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Wage share and labor productivity: empirical evidence from OECD countries

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Abstract

This paper empirically examines the relationship between functional income distribution and labor productivity. In particular, it tests the hypothesis that a higher wage share promotes productivity growth by pushing firms to invest and innovate in order to preserve profit margins. Using panel data for OECD countries, the results provide strong support for this mechanism: increases in the wage share are associated with significantly higher labor productivity growth. The magnitude of the effect suggests that the contraction of wage shares in many advanced economies may explain an important part of their recent productivity slowdown. The analysis further shows that this positive link operates primarily through capital deepening, consistent with the view that wage pressures incentivize investment in labor-saving technologies. By contrast, no robust relationship is found between the wage share and Total Factor Productivity.

JEL codes: C23 E25 D33 O30

Keywords: Labor productivity; Wage share; Productivity slowdown; Capital deepening; Induced technical change

1 Introduction

Revitalizing sluggish labor productivity dynamics has become a key priority for policymakers across many countries. The persistent slowdown in productivity over recent decades has raised concerns about long-term economic performance, social welfare, and growth potential in several economic areas, including Europe (Draghi, 2024).

The deceleration in productivity growth has been widely debated in the literature, with numerous explanations proposed (Cusolito and Maloney, 2018; Goldin et al., 2024). Some scholars argue that the slowdown may be largely illusory, resulting from difficulties in accurately measuring GDP, welfare, and thus productivity in an economy increasingly shaped by digital and ICT-related activities (Brynjolfsson and McAfee, 2011; Brynjolfsson et al., 2014; Mokyr, 2014). An alternative influential theory points to the diminishing opportunities for innovation (Gordon, 2015, 2017). According to this view, the most transformative innovations, the so–called 'low hanging fruit', have already been harvested, making radical technological breakthroughs increasingly rare (Bloom et al., 2020).

Another line of explanation emphasizes structural changes in the economy, particularly the reallocation of resources toward sectors with inherently lower productivity or slower productivity growth (Baumol, 1967; Nordhaus et al., 1972; Nordhaus, 2008; Duarte and Restuccia, 2010; McMillan and Rodrik, 2011). Others interpret the slowdown as a reversion to historical norms, following the exceptionally high productivity growth of the post–World War II decades, which largely reflected temporary adjustments rather than a permanent shift in long-term growth trends (Gordon, 2015). More recent contributions have pointed to declining business dynamism, weaker competition, and rising market concentration (e.g., Decker et al., 2016, 2017; Gutiérrez and Philippon, 2017; Syverson, 2019), as well as to labor market deregulation and the spread of temporary employment, especially in high-tech sectors where cumulative and tacit knowledge are crucial for innovation (Cetrulo et al., 2019; Pariboni and Tridico, 2020; Pianta and Reljic, 2022; Reljic et al., 2023; Kleinknecht et al., 2006, 2014; Kleinknecht, 2020).

In this paper, we explore an additional explanation for the productivity slowdown by examining its potential relationship with the functional income distribution. Specifically, we investigate whether part of the productivity slowdown can be attributed to the consistent decline in the wage share observed in many countries since the 1970s. Several theoretical frameworks support this link, including: the classical Marxian perspective, which emphasizes how wage pressure can influence firms' investment decisions in labor-saving technologies (Michl, 1999; Foley et al., 2019); the induced innovation theory, which posits that the direction of technical change responds to the relative cost of production inputs (Hicks, 1932; Kennedy, 1964; Acemoglu, 2002); and the efficiency wage theory, which suggests that higher wages may increase workers' effort, motivation, and commitment, thereby enhancing productivity (Shapiro and Stiglitz, 1984; Akerlof and Yellen, 1986).

To test our research hypothesis, we estimate a dynamic panel model using data from 26 OECD countries over the period 1970–2019. The results suggest that higher levels of the wage share are associated with faster labor productivity growth, supporting the hypothesis that the decrease in the wage share may have contributed to the slowdown of productivity. To investigate the underlying mechanisms, we build on the traditional productivity decomposition framework. The analysis reveals that the positive effect is entirely driven by capital deepening, with rising labor costs incentivizing firms to increase capital investment. By contrast, we find no significant relationship between the wage share and Total Factor Productivity (TFP).

The remainder of the paper is structured as follows. Section 2 reviews the literature on the relationship between productivity and wages. Section 3 describes the data and the empirical methodology. The main results are presented in section 4, while section 5 offers concluding remarks.

2 Linking functional income distribution to labor productivity

Technical change has long been a central topic in economic theory. Numerous economists have emphasized that sustained economic growth depends critically on an economy's ability to continuously innovate and improve its production processes (Schumpeter, 1912; Solow, 1956; Romer, 1986; Lucas Jr, 1988; Grossman and Helpman, 1991; Aghion and Howitt, 1992).

Scholars have increasingly shifted away from treating innovation and technological progress as exogenous forces, recognizing instead that they are shaped by prevailing socio-economic conditions, which influence both the pace and direction of technical change. In this perspective, several connections can be drawn between functional income distribution, technical change, and labor productivity dynamics.

In the Marxian perspective, strong wage pressures can incentivize firms to adopt labor-saving technologies and increase capital investment as a means to protect profit margins while simultaneously undermining workers' bargaining power (Michl, 1999; Foley, 2003; Tavani and Zamparelli, 2018; Foley et al., 2019). Within this perspective, labor-saving technical change functions as a "weapon" employed by the capitalist class to shape the distributive conflict (Marquetti, 2004; Stamegna, 2024b). In a similar vein, Paolo Sylos Labini's theory of productivity suggests that rising labor costs may prompt firms to enhance labor productivity through two main channels: by reorganizing production more efficiently (the organizational effect) or by investing in labor-saving capital (the Ricardian effect) (Sylos Labini, 1983, 1995).[1]

Hicks (1932) examined how changes in relative factor prices influence the direction of technical change, arguing that "a change in the relative prices of the factors of production is itself a spur to invention, and to invention of a particular kind – directed to economising the use of a factor which has become relatively expensive". Innovations are thus (at least) partly induced, as firms respond to shifts in relative factor costs by developing technologies that substitute for the now more expensive input. Kennedy (1964) formalized this insight in a model of profit-maximizing firms operating along an invention possibility frontier, which captures the trade-off between (exogenously available) capital- and labor-augmenting innovations. Within this framework, firms choose the point on the frontier that maximizes the rate of unit cost reduction – a decision shaped by relative factor prices. Consequently, the direction of technical change is influenced by the functional distribution of income, with labor and capital productivity growth positively associated with the wage and profit shares, respectively.

In recent years, several contributions have revitalized and further developed the theory of induced innovation, both within the neoclassical paradigm (Acemoglu, 2002, 2007, 2010; Funk, 2002) and through heterodox approaches (Duménil and Lévy, 1995, 2010; Foley, 2003; Julius, 2005; Tavani, 2012; Tavani and Zamparelli, 2015, 2021; Foley et al., 2019; Zamparelli, 2015, 2024). The framework has also attracted growing attention in the context of the green transition, with numerous studies supporting the notion that energy and carbon prices play a key role in shaping the development of green technologies (Popp, 2002; Foley, 2003; Johnstone et al., 2010; Acemoglu et al., 2012; Aghion et al., 2016; Grubb et al., 2021; Amendola et al., 2024b; Bastos et al., 2024; Dugoua and Gerarden, 2025).

[1] Empirically, Sylos Labini proposed and estimated various versions of the productivity equation. In some analyses, the two underlying channels are typically distinguished: the organizational effect is influenced by the ratio of wages to output prices, whereas the Ricardian effect depends on the ratio of wages to the price of machinery.

From an evolutionary perspective, several studies have highlighted the role of labor market institutions in shaping the process of creative destruction. The decentralization of wage bargaining—partly driven by the diffusion of non-standard forms of employment—puts downward pressure on wages, allowing technological laggards to remain competitive by relying on low labor costs rather than adopting innovative processes (Michie and Sheehan, 2003; Kleinknecht, 2020). By contrast, higher wages increase costs that disproportionately burden these laggards, forcing them either to innovate or to exit the market (Nelson and Winter, 1982).

Wage dynamics can also affect productivity indirectly through demand, in line with the Kaldor–Verdoorn law, which posits a stable long-run relationship whereby output growth drives productivity growth (Kaldor, 1957; Verdoorn, 1949). In this framework, market expansion becomes a necessary condition for activating the technological and organizational factors that sustain productivity improvements. These include incentives for adopting organizational innovations and improving input efficiency, changes in the sectoral composition of output and employment, and both static (stemming from indivisibilities in the production process) and dynamic (linked to innovation and learning-by-doing) economies of scale. Additionally, increased investment that incorporates technological progress also contributes to productivity growth (Antenucci et al., 2020; Deleidi et al., 2023). Since growth can be wage-led (Dammerer et al., 2025; Alcobia and Barradas, 2025), movement of the wage share can affect the productivity dynamic also through its impact on output.

From an empirical standpoint, numerous studies have highlighted the pivotal role of induced innovation dynamics in driving major technological revolutions over the centuries. For instance, Habakkuk (1962), through the well-known Habakkuk hypothesis, argued that the faster pace of labor-saving innovation in 19th-century United States compared to Britain was driven by the U.S.'s expansive territory and relatively scarce labor supply. Similarly, Allen (2009) demonstrated that Britain's unique combination of high industrial wages, cheap energy, and affordable capital spurred the innovations that ignited the Industrial Revolution. Along similar lines, Otojanov et al. (2023) showed that Britain's adoption of labor-saving technologies between 1700 and 1914 largely responded to shifts in relative factor prices.

Empirical evidence has also been gathered on the relationship between wages (or wage share) and labor productivity. Using cointegration and Granger-causality analyses, Marquetti (2004) found unidirectional causality from real wages to labor productivity in the United States. de Souza (2017) applied a panel error-correction model to manufacturing data, revealing cointegration and bidirectional long-run causality between real wages and labor-augmenting innovations. Employing a panel vector autoregressive model for OECD countries, Dávila-Fernández (2020) reported that positive shocks to the labor share relative to capital share led to increases in labor productivity growth. Fontanari and Palumbo (2023) argued that stagnant real wages contributed to the U .S. productivity slowdown, showing that high-productivity sectors experienced marked deceleration following distributional shifts against wages. Cruz (2023) found a positive bidirectional association between labor productivity and real wages across 25 OECD countries. Stamegna (2024a) analyzed the wage–productivity nexus at business cycle frequencies in the U.S., estimating SVAR models for the post-war era (1948–1984) and the Great Moderation (1985–2019), and found that positive wage shocks consistently boosted labor productivity. Finally, Angelone and Canale (2025), using an autoregressive distributed lag cointegration model for Italy, concluded that increases in the wage share led to higher labor productivity growth.

Further insights emerged from the Sylos Labini productivity framework, with several scholars verifying its explanatory power across different contexts (Guarini, 2007; Corsi and D'Ippoliti, 2013; Lucarelli et al., 2016; Carnevali et al., 2020; Fontanari and Palumbo, 2023; Fontanari, 2024).

3 Empirical framework

3.1 Productivity slowdown and wage share compression

The productivity slowdown that has affected advanced economies in recent decades is clearly visible in Figure 1, which reports the time series of labor productivity growth for the 26 countries included in the analysis, with productivity measured as GDP (in PPP) per hour worked.[2] Data, sourced form

[2]Countries included: Australia, Austria, Belgium, Canada, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, the United Kingdom, and the United States. The panel is unbalanced, as some countries have shorter time spans.

OECD, reveal that labor productivity growth has declined by approximately 0.07 percentage points per year, on average, over the last decades (Cette et al., 2016; Syverson, 2017; Erber et al., 2017). For instance, between 1970 and 1985, labor productivity grew by about 3% annually in Germany, 3.7% in France, and 4% in Japan. In contrast, over the past 15 years, growth in these countries has fallen to around 0.7–0.8% per year. In the United States, the decline has been less pronounced, with growth dropping by about 0.2 percentage points from an average of 1.4% per year. Nevertheless, compared with the decade preceding the global financial crisis – a period of renewed productivity growth largely driven by the ICT boom – the slowdown exceeds 1 percentage point. Table 1 further corroborates this declining trend in labor productivity growth.

Over the same period, the compression of the wage share has also been particularly pronounced (Karabarbounis and Neiman, 2013; Guerriero, 2019). For instance, the wage share declined by about 3 percentage points in Germany, 5 in France, 7 in Italy, and 12 in Japan (see Figure 1).[3] The literature has largely attributed these dynamics to several factors, including: technological change and capital deepening (e.g., Acemoglu, 2003; Brynjolfsson et al., 2014; Karabarbounis and Neiman, 2013), trade and globalization (e.g., Harrison, 2005; Young and Tackett, 2018), market structure and rising monopolization (e.g., Barkai, 2020; Autor et al., 2020), and labor market institutions (e.g., Bentolila and Saint-Paul, 2003; Ciminelli et al., 2020; Amendola et al., 2024a). A partial reversal of the wage share decline has been observed in the aftermath of the global financial crisis, consistent with the positive coefficient on the squared time term reported in Table 1.

3.2 The econometric approach

The aim of this paper is to examine whether causal links exist between these two phenomena. Specifically, our goal is to determine whether at least part of the slowdown in labor productivity growth can be attributed to the compression of the wage share.

To investigate this, we employ the following two-way fixed effects dynamic panel model:

[3] The wage share is measured as the adjusted wage share, expressed as a percentage of GDP at current factor cost, and obtained from the Ameco database.

	Labor prod. growth	Wage share
t	-0.068^{***}	-0.384^{***}
	(0.018)	(0.026)
t^2	0.000	0.004^{***}
	(0.000)	(0.001)
GFC dummy	-2.072^{***}	0.849
	(0.376)	(0.601)
Observations	1111	1156
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 1: Quadratic time-trend estimates for labor productivity growth and wage share, controlling for country fixed effects and the global financial crisis.

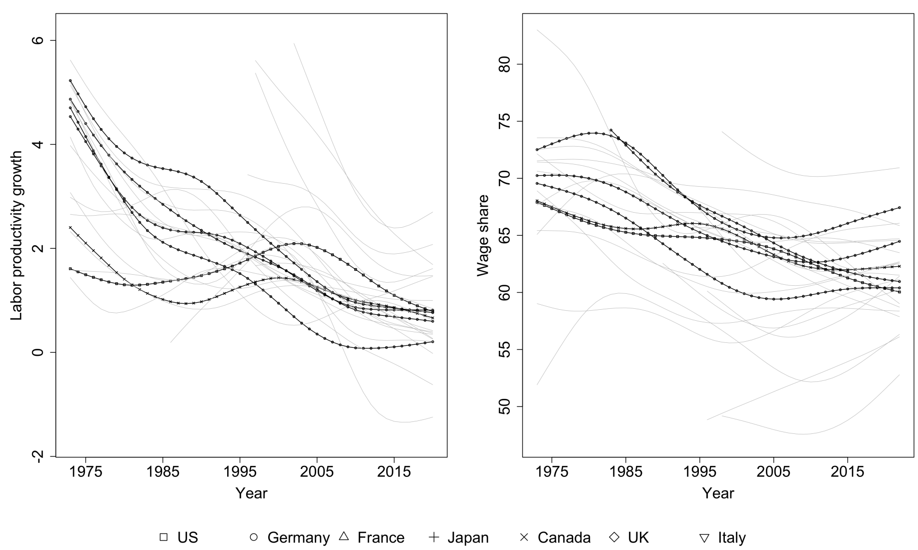

Figure 1: HP-filtered trends of labor productivity growth and wage share.

$$\Delta LP_{i,t} = \alpha_i + \beta_1 \Delta LP_{i,t-1} + \beta_2 WS_{i,t} + \theta X_{i,t-1} + \gamma_t + \epsilon_{i,t} \quad (1)$$

where i and t denote country and time, respectively, α_i captures time-invariant country characteristics, γ_t represents time-fixed effects, ΔLP is the labor productivity growth rate, WS is the wage share, and X is a vector of additional control variables, which includes: (i) the number of patents granted to each country, to account for innovation dynamics; (ii) the (log of) unemployment rate, to capture potential feedback mechanisms between labor market dynamics and labor productivity growth; (iii) per capita income, to reflect a possible convergence process in labor productivity across countries, which predicts higher labor productivity growth rates in relatively poorer economies; (iv) gross fixed capital formation, expressed as a share of GDP, to account for investment in physical capital; v) union density, measured as the number of net union members as a proportion of the number of employees, to control for the bargaining power of workers; vi) trade openness, measured as the share of import and exports over GDP, to account for globalization and international production fragmentation; vii) the capital-labor ratio, to control for the capitalization level of the economy; viii) and the financial integration level, measured as the sum of total asset total liabilities relative to GDP, to control for the level of financialization of the economy.

Our primary interest lies in the coefficient β_2, which measures the contemporaneous relationship between the wage share and labor productivity growth. Yet, estimating Equation 3 is complicated by potential reverse causality.[4] While the wage share may influence productivity growth, the reverse channel is also relevant; the wage share is, in fact, sensitive to contemporaneous changes in labor productivity. Mechanically, variations in labor productivity modify the wage share unless productivity gains (or losses) are perfectly distributed between wages and profits in proportion to the prevailing shares. Such an assumption is unlikely to hold, particularly over short horizons, which exposes our estimates to reverse causality bias.

To address this issue and correctly identify the causal effect of interest, we rely on the assumption that current productivity growth does not affect lagged wage share levels. There are no clear theoretical grounds to expect

[4]The inclusion of a lagged dependent variable in a fixed-effects panel framework also introduces the well-known Nickell bias when estimated with standard methods (Nickell, 1981). Nonetheless, this bias tends to be negligible in panels with a large time dimension, as in our case.

future productivity growth to influence current wage share values, which makes lagged measures a suitable source of exogenous variation. Building on this intuition, we estimate two additional models alongside Equation 3. In the first specification, we replace $WS_{i,t}$ with $WS_{i,t-1}$, assuming that the wage share influences productivity growth with a lag – a plausible mechanism, as firms may require time to adjust to changes in functional income distribution. In the second specification, we retain the contemporaneous effect of the wage share on productivity growth but instrument $WS_{i,t}$ with $WS_{i,t-1}$ to address reverse causality. In both cases, the validity of the identification strategy crucially rests on the absence of autocorrelation in the error terms.

4 Results

This section presents the main findings of the analysis. Table 2 reports results for seven distinct models, reflecting alternative identification strategies and sets of control variables.

The results indicate that our research hypothesis is not supported when a simple, naive approach is used, one that ignores potential endogeneity issues. Under these conditions, the wage share appears insignificant in explaining labor productivity growth. However, further analysis suggests that this lack of significance is likely driven by endogeneity bias, as the results change markedly when endogeneity is properly addressed.

A clear and statistically significant relationship between the wage share and labor productivity growth emerges when the current wage share is replaced with its lagged value. These results are robust across alternative model specifications, with estimated effects ranging between 0.05 and 0.06. Since both labor productivity growth and the wage share are measured in percentage points, this implies that a one percentage point increase (or decrease) in the wage share translates into a 0.05–0.06 percentage point increase (or decrease) in the labor productivity growth rate. Importantly, the validity of the identification strategy – and thus the reliability of the results – is supported by the absence of autocorrelation in the error terms, as verified using a (panel) Breusch-Godfrey test for first-order autocorrelation in the residuals.

When lagged wage shares are used as instruments for current levels, the results are confirmed and the estimated effects are slightly larger. Once again, no autocorrelation is detected in the residuals. Additionally, the relevance of the instrument is confirmed by the extremely high value of the F-statistics.[5]

The magnitude of the estimated effects is non-negligible. Considering the peak coefficient, changes in the wage share could account for roughly 15% of the productivity slowdown in France over the last decades and about one-quarter of the slowdown in Japan. Long-term effects, calculated as $\frac{\beta_2}{1-\beta_1}$, are even more pronounced: the maximum estimated impact suggests that wage share changes could explain nearly one-third of the Japanese productivity slowdown. These findings indicate that weaker wage pressure on profit margins – which reduces firms' incentives to invest, innovate, and enhance labor productivity – has likely played a crucial role in the deceleration of productivity growth in advanced economies over recent decades.

Some final brief remarks on the results for the control variables are in order. The positive and significant coefficient on the lagged dependent variable points to clear persistence in productivity growth over time. Patent activity also exerts a positive effect, suggesting a plausible link between innovation – as proxied by patents – and labor productivity growth. Higher productivity is additionally associated with less tight labor market conditions, while evidence of cross-country convergence emerges, with faster growth observed in countries with lower per capita income. Consistent with previous findings, stronger worker bargaining power – proxied by union density – appears to foster productivity. By contrast, productivity growth tends to be lower in more capital-intensive and financialized economies.

4.1 Transmission mechanisms

Building upon the growth accounting framework introduced by the seminal work of Solow (1957), productivity dynamics can be decomposed into several key components. A typical decomposition includes (at least) three main drivers: (i) total factor productivity ; (ii) capital deepening; and (iii) workforce quality.

Jones (2016) apply this framework to U.S. labor productivity and find that TFP alone accounts for approximately 80% of productivity gains, underscoring the central role of the "Solow residual" in explaining economic growth. Similarly, Goldin et al. (2024) extend this analysis to few advanced economies. Their results suggest that, in addition to TFP, capital deepening

[5] Additional robustness analyses are reported in the Appendix A, where the model is estimated by either replacing time-fixed effect with country-specific quadratic trend (Table A.1) or by replacing productivity growth with its (log) level (Table A.2).

	Basic	Lagged wage share			Lagged wage share - IV		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Wage share$_t$	-0.042				0.059***	0.081***	0.071**
	(0.026)				(0.020)	(0.027)	(0.031)
Wage share$_{t-1}$		0.049***	0.064***	0.057**			
		(0.017)	(0.021)	(0.025)			
Labor prod. growth$_{t-1}$	0.159***	0.161***	0.135**	0.104	0.161***	0.132**	0.103
	(0.054)	(0.052)	(0.065)	(0.067)	(0.051)	(0.063)	(0.065)
Patents$_{t-1}$			0.007***	0.005***		0.007***	0.006***
			(0.002)	(0.002)		(0.002)	(0.002)
Unemployment$_{t-1}$			0.367	0.556**		0.440*	0.617**
			(0.238)	(0.275)		(0.247)	(0.281)
per capita GDP$_{t-1}$			-0.049***	-0.116***		-0.052***	-0.118***
			(0.011)	(0.029)		(0.011)	(0.028)
GFCF$_{t-1}$			0.564	0.260		0.639	0.306
			(0.798)	(0.740)		(0.790)	(0.739)
Union density$_{t-1}$				0.022***			0.022***
				(0.008)			(0.008)
Trade$_{t-1}$				-0.002			-0.003
				(0.004)			(0.004)
Capital/Labor$_{t-1}$				-0.015***			-0.015***
				(0.002)			(0.002)
Financial integration$_{t-1}$				-0.006**			-0.006**
				(0.003)			(0.003)
Observations	1046	1044	959	925	1043	958	924
AR(1)	0.758	0.907	0.878	0.915	0.958	0.852	0.840
F-test	-	-	-	-	1113	909	930
Note:					*p<0.1; **p<0.05; ***p<0.01		

Table 2: Regression results for labor productivity growth. Driscoll and Kraay (1998) standard errors are reported in parentheses. The AR(1) column reports p-values from a Breusch-Godfrey test for first-order autocorrelation in the residuals of a pooled regression model.

is another crucial driver of productivity, with both factors contributing most significantly to productivity growth.

Importantly, they also analyze the role of these components in explaining the recent productivity slowdown. Their findings reveal that in France, the deceleration is primarily driven by a slowdown in TFP, while in Japan, capital deepening plays the dominant role. In contrast, a more balanced pattern emerges in Germany, the United Kingdom, and the United States, where both TFP and capital deepening contribute roughly equally to the slowdown. Workforce quality plays a relatively minor role, with a minor role only in Germany and the UK.

Although this decomposition is not immune to both theoretical and empirical criticisms, we use this framework to further investigate the observed relationship between the wage share and labor productivity growth. Specifically, we rely on OECD data on capital deepening and TFP to assess whether this relationship is primarily driven by one of these components.[6] Drawing, in a broad sense, from the Sylos Labini conjecture, we can hypothesize that a higher wage share may promote productivity by encouraging firms to invest in capital, thus increasing the capital deepening of the economy, or by promoting a more efficient production organization, thus improving the TFP.

To this end, we modify the main regression models as follows:

$$\Delta CD_{i,t} = \alpha_i + \beta_1 \Delta CD_{i,t-1} + \beta_2 \Delta CD_{i,t-2} + \beta_3 WS_{i,t} + \theta X_{i,t-1} + \gamma_t + \epsilon_{i,t} \quad (2)$$

$$\Delta TFP_{i,t} = \alpha_i + \beta_1 \Delta TFP_{i,t-1} + \beta_2 WS_{i,t} + \theta X_{i,t-1} + \gamma_t + \epsilon_{i,t} \quad (3)$$

where CD and TFP are, respectively, capital deepening and Total factor productivity.[7]

Tables 3 and 4 present the results of the analysis, estimating – as in the previous sections – seven different models for each variable of interest. The findings reveal a clear and robust causal relationship from the wage share to capital deepening. This suggests that firms respond to rising wage pressure by increasing capital investment, aiming to substitute labor with capital and thereby reduce wage costs. This mechanism echoes the Marxian intuition and the Ricardo effect as emphasized by Sylos Labini. In contrast, we do find

[6] Due to data availability, the sample for this analysis is reduced, covering the period 1985–2019 and including 21 countries.

[7] The second lag of the capital deepening growth rate was included to address autocorrelation in the error terms, although its inclusion only marginally impacts the results.

	Basic	Lagged wage share			Lagged wage share - IV		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Wage share$_t$	0.081***				0.073**	0.075**	0.071**
	(0.028)				(0.034)	(0.032)	(0.034)
Wage share$_{t-1}$		0.063**	0.064**	0.061**			
		(0.029)	(0.028)	(0.030)			
Cap. deep. growth$_{t-1}$	0.458***	0.461***	0.361***	0.358***	0.458***	0.362***	0.359***
	(0.061)	(0.063)	(0.073)	(0.073)	(0.063)	(0.073)	(0.073)
Cap. deep. growth$_{t-2}$	0.113	0.105	0.128**	0.122**	0.113	0.136**	0.129**
	(0.073)	(0.072)	(0.054)	(0.056)	(0.073)	(0.054)	(0.057)
Patents$_{t-1}$			0.005**	0.004**		0.005***	0.005**
			(0.002)	(0.002)		(0.002)	(0.002)
Unemployment$_{t-1}$			−1.069***	−1.042***		−1.009***	−0.988***
			(0.114)	(0.096)		(0.110)	(0.093)
per capita GDP$_{t-1}$			0.038***	0.043***		0.036***	0.040**
			(0.012)	(0.017)		(0.012)	(0.016)
GFCF$_{t-1}$			1.875***	1.842***		1.864***	1.829***
			(0.464)	(0.485)		(0.475)	(0.498)
Union density$_{t-1}$				−0.005			−0.004
				(0.012)			(0.012)
Trade$_{t-1}$				−0.008			−0.008
				(0.006)			(0.006)
Financial integration$_{t-1}$				0.002			0.002
				(0.003)			(0.003)
Observations	642	642	642	635	641	641	634
AR(1)	0.750	0.951	0.180	0.221	0.728	0.122	0.156
F-test	-	-	-	-	1204	832	1039

Note: *p<0.1; **p<0.05; ***p<0.01

Table 3: Regression results for capital deepening growth. Driscoll and Kraay (1998) standard errors are reported in parentheses. The AR(1) column reports p-values from a Breusch-Godfrey test for first-order autocorrelation in the residuals of a pooled regression model.

	Basic	Lagged wage share			Lagged wage share - IV		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Wage share$_t$	-0.090^{***}				0.013	0.018	0.004
	(0.034)				(0.033)	(0.031)	(0.039)
Wage share$_{t-1}$		0.009	0.013	0.002			
		(0.028)	(0.026)	(0.034)			
TFP growth$_{t-1}$	0.182^{**}	0.210^{***}	0.201^{***}	0.159^{**}	0.213^{***}	0.204^{***}	0.162^{**}
	(0.076)	(0.074)	(0.076)	(0.067)	(0.074)	(0.075)	(0.067)
Patents$_{t-1}$			0.005^{**}	0.004^{**}		0.006^{**}	0.004^{**}
			(0.002)	(0.002)		(0.002)	(0.002)
Unemployment$_{t-1}$			0.470^{***}	0.628^{***}		0.489^{***}	0.643^{***}
			(0.162)	(0.169)		(0.164)	(0.174)
per capita GDP$_{t-1}$			-0.098^{***}	-0.166^{***}		-0.098^{***}	-0.166^{***}
			(0.026)	(0.043)		(0.026)	(0.042)
GFCF$_{t-1}$			0.432	-0.068		0.458	-0.059
			(0.679)	(0.738)		(0.674)	(0.737)
Union density$_{t-1}$				0.016^{*}			0.016^{*}
				(0.009)			(0.010)
Trade$_{t-1}$				0.012^{***}			0.011^{***}
				(0.004)			(0.004)
Capital/Labor$_{t-1}$				-0.015^{***}			-0.015^{***}
				(0.004)			(0.004)
Financial integration$_{t-1}$				-0.010^{***}			-0.010^{***}
				(0.002)			(0.002)
Observations	1046	1044	959	925	1043	958	924
AR(1)	0.257	0.933	0.786	0.613	0.926	0.785	0.610
F-test	-	-	-	-	1336	1078	1605
Note:							$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Table 4: Regression results for TFP growth. Driscoll and Kraay (1998) standard errors are reported in parentheses. The AR(1) column reports p-values from a Breusch-Godfrey test for first-order autocorrelation in the residuals of a pooled regression model.

a small and not statistically significant relationship between the wage share and TFP, indicating that increased wage pressure does not appear to sizably enhance the efficiency in the use of existing resources within the production process.

5 Conclusions

In this paper, we examined how the functional distribution of income shapes labor productivity dynamics. In particular, we investigated whether weak wage pressure – reflected in a declining labor share of income – may reduce firms' incentives to invest and innovate, thereby slowing productivity growth.

To test this hypothesis, we estimated a dynamic panel model using data from 26 advanced economies over the period 1970–2019. The results provide robust evidence in support of our conjecture: labor productivity growth is sensitive to functional income distribution. A one-percentage-point increase in the wage share is associated with a 0.04 to 0.08 percentage-point rise in productivity growth in the short run, with slightly larger effects over the longer term. Given the pronounced decline in the wage share observed across many economies in recent decades, these effects are far from negligible and may account for a nontrivial share of the productivity slowdown.

We also explored the mechanisms underlying this relationship by decomposing productivity growth into its main components: capital deepening and total factor productivity (TFP). The results indicate that the positive impact of the wage share on productivity operates primarily through capital deepening, while no significant link is found with TFP. This suggests that firms respond to stronger wage pressure mainly by increasing capital investment – substituting labor and enhancing productivity – rather than through improvements in total factor efficiency.

Consistent with a long-standing tradition – from Marx and Sylos Labini to contemporary evolutionary economics – our findings support the view that innovation and technical change not only shape income distribution but are also shaped by it. While wage compression may help firms preserve profit margins in the short run, it risks eroding long-term growth potential by discouraging investment in innovation and productive capital. Persistent wage restraint can thus trap economies in a low-wage, low-innovation equilibrium, with adverse implications for both productivity and overall economic performance. Conversely, a more balanced income distribution can sustain aggregate demand and foster a virtuous cycle in which rising wages, innovation, and productivity growth reinforce one another.

A Additional results

	Basic	Lagged wage share			Lagged wage share - IV		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Wage share$_t$	−0.114**				0.130**	0.164**	0.159***
	(0.054)				(0.058)	(0.067)	(0.047)
Wage share$_{t-1}$		0.092**	0.105**	0.102***			
		(0.038)	(0.043)	(0.031)			
Labor prod. growth$_{t-1}$	0.063	0.097*	0.074	0.058	0.100*	0.069	0.058
	(0.062)	(0.054)	(0.058)	(0.062)	(0.054)	(0.056)	(0.060)
Patents$_{t-1}$			0.008	0.015*		0.009	0.016*
			(0.009)	(0.009)		(0.009)	(0.010)
Unemployment$_{t-1}$			−0.402	0.519		−0.173	0.775
			(0.445)	(0.445)		(0.537)	(0.503)
per capita GDP$_{t-1}$			−0.223***	−0.289***		−0.225***	−0.283***
			(0.049)	(0.055)		(0.053)	(0.060)
GFCF$_{t-1}$			−0.099	0.630		−0.173	0.465
			(1.093)	(1.196)		(1.127)	(1.284)
Union density$_{t-1}$				−0.015			−0.022
				(0.023)			(0.021)
Trade$_{t-1}$				−0.010			−0.011
				(0.013)			(0.015)
Capital/Labor$_{t-1}$				−0.026***			−0.026***
				(0.004)			(0.004)
Financial integration$_{t-1}$				0.0005			0.002
				(0.006)			(0.006)
Observations	1046	1044	959	925	1043	958	924
AR(1)	0.000	0.564	0.990	0.791	0.360	0.835	0.974
F-test	-	-	-	-	378	797	619
Note:							*p<0.1; **p<0.05; ***p<0.01

Table A.1: Regression results for labor productivity growth; model with country-specific quadratic trend. Driscoll and Kraay (1998) standard errors are reported in parentheses. */**/*** denote statistical significance at the 10%, 5%, and 1% levels, respectively. The AR(1) column reports p-values from a Breusch-Godfrey test for first-order autocorrelation in the residuals of a pooled regression model.

	Basic	Lagged wage share			Lagged wage share - IV		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Wage share$_t$	−0.056**				0.039*	0.060**	0.064**
	(0.028)				(0.022)	(0.031)	(0.032)
Wage share$_{t-1}$		0.032*	0.048*	0.051*			
		(0.019)	(0.025)	(0.026)			
Labor prod.$_{t-1}$	1.101***	1.108***	1.098***	1.069***	1.108***	1.096***	1.069***
	(0.059)	(0.055)	(0.067)	(0.070)	(0.054)	(0.066)	(0.069)
Labor prod.$_{t-2}$	−0.159***	−0.161***	−0.143**	−0.111*	−0.161***	−0.141**	−0.111*
	(0.054)	(0.051)	(0.064)	(0.067)	(0.050)	(0.062)	(0.066)
Patents$_{t-1}$			0.008***	0.007***		0.008***	0.007***
			(0.002)	(0.002)		(0.002)	(0.002)
Unemployment$_{t-1}$			0.279	0.676**		0.335	0.730***
			(0.237)	(0.268)		(0.247)	(0.272)
per capita GDP$_{t-1}$			−0.033***	−0.047*		−0.035***	−0.049*
			(0.011)	(0.028)		(0.011)	(0.027)
GFCF$_{t-1}$			0.172	0.100		0.236	0.145
			(0.798)	(0.732)		(0.795)	(0.732)
Union density$_{t-1}$				0.014*			0.013*
				(0.008)			(0.007)
Trade$_{t-1}$				0.001			0.000
				(0.005)			(0.005)
Capital/Labor$_{t-1}$				−0.012***			−0.012***
				(0.002)			(0.002)
Financial integration$_{t-1}$				−0.012***			−0.012***
				(0.003)			(0.003)
Observations	1046	1044	959	925	1043	958	924
AR(1)	0.469	0.995	0.778	0.779	0.963	0.757	0.727
F-test	-	-	-	-	1123	830	921
Note:							*p<0.1; **p<0.05; ***p<0.01

Table A.2: Regression results for (log) labor productivity. Driscoll and Kraay (1998) standard errors are reported in parentheses. */**/*** denote statistical significance at the 10%, 5%, and 1% levels, respectively. The AR(1) column reports p-values from a Breusch-Godfrey test for first-order autocorrelation in the residuals of a pooled regression model.

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