

The decoupling between labour compensation and productivity in high-income countries: Why is the nexus broken?

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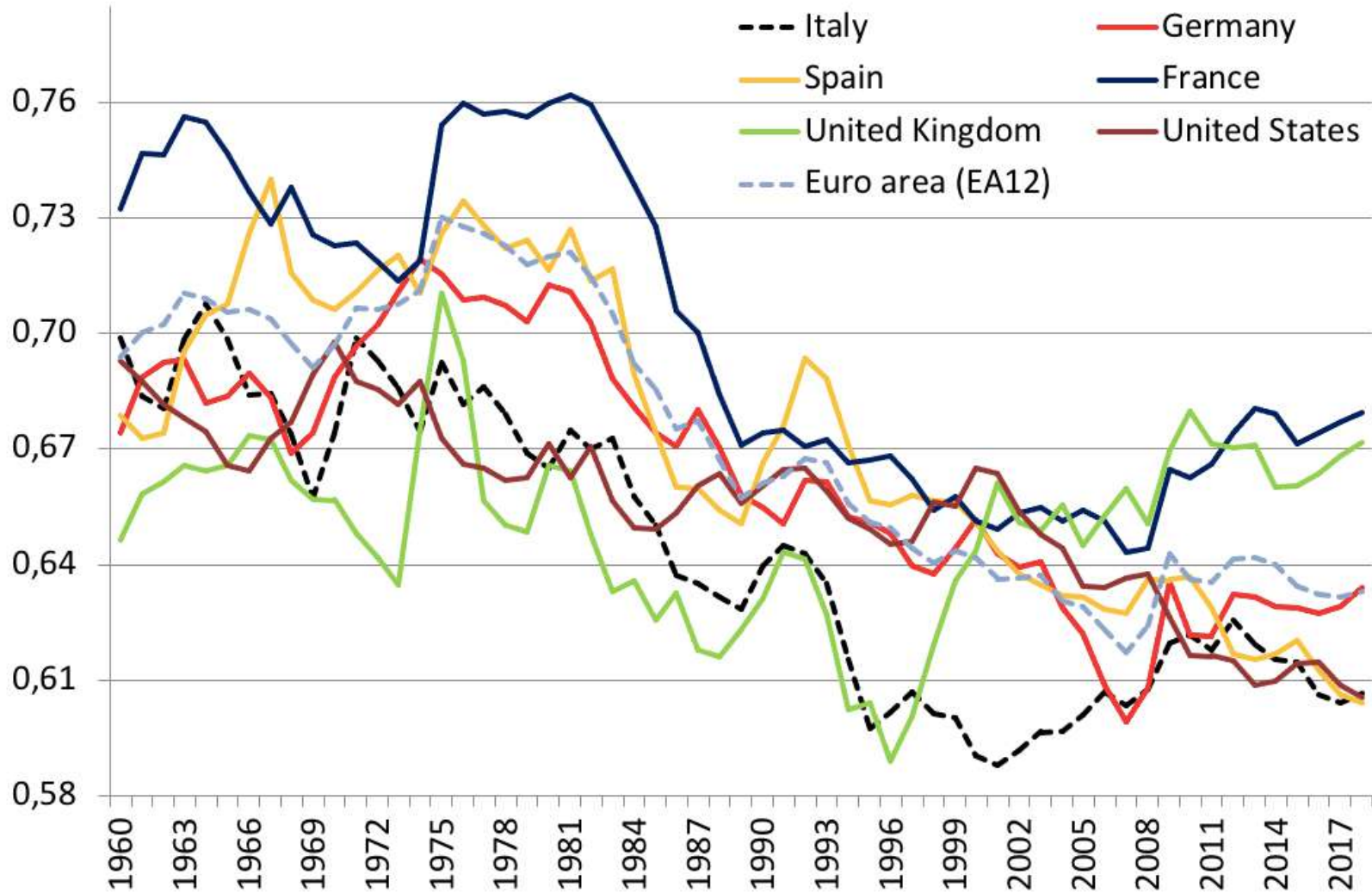
Roma Tre, 12 aprile 2024

Kaldor's stylized facts of economic growth remind us that the shares of national income received by labour and capital are **roughly constant** over long periods of time.

This translates in the fact that **wages should track productivity** with remarkable stability in the long run...

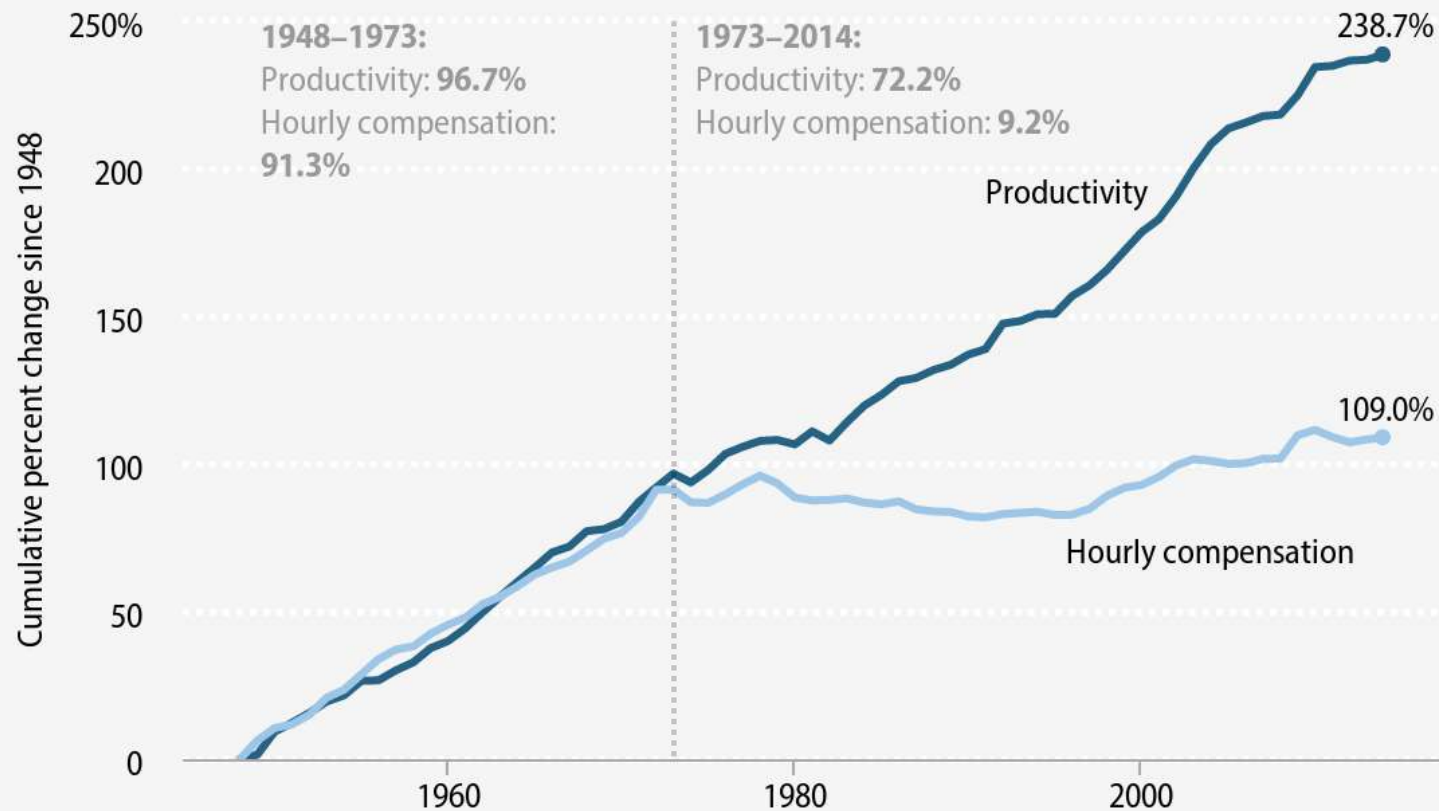
LONG-TERM TREND IN THE (ADJUSTED) WAGE SHARE

... but the evidence does not corroborate this view.



THE PARAMOUNT CASE: THE UNITED STATES

Disconnect between productivity and a typical worker's compensation, 1948-2014

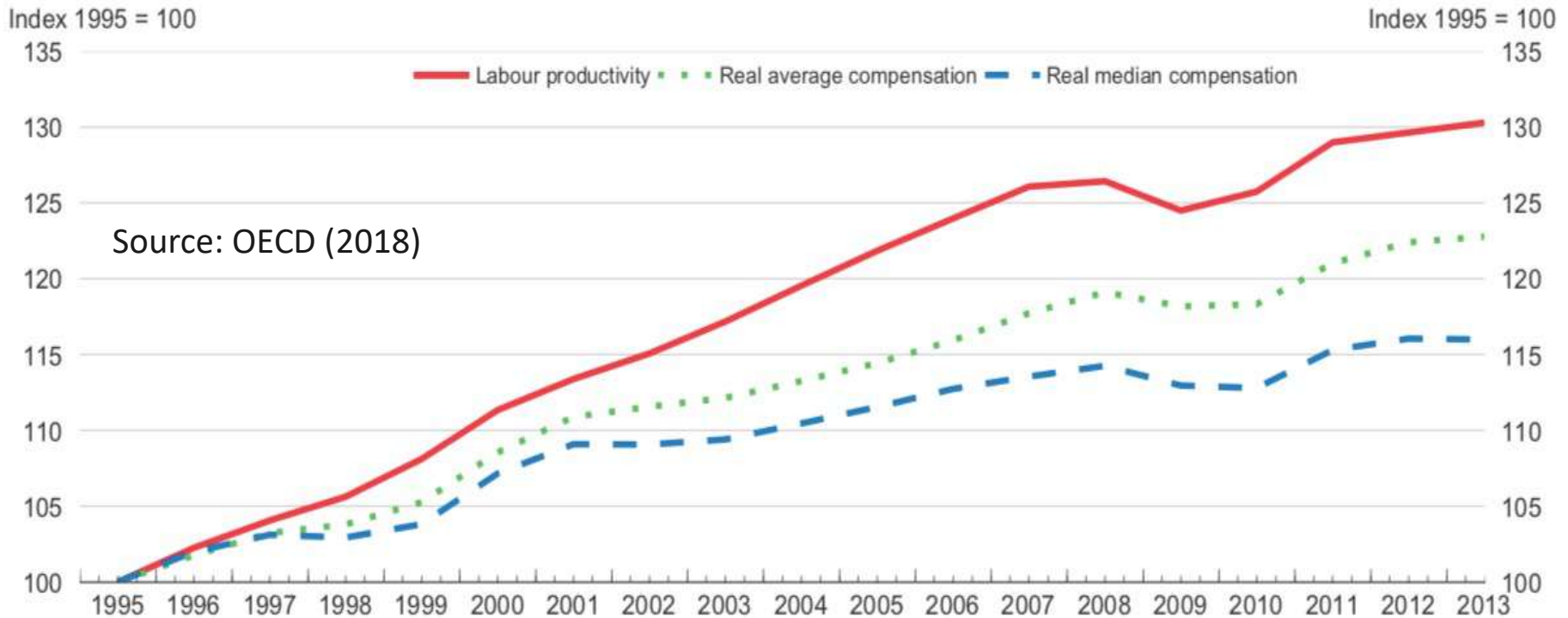


Note: Data are for average hourly compensation of production/nonsupervisory workers in the private sector and net productivity of the total economy. "Net productivity" is the growth of output of goods and services minus depreciation per hour worked.

Source: EPI analysis of data from the BEA and BLS (see technical appendix for more detailed information)

OECD AVERAGE (24 COUNTRIES)

Total economy excluding primary, housing and non-market industries



Note.

Labour productivity > Real **average** compensation → **Drop in the wage share**

Real average compensation > Real **median** compensation → **Wage inequality**

Which decoupling? We focus on the first component exclusively.

What is the size of this decoupling?

- We aim at quantifying the extent to which productivity gains have translated into wage growth so far and by opposition to catch the magnitude of the decoupling.

Which causes behind that?

- We inquire into the factors that prevented wage growth from keeping pace with productivity.

CURRENT EXPLANATIONS: THE MAINSTREAM VIEW

- **Technology and skill-biased technical change** (Hogrefe and Kappler, 2013; Bassanini and Manfredi, 2014; Grossman et al., 2017; IMF, 2017).
- **Fall in the price of investment goods**: combined with an elasticity of substitution between labour and capital greater than one (*a debated point*), this would cause capital deepening and lower the labour share (Karabarbounis and Neiman, 2014)
- **International trade**: unskilled labour would suffer the most from the integration of emerging economies, while capital and skilled labor would benefit; the reverse is expected to happen in labour-abundant economies (e.g., IMF, 2007).
- Role of **superstar firms** (*winner take most*) and market concentration (Autor et al., 2017; Calligaris et al., 2018; Schwellnus et al., 2018).
- Very few New Keynesian contributors underline
 - the role of **increasing unemployment** (Stansbury and Summers, 2017) viewed however as a cyclical phenomenon;
 - the loss **trade unions** powers (Stansbury and Summers, 2020) in the context of 'New Consensus' models, so that the decline of union's power explains the decrease in the NAIRU.

CURRENT EXPLANATIONS: POLITICAL ECONOMY

Political economy (PE) approaches recognize that macroeconomic and institutional factors may have altered the balance of power between labour and capital.

The functional income distribution is *the most immediate indicator of the balance of forces between labour and capital* (Franzini and Pianta, 2015, p. 71).

- Role of the **labour market slack** in affecting workers' bargaining power (unemployment and underemployment);
- Globalization is **international trade** and **capital mobility** (cost competition, delocalization, erosion of productive structures in mature countries);
- Increasing **financialization** as a re-distributive process (shareholder value orientation, short-termism, investment opportunities);
- Decreasing **institutions** operating in favour of workers (political role of unions and rules-norms in the labour market).

LABOUR MARKET SLACK

Theoretical foundations

- Conflict theory of income distribution (Marx and the classical economists)
 - **Labour market conditions** (not unemployment uniquely) are regarded as very relevant factors that can affect wages – along with, of course, other institutional, historical and political elements.
 - We do not assume any tendency of the economy to return to some ‘equilibrium’ unemployment, understood as an attractor for the economic system (as in the neoclassical theory and/or the Shaikh’s position (cf. Stirati and Paternesi Meloni, 2021))
- insufficient aggregate demand may cause *persistent* labour market slack, which in turn can affect workers’ bargaining power.

Evidence

- Negative effect of labour market slack on the labour share in Kristal (2010), Dünhaupt (2017); Pariboni and Tridico (2019); Stirati and Paternesi Meloni (2021).
- Downward pressure exerted on wages by unemployment in OECD (2014).
- Stirati and Paternesi Meloni (2018) and Stansbury and Summers (2017) document a negative association between unemployment and real wage growth.

Our indicators of labour market slack (*LMS*)

- Unemployment rate (*UN*)
- Short-term unemployment rate (*STU*)
- Long-term unemployment rate (*LTU*)
- An index of unemployment intensity (*UNINT*) constructed in the spirit of Shaikh (2016), which combines *UN* and its duration

- Enlarged measures of slack in the labour market, that is
 - the missing employment rate (*ER*)
 - the employment growth with the opposite sign (*EG*)
 - the missing participation rate (*PR*)

- Two original multidimensional indicators of labour market slack that condense three measures of underemployment (by using a PCA)
 - *UND1* combines *UN*, *ER* and *PR*
 - *UND2* combines *UN*, *EG* and *PR*

Premises

1. With respect to trade

- On the one side, globalization is supposed to benefit capital in advanced economies and unskilled labour in developing countries (Stolper and Samuelson, 1941) → wage moderation related to the expansion of international trade and the large newcomers (Acemoglu, 1998, 2003).
- On the other side, the PE approach argues that the main effect of trade on income distribution works by affecting the bargaining position of the parties (Rodrik, 1998).

2. With respect to capital mobility

Guschanski and Onaran (2018) elucidate that globalization increases the fall-back options of capital. Tridico and Paternesi Meloni (2018): tax competition.

Evidence

- IMF (2007), Stockhammer (2013) and OECD (2015) find negative, albeit small, effects of globalization on the wage share in high-income countries.
- Fauser (2014) finds that capital mobility is associated to increasing inequality.
- Stirati and Paternesi Meloni (2018) estimate a negative effect of exchange rate depreciation on real wage growth.

Our indicators of globalization (*GLOB*)

- Globalization is predominantly intended as trade openness, but we shall also use two metrics of financial globalization.

- Share in GDP of exports of goods and services (*EXP*)
- Share in GDP of imports of goods and services (*IMP*)
- Trade openness (*OPEN*), expressed as the sum of the import and export shares.

- We shall also consider the dynamics of the real effective exchange rate ($\Delta REER$, an increase meaning real appreciation).

- *REER* captures the evolution of relative prices of imports, which may have effects on the income distribution.

Premises

- Financialization can be observed from different angles (Hein, 2015; Dünhaupt, 2017; Pariboni and Tridico, 2019), including the influence of the returns on financial assets on the profit rate (Pivetti, 1991; Hein, 2014).

Financialization as is an intrinsically “redistributive process” (Van der Zwan, 2014).

Possible channels (Stockhammer, 2013):

- More options for investing (location, duration and typology);
- Less incentives to enhance long-term growth through real investment (Van Treeck, 2009)
- Downsize and distribute and short-termism (Lazonick and O’Sullivan, 2000)

Evidence

The effects of financialization on wage dynamics are not so clear at the empirical level.

- A negative but moderate effect on the wage share in Pariboni and Tridico (2019) with market capitalization, and in Gouzoulis (2020) with credit from banks/fin. operators
- Significant (negative) effect of foreign direct investment (Dünhaupt, 2013) and foreign assets/liabilities as a proxy for financial globalization (Stockhammer, 2017)
- Distributed dividends over the GDP (Duménil and Lévy, 2001; Hein and Schoder, 2011; Onaran et al., 2011) → not always significant (probably troublesome)

Our indicators of financialization (*FIN*)

We refer to pure financial variables related to the domestic economy

- credit provision (*CRED*)
- market capitalization (*MKT*)

and to variables that may provide some indications concerning the effects of financialization intended as international finance and capital mobility

- financial globalization (*FGL*) as foreign assets plus liabilities (share of the GDP)
- foreign direct investment (*FDI*), inflows plus outflows (share of the GDP).

We also make use of a variable representing the ‘downsize and distribute’ behaviour of businesses:

- distributed dividends as a share of profits, both in the total economy (*DIV*) and in non-financial corporations (*DIV_NFC*).
- We shall also consider the real interest rate (*RIR*), as high interest rates might be associated with a higher rate of profit - and hence higher profit shares.

Mixed evidence

EC (2007): null effect of unions on income distribution (positive effects for medium-to-high-skilled workers and even negative effects for low-skilled workers).

IMF (2007): no effects of labour market policies and institutions to the labour share.

Stockhammer (2013): trade unions have a (positive) influence on the wage share, while no significant effects from EPL, minimum wage and unemployment benefits.

Pariboni and Tridico (2019), Deakin et al. (2014), Brancaccio et al. (2018): positive association between employment protection and the labour share.

A debated point

- Pariboni and Tridico (2019): ‘flexicurity’ → poor employment protection legislation associated with sustained income and job security (e.g., Denmark)
- Baccaro and Howell (2011): in Europe institutional change by means of a changing role of existing institutions (derogation clauses of national contracts).
- Iversen et al. (2016): union membership is in structural decline, but the coverage of union wage agreements has not fallen in line with the membership (e.g. France)
- Baccaro and Pontusson (2019): in Germany, starting from the 1990s, the “collective bargaining system ceased to redistribute productivity across sectors”

Our indicators of labour market institutions (*LMI*)

- Trade union density (*TU*)
- Strength of employment protection legislation
 - for regular contracts (*EPL*),
 - for temporary contracts (*EPL_T*)
- Collective bargaining coverage (*BC*)
- Share of part-time contracts (*PT*)
- Share of temporary contracts (*TEMP*)

Intuitively, our investigation will assess the association between real wage growth (our dependent variable), on the one side, and labour productivity growth and a set of dimensions found to be relevant to our discussion, on the other side.

- **Countries:** the empirical exploration is confined to advanced economies, we follow Girardi et al. (2020) and define ‘mature’ countries as the ones that joined the OECD before 1973.

We thus identify 22 countries: Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, UK, US.

Timespan: from 1970 to 2018 (dictated by data availability).

THE MODEL

$$\Delta R_COMP_{i,t} = \alpha_i + \delta_t + \beta_D \Delta R_PROD_{i,t} + \beta_R RIR_{i,t} + \beta_C \Delta REER_{i,t} + \\ + \beta_U LMS_{i,t} + \beta_F FIN_{i,t} + \beta_G GLOB_{i,t} + \beta_L LMI_{i,t} + \varepsilon_{i,t}$$

- ΔR_COMP is the yearly rate of change of the average labour compensation per employed person, deflated by means of the CPI index (or the GDP deflator)
- ΔR_PROD is the annual rate of growth of labour productivity, measured as the rate of change of the real GDP per person employed
- we **always** make use of both country- and year-fixed effects (α_i and δ_t)

1. **Simple model.** We first estimate a 'one variable' model. With β_D equal to one, productivity growth would **completely translate** into higher wages and no changes in the labour share would be detected (the 'strongest linkage'). We can expect β_D to range between zero and one.

2. **Baseline model.** We add to the simple model the following variables: LMS , RIR , $\Delta REER$.

3. **Extended model.** We add to the baseline model one further dimension at a time, namely $GLOB$, FIN and LMI .

4. **General model.** By taking stock of what emerged from the extended models, we focus on variables that are proven to be relevant to the pace of real compensation and consider them simultaneously.

MAIN FINDINGS – SIMPLE MODEL OF DECOUPLING

Variables	Model 1	Model 2 (5y-MA)	Model 3 (5y-FA)	Model 4 (1980-2018)	Model 5 (1999-2018)
ΔR_{PROD}	0.381*** (0.046)	0.586*** (0.039)	0.555*** (0.093)	0.288*** (0.048)	0.143*** (0.056)
Constant	4.158*** (0.662)	2.667*** (0.333)	2.263*** (0.586)	-0.414 (0.609)	1.772*** (0.562)
Obs. (Countries)	904 (22)	904 (22)	190 (22)	731 (22)	396 (22)
Adjusted R2	0.301	0.658	0.595	0.195	0.254
Wald statistic	$\chi^2(67) =$ 370.31	$\chi^2(71) =$ 1732.70	$\chi^2(31) =$ 279.23	$\chi^2(58) =$ 177.34	$\chi^2(39) =$ 134.76
Prob > χ^2	0.000	0.000	0.000	0.000	0.000

Dependent variable: ΔR_{COMP} . Labour compensations are deflated by means of the CPI index. MA = moving averages; FA = fixed averages. Timespan: 1970–2018 (unless specified differently). All specifications include country and year fixed effects. Robust standard errors clustered by countries in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Compensations deflated by CPI.

- **Robustness: we also deflate compensations by means of the product deflator.**

FINDINGS – BASELINE MODEL (TRADITIONAL LMS)

Variables	Model UN	Model UN with 5y-MA	Model LTU	Model STU	Model UNINT
ΔR_{PROD}	0.359*** (0.042)	0.616*** (0.039)	0.264*** (0.041)	0.273*** (0.041)	0.271*** (0.041)
$\Delta REER$	0.098*** (0.014)	0.155*** (0.015)	0.102*** (0.013)	0.097*** (0.013)	0.097*** (0.014)
RIR	0.018 (0.025)	-0.016 (0.016)	-0.113*** (0.029)	-0.105*** (0.028)	-0.119*** (0.027)
LMS	-0.212*** (0.033)	-0.153*** (0.018)	-0.155*** (0.049)	-0.284*** (0.059)	-0.923*** (0.280)
Constant	4.426*** (0.628)	2.968*** (0.330)	1.751 (1.668)	3.036* (1.677)	1.148 (1.209)
Obs. (Countries)	825 (22)	891 (22)	673 (22)	673 (22)	684 (22)
Adjusted R2	0.379	0.666	0.343	0.355	0.334
Wald statistic	$\chi^2(69) =$ 504.37	$\chi^2(72) =$ 1777.32	$\chi^2(69) =$ 351.77	$\chi^2(69) =$ 371.43	$\chi^2(69) =$ 344.08
Prob > χ^2	0.000	0.000	0.000	0.000	0.000

Dependent variable: ΔR_{COMP} . Labour compensations are deflated by means of the CPI index. Timespan: 1970–2018. All specifications include country and year fixed effects. Robust standard errors clustered by countries in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

FINDINGS – GENERAL MODEL

Variables	Model I (EPL and OPEN, 5y- MA)	Model II (EPL and EXP, 5y- MA)	Model III (EPL and IMP, 5y- MA)	Model IV (TU and OPEN, 5y- MA)	Model V (TU and EXP, 5y- MA)	Model VI (TU and IMP, 5y- MA)	Model VII (EPL and FDI, 5y- MA)	Model VIII (TU and FDI, 5y- MA)
ΔR_PROD	0.497*** (0.039)	0.491*** (0.039)	0.498 (0.041)	0.621*** (0.039)	0.619*** (0.039)	0.624*** (0.039)	0.464*** (0.041)	0.566*** (0.039)
$\Delta REER$	0.149*** (0.014)	0.151*** (0.014)	0.147*** (0.015)	0.160*** (0.015)	0.161*** (0.015)	0.160*** (0.015)	0.148*** (0.014)	0.150*** (0.014)
RIR	-0.115*** (0.018)	-0.118*** (0.018)	-0.108*** (0.018)	-0.049*** (0.016)	-0.049** (0.015)	-0.048*** (0.016)	-0.104*** (0.018)	-0.095*** (0.016)
$UND2$	-0.143*** (0.020)	-0.134*** (0.020)	-0.156*** (0.021)	-0.181*** (0.021)	-0.179*** (0.021)	-0.183*** (0.021)	-0.146*** (0.021)	-0.181*** (0.021)
LMI	0.352** (0.169)	0.353** (0.170)	0.375** (0.177)	2.956*** (0.637)	2.978*** (0.638)	2.922*** (0.636)	0.561*** (0.172)	1.969*** (0.677)
$GLOB$	-1.529*** (0.293)	-2.407*** (0.508)	-3.292*** (0.658)	-0.512*** (0.255)	-0.849*** (0.452)	-1.099** (0.546)	-	-
FIN	-	-	-	-	-	-	-0.955*** (0.322)	-1.162*** (0.342)
Constant	2.813*** (0.402)	2.798*** (0.403)	2.795*** (0.422)	2.152*** (0.391)	2.036*** (0.387)	2.079*** (0.388)	2.523*** (0.423)	2.320*** (0.416)
Obs. (Countries)	807 (22)	807 (22)	807 (22)	882 (22)	882 (22)	882 (22)	774 (22)	826 (22)
Adjusted R2	0.693	0.696	0.698	0.671	0.672	0.671	0.677	0.664
Wald statistic	$\chi^2(74) =$ 1863.17	$\chi^2(74) =$ 1848.13	$\chi^2(74) =$ 1864.55	$\chi^2(74) =$ 1764.73	$\chi^2(74) =$ 1802.78	$\chi^2(74) =$ 1804.39	$\chi^2(74) =$ 1624.25	$\chi^2(74) =$ 1635.72
Prob > χ^2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Dependent variable: ΔR_COMP . Labour compensations are deflated by means of the CPI index. All specifications include country and year fixed effects. All variables are expressed as 5-years moving averages. Timespan: 1970–2018. Robust standard errors clustered by countries in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

OUR COEFFICIENTS AND SOME MACRO-INSTITUTIONAL TRENDS

Variable	Approx. average value in the 70s/80s	Approx. average value post-2001	Average annual effect on real wage growth (1970-2018)
Unemployment rate	3.5%	7%	-0.55%
Trade openness (share GDP)	40%	102%	-0.31%
FDI inflow plus outflow (share GDP)	1.5	16.5	-0.13%
Trade union density	45%	30%	-0.45%
Employment protection	2.4	2.0	-0.22%

Contributions calculated by using the average (semi)elasticity stemming from our estimations, and the increase/decrease in the average value of each variable. Reference period: 1970-2018.

FINAL CONSIDERATIONS

- The productivity-pay pass-through coefficient is about 0.3 on a yearly basis and reaches **0.5** when averaging over the cycle.
- The coefficient is found to be **lower in recent times** and when confining the analysis to the **private sector of the economy**.
- A marginally greater divergence when considering CPI-deflated instead of GDP deflator-deflated average compensation: consumer prices have grown at a higher rate than product prices in mature economies.
- Some of our dimensions have effectively contributed to wage stagnation: among them, a preeminent role for **labour market slack, worsening labour market institutions, trade openness** and **capital mobility**.
- While the process of increasing financialization seems not to have exerted a significant impact on real wage growth.
- We generally find a positive effect on wages of real appreciation, while the role of the real interest rate is not clear-cut.
- **Macroeconomic and institutional factors DO matter, hence the PE approach is a promising way to elaborate on the drivers of income distribution (cf. Stockhammer, 2017).**

Thank you for your attention.

Full paper available as

Paternes Meloni, W., & Stirati, A. (2023). The decoupling between labour compensation and productivity in high-income countries: Why is the nexus broken?

British Journal of Industrial Relations, Volume 61, Issue 2
June 2023, pp. 425-463

WHY?

- Before the GFC, attention to the **personal income distribution** uniquely.

'the great mystery of the modern theory of distribution is why anyone regards the share of wages and profits as an interesting problem' (Blaug, 1996, p. 467)

- Back then, institutional reports (European Commission, 2007; IMF, 2007) and academic contributions (Glyn, 2009; Atkinson, 2009) put the emphasis also on **wage share trends**

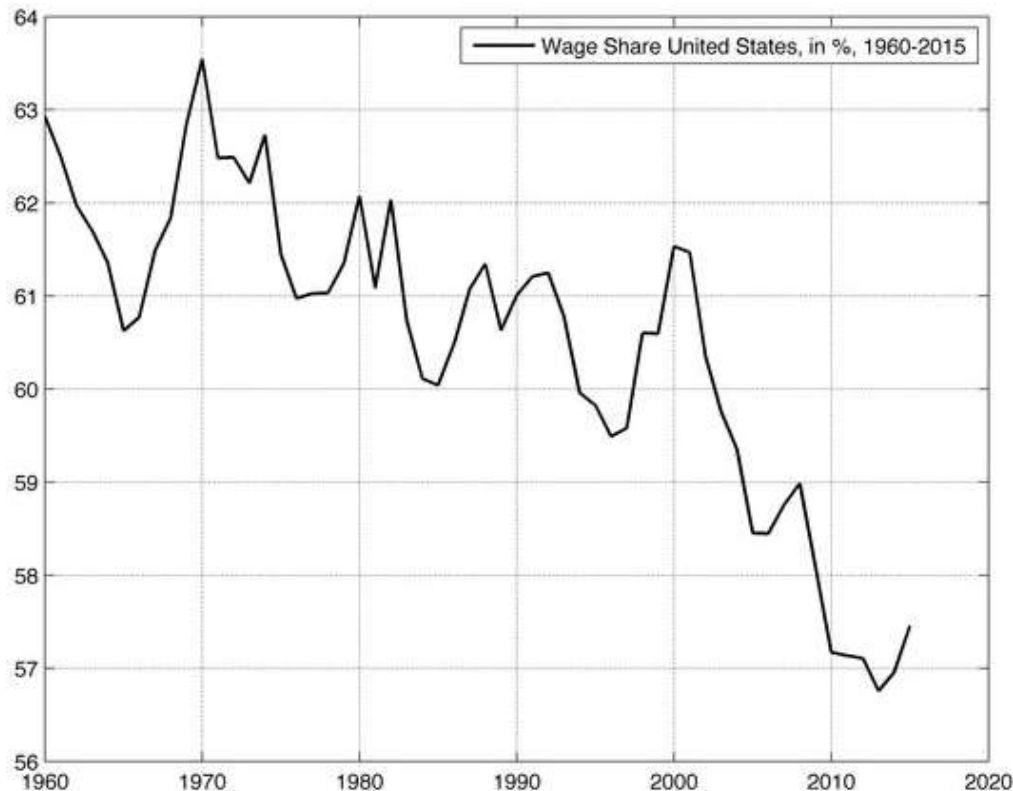
Three main reasons:

1. capital and property incomes are not so widespread even among workers and middle classes (what Glyn called *the rhetoric of the Everyman a capitalist*);
2. the wage income share relates to the personal income distribution (European Commission, 2008; Jacobson and Occhino, 2012; Bengtsson and Waldenström, 2018; Erauskin, 2020) and increasing wealth polarization (Barba and Pivetti, 2009; Piketty, 2014);
3. wage share trends are relevant for macroeconomic stability as they affect aggregate demand – both its composition and its evolution (Onaran and Galanis, 2012; Hein, 2015; Cynamon and Fazzari, 2015; Hein and Prante, 2018) - and the composition of the tax base.

The functional income distribution is *'the most immediate indicator of the balance of forces between labour and capital'* (Franzini and Pianta, 2015, p. 71).

FROM THE (DROP IN THE) WAGE SHARE TO THE DECOUPLING

An approximately one-to-one connection between the wage growth and the pace of productivity would imply a relative stability of income shares over time.



Wage share in the US defined as employees compensation divided by GDP, as a percentage.

Source: Ameco

CURRENT EXPLANATIONS: THE MAINSTREAM VIEW (1)

Main explanation

- **Technology and skill-biased technical change** (Hogrefe and Kappler, 2013; Bassanini and Manfredi, 2014; Grossman et al., 2017; IMF, 2017).
 - Technological change is **skill biased** (ICT is viewed as complementary to skilled labour and a substitute for unskilled labour) → shift in income distribution towards skilled labour → sharp increase in personal income inequality (Autor *et al.* 1999; Card and Di Nardo 2002).
 - Technological change is **capital augmenting** rather than labour augmenting (EC, 2007; IMF, 2007), and this is consistent with skill-biased technological change (Stockhammer, 2017) → rising demand for high-skilled labour and falling demand for low-skilled labour → rising wages for high-skilled workers and falling wages for low-skilled workers → **negative net effect on the wage share**
- As mentioned before, rising wage inequality has been proved to be associated with decreasing labour share (EC, 2008; Erauskin, 2020); Bengtsson and Waldenström (2017) find a long-run association between the capital share and the top 1%-5%.

CURRENT EXPLANATIONS: THE MAINSTREAM VIEW (2)

Other explanations

- **Fall in the price of investment goods**: combined with an elasticity of substitution between labour and capital greater than one (*a debated point*), this would cause capital deepening and lower the labour share (Karabarbounis and Neiman, 2014)
- **International trade**: unskilled labour would suffer the most from the integration of emerging economies, while capital and skilled labor would benefit; the reverse is expected to happen in labour-abundant economies (e.g., IMF, 2007).
- Role of **superstar firms** (*winner take most*): market concentration in big firms that, although big, employ relatively few workers, would have contributed to depression of the aggregate labour share (Autor et al., 2017; Calligaris et al., 2018; Schwellnus et al., 2018; Gutierrez G. and Philippon, 2019).
- Very few New Keynesian contributors underline: the role of **increasing unemployment** (Stansbury and Summers, 2017) viewed however as a cyclical phenomenon; and the loss **trade unions** powers (Stansbury and Summers, 2020) in the context of New consensus models, so that the decline of union's power explains the decrease in the NAIRU.

WHAT SIZE FOR THE PRODUCTIVITY-PAY DECOUPLING?

Country-specific studies

- Stansbury and Summers (2017)
USA: 0.7 (1974-2016), 0.5 (1999-2016)
UK: 1.55; CAN: 0.95; GER pre-1991: 0.88.
GER post-1991: 0.23); FRA: 0.32; ITA: 0.42
- Theodoropoulou (2019)
POR: 0.46; ITA: 0.50; UK: 0.54; SPA: 0.61.

Panel explorations

- Škare and Škare (2017): ten selected OECD countries (1950– 2014), 1980s as a dominant breaking point for the start of the phenomenon.
- Pasimeni (2018): European countries, strong link pre-1998, and 50% later on.
- Prenner (2018) focuses on 28 EU countries (1960-2018) and finds that a 1% increase in productivity increases the real average compensation by 0.64%.
- Schröder (2020): CEEC, heterogeneity for the period 2002– 2017: decoupling in countries that followed export-led strategies.

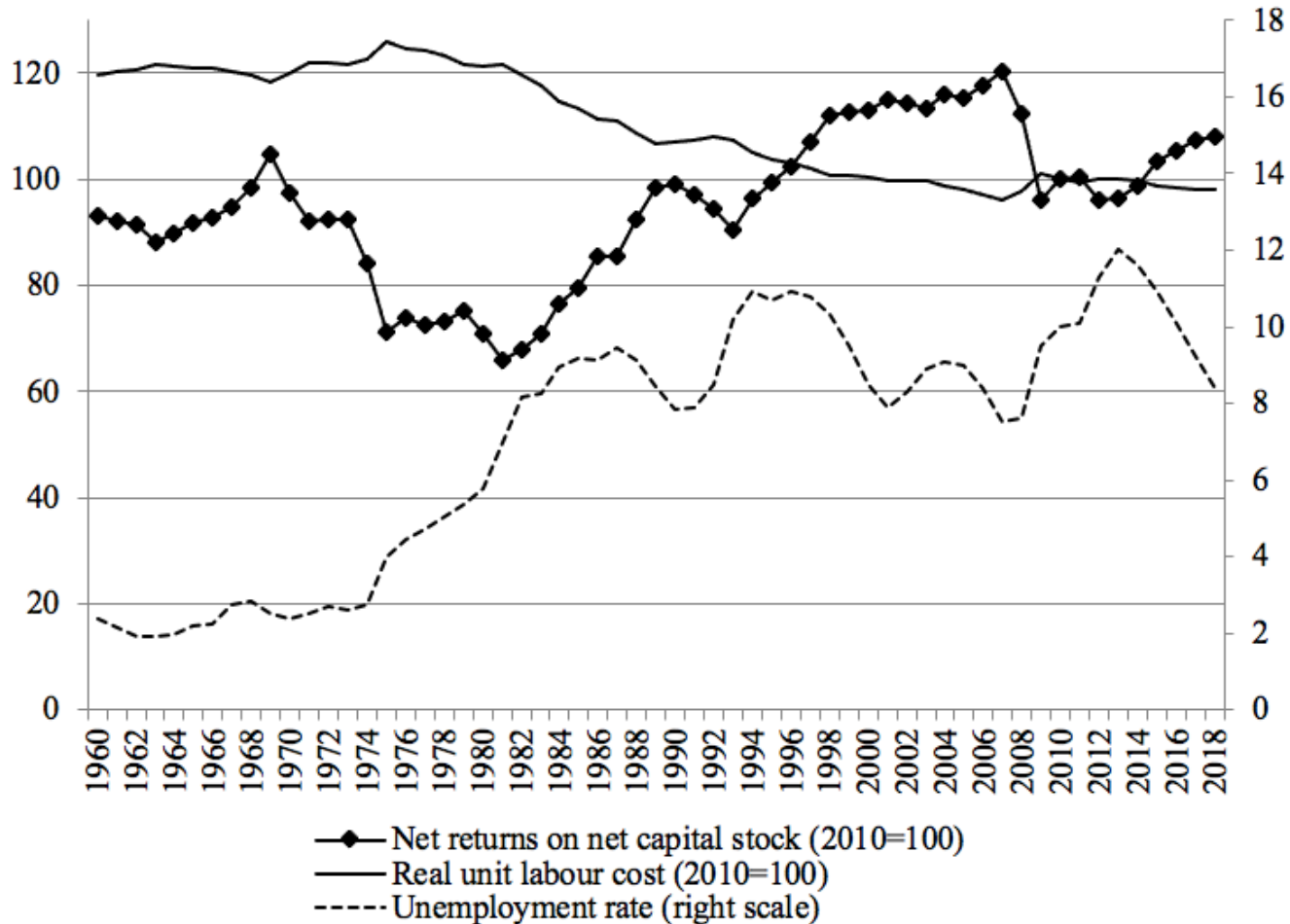
OUR CONTRIBUTION AND THE EXISTING LITERATURE

Our work's main elements of novelty:

- Average behaviour of the wage-productivity link in mature countries for a **long timespan** (22 high-income countries from 1970 to 2018).
- Use of a **plurality of indicators** for each macroeconomic and institutional dimension.
- Focus on the **structural effects** (not cyclical/short-run) of institutional and macroeconomic factors.
- We do not assume a tendency of the economy to return to some 'equilibrium' unemployment **compatible with a stable wage share** and/or understood as an attractor for the economic system.
- Inclusion of **extended indicators of labour market slack**, which take into account also underemployment.
- Adoption of methodological refinements (i.e., we do not focus on the wage share, but we treat compensation and productivity separately).

LABOUR MARKET SLACK

Persistent unemployment and more generally greater labour market slack may act as wage-moderating factor → in recent years, capitalist economies, and particularly European countries, have featured higher and persistent levels of unemployment.



LABOUR MARKET INSTITUTIONS

Premises

- Institutions operating in favour of workers, public policies and practices are recognized in the process of “promoting a broader sharing of productivity gains, both by supporting wages at the bottom of the wage distribution and raising labour shares” (OECD, 2018, p. 60).
- A general process of labor market flexibilization is documented in a variety of works (among others Deakin et al., 2014; Brancaccio et al., 2018; Tridico and Paternesi Meloni, 2018; Hein et al., 2020).

Indicators in literature

- Employment protection legislation (Tridico, 2013; Hein et al., 2020)
- Trade union density (Kristal, 2010; Stockhammer, 2013; Bengtsson, 2014; Prenner, 2018; Tridico and Paternesi Meloni, 2018)
- Collective bargaining coverage (Dell’Aringa and Pagani, 2007; Iversen et al., 2016)
- The generosity of unemployment benefits (Guichard and Rusticelli, 2010)
- Strike activity (Dünhaupt, 2017)
- Part- time and temporary contracts (Pariboni and Tridico, 2019b).

SOME DESCRIPTIVE TRENDS

Variable	Panel average 1970-1980	Panel average 1981-1998	Panel average post-1998
Productivity growth	1.91%	2.15%	1.28%
Real compensation growth	1.64%	1.54%	1.50%
Unemployment rate	3.23	6.15	7.79
Trade openness (share GDP)	42.1	46.2	94.4
FDI inflow plus outflow (share GDP)	1.2	2.5	11.2
Market capitalization (share GDP)	18.2	43.4	74.1
Trade union density	45.3	43.1	29.4
Employment protection	2.34	2.27	2.11

METHODOLOGICAL AND ECONOMETRIC REFINEMENTS

- The use of both **country- and year-fixed effects** enable us to control explicitly for spatial heterogeneity, specific time effects and/or coordinated business cycles. In addition, time fixed effects may reduce the risk of errors due to omitted variables.
- All the variables have been checked to be **panel stationary** by means of a Fisher-type unit-root test based on augmented Dickey-Fuller tests (Choi, 2001).
- As our principal tool, we will use the **feasible generalized least squares (FGLS)** estimator (robust estimations in the presence of autocorrelation within panels as well as cross-sectional correlation and heteroskedasticity across panels).
- We run our models with alternative estimators, namely:
 - i) an autoregressive AR-FGLS estimator (with AR(1) disturbance);
 - ii) an Arellano–Bond estimator for dynamic panel data;
 - iii) a linear GMM (generalized method of moments) estimator;
 - iv) a system GMM estimator.
- We also consider **5-year fixed or moving averages** to deal with the cyclicity of productivity (Basu, 1996) and wages (Stirati, 2016), and to capture the ‘structural’ effects of our variables (impact on the bargaining power of the parties and on wages over time).
- **Robustness:** subperiods, different deflators, private sector uniquely, wage/compensation.

Appendix

Multidimensional indicators of LMS

Our multidimensional measures of *LMS* are constructed by means of Principal Component Analysis (PCA) techniques. *UND1* and *UND2* condense the variables reported in Tables A2.1 and A2.2; while Tables A2.3 and A2.4 report the details of each PCA.

Table A2.1. Components of *UND1*

Index of underemployment version 1 (<i>UND1</i>)
Unemployment rate (<i>UN</i>)
Missing employment rate (<i>ER</i>)
Missing participation rate (<i>PR</i>)

Table A2.2. Components of *UND2*

Index of underemployment version 2 (<i>UND2</i>)
Unemployment rate (<i>UN</i>)
Employment growth with opposite sign (<i>EG</i>)
Missing participation rate (<i>PR</i>)

The missing participation rate (*PR*) is defined as 100 minus the participation rate; *EG* is employment growth with opposite sign; the missing employment rate (*ER*) is defined as 100 minus the employment rate (see Appendix 1 for variables detail).

Table A2.3. Principal Component Analysis for the calculation of *UND1*

Correlation matrix of MVs

Variable	UN	ER	PR
UN	1.000	-	-
ER	0.4727	1.000	-
PR	0.1671	0.8847	1.000

Principal components/correlation (rotation: varimax)

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	2.0981	1.2037	0.6994	0.6994
Comp2	0.8943	0.8869	0.2981	0.9975
Comp3	0.0074	-	0.0025	1.0000

Principal components (eigenvectors) Standardized variables	Comp1	Comp2	Comp3	Un-explained
UN	0.3646	0.8976	0.2477	0
ER	0.6871	-0.0798	-0.7222	0
PR	0.6285	-0.4335	0.6458	0

Table A2.4. Principal Component Analysis for the calculation of *UND2*

Correlation matrix of MVs

Variable	UN	EG	PR
UN	1.000	-	-
EG	0.2321	1.000	-
PR	0.1671	0.0212	1.000

Principal components/correlation (rotation: varimax)

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	1.2555	0.2502	0.4185	0.4185
Comp2	1.0053	0.2661	0.3351	0.7536
Comp3	0.7391	-	0.2464	1.0000

Principal components (eigenvectors) Standardized variables	Comp1	Comp2	Comp3	Un-explained
UN	0.7107	0.0084	-0.7034	0
EG	0.5877	-0.5567	0.5871	0
PR	0.3866	0.8307	0.4006	0

Appendix

Simple model of decoupling (deflating compensations with GDP deflator)

Variables	Model 6	Model 7 (5y-MA)	Model 8 (5y-FA)	Model 9 (1980-2018)	Model 10 (1999-2018)
ΔR_PROD	0.338*** (0.043)	0.601*** (0.040)	0.594*** (0.091)	0.239*** (0.048)	0.075 (0.060)
Constant	3.858*** (0.625)	1.961*** (0.331)	1.719*** (0.517)	0.514 (0.619)	1.392** (0.609)
Obs. (Countries)	904 (22)	904 (22)	190 (22)	731 (22)	396 (22)
Adjusted R2	0.257	0.580	0.558	0.151	0.112
Wald statistic	$\chi^2(67) = 301.07$	$\chi^2(69) = 1249.07$	$\chi^2(31) = 242.64$	$\chi^2(58) = 131.95$	$\chi^2(39) = 50.07$
Prob > χ^2	0.000	0.000	0.000	0.000	0.110

Dependent variable: ΔR_COMP . Labour compensations are deflated by means of the GDP deflator. MA = moving averages; FA = fixed averages. Timespan: 1970–2018 (unless specified differently). All specifications include country and year fixed effects. Robust standard errors clustered by countries in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Appendix

Baseline model with alternative estimators

Variables	Model AR-FGLS	Model Arellano-Bond	Model Linear GMM	Model System GMM
ΔR_COMP (-1)	-	0.269*** (0.033)	-	0.280*** (0.028)
ΔR_PROD	0.302*** (0.044)	0.323*** (0.044)	0.359*** (0.039)	0.325*** (0.044)
$\Delta REER$	0.083*** (0.014)	0.100*** (0.014)	0.098*** (0.013)	0.103*** (0.014)
RIR	0.043 (0.028)	0.019 (0.025)	0.017 (0.023)	0.003 (0.025)
UN	-0.231*** (0.042)	-0.144*** (0.035)	-0.214*** (0.030)	-0.142*** (0.035)
Constant	4.587*** (0.703)	3.626*** (0.613)	2.794*** (0.382)	3.154 (3.554)
Obs. (Countries)	825 (22)	794 (22)	825 (22)	816 (22)
Wald statistic	$\chi^2(70) =$ 339.55	$\chi^2(50) =$ 493.69	$\chi^2(48) =$ 513.13	$\chi^2(71) =$ 649.10
Prob > χ^2	0.000	0.000	0.000	0.000

*Dependent variable: ΔR_COMP . Labour compensations are deflated by means of the CPI index. Model AR-FGLS estimated by means of cross-sectional time-series FGLS regression with AR(1) disturbance. Model Arellano-Bond estimated by means of dynamic panel-data estimation. Model Linear GMM estimated with linear dynamic panel-data estimation. Model System GMM estimated by means of system dynamic panel-data estimation. Timespan: 1970–2018. All specifications include country and year fixed effects. Robust standard errors clustered by countries in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.*

FINDINGS – BASELINE MODEL (ENLARGED LMS)

Variables	Model UN_N	Model ER	Model EG	Model PR	Model UND1	Model UND2
ΔR_{PROD}	0.363*** (0.043)	0.370*** (0.043)	0.411*** (0.045)	0.352*** (0.044)	0.352*** (0.046)	0.374*** (0.043)
$\Delta REER$	0.098*** (0.014)	0.106*** (0.014)	0.100*** (0.014)	0.109*** (0.014)	0.105*** (0.015)	0.094*** (0.014)
RIR	-0.011 (0.024)	-0.025 (0.024)	-0.003 (0.023)	-0.040* (0.023)	-0.026 (0.025)	-0.013 (0.024)
LMS	-0.165*** (0.028)	-0.111*** (0.036)	-0.280*** (0.044)	-0.028 (0.026)	-0.105*** (0.039)	-0.268*** (0.035)
Constant	4.113*** (0.630)	4.532*** (0.646)	3.299*** (0.640)	4.757*** (1.004)	4.605*** (0.758)	4.428*** (0.664)
Obs. (Countries)	825 (22)	831 (22)	831 (22)	822 (22)	816 (22)	816 (22)
Adjusted R2	0.375	0.367	0.392	0.346	0.339	0.377
Wald statistic	$\chi^2(69) =$ 495.76	$\chi^2(69) =$ 483.43	$\chi^2(69) =$ 536.13	$\chi^2(69) =$ 435.27	$\chi^2(69) =$ 419.88	$\chi^2(69) =$ 494.54
Prob > χ^2	0.000	0.000	0.000	0.000	0.000	0.000

Dependent variable: ΔR_{COMP} . Labour compensations are deflated by means of the CPI index. UN_N = unemployment rate (standardized); ER = missing employment rate; EG = employment growth (opposite sign); PR = missing participation rate; UND1 = composite index of underemployment, version 1 (including UN, ER, PR); UND2 = composite index of underemployment, version 2 (including UN, EG, PR). Note: all coefficients on enlarged measures of LMS are comparable as variables have been standardized. Timespan: 1970–2018. All specifications include country and year fixed effects. Robust standard errors clustered by countries in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

FINDINGS – EXTENDED MODEL (WITH GLOB)

Variables	Model EXP	Model IMP	Model OPEN	Model EXP with 5y-MA	Model IMP with 5y-MA	Model OPEN with 5y-MA
ΔR_PROD	0.360*** (0.043)	0.359*** (0.044)	0.359*** (0.043)	0.614*** (0.039)	0.616*** (0.041)	0.614*** (0.039)
$\Delta REER$	0.098*** (0.014)	0.097*** (0.015)	0.098*** (0.014)	0.157*** (0.015)	0.156*** (0.016)	0.156*** (0.015)
RIR	0.015*** (0.025)	0.022 (0.026)	0.019 (0.025)	-0.023* (0.016)	-0.023 (0.017)	-0.024 (0.016)
UN	-0.205*** (0.034)	-0.215*** (0.033)	-0.214*** (0.034)	-0.145*** (0.019)	-0.148*** (0.019)	-0.145*** (0.019)
$GLOB$	-0.684 (0.932)	1.605 (1.095)	0.151 (0.525)	-0.792*** (0.441)	-1.256** (0.559)	-0.525** (0.249)
Constant	4.428*** (0.628)	4.370*** (0.628)	4.421*** (0.628)	2.980*** (0.329)	3.014*** (0.344)	2.995*** (0.329)
Obs. (Countries)	825 (22)	825 (22)	825 (22)	891 (22)	891 (22)	891 (22)
Adjusted R2	0.379	0.381	0.380	0.667	0.668	0.667
Wald statistic	$\chi^2(70) =$ 505.24	$\chi^2(70) =$ 507.83	$\chi^2(70) =$ 504.50	$\chi^2(73) =$ 1786.97	$\chi^2(73) =$ 1793.77	$\chi^2(73) =$ 1790.55
Prob > χ^2	0.000	0.00	0.000	0.000	0.000	0.000

Dependent variable: ΔR_COMP . Labour compensations are deflated by means of the CPI index. Timespan: 1970–2018. All specifications include country and year fixed effects. Robust standard errors clustered by countries in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

FINDINGS – EXTENDED MODEL (WITH FIN)

Variables	Model CRED	Model MKT	Model FGL	Model FDI	Model DIV	Model DIV_NFC	Model CRED, 5y-MA	Model FDI, 5y-MA
ΔR_{PROD}	0.367*** (0.059)	0.289*** (0.038)	0.414*** (0.051)	0.303*** (0.043)	0.301*** (0.041)	0.281*** (0.045)	0.500*** (0.047)	0.539*** (0.039)
$\Delta REER$	0.112*** (0.019)	0.054*** (0.013)	0.099*** (0.015)	0.100*** (0.013)	0.052*** (0.016)	0.075*** (0.016)	0.157*** (0.018)	0.147*** (0.014)
RIR	-	-0.051** (0.026)	0.031 (0.027)	-0.073*** (0.027)	-0.074*** (0.028)	-0.083*** (0.030)	-	-0.090*** (0.017)
UN	-0.155*** (0.049)	-0.163*** (0.028)	-0.226*** (0.042)	-0.183*** (0.032)	-0.183*** (0.030)	-0.177*** (0.033)	-0.139*** (0.022)	-0.136*** (0.018)
FIN	-1.743*** (0.390)	0.230 (0.266)	-0.890 (1.049)	-0.462 (0.397)	0.004 (0.022)	0.007 (0.056)	-1.547*** (0.194)	-0.893** (0.338)
Constant	5.630*** (0.961)	4.682*** (0.615)	4.353*** (0.651)	4.238*** (0.633)	1.083 (0.861)	3.299*** (0.817)	2.988*** (0.453)	2.981*** (0.3259)
Obs. (Countries)	553 (22)	643 (21)	733 (22)	763 (22)	498 (19)	537 (20)	553 (22)	763 (22)
Adjusted R2	0.395	0.388	0.376	0.350	0.472	0.437	0.676	0.668
Wald statistic	$\chi^2(79) =$ 361.59	$\chi^2(65) =$ 407.25	$\chi^2(66) =$ 441.28	$\chi^2(70) =$ 470.78	$\chi^2(67) =$ 445.70	$\chi^2(68) =$ 417.85	$\chi^2(72) =$ 1253.39	$\chi^2(73) =$ 1676.34
Prob > χ^2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Dependent variable: ΔR_{COMP} . Labour compensations are deflated by means of the CPI index. Timespan: 1970–2018. The FGL specification refer to the period 1970–2011 due to data availability. All specifications include country and year fixed effects. Robust standard errors clustered by countries in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

FINDINGS – EXTENDED MODEL (WITH LMI)

Variables	Model TU	Model EPL	Model EPL_T	Model BC	Model TU with 5y-MA	Model EPL with 5y-MA	Model BC with 5y-MA	Model TEMP	Model PT
ΔR_{PROD}	0.322*** (0.041)	0.284*** (0.040)	0.303*** (0.052)	0.597*** (0.056)	0.605*** (0.040)	0.462*** (0.039)	0.597*** (0.037)	0.238*** (0.046)	0.237*** (0.048)
$\Delta REER$	0.090*** (0.013)	0.093*** (0.013)	0.088*** (0.014)	0.081*** (0.016)	0.155*** (0.016)	0.151*** (0.014)	0.145*** (0.014)	0.117*** (0.016)	0.116*** (0.017)
RIR	0.023 (0.024)	-0.064** (0.025)	-0.092*** (0.030)	-0.011 (0.034)	-0.033* (0.017)	-0.101*** (0.018)	-0.072*** (0.019)	-0.083** (0.032)	-0.082** (0.034)
UN	-0.234*** (0.032)	-0.155*** (0.031)	-0.180*** (0.035)	-0.217*** (0.038)	-0.161*** (0.019)	-0.112*** (0.019)	-0.148*** (0.018)	-0.159*** (0.036)	-0.158*** (0.039)
LMI	4.699*** (1.278)	0.513* (0.342)	0.238* (0.129)	2.672** (1.046)	3.009*** (0.660)	0.251* (0.183)	0.823** (0.430)	-1.883 (3.793)	-0.983 (4.246)
Constant	2.841*** (0.738)	4.139*** (0.801)	1.807*** (0.596)	0.788 (1.685)	1.989*** (0.400)	2.965*** (0.421)	2.512*** (0.442)	2.908*** (0.696)	3.040*** (1.163)
Obs. (Countries)	799 (22)	741 (22)	543 (22)	407 (22)	799 (22)	741 (22)	407 (22)	531 (22)	531 (22)
Adjusted R2	0.406	0.404	0.404	0.547	0.677	0.684	0.705	0.367	0.366
Wald statistic	$\chi^2(70) =$ 546.49	$\chi^2(70) =$ 503.60	$\chi^2(55) =$ 366.09	$\chi^2(70) =$ 491.35	$\chi^2(73) =$ 1870.12	$\chi^2(73) =$ 1744.66	$\chi^2(73) =$ 2043.57	$\chi^2(51) =$ 307.91	$\chi^2(51) =$ 307.61
Prob > χ^2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Dependent variable: ΔR_{COMP} . Labour compensations are deflated by means of the CPI index. Timespan: 1970–2018. All specifications include country and year fixed effects. Robust standard errors clustered by countries in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Appendix

Alternative specifications

Variables	Model A 1980-2018	Model B 1999-2018	Model C PR_S (1)	Model D PR_S (2)	Model E PR_S (3)	Model F PR_S (4)	Model G PR_S (5)	Model H GDP-deflated compensation	Model W Average gross wage
ΔR_PROD	0.331*** (0.046)	0.202*** (0.051)	0.192*** (0.040)	0.143*** (0.045)	0.144*** (0.045)	0.194*** (0.039)	0.203*** (0.040)	0.356*** (0.042)	0.361*** (0.038)
$\Delta REER$	0.104*** (0.015)	0.128*** (0.020)	0.064*** (0.018)	0.065*** (0.019)	0.066*** (0.019)	0.065*** (0.017)	0.061*** (0.018)	0.085*** (0.014)	0.059*** (0.012)
RIR	0.036 (0.027)	-0.066* (0.038)	-0.047 (0.032)	0.008 (0.036)	0.005 (0.037)	-0.055* (0.032)	-0.040 (0.034)	-	-0.057** (0.025)
UN	-0.202*** (0.035)	-0.175*** (0.044)	-0.119*** (0.044)	-0.044 (0.051)	-0.034 (0.052)	-0.094** (0.045)	-0.130*** (0.046)	-0.156*** (0.030)	-0.167*** (0.029)
$TEMP$	-	-	-	-0.185*** (0.046)	-0.174*** (0.047)	-	-	-	-
EPL	-	-	-	-	-	-	0.370* (0.220)	-	-
$OPEN$	-	-	-	-	-0.965 (0.935)	-2.186*** (0.867)	-	-	-
Constant	0.249 (0.602)	2.956*** (0.566)	3.182*** (1.325)	2.543*** (0.897)	2.554*** (0.896)	3.082*** (1.315)	2.593* (1.422)	4.198*** (0.623)	4.100*** (0.536)
Obs. (Countries)	709 (22)	374 (22)	379 (18)	291 (18)	291 (18)	379 (18)	366 (18)	863 (22)	787 (21)
Adjusted R2	0.285	0.399	0.482	0.427	0.429	0.490	0.460	0.303	0.412
Wald statistic	$\chi^2(60) =$ 282.83	$\chi^2(41) =$ 284.50	$\chi^2(62) =$ 352.14	$\chi^2(43) =$ 217.61	$\chi^2(44) =$ 219.47	$\chi^2(63) =$ 364.39	$\chi^2(63) =$ 312.18	$\chi^2(69) =$ 375.63	$\chi^2(68) =$ 550.81
Prob > χ^2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Dependent variable: ΔR_COMP in Models A, B, C, D, E, F, G and H; while ΔR_WAGE in Model W. Labour compensations or alternatively gross wages are deflated by means of the CPI index in all Models except Model H, where we use GDP-deflated compensation. Timespan: 1970–2018 (unless specified differently). All specifications include country and year fixed effects. Robust standard errors clustered by countries in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Appendix

General model with 5-years moving and fixed averages

Variables	Moving averages							Fixed averages		
	CPI-deflated compensation				GDP-deflated compensation			CPI-deflated compensation		
	1980-2018	1999-2018	With TU and OPEN	With TU and FDI	With TU	With TU and OPEN	With TU and FDI	Baseline model	General Model with OPEN	General Model with FDI
<i>ΔR_PROD</i>	0.580*** (0.044)	0.498*** (0.049)	0.603*** (0.039)	0.527*** (0.039)	0.615*** (0.036)	0.616*** (0.036)	0.555*** (0.038)	0.562*** (0.083)	0.545*** (0.084)	0.456*** (0.087)
<i>ΔREER</i>	0.147*** (0.017)	0.183*** (0.019)	0.156*** (0.015)	0.147*** (0.014)	0.108*** (0.014)	0.108*** (0.014)	0.099*** (0.014)	0.160*** (0.032)	0.158*** (0.031)	0.158*** (0.031)
<i>RIR</i>	-0.013 (0.017)	-0.059** (0.024)	-0.040** (0.016)	-0.089** (0.017)	0.035** (0.015)	0.030* (0.016)	0.025 (0.016)	-0.034 (0.034)	-0.048 (0.035)	-0.050 (0.035)
<i>UN</i>	-0.149*** (0.020)	-0.150*** (0.021)	-0.153*** (0.019)	-0.147*** (0.018)	-0.145*** (0.017)	-0.141*** (0.017)	-0.155*** (0.017)	-0.134*** (0.037)	-0.139*** (0.038)	-0.153*** (0.038)
<i>TU</i>	-	-	3.000*** (0.631)	1.992*** (0.668)	2.192*** (0.587)	2.155*** (0.587)	1.996*** (0.643)	-	2.290** (1.332)	2.526** (1.469)
<i>OPEN</i>	-	-	-0.520** (0.245)	-	-	-0.392* (0.221)	-	-	-0.510 (0.496)	-
<i>FDI</i>	-	-	-	-0.856** (0.337)	-	-	-1.030*** (0.323)	-	-	-0.223 (0.778)
Constant	0.573* (0.301)	1.734*** (0.332)	2.019*** (0.382)	2.333*** (0.390)	1.890*** (0.373)	1.924*** (0.357)	1.828*** (0.376)	2.737*** (0.474)	2.036*** (0.641)	1.976*** (0.673)
<i>Obs. (Countries)</i>	745 (22)	578 (22)	890 (22)	830 (22)	890 (22)	890 (22)	830 (22)	187 (22)	187 (22)	176 (22)
<i>Adjusted R2</i>	0.511	0.600	0.679	0.672	0.655	0.656	0.615	0.690	0.696	0.667
<i>Wald statistic</i>	$\chi^2(61) = 779.49$	$\chi^2(51) = 868.41$	$\chi^2(73) = 1884.06$	$\chi^2(74) = 1703.13$	$\chi^2(73) = 1709.93$	$\chi^2(74) = 1719.07$	$\chi^2(74) = 1339.61$	$\chi^2(34) = 416.56$	$\chi^2(36) = 425.55$	$\chi^2(36) = 353.94$
<i>Prob > χ^2</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Dependent variable: *ΔR_COMP* (different deflators). All specifications include country and year fixed effects. Timespan: 1970–2018 (unless specified differently). Robust standard errors clustered by countries in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

COMPARISON WITH OTHER WORKS

- Concerning unemployment, our findings are almost completely in line with literature, with an average coefficient of -0.2.
- Same effects also for globalization, intended as trade or capital mobility (FDI).
- Some disagreement with respect to financialization: market capitalization has a significant (negative) effect in both Stockhammer (2017) and Pariboni and Tridico (2019); the dividend-to-profit ratio is also not significant in our work.
- Concerning *LMI*, our findings do not confirm the nuanced picture suggested by some of the literature: in our investigation, *all* the selected proxies for institution in favour of workers have the expected association with wage dynamics.

How discrepancies can be motivated

- Two different panels: Stockhammer (2017) refers to the pre-2008 period uniquely and considers both mature and developing economies
- Stockhammer (2017) uses a different indicator of employment protection (we focus on mature countries), while our results are in line with Pariboni and Tridico (2019)
- Methodological reasons: we treat productivity and pay separately (side-effects?), and we always use a two-way fixed effect strategy

Appendix

Variables and sources (1)

Average labour compensation (<i>COMP</i>)	The average labour compensation per employed person includes the gross wage and the value of social contributions payable by employers. Source: OECD.Stat, Productivity, total economy and private sector.
Average gross wage (<i>WAGE</i>)	The average gross wage includes uniquely wages and salaries paid in cash or in kind. Source: OECD.Stat, Labour, Earnings.
Labour productivity (<i>PROD</i>)	Labour productivity is defined as real GDP per person employed. Real GDP is nominal GDP deflated by the product price index. Source: OECD.Stat, Productivity, total economy and private sector.
CPI index	Source: OECD.Stat, Economic Outlook No 106, November 2019.
GDP deflator	Source: OECD.Stat, Economic Outlook No 106, November 2019.
Real interest rate (<i>RIR</i>)	Real interest rate is defined as the lending interest rate adjusted for inflation as measured by the GDP deflator. Source: OECD.Stat, Key Economic indicators.
Real effective exchange rate (<i>REER</i>)	Nominal effective exchange divided by a price deflator or index of costs. Index (2010=100). Source: World Bank, World Development Indicators.
Unemployment rate (<i>UN</i>)	Unemployment rate (as a percentage of active labour force). Source: OECD.Stat, Labour Force Statistics.
Short-term unemployment rate (<i>STU</i>)	Author calculation on short-term unemployment (persons, less than 6 months) and active labour force (15-64 years). Source: OECD.Stat, Labour force statistics.
Long-term unemployment rate (<i>LTU</i>)	Author calculation based on long-term unemployment (persons, 6 months or more) and active labour force (15-64 years). Source: OECD.Stat, Labour force statistics.
Unemployment duration	Average duration of unemployment (expressed in months). Source: OECD.Stat, Labour Force Statistics, Unemployment by duration.
Employment	Employment, all persons. Source: OECD.Stat, Labour force statistics, Employment by activities.
Working age population	Working age population (15-64 years). Source: OECD.Stat, Labour force statistics.
Participation rate	Active labour force as a percentage of working age population (15-64 years). Source: OECD.Stat, Labour force statistics.
Export (<i>EXP</i>)	Export of goods and services (% of GDP). Source: World Bank.
Import (<i>IMP</i>)	Import of goods and services (% of GDP). Source: World Bank.

Appendix

Variables and sources (2)

Credit provision (<i>CRED</i>)	Domestic credit provided by the financial sector (% of GDP). Source: World Bank.
Market capitalization (<i>MKT</i>)	Market capitalization of listed domestic companies (% of GDP). Source: World Bank.
Distributed dividends (<i>DIV</i>)	Ratio of distributed income of corporations to gross operating surplus. Source: own calculation on OECD.Stat (Dataset: 14A. Non-financial accounts by sectors).
Distributed dividends in non-financial corporations (<i>DIV_NFC</i>)	Ratio of distributed income of non-financial corporations to gross operating surplus of non-financial corporations. Source: own calculation on OECD.Stat (Dataset: 14A. Non-financial accounts by sectors).
Financial globalization (<i>FGL</i>)	Financial globalization is external assets plus external liabilities (% of GDP). Source: Lane and Milesi-Ferretti (2007).
Foreign direct investment (<i>FDI</i>)	Foreign direct investment (inward plus outward) share of GDP. Source: OECD.Stat, FDI flows (total and by industry).
Trade union density (<i>TU</i>)	Trade union density (administrative data, survey data when administrative data are not available). Source: OECD.Stat, Trade unions and collective bargain.
Employment protection legislation (<i>EPL</i>)	Strictness of employment protection – individual and collective dismissals (regular contracts), version 1. Source: OECD.Stat, Labour, Employment protection.
Employment protection legislation, temporary (<i>EPL_T</i>)	Strictness of employment protection – individual and collective dismissals (temporary contracts), version 1. Source: OECD.Stat, Labour, Employment protection.
Collective bargaining coverage (<i>BC</i>)	Percentage of employees with the right to bargain. Source: OECD.Stat, Trade unions and collective bargain.
Part-time contracts (<i>PT</i>)	Share of employed in part-time employment. Source: OECD.Stat, Labour force statistics (Full-time Part-time employment).
Temporary contracts (<i>TEMP</i>)	Share of temporary employment. Temporary employment includes wage and salary workers whose job has a pre-determined termination date. Source: OECD.Stat, Labour force statistics (Incidence of permanent employment).