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Investment, income distribution, and growth regimes in Brazil: a post-Keynesian empirical analysis

Carlos Gilbert Conte Filho1 | carlos.conte@ufrgs.br |
ORCID: 0000-0003-3753-9723

[1]Universidade Federal do Rio Grande do Sul, Departamento de Economia e Relações Internacionais, Porto Alegre, RS, Brazil

ABSTRACT: This study investigates the determinants of investment rate in Brazil over the period 1995-2019, drawing on the post-Keynesian approach proposed by Bhaduri and Marglin (1990). Using annual time-series data and Vector Autoregressive (VAR) and Vector Error Correction Model (VECM) techniques, the results show that aggregate demand – proxied by GDP – exerts a positive and persistent influence on investment, confirming the relevance of accelerator-type mechanisms. Profitability displays only transitory effects, while the wage share has a more durable and increasingly significant impact, surpassing profits as a driver of investment in the long run. These findings indicate that Brazil's growth regime is hybrid, with wage-led features prevailing over profit-led dynamics. The evidence underscores the importance of redistributive and demand-oriented policies to foster capital accumulation and sustain long-term growth from a post-Keynesian perspective.

KEYWORDS: Investment; growth regimes; wage-led; profit-led.

JEL Classification: C22; E11; E12; E22.

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INTRODUCTION

Investment dynamics play a central role in economic growth, directly shaping productive capacity, employment, and long-term development. Despite its importance, the determinants of investment remain a core theoretical and empirical challenge. Conventional approaches, rooted in neoclassical theory, typically emphasize interest rates and savings availability. In contrast, post-Keynesian and Kaleckian traditions stress effective demand, income distribution, and uncertainty as fundamental drivers of investment decisions (López and Mott, 1999).

Within this framework, the analytical contribution of Bhaduri and Marglin (1990) is particularly influential. By explicitly incorporating aggregate demand, profitability, and the wage share into the investment function, their model allows for the identification of wage-led and profit-led growth regimes. In wage-led regimes, increases in labor income stimulate demand and investment through consumption effects, whereas in profit-led regimes investment is primarily driven by higher profit rates. Identifying the prevailing regime has direct implications for macroeconomic policy, especially in economies marked by inequality and structural volatility.

The Brazilian economy provides a relevant empirical setting for this analysis. Since the mid-1990s, Brazil

has experienced profound macroeconomic and institutional transformations, including stabilization after chronic inflation, changes in income distribution, increasing financialization, and pronounced investment cycles (Bielschowsky, 2012; Schneider, 2015). Over this period, investment has displayed high volatility and persistent weakness, raising questions about the relative roles of demand conditions, profitability, and distributive dynamics in shaping accumulation.

The objective of this article is to empirically investigate the determinants of investment in Brazil between 1995 and 2019 within a post-Keynesian/Kaleckian framework, drawing on the investment function proposed by Bhaduri and Marglin (1990). The analysis seeks to assess how aggregate demand, profitability, and functional income distribution jointly shape investment decisions in a structurally heterogeneous and demand-constrained economy. By employing annual time-series data and Vector Autoregressive and Vector Error Correction Model techniques, the study examines both the short-run dynamics and the long-run equilibrium relationships among investment, output, profit rate, and wage share. In doing so, the article aims to identify the prevailing growth regime in the Brazilian economy and to evaluate whether investment dynamics are primarily driven by profitability or by demand and distributive mechanisms, thereby contributing to the empirical debate on wage-led and profit-led accumulation regimes in emerging economies.

The article is organized as follows. Section 2 presents the theoretical framework based on post-Keynesian and Kaleckian approaches. Section 3 briefly outlines the macroeconomic context of Brazil during the period analyzed. Section 4 reviews the relevant empirical literature. Section 5 presents the econometric methodology and results. Section 6 concludes with policy implications.

THEORETICAL FRAMEWORK

Understanding investment decisions from the post-Keynesian and Kaleckian perspectives is essential for analyzing the macroeconomic dynamics of contemporary capitalist economies. Both approaches emphasize effective demand, functional income distribution, and business expectations as central determinants of investment (López and Mott, 1999). Within this tradition, the seminal contribution of Bhaduri and Marglin (1990) stands out. Their investment function – incorporating the profit rate, the level of economic activity, and the wage share – provides a coherent framework for the empirical identification of wage-led and profit-led growth regimes.

The post-keynesian theory

In contrast to the neoclassical view, which conceives investment as a function of the interest rate and the supply of savings, the post-Keynesian approach understands investment as driven by demand conditions, expectations, and realized profitability. This perspective rejects the notion of automatic adjustment toward full employment and instead views investment as an inherently unstable variable, shaped by subjective decisions under conditions of radical uncertainty. Savings adjust ex post to investment, rather than constraining it ex ante, reversing the logic of orthodox theory.

Post-Keynesian theory shares with Keynes the emphasis on effective demand as the fundamental determinant of output and employment but extends this insight to long-run growth dynamics. It systematically incorporates monetary and financial factors, institutional structures, and historical time, allowing the economy to persist in states of underutilized capacity (Aboobaker, 2025; Lavoie, 1994, 2006b; Klagsbrunn, 1996). Unlike conventional Keynesianism, often confined to short-run stabilization, the post-Keynesian framework offers a dynamic and institutionally grounded theory of growth.

A key innovation of post-Keynesian theory is the incorporation of endogenous money and bank credit into the investment process. Banks create money through credit provision, enabling investment to precede savings. In this context, the interest rate is institutionally determined and plays a secondary role in investment decisions, which are instead driven by capacity utilization, realized profits, and demand expectations (Lavoie, 2006a, 2016).

Post-Keynesians also develop a broader investment function that goes beyond Keynes's marginal effi-

ciency of capital, incorporating factors such as idle capacity, past profitability, market structure, and income distribution. Investment is thus understood as a multi-causal and historically contingent process rather than a mechanical response to expected returns (Lavoie, 2006a; Shaikh, 2009).

The principle of induced investment occupies a central place in this framework. Expansions in demand lead firms to increase productive capacity, generating cumulative processes in which investment, income, and consumption reinforce one another. This circular causation, emphasized by Kalecki, Kaldor, and Harrod, explains both sustained growth trajectories and prolonged downturns (Fonseca and Araújo, 2025).

Underlying these mechanisms is the rejection of rational expectations and self-regulating markets. Influenced by Keynes, Shackle, Joan Robinson, and Skidelsky, post-Keynesians emphasize non-probabilistic uncertainty, conventions, and animal spirits as key determinants of investment decisions (Brady, 2021; Skidelsky, 2011; Stockhammer, 1999). In this setting, the state plays a central role not only as a countercyclical agent but also as a coordinator of expectations and a stabilizer of long-term growth dynamics.

The Kaleckian approach

The Kaleckian approach complements post-Keynesian theory by emphasizing market structure and functional income distribution. Kalecki rejects the neoclassical assumption of perfect competition and marginal productivity pricing, arguing instead that firms operate under oligopolistic conditions and set prices as a mark-up over costs. As a result, the profit rate becomes endogenous to market structure and distributive conflict rather than determined by technology.

Kaleckian theory shares the post-Keynesian emphasis on effective demand but places greater analytical weight on the relationship among wages, profits, and investment incentives. Variations in the wage share directly affect consumption demand and profitability, generating a fundamental tension: higher wages tend to stimulate consumption but may compress profits, while a higher profit share may encourage investment at the cost of weaker demand (López and Mott, 1986; Possas, 1999; Skott, 2012).

This tension underlies the formulation of wage-led and profit-led growth regimes. In wage-led regimes, demand effects dominate and increases in the wage share stimulate investment and growth. In profit-led regimes, investment responds primarily to profitability, even if consumption demand weakens.

Subsequent contributions show that the prevailing regime depends on structural characteristics such as trade openness, export orientation, labor market institutions, and the composition of demand (Blecker, 2016; Hein and Vogel, 2007; Hein and Tarassow, 2010; Onaran and Galanis, 2014; Onaran *et al.*, 2011; Stockhammer, 2006). Even in profit-led economies, moderate redistribution combined with active fiscal policy may have expansionary effects (Onaran *et al.*, 2011). While post-Keynesians emphasize radical uncertainty, endogenous money, and expectations coordination, Kaleckians focus more explicitly on market power, distributive conflict, and realized profit rates as guides to investment under competitive rivalry (Rochon *et al.*, 2021; Shaikh, 2016; Stockhammer, 2008). Despite these differences, both approaches converge in rejecting the neoclassical representation of investment as a technical function of interest rates and savings. Instead, they view investment as a strategic decision shaped by demand conditions, distributive dynamics, expectations, and institutional structures, providing a more appropriate framework for analyzing investment behavior in economies characterized by instability, inequality, and persistent demand constraints (Shaikh and Tonak, 1996).

The Bhaduri and Marglin investment equation

Within this analytical tradition, the investment function proposed by Bhaduri and Marglin (1990) provides a formal link between theory and empirics. Investment is modeled as a function of aggregate demand, profitability, and the functional distribution of income, allowing demand effects, profit incentives, and distributive dynamics to interact in a coherent framework. Formally, the investment function can be written as:

$$I_t = \alpha Y_t + \beta \pi_t + \gamma \omega_t$$

where I_t denotes investment, Y_t represents aggregate demand or output, π_t is the profit rate, and $\omega_t = \frac{W_t}{Y_t}$ corresponds to the wage share in national income. The parameters α, β, and γ capture the sensitivity of investment to demand conditions, profitability, and income distribution, respectively.

The key insight of this formulation is that the impact of income distribution on investment is theoretically ambiguous and depends on the relative strength of demand and profitability channels. In wage-led regimes, a higher wage share stimulates investment indirectly by boosting consumption and aggregate demand. In profit-led regimes, investment responds primarily to increases in profitability, even if higher profit shares dampen consumption demand (Bhaduri and Marglin, 1990).

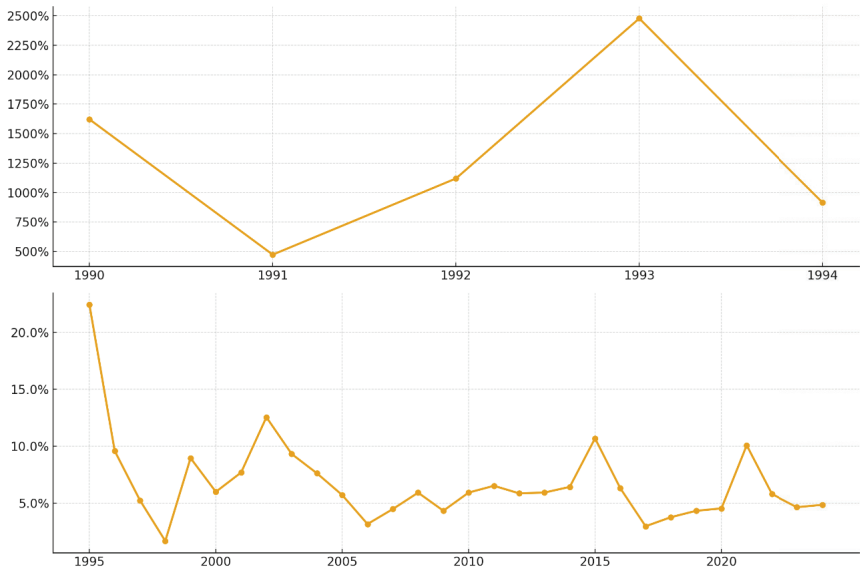
By jointly incorporating demand, distribution, and profitability, this investment function provides a direct theoretical foundation for the empirical strategy adopted in this article. It allows the estimation of dynamic responses of investment to distributive and demand shocks and supports the identification of the prevailing growth regime in the Brazilian economy.

MACROECONOMIC PERFORMANCE AND STRUCTURAL DYNAMICS OF THE BRAZILIAN ECONOMY (1995-2019)

In the second half of the 1990s – after a long period of macroeconomic instability marked by chronic inflation and repeated stabilization failures – the Brazilian economy entered a phase of relative macroeconomic stability. This change was driven by the implementation of the Real Plan in 1994, which managed to contain inflation and establish a new monetary regime. The post-stabilization environment, however, was characterized by persistently high real interest rates and recurring interruptions in economic growth, factors that constrained aggregate demand and limited the recovery of investment for much of the period (Giambiagi, 2011).

Figure 1 illustrates the sharp and sustained fall in inflation after the Real Plan, providing empirical support for choosing 1995 as the starting point of the analysis. Although price stability represented an important institutional achievement, it was pursued through a policy combination heavily dependent on restrictive monetary policy and fiscal restraint. This strategy contributed to modest growth performance and increased macroeconomic volatility during the second half of the 1990s. As a result, between 1995 and 2019, average GDP growth remained relatively low, at approximately 2.36% per year.

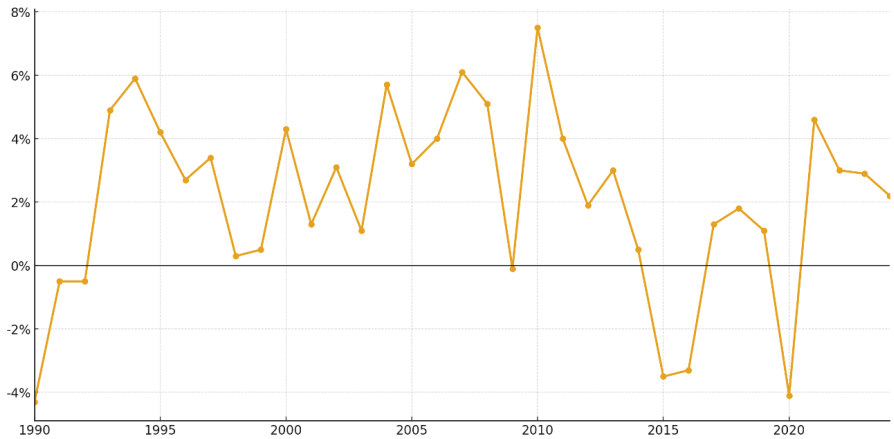
Figure 1: Evolution of the IPCA between 1990 and 2024 (%)



Source: IBGE (2026).

The implications of this growth pattern become clearer when we examine the broader evolution of economic activity. Figure 2 summarizes the main growth cycles of the Brazilian economy throughout the period, highlighting the acceleration observed in the mid-2000s, the sharp interruption caused by the 2008 global financial crisis, and the subsequent slowdown in the early 2010s. Although the 2008 crisis did not immediately reverse the distributive and demand-driven dynamics that had sustained the growth of the Brazilian economy in the previous decade, it marked the beginning of a more fragile trajectory, characterized by increasing volatility and a decline in the pace of investment.

Figure 2: Evolution of Brazil's GDP (1990-2024), annual variation in %



Source: IBGE (2026).

Analyzing the Brazilian macroeconomic trajectory after 1994, it is observed that, during the government of Fernando Henrique Cardoso (1995-2002), economic policy was mainly oriented towards price stabilization, fiscal consolidation, and the implementation of institutional reforms. Large-scale privatizations and the enactment of the Fiscal Responsibility Law in 2000 strengthened fiscal discipline and increased the credibility of economic policy at the federal and subnational levels (Arraes and Matias-Pereira, 2024; Teles and Dias, 2022). Despite these institutional advances, economic performance remained relatively modest. The combination of high real interest rates, external vulnerability, and constraints imposed by macroeconomic policy limited the expansion of aggregate demand and inhibited the recovery of investment. As a result, gross fixed capital formation remained at historically low levels, while the share of wages in income remained compressed, reinforcing a pattern of weak growth strongly conditioned by demand constraints.

From the early 2000s, Brazil experienced a more favorable growth cycle, particularly during Lula's government (2003-2010). This period combined a favorable external environment – mainly high commodity prices – with a sustained expansion of domestic demand. Policies aimed at income redistribution, credit expansion, and real increases in the minimum wage strengthened household consumption and improved income distribution, with the Bolsa Família program playing a central role (Campello and Neri, 2014). This demand-side dynamic was accompanied by a recovery in investment and profitability. Public investment also gained relevance through initiatives such as the Growth Acceleration Program (PAC), which sought to alleviate infrastructure bottlenecks and attract investment (Da Silva *et al.*, 2016).

Economic performance deteriorated sharply during Dilma Rousseff's government (2011-2016). Faced with the slowdown in growth observed from 2011 onwards, the government adopted the so-called New Macroeconomic Policy Matrix, which combined interest rate reductions, expansion of subsidized credit, tax exemptions, currency depreciation, and selective industrial policies aiming at stimulating investment and industrial activity (Bastos, 2017). Despite these initiatives, the results were limited. The combination of increasing uncertainty, deterioration of business expectations, weakening of the fiscal framework, and loss of coordination in macroeconomic policy compromised the effectiveness of these measures.

From 2014 onwards, these factors contributed to a sharp collapse in investment, aggravated by political and institutional shocks that intensified uncertainty and reduced the confidence of economic agents. The result was a deep recession in 2015-2016, characterized by a severe contraction in capital formation, a fall in profitability, and a generalized deterioration of macroeconomic conditions. This episode marked a significant inflection point in the growth trajectory of the Brazilian economy, with persistent effects on investment and distributional dynamics in subsequent years.

The period from 2017 to 2019 was characterized by a weak and uneven recovery. Institutional changes, including the introduction of a constitutional spending cap and labor market reforms, sought to restore fiscal credibility but also restricted the scope of expansionary fiscal policy. Investment recovered only gradually and remained below pre-crisis levels, while income distribution deteriorated, with a decrease in the share of wages in income and an increase in labor market precarization (Dweck *et al.*, 2020).

The COVID-19 pandemic further exposed the structural weaknesses of the Brazilian economy. Emergency fiscal measures played a significant role in temporarily sustaining aggregate demand and mitigating the immediate effects of the crisis on income and employment. However, this episode also highlighted the tension between the adoption of countercyclical policies and fiscal constraints in a context marked by weak investment dynamics and high macroeconomic uncertainty (Correia *et al.*, 2020). Although the pandemic is outside the period analyzed in this study, its effects reinforce the interpretation that structural limitations to investment precede exceptional shocks and condition the economy's recovery capacity.

Overall, between 1995 and 2019, the Brazilian economy exhibited pronounced investment volatility, recurrent growth interruptions, and significant distributive shifts. Persistent demand constraints, fluctuating profitability, and changes in income distribution constitute the macroeconomic backdrop against which investment decisions were formed, reinforcing the relevance of a post-Keynesian/Kaleckian framework for analyzing investment dynamics in Brazil.

EMPIRICAL STUDIES ON INVESTMENT AND GROWTH REGIMES

The post-Keynesian and Kaleckian approaches to investment have been widely tested in different national and international contexts. Empirical studies typically estimate investment functions inspired by Bhaduri and Marglin (1990), incorporating variables such as aggregate demand (output or capacity utilization), profitability, and functional income distribution. A variety of econometric methods have been employed, including Vector Autoregressive (VAR) and Vector Error Correction Models (VECM), Autoregressive Distributed Lag (ARDL) models, Generalized Method of Moments (GMM), and panel regressions.

Early macroeconometric evidence for advanced economies is provided by Stockhammer (2008), who estimate a post-Keynesian model for the Eurozone and find that higher wage shares stimulate consumption and aggregate demand, outweighing negative effects on investment and net exports. Their results characterize the Eurozone as predominantly wage-led. Extending this analysis to a global setting, Onaran and Galanis (2013) estimate a multi-country aggregate demand model and show that most advanced economies are wage-led at the domestic level, while small and open economies may display profit-led features. Importantly, they argue that coordinated wage-led policies can generate expansionary effects at the global level.

Firm-level and sectoral studies emphasize the role of profitability and financialization in shaping investment behavior. Using panel data for U.S. firms, Orhangazi (2008) shows that rising dividend payments, interest expenses, and financial asset holdings reduce productive investment, indicating that financialization weakens the traditional link between profits and accumulation. Similar conclusions are reached in studies focusing on emerging economies. For India's organized manufacturing sector, Basu and Das (2016) find that profitability and capacity utilization positively affect investment in both the short and long run, although distributive variables also play a relevant role.

For Brazil, empirical evidence points to mixed but predominantly demand-led dynamics. Using aggregate demand decompositions, Carvalho and Rugitsky (2015) show that consumption in Brazil during the 2000s was driven by wage-led mechanisms, while investment remained sensitive to profitability and external shocks. Employing VAR and VECM techniques with quarterly data, Santos *et al.* (2016) find that commod-

ity prices play an important role in stimulating investment, whereas exchange rate depreciation and distributive variables exert weaker effects.

Long-run time-series analyses reinforce the relevance of wage-led dynamics in the Brazilian case. Tomio (2020), using data from 1956 to 2008, identifies a wage-led growth regime, in which increases in the wage share raise aggregate demand despite potential negative effects on profitability. Similarly, Avritzer *et al.* (2021) find that the wage share positively affects output and investment in the short run, although long-term growth is driven by autonomous demand components, consistent with supermultiplier-type mechanisms.

More recent microeconometric evidence confirms the importance of profitability and demand while highlighting the constraining role of financialization. Using firm-level panel data for Brazil between 2007 and 2017, Meyer and Paula (2023) show that the profit rate and capacity utilization stimulate investment, whereas financial costs and financial asset accumulation exert negative effects. Their results suggest that, although profitability matters, the allocation of profits toward financial activities limits productive accumulation.

Overall, the empirical literature indicates that investment is influenced by both demand conditions and profitability, with the relative importance of each channel depending on structural characteristics, external constraints, and institutional settings. In the Brazilian case, existing evidence suggests the coexistence of wage-led and profit-led elements over time, with a strong role played by aggregate demand, commodity cycles, and financialization. This mixed evidence motivates the empirical analysis developed in this article, which applies the investment function proposed by Bhaduri and Marglin (1990) to Brazilian data from 1995 to 2019, allowing demand, profitability, and distributive effects on investment to be jointly assessed within a unified analytical framework and enabling the identification of the prevailing growth regime.

EMPIRICAL ANALYSIS

This section empirically investigates the determinants of the investment rate in Brazil based on the investment function proposed by Bhaduri and Marglin (1990). Using annual time-series data, the analysis examines the effects of aggregate demand, profitability, and income distribution on investment over the period from 1995 to 2019. The starting point is justified by the implementation of the Real Plan in 1994, which inaugurated a phase of greater macroeconomic stability and provided a consistent framework for analyzing investment dynamics. The sample ends in 2019 to avoid distortions associated with the extraordinary economic shocks triggered by the COVID-19 pandemic.

The investment rate is measured by gross fixed capital formation as a proportion of GDP, while aggregate demand is proxied by real GDP. Profitability is measured according to the classical-Marxian tradition as the ratio of net profits to the net stock of non-residential fixed capital. The wage share corresponds to the share of labor remuneration in GDP. These variables, along with their expected signs and data sources, are presented in Table 1, while the full set of time series is reported in the Appendix.

Table 1: Variables, expected signs, and data sources

Variable	Description	Expected sign	Data
I	Gross Fixed Capital Formation as a proportion of GDP (investment rate)	–	Instituto Brasileiro de Geografia e Estatística
Y	Gross Domestic Product	Positive	Instituto Brasileiro de Geografia e Estatística
π	Profit rate	Indeterminate	Instituto de Pesquisa Econômica Aplicada; Instituto Brasileiro de Geografia e Estatística
ω	Wage share as a proportion of GDP	Indeterminate	Marquetti et al. (2022)

Source: Elaborated by the author with results obtained using the EViews 12 software application (2026).

Before estimating the model, standard unit root tests were applied to assess the stochastic properties of the series. Augmented Dickey-Fuller and Phillips-Perron tests indicate that investment, profitability, and the wage share are integrated of order one, whereas output is stationary in levels. These results are reported in Table 2.

Table 2: Unit root test on the variables

Variable	ADF test	PP test	Order of integration
I	-2.800603 (-3.020686)	-1.624771 (-2.991878)	I(1)
D(I)	-3.777532 (-2.998064)	-3.777532 (-2.998064)	
Y	-3.486268 (-2.991878)	-3.486268 (-2.991878)	I(0)
π	-2.500245 (-3.012363)	-2.277125 (-2.991878)	I(1)
D(π)	-5.010631 (-3.004861)	-2.277125 (-5.266178)	
ω	-0.918449 (-2.991878)	-1.577545 (-2.960411)	I(1)
D(ω)	-4.520725 (-2.998064)	-0.952622 (-2.991878)	

Source: Elaborated by the author with results obtained using the EViews 12 software application (2026).
Note: Values in parentheses indicate the critical value at the 5% significance level (H_0 = unit root).

The empirical strategy is based on a VAR model, which treats all variables as endogenous and avoids imposing *a priori* restrictions on the causal order. Given the combination of integration orders (I(1) and I(0)), cointegration tests are necessary to verify whether investment, demand, profitability, and income distribution share a stable long-term relationship. This approach is particularly consistent with post-Keynesian and Kaleckian theory, in which investment, demand, and distribution interact through feedback mechanisms, rather than unidirectional causality. The information criteria indicate that a VAR with two lags offers the best balance between parsimony and explanatory power, as shown in Table 3.

Table 3: Number of ideal lags to be included in the VAR

Lag	LR	FPE	AIC	SC	HQ
0	NA	3.51e-16	-24.23547	-24.03652	-24.19230
1	69.17869	2.21e-17	-27.03533	-26.04055	-26.81944
2	28.05456*	2.69e-18*	-29.94228*	-27.35585*	-29.38096*
3	29.37300	1.07e-17	-27.95927	-26.16866	-27.57067

Source: Elaborated by the author with results obtained using the EViews 12 software application (2026).

Johansen cointegration tests reject the null hypothesis of no cointegration, pointing to the existence of at least one cointegrating vector among investment, output, profitability, and wage share. This finding indicates that, although these variables may diverge in the short run, they are tied together by a stable long-run equilibrium relationship. The cointegration test results are presented in Table 4.

Table 4: Johansen cointegration tests

Test Type	No Intercept	Intercept	Intercept	Intercept	Intercept
	No Trend	No Trend	No Trend	Trend	Trend
Trace	2	3	4	2	2
Maximum Eigenvalue	1	3	4	2	2

Source: Elaborated by the author with results obtained using the EViews 12 software application (2026).

The adequacy and stability of the model were evaluated through additional diagnostic tests. Granger exogeneity tests indicate that investment responds contemporaneously to shocks in output, income distribution, and profitability (in that order). The results are presented in Table 5.

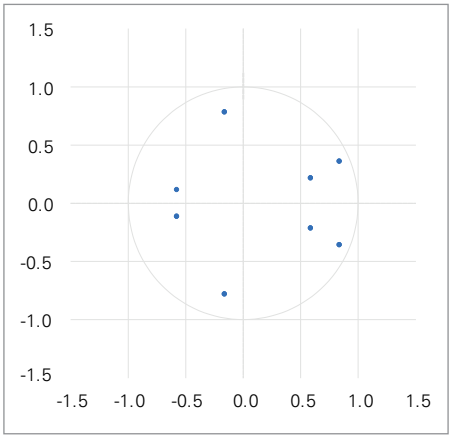
Table 5: VAR Granger block exogeneity test

Variable	Chi-squared	Probability
I	4.610104	0.5947
Y	11.16183	0.0835
π	20.51514	0.0022
ω	18.29660	0.0055

Source: Elaborated by the author with results obtained using the EViews 12 software application (2026).

According to Figure 3, the stability condition of the VAR is satisfied, since all the inverse roots of the characteristic polynomial are inside the unit circle, indicating that the estimated dynamics are stable, and that the impulse response analysis is valid.

Figure 3: Inverted polynomial generated in VAR



Source: Elaborated by the author with results obtained using the EViews 12 software application (2026).

Residual diagnostic tests further confirm that the errors are normally distributed, homoscedastic, and free from serial correlation, ensuring the reliability of statistical inference. The results of these tests are summarized in Table 6.

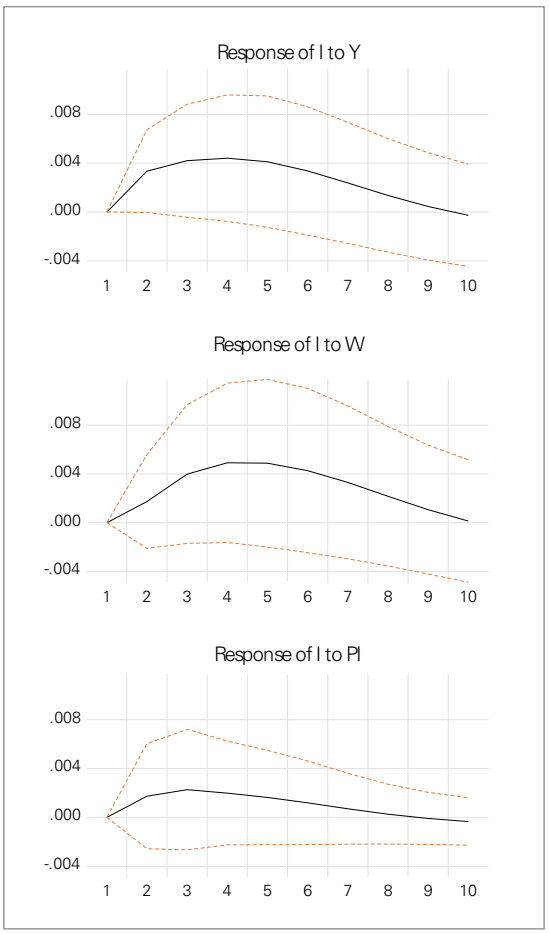
Table 6: Residual tests

VAR Residual Normality Test (Jarque-Bera)	Heteroskedasticity (Breusch-Pagan-Godfrey)	Serial correlation (LM) – lag 2
5.187043	153.2862	1.320292
(0.7374)	(0.6343)	(0.2791)

Source: Elaborated by the author with results obtained using the EViews 12 software application (2026).
Note: The null hypothesis of the residual tests (normality, heteroskedasticity, and serial correlation) indicates that the residuals are normally distributed, homoscedastic, and free from serial correlation, respectively. The values in parentheses indicate the probability of accepting the null hypothesis.

The dynamic interactions among the variables are examined through impulse-response functions (IRF) estimated over a ten-period horizon. IRF analysis reveals a clear hierarchy of effects. A positive shock to aggregate demand generates a strong and persistent increase in investment, confirming the relevance of accel-

Figure 4: Impulse-Response Function in Investment (I)



Source: Elaborated by the author with results obtained using the EViews 12 software application (2026).

erator-type mechanisms emphasized in post-Keynesian theory. This response indicates that firms adjust investment primarily in reaction to realized and expected demand conditions, reinforcing the notion of investment as a demand-induced and demand-driven process. Shocks to profitability also produce a positive investment response; however, this effect is comparatively shorter-lived and dissipates relatively quickly, suggesting that profitability alone is insufficient to sustain higher levels of investment over time. In contrast, shocks to the wage share lead to a more persistent positive investment response, indicating that distributional changes favoring labor income stimulate accumulation indirectly through higher consumption, greater utilization of productive capacity, and improved demand expectations. These dynamic responses are illustrated in Figure 4.

The VECM estimates provide additional information on the long-run dynamics of the investment rate. The estimated error-correction term is negative and statistically significant, indicating that deviations of investment from its long-run equilibrium are corrected relatively quickly, with approximately 92% of the disequilibrium adjusted in each period. This result confirms the existence of a stable long-term relationship linking investment, aggregate demand, profitability, and income distribution.

While the short-run coefficients capture the adjustment dynamics associated with past changes in output, profitability, and the wage share, long-run investment behavior is dominated by the equilibrium relationship summarized in the cointegrating vector. It should be noted that the negative sign of the coefficients in the error-correction equation reflects the speed and direction of adjustment toward the long-run equilibrium, rather than a negative marginal effect of output or the wage share on the investment rate. The estimated long-run coefficients and the error-correction term are reported in Table 7.

Table 7: Error correction vector and estimated coefficients for the long run

Variable	Estimated coefficient	p-value
Cointegrating equation	-0.9210	0.0232a
I(-1)	-0.4807	0.3317
I(-2)	0.2846	0.4782
Y(-1)	-0.5390	0.0948b
Y(-2)	-0.4052	0.0628b
ω(-1)	-0.4596	0.5047
ω(-2)	-1.6838	0.0528b
π(-1)	-0.8841	0.5092
π(-2)	-2.3334	0.0976b
Coefficient of Determination	0.528225	

Source: Elaborated by the author with results obtained using the EViews 12 software application (2026).
Notes: The variable significance test assumes as the null hypothesis (H0) that the estimated coefficient is not statistically significant. The letter "a" indicates that the estimated coefficient is significant at the 5% level. The letter "b" indicates that the estimated coefficient is significant at the 10% level.

Variance decomposition analysis complements the impulse-response results by quantifying the relative importance of each variable in explaining fluctuations in investment over time. As shown in Table 8, investment innovations account for a substantial share of their own variance, reflecting the inertial and path-dependent nature of capital accumulation. Among the explanatory variables, aggregate demand and wage share become increasingly important sources of investment variability as the time horizon expands, whereas profitability plays a comparatively smaller role. This pattern reinforces the interpretation of a demand-led ac-

cumulation regime in which distributive dynamics influence investment mainly through their effects on consumption and demand rather than through a direct profitability channel.

Table 8: Decomposition of investment variance

Period	I	Y	ω	π
1	100.0000	0.000000	0.000000	0.000000
2	98.16008	0.486833	0.209988	1.143096
3	96.10550	1.481349	1.378030	1.035121
4	92.66497	3.121086	3.301677	0.912269
5	87.40388	5.580411	5.977595	1.038116
6	83.01753	7.721942	7.685813	1.574718
7	80.40139	8.725852	8.266272	2.606489
8	79.45269	8.873451	7.979619	3.694236
9	79.22010	8.629779	7.773387	4.376738
10	78.76958	8.402932	8.131049	4.696436

Source: Elaborated by the author with results obtained using the EViews 12 software application (2026).

As shown in Table 8, after ten periods the contribution of the wage share to the variance of the investment rate (8.13%) exceeds that of profitability (4.69%). This result indicates that, over longer horizons, distributive dynamics associated with labor income play a more prominent role in explaining fluctuations in investment than profit-related factors.

Taken together, the empirical evidence suggests that the investment rate in Brazil is predominantly driven by aggregate demand and income distribution. While profitability affects investment mainly through short-run adjustments, demand conditions and the wage share exert stronger and more persistent influences on investment dynamics. This pattern is consistent with a demand-led accumulation process exhibiting wage-led features, in line with the post-Keynesian/Kaleckian framework and the investment function proposed by Bhaduri and Marglin (1990).

FINAL REMARKS

This article investigated the determinants of the investment rate in Brazil between 1995 and 2019 from a post-Keynesian/Kaleckian perspective, drawing on the investment function proposed by Bhaduri and Marglin (1990). By jointly considering aggregate demand, profitability, and functional income distribution within a unified empirical framework, the study aimed to identify the prevailing accumulation regime and assess the relative importance of demand-side and distributive mechanisms in shaping investment dynamics.

The empirical results provide robust evidence that the investment rate in Brazil is predominantly demand-driven. Aggregate demand exerts a strong and persistent influence on investment, confirming the relevance of accelerator-type mechanisms. Profitability affects investment mainly in the short run, indicating that profit incentives alone are insufficient to sustain accumulation in the absence of expanding demand. Income distribution also plays a central role, as increases in wage share generate positive and persistent effects on investment through consumption, capacity utilization, and demand expectations.

Taken together, these findings characterize the Brazilian economy during the period analyzed as operating under a demand-led accumulation regime with wage-led features. While profit-led elements are not absent, the dominant mechanism linking distribution and investment operates through aggregate demand

rather than direct profitability effects. This result reinforces the analytical relevance of the Bhaduri-Marglin framework for understanding investment behavior in demand-constrained economies.

From a broader perspective, the results challenge the neoclassical view that investment is primarily governed by interest rates or savings availability. Instead, investment decisions are shaped by effective demand, distributive dynamics, and realized profitability under conditions of fundamental uncertainty and endogenous finance. In this sense, the Brazilian case illustrates how post-Keynesian and Kaleckian mechanisms operate in practice.

The findings carry important policy implications. Strategies focused exclusively on restoring profitability through wage compression or fiscal retrenchment are unlikely to generate sustained investment growth. By contrast, policies that strengthen aggregate demand and improve income distribution – such as real wage growth, income transfers, and public investment – can foster a more favorable environment for accumulation, with public investment also playing a potential crowding-in role.

Finally, future research could deepen the analysis of the instability of growth regimes over time, examining possible transitions between wage-led and profit-led regimes in response to institutional, macroeconomic, or political changes. The explicit incorporation of external constraints, the exchange rate, and the role of the state in coordinating demand and investment could contribute to a more comprehensive understanding of the dynamics of accumulation in emerging economies such as Brazil.

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AUTHOR BIOGRAPHIES
Carlos Gilbert Conte Filho is professor in the Economics Department at Universidade Federal do Rio Grande do Sul, Porto Alegre/RS, Brazil.

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The authors have no conflicts of interest to declare.

DATA AVAILABILITY
The full dataset that supports the conclusions of this study is presented in the Appendix of this article.

AUTHORS' CONTRIBUTION
Carlos Gilbert Conte Filho: Conceptualization; Data curation; Formal analysis; funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Writing – original draft; Writing – proofreading, and editing.

APPENDIX

	Gross Fixed Capital Formation (% GDP)	GDP (Y)	Profit rate π	Wage share ω
1995	20.29%	4.22%	11.67%	55.28%
1996	18.64%	2.21%	12.07%	55.09%
1997	19.12%	3.39%	13.09%	53.20%
1998	18.54%	0.34%	12.59%	53.99%
1999	17.02%	0.47%	12.92%	52.79%
2000	18.30%	4.39%	13.30%	50.82%
2001	18.42%	1.39%	12.60%	51.24%
2002	17.93%	3.05%	12.63%	50.49%
2003	16.60%	1.14%	12.98%	50.27%
2004	17.32%	5.76%	13.46%	49.29%
2005	17.06%	3.20%	13.12%	50.42%
2006	17.21%	3.96%	13.61%	50.93%
2007	18.00%	6.07%	14.30%	50.85%

continua

continuação

2008	19.39%	5.09%	13.90%	51.11%
2009	19.10%	-0.13%	12.68%	53.58%
2010	20.53%	7.53%	13.91%	52.24%
2011	20.61%	3.97%	13.96%	53.02%
2012	20.72%	1.92%	12.80%	54.43%
2013	20.91%	3.00%	12.74%	55.23%
2014	19.87%	0.50%	12.45%	55.78%
2015	17.84%	-3.55%	10.76%	57.93%
2016	15.52%	-3.28%	10.96%	58.19%
2017	14.56%	1.32%	11.78%	57.24%
2018	15.10%	1.78%	12.08%	56.53%
2019	15.47%	1.22%	12.60%	56.08%

Source: Elaborated by the author with results obtained using the EViews 12 software application (2026).