, leading working households to consume in alignment with their expected future social status (Wisman, 2009, 2013). Alternatively, it can be indirect, arising from the expenditure cascades discussed by Levine et al. (2010).

Table 3: Change in Distribution with Unconventional Consumption Behavior: Golden Age and Neoliberal Regimes

	ω_r	ω_p	π	η	d_{R1}	d_{R2}	$d_R max$	c
Golden Age	0.2304	0.48	0.2896	2.92	-0.446	-2.442	0.088	0.025
Neoliberal	0.23835	0.42	0.34165	21.72	1.327	-1.218	0.262	-0.043

Tables 3 and 4 report numerical results for the model using the pecking order consumption function and conventional consumption function respectively.[2] We first inspect the case of

[2]Table 5 (the second column (US)) in appendix A details the parameter values utilized. The distribution

pecking order consumption function. If the feasibility coefficient is negative, d_{Rmax} falls below the stable steady state, rendering the growth regime unsustainable as workers struggle to meet debt commitments (d_{Rmax2} in Figure 1). Despite d_{Rmax} being significantly higher in the Neoliberal regime than the Golden Age (Table 3, column 7), the negative feasibility coefficient indicates unsustainability, as d_{Rmax} remains below the stable steady state d_{R1}. Under the Golden Age regime, a positive c value signals that d_{Rmax} exceeds the stable steady state d_{R1} (e.g., d_{Rmax1} in Figure 1), ensuring sustainability. The results depend crucially on two key behaviors we emphasize: consumption emulation, particularly its magnitude, and the pecking order consumption function. Income redistribution that favors the very affluent within the top quintile, coupled with the tendency of working households to emulate their consumption standards, increases the emulation propensity, η. This, along with the pecking order consumption function, shifts debt accumulation from sustainable to unsustainable levels.[3]

If we adopt the conventional consumption function, as shown in table 4, both the Neoliberal and Golden age regimes become sustainable even with a high emulation propensity. Table 4 shows that the Neoliberal growth regime remains sustainable within a broad range of initial values for d_R. The stable steady-state d_{R2} is considerably below the maximum limit of d_{Rmax}. The positive feasibility coefficient $c = 0.305$ signifies that, at d_{R2}, the debt to capital ratio of working households aligns well with their debt servicing capabilities. In contrast to the findings in table 3, where the Neoliberal regime was deemed unsustainable due to the distributional characteristics, table 4 reveals a different outcome with conventional debt servicing behavior. Even amid the distributional changes from the Golden Age to the Neoliberal regime, the growth process remains sustainable as long as debtors treat servicing obligations as income deductions.

Table 4: Change in Distribution with Conventional Consumption Behavior: Golden Age and Neoliberal Regimes

	η	d_{R1}	d_{R2}	d_Rmax	c
Golden Age	2.92	9.685	-0.104	1.589	0.154
Neoliberal	21.72	13.845	0.740	4.251	0.305

This comparative analysis highlights the crucial role of the treatment of debt servicing in relation to consumption and saving behaviors, indicating that the sustainability of the Neoliberal growth regime is contingent on how working households manage debt. Accumulation of household debt and increased indebtedness are not inherently instability inducing, rather, the threat to growth sustainability hinges on additional aspects of household behavior.

parameters for the Golden age appear in the first three columns of the second row of Tables 3 and 4 are calculated from the same sources reported in Table 5. Note also that the values of ω_r in the same tables are calculated from the values of ω_p, α and ϕ, given that $\omega_r = (1 + \alpha\phi)\omega_p$.

[3]See Setterfield and Kim (2016) for more detailed discussion.

5 Institutions, Behaviors, and Sustainability

The preceding discussion underscores the significance of behavioral factors, prompting an exploration into the underlying causes of these behavioral variations. This naturally raises the question: what are the potential factors contributing to such differences in behavior? It is crucial to recognize that the experiences of household debt accumulation varies across countries, influencing both financial fragility and economic growth differently. Diverse experiences arise due to various factors, encompassing the structure of financial markets, welfare systems, economic institutions, as well as consumption and borrowing cultures. These multifaceted elements constitute the fundamental reasons behind borrowing patterns, debt accumulation, and economic instability. This section partially delves into this dimension, specifically focusing on the distinctions between liberal market economies and coordinated market economies (Hall and Soskice, 2001), all in connection with the aforementioned issues. This discourse also aligns with the burgeoning literature that draws connections between Keynesian economics and the realm of Comparative Political Economy. Our discussion, in this section, focuses on the model with the pecking order consumption function (equation 7), as such consumption behavior clearly contributes to the unsustainable debt accumulation.[4] The model above is slightly modified to include the taxation of rentiers profit income and government welfare spending in the following way:

$$C^T = \eta C_R - \omega_S \tag{31}$$

$$\omega_S = t\Pi \tag{32}$$

In our revised model, the target consumption level is now influenced not only by emulation but also by the size of the social wage, ω_S. This social wage represents the public provision of services like health care and education. We posit that C^T inversely varies with the social wage. As public services decline, households must increase private consumption to maintain established standards. In other words, rising household debt correlates with changes in social service provision. We term this phenomenon "running to stand still."

Equation (32) defines the social wage funded by a proportional tax (t) on total profits, ensuring a balanced budget. The public sector acts as an intermediary, taxing profits and redistributing to workers. This equation reflects the neoliberal era's tax cuts for affluent households and the shift of healthcare and education costs from the public to the household sector. Notably, the social wage varies directly with the profit tax rate in (32), capturing these neoliberal features through a single parameter (t). This representation is parsimonious and highlights the opportunity cost of tax cuts, as increased taxes on top incomes could fund public services, reducing the burden on working households and enhancing the growth regime's sustainability.

The forms and dynamics of capitalism are not uniform , but diverse. In other words, there exist Varieities of Capitalism, which is well established in the comparative political economy literature (Hall and Soskice, 2001). There are many dimensions of such varieties, and here we focus on distribution and tax policies as our model is readily adaptable to provide insight

[4]In this section, we also focus on the distributional regime of the neoliberal era.

on these issues. This section asks that question: would the US, a representative liberal market economy, exchibits different patterns of debt accumulation and sustainability if it adopted the distribution and tax parameters of a coordinated market economy (specicially, Germany's)?

Again, table 5 details the parameter values utilized, revealing a clear contrast between the US and German economies. While income inequality has increased over time in Germany, the overall income disparity is lower in Germany compared to the US. Key parameters, such as ϕ and π (the supervisory to production worker wage ratio and the profit share of income, respectively), are lower in Germany, while ω_p and t (the wage share of supervisory workers and tax rate on top incomes) are higher.

An exception to this trend is the real interest rate, i, which is nearly double in Germany compared to the US. Post-Keynesian analysis suggests interest rates influence income distribution through transfer payments between debtors and creditors (Rogers, 1989; Lavoie, 1992). In this context, Germany exhibits a more pro-rentier economic stance than the US, primarily influenced by macroeconomic policies, particularly the European Central Bank's (ECB) focus on low inflation compared to the more accommodative Federal Reserve Bank. This divergence in policy objectives results in distinct interest rate regimes between Germany and the US.

First, we ask whether aggressive redistribution via taxes and transfers would make the US growth regime sustainable, reducing the debt burden on working households and creating a more sustainable system. To explore this, we adjust our model parameters, introducing a larger social wage funded by a higher German tax on top incomes. In this modified case, the model yields $d_R^* = 0.81$ and the steady state debt to income ratio, ${d_Y}^* = 2.29$.[5] With a higher rate of taxation and increased redistribution, there is a noticeable decrease in the debt burden for workers. These changes also lead to a rise in the steady-state capacity utilization rate, from 80% to 84%, aligning with Keynesian logic that income redistribution stimulates demand and economic activity. Although the enhanced social wage improves workers' capacity to carry debt (with $d_{Rmax} = 0.31$ and the sustainability gap, $d_{Rmax} - {d_R}^* = -0.50$, higher than the baseline scenario), the growth regime remains unsustainable. This suggests that relying solely on redistributive fiscal policy may not adequately address neoliberalism's inequality and associated macroeconomic issues. While the higher German tax and social wage moderate US capitalism by reducing the steady-state debt burden and the sustainability gap, they do not resolve the underlying problem of the system's inherent unsustainability.

Second, on top of an elevated social wage supported by a Germanic tax on high incomes, we transplant the entire German distributional system from the third column of Table 5 into the framework of US capitalism entailing reduced wage inequality, less disparity in the functional income distribution, and a narrower gap between top incomes and the median income along with higher German (i.e., ECB) interest rates.

[5]Note that d_R^* is closely related to the steady state debt to income ratio, d_Y^*, since:

$$d_Y = \frac{D_R}{W_p N} = \frac{\frac{D_R}{K}}{\frac{W_p N Y}{Y K}} = \frac{d_R}{\omega_p u}$$

In this scenario, macroeconomic performance unquestionably worsens. The equilibrium capacity utilization rate drops to 81%, and key indicators show a significant decline. Specifically, we observe a rise in the equilibrium debt-to-income ratio of workers ($d_R{}^* = 1.23$) and a fall in the maximum feasible debt-to-capital ratio ($d_{Rmax} = 0.10$), resulting in a widening sustainability gap of -1.13.

These findings underscore the pivotal role of monetary policy in a credit dependent economy. Despite the seemingly advantageous features of the German distributional regime, higher interest rates overshadow benefits, leading to increased worker indebtedness and a shift away from the maximum feasible debt burden for working households. The root cause lies in the more hawkish stance of the ECB towards inflation, resulting in a higher interest rate regime compared to the US Federal Reserve Bank. In other words, these results also emphasize the need for central banks to consider the repercussions of abrupt interest rate hikes on the heavily indebted private sector instead of solely focusing on lowering inflation.

Assuming the German distributional regime from the previous section, replacing the ECB's monetary policy with that of the Federal Reserve eases financial stress on the system, reducing working households' steady-state debt burden. However, it does not make the growth regime sustainable. Instead, it leads to a significant decline in steady-state capacity utilization, indicating a deterioration in real economic performance. The paradox within neoliberalism becomes evident here: while reducing the squeeze on working households' income is essential to financial stability, it hampers aggregate demand formation, making the system unsustainable. Lowering the interest rate, all else being equal, increases the overall savings rate by enabling workers to save more of their wage income instead of using it for debt servicing and consumption. And, this leads to a reduction in transfer income for rentiers, impacting their consumption spending. Simultaneously, workers' lower consumption targets result in reduced borrowing and debt-financed consumption. The net effect is a significant decline in aggregate consumption demand. This unfortunate outcome underscores that just as aggressive monetary policies focused solely on achieving an inflation target can jeopardize an indebted economy, an enlightened monetary policy alone cannot resolve the macroeconomic and financial challenges of neoliberalism, given its paradoxical nature, even when accompanied by more equal labor market outcomes.

Suppose that, alongside the previously discussed reduction in the interest rate, we also raise the value of κ_0 to its higher of the two values in the second row of Table 5. This parametric change has a behavioral implication: as κ_0 is the intercept term in our investment function (refer to equation (5)), it signifies autonomous, fixed capital formation independent of the profit rate. Since it is autonomous, an increased κ_0 could be interpreted as the expenditures from the public sector, resembling, for example, an infrastructure policy. This increase in autonomous expenditures restores the steady-state rate of capacity utilization to its baseline value of around 80%.

Consider then this reformed US capitalism with Germanic labor market outcomes, a tax-and-transfer scheme based on a Germanic tax on top incomes, the low interest rate of the Federal Reserve, and an active policy of fiscal expenditures. Figure 3 illustrates the debt dynamics of this system, showing $d_R^* = 0.26$ and $d_{Rmax} = 0.52$. The equilibrium debt burden for workers decreases significantly, their maximum feasible debt burden increases, and the former now falls within the latter, making the growth regime sustainable.

Meanwhile, $d_Y{}^* = 0.68$, a respectable value compared to actual outcomes in the past

four decades. It is less than half of the debt-to-income ratio sustained by the middle three quintiles of the US wealth distribution in the early 2000s and almost identical to the ratio in 1983 (0.67) before the neoliberal boom.

The system appears reasonably shock-proof, with the value of d_Y associated with d_{Rmax} at the steady-state rate of capacity utilization being 1.36. This implies that, from an equilibrium position, the debt-to-income ratio can double without risking default among working households and threatening the overall economy.

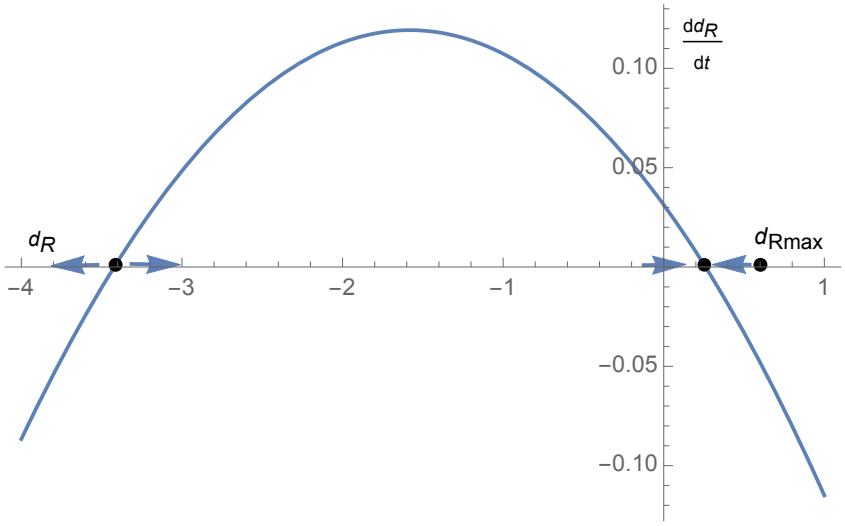

Figure 3: "Fully reformed" US capitalism

In summary, a paradoxical nature of neoliberalism is such that the borrowing and debt accumulation of less-affluent households is both an unwanted source of financial fragility and a necessary source of aggregate demand formation (the paradox of inequality). To make the system sustainable, then, in addition to a more equal distributional regime, autonomous expenditures such as strong public investment are necessary for sustained demand formation and sustainable levels of borrowing and debt accumulation.

5.1 Taking Stock

Our findings shed light on the critical facets of both positive and negative aspects of credit, borrowing, and debt accumulation. Credit plays a pivotal role in demand formation, yet comes with the potential for instability due to accumulating debt. This accompanying instability is deeply rooted in behavioral aspects, as evidenced by our results on consumption behaviors. Moreover, these behaviors are in turn significantly influenced by institutions, including informal ones such as consumption and borrowing cultures.[6]

[6]In this sense, our conceptualization of institutions is consistent with the idea of North (1990, p.4), "Institutions include any form of constraint that human beings devise to shape human interaction. Are institutions formal or informal? They can be either, and I am interested in both formal constraints—such as rules that human beings decide—and informal constraints—such as conventions and codes of behavior."

6 Conclusion

The primary objective of this chapter has been to examine recent developments in the role of household credit and consumption within the framework of the neo-Kaleckian growth and distribution model. The study extends a conventional Kaleckian growth model by incorporating consumption emulation and borrowing behaviors among working households. It emphasizes how debtor households manage their debts and the subsequent impact on macroeconomic performance. The integration of emulation-induced borrowing and consumption fundamentally alters the nature of the growth process, steering the economy towards a consumption-driven profit-led model. The analysis suggests that inequality may enhance growth by stimulating consumption among capitalists, rentiers, and workers through emulation-driven borrowing—a phenomenon termed the "paradox of inequality."

Expanding on our analysis, we delve into the dynamics to assess the sustainability of the debt accumulation process through numerical analysis. This exploration focuses on the influence of distributional differences between Neoliberal and Golden Age regimes. Our comparative analysis underscores the pivotal role of debt servicing in shaping consumption and saving behaviors. It indicates that the sustainability of the Neoliberal growth regime depends on how working households manage debt. In the model employing the pecking order consumption function, the more equal distribution regime of the Golden Age is essential for sustainability. Conversely, the model with the conventional consumption function generates a sustainable system irrespective of distributional regimes, emphasizing the crucial impact of how working households handle debt servicing obligations for the characteristics of a sustainable regime.

These findings underscore how institutional differences, such as distributional and welfare systems, can affect household debt accumulation and sustainable growth. To explore this further, we apply the distribution and welfare parameters of Germany, a representative coordinated market economy, to the United States. Even with the more equal distributional regime of Germany, the US economy exhibits unsustainable debt accumulation with potential system breakdown. This highlights the paradox of inequality and neoliberal capitalism's nature, where borrowing and debt accumulation, driven by emulation, serve as both an unwanted source of financial fragility and a necessary contributor to aggregate demand formation. For sustainable growth, not only is a more equal distributional regime essential, but autonomous expenditures without potential financial fragility are also necessary for sustained demand formation.

Overall, our results and this research area underscore the paradoxical nature of capitalism, necessitating constant demand injection to sustain growth, albeit at the cost of potential instability. Addressing this challenge requires understanding institutional structures, including informal structures such as culture and norms, and their role in shaping behaviors, demand generation, and debt accumulation. The ongoing effort to integrate post-Keynesian economics with a broad array of Political Economy literature that emphasizes institutions, such as Varieties of Capitalism, would therefore appear to represent an important and fruitful avenue for future research.

Appendix A

Table 5: Parameter values

Parameter	Value (US)	Value (Germany)	Source
c_W	0.94	-	Author's calculations based on Bunting (1998)
c_π	0.20	-	Setterfield and Budd (2011)
β	0.10	-	Author's calculations[a]
λ	0.29	-	Ravina (2007)
δ	74.89	61.06	Author's calculations based on Mishel and Sabadish (2012), Anselmann and Krämer (2015), Melcher (2016)
ϕ	2.27	1.85	Author's calculations based on Mishel et al. (2007), Anselmann and Krämer (2015)
α	0.25	-	Author's calculations based on (Mishel et al., 2007, p.118)
ω_p	0.42	0.485	Author's calculations based on Mohun (2006), Anselmann and Krämer (2015)
π	0.34	0.29	Setterfield and Budd (2011), Anselmann and Krämer (2015)
κ_0	0.015 or 0.0805	-	Author's calculations[b]
κ_r	0.5	-	Lavoie and Godley (2001), Skott and Ryoo (2008)
i	0.0481	0.0871	Author's calculations based on World Bank Data[c]
t	0.375	0.491	Author's calculations based on Anselmann and Krämer (2015)
η	21.72	17.71	Calculated as $\eta = \lambda\delta$

a. Set in accordance with other parameters to satisfy the Keynesian stability condition.
b. Set in accordance with other parameters to yield a capacity utilization rate of approximately 80 per cent.
c. See data.worldbank.org.

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