

Labour productivity, wages and the functional distribution of income in Portugal: A sectoral approach

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ABSTRACT

The main purpose of this paper is to study the functional distribution of income in Portugal in the long run, considering the period between 1953 and 2017. The labour share in income or value added depends on two fundamental variables, labour productivity and the average labour compensation. The trends of these variables are quantified for the aggregate economy and for its main productive sectors. An interesting result emerges, namely the different dynamics across sectors, both for the (unadjusted) wage share (considering only the wages of employees) and for the adjusted labour share (considering also as labour compensation one fraction of mixed income). Moreover, a shift-share analysis is used, in order to distinguish the importance of each sector's wage share evolution ("within" effect) and the changes in each sector's weight (structural changes, or "between" effect). Finally, a first attempt to incorporate the effect of wage inequality on the functional distribution of income is made, subtracting the labour compensation of the highest paid workers (top 10%, 5% and 1%) in order to calculate the wage share of the (so-called) "typical" workers.

KEYWORDS

functional income distribution, labour share, sectoral analysis, shift-share analysis, wage inequalities, Portugal

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1. INTRODUCTION

The functional distribution of income is an important economic, social and political topic. Nicholas Kaldor, in a seminal paper published in 1957, considered that the share of wages and the share of profits in the national income have shown a remarkable constancy in developed capitalist economies (Kaldor 1957). Previously, J. M. Keynes has written “. . .the stability of the proportion of the national dividend accruing to labour [. . .] is one of the most surprising, yet best-established, facts in the whole range of economic statistics [. . .] Indeed, [. . .] the result remains a bit of a miracle.” (Keynes 1939: 48/49). However, Solow (1958) had a sceptical position about this empirical regularity, saying that the stability of labour’s share may be an optical illusion.

Since then, (at least) mainstream economists gave little attention to this interesting theme, considering it irrelevant and ignoring it in most economics manuals or even seeing it as uncomfortable, as if studying distribution dynamics was a revival of class struggle concerns. For instance, Blaug (1996: 467) sustained that “the great mystery of the modern theory of distribution is why anyone regards the share of wages and profits as an interesting problem”. Lucas (2004) went even further, saying that “[o]f the tendencies that are harmful to sound economics, the most seductive, and in my opinion the most poisonous, is to focus on questions of distribution[. . .]”. Martin Feldstein, the former head of Reagan’s Council of Economic Advisors, in turn, considered that studies of income distribution are motivated by envy (cited in Milanovic 2013): “[b]efore the global crisis, income inequality was relegated to the underworld of economics. The motives of those who studied it were impugned.”

In fact, in a setting of perfectly competitive markets, with factors remunerated according to their marginal productivity, labour and capital shares are constant by assumption, as in the neoclassical growth models of Solow (1956) and Swan (1956). So, the labour share has been considered stable overtime by most researchers, and, at least until the 1980s, this was considered one of the (Kaldor’s) stylized facts of economic growth.

Nevertheless, two or three decades of globalization and prevalence of neoliberal ideas has changed it all, and, from the early 1980s until today, the labour share has been decreasing, at least in developed economies. First examples of authors studying this subject are, among others, Blanchard (1997), Blanchard and Giavazzi (2003) and Bentolila and Saint-Paul (2003). In addition, this trend is nowadays consensually recognized by the most important international organizations (see, for example, European Commission 2007; ILO – OECD 2015; IMF 2017; OECD 2018) and has recently attracted great attention from researchers and policy makers everywhere. The decrease of the labour share has been quantified by many empirical researchers for many countries and its negative consequences have been highlighted (Atkinson, 2009; Piketty, 2014).

There is still however some inertia on the study of this topic by mainstream economists. For example, in an interesting study of new growth facts (*a la* Kaldor), Jones and Romer (2009) recognize the trend of a decreasing labour share, but do not ascribe it the status of “a new stylized fact of growth”. For Atkinson (2009), however, this is the main issue that political economy must address, for at least three reasons: to make a link between incomes at the macroeconomic level (national accounts) and incomes at the level of the household; to help to understand the inequality in the personal distribution of income; and to address the concern of social justice with the fairness of different sources of income.



Conceptually, the functional distribution of income is the division of national income between labour and capital. The labour share is the part of national income attributed as labour compensation, whereas the capital share is the part of national income allocated to capital. A decrease of the labour share results from a low growth of average labour compensation relative to the growth of labour productivity and, therefore, an increasing return of capital against labour. This is a source of increasing inequalities, if capital gains are concentrated at the upper end of the income distribution (Ponattu et al. 2018). A clear illustration of this tendency for the USA is presented by Taylor (2020: 4): “[s]urging non-wage income is striking for households in the top one percent. These people generate most personal saving and hold substantial wealth, including equity and real estate, which produce capital gains.”

There are many reasons explaining the decreasing path of the labour share. From the point of view of mainstream economists, technical progress, globalization and the change in market structures (concentration) contribute to explain the phenomenon (Cette et al. 2019). In this line of reasoning, Karabarbounis and Neiman (2014) underlined the decrease in the price of capital goods coupled with an elasticity of labour replacement for capital above one. Autor and Salomons (2018) highlighted the importance of communication and information technologies, robotization and automation. In the context of globalization, offshoring and global value chains assume an important role (Elsby et al. 2013). The tendency for concentration in market structures is due to the emergence of hyper-productive firms, originating from “winner-take most” dynamics, as referred by Autor et al. (2017). Gutiérrez and Philippon (2018) and Philippon (2019) attribute some of the decline in the US labour share to a declining competition. Two other explanations, highlighted in a recent report about this issue (McKinsey Global Institute 2019), are boom and bust cycles (rapidly rising prices of commodities, real estate and construction) and higher depreciation of intangible capital (namely, intellectual property products).

On the other hand, alternative schools of thought, namely the (so-called) heterodox economists, sociologists, and political scientists, have identified other reasons for the decrease of the labour share such as the decrease of union power (Stockhammer 2009), financialisation (Epstein 2005; Hein 2015; Guschanski – Onaran 2018), and the decreasing weight of the public sector, due to the neoliberal program of privatizations, deregulation and welfare state retrenchment (Dünhaupt 2013).

There is a growing body of empirical literature focused on the problems of measuring the labour share. For example, Bridgman (2018) called attention to the difference between gross and net labour share and the corresponding role of depreciation and production taxes, which have been growing and contributing to explain a significant part of the increase in the first indicator, but not the second. Kónya et al. (2020) highlighted the importance of considering the mixed income of self-employed workers and computing adjusted labour share indicators, particularly in countries with a significant share of agriculture and informal services in total employment, as is the case in Central and Eastern European Countries (CEEC). Cette et al. (2019) studied the joint impact on the labour share when accounting for: (i) start and end periods; (ii) self-employment; and (iii) residential real estate income, concluding that, after correction of these three potential biases, a general decline in the labour share does not emerge in their sample of advanced economies. An opposite view is proposed by Stansbury and Summers (2020), who argued that after carefully defining and measuring the bargaining power of workers in the USA, a clear falling labour share tendency is detected and explained for this country’s case.



This paper studies the evolution of the labour share in Portugal, a southern and semi-peripheral European country, over a long time period marked by very different political and economic phases: a dictatorship until 1974; economic integration in the (then) European Economic Community in 1986; sharing a strong currency (the Euro) with more advanced economies since 1999; a serious macroeconomic austerity program imposed by the *Troika* (European Commission; European Central Bank; International Monetary Fund) in the sovereign debt crisis period of 2011–2014, shortly after the great recession of 2008/2009. There has not been much investigation about this issue in Portugal, and one of the few references worth mentioning is [Barradas and Lagoa \(2017\)](#), who study the relationship between the labour share and financialisation and other related determinants for Portugal between 1978 and 2012. They conclude by means of an ARDL (Autoregressive Distributed Lag) model that financialisation had an indirect long-term effect on the labour share through its impact on government activity and trade union density. In addition, as far as we know, at the sectoral level there are no studies of the Portuguese case. The present paper aims to overcome this literature gap, which is important because the dynamics of labour productivity and average wages are very different across sectors, as well illustrated by [Taylor and Ömer \(2019\)](#) for the case of the US and by [Kónya et al. \(2020\)](#) for the CEEC case.

The rest of the paper is organized as follows. After a short section presenting the measures used in the paper and the corresponding data sources (Section 2), the evolution of the wage share and the adjusted labour share in Portugal is quantified and analysed for a long time-horizon (1953–2017) for the whole economy, and for a period of four decades (1977–2016) for five big sectors, in Section 3. Still in Section 3, a brief comparison of the data for Portugal with that for France, United Kingdom and the USA for the period 1960–2019 is presented. Next, for a more recent period (1995–2017) a more detailed sectoral analysis is made, by means of a shift-share exercise explaining “within” and “between” effects of labour share changes across 38 sectors, and also a careful quantification of trends in wage share, adjusted labour share, labour productivity and average wages in several individual sectors (Section 4). In Section 5, the wage share of the so-called “typical” workers is constructed, subtracting from total labour compensation the wages of the highest-paid workers. Finally, Section 6 concludes the paper by presenting the main results and some limitations of this study.

2. MEASURES AND DATA SOURCES

2.1. Measures

In this paper two definitions are used to measure the share of national income allocated to labour. The first one is the *wage share*, the weight of wages in gross value added (GVA), including in wages all the income compensation of employees (payroll taxes paid by employers are included). Gross value added corresponds to GDP at factor cost, resulting from adding labour compensation and gross operating surplus (excluding production and products taxes net of subsidies). It is worth noting that gross operating surplus encompasses profits, interest and rents, but also capital depreciation. It would be interesting to exclude this last component and work with a net wage share measure, but at the sectoral level (the main purpose of our study) the data on capital depreciation are imprecise or unavailable.



The second measure is the *adjusted labour share*, obtained by adding to the compensation of employees one parcel of the income received by the self-employed workers (the so-called mixed income). There are several methods to calculate this parcel. The first method, and the simpler one, consists of attributing two-thirds of the mixed income to labour and one third to capital. The second one, which is used in this paper, assumes that the self-employed have the same average wage as the employees, and its labour compensation is calculated by multiplying this (common) average wage by the total number of self-employed workers. This method can be sophisticated, considering the average earnings of the self-employed equal to those of employees with similar sectoral and personal characteristics (education levels, age, gender, etc.). For more details on this, see, for example, [Guerriero \(2012\)](#).

In order to uncover the wage inequalities implicit in a global wage share measure, through the study of the wage share of (so-called) “typical” workers, the wage share of the bottom 90%, 95%, and 99% workers in the wage distribution is also calculated.

2.2. Data sources

To obtain a very long run quantification of the wage and adjusted labour shares (1953–2017), it was necessary to combine three databases: (i) the historical series constructed by the Portuguese Central Bank (*Séries Longas do Banco de Portugal*), with data from 1953 until 1977; (ii) the OECD STAN database, with data sourced by the Portuguese Statistical Institute, based on the System of Portuguese National Accounts, 1977 (*Instituto Nacional de Estatística (INE) – Sistema de Contas Nacionais Portuguesas*, SCNP 1977), between 1977 and 1995; and (iii) data obtained from INE, based on the System of European Accounts – SEC 1995), between 1995 and 2017.

The source for the international comparison of labour shares is AMECO’s “adjusted wage share” indicator, corresponding to our “adjusted labour share” measure.

The sectoral analysis of the labour share is made in two stages: first, a broad picture of the five main sectors of the economy, in a long-run period of four decades: 1977–2017, with data from SCNP 1977 and SEC 1995. Second, a more detailed analysis for the period 1995–2016, considering 38 sectors, by means of a shift-share analysis, as well as a closer look at some individual sectors’ wage share, assessing the combined evolution of labour productivity (gross value added per employee) and average wages.

Finally, to calculate the labour share of “typical” workers, we use a rich database from the Portuguese Ministry of Labour and Social Solidarity with personal records, called *Quadros de Pessoal (QP)*. This database covers more than three million workers and around three hundred thousand firms per year and contains annual information on every wage earner in the Portuguese economy (except for civil servants and independent workers), namely gender, age, education, skills, occupation, monthly wages and hours worked.

3. THE LABOUR SHARE IN PORTUGAL: A LONG RUN PERSPECTIVE

3.1. The labour share in the whole economy: 1953–2017

The evolution of the wage share in Portugal since the 1950s until today has shown an irregular pattern of ups and downs, but it is very interesting to notice that the start and end values of the



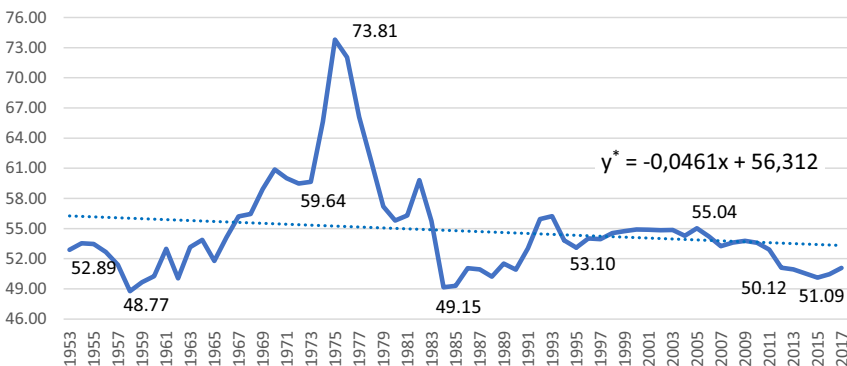
series are almost equal, around 52% (see Fig. 1). It is as if Kaldor is right and the Keynesian “bit of a miracle” prevails in the long run trajectory of Portuguese functional income distribution.

However, after some slight variations around 52% in the first decade or so the wage share in Portugal started a pronounced upward trend in the mid-1960s and attained its highest value in 1975 (73.8%). This trend can be attributed to some peculiarities of the Portuguese case, namely the social and political context of the country rather than purely economic reasons: a strong emigration flow during the sixties and the first years of the 1970s, and the end of the dictatorship (*Estado Novo*) with the 25 April Revolution and its subsequent political upheaval and left turnover (1974/1975).

With the so-called “normalization” of the political situation (in 1976), and mainly with the austerity associated with the two balance of payment crises and IMF interventions (1977–1979 and 1983–1985), the wage share reversed the previous strong upward trend and, in less than a decade, returned to values below its average norm (49.2% in 1984, its lowest value in a democracy).

The first years of membership of the European Union (then European Economic Community, EEC) coincided with a slight increase of the wage share in Portugal, which were followed by a decade of relative stabilization around 55%. Since the mid-2000s, the wage share started a slightly decreasing trend, reinforced in the recent past with the Eurozone crisis of 2011–2013, returning to a value close to the minimum of 1984, 50%. The last two years of the series – 2016 and 2017 – seem to point to a recovery of the wage share of income, but it is premature to say if this reversal is sustainable or not. All in all, it is fair to say that the distribution of income between capital and labour, at least in mid-developed countries with social and political instability, although certainly determined by economic reasons, can only be understood with a more general, holistic and multidisciplinary approach.

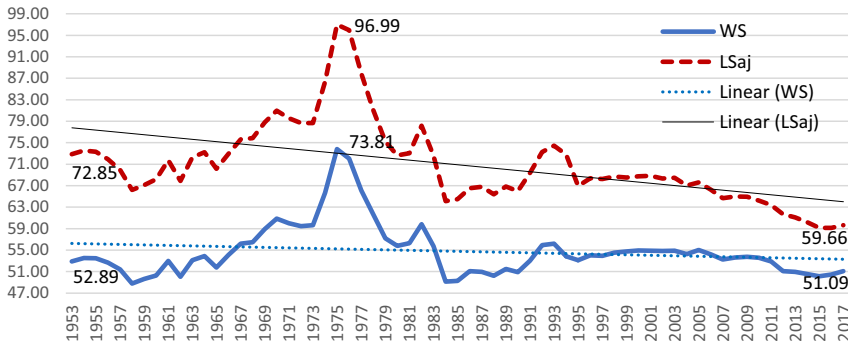
The evolution of the adjusted labour share in Portugal is similar to the evolution of the (unadjusted) wage share, as in the short run there is no significant variation in the share of self-employment on the labour input (see Fig. 2). However, it is worth noting that the first series becomes closer to the second one, due to the decreasing trend of self-employed workers’



Sources: Banco de Portugal and INE.

Fig. 1. Evolution of the wage share in Portugal: 1953–2017





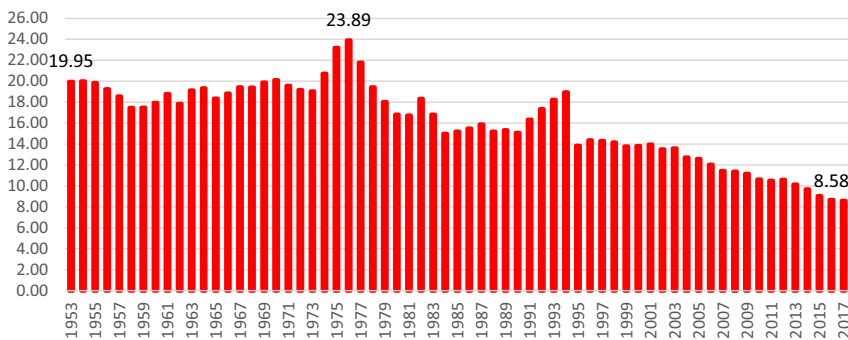
Sources: Banco de Portugal and INE.

Fig. 2. Evolution of the adjusted labour share (LSaj) in Portugal: 1953–2017

compensation in the long run, particularly since the mid-1990s, from around 20% to below 10% of GDP at factor prices (see Fig. 3).

Before presenting the evolution of the wage share in the main five sectors of the Portuguese economy, it is interesting to assess the pattern of this indicator in an international context, using the “adjusted wage share” of AMECO, available for an encompassing group of countries. This measure corresponds to our adjusted labour share (see sub-section 2.1 for details), and the comparative analysis is focused on France, United Kingdom and the USA, for a long period of six decades, 1960–2019 (Fig. 4).

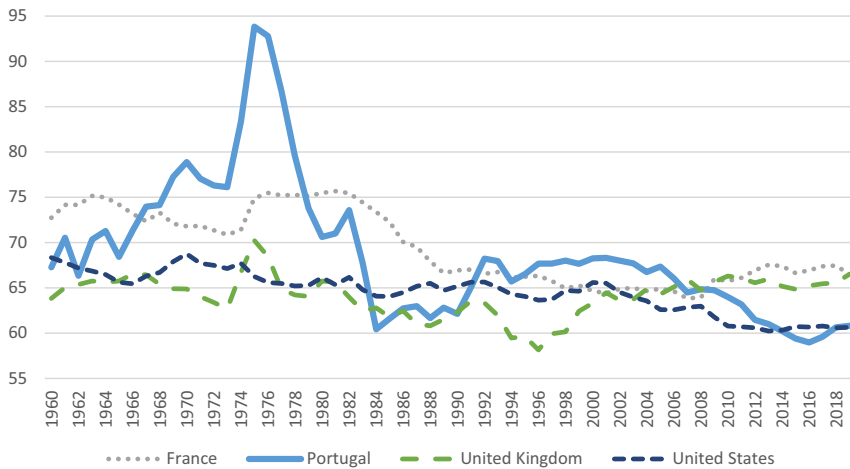
The most astonishing result is the very large variability of the labour share in Portugal, during the first three decades, explained mainly by the political and socio-demographic factors already mentioned. It is also worth noting that the labour share was significantly larger in France than in the Anglo-Saxon countries until the mid-eighties, but not so much thereafter. Finally, since around 2000, the labour share declines in Portugal and the USA, but remains relatively stable, or even increases slightly in France and in the United Kingdom. Therefore, this brief



Sources: Banco de Portugal, INE and author’s calculations.

Fig. 3. Difference between the adjusted labour share and the wage share in Portugal: 1953–2017





Source: AMECO.

Fig. 4. Adjusted labour share in Portugal and some other countries: 1960-2019

comparative analysis, highlighting the differences across countries, shows that a careful and detailed assessment of each country should be made. The analysis of the Portuguese case is the purpose of this paper.

3.2. The labour share in five big sectors: 1977-2016

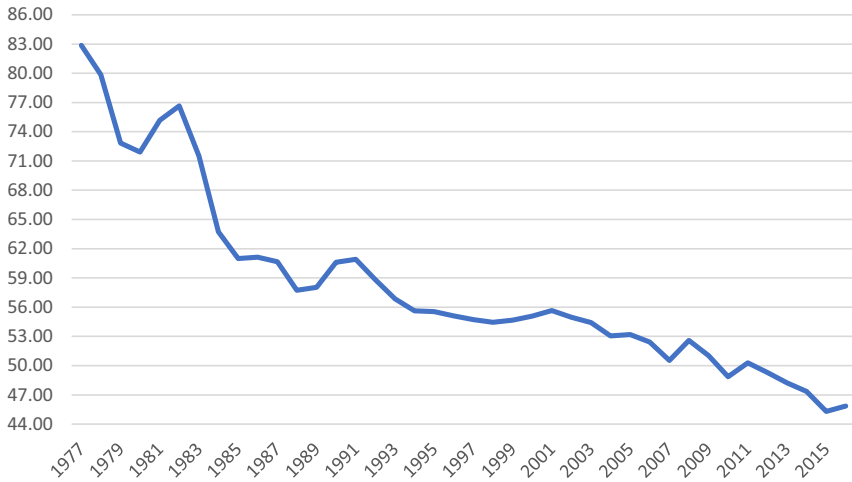
The income distribution is significantly different across sectors. In this sub-section, we analyse the evolution of the wage share in five big sectors of the Portuguese economy, namely industry (Manufacturing and Energy), Public Services, Private Services, Agriculture and Construction. In the case of Manufacturing and Energy (see Fig. 5), the profile is of a strong decline in the wage share, from 83% in 1977 until 47% in 2016, with some minor and brief recoveries, insufficient to invert the main trend.

A similar profile occurs in the case of Public Services (Fig. 6), although with a smaller overall decline over this period, from 91% to 77%. On the other hand, the trend in Private Services is similar to that of the whole economy, but with a smaller amplitude of variation, in the interval 47%-37% (Fig. 7).

The evolution of the wage share in Agriculture shows a peculiar pattern of a U curve, starting with a value of 28%, attaining a minimum of 16% in 1997, and recovering thereafter to above 30% in 2016 (see Fig. 8). However, there are serious problems in measuring the wage share in this sector, because most of the workers are self-employed and tend to have lower qualifications and productivity than employees, and a significant part of their production is self-consumed, in small family farms (Kónya et al. 2020).

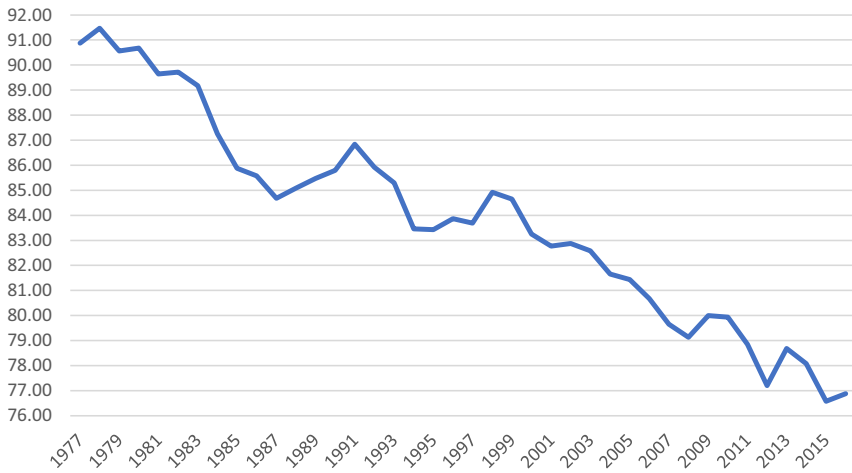
Finally, the wage share in Construction followed a quite irregular pattern of ups and downs, starting with values around 65%/70% in the first five years, declining strongly in the following decade, until 52% in 1995, and recovering until the beginning of the sovereign debt crisis (66% in 2010). In the crisis years (from 2011 to 2013), the wage share decreased four percentage points, after which a new recovery emerges (see Fig. 9).





Source: OECD STAN and INE.

Fig. 5. Evolution of the wage share: Manufacturing and Energy - 1977/2016



Source: OECD STAN and INE.

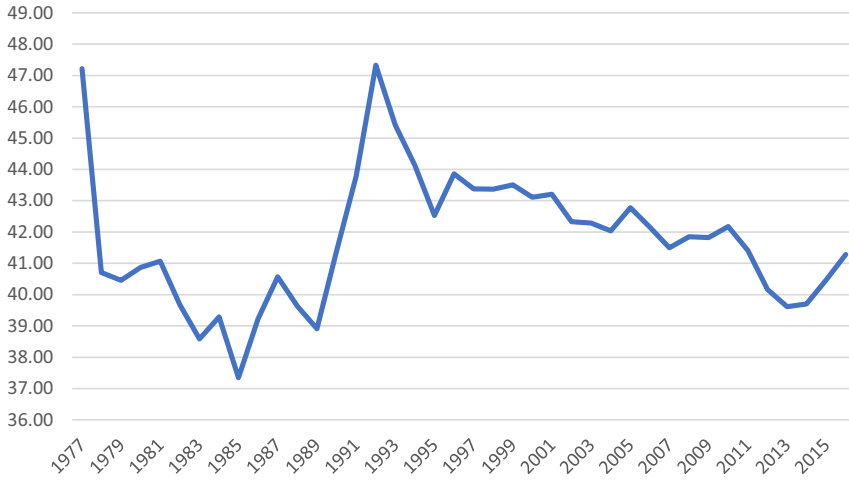
Fig. 6. Evolution of the wage share: Public Services - 1977/2016

4. LABOUR SHARE IN PORTUGAL: A DETAILED SECTORAL APPROACH

4.1. Shift-Share analysis

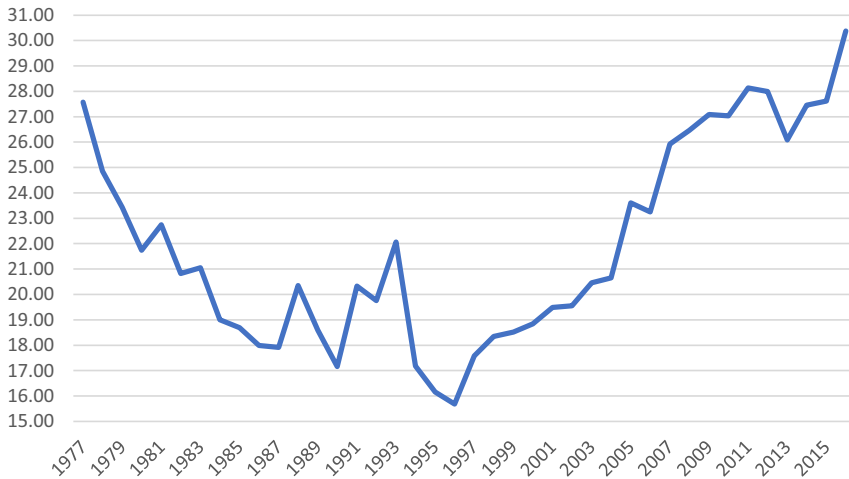
In this section, a shift-share analysis is carried out in order to distinguish and quantify the so-called “intra-sectorial”, or “within” effect (change in the wage share of the economy due to the





Source: OECD STAN and INE.

Fig. 7. Evolution of the wage share: Private Services - 1977/2016

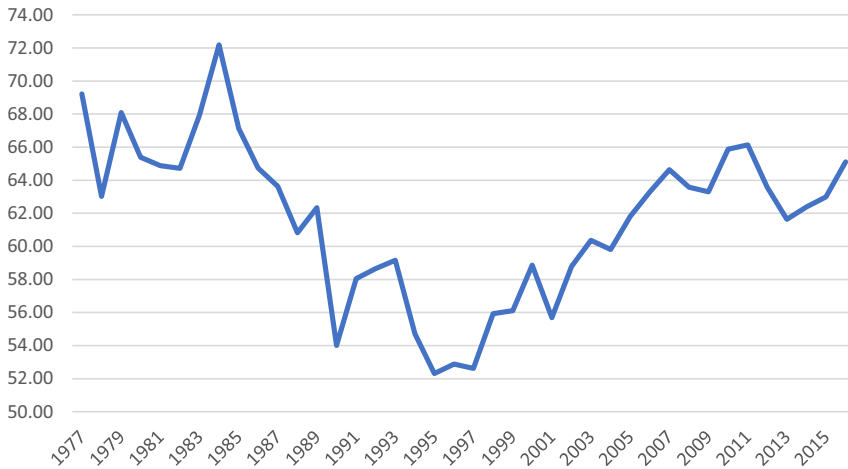


Source: OECD STAN and INE.

Fig. 8. Evolution of the wage share: Agriculture - 1977/2016

evolution of each sector’s wage share), from the “inter-sectoral”, or “between” effect (also called structural change effect, as it measures the influence of changes in the relative weight of each sector in gross value added). This second effect is negative if labour moves from sectors with high wage share to sectors with low wage share, and positive in the opposite case.





Source: OECD STAN and INE.

Fig. 9. Evolution of the wage share: Construction – 1977/2016

The determination of the variation of the wage share in the economy, from year 0 to year T is decomposed as follows:

$$WS_T - WS_0 = \sum_{i=1}^n \overline{sh}_i (WS_{i,T} - WS_{i,0}) + \sum_{i=1}^n \overline{WS}_i (sh_{i,T} - sh_{i,0}) \tag{1}$$

where:

- WS_t : wage share of total economy in year t ($t = 0, \dots, T$)
- $WS_{i,t}$: wage share of sector i in year t
- $sh_{i,t}$: share of GVA of sector i in total GVA in year t
- \overline{sh}_i : average share of GVA of sector i in total GVA between 0 and T
- \overline{WS}_i : average wage share of sector i between 0 and T

The two effects described above are:

$$\sum_{i=1}^n \overline{sh}_i (WS_{i,T} - WS_{i,0}) - \text{the “within” effect}$$

$$\sum_{i=1}^n \overline{WS}_i (sh_{i,T} - sh_{i,0}) - \text{the “between” effect}$$

This shift-share exercise was performed for 38 sectors of the Portuguese economy, in the period 1995–2016. The results (“within” effect, “between” effect and total effect) for each sector and for the whole economy, as well as the relative weight of the total effect of each sector in aggregate total effect, are presented in Table 1. The manufacturing ones are marked in yellow. For economy of space, only the 20 sectors with the highest total effect value are shown, in



Table 1. Shift-share analysis of changes in the wage share: 1995-2016

NO	Sectors	Within	Between	Total	Rel. Weight
4	Textiles	-0.0022	-0.0118	-0.0140	-52.99
32	Education	-0.0045	-0.0041	-0.0085	-32.32
18	Construction	0.0069	-0.0154	-0.0085	-32.14
25	Finance	-0.0031	-0.0047	-0.0077	-29.17
31	Public Administration	-0.0027	-0.0043	-0.0070	-26.51
5	Wood and Cork	-0.0003	-0.0044	-0.0047	-17.80
9	Rubber and Plastics	0.0000	-0.0034	-0.0033	-12.59
3	Food, Drinks, Tobacco	-0.0054	0.0024	-0.0029	-10.99
14	Transport Equipment	-0.0038	0.0009	-0.0029	-10.91
1	Agriculture	0.0054	-0.0074	-0.0020	-7.61
7	Chemicals	-0.0006	-0.0013	-0.0020	-7.47
22	Edition, Broadcasting	-0.0015	-0.0002	-0.0017	-6.34
10	Metal Products	-0.0005	-0.0010	-0.0016	-5.93
12	Electrical Equipment	0.0001	-0.0015	-0.0014	-5.18
23	Telecommunications	0.0002	-0.0014	-0.0012	-4.58
11	Electronic and Information Equipment	0.0007	-0.0018	-0.0012	-4.35
16	Electricity and Gas	-0.0017	0.0007	-0.0010	-3.81
15	Other Manufacturing	-0.0005	-0.0004	-0.0009	-3.41
2	Mining	0.0006	-0.0014	-0.0008	-3.05
8	Pharmaceutical	-0.0003	-0.0004	-0.0008	-2.91
	<i>Total (percentage points)</i>	-1.83	-0.82	-2.65	-100.00
	<i>Total (%)</i>	-69.00	-31.00	-100.00	

Sources: INE and authors' calculations.

descending order of their relative weight. The results for the other sectors are available from the authors upon request.

The main result worth mentioning is that between 1995 and 2016 the wage share in Portugal declined by 2.65 percentage points, and the dominant force underlying that evolution was clearly the within effect, -1.83 percentage points, or 69% of the total decline. Therefore, we can conclude that the decrease of the wage share in Portugal is mostly explained by decreases of sectoral wage shares and less by changes in sectoral relative weights in gross value added. However, there are some differences across sectors worth mentioning, namely the large and positive “within” effect in Agriculture and Construction. In these labour intensive and low-productivity sectors, the labour share in this period increased, but as their weight in the economy has fallen (significant



negative “between” effect), they contributed to the overall decrease in the wage share. A similar trend occurred in Textiles, the sector with the second largest (negative) “between” effect, a consequence of a significant loss of employment in this period.

In sum, the sectors most responsible for the declining wage share are: Textiles, Education, Construction, Finance, and Public Administration. On the other hand, the sectors less responsible for this negative trend are: Electronic Equipment, Electricity and Gas, Other Manufacturing, Mining, and Pharmaceutical products. A detailed explanation of each one of these individual cases can shed light on some important structural changes in the Portuguese economy, but this is beyond the objectives of this paper.

4.2. Labour share, productivity and wages in some individual sectors

The evolution of the wage share results from the combined profile of two important variables, labour productivity and average labour compensation. In fact, when labour productivity increases more rapidly than average wage, the wage share declines, and vice-versa.

In Fig. 10, the trends of these variables are shown, for the whole economy, in the period 1995–2015, in three related panels: in Panel A, the evolution of the wage share (and adjusted labour share); in Panel B, the evolution of labour productivity (gross value added per worker) and average labour compensation (wages divided by the number of workers); and in Panel C, the growth rates of these two last variables in several periods (1995–2000; 2000–2005; 2005–2010; 2010–2015; 1995–2015). Gross value added and wages are in real terms, deflated by the GDP price index.

As it was already shown, the wage share and the adjusted labour share in Portugal declined in the overall period but experienced changes in the period in-between. In the last five years of the 1990s, the average labour compensation grew above labour productivity, and so the labour share (adjusted and unadjusted) grew, although slightly. This was a period of strong economic growth and low unemployment, which may have contributed to a larger bargaining power of workers.

Since 2000, however, the opposite occurred, with significant strength in the last decade, with labour losing to capital in the functional distribution of income. These were difficult times for the Portuguese economy, subjected to three (almost simultaneous) shocks: adoption of a strong currency (the Euro); European integration of (and greater competition from) less advanced economies (Central and Eastern European countries, Cyprus and Malta); greater competition from China and other Asian countries. The result was a slowdown in growth and a significant increase in unemployment, detrimental to the bargaining power of workers. Moreover, in the last five years of the period (2010–2015), there was even a real decay of average wages, a well-known consequence of the sovereign debt crisis in Portugal and the strong austerity program imposed on the country by the *Troika*. Labour productivity growth in this sub-period slowed down as well but was always positive.

As it was also shown, there are significant differences in the evolution of these variables across sectors. The purpose of the following figures is to illustrate these differences, for the case of five individual sectors (Manufacturing, Public Services, Trade, Real Estate and Business Services). For economy of space, the results for the other sectors are omitted here, but are available from the authors upon request.

In the case of Manufacturing (see Fig. 11), labour productivity always grew more than average wages, and so the labour share declined continually. The biggest difference in the growth



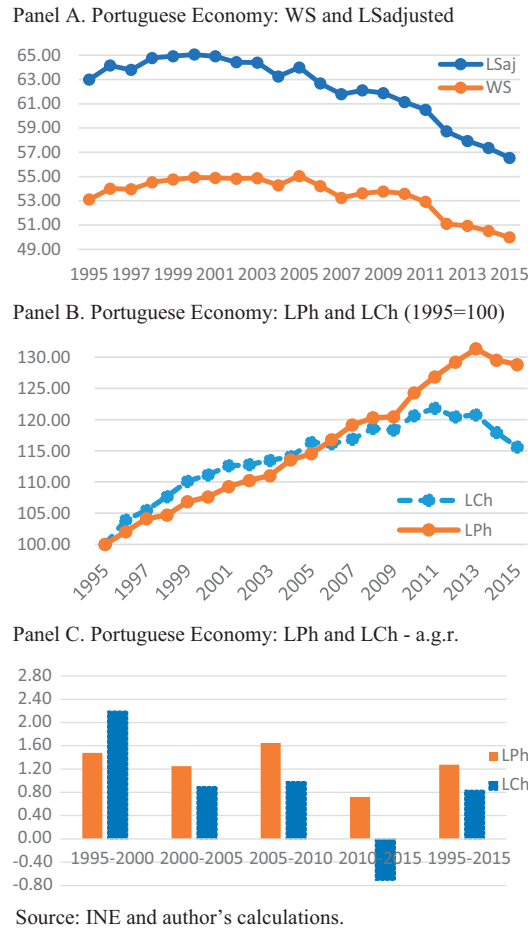
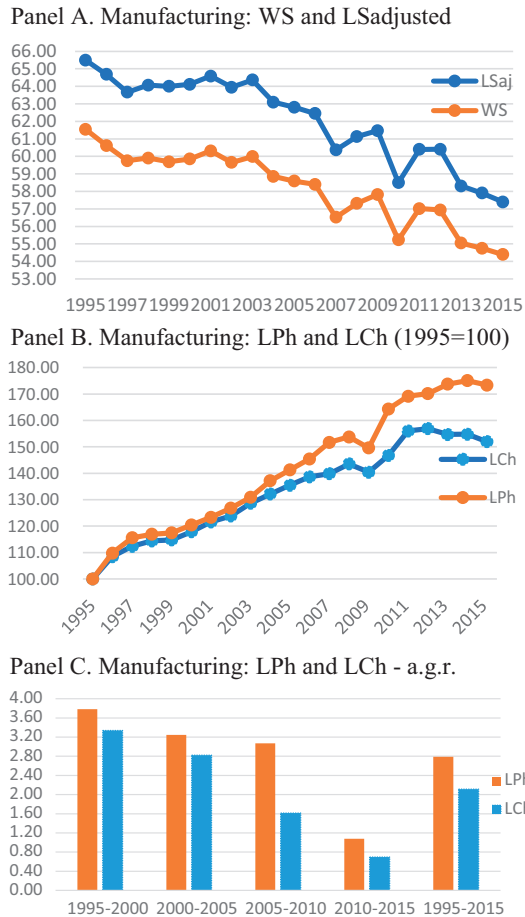


Fig. 10. Evolution of wage share, labour productivity and average labour compensation: Portuguese economy - 1995/2015

rate of these variables (1.5 percentage points) was in sub-period 2005–2010. A possible explanation for this trend, common to most developed (and developing) countries, is given by the so-called Baumol effect (Baumol 1967): due to increasing returns to scale and automation, labour productivity in manufacturing increases markedly more than in the rest of the economy. Manufacturing workers are however subject to the competition of similar workers of other sectors and so their wages tend to increase in line with the wages of their less productive peers, not in line with the growth in their own productivity. The result is clear: manufacturing workers capture a declining share of the output of the manufacturing sector.

In Public Services, the wage share declined since 1998 in almost all the years until 2015 (the only exceptions are 2009 and 2013). A peculiarity of this sector is that both labour productivity and average labour compensation have negative growth rates in all the sub-periods (see Fig. 12).





Source: INE and author's calculations.

Fig. 11. Evolution of wage share, labour productivity and average labour compensation: Manufacturing - 1995/2015

The interpretation of the labour share in public services must be careful, because in this sector there are, by definition, no market prices, nor profits, and so the wage share is very large, around 80–90%. The remaining part of gross value added (10–20%) corresponds essentially to capital depreciation. The sustained decline in the labour share in this sector resulted from the stagnation in nominal wages of public sector workers in Portugal as part of the effort to participate in the Economic and Monetary Union by the fulfilment of its budgetary rules (Stability and Growth Pact). The result was that the wage share in public services fell and the share of capital depreciation increased, a process again strongly reinforced after the sovereign debt crisis and corresponding austerity, already mentioned.



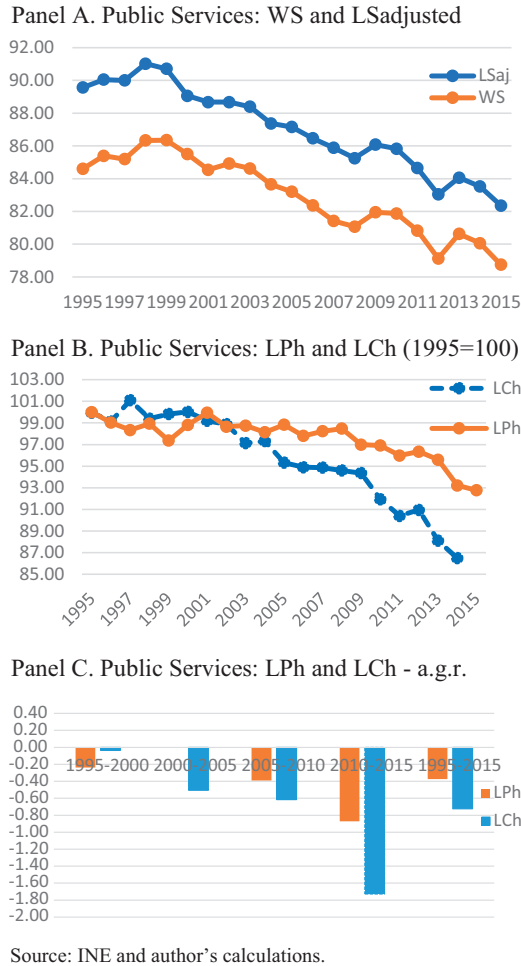


Fig. 12. Evolution of wage share, labour productivity and average labour compensation: Public Services - 1995/2015

Trade has an interesting time profile, with the wage share increasing until the start of the global financial crisis (2008) and declining thereafter. The subperiods are however very different from one another, with strong growth rates of labour productivity and average wages in 1995–2000, negative rates in 2000–2005, and recoveries in the following subperiods, particularly in the case of productivity (see Fig. 13). Trade is a low productivity sector, protected from international competition, and with a significant number of precarious jobs. The evolution of wages in this sector tends to be strongly pro-cyclical and very respondent to labour market conditions.

Real Estate has a peculiar functional distribution of income, highly concentrated in capital returns. Nonetheless, the wage share starts growing slightly, from 5% in 1995 to 7% in 2000,



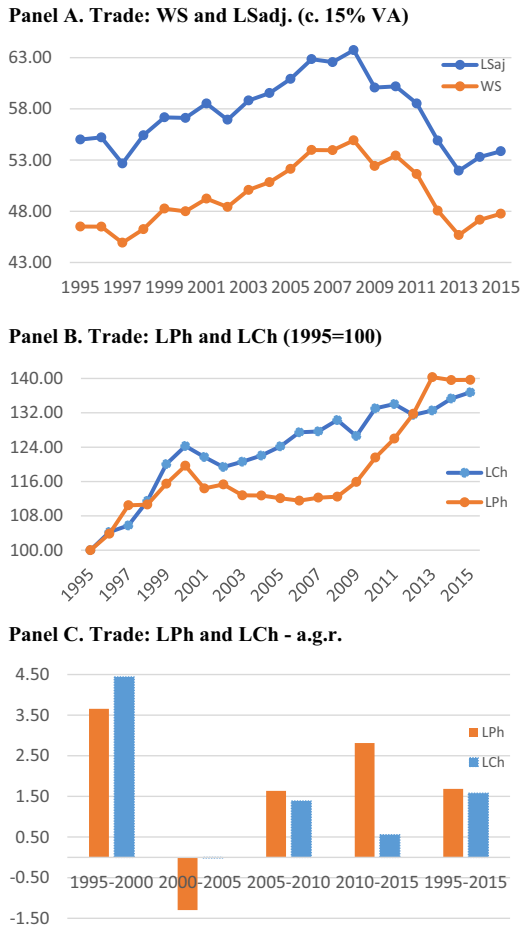


Fig. 13. Evolution of wage share, labour productivity and average labour compensation: Trade – 1995/2015

but declines strongly in the next 15 years, ending with low values around 3.5% in the final years (see Fig. 14). Moreover, it is worth noting the strong decline of labour productivity in the first quinquennium, and the negative growth rates of average wages in the following subperiods.

Finally, in the Business Services sector, the wage share has a remarkable constancy around 80%, with strong decreases both of productivity and wages in the first subperiods, slight decreases in 2005–2010, and positive growth rates in 2010–2015, mainly in wages (see Fig. 15). This is also a low productivity sector, with a significant number of self-employed workers, and this may help to explain the relatively good performance of wages in the crisis period, as self-employed workers avoided better the austerity measures imposed by the *Troika* in 2011–2013.



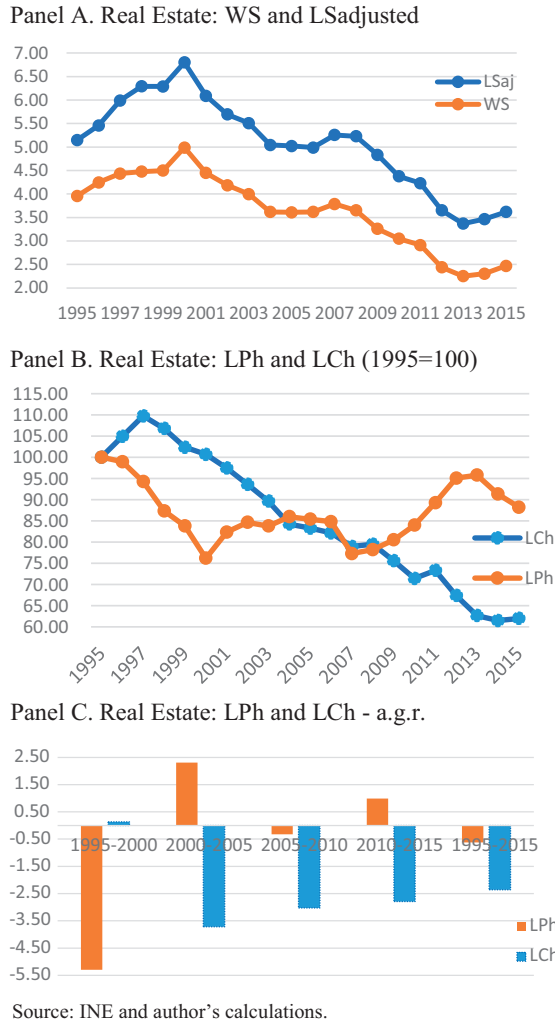


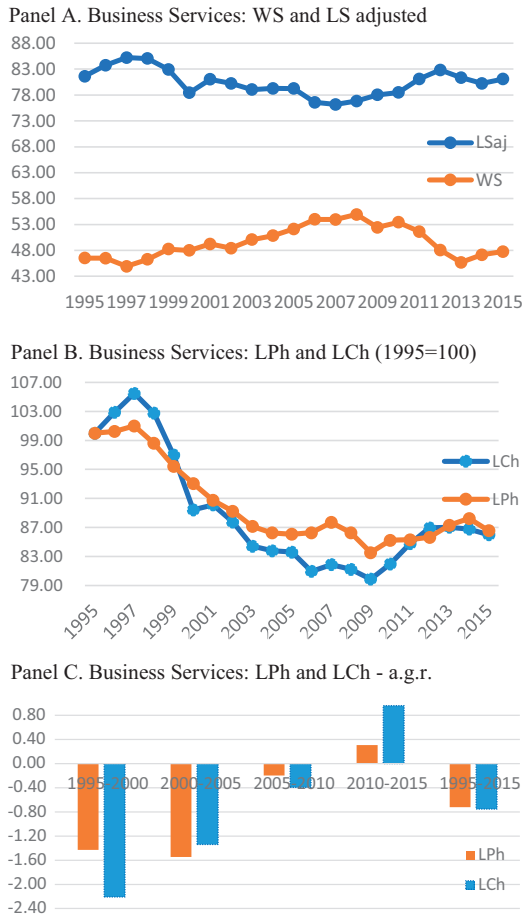
Fig. 14. Evolution of wage share, labour productivity and average labour compensation: Real Estate - 1995/2015

5. WAGE INEQUALITIES AND THE WAGE SHARE OF “TYPICAL” WORKERS

In the last years, the wage gap between senior managers and other employees has increased, bringing to the forefront the issue of wage and income inequalities. Moreover, there is the question if CEOs should be treated as employees and their remunerations included in labour compensation or in capital gains (e.g., stock options should not be considered labour income, but capital income).

In this section, an attempt is made to measure this effect over the functional distribution of income. In order to do so, a new indicator is used, the wage share of the so-called “typical”





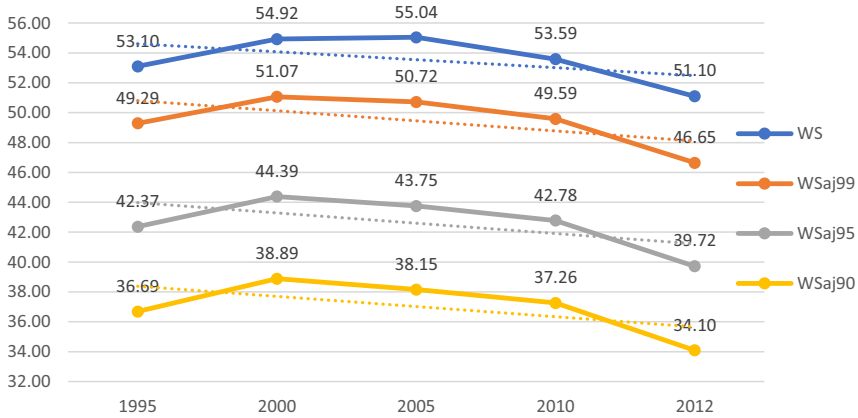
Source: INE and author's calculations.

Fig. 15. Evolution of wage share, labour productivity and average labour compensation: Business Services - 1995/2015

workers, which excludes from labour compensation the wages of the highest paid workers (the top 10%, 5% and 1%).

The data necessary to calculate this indicator is taken from *Quadros de Pessoal* (QP). The methodology consists in the following steps: (1) identify the 90th, 95th and 99th percentiles of the monthly basis remuneration and determine the monthly base remuneration of the top 10%, 5% and 1% employees, respectively; (2) annualize this base remuneration (14 months); (3) obtain employers' social contributions (23.75% of base remuneration); (4) annualize irregular remuneration of the 10%, 5% and 1% above (12 months); (5) correct using the ratio between the number of total workers (INE) and the number of employees (QP); (6) obtain the total remuneration of the top 10%, 5% and 1% workers; (7) calculate the labour compensation of the bottom 90%, 95%, and 99%, by the difference between total labour compensation (INE) and the





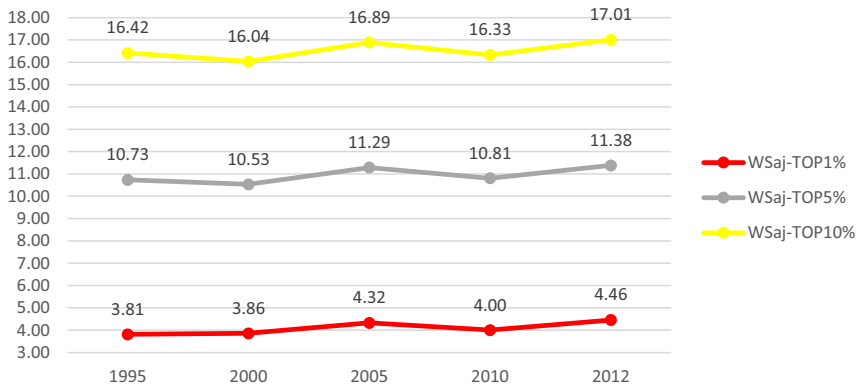
Sources: INE, *Quadros de Pessoal* and authors' calculations.

Fig. 16. Global wage share (WS) and wage share (WSaj) of bottom 90%, 95% and 99% workers

wages of the top 10%, 5%, and 1% wage workers, respectively; (8) calculate the adjusted wage share of the bottom 90%, 95%, and 99%, dividing the value of labour compensation of the bottom 90%, 95%, and 99% workers by the value of gross value added at factor cost, respectively.

This methodology was applied for every five years between 1995 and the last year with data available, 2012. The wage share for the whole economy and the adjusted wage share of the bottom 90%, 95% and 99% workers (the so-called “typical” workers) grew between 1995 and 2000, reaching the maximum value in that year, and thereafter, decay until 2012 (see Fig. 16).

For example, in 2000, the bottom 90% of workers received almost 39% of gross value added generated in the Portuguese economy, and in 2012, they received only 34%. This difference (around -5 percentage points) is larger than the fall in the global (or unadjusted) wage share



Sources: INE, *Quadros de Pessoal* and authors' calculations.

Fig. 17. Wage share of top 10%, 5% and 1% workers



(−3.82 percentage points), and so the conclusion emerges, that for this (large) group of lower-paid (“typical”) workers, labour income inequality in Portugal has increased in this period.

A similar analysis can be made if we consider that the difference between the value of the wage share for the whole economy and the values of the wage share for the bottom 90%, 95%, and 99% workers represent, of course, the wage shares of the top 10%, 5%, and 1% workers, respectively. The results of this exercise are shown in Fig. 17. Although showing a more irregular pattern, there is a slight increasing trend in these three measures, pointing to some reinforcement of wage inequalities in Portugal between 1995 and 2012.

6. CONCLUSIONS

In most developed countries, the labour share has grown between the 1950s and the 1970s. Since the 1980s, and especially since the beginning of the new millennium, the labour share declined in many countries, especially in the United States (but not in all, the United Kingdom being a significant exception), contributing to increasing income inequality in those countries. There are several explanatory reasons for this trend, namely technical progress, globalization and change in market structures (concentration) with hyper-productive firms, weakening trade unions, financialisation of the economy and the decrease in the weight of public sector, among others.

In Portugal, the wage share has grown since the second half of the 1960s, achieving a maximum value in 1975. This trend is explained by some peculiarities of the country, namely the social and political context, rather than purely economic reasons, e.g. dictatorship, emigration and the Revolution of 1974. In the following decade (1976–1985) the increasing trend was reversed, and the wage share returned to the value of the mid-1960s. After a short period with a new, albeit slight, increase, the labour share stabilized for another decade or so, and since the mid-2000s declined again, particularly during the Eurozone crisis (2011–2015).

From a sectoral point of view, in Portugal, between 1977 and 2016, there are different evolution profiles. For example, in manufacturing, energy and public services, the labour share decreased since the beginning of the 2000s. In other sectors, this decrease only occurred after the Great Recession of 2008/2009.

The shift-share analysis allows to conclude that the dominant cause explaining the decline of the wage share between 1995 and 2016 (below 3 percentage points and so not much significant), is the “within” effect (69%) and not the “between” effect (31%). Therefore, most of the decline is due to the evolution of sectoral wage shares and a small part to changes in sectoral value-added shares. Exceptions to this trend were agriculture and construction, with a positive “within” effect, but with a significant negative value of “between” effect, due to their diminishing weight in employment and value added, which overcame the first effect. The individual sector most responsible for the fall in the labour share was textiles, with a reasonable negative “within” effect and a large negative “between” effect, a consequence of the employment destruction in this sector, which also happened in other traditional manufacturing sectors, one of the most significant structural changes of the Portuguese economy in the last decades.

Regarding the wage inequality issue, the adjusted wage share of the so-called “typical” workers (the bottom 90%, 95% and 99% of the wage distribution) grew up between 1995 and 2000 and declined thereafter. The adjusted wage shares of the highly paid workers (the top 10%, 5% and 1%) exhibited a more irregular behaviour, but on average showed a sustained increasing



trend between 1995 and 2012, pointing to some increase in wage inequality in Portugal, but perhaps less pronounced than in other developed countries, namely the United States.

This paper provides a good descriptive analysis of the functional income distribution in Portugal, with a large time span and great sectoral detail. However, there are several improvements to make, namely a more careful treatment of mixed income in sectors where this category is relevant (agriculture, construction, some private services) and the explicit account of capital depreciation, as well as the assessment and quantification of the main forces explaining the division of income between capital and labour.

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REFERENCES

- Autor, D. – Salomons, A. (2018): *Is Automation Labor-Displacing? Productivity Growth, Employment, and the Labor Share*. NBER Working Paper 24871.
- Atkinson, A. (2009): Factor Shares: The Principal Problem of Political Economy? *Oxford Review of Economic Policy* 25(1): 3–16.
- Autor, D. – Dorn, D. – Katz, L.F. – Patterson, C. – Reenen, J.V. (2017): *The Fall of the Labor Share and the Rise of Superstar Firms*. NBER Working Paper 23396.
- Baumol, W. J. (1967): Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis. *American Economic Review* 57(3): 415–426.
- Barradas, R. – Lagoa, S. (2017): Functional Income Distribution in Portugal: The Role of Financialisation and Other Related Determinants. *Society and Economy* 39(2): 183–212.
- Blaug, M. (1996): *Economic Theory in Retrospect*. Cambridge: Cambridge University Press.
- Blanchard, O. (1997): The Medium Run. *Brookings Papers on Economic Activity* 2: 89–158.
- Blanchard, O. – Giavazzi, F. (2003): Macroeconomic Effects of Regulation and Deregulation in Goods and Labor Markets. *Quarterly Journal of Economics* 118: 879–907.
- Bentolila, S. – Saint-Paul, G. (2003): Explaining Movements in the Labor Share. *B. E. Journal of Macroeconomics* 3(1): 1–33.
- Bridgman, B. (2018): Is Labor's Loss Capital's Gain? Gross Versus Net Labor Shares. *Macroeconomic Dynamics* 22(8): 2070–2087.
- Cette, G. – Koehl, L. – Philippon, T. (2019): *Labor Shares in Some Advanced Economies*. NBER Working Paper 26136.
- Dünhaupt, P. (2013): *Determinants of Functional Income Distribution: Theory and Empirical Evidence*. Global Labour University Working Paper 18.
- Elshy, M. W. L. – Hobijn, B. – Şahin, A. (2013): *The Decline of the U.S. Labor Share*. *Brookings Papers on Economic Activity*, Fall.



- Epstein, G. A. (2005): *Financialization and the World Economy*. Cheltenham: Edward Elgar Publishing Limited.
- European Commission (2007): The Labour Income Share in the European Union. In: *Employment in Europe 2007*. Directorate-General for Employment, Social Affairs and Equal Opportunities, Brussels, pp. 237–272.
- Guerriero, M. (2012): *The Labour Share of Income Around the World. Evidence from a Panel Dataset*. IDPM Development Economics and Public Policy Working Paper Series 32/2012.
- Guschanski, A. – Onaran, Ö. (2018): *The Labour Share and Financialisation: Evidence from Publicly Listed Firms*. Greenwich Political Economy Research Centre GPERC59.
- Gutiérrez, G. – Philippon, T. (2018): *How EU Markets Became More Competitive than US Markets: A Study of Institutional Drift*. NBER Working Paper 24700.
- Hein, E. (2015): Finance-dominated Capitalism and Re-distribution of Income: a Kaleckian Perspective. *Cambridge Journal of Economics* 39(3): 907–934.
- International Labour Organization (ILO) – Organisation for Economic Cooperation and Development (OECD) (2015): *The Labour Share in G20 Economies. Report Prepared for the G20 Employment Working Group*, Antalya, Turkey, 26–27 February.
- International Monetary Fund (IMF) (2017): Understanding the Downward Trend in Labor Income Shares. In: *World Economic Outlook: Gaining Momentum? April*. Washington DC: IMF.
- Jones, C. – Romer, P. (2009): *The New Kaldor Facts: Ideas, Institutions, Population, and Human Capital*. NBER Working Paper 15094.
- Kaldor, N. (1957): A Model of Economic Growth. *The Economic Journal* 67(268): 591–624.
- Karabarbounis, L. – Neiman, B. (2014): The Global Decline of the Labor Share. *Quarterly Journal of Economics* 129(1): 61–103.
- Keynes, J. M. (1939): Relative Movements of Real Wages and Profit. *The Economic Journal* 49(193): 34–51.
- Kónya, I. – Krekó, J. – Oblath, G. (2020): Labor Shares in the Old and New EU Member States - Sectoral Effects and the Role of Relative Prices. *Economic Modelling* 90: 254–272.
- Lucas, R. (2004): *The Industrial Revolution: Past and Future*. Federal Reserve Bank of Minneapolis 2003 Annual Report Essay. <https://www.minneapolisfed.org/article/2004/the-industrial-revolution-past-and-future>, accessed 22/06/2021.
- McKinsey Global Institute (2019). The Declining Labor Share of Income in the United States. <https://www.mckinsey.com/featured-insights/employment-and-growth/a-new-look-at-the-declining-labor-share-of-income-in-the-united-states>, accessed 22/06/2021.
- Milanovic, B. (2013): Why Income Inequality is Here to Stay. *Harvard Business Review*, 3(January). <https://hbr.org/2013/01/why-income-inequality-is-here>, accessed 22/06/2021.
- Organisation for Economic Cooperation and Development (OECD) (2018): Decoupling of Wages from Productivity: What Implications for Public Policies? *OECD Economic Outlook* 2018(2).
- Philippon, T. (2019): *The Great Reversal*. Cambridge: Harvard University Press.
- Piketty, T. (2014): *Capital in the Twenty-First Century*. Cambridge: Harvard University Press.
- Ponattu, D. – Sachs, A. – Weinelt, H. (2018): *Market Concentration and the Labor Share in Germany*. Bertelsmann Stiftung Policy Brief 2018/03.
- Solow, R. M. (1956): A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics* 70(1): 65–94.
- Solow, R. M. (1958): A Skeptical Note on the Constancy of Relative Shares. *The American Economic Review* 48(4): 618–631.
- Stansbury, A. – Summers, L. (2020): *Declining Worker Power and American Economic Performance*. Brookings Papers on Economic Activity, March.



- Stockhammer, E. (2009): *Determinants of Functional Income Distribution in OECD Countries*. IMK Study Working Paper 5/2009.
- Swan, T. W. (1956): Economic Growth and Capital Accumulation. *The Economic Record* 32(2): 334–361.
- Taylor, L. (2020): Wage Repression, Asset Price Inflation, and Structural Change Caused Rising Macroeconomic Inequality for Fifty Years from Reagan to Trump. Memo for a conference on “Labor, Technology, and Growth: Towards a Gini Negative Solution”. Stanford University, February 28.
- Taylor, L. – Ömer, Ö. (2019): Race to the Bottom: Low Productivity, Market Power, and Lagging Wages. *International Journal of Political Economy* 48(2): 1–20.

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