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Income Distribution and Household Debt Dynamics under Kaleckian Pricing

houssam boughabi

houssam1404@gmail.com

National Institute of Statistics and Applied Economics https://orcid.org/0009-0005-3492-1910

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Income Distribution and Household Debt Dynamics under Kaleckian Pricing

Houssam BOUGHABI
PhD Candidate, National Institute of Statistics and Applied Economics (INSEA)
Guest Fellow, Center for Economic and Sociological Studies (CESS), Department of Socioeconomics, Universität Hamburg
Rabat, Morocco
houssam1404@gmail.com

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Declarations

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Abstract

This paper develops and empirically evaluates a Kaleckian framework linking income distribution, mark-up pricing, and household consumption dynamics in selected Eurozone economies. Within the Kaleckian tradition, real wages are structurally determined by distributive conflict through the mark-up, implying that shifts toward profits may compress purchasing power and alter aggregate demand. The analysis addresses two central questions: whether variations in the mark-up are reflected in real wage dynamics consistent with Kaleckian pricing, and whether households smooth consumption through borrowing in response to distributive pressures. Using annual data for Germany, France, Italy, and the Netherlands over the period 1980–2025, the results reveal substantial cross-country heterogeneity in real wage developments, providing only partial support for a uniform mark-up compression mechanism. Real consumption exhibits significant persistence in Germany and the Netherlands, with the estimated parameter approaching unity, consistent with martingale-like smoothing and strong path dependence. However, the borrowing channel does not emerge as statistically robust across countries, suggesting that debt does not systematically function as a long-run stabilizing device for demand. The findings therefore support the relevance of Kaleckian distributional dynamics and consumption inertia while offering limited empirical confirmation for sustained debt-led stabilization in the selected Eurozone economies.

JEL Classification. E12, E25, E31, E44, D33.
Key words and phrases. Kaleckian pricing; Distributive conflict; Debt-financed consumption; Consumption smoothing; Financial fragility.

1 Introduction

The dynamics of capitalist economies cannot be understood independently of income distribution, administered pricing, and financial structures. In the Kaleckian tradition, prices are determined by firms through mark-up rules rather than market-clearing mechanisms. As shown in Kalecki (1937, pp. 440–447), profit expectations and investment decisions are inherently shaped by uncertainty and distributive conditions. Later, Kalecki (1954, pp. 102–108) formalized the relationship between mark-up pricing and cyclical dynamics, establishing that the distribution between wages and profits influences macroeconomic stability.

This approach departs fundamentally from the neoclassical framework. In Keynes (1936, pp. 267–273), output is governed by effective demand rather than by full-employment equilibrium, while Davidson (1972, pp. 45–53) emphasizes the monetary foundations of production economies. Prices and wages are set in nominal terms, but real outcomes emerge through distributive interaction. Lee (1999, pp. 112–118) further clarifies that mark-up pricing reflects institutional power, industrial concentration, and bargaining strength rather than marginal productivity conditions.

Building on these foundations, Post-Keynesian growth theory demonstrates that shifts in income distribution have systematic macroeconomic consequences. Rowthorn (1977, pp. 215–223) shows that distributive conflict can generate inflationary pressures independent of excess demand, while Bhaduri and Marglin (1990, pp. 375–380) formalize the distinction between wage-led and profit-led demand regimes. In wage-led economies, a decline in the wage share reduces aggregate consumption because workers exhibit a higher marginal propensity to consume than profit recipients. These insights underscore that pricing decisions and distributive outcomes are not merely microeconomic phenomena but central determinants of macroeconomic performance.

The increasing role of finance further deepens these distributive mechanisms. Minsky (1986, pp. 205–214) argues that financial commitments amplify cyclical dynamics, as rising leverage during expansions increases vulnerability to subsequent contractions. Palley (1996, pp. 450–456) extends this reasoning by showing that debt-financed consumption can temporarily sustain demand when wage growth stagnates, thereby masking underlying distributive tensions. Similarly, Stockhammer (2015, pp. 940–946) documents how rising inequality and financialization have reshaped demand formation in advanced economies, linking household indebtedness to shifts in income distribution. Together, these contributions suggest that administered pricing, wage compression, and credit expansion form an integrated macroeconomic mechanism in which short-run demand stabilization may coexist with growing structural financial fragility.

Within this framework, real wages are structurally determined by the mark-up. Rearranging the pricing rule yields:

$$\frac{w_t}{p_t} = \frac{1}{1+\tau_t}$$

An increase in the mark-up (τ_t) reduces the real wage for a given nominal wage. Hence, income distribution becomes a structural determinant of purchasing power and aggregate demand. Rowthorn (1977, pp. 215–223) and Taylor (1991, pp. 47–53) show that such distributive shifts may generate either wage-led or profit-led regimes depending on behavioral parameters.

The macroeconomic implications depend critically on household behavior. If workers exhibit a higher marginal propensity to consume than profit earners (Bhaduri and Marglin 1990, pp. 375–380), a decline in the wage share depresses consumption and effective demand. However, financial liberalization has altered this transmission channel. As emphasized by Minsky (1986, pp. 109–115), debt commitments and balance-sheet positions interact with income distribution. Davidson (1972, pp. 26–34) stresses that credit creation enables spending beyond current income, while Sawyer (2003, pp. 338–342) and Palley (1996, pp. 450–456) show that rising household indebtedness can temporarily sustain demand.

Recent evidence highlights the macroeconomic relevance of these mechanisms. Stockhammer (2015, pp. 940–946) argues that rising inequality constrains demand, while financialization intensifies reliance on credit. Yet empirical work combining mark-up pricing, real wage dynamics, and consumption smoothing in a multi-country Eurozone context remains limited.

A growing body of Post-Keynesian literature has examined the macroeconomic consequences of functional income distribution within demand-led growth models. Engelbert Hein (2009, pp. 338–345) argues that the transition toward finance-dominated capitalism has altered the traditional wage-led growth configuration in Europe, weakening the transmission from wage growth to aggregate demand. Similarly, Özlem Onaran and Giorgos Galanis (2014, pp. 2488–2495) develop a global demand model demonstrating that most large economies remain wage-led once international spillovers are considered. Marc Lavoie and Engelbert Stockhammer (2013, pp. 166–174) further synthesize theoretical and empirical evidence on wage-led growth regimes, emphasizing that the macroeconomic effects of distribution depend critically on consumption behavior and financial structures.

Parallel research has investigated the financialization of household demand and its implications for macroeconomic stability. Thomas I. Palley (2007, pp. 280–286) conceptualizes financialization as a structural transformation that increases reliance on debt-financed consumption, potentially offsetting wage stagnation. Barry B. Cynamon and Steven M. Fazzari (2008, pp. 10–18) document the expansion of household leverage in the United States and its role in sustaining aggregate demand prior to the global financial crisis. Engelbert

Stockhammer, Özlem Onaran, and Stefan Ederer (2009, pp. 145–153) provide evidence that shifts in functional income distribution significantly affect aggregate demand in the Euro area. Moreover, Eckhard Hein and Lea Vogel (2008, pp. 377–384) show that European economies exhibit heterogeneous wage-led and profit-led characteristics depending on institutional regimes. However, these studies typically treat borrowing as an aggregate stabilizer without explicitly embedding it within a structural mark-up pricing mechanism linking distributive conflict to real wage compression.

The broader Post-Keynesian growth and distribution literature provides important analytical foundations but leaves open the empirical question of long-run consumption persistence under distributive pressure. Amitava Krishna Dutt (2006, pp. 701–708) and Amitava Krishna Dutt (2010, pp. 5–12) examine wage-led versus profit-led growth in models incorporating financial fragility, yet without testing martingale-like consumption behavior. Marc Lavoie and Katherine Godin (2001, pp. 274–282) survey Kaleckian growth models and highlight the importance of distributional dynamics, while Amitava Krishna Dutt (2011, pp. 360–368) critically reviews empirical growth models, noting the need for stronger integration between financial variables and demand regimes. Together, this literature establishes the centrality of distribution and finance but does not directly test whether consumption dynamics in advanced European economies exhibit martingale-like persistence while simultaneously assessing the statistical relevance of borrowing as a compensatory mechanism under mark-up pricing. This omission defines the precise empirical contribution of the present study.

This paper addresses that gap by integrating Kaleckian pricing with a dynamic consumption framework. Specifically, we estimate:

$$C_t^{real} = \alpha + \beta_1 C_{t-1}^{real} + \beta_2 B_{t-1}^{real} + \varepsilon_t$$

where C_t^{real} denotes real consumption and B_{t-1}^{real} captures lagged borrowing. The martingale-like smoothing hypothesis implies $\beta_1 \approx 1$.

Research Questions

The analysis is structured around two precise research questions:

RQ1 — Distributive Conflict and Real Wages:
How does variation in the mark-up affect real wages in selected Eurozone economies, as captured by the structural relation

$$\frac{w_t}{p_t} = \frac{1}{1+\tau_t},$$

and to what extent do observed wage dynamics reflect distributive shifts consistent with Kaleckian pricing (Kalecki 1954, pp. 143–152; Kalecki 1971, pp. 16–24)?

RQ2 — Consumption Smoothing and Financial Fragility:
Does real consumption exhibit martingale-like persistence ($\beta_1 \approx 1$) and does borrowing significantly mediate consumption dynamics ($\beta_2 \neq 0$) in a manner consistent with debt-financed demand stabilization and Minskyan financial fragility (Minsky 1986, pp. 205–214; Stockhammer 2015, pp. 45–52)?

By empirically linking mark-up pricing, real wage determination, and debt-mediated consumption smoothing, this study provides a cross-country validation of a Kaleckian–Minskyan macroeconomic mechanism.

The results demonstrate that while consumption persistence is strong across countries, the borrowing channel is heterogeneous, suggesting institutional variation in financial fragility across the Eurozone.

2 Kaleckian Pricing, Debt, and Real Consumption

In capitalist economies characterized by imperfect competition, prices are not determined through market-clearing mechanisms or marginal productivity equalization. Instead, firms operating in oligopolistic environments administer prices according to full-cost or mark-up pricing principles. In the Kaleckian tradition, the price level is set as a mark-up over unit labour costs, reflecting production costs, overhead expenses, and the prevailing balance of bargaining power between capital and labour (Kalecki 1954, pp. 143–152).

In its simplest form, the pricing rule may be expressed as:

$$p_t = (1 + \tau_t)\, w_t, \qquad (1)$$

where $p_t$denotes the price level, $w_t$represents nominal unit labour costs, $\tau_t$is the mark-up rate, and $\varepsilon_t$captures exogenous cost disturbances (e.g., imported inputs or institutional shifts). The mark-up $\tau_t$reflects industry concentration, competitive pressures, and trade union strength rather than short-run demand fluctuations.

Equation (1) implies a direct relationship between distributive conflict and real wages. Rearranging yields:

$$\frac{w_t}{p_t} = \frac{1}{1+\tau_t}$$

Hence, real wages are determined by the mark-up, not by marginal productivity. For a given money wage, an increase in the mark-up reduces the real wage. More generally, real wages are structurally determined by the mark-up and thus by distributive conflict.. Income distribution therefore becomes a structural determinant of purchasing power and aggregate demand. Real wages are not governed by marginal productivity conditions but by institutional and distributive forces embedded in the pricing rule.

This structural asymmetry has direct implications for household behaviour. When $\tau_t$rises and real wages decline, workers experience an erosion of purchasing power. Since prices are administered while wages adjust imperfectly, workers cannot offset distributive losses within the wage–price nexus itself. Adjustment must therefore occur through financial channels.

2.1 Mark-up Pricing and Distributive Conflict in the Kaleckian Framework

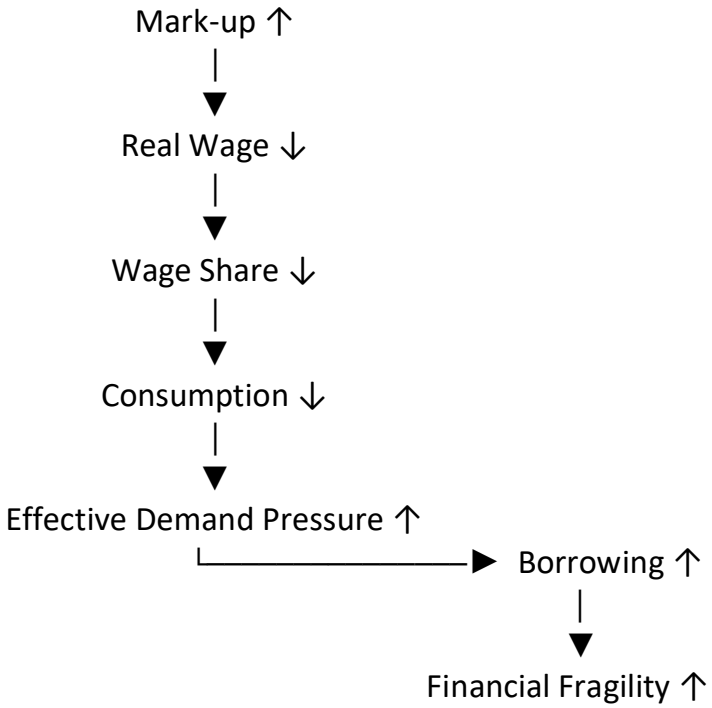
Kalecki emphasizes that prices are administratively fixed, while quantities adjust to effective demand. This contrasts with neoclassical theory, where flexible prices and wages restore equilibrium. In the Kaleckian system, firms aim to preserve profit margins and stabilize prices rather than continuously adjust them to clear markets (Lee 1999, pp. 141–152).

An increase in the mark-up $\tau_t$redistributes income from wages to profits even if nominal wages remain unchanged. If wages do not rise proportionally with prices, the wage share declines. Kalecki links this mechanism to conflict inflation: firms raise prices to defend profit margins when cost pressures emerge (Kalecki 1971, pp. 16–24). Inflation in this framework is not purely monetary; it is rooted in distributive tensions between capital and labour.

The macroeconomic consequences depend on the demand regime. In wage-led economies, a fall in the wage share reduces aggregate consumption because workers exhibit a higher marginal propensity to consume than profit earners (Bhaduri and Marglin 1990, pp. 378–385). Consequently, attempts to increase profitability through higher mark-ups may depress demand, output, and employment — generating demand-led instability.

Moreover, since prices and wages are set in nominal terms, real magnitudes emerge only ex post. As (Minsky 1986, pp. 205–214) stresses, administered pricing interacts with financial commitments: firms and households enter contractual obligations based on nominal expectations. When distributional shifts alter real incomes, balance-sheet positions adjust asymmetrically, amplifying macroeconomic volatility.

Thus, equation (1) is not merely an accounting identity; it defines a structural transmission mechanism:



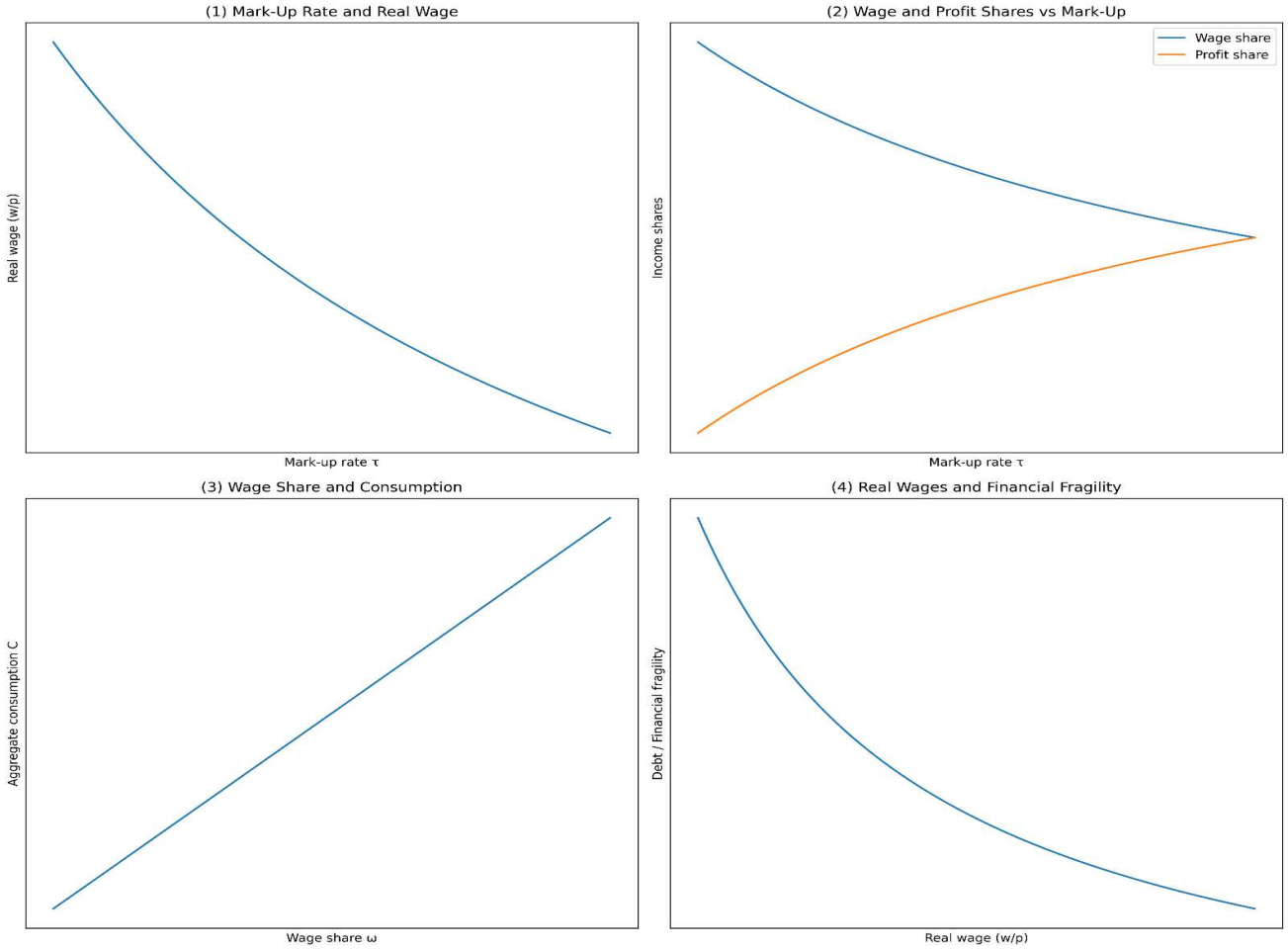


Figure 1. The Transmission Mechanism of Distributive Conflict under Mark-Up Pricing (Source: Author's conceptual illustration).

2.2 Debt-Financed Consumption as Workers' Adjustment Mechanism

Mark-up pricing generates a divergence between nominal wage growth and price inflation. If nominal wages adjust sluggishly relative to prices, real disposable income declines. Workers, as price takers in goods markets, cannot directly influence administered prices (Kalecki 1954, pp. 11–18).

In response, households may stabilize consumption through two distinct financial mechanisms:

1. **Dissaving** (drawing down accumulated deposits), or
2. **Net borrowing** (increasing liabilities).

The second mechanism is macroeconomically more significant because it increases leverage and future repayment obligations.

Within a monetary production economy, banks create deposits endogenously in response to credit demand (Davidson 1972, pp. 26–34). Consequently, borrowing allows households to temporarily decouple consumption from current wage income. This behaviour aligns with Keynes's principle of effective demand: consumption depends not solely on current income but also on liquidity conditions, expectations, and institutional credit structures (Keynes 1936, pp. 96–104).

Real consumption dynamics may therefore be represented as:

$$\frac{C_t}{p_t} = \alpha + \phi \frac{C_{t-1}}{p_{t-1}} + a \frac{B_{t-1}}{p_{t-1}} + \varepsilon_t \qquad (2)$$

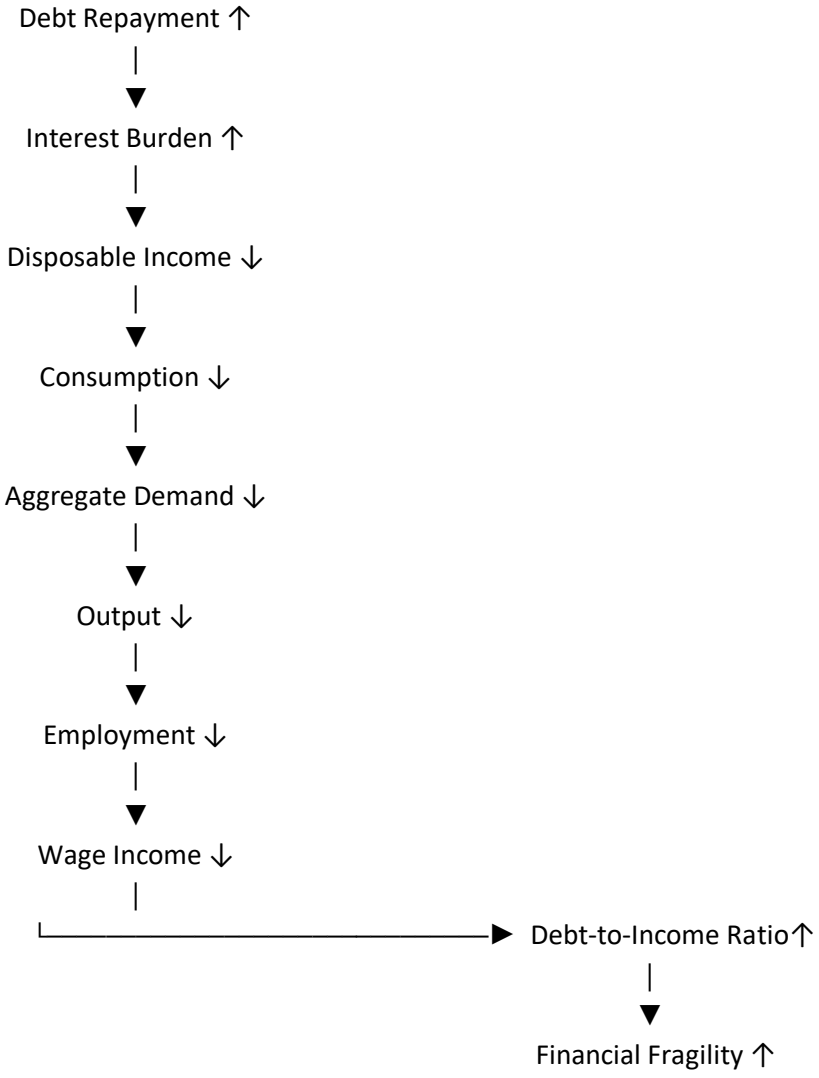
where:

- ϕcaptures consumption persistence,
- B_{t-1}denotes the real stock of financial assets or debt,
- $a$measures the marginal propensity to consume out of financial resources.

If $\phi \approx 1$, consumption exhibits strong persistence consistent with smoothing behaviour. However, if debt finances consumption;

From a macroeconomic standpoint, debt-financed consumption can temporarily offset the demand contraction caused by declining wage shares. In a wage-led regime, rising mark-ups reduce demand unless compensated by credit expansion. The parameter a in equation (2) captures this compensatory channel.

During deleveraging:



Firms respond primarily by adjusting quantities rather than prices, consistent with Kaleckian imperfect competition (Rowthorn 1977, pp. 221–227; Taylor 1991, pp. 78–85). The initial inflationary impulse generated by distributive conflict thus gives way to demand compression and recessionary pressure.

2.3 Structural Synthesis

The integrated mechanism can therefore be summarized as follows:

1. Mark-up pricing redistributes income.
2. Real wages decline when bargaining power weakens.
3. Households smooth consumption through dissaving or borrowing.
4. Debt accumulation increases financial fragility.
5. Deleveraging triggers contraction in effective demand.

The interaction between administered pricing, distributive conflict, and endogenous credit creation generates a path-dependent dynamic in which short-run stabilization mechanisms produce long-run instability.

This framework situates consumption smoothing within a broader Kaleckian–Minskyan monetary production model, where distribution, finance, and effective demand are structurally interdependent.

2.4 Real Consumption and the Martingale Condition

In the Post-Keynesian framework, the dynamics of consumption and prices may be expressed through the conditional expectation of future real consumption. Formally,

$$\boldsymbol{E}\left[\frac{C_T}{p_T}\,\middle|\,\boldsymbol{F}_t\right]=\frac{C_t}{p_t} \qquad (3)$$

This expression represents a martingale-like benchmark in which expected real consumption, conditional on current information, equals its present level. Importantly, this condition is not imposed as an equilibrium identity but serves as a theoretical limiting case of strong consumption persistence. It captures the idea that households attempt to stabilize real expenditure over time despite distributive shifts and inflationary pressures (Kalecki 1954, pp. 147–152; Kalecki 1971, pp. 16–24).

The intuition is that, in a monetary production economy, real consumption does not adjust instantaneously to income shocks. Institutional rigidities, expectations, and intertemporal commitments generate inertia in spending behavior (Keynes 1936, pp. 96–101; Davidson 1972, pp. 26–34). Financial mechanisms — including deposits and borrowing — may, in principle, support such smoothing. However, the empirical relevance of this channel remains an open question rather than an assumed outcome.

From a macroeconomic perspective, the persistence parameter therefore functions as an empirical indicator of path dependence in consumption dynamics. If close to unity, it suggests strong inertia consistent with smoothing behavior. If substantially below unity, it indicates faster adjustment and weaker intertemporal stabilization (Lee 1999, pp. 141–152; Taylor 1991, pp. 78–85).

Importantly, while Kaleckian–Minskyan theory allows for debt-financed stabilization and subsequent

deleveraging cycles (Minsky 1986, pp. 231–239), the presence and strength of this mechanism must be determined empirically. The model therefore treats borrowing effects as testable rather than presupposed.

Empirical Validation. Empirical Validation

To examine whether real consumption exhibits martingale-like persistence, we estimate the following fixed-effects panel specification:

$$\frac{C_{i,t}}{p_t} = \alpha + \phi \frac{C_{i,t-1}}{p_{t-1}} + a \frac{B_{i,t-1}}{p_{t-1}} + \varepsilon_{i,t}$$

where:

- $C_{i,t}/p_t$ denotes real consumption of household i,
- $B_{i,t-1}$ represents lagged borrowing,
- ϕ captures consumption persistence,
- a measures the marginal propensity to consume out of financial resources.

The martingale property implies $\phi \approx 1$. If ϕ is statistically indistinguishable from unity, real consumption exhibits strong persistence consistent with smoothing behavior. Deviations from unity indicate liquidity constraints, credit rationing, or precautionary adjustment — mechanisms central to Post-Keynesian demand theory.

Importantly, if $\phi = 1$ exactly, the process contains a unit root and becomes non-stationary. Therefore, panel unit-root diagnostics must accompany the regression to ensure econometric consistency.

Empirical Analysis: Kaleckian Pricing and Consumption Smoothing in Selected Eurozone Economies

The empirical investigation employs annual macroeconomic data for Germany, France, Italy, Spain, the Netherlands, and Belgium over the period 1980–2025. The analysis focuses on:

- Consumer Price Index (CPI),
- Compensation of employees,
- GDP,
- Private consumption,
- Borrowing

All variables are obtained from the World Bank's World Development Indicators database to ensure cross-country comparability.

The empirical analysis in this study relies on macroeconomic data from selected Eurozone countries, specifically Germany, France, Italy, Spain, the Netherlands, and Belgium, covering the period 1980–2025. Key variables include consumer prices (CPI), gross domestic product (GDP), the share of private consumption in GDP, and compensation of employees, which are used to construct proxies for average wages and household financial assets. The data are sourced from the World Bank's World Development Indicators (WDI) database, a comprehensive and widely used repository for cross-country economic statistics, ensuring consistency and comparability across countries. Missing values are addressed using forward and backward filling techniques to maintain continuous annual

series suitable for panel regression analysis.

To facilitate the estimation of the Kaleckian pricing model and the Post-Keynesian consumption smoothing framework, variables are converted into real terms by adjusting for price levels. Real consumption, wages, and bank deposit proxies are constructed to capture both the income distribution effects on prices and the role of financial as- sets in shaping household behavior. Lagged values of consumption and financial assets are included to model partial adjustment mechanisms and consumption smoothing, re- flecting the theoretical underpinnings of demand-led growth. This approach allows for the empirical validation of wage–price relations and household consumption dynamics across multiple Eurozone economies, while accommodating the limitations of available macroeconomic data.

This section presents the empirical findings of our study.

We estimate consumption smoothing and financial fragility via the regression

$$C_t^{\text{real}} = \alpha + \beta_1 C_{t-1}^{\text{real}} + \beta_2 B_{t-1}^{\text{real}} + \varepsilon_t.$$

And we plot the real wage change in:

$$\frac{w_t}{p_t} = \frac{1}{1+\tau_t}$$

2.5 Real Wage Trends and the Mark-Up Hypothesis

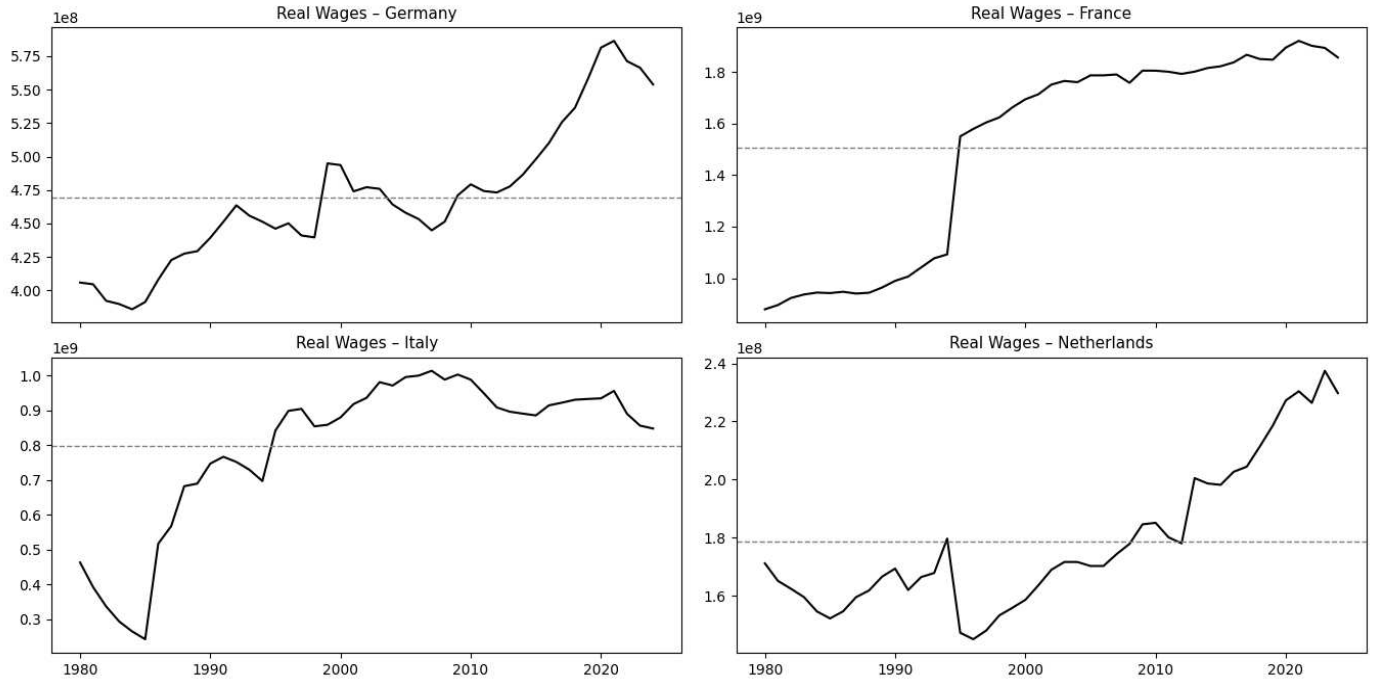


Figure 2: Real Wage Dynamics under Mark-Up Pricing: Germany, France, Italy, and the Netherlands (1980–2025) (Author's calculations based on World Development Indicators (WDI), World Bank.)

2.6 Consumption Smoothing Regression Results

Variable	Coefficient	Std. Error	*t*-Statistic	*p*-Value
		Germany		
c	1.368e+09	9.85e+08	1.388	0.173
C real lag _	0.8764	0.351	2.496	0.017
B real lag _	0.0235	0.170	0.139	0.890
R^2		0.880		
Adjusted R^2		0.874		
		France		
c	9.442e+08	7.13e+08	1.324	0.193
C real lag _	0.2753	0.953	0.289	0.774
B real lag _	0.3535	0.501	0.705	0.485
R^2		0.888		
Adjusted R^2		0.883		
		Italy		
c	1.845e+09	9.51e+08	1.939	0.059
C real lag _	0.1507	0.874	0.172	0.864
B real lag _	0.3976	0.523	0.760	0.452
R^2		0.683		
Adjusted R^2		0.667		
		Netherlands		
c	1.862e+08	1.7e+08	1.094	0.280
C real lag _	0.9480	0.270	3.511	0.001
B real lag _	0.0002	0.109	0.002	0.998
R^2		0.906		
Adjusted R^2		0.902		

Table 1: Consumption Smoothing Regression Results across Selected Eurozone Countries

3 Conclusion

The evidence does not support a uniform pattern of real wage compression across Eurozone economies. Instead, the results indicate substantial cross-country heterogeneity:

- Italy shows sustained periods consistent with distributive pressure and possible mark-up dominance.
- Germany and the Netherlands display long-run wage recovery and stability.
- France exhibits structural upward adjustment with institutional resilience.

Thus, Research Question 1 receives partial support. The Kaleckian mechanism linking mark-up variation to real wage compression is empirically plausible but not universally observed across countries. Distributive conflict appears mediated by institutional wage-setting regimes, macroeconomic coordination, and structural characteristics specific to each economy.

In sum, while the theoretical pricing rule implies a direct inverse relationship between mark-up and real wages, the empirical evidence suggests that the strength and persistence of this mechanism vary across Eurozone economies. Real wage dynamics reflect distributive forces, but these forces operate within heterogeneous institutional and macroeconomic environments rather than through a uniform structural compression process.

Research Question 2 examined whether real consumption exhibits martingale-like persistence and whether borrowing systematically mediates consumption dynamics in a manner consistent with debt-financed demand stabilization and Minskyan financial fragility. The extended sample (1980–2025) provides clearer evidence on both dimensions.

First, the results indicate that consumption persistence is present but not uniformly close to unity across countries. In Germany (0.8764, $p = 0.017$) and the Netherlands (0.9480, $p = 0.001$), the coefficient on lagged real consumption is positive, statistically significant, and relatively high, suggesting strong intertemporal dependence in consumption behavior. In the Dutch case, the coefficient approaches unity, supporting a martingale-like interpretation consistent with consumption smoothing and substantial path dependence. Germany also exhibits significant persistence, though moderately below unity, implying smoothing behavior with some mean-reverting adjustment.

By contrast, France and Italy display low and statistically insignificant coefficients on lagged consumption. This weak persistence suggests that consumption in these economies is less consistent with martingale-like smoothing over the long sample period. Instead, consumption dynamics appear more volatile and less anchored to past expenditure, indicating structural or institutional differences in household adjustment mechanisms.

Second, the borrowing channel does not emerge as statistically significant in any of the

four countries over the 1980–2025 period. Although the borrowing coefficients are positive in France and Italy, and near zero in Germany and the Netherlands, none are statistically distinguishable from zero. This finding implies that, over the long horizon considered, household debt does not systematically act as a stabilizing mechanism for real consumption. In other words, there is no robust empirical support for the hypothesis that borrowing persistently offsets distributive pressures on wages across these economies.

Taken together, the extended-period results suggest that consumption smoothing is partially supported — particularly in Germany and the Netherlands — but the debt-financed stabilization hypothesis receives limited empirical confirmation. The absence of a significant borrowing effect indicates that, over the long run, household consumption in these Eurozone economies is primarily driven by internal persistence rather than sustained leverage expansion. Thus, in response to RQ2, the evidence points toward structural consumption inertia rather than systematic debt-led demand stabilization, with financial fragility playing a more limited macroeconomic role over the full 1980–2025 period than in shorter, more recent samples.

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