Department of Economics - FEA/USP

Size matters: wealth accumulation and conflict in a Classical-Post-Keynesian framework

Vinicius Curti Cícero

Gilberto Tadeu Lima

Working Paper Series Nº 2026-28

DEPARTMENT OF ECONOMICS, FEA-USP
WORKING PAPER № 2026-28

Size matters: wealth accumulation and conflict in a Classical-Post-Keynesian framework

Vinicius Curti Cícero (cicerov@denison.edu)

Gilberto Tadeu Lima (giltadeu@usp.br)

Abstract:

The Pasinetti irrelevance theorem was derived under the assumption that the rate of return on capital owned by workers but operated by capitalists equals the economy-wide rate of profit. A subsequent literature relaxed the equality, but left the differential exogenously given. This paper makes its determination the object of the theory: the wedge between the rate of return on worker-owned capital and the economy-wide rate of profit is set by a contested exchange in which capitalist bargaining power flows from the operational control exercised over production. The resulting framework recovers the canonical Pasinetti structure as the zero-wedge boundary case of a Classical surplus-approach closure. When the wedge is positive, workers' saving propensity enters the determination of long-run capital and output growth, the long-run equilibrium wealth distribution emerges as the joint outcome of saving behaviour and the institutional terms of the class-conflictual appropriation of the profits generated by worker-owned capital, and a higher capitalist appropriation rate raises long-run growth, though by less than the diversion of income towards the higher-saving class would alone deliver. Allowing the wedge to depend on the wealth distribution - so that capitalist bargaining power rises with the relative size of capital wealth they control - carries these results into a setting where the institutional efficiency of the wealth-to-power conversion becomes itself a determinant of long-run capital wealth concentration. The framework thereby identifies a redistributive lever the inherited tradition did not theorise: institutional protections on the terms of that operation reduce the long-run equilibrium wealth share capitalists can sustain.

Keywords: Wealth inequality; contested exchange; distributive conflict; Pasinetti theorem; theory of distribution.

JEL Codes: E11; E25; D31.

Size matters: wealth accumulation and conflict in a Classical–Post-Keynesian framework*

Vinicius Curti Cícero[†] Gilberto Tadeu Lima[‡]

Abstract

The Pasinetti irrelevance theorem was derived under the assumption that the rate of return on capital owned by workers but operated by capitalists equals the economy-wide rate of profit. A subsequent literature relaxed the equality, but left the differential exogenously given. This paper makes its determination the object of the theory: the wedge between the rate of return on worker-owned capital and the economy-wide rate of profit is set by a contested exchange in which capitalist bargaining power flows from the operational control exercised over production. The resulting framework recovers the canonical Pasinetti structure as the zero-wedge boundary case of a Classical surplus-approach closure. When the wedge is positive, workers' saving propensity enters the determination of long-run capital and output growth, the long-run equilibrium wealth distribution emerges as the joint outcome of saving behaviour and the institutional terms of the class-conflictual appropriation of the profits generated by worker-owned capital, and a higher capitalist appropriation rate raises long-run growth, though by less than the diversion of income towards the higher-saving class would alone deliver. Allowing the wedge to depend on the wealth distribution — so that capitalist bargaining power rises with the relative size of capital wealth they control — carries these results into a setting where the institutional efficiency of the wealth-to-power conversion becomes itself a determinant of long-run capital wealth concentration. The framework thereby identifies a redistributive lever the inherited tradition did not theorise: institutional protections on the terms of that operation reduce the long-run equilibrium wealth share capitalists can sustain.

Keywords: Wealth inequality; contested exchange; distributive conflict; Pasinetti theorem; theory of distribution.

JEL codes: E11, E25, D31.

*We are thankful to seminar participants at the 51st Eastern Economic Association Annual Conference in New York. Any remaining errors are our own.

[†]*Corresponding Author*. Assistant Professor, Department of Global Commerce, Denison University, 100 West College Street, Granville, OH 43023. Contact: cicerov@denison.edu

[‡]Professor, Department of Economics, University of São Paulo, Brazil. Contact: giltadeu@usp.br

1 Introduction

Wealth concentration in advanced capitalist economies has risen markedly since the late twentieth century, reaching, in the most extreme cases, levels comparable to those of the early twentieth century. The top one per cent of households in the United States now owns roughly forty-two per cent of total household wealth, with the top tenth of one per cent alone holding close to twenty-two per cent (Saez & Zucman, 2016). Comparable patterns, though at lower magnitudes, appear for France (Garbinti et al., 2021) and across Europe (Piketty, 2014). The phenomenon has lately acquired a new dimension in the United States, where Mian et al. (2025) estimate that the saving rate of the top one per cent rose from forty-three to fifty-four per cent of disposable income between 1963–82 and 1983–2019 while that of the bottom ninety-nine fell from fourteen to seven. The long-run dynamics of wealth between classes are once again at the centre of political economy.

Two contributions opened the modern Cambridge analysis of these dynamics: Kaldor's reformulation of the theory of distribution in terms of differential class saving (Kaldor, 1955), and Pasinetti's extension of the framework to an economy in which workers themselves accumulate capital wealth and earn a share of profits (Pasinetti, 1962). The theorem that emerged — the celebrated irrelevance of workers' saving propensity for the long-run rate of profit in an economy growing at its exogenously given natural rate — has shaped the heterodox understanding of capital and output growth as well as the functional distribution of income ever since. Its derivation proceeds under an assumption that Pasinetti made openly rather than concealed. Having derived the accumulation equations for an economy in which workers own a portion of the capital stock and lend that portion to capitalists, he writes that "in a long-run equilibrium model, the obvious hypothesis to make is that of a rate of interest equal to the rate of profit" (Pasinetti, 1962, pp. 271–272). The literature inheriting this framework has, with few exceptions, carried the hypothesis forward intact, treating it as a matter of settled long-run reasoning rather than as a substantive premise of the theorem.

Whatever its role in the theorem's derivation, the uniformity hypothesis encodes a substantive institutional structure, and Pasinetti himself is candid about the asymmetry that lies behind it. Workers, he writes, hold capital "directly or through loans to the capitalists" (Pasinetti, 1962, p. 270), and the rate of return that appears in his accumulation equations is described explicitly as "the rate of interest on these loans". The framing is reaffirmed without equivocation in the 1974 monograph, where Pasinetti restates the structure as one in which "workers lend their capital to the capitalists" (Pasinetti, 1974, p. 127). The relation between worker-owners and capitalist-operators of productive capital is, in Pasinetti's own framing, a lending relation. What determines the rate at which such a loan is remunerated, when the lender does not operate the capital and the operator possesses both informational and operational discretion over its use, is a question the uniformity convention leaves unasked — and one that the literature which later admitted the differential answered only by assumption.

This paper takes the question explicitly and seriously. We allow the rates of return on the capital owned by workers and capitalists to potentially differ, treating the wedge between them as an economically meaningful and possibly endogenous object: it represents the share of the surplus generated by workers' own capital that capitalists, as operators, appropriate in the process of putting that capital to use. We take Pasinetti's lending language as a generic description of the act of putting capital owned by one party into the operations of another, and develop the framework in the productive-relation reading of that act: capital is homogeneous and physical, and the lending relation is a rental of physical capital from worker-owner to capitalist-operator. Crucially, the wedge may arise even when capital is homogeneous and is owned on identical physical terms — what differs is not the asset itself but the relation between owner and operator. The size of this wedge is itself the outcome of distributive bargaining over the surplus, with the position of each class shaped by its share, or *relative size*, of total capital wealth. The mechanism rests on the contested-exchange framework of Bowles and Gintis (1990), applied in a novel direction. For these authors, the bargaining advantage in capital-market exchanges runs from lender to borrower, transmitted through the collateral the wealthy lender can demand. In our setting it runs from borrower to lender, transmitted through the operational control the capitalist exercises over production.

The literature inheriting the Pasinetti framework has been extended in many directions, but almost all of it has retained the equality of returns and varied instead the channel through which institutions, technology, or demand shape accumulation. Within neoclassical territory, the dual long-run equilibrium of Samuelson and Modigliani (1966), its consolidation in Darity (1981), and the anti-dual long-run equilibrium derived under high elasticity of substitution by Zamparelli (2017) together establish the canonical taxonomy of long-run configurations. Within the Classical–Marxian tradition, recent contributions trace how those configurations respond to induced technical change, consumption externalities, labour-share suppression, effective demand, and Goodwinian distributive cycles (Cícero & Tavani, 2025; Cruz & Tavani, 2023; Kumar et al., 2018; Petach & Tavani, 2020; Rada et al., 2023; Stamegna, 2025; Taylor et al., 2019). Across this body of theory, the locus of distributive struggle is the wage-profit margin: the second locus we identify, the appropriation of the surplus generated by workers' *own* capital, is one the uniformity assumption forecloses by construction.

A smaller and earlier line of work, recently surveyed by Baranzini and Mirante (2021), admits a wedge between the two rates of return and asks whether the irrelevance theorem survives. The answer proved to depend on how the wedge is specified. Laing (1969) and Moore (1974) showed that an exogenously given differential leaves the determination of the long-run profit rate by the natural growth rate and the capitalists' saving propensity intact, altering the distribution and accumulation of wealth across classes rather than the irrelevance result itself. Fazi and Salvadori (1985), in this journal, established the point in a general formulation, locating the force of the theorem in the balanced-growth and accumulation conditions rather than in the uniformity of returns. Balestra and Baranzini (1971) reached the opposite verdict — workers' saving propensity enters the equilibrium profit rate once their return falls proportionally below the profit rate — through a neoclassical apparatus that Gupta (1976) subsequently showed to be dispensable, and Pasinetti himself derived the corresponding generalisation of the Cambridge equation for the overall rate of profit, describing the redistributive effect of the wedge as "equivalent to a higher propensity to save of the capitalists" (Pasinetti, 1974, p. 141). Uthman (2006) pressed the conceptual point furthest, arguing that once workers' capital income is interpreted as contractual interest rather than as a share of profits, the Cambridge equation does not generally hold. What unifies this line, on both sides of the verdict, is the status of the differential: it is everywhere exogenous — a parameter, a proportionality factor, or a contractual convention — introduced into the model rather than determined within it.

The nearest approaches to a determination lie outside the productive relation. Ciccarone (2004) grounds the distinction between interest and profit institutionally, in an explicit banking sector, but the magnitude of the differential remains exogenously given. The Marxian and Sraffian-monetary route begins with the reconstruction in Panico (1980), in this journal, of interest as a portion of profit determined by distributive contest, and this determination is extended by Panico (1985, 1988). Throughout, the determination runs through monetary authority and banking-sector practice, and workers, where they appear, do so as debt-holders rather than as owners of physical capital. The most direct Post-Keynesian treatment is the work of Ederer and Rehm (2020a), who develop a Neo-Kaleckian capital accumulation and output growth model with class-specific returns on wealth, and Ederer et al. (2021), who calibrate the resulting wedge using European household data. The wedge is exogenous and traced to differential portfolio composition, with workers earning less because they hold lower-yielding assets, and the financial-system feature that produces this composition is taken as given. Across the whole line, then, the wedge is admitted but not explained: why capitalists should systematically earn more on the capital they operate than the workers who own it, and why the differential should vary, have remained outside the theory.

Against this backdrop, our contribution is threefold. First, we embed a potential wedge in the Classical surplus closure: an appropriation parameter governs the share of profit generated by workers' capital that capitalists appropriate in operating it. We recover the canonical Pasinetti structure when the parameter is zero, with the Cambridge equation surviving as a special case, and derive the breakdown of that structure when the parameter is strictly positive. Two qualifications bound the claim. The closure is Classical rather than Pasinetti's own: the profit rate is anchored by the conventional wage through the wage–profit schedule and long-run growth is endogenous, so what the zero-wedge case inherits from Pasinetti is a transposed, Pasinetti-like form of the irrelevance property — the independence of the long-run accumulation rate from workers' saving — rather than the theorem itself, which concerns the determination of the profit rate in an economy growing at its natural rate. And the finding that a strictly positive wedge brings workers' saving into the analysis echoes, in transposed form, what Pasinetti's own generalisation established within the original closure. What is new here is the setting and, above all, the object: outside the zero-wedge case, workers' saving propensity enters the determination of the long-run accumulation rate and the long-run capitalist wealth share responds non-trivially to saving propensities and to the technical conditions of production — with the wedge itself ultimately no longer a given of the analysis but an outcome of it.

This contribution is theoretical, but it speaks to an established empirical regularity. The fact that returns on wealth rise systematically with the level of wealth held is well-documented across administrative data from Norway (Fagereng et al., 2020), Sweden (Bach et al., 2020), and the European Household Finance and Consumption Survey (Ederer et al., 2021). Portfolio composition — wealthier households holding higher-yielding asset classes — contributes to the gradient, but is not the whole story. Davis and Konstantinidis (2025), working in class rather than decile terms, document substantial differential returns between capitalists and workers in the United States that cannot be accounted for by portfolio composition alone, pointing to mechanisms operating beyond it. The framework developed here isolates one such mechanism: in the model, capital is homogeneous by construction, and the wedge between worker and capitalist returns arises entirely within the productive relation, through the contested rental exchange that puts workers' physical capital into capitalist discretionary control. To our knowledge this is the first such mechanism derived in the Classical surplus-approach closure that has dominated the modern Classical–Marxian wealth-distribution literature.

Second, we give the appropriation parameter a micro-foundation in contested exchange. The parameter is not a primitive of the economy but the outcome of a distributive struggle between worker-owners and capitalist-operators of productive capital — precisely the determination that the exogenous-wedge literature left outside the theory. Following Bowles and Gintis (1990), we treat the rental of workers' capital as a contested exchange: the operator's performance is imperfectly observable and the contractual terms imperfectly enforceable, so the *de facto* terms depend on the bargaining position of the parties and on the enforcement devices available to each. In their treatment of capital-market exchange the wealthy lender wields short-side power through the collateral she can demand. In ours, the worker is the lender and the capitalist the borrower-operator, and bargaining advantage flows instead from the operational control the capitalist exercises over production. Relative capital wealth still matters, but as an enforcement device rather than as a source of contractual leverage: it determines how easily capitalists can sustain operations without depending on workers' capital, and so how much they can credibly extract from any given worker-owner who lends. The appropriation parameter therefore depends on the share of total capital wealth held by capitalists, rising with it. This is what we mean by *size matters* in the context of this paper.[1]

Third, we characterise the dynamics that follow. The endogenous-appropriation system

[1] An early verbal anticipation of a possibly size-based rationale for the differential appears in Balestra and Baranzini (1971), who justify a below-profit rate of return on workers' saving partly on the ground that profitable investment requires a minimum scale that workers' individual savings cannot reach. The differential nonetheless remains exogenously given in their analysis.

converges to a unique interior long-run equilibrium under mild parametric restrictions, with the corner configurations of the canonical literature — one class eventually owning all capital wealth — unstable across a wide region of the parameter space. The result we wish to highlight, however, is more distinctive: the response of the long-run accumulation rate to a higher rate of capitalist appropriation of the profits generated by worker-owned capital is the outcome of two channels pulling against each other. The direct effect runs through the additional saving channel of capitalists — the channel Pasinetti (1974) identified as equivalent to a higher capitalist saving propensity — and is positive. But the indirect effect, operating through the long-run equilibrium capital wealth distribution that the wedge itself reshapes, runs the other way. Once both channels are allowed to operate, the long-run response to stronger appropriation is no longer given by the saving differential alone: appropriation still raises long-run accumulation, but by less than the Cambridge intuition would deliver.

The remainder of the paper is organised as follows. Section 2 introduces the building blocks of the model: the production structure, the appropriation parameter, and the class-specific accumulation equations. Section 3 characterises long-run dynamics under exogenous appropriation, including comparative statics and the breakdown of the Pasinetti-like irrelevance property inherited by the zero-wedge case. Section 4 endogenises appropriation as a function of the capitalist wealth share and shows that the qualitative results are robust to alternative specifications of the bargaining function. Section 5 concludes with a discussion of the framework's implications for institutional and redistributive policy, and of fruitful extensions to which the analysis points.

2 Model structure

We now formalise the framework set out in the introduction. The economy is one in which two classes hold and accumulate capital, the surplus generated by workers' capital may be partly appropriated by capitalists in the process of operating it, and the long-run dynamics of capital accumulation and wealth distribution emerge from the interaction between class-specific saving behaviour and this appropriation. The extent of appropriation is initially treated as an exogenously given constant, but is subsequently modelled as endogenous and time-varying. We develop the building blocks in turn.

2.1 Building blocks

Time is continuous and the population is fixed. The economy follows the Classical tradition in distinguishing two household classes: capitalists and workers. Capitalists own and operate firms. Firms employ both the capital owned by capitalists and the capital owned by workers, the latter rented from worker-owners under terms specified below. Capitalists receive profits and save a constant fraction $s_C \in (0, 1)$. Labour is always in excess supply, and workers supply labour inelastically. Workers earn wages and, if they hold physical capital, a share of the profits generated by that capital in the production process — a share settled by the distributive conflict described later in this section. Therefore, profits accruing to capitalists may include profits generated by the use of capital owned by workers in the production process. Workers save a constant fraction $s_W \in (0, 1)$ of their total income.

We consider a one–sector economy in which the single good serves as both a consumption good and a capital good. Capital is homogeneous across all owners, and the unit price of the good — and hence the unit price of capital — is normalised to one. Total (or aggregate) capital is $K = K_W + K_C$, where K_i denotes the stock held by household class $i \in \{W, C\}$. Labour input is denoted by L.

Output X is produced according to a Leontief (fixed–coefficients) technology:

$$X = \min\{aL,\, bK\}, \tag{1}$$

where $a > 0$ is output per unit of labour and $b > 0$ is the output–capital ratio.[2] At full capital capacity utilisation, the capital constraint binds, so $X = bK$ and labour demand is $L = X/a$.

Gross total income decomposes as:

$$X = wL + R, \tag{2}$$

where w is the real wage and R total profits. Following the Classical political economy tradition, the real wage is treated as a fixed, conventional constant that is determined outside the model by societal norms.[3]

[2] Equivalently, $1/a$ is the unit labour requirement and $1/b$ the capital–output ratio.

[3] The convention closure on the real wage is a substantive analytical choice that isolates a single locus of active distributive struggle, developed below, from the wage-profit relation. The Bowles and Gintis (1990) contested-exchange framework we draw on in Section 4 is itself a theory of wage determination, and the productive-relation reading developed here applies symmetrically to the wage relation. Joint endogenisation of both arenas is a natural completion of the framework, which we pursue in future work.

Because capital is homogeneous and is operated under the same technique whoever owns it — the labour coefficient does not vary with whether the capital in use belongs to the capitalist operating it or to a worker who has rented it out —, the *physical* (or *economy-wide*) rate of profit r is uniform across capital assets, implying $R = rK$. Adopting the Classical Political Economy closure (Foley et al., 2019), the wage–profit schedule at which the economy is always situated is represented by:

$$1 = \frac{w}{a} + \frac{r}{b}, \tag{3}$$

where the real wage w is anchored by social convention and the physical rate of profit r adjusts to satisfy the schedule. Both are determined outside the capital wealth distribution between classes, and remain parametric with respect to it as that distribution evolves endogenously. Define the wage share $\sigma \equiv \frac{wL}{X}$ and the total profit share $\pi \equiv \frac{R}{X}$. Using Equations (1) and (2), we obtain $\sigma = \frac{w}{a}$ and $\pi = \frac{r}{b}$, so that $\sigma + \pi = 1$.

Two immediate implications follow from the structure so far. First, using Equation (3), the wage bill can be expressed as:

$$wL = \sigma X = \frac{w}{a} bK = (b - r)K,$$

which indicates that for strictly positive values of the total capital stock K, a strictly positive wage bill requires $0 < r < b$. Second, total profits admit a straightforward decomposition by class ownership:

$$R = R_W + R_C,$$

with $R_i = rK_i$, $i \in \{W, C\}$. While the economy-wide rate of profit r is uniform across capital assets regardless of ownership, the *division* of R_W — the profits generated by workers' capital — between worker-owners and capitalist-operators is not pinned down by r alone. Its resolution depends on the bargaining position of the two classes in the exchange through which workers rent their capital to capitalists, which is the subject of the next subsection.

2.2 Appropriation and accumulation

We follow the Classical tradition, as reformulated by the founders of the Cambridge theory of distribution, in assuming that while workers may hold capital wealth, its operation is entrusted to the capitalist class as the commander of the production process (Kaldor, 1955; Pasinetti, 1962).[4] Pasinetti's canonical contribution sparked a large literature, and more recent extensions in Classical and Post-Keynesian directions have largely left the assumption that workers' capital wealth can be seamlessly operated by capitalists intact (e.g., Cícero & Tavani, 2025; Cruz & Tavani, 2023; Ederer & Rehm, 2020b; Kumar et al., 2018; Petach & Tavani, 2020; Stamegna, 2025; Taylor et al., 2019; Zamparelli, 2017). This reflects the view — reasonable on its own terms — that effective control over production rests with capitalists. Treating such control as entirely costless is, however, a strong simplification: it implies that the operation of workers' capital by capitalists entails a frictionless income transfer, which effectively represents an implicit windfall gain for the worker-owner.

The present framework departs from this assumption by recognising that the profits generated by workers' capital in use are themselves a site of distributive conflict. Capitalists, as operators of productive capital, may appropriate a portion of this flow of profits depending on the prevailing institutional arrangements and the relative bargaining position of the two classes in the (contested) exchange through which workers rent their capital to capitalists. The model thereby introduces a second distributive arena alongside the wage-profit relation corresponding to the production process *per se*: profits accruing from the use of workers' own capital, and ultimately the long-run distribution of wealth between the two classes, become an additional locus of struggle and conflicting claims, operating outside the direct labour relation. This second conflicting-claims distributive arena operates outside, or separately from, the direct labour relation, while nonetheless overlapping with it insofar as the same underlying labour relation that prevails when the worker operates capital owned by the capitalist also applies when she operates her own capital rented to the capitalist.

The substantive content of this second locus is best understood in Marxian terms. The surplus value generated in production is appropriated, in the first instance, by the operator of capital — the capitalist firm-owner who directs the labour process and brings commodities to market — regardless of who owns the capital employed. When workers

[4] Although the Cambridge theory of distribution is conventionally associated primarily with the seminal contributions of Kaldor (1955) and Pasinetti (1962), Joan Robinson was also one of its principal intellectual architects. Her pioneering analyses of capital accumulation, output growth, and the functional income distribution between wages and profits — especially in *The Accumulation of Capital*, first published in 1956 (Robinson, 1956) — were instrumental in reviving classical political economy within a Keynesian framework and in establishing many of the analytical foundations on which the Cambridge theory of distribution was subsequently built.

contribute their own capital to production alongside their labour power, they supply both *variable* and *constant* capital, but the surplus value generated remains, in the moment of its extraction, in the hands of the capitalist who operates it. Whether workers recover any portion of that surplus is then a matter of the (contested) rental exchange through which their capital is operated. That (contested) exchange is not a technical relation but a conflicting-claims distributive one. Exploitation in this setting is layered: a primary layer through the wage relation, and a secondary layer — potential rather than realised — through the capital-lease relation. The Pasinetti convention assumes the second layer settles costlessly in workers' favour. Our framework treats its conflictual resolution as a substantive theoretical object.

The terms on which this second layer is resolved are summarised in what follows by a single parameter, the share of the surplus generated by workers' capital that capitalists appropriate in operating it. Following the contested-exchange logic (Bowles & Gintis, 1990) outlined in the introduction, this parameter is shaped by the relative bargaining position of the two classes and, ultimately, by the capital wealth distribution itself — a connection we exploit in Section 4. For the moment we treat the appropriation of the profits generated by worker-owned capital as a primitive of the economy, returning to its endogenisation once the dynamics under exogenous appropriation are understood. The boundary case in which appropriation by capitalists is zero corresponds to workers operating, in effect, as pure capitalists on their own capital — recovering in full the surplus their capital generates — and recovers the canonical Pasinetti structure as a special case of the framework that follows.

Formally, the total profits generated by workers' capital are divided between workers and capitalists:

$$R_W = R_{W,W} + R_{W,C}, \tag{4}$$

where $R_{W,W}$ denotes the share retained by workers and $R_{W,C}$ the share appropriated by capitalists.

The appropriation parameter — the *additional* rate of exploitation — is defined as:

$$e \equiv \frac{R_{W,C}}{R_W}, \tag{5}$$

with $e \in [0, 1]$, where the lower bound corresponds to the Pasinetti case in which workers retain the full surplus generated by their capital, and the upper bound to a configuration in which capitalists appropriate it entirely. By construction, the terms in Equation (4) —

corresponding to the share of profits from workers' capital that they retain and the portion appropriated by capitalists — can be written as $R_{W,W} = (1-e)rK_W$ and $R_{W,C} = erK_W$.

Given this distribution, the capitalist class — whose income consists exclusively of profits, which constitutes the entire surplus remaining after wages have been paid — accumulates wealth in the form of capital by saving a constant fraction of its income. Let S_C denote capitalist saving and I_C investment. By definition, capitalist accumulation is:

$$S_C = s_C Y_C = I_C = \dot{K}_C = s_C \left[R_C + R_{W,C}\right] = s_C \left[rK_C + erK_W\right], \tag{6}$$

where s_C is the capitalists' propensity to save, Y_C their total income, and $\dot{K}_C$ the rate of change of the capital stock owned by capitalists.

Workers also accumulate wealth in the form of capital through saving, but their income has two distinct components: the wage bill and the share of profits from their own capital that they are able to retain. Their wealth accumulation is therefore given by:

$$S_W = s_W Y_W = I_W = \dot{K}_W = s_W \left[wL + R_{W,W}\right] = s_W \left[\frac{wbK}{a} + (1-e)rK_W\right], \tag{7}$$

where s_W is the workers' propensity to save, Y_W their total income, S_W and I_W their saving and investment, respectively, and $\dot{K}_W$ the change in the capital stock owned by workers.

To analyse the dynamics of accumulation, define the measure of wealth inequality as $k \equiv \frac{K_C}{K}$, the share of total capital wealth owned by capitalists. Substituting from Equations (6) and (7), the class-specific growth rates of wealth in the form of capital are:

$$g_C \equiv \frac{\dot{K}_C}{K_C} = s_C r \left[1 + e\left(\frac{1-k}{k}\right)\right], \tag{8}$$

$$g_W \equiv \frac{\dot{K}_W}{K_W} = s_W \left[\frac{b-r}{1-k} + r(1-e)\right]. \tag{9}$$

Equation (8) shows that capitalist wealth grows faster when the rate of capitalist appropriation of the profits generated by workers' capital, e, is higher, while (9) highlights that workers' wealth growth depends both on wage income and on the portion of their capital income they are able to retain, $1-e$. The output growth rate of the economy as a whole, or aggregate accumulation rate, is the wealth-weighted average of these class-specific rates:

$$\bar{g} \equiv \frac{\dot{K}}{K} = \frac{K_C}{K} g_C + \frac{K_W}{K} g_W = k g_C + (1-k) g_W. \tag{10}$$

3 Long-run behaviour

The dynamics of the model can be reduced to a single differential equation governing the evolution of the capitalist share of wealth in the form of capital, k. Since aggregate wealth is jointly accumulated by both classes, the central question is how its distribution between capitalists and workers changes over time.

Formally, a long-run equilibrium is defined by $\dot{k} = 0$, that is, by a stationary share of capitalist wealth. Substituting the class-specific wealth accumulation rates from Equations (8) and (9), the dynamics of k take the form of a replicator equation:

$$\dot{k} = k(1-k)\left[g_C - g_W\right] = k(1-k)\left\{s_C r\left[1 + e\left(\frac{1-k}{k}\right)\right] - s_W\left[\frac{b-r}{1-k} + (1-e)r\right]\right\}. \quad (11)$$

Equation (11) shows that the adjustment of capital wealth shares is governed by the difference in class-specific capital growth rates. When capitalist wealth grows faster than workers' wealth, the capitalist share k rises; when the opposite holds, k declines. The forces shaping this difference include the relative saving propensities of each class, s_W and s_C, the common rate of return on capital, r, the output-capital ratio, b, the wage–profit distribution, the level of wealth inequality itself, k, and the appropriation parameter, e. In this sense, the long-run distribution of capital wealth reflects not only the classical conflict over income between wages and profits, but also the additional distributive conflict arising from the operation of workers' capital by capitalists.

3.1 Equilibria and stability

The long-run dynamics admit three candidate stationary points. We begin with the two canonical corner solutions: (i) the dual long-run equilibrium, where all wealth in the form of capital is held by workers (i.e., $k^* = 0$) (Samuelson & Modigliani, 1966), and (ii) the "anti-dual" long-run equilibrium, where all wealth in the form of capital is held by capitalists (i.e., $k^* = 1$) (Darity, 1981; Zamparelli, 2017).

To assess their relevance, we examine local stability. At the dual solution, following Samuelson and Modigliani (1966), the derivative of the dynamic equation around $k = 0$ is:

$$\lim_{k \to 0^+} \frac{\partial \dot{k}}{\partial k} = (1-2e)rs_C + (er-b)s_W = (rs_C - bs_W) - re(2s_C - s_W).$$

The expression separates the standard Pasinetti existence condition $rs_C > bs_W$ from a corrective term contributed by the wedge. The dual corner is unstable under standard parametric restrictions.

For the "anti-dual" solution, as in Darity (1981) and Zamparelli (2017), we obtain:

$$\lim_{k \to 1^-} \frac{\partial \dot{k}}{\partial k} = s_W(2r - er - b) - rs_C,$$

which is strictly negative across broad parameter ranges, implying local instability here as well.

In addition to these corner long-run equilibria, the system admits an interior long-run equilibrium solution — the Pasinetti equilibrium path. Solving Equation (11) for $k^* \in (0,1)$ yields two algebraic roots, but only one is economically admissible.[5] The interior long-run equilibrium is given by:

$$k^* = \frac{(2e-1)rs_C + bs_W - ers_W - \sqrt{\Delta}}{2(e-1)r(s_C - s_W)}, \tag{12}$$

with $\Delta \equiv b^2 s_W^2 + r^2(s_C - es_W)^2 - 2brs_W(s_C - 2es_C + es_W)$.

As shown in Appendix A, this interior long-run equilibrium is locally asymptotically stable. The capitalist wealth share therefore converges to a positive interior value determined jointly by saving propensities, distributive variables, and the appropriation parameter e.

3.2 Comparative statics

We now evaluate how the parameters of this model affect the capital wealth distribution along the Pasinetti long-run equilibrium path. From Equation (11), we can write:

$$F(k) \equiv s_C r\left(1 + e\frac{1-k}{k}\right) - s_W\left(\frac{b-r}{1-k} + (1-e)r\right), \tag{13}$$

and the long-run equilibrium condition for an interior solution is simply given by $F(k^*; \theta) = 0$ with $\theta \in \{e, s_C, s_W, b, r\}$. Applying the implicit function theorem, we have that:

$$\frac{\partial k^*}{\partial \theta} = -\frac{F_\theta(k^*)}{F_k(k^*)}.$$

From Equation (13), for any $k \in (0,1)$ we have that:

$$\frac{\partial F(k)}{\partial k} = F_k(k) = -\frac{s_C re}{k^2} - \frac{s_W(b-r)}{(1-k)^2} < 0.$$

Hence, the sign of each comparative static of the interior solution k^* with respect to the exogenously determined variables of the model is completely determined by the sign of $F_\theta(k^*)$. Direct calculation, carried out in Appendix B, yields the signs reported in Table 1.

[5] Appendix A provides the detailed analysis of existence, admissibility, and stability.

Table 1: Comparative statics of the interior long-run equilibrium

θ	$F_\theta(k^*)$	$\partial k^*/\partial\theta$
e	$+$	$+$
s_C	$+$	$+$
s_W	$-$	$-$
b	$-$	$-$
r	$+$	$+$

All else constant, a higher capitalist appropriation parameter, e, a higher capitalist saving rate, s_C, or a higher common profit rate, r, all push the long-run equilibrium toward greater capitalist wealth shares, whereas a higher worker saving rate, s_W, or a larger output-capital ratio, b, shift the capital wealth distribution toward workers.

3.3 Long-run accumulation rate

Next, we examine long-run overall output growth. Along the interior (Pasinetti) long-run equilibrium path defined in Equation (12), the aggregate accumulation rate equals the capitalist rate. Hence $\bar{g}^* = g_C(k^*)$. Substituting (12) into (8) yields:

$$\bar{g}^* = \frac{1}{2}\left[s_W b + r(s_C - s_W e) + \sqrt{s_C^2 r^2 - 2r(b - 2be + er)s_C s_W + (b - er)^2 s_W^2}\right]. \tag{14}$$

Importantly, the radicand in Equation (14) is strictly positive under the standard domain $0 < r < b$, $0 \leq e < 1$, $s_C, s_W > 0$, so the square root is well defined. This expression highlights a central implication of the model: once capitalist appropriation of profits generated by worker-owned capital is introduced, the long-run accumulation rate depends explicitly on workers' saving behaviour. The following proposition makes this point precise.

Proposition 1 (Relevance of workers' saving)**.** *For any $e > 0$, the overall rates of capital accumulation and output growth along the Pasinetti long-run equilibrium path are strictly increasing in the workers' saving propensity.*

Proof. Since $\bar{g}^* = g_C(k^*)$ along the long-run equilibrium path, from Equation (8) we have that:

$$\bar{g}^* = g_C(k^*) = s_C r[(1-e) + e/k^*].$$

Thus, it suffices to show $\partial k^*/\partial s_W < 0$. From the previous subsection we have that:

$$\frac{\partial k^*}{\partial s_W} = -\frac{F_{s_W}(k^*)}{F_k(k^*)} < 0 \implies \frac{\partial \bar{g}^*}{\partial s_W} > 0, \quad \forall\, e > 0.$$

$\square$

Proposition 1 establishes the breakdown, within the Classical closure, of the Pasinetti-like irrelevance property that the zero-wedge case inherits. Once capitalist appropriation of profits generated by worker-owned capital is present ($e > 0$), part of workers' potential capital accumulation is diverted to capitalists, and the long-run output growth rate responds directly to s_W. Distributional conflict thus reshapes macroeconomic dynamics, making long-run equilibrium overall capital accumulation and output growth jointly determined by the saving propensities of both classes and the intensity of the capitalist appropriation of profits generated by worker-owned capital.

A natural corollary identifies the boundary at which this breakdown vanishes.

Corollary 1 (Irrelevance as a special case). *If $e = 0$, the overall rates of capital accumulation and output growth along the interior long-run equilibrium path reduce to the standard Cambridge equation: $\bar{g}^* = s_C r$.*

Proof. Setting $e = 0$ in Equation (14) gives:

$$\bar{g}^* = \frac{1}{2}\left[s_W b + s_C r + \sqrt{r^2 s_C^2 - 2rbs_C s_W + b^2 s_W^2}\right] = \frac{1}{2}[s_W b + s_C r + s_C r - s_W b] = s_C r.$$

$\square$

The corollary places the Pasinetti-Cambridge result in its proper analytical location: it is the limiting case of a one-parameter family of long-run equilibria in which the wedge between worker and capitalist appropriations of the returns on worker-owned capital is closed. Everywhere else in the family, both the long-run wealth share and the long-run rates of capital accumulation and output growth depend on the full vector of distributive and saving parameters.

We now turn to the response of the long-run equilibrium rates of capital accumulation and output growth to the intensity of the capitalist appropriation of returns on worker-owned capital itself.

Proposition 2 (Appropriation and long-run growth). *For any $e \in (0, 1)$, the comparative static $\partial \bar{g}^*/\partial e$ decomposes into a positive direct effect, through the additional saving channel of* *capitalists, and a negative indirect effect, through the long-run equilibrium wealth share k^*. Under the standard parametric restriction $s_C > s_W$, the direct effect dominates and the comparative static is strictly positive.*

Proof. Differentiating $\bar{g}^* = g_C(k^*) = rs_C[(1-e) + e/k^*]$ with respect to e and taking into account the dependence of k^* on e yields

$$\frac{\partial \bar{g}^*}{\partial e} = \underbrace{s_C r\left(\frac{1}{k^*} - 1\right)}_{\text{direct effect }(+)} + \underbrace{s_C r\left(-\frac{e}{(k^*)^2}\right)\frac{\partial k^*}{\partial e}}_{\text{indirect effect}(-)}.$$

The direct effect is strictly positive for any interior $k^* \in (0,1)$, while the indirect effect carries the opposite sign of $\partial k^*/\partial e$, which is strictly positive by Table 1. Substituting $\partial k^*/\partial e = -F_e(k^*)/F_k(k^*)$ from Section 3.2 and Appendix B, the sum is strictly positive if and only if

$$\frac{1-k^*}{k^*}\left[\frac{s_C re}{(k^*)^2} + \frac{s_W(b-r)}{(1-k^*)^2}\right] > \frac{e}{(k^*)^2}\left[\frac{s_C r(1-k^*)}{k^*} + s_W r\right].$$

The terms in s_C on the two sides are both equal to $s_C re(1-k^*)/(k^*)^3$ and cancel, simplifying the inequality to $k^*(b-r)/(1-k^*) > er$. Writing $\phi^* \equiv k^* + e(1-k^*)$, the interior equilibrium condition $F(k^*) = 0$ gives

$$\frac{b-r}{1-k^*} = \frac{s_C r\phi^*}{s_W k^*} - (1-e)r,$$

and since $(1-e)k^* = \phi^* - e$ the inequality reduces to $\frac{s_C}{s_W}\phi^* > \phi^*$, that is, to $s_C > s_W$. Each step in the chain is an equivalence, so the comparative static vanishes at $s_C = s_W$ and would be strictly negative for $s_C < s_W$.

□

Proposition 2 isolates the channel that the inherited treatments of the wedge left implicit. The direct channel coincides with the intuition Pasinetti articulated in describing a wedge as "equivalent to a higher propensity to save of the capitalists" (Pasinetti, 1974, p. 141): capitalist appropriation of profits generated by worker-owned capital diverts income from a low-saving class to a high-saving class, raising aggregate saving and, via the Cambridge mechanism, the long-run rates of capital accumulation and output growth. The indirect channel was held fixed by that intuition. Once the capital wealth distribution is allowed to respond endogenously, however, a higher rate of capitalist appropriation of the profits generated by worker-owned capital raises the long-run equilibrium capitalist wealth share, and the higher long-run equilibrium k^* erodes the relative contribution of the appropriated flow erK_W to capitalist accumulation. The offset is genuine but partial: under the saving ordering maintained throughout, it attenuates the direct effect without reversing it, so stronger appropriation raises the long-run rates of capital accumulation and output growth by less than the Cambridge intuition alone would suggest.

The remaining comparative statics on $\bar{g}^*$ are reported in Table 2. The corresponding derivations are carried out in Appendix B.

Table 2: Comparative statics of the long-run accumulation rate

θ	$\partial \bar{g}^* / \partial \theta$
s_W	$+$
b	$+$
s_C	$+$
r	$+$
e	$+$

The pattern is structural rather than incidental. The parameters s_W and b do not enter g_C directly, and so reach $\bar{g}^*$ through the long-run equilibrium wealth share alone, which settles their signs at once. The parameters s_C, r and e act on both the capitalist saving pool and that share, and in each case the distributional response works against the direct effect. Yet in none of the three does it prevail: under the saving ordering maintained throughout, the direct effect dominates, and the endogenous response of the capital wealth distribution attenuates the long-run growth response without overturning it. The uniform signs reflect the Classical closure adopted here, in which output is supply-determined and aggregate saving governs accumulation, so that any redistribution towards the class saving a larger fraction of its income raises long-run accumulation.

4 Relative bargaining and conflict dynamics

We now extend the baseline framework by endogenising the relative appropriation of profits generated by workers' capital. As argued in the Introduction and in Section 2.2, the capitalist appropriation parameter e summarises a contested exchange, inspired by Bowles and Gintis (1990), in which capitalist bargaining power rises with the share of total capital wealth they control: relative capital wealth determines how easily capitalist-operators sustain production without recourse to workers' capital, and thus how much they can credibly extract from any given worker-owner who lends. The same logic of distribution as the resolution of conflicting claims on available income animates the wage-price bargaining literature, whose canonical formulation by Rowthorn (1977) stands as another pioneering Cambridge contribution (see also Dutt, 1987). Here, that logic is applied not to the wage-profit split, but specifically to the division of the surplus generated by the employment of workers' own capital in a production process commanded by capitalists. The bargaining function below makes this dependence explicit.

4.1 General functional form

Concretely, we replace the constant parameter e with the following function:

$$e = f(k),$$

with $f : [0,1] \to [0,1]$, $f(0) = 0$, and $f'(k) \geq 0$.[6] Thus, the capitalist appropriation parameter e increases in the capitalist wealth share and vanishes when capitalists hold no wealth in the form of capital. From Equations (6) and (7), the class-specific capital accumulation rates become:

$$g_C(k) = s_C r \left[1 + f(k) \frac{1-k}{k} \right],$$

$$g_W(k) = s_W \left[\frac{b-r}{1-k} + r(1 - f(k)) \right],$$

and the wealth-share dynamic retains the replicator form of Equation (11):

$$\dot{k} = k(1-k) \left[g_C(k) - g_W(k) \right].$$

As shown in Appendix C, both corner equilibria are generically unstable once appropriation of profits generated by worker-owned capital is endogenous. At $k \to 0$, capitalist accumulation dominates whenever $s_C r[1 + f'_+(0)] > b s_W$, a condition strictly weaker than its constant-e counterpart at $e = 0$. That is, endogenous appropriation reinforces the instability of the dual corner. At $k \to 1$, instability follows under the same parametric

[6]The boundary condition $f(0) = 0$ is a technical requirement ensuring that the dual corner $k = 0$ remains a fixed point of the dynamic: under any specification with $f(0) > 0$, the term $f(k)(1-k)/k$ in $g_C(k)$ diverges as $k \to 0^+$. The interior dynamics, which are the object of substantive interest, are insensitive to this choice.

restrictions as in the constant-e case. The architecture of the long-run dynamics — corners repelling, interior absorbing — therefore carries over to the endogenous case, and under weaker conditions.

Consequently, the interesting action occurs at the interior long-run equilibrium configuration — the Pasinetti steady state. An interior long-run equilibrium $k^* \in (0, 1)$ is defined by the fixed-point condition $g_C(k^*) = g_W(k^*)$. The condition can be written as:

$$f(k^*) = \frac{s_W\left[\frac{b-r}{1-k^*} + r\right] - s_C r}{r\left[s_C \frac{1-k^*}{k^*} + s_W\right]}.$$

The right-hand side is a function of k^* alone once saving propensities and technology are fixed, and the long-run equilibrium is the level at which the bargaining function intersects this locus. Existence and uniqueness of an interior solution depend on the geometry of the intersection — a feature we exploit in the simulations below.

Along any such interior long-run equilibrium path, the aggregate accumulation rate equals both class-specific rates. Substituting the long-run equilibrium condition yields:

$$\bar{g}^* = g_C(k^*) = g_W(k^*) = \frac{b\, s_C\, s_W}{s_C(1-k^*) + s_W k^*}.$$

This expression is striking in its independence from the precise form of f: once k^* is determined, the long-run rate of accumulation responds to the bargaining function only through the long-run equilibrium wealth share it selects. The structural parameters enter directly, while the institutional content of appropriation of the profits generated by worker-owned capital enters only indirectly, through the capital wealth distribution it sustains. Differentiating with respect to workers' saving, holding k^* fixed, gives:

$$\left.\frac{\partial \bar{g}^*}{\partial s_W}\right|_{k^*} = \frac{b\, s_C^2 (1-k^*)}{\left[s_C(1-k^*) + s_W k^*\right]^2} > 0,$$

and under the stability conditions of Appendix C the total derivative carries the same sign. The non-neutrality of workers' saving established in Proposition 1 is therefore robust to the specific functional form by which the wedge is determined: whenever appropriation of the profits generated by worker-owned capital depends non-trivially on the capital wealth distribution, the long-run equilibrium overall rates of capital accumulation and output growth respond to the saving propensities of both classes.

4.2 Simulation and illustrative dynamics

We now introduce a specific functional form for the appropriation rate e and explore its implications through a simple simulation exercise. The simulations serve two purposes: to illustrate the global dynamics of the wealth-share adjustment process under endogenous appropriation of the profits generated by worker-owned capital, and to show how the key comparative statics highlighted in the analytical sections extend beyond the constant-appropriation case. To capture the idea that bargaining power depends on the relative size of capitalist wealth, we assume that appropriation takes the simple form

$$f(k) = k^{\mu}, \quad \text{with } 0 < \mu \leq 1. \tag{15}$$

This flexible specification operationalises the "size matters" mechanism developed earlier: the share of total capital wealth held by capitalists is the enforcement device that translates into bargaining power, and the functional form k^{μ} makes the strength of that translation explicit. The curvature parameter μ governs how rapidly capitalist appropriation of profits generated by worker-owned capital increases with the capitalist wealth share. Lower values of μ correspond to a highly concave relationship, in which bargaining power rises sharply at low levels of capitalist wealth but exhibits strong diminishing returns thereafter. As μ increases, the capitalist appropriation rate becomes progressively less concave, approaching a linear relationship when $\mu = 1$. In this sense, μ captures the *efficiency* with which relative capital wealth is translated into bargaining power, rather than the overall level of power itself.

Throughout, we adopt parameter values drawn from the empirical literature and summarised in Table 3. The output–capital ratio b is computed from the Extended Penn World Tables (Marquetti et al., 2021) using the average for the US economy between 2000 and 2019. The gross profit rate r is computed over the same period, following an approach consistent with the global estimates reported in Basu et al. (2025). The saving propensities are calibrated to micro evidence on US households. Dynan et al. (2004) document a steep gradient across the income distribution, with structural rationalisations developed in Huggett and Ventura (2000). Saez and Zucman (2016) further report decennial saving rates of 38–45% for the top 1% of the wealth distribution against near-zero or negative rates for the bottom 90%. Similar patterns hold across advanced and developing economies (Alan et al., 2015; Gandelman, 2017). We adopt a conservative calibration of 30% for capitalists and 3% for workers. These values are not meant to provide a precise calibration, but rather to anchor the simulations in plausible magnitudes and to illustrate the operation of the qualitative mechanisms emphasised in the analytical sections.

Table 3: Baseline parameter values used in the simulation exercise

Parameter	Description	Source	Value
b	Output-capital ratio measure at current national prices	EPWT 7.0	0.304
r	Gross profit rate measure at current national prices	EPWT 7.0	0.074
s_C	Saving propensity of capitalist group	Literature	0.300
s_W	Saving propensity of worker group	Literature	0.030

Figure 1 presents the phase diagram of the wealth-share dynamics $\dot{k}$ for alternative values of the curvature parameter μ. In all cases, the system admits a unique interior steady state k^*, indicated by a filled point, to which the capitalist wealth share converges monotonically from any interior initial condition. As μ increases, the long-run equilibrium k^* shifts modestly downward. The institutional reading runs through the curvature of the wealth-to-power mapping: at lower μ the capitalist appropriation function rises steeply at low k, so that even modest concentrations of capital wealth deliver substantial bargaining power, and the long-run equilibrium consolidates at a higher capitalist share. At higher μ, the appropriation capitalists can extract at any given k is smaller, and the long-run equilibrium settles at a lower capitalist share. Regimes in which the size-matters mechanism operates with greater efficiency therefore sustain greater long-run wealth inequality.

Figure 2 confirms global convergence: from a common initial condition, the wealth share approaches its interior steady state monotonically across all values of μ, with adjustment speeds that vary in magnitude but not in qualitative character. The long-run wealth shares produced by the baseline calibration fall within 60-80%, consistent with Saez and Zucman (2016) capitalisation-based estimates that the top 10% of US households holds roughly three quarters of total wealth. This provides empirical anchoring for the interpretation of the capitalist class adopted in the model.

Finally, Figure 3 reports the main comparative statics with respect to the workers' saving propensity. Panel (a) shows that higher worker saving reduces the long-run equilibrium capitalist wealth share k^* across all values of μ. Panel (b) shows that the long-run accumulation rate $\bar{g}^*$ rises with s_W across all bargaining regimes. The non-neutrality of

Figure 1: Phase diagram of the wealth-share dynamics $\dot{k}$ under endogenous appropriation

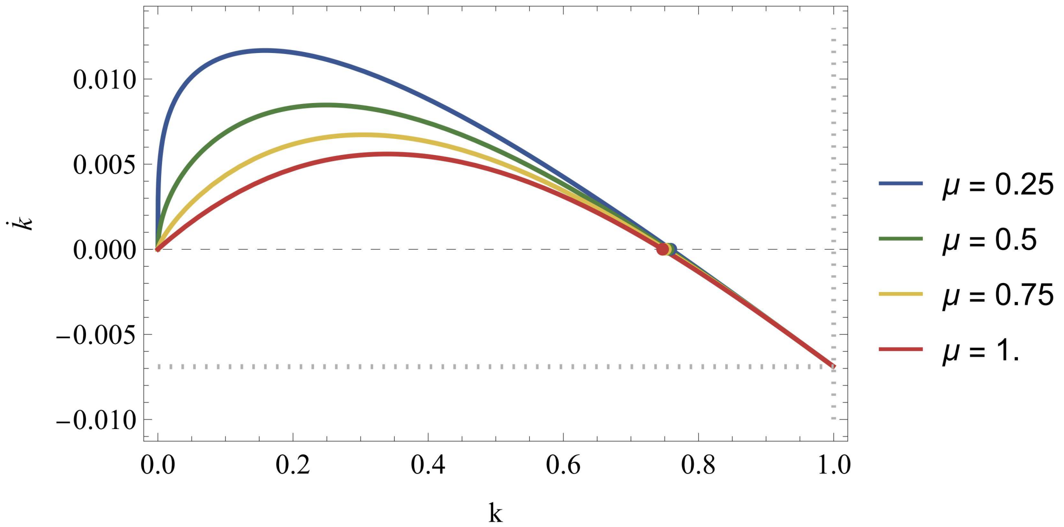
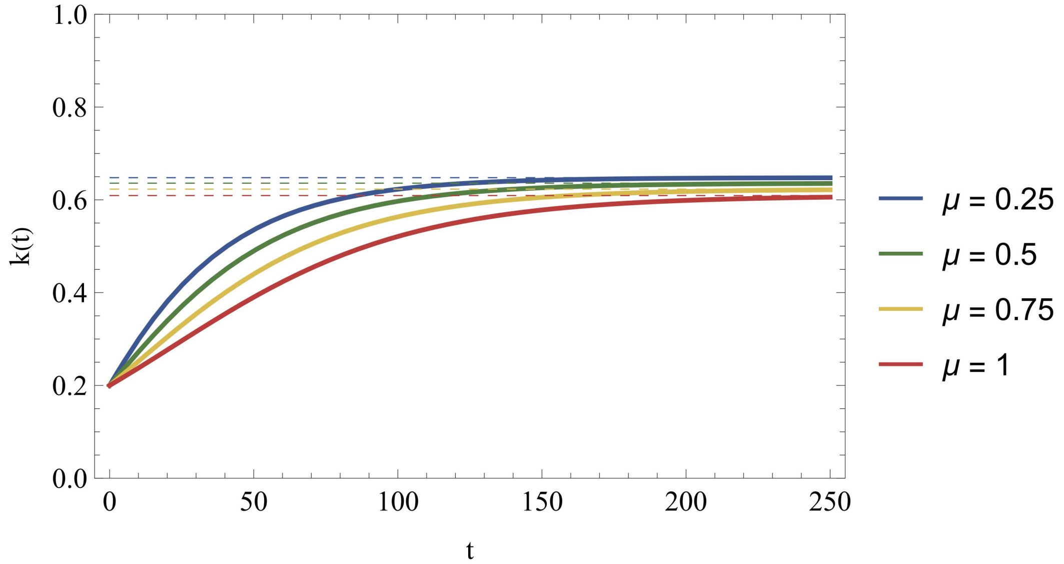


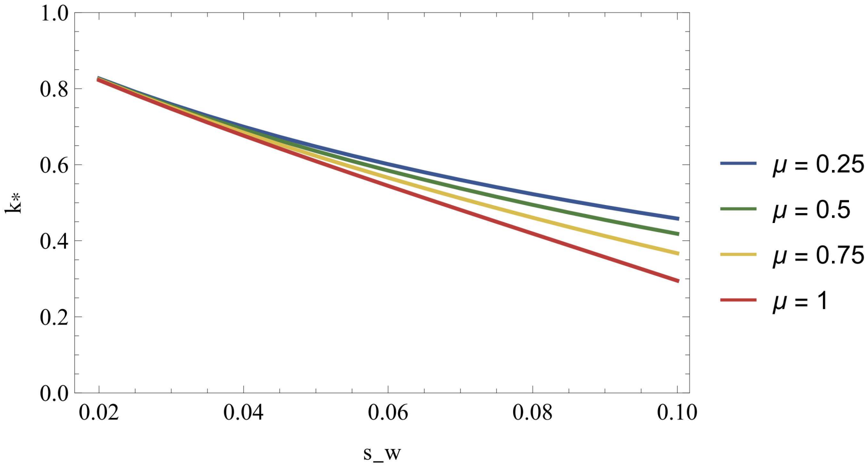
Figure 2: Convergence of the capitalist wealth share $k(t)$ to the interior steady state k^* under endogenous appropriation



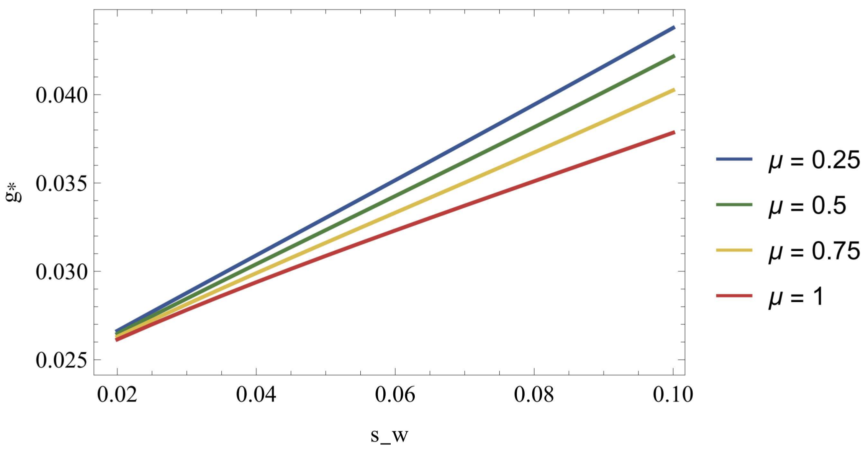
workers' saving therefore extends to the endogenous-appropriation case for the full range of curvatures considered, and it does so for distributional as well as capital and output growth outcomes.

Across the range of curvature parameters considered, the qualitative results remain unchanged: the dynamics converge to a unique interior long-run equilibrium configuration, and workers' saving exerts a non-neutral influence on both the corresponding long-run wealth distribution and the overall rates of capital accumulation and output growth. The

Figure 3: Comparative statics with respect to the workers' saving propensity under endogenous appropriation



(a) Capitalist wealth share



(b) Long-run accumulation rate

mechanism therefore does not depend on the specific functional form by which relative wealth in the form of capital is translated into relative bargaining power; what matters is that the dependence is non-trivial. The simulations additionally surface a substantive institutional implication — that the efficiency of the wealth-to-power conversion, captured by μ, is itself a determinant of long-run capital wealth concentration — which the analytical sections, working at the level of a general f, could establish only as a structural possibility, not a comparative outcome.

5 Concluding remarks

The Pasinetti irrelevance theorem was derived under an assumption Pasinetti made openly: that the rate of return on capital owned by workers but operated by capitalists equals the economy-wide rate of profit, which ultimately implies that such an operation is costless to workers. This constitutes a particularly strong institutional assumption under capitalism, since it entails that capitalists manage and operate workers' capital without extracting any remuneration for doing so, thereby providing workers with what essentially amounts to a free lunch. This paper has treated that assumption as a substantive institutional premise rather than a long-run equilibrium condition, and has asked what a Classical surplus closure — in which the profit rate is anchored by a conventional wage and long-run growth is endogenous — yields when the premise is relaxed and the resulting wedge between the two rates is determined endogenously as a positive function of the share of total capital wealth owned by capitalists rather than given exogenously. The answer, we have argued, is a richer dynamic in which workers' saving propensity enters the determination of the long-run equilibrium overall rates of capital accumulation and output growth, while the long-run equilibrium capital wealth distribution depends jointly on saving propensities and on the institutional terms of the class-conflictual appropriation of the profits generated by worker-owned capital. The response of those rates to the intensity of such appropriation, in turn, operates through two opposing channels: the direct effect Pasinetti (1974) identified is partly offset by an indirect effect running through the long-run equilibrium capitalist wealth share, which attenuates it without reversing its sign.

These results follow from embedding a wedge between worker and capitalist returns on worker-owned capital into the Classical surplus-approach closure, with the canonical Pasinetti structure recovered as the zero-wedge boundary case. The wedge itself is micro-founded within a contested exchange framework: bargaining advantage flows from the operational control capitalists exercise over production — an inversion of the standard Bowles and Gintis (1990) capital-market story in which collateral grants short-side power to the lender. The curvature of the resulting bargaining function, captured by a single parameter, registers the institutional efficiency with which wealth in the form of capital is translated into relative bargaining power, and is itself a determinant of long-run wealth concentration: regimes in which modest concentrations of wealth translate sharply into bargaining power sustain greater long-run equilibrium wealth inequality than regimes in which the conversion is more gradual.

The framework identifies a further relevant site of policy action about which the inherited Pasinetti tradition did not theorise. The conventional levers of redistributive policy — progressive taxation, income transfers, wage-setting institutions — alter the structural parameters of saving and after-tax return on capital. Alongside these, the framework developed in this paper brings into view a further relevant lever: institutional protections on the terms under which workers' capital is operated by capitalists, which constrain the wealth-to-power conversion and so reduce the long-run equilibrium wealth share capitalists can sustain. Constraints on the discretion capitalist operators exercise over capital they do not own but rather borrow from workers, and protections that strengthen the standing of workers in the setting of the institutional terms of the capitalists' operation of the worker-owned capital, are redistributive policy instruments the model identifies — instruments that operate not through the saving pool but through the institutional efficiency with which relative wealth in the form of capital is translated into relative bargaining power of workers and capitalists. The analytical vocabulary is symmetric, but its policy application is not: a less efficient wealth-to-power conversion in favour of the capitalist class translates into a less unequal long-run distribution of wealth.

The framework points to several extensions we leave for future work. The most natural is to let both distributive arenas operate jointly: the Classical closure adopted here resolves the wage-profit relation in production by convention, leaving only the class-conflictual appropriation of the profits generated by workers' capital as an active site of distributive struggle, but the framework's productive-relation logic applies symmetrically to the wage relation itself. A model in which both the wage and the intensity of the capitalist appropriation of profits generated by worker-owned capital are jointly and endogenously determined by inter-class bargaining under conflicting income claims — the first in the labour market, the second in the capital-rental relation studied here — would let the framework address how distributive pressures in one arena reshape outcomes in the other. Heterogeneity within classes — multiple worker types differentiated by wealth holdings, or capitalists differentiated by sector — would let the framework address within-class as well as between-class inequality. A companion analysis of endogenous appropriation within Pasinetti's own natural-rate closure, where the theorem concerns the determination of the rate of profit, is a natural counterpart to the present exercise.

By way of conclusion, the broader claim the paper makes is that the long-run distribution of wealth in the form of capital between classes is not pinned down by saving differentials alone. Once the operation of workers' capital by the capitalist class is recognised as a site of distributive struggle in its own right, the capital wealth distribution becomes the joint outcome of saving behaviour and the institutional terms on which class power is exercised over production and distribution of the profits resulting from the employment of worker-owned capital. The Cambridge tradition remains an appropriate analytical framework for addressing contemporary concerns regarding wealth concentration, once the terms on which the capitalist class manages and operates worker-owned capital are treated not as an assumption of the theory but as an object of it.

In this regard, the "rules of the game", a concept frequently invoked by Joan Robinson (e.g., Robinson, 1956) to characterise the institutional framework within which capital accumulation, the functional distribution of income, and class interaction take place, intuitively suggest that the capitalist class would not manage and operate worker-owned capital without attempting to appropriate as large a share as possible of the returns on it. However, as shown in this paper, the extent to which the capitalist class succeeds in doing so depends on the relative bargaining power of the two classes, itself proxied by each class's share in wealth held in the form of capital. The rules of the game may license the attempt, but its success at any moment is settled by a wealth distribution that the process of appropriation is itself continually reshaping.

References

Alan, S., Atalay, K., & Crossley, T. F. (2015). Do the rich save more? Evidence from Canada. *Review of Income and Wealth*, *61*(4), 739–758.

Bach, L., Calvet, L. E., & Sodini, P. (2020). Rich pickings? Risk, return, and skill in household wealth. *American Economic Review*, *110*(9), 2703–2747.

Balestra, P., & Baranzini, M. (1971). Some optimal aspects in a two class growth model with a differentiated interest rate. *Kyklos*, *24*(2), 240–256.

Baranzini, M. L., & Mirante, A. (2021). Pasinetti's theorem: A narrow escape, for what was to become an inexhaustible research programme. *Structural Change and Economic Dynamics*, *59*, 470–481.

Basu, D., Huato, J., Jauregui, J. L., & Wasner, E. (2025). World profit rates, 1960–2019. *Review of Political Economy*, *37*(1), 92–107.

Bowles, S., & Gintis, H. (1990). Contested exchange: New microfoundations for the political economy of capitalism. *Politics & Society*, *18*(2), 165–222.

Ciccarone, G. (2004). Finance and the Cambridge equation. *Review of Political Economy*, *16*(2), 163–177.

Cícero, V. C., & Tavani, D. (2025). Institutional changes, effective demand, and inequality: A structuralist model of secular stagnation. *Metroeconomica*, *Forthcoming*.

Cruz, M. D., & Tavani, D. (2023). Secular stagnation: A Classical–Marxian view. *Review of Keynesian Economics*, *11*(4), 554–584.

Darity, W. A. (1981). The simple analytics of Neo-Ricardian growth and distribution. *American Economic Review*, *71*(5), 978–993.

Davis, L., & Konstantinidis, C. (2025). Asset ownership, rates of return, and the US working class. *Socio-Economic Review*, mwaf082.

Dutt, A. K. (1987). Alternative closures again: A comment on 'growth, distribution and inflation'. *Cambridge Journal of Economics*, *11*(1), 75–82.

Dynan, K. E., Skinner, J., & Zeldes, S. P. (2004). Do the rich save more? *Journal of Political Economy*, *112*(2), 397–444.

Ederer, S., Mayerhofer, M., & Rehm, M. (2021). Rich and ever richer? Differential returns across socioeconomic groups. *Journal of Post Keynesian Economics*, *44*(2), 283–301.

Ederer, S., & Rehm, M. (2020a). Will wealth become more concentrated in Europe? Evidence from a calibrated Post-Keynesian model. *Cambridge Journal of Economics*, *44*(1), 55–72.

Ederer, S., & Rehm, M. (2020b). Making sense of Piketty's fundamental laws in a Post-Keynesian framework: The transitional dynamics of wealth inequality. *Review of Keynesian Economics*, *8*(2), 195–219.

Fagereng, A., Guiso, L., Malacrino, D., & Pistaferri, L. (2020). Heterogeneity and persistence in returns to wealth. *Econometrica*, *88*(1), 115–170.

Fazi, E., & Salvadori, N. (1985). The existence of a two-class economy in a general Cambridge model of growth and distribution. *Cambridge Journal of Economics*, *9*(2), 155–164.

Foley, D. K., Michl, T. R., & Tavani, D. (2019). *Growth and distribution*. Harvard University Press.

Gandelman, N. (2017). Do the rich save more in Latin America? *The Journal of Economic Inequality*, *15*(1), 75–92.

Garbinti, B., Goupille-Lebret, J., & Piketty, T. (2021). Accounting for wealth-inequality dynamics: Methods, estimates, and simulations for France. *Journal of the European Economic Association*, *19*(1), 620–663.

Gupta, K. L. (1976). Differentiated interest rate and Kaldor–Pasinetti paradoxes. *Kyklos*, *29*(2), 310–314.

Huggett, M., & Ventura, G. (2000). Understanding why high income households save more than low income households. *Journal of Monetary Economics*, *45*(2), 361–397.

Kaldor, N. (1955). Alternative theories of distribution. *The Review of Economic Studies*, *23*(2), 83–100.

Kumar, R., Schoder, C., & Radpour, S. (2018). Demand driven growth and capital distribution in a two class model with applications to the United States. *Structural Change and Economic Dynamics*, *47*, 1–8.

Laing, N. F. (1969). Two notes on Pasinetti's theorem. *Economic Record*, *45*(3), 373–385.

Marquetti, A., Miebach, A., & Morrone, H. (2021). *Documentation on the Extended Penn World Tables 7.0, EPWT 7.0* (tech. rep.). Universidade Federal do Rio Grande do Sul. https://www.ufrgs.br/ppge/wp-content/uploads/2022/01/Documentation-EPWT-7.0.pdf

Mian, A., Straub, L., & Sufi, A. (2025). *The saving glut of the rich* [Working paper, July 2025. Available at https://atif.scholar.princeton.edu/sites/g/files/toruqf3691/files/documents/MSS_SGR_July242025.pdf.].

Moore, B. J. (1974). The Pasinetti paradox revisited. *The Review of Economic Studies*, *41*(2), 297–299.

Panico, C. (1980). Marx's analysis of the relationship between the rate of interest and the rate of profits. *Cambridge Journal of Economics*, *4*(4), 363–378.

Panico, C. (1985). Market forces and the relation between the rates of interest and profits. *Contributions to Political Economy*, *4*, 37–60.

Panico, C. (1988). *Interest and profit in the theories of value and distribution*. Macmillan.

Pasinetti, L. (1962). Rate of profit and income distribution in relation to the rate of economic growth. *The Review of Economic Studies*, *29*(4), 267–279.

Pasinetti, L. (1974). *Growth and income distribution: Essays in economic theory*. Cambridge University Press.

Petach, L., & Tavani, D. (2020). Income shares, secular stagnation and the long-run distribution of wealth. *Metroeconomica*, *71*(1), 235–255.

Piketty, T. (2014). *Capital in the twenty-first century*. Harvard University Press.

Rada, C., Tavani, D., von Arnim, R., & Zamparelli, L. (2023). Classical and Keynesian models of inequality and stagnation. *Journal of Economic Behavior & Organization*, *211*, 442–461.

Robinson, J. (1956). *The accumulation of capital*. Macmillan.

Rowthorn, R. E. (1977). Conflict, inflation and money. *Cambridge Journal of Economics*, *1*(3), 215–239.

Saez, E., & Zucman, G. (2016). Wealth inequality in the United States since 1913: Evidence from capitalized income tax data. *The Quarterly Journal of Economics*, *131*(2), 519–578.

Samuelson, P. A., & Modigliani, F. (1966). The Pasinetti paradox in neoclassical and more general models. *The Review of Economic Studies*, *33*(4), 269–301.

Stamegna, M. (2025). A Kaleckian growth model of secular stagnation with induced innovation. *Metroeconomica*, *76*(2), 340–371.

Taylor, L., Foley, D. K., & Rezai, A. (2019). Demand drives growth all the way: Goodwin, Kaldor, Pasinetti and the steady state. *Cambridge Journal of Economics*, *43*(5), 1333–1352.

Uthman, U. A. (2006). Profit-sharing versus interest-taking in the Kaldor–Pasinetti theory of income and profit distribution. *Review of Political Economy*, *18*(2), 209–222.

Zamparelli, L. (2017). Wealth distribution, elasticity of substitution and Piketty: An 'anti-dual' Pasinetti economy. *Metroeconomica*, *68*(4), 927–946.

A Interior solution: existence and stability analysis

A.1 Existence and uniqueness

Consider the interior stationary point(s) of the capitalist wealth–share dynamic in Equation (11). We restrict attention to the economically relevant domain $0 < r < b$, $0 \leq e < 1$, and $s_C > s_W > 0$. The closed form derived below degenerates at $e = 1$ and at $s_C = s_W$, and the interior root at $e = 0$ is admissible only for $s_C > s_W$. Define

$$F(k) \equiv s_C r\left(1 + e\frac{1-k}{k}\right) - s_W\left(\frac{b-r}{1-k} + (1-e)r\right),$$

so that interior equilibria are the solutions to $F(k) = 0$.

Multiplying through by $k(1-k)$ yields a quadratic in k:

$$r(1-e)(s_W - s_C)k^2 + \big[(1-2e)s_C r - s_W(b - er)\big]k + es_C r = 0,$$

with solutions

$$k_{\pm} = \frac{(2e-1)rs_C + bs_W - ers_W \pm \sqrt{\Delta}}{2(e-1)r(s_C - s_W)}, \tag{A.1}$$

where

$$\Delta \equiv b^2 s_W^2 + r^2(s_C - es_W)^2 - 2brs_W(s_C - 2es_C + es_W).$$

The function $F(k)$ is continuous on $(0, 1)$, diverges to $+\infty$ as $k \to 0^+$ and to $-\infty$ as $k \to 1^-$, and satisfies

$$F'(k) = -\frac{s_C re}{k^2} - \frac{s_W(b-r)}{(1-k)^2} < 0.$$

Thus F is strictly decreasing, crossing zero exactly once. Only one of the algebraic roots in Equation (A.1) therefore lies in $(0, 1)$.

To identify the relevant branch, note that when $e = 0$ the interior solution reduces to

$$k^* = \frac{rs_C - bs_W}{r(s_C - s_W)} \in (0, 1),$$

which corresponds to k_-, while k_+ collapses to the corner $k = 0$. By continuity, the admissible interior solution for all $e \in (0, 1)$ is

$$k^* = \frac{(2e-1)rs_C + bs_W - ers_W - \sqrt{\Delta}}{2(e-1)r(s_C - s_W)}. \tag{A.2}$$

A.2 Local stability

Since $\dot{k} = k(1-k)F(k)$, we have that:

$$\frac{\partial \dot{k}}{\partial k} = (1-2k)F(k) + k(1-k)F'(k).$$

At the interior solution k^*, where $F(k^*) = 0$, this reduces to:

$$\left.\frac{\partial \dot{k}}{\partial k}\right|_{k^*} = k^*(1-k^*)F'(k^*).$$

Because $k^* \in (0,1)$ and $F'(k) < 0$, it follows immediately that

$$\left.\frac{\partial \dot{k}}{\partial k}\right|_{k^*} < 0,$$

so the interior long-run equilibrium value of the capitalist wealth share is locally asymptotically stable.

B Comparative statics: derivations

This appendix collects the derivations of the comparative-static signs reported in Tables 1 and 2.

B.1 Signs of the partial derivatives of the long-run equilibrium capitalist wealth share

Recall from Equation (13) that

$$F(k) \equiv s_C r\left(1 + e\frac{1-k}{k}\right) - s_W\left(\frac{b-r}{1-k} + (1-e)r\right),$$

and that

$$F_k(k) = -\frac{s_C re}{k^2} - \frac{s_W(b-r)}{(1-k)^2} < 0$$

on the admissible domain $k \in (0,1)$, $0 < r < b$, $0 \leq e < 1$, and $s_C > s_W > 0$.

Direct calculation yields:

$$F_e(k) = s_C r\frac{1-k}{k} + s_W r > 0,$$

$$F_{s_C}(k) = r\left(1 + e\frac{1-k}{k}\right) > 0,$$

$$F_{s_W}(k) = -\left(\frac{b-r}{1-k} + (1-e)r\right) < 0,$$
$$F_b(k) = -\frac{s_W}{1-k} < 0,$$
$$F_r(k) = s_C\left(1 + e\frac{1-k}{k}\right) + s_W\left(\frac{1}{1-k} - (1-e)\right) > 0.$$

The sign of $F_r(k)$ follows from $1/(1-k) > 1 \geq 1-e$ for any $k \in (0,1)$ and $e \in [0,1]$, which makes the second bracket strictly positive.

By the implicit function theorem, $\partial k^*/\partial\theta = -F_\theta(k^*)/F_k(k^*)$, and since $F_k < 0$ the sign of $\partial k^*/\partial\theta$ coincides with the sign of $F_\theta(k^*)$. The signs reported in Table 1 follow directly.

B.2 Signs of the partial derivatives of the long-run accumulation rate

Along the interior long-run equilibrium path, $\bar{g}^* = g_C(k^*) = rs_C[(1-e) + e/k^*]$. Differentiating with respect to each parameter and taking into account the dependence of k^* on that parameter yields:

$$\frac{\partial\bar{g}^*}{\partial s_W} = rs_C\left(-\frac{e}{(k^*)^2}\right)\frac{\partial k^*}{\partial s_W},$$
$$\frac{\partial\bar{g}^*}{\partial b} = rs_C\left(-\frac{e}{(k^*)^2}\right)\frac{\partial k^*}{\partial b},$$
$$\frac{\partial\bar{g}^*}{\partial s_C} = r\left[(1-e) + \frac{e}{k^*}\right] + rs_C\left(-\frac{e}{(k^*)^2}\right)\frac{\partial k^*}{\partial s_C},$$
$$\frac{\partial\bar{g}^*}{\partial r} = s_C\left[(1-e) + \frac{e}{k^*}\right] + rs_C\left(-\frac{e}{(k^*)^2}\right)\frac{\partial k^*}{\partial r},$$
$$\frac{\partial\bar{g}^*}{\partial e} = rs_C\left(\frac{1}{k^*} - 1\right) + rs_C\left(-\frac{e}{(k^*)^2}\right)\frac{\partial k^*}{\partial e}.$$

The signs follow from the entries of Table 1. For s_W: the only channel is the indirect one. Since $\partial k^*/\partial s_W < 0$ and the coefficient $-rs_Ce/(k^*)^2 < 0$, the two negatives compound and $\partial\bar{g}^*/\partial s_W > 0$. This is Proposition 1.

For b: again the only channel is the indirect one. Since $\partial k^*/\partial b < 0$, the same compounding yields $\partial\bar{g}^*/\partial b > 0$.

For s_C, r, and e: each derivative decomposes into a strictly positive direct effect and an indirect effect whose sign is the opposite of $\partial k^*/\partial\theta$, and since $\partial k^*/\partial s_C$, $\partial k^*/\partial r$ and $\partial k^*/\partial e$ are all strictly positive by Table 1, the indirect effect is strictly negative in each case. The direct effect nonetheless dominates. From Equations (6), (7) and (10), and using

$Y_C + Y_W = bK$ together with $Y_C = r\,[k + e(1-k)]\,K$, the aggregate accumulation rate can be written as

$$\bar{g} = s_W b + r(s_C - s_W)\,\phi, \qquad \phi \equiv k + e(1-k),$$

where ϕ is the share of total profits accruing to capitalists. Since $\partial\phi/\partial e = 1 - k > 0$ and $\partial\phi/\partial k = 1 - e > 0$, differentiating along the interior long-run equilibrium path gives

$$\frac{\partial \bar{g}^*}{\partial \theta} = \frac{\partial}{\partial \theta}\Big[s_W b + r(s_C - s_W)\phi^*\Big],$$

which for $\theta \in \{s_C, r, e\}$ is in each case a sum of strictly positive terms given $s_C > s_W$ and the signs in Table 1. Proposition 2 establishes the result for e by the alternative route of the direct decomposition.

C Endogenous case

This appendix evaluates the stability of equilibria with endogenous appropriation. Let $e = f(k)$ with $f : [0,1] \to [0,1]$, $f(0) = 0$, f continuous at 1, and $f'_+(0)$ finite (or $f'_+(0) = +\infty$, in which case the dual corner is repelling *a fortiori*). Write

$$\dot{k} = k(1-k)F(k),$$

with

$$F(k) \equiv g_C(k) - g_W(k),$$

where the accumulation rates are

$$g_C(k) = s_C r\left[1 + f(k)\frac{1-k}{k}\right], \qquad g_W(k) = s_W\left[\frac{b-r}{1-k} + r\big(1 - f(k)\big)\right].$$

Differentiating yields

$$\frac{\partial \dot{k}}{\partial k} = (1-2k)F(k) + k(1-k)F'(k), \tag{C.1}$$

with

$$F'(k) = s_C r\left[f'(k)\left(\frac{1}{k} - 1\right) - \frac{f(k)}{k^2}\right] - s_W\left[\frac{b-r}{(1-k)^2} - r f'(k)\right]. \tag{C.2}$$

C.1 Corner solutions

Consider first the "dual" case, where $k \to 0^+$. Using $f(0) = 0$ and $\lim_{k\to 0^+} f(k)/k = f'_+(0)$, we have that:

$$\lim_{k\to 0^+} g_W(k) = s_W b, \qquad \lim_{k\to 0^+} g_C(k) = s_C r\big(1 + f'_+(0)\big).$$

Thus, we simply write

$$\lim_{k\to 0^+} F(k) = s_C r\big(1 + f'_+(0)\big) - s_W b,$$

and

$$\lim_{k\to 0^+} \frac{\partial \dot{k}}{\partial k} = s_C r\big(1 + f'_+(0)\big) - s_W b. \tag{C.3}$$

Since $s_C r$ is typically larger than $s_W b$ and $f'_+(0) \geq 0$, the dual corner is generically unstable.

Next, consider the other corner solution, the "anti-dual" case with $k \to 1^-$. Let $z = 1 - k \to 0^+$. Then, we have that:

$$F(1-z) = -\frac{s_W(b-r)}{z} + A_0 + O(z),$$

where

$$A_0 \equiv r\big(s_C - s_W + s_W f(1)\big),$$

and

$$F'(1-z) = -\frac{s_W(b-r)}{z^2} + O(1).$$

Substituting into (C.1) gives

$$\lim_{k\to 1^-} \frac{\partial \dot{k}}{\partial k} = -s_W(b-r) - A_0 = s_W\big(2r - rf(1) - b\big) - s_C r. \tag{C.4}$$

Since $f(1) \leq 1$ and $s_C > s_W$, this expression is strictly negative and the anti-dual corner is unstable.

Hence, with endogenous capitalist appropriation increasing in k, both corners tend to be locally unstable under mild and empirically plausible restrictions, leaving room for a stable interior long-run equilibrium.

C.2 Interior long-run equilibrium

Now consider interior long-run solutions to $\dot{k} = 0$. At any interior root $k^* \in (0,1)$ of F:

$$\left.\frac{\partial \dot{k}}{\partial k}\right|_{k^*} = k^*(1-k^*)F'(k^*),$$

so k^* is locally asymptotically stable if and only if $F'(k^*) < 0$.

From (C.2), the term $-s_W(b-r)/(1-k)^2$ is a strong negative force as $k \to 1^-$, the terms proportional to $f'(k)$ are positive, and the component $-s_C r f(k)/k^2$ is negative.

Evaluating (C.2) at k^* and rearranging yields

$$F'(k^*) < 0 \Leftarrow f'(k^*) < \frac{s_C r \frac{f(k^*)}{(k^*)^2} + s_W \frac{b-r}{(1-k^*)^2}}{s_C r \frac{1-k^*}{k^*} + s_W r}. \tag{C.5}$$

Thus, provided the local slope of f at k^* is not "too large" relative to the technological terms and saving rates, the interior long-run equilibrium level of the capitalist wealth share is locally stable. If the bound (C.5) holds for all $k \in (0,1)$, then $F'(k) < 0$ throughout (i.e. F is strictly decreasing). In this case the interior root is unique and locally stable.

Along any interior long-run equilibrium $k^* \in (0,1)$ the aggregate accumulation rate is

$$\bar{g}^* = \frac{b\, s_C\, s_W}{D^*},$$

with

$$D^* \equiv s_C(1-k^*) + s_W k^*.$$

Note that the direct effect of s_W on $\bar{g}^*$, holding k^* fixed, is given by

$$\left.\frac{\partial \bar{g}^*}{\partial s_W}\right|_{k^*} = \frac{b\, s_C^2(1-k^*)}{\left[s_C(1-k^*) + s_W k^*\right]^2} > 0.$$

To account for the dependence of k^* on s_W, use the implicit function theorem on $F(k^*;\theta) = 0$ with $\theta = s_W$:

$$\frac{dk^*}{ds_W} = -\frac{F_{s_W}(k^*)}{F_k(k^*)},$$

where $F_{s_W}(k) = -\left[\frac{b-r}{1-k} + r\big(1-f(k)\big)\right] < 0$ and $F_k(k^*) < 0$ at a stable interior k^*. Hence $dk^*/ds_W < 0$ and the total derivative is

$$\frac{d\bar{g}^*}{ds_W} = \frac{b\, s_C}{(D^*)^2}\left[s_C(1-k^*) + s_W(s_C - s_W)\frac{dk^*}{ds_W}\right].$$

Under the stability and regularity conditions discussed above, the second term cannot overturn the positive direct effect, so $d\bar{g}^*/ds_W > 0$. In particular, for the special case $f(k) = k$ the inequality holds on the admissible set $2rs_C > bs_W$.

C.3 Special case: linear relationship

A simple and illustrative specification is $f(k) = k$, where the appropriation parameter e rises one-for-one with the capitalist wealth share. This "size matters" case captures the idea that greater capital wealth control translates directly into stronger bargaining power.

Then we have:

$$g_C(k) = s_C r(2-k),$$
$$g_W(k) = s_W \left[\frac{b-r}{1-k} + r(1-k)\right].$$

Besides, we have that:

$$F(k) = g_C(k) - g_W(k) = s_C r(2-k) - s_W \left[\frac{b-r}{1-k} + r(1-k)\right],$$

and the wealth share dynamic is $\dot{k} = k(1-k)F(k)$.

First, we evaluate if an interior long-run equilibrium level of the capitalist wealth share exists. As $k \to 1^-$ we have $F(k) \to -\infty$, and as $k \to 0^+$ we have $F(k) \to 2rs_C - bs_W$. Hence a sufficient condition for an interior long-run equilibrium is given by:

$$2rs_C > bs_W.$$

Next, note that differentiating F gives us:

$$F'(k) = -s_C r - s_W \left[\frac{b-r}{(1-k)^2} - r\right] = -r(s_C - s_W) - \frac{s_W(b-r)}{(1-k)^2},$$

so $F'(k) < 0$ for all $k \in (0,1)$. Therefore F is strictly decreasing, the interior root is unique whenever it exists, and

$$\left.\frac{\partial \dot{k}}{\partial k}\right|_{k^*} = k^*(1-k^*)F'(k^*) < 0,$$

which proves local asymptotic stability of the interior long-run equilibrium level of the capitalist wealth share.

Thus, in short, for the particular case $f(k) = k$ there is at most one economically admissible interior steady state, it exists if and only if $2rs_C > bs_W$, and it is locally stable.

The corresponding long-run accumulation rate is again determined by the capitalist rate of accumulation. Although the algebra is less transparent than in the baseline case, it confirms the same qualitative result:

$$\bar{g}^* = \frac{s_C r(s_C - 2s_W) + s_C\sqrt{r^2\left(s_C - 2s_W\right)^2 + 4s_W br(s_C - s_W)}}{2(s_C - s_W)}.$$

As before, higher s_W raises $\bar{g}^*$. Endogenising capitalist appropriation thus magnifies the role of distributive conflict in shaping both the capital wealth distribution and the output growth rate, and demonstrates that the irrelevance property no longer holds once relative bargaining power is allowed to matter.