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Abstract

Living Wage (LW) is a concept that goes beyond that of National Minimum Wage (NMW), since it implies income adequacy to the wage earners and to his/her family members. The implementation of LW in Portugal then implies a mix of variables, including the minimum wage (that imply labour costs, and a change of earnings distribution), but also variables that imply fiscal costs (social benefits and tax deductions). It is then expected to reach household income adequacy, and to be feasible regarding the labour and fiscal costs, and socially acceptable regarding the change of earnings distribution. The relevance of such trade-offs is of high relevance for the Portuguese economy where average and median wages are low, the NMW is generous, when related to the median wage, and wage income distribution has high inequality, namely at the top, evidencing high polarization. This article analyses such issues centred on the worker (as a wage earner, as a household member and as a citizen with social rights and fiscal duties) and using EU-SILC data to quantify some of these trade-offs by the simulation of different values for core action variables aiming to reach LW, supported on an adequate normative estimation of a Minimum Income Standard (MIS) for Portugal.

JEL Codes: D60, I30, J30

Keywords: Living Wage (LW), National Minimum Wage (NMW), Minimum Income Standard (MIS), adequacy, feasibility, acceptability.

EU-SILC data were provided by INE under a Data Transfer Protocol for Scientific Purposes.

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1. Introduction

Although it may be confused with National Minimum Wage (NMW), Living Wage (LW) is a different concept. Indeed, while NMW is a legal threshold defined as the minimum pay to which workers are entitled in a country, LW is related to people's needs, not only those of the worker but also of the worker's family. This is, LW is an adequate Minimum Wage, when adequacy means that such labour income originates the minimum household income required for living with human dignity. The design of LW then requires a mix of variables to be considered: minimum wages (which implies labour costs, and changes in earnings distribution, that should be socially acceptable) and fiscal policy (income taxes and social transfers). It also requires a design feasible both for the firms (labour costs) and for the government (fiscal costs) and acceptable for the workers (rise of low wages and change in distribution of wages). The Living Wage (LW) should then satisfy three basic requirements: that of "adequacy" (it should generate the minimum income standard of the household), of "feasibility" (reasonable wage costs for the firms and fiscal costs for the government) and of "social acceptability" (to originate a wage income distribution that is acceptable according to the prevailing social norms). If a Living Wage (LW) to be implemented is above the National Minimum Wage (NMW), this implies several trade-offs, and its implementation requires negotiation among social partners (regarding wages) and with the government (regarding taxes and transfers).

This article aims to make a preliminary approach to the identification and quantification of such trade-offs. The "wage earner" is considered as the central research unit in this analysis, with three distinct social roles and corresponding links to the society: as an *employee*, with a labour link to the *firm* where he/she works (that pays the wage); as a member of a *household* (the location of needs satisfaction), with a link to a basic consumption unit (that share resources to buy goods and services and support the costs of the household's needs satisfaction), that also is a locus of many other social and economic decisions (namely the participation in labour market); and as a *citizen*, linked with the *welfare system* in the society, regarding labour rights, social rights (for receiving social transfers) and fiscal duties (paying income taxes). The analysis that we make in this paper departs from a normative threshold (the income level that may originate a decent standard of living) to estimate the corresponding wage level (considering social transfers and taxes) and then make an objective analysis (who are the wage income earners that do not satisfy such requirement, and how it contributes to their household living standard) and, as well, a preliminary simulation exercise of different mixes of variables to reach such Living Wage level. This is of high relevance for the Portuguese economy, where wages are low, the NMW is generous, when related to the median wage (SWD (2020) 245 final), and wage income distribution evidence high inequality, namely at the top (Atkinson, 2007).

The analytical approach that is followed (the *wage earner* as the core, with multiple links to the society) implies that the EU-SILC is an adequate data source to analyse the major topics of this article. Firstly, an investigation is made of the low wages: who are the working poor, or the very low wage workers (socioeconomic attributes), where are they working (economic sectors), and what are the major characteristics of the wage distribution (wage inequality). Secondly, an investigation of the role of wages on household income distribution and of the role of low wages to explain household income poverty, what implies to look at the household composition in terms of wage earners, other market incomes and, as well, the composition of disposable income, namely income taxes and social benefits. Thirdly, an investigation of alternative values of the three action variables: minimum wages, social benefits, and tax reductions (simulation analyses) that originate the same amount of disposable

household income. Fourthly, an assessment of the trade-offs among the various alternatives in terms of labour costs, fiscal costs, and changes on earnings distribution.

Finally, a reference should be made to the use of previous research (Pereirinha *et al.*, 2020a, 2020b) on the estimation of Minimum Income Standard (MIS) for Portugal, as the level of income needed to achieve a decent standard of living, using a method that combines a consensual approach (supported on focus groups of common people) with the expert view on some human needs (Davis *et al.*, 2015). This method was intended to represent some social consensus about what a decent standard of living is, following approaches also used to calculate LW, either in the UK (Hirsch, 2017a, 2017b) or in Ireland (Collins, 2014a, 2014b).

2. What is a Living Wage

The idea of Living Wage (LW) is an old topic both in Philosophy and in Economics (Stabile, 2008) but its (voluntary or mandatory) implementation has been a utopia for long time. It emerges in social movements in the USA (in 1870), promoted by civil society groups with campaigns for LW to be paid by municipalities and private businesses contracted by them. More recently, in the UK a campaign for living wage was originated in Citizens UK (which became the Living Wage Foundation in 2011), a coalition of faith institutions and civil society actors that claimed for voluntary adoption of LW, which became a reality in East London in early 2000s (Werner & Lim, 2016). The voluntary vs. mandatory LW still remains as a matter of policy discussion. LW gained political relevance mainly in the Anglo-Saxon countries, as a reaction to Thatcherism and Reagenomics, and has great pertinence in the present context of globalization and neoliberal orientation of economic policies.

The right of the worker to a LW is recognized in one of the 20 principles of the 2017 European Pillar of Social Rights (ESPR, nr. 6) and is aligned with SDGs: to end poverty in all its forms everywhere (1); to promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all (8); to reduce inequality within and among countries (10). The realization of the right to a LW in EU countries through minimum wage protection is one of the aims of the European Commission recent initiative to promote Adequate Minimum Wages in the EU, “ensuring that workers in the Union earn adequate wages is essential to guarantee adequate working and living conditions, as well as to build fair and resilient economies and societies in line with the United Nations 2030 Agenda for Sustainable Development and its Sustainable Development Goals.” (COM (2020) 682 final:1). This renewed interest on LW as a policy matter comes from the fact that “(...) an increased job polarisation resulting in turn in an increasing share of low-paid and low-skilled occupations (...) has led to more in-work poverty and wage inequality”, and that “the role of minimum wages becomes more important during economic downturns. The Covid-19 crisis has particularly hit sectors with a higher share of low-wage workers” (COM (2020) 682 final:1-2). At nation level, political commitments are growing to strength wage floors to ensure adequate income for low paid workers with the economic recovery after 2013, and very much aligned to the concept of Living Wage (Eurofound, 2018).

The advocacy of LW has strong foundations, both as a matter of citizenship and on economic grounds. The former contribution of John Ryan, in the early 1900s, established the LW as a natural right (the right to subsist as an original and universal right, and the LW as a derived right), and the obligation to pay a LW as a matter of distributive justice (Ryan, 1912). One century later, in the early 2000s, Jerold Waltman defended LW as a requirement for an autonomous citizenship, required for a citizen to make

choices (Waltman, 2004). The economic foundations of LW are primarily found in Donald Stabile, who reacted to the lack of support for a LW with arguments on the grounds of sustainability (without LW, the workers could not sustain their families, what would originate its depletion), capability (using Sen's approach, the workers should be given more than sufficient nutrition to survive) and externality (low wages lead to workers mal-nourished and bad health, what imposes costs to others in the society) (Stabile, 2008). There is then both ethical and economic arguments to support LW (Konigsburg, 2017).

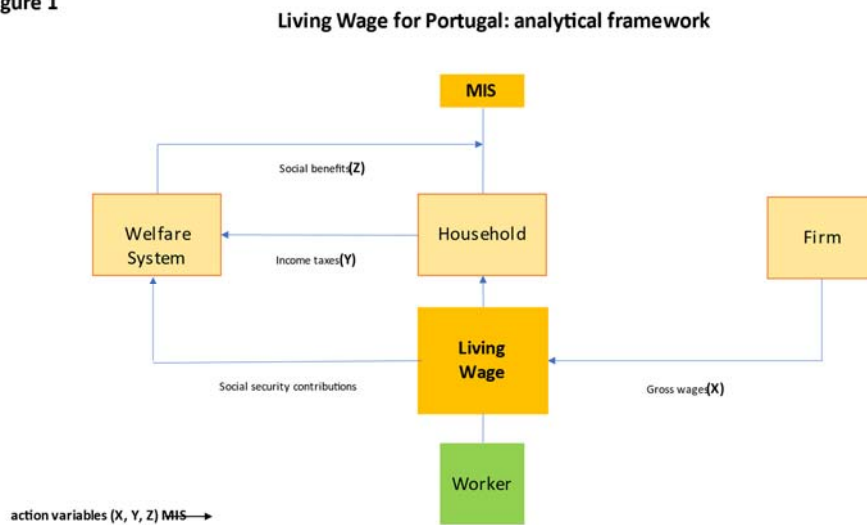
The calculation of LW requires a focus on in-work poverty (Eurofound, 2017) and, as well, on the relation of wages with household income poverty, by looking at the household composition and the economic behaviour of their members (Filandri & Struffolung, 2018). This makes the economic costs of children an important issue (Penne et al., 2019). Some methodologies for their calculation are already well-established (Anker & Anker, 2017), with wide application all over the world (<https://wageindicator.org/salary/living-wage>). This is not, however, the approach that we consider as adequate. The above method is a rather top-down approach (*what science says*), what is understandable due to its extensive worldwide application. There are other approaches to calculate household reference budgets and to estimate adequate household income (Deeming, ed 2020), namely those grounded on a social consensus (*what people think*) on minimum income standard (Davis et al, 2015). That is the case of MIS (minimum income standard) in the UK (Davis et al., 2019) that supports the calculation of the LW in the UK (Hirsch, 2017), and a similar approach was also used to calculate the LW in Ireland (Collins, 2014a, 2014b).

But new avenues should be explored intending the research required to support the decision and implementation of a LW in Portugal, namely that of the social acceptability of the implementation of the LW (either as mandatory or voluntary). A special focus should be given to understand the firm's motivations for the implementation of LW (Werner & Lim, 2016). This corresponds to a more sociological component of analysis that complements other more economic oriented components. This broad view of research corresponds to what has been advised as the applied research agenda on this topic (Carr et al, 2016, Searl & McWha-Hermann, 2020).

Figure 1 describes the analytical framework that is followed in this article, making evidence of the three core action variables in public policy: national minimum wage, social benefits, and income tax.

The crucial point is the link of the worker (as wage earner) to the household, whose needs are intended to be satisfied, what requires a minimum income standard (MIS) to be guaranteed. MIS is the adequate income that permits to reach living conditions with human dignity in Portugal, according to a consensual sense of dignity in our country. We will focus our analysis on households with workers in their socioeconomic composition and, therefore, wage income is a crucial income source to reach this income level. As a disposable income, such MIS can be reached as a combination of gross wage income and income taxes and, considering the demographic composition of the household, of the social benefits that may compensate for additional costs associated to a bigger household size. These will be the variables analysed in the article to simulate several scenarios to reach the same household MIS.

Figure 1



3. A polarized labour market in Portugal

By job polarization is meant the “rising [of] relative demand in well-paid skilled jobs (that typically require non-routine cognitive skills) and in low-paid least skilled jobs (that typically require non-routine manual skills) and falling relative demand in the ‘middling’ jobs that have typically required routine manual and cognitive skills” (Goos & Manning, 2007: 118). Such pattern of employment growth was firstly evidenced in the 1990s by research on the US labour market (Autor *et al.*, 2006), in the UK (Goos & Manning, 2007) and in other European countries (Goos, Manning & Salomons, 2009, 2014). Job polarization became, since the early 2000s¹, a relevant topic in labour economics, originating important insights into its causes and its consequences and, as well, on the consequences for employment structure that result from wage policies in polarized labour markets, namely the creation or updating of minimum wages (Maarek & Moiteaux, 2018).

Several factors have been evoked for such pattern of employment growth, and one of them was the technology. The impact of technology in the labour market is a debated issue in labour economics, but the skill-biased technological change (SBTC) hypothesis lasted as dominant for long time. This hypothesis supported that technology is biased in favour of skilled workers and against unskilled workers, what would explain the rise of earnings inequality (Katz & Autor, 1999), although it is questionable that such hypothesis may explain wage inequality (Card & DiNardo, 2002). An alternative view was proposed by Autor, Levy and Murnane (2003) and is more commonly accepted as a foundation of labour market polarization: their hypothesis, known as ALM hypothesis, is that technology promotes labour substitution, but differently according to their task in the production process: technology can replace labour in routine tasks (being either manual or cognitive) but cannot

¹ A sign of the relevance of this topic was the organization of the international conference on “Polarization(s) in Labour Markets”, by the Directorate for Research, Studies and Statistics (DARES, French Ministry of Labour) and the International Labour Organization (ILO) in Paris on June 19, 2018, that originated a special issue of the journal *Travail et Emploi*, nº 157, 2019.

replace labour in non-routine tasks. The introduction of computation in the production process reduces the demand for routine tasks but may increase the demand for labour in non-routine cognitive tasks. Autor, Levy and Murnane (2003) and Autor, Katz and Kearney (2006), following the ALM hypothesis, view technology impact on labour market through the changes that occur on the tasks performed by the workers which then originates changes on the demand for skills, and propose a task-based model to describe such changes. A distinction is made of three different categories of tasks: abstract, routine, and manual. Abstract tasks are complementary to the computation, and so employment and wages rise as a response to the improvement of technology. Such improvement reduces the demand for routine tasks, substituted by computation, originating a reduction of employment and wages for routine task workers that, not holding higher education, are not prepared to perform abstract tasks. A different effect is caused on non-routine manual workers, whose tasks are complementary to technology, which include skilled professionals, but also unskilled jobs (like shelf filling jobs, coordination tasks that machines cannot operate): the demand for of these workers (and their wages) is expected to rise. So, one may expect a rise of employment in the top and the bottom of the wage distribution, and a reduction in the middle. This is job polarization: “rising relative demand in well-paid skilled jobs (that typically require non-routine cognitive skills) and in low-paid skilled jobs (that typically require non-routine manual skills) and falling relative demand in the ‘middling’ jobs that have typically required routine manual and cognitive skills” (Goos & Manning, 2007).

It is important to analyse the economic effects on labour market of a high minimum wage when the labour market evidences polarization characteristics. In a research conducted on European labour markets, Maarek and Moiteaux (2018) conclude that the minimum wage level plays a crucial role on employment and in the shape of wage distribution in polarized labour markets: “in economies characterized by high minimum wage, employment decrease as the proportion of routine jobs decreases, while it is the opposite in low minimum wage countries” and, as an explanation for that, that “a high minimum wage can prevent the creation of low-paid jobs. Our estimations indicate that the proportion of manual jobs does not increase as a response of the reduction of routine jobs, when the minimum wage is high enough”. They also argue that “the cost of the minimum wage could be magnified in an environment in which routine jobs are destroyed. Those jobs provided good wage opportunities for low-skilled workers, and employment opportunities for this category of workers has been deteriorated as a result. In this environment, in which many low-skilled workers cannot be reallocated to abstract well-paid occupations, the ability of an economy to create manual low-paid jobs is necessary to maintain the employment rate constant, which may not be possible in high minimum wage economies” (pp. 22-23).

This is a relevant issue when dealing with the discussion of creating minimum wage or on deciding on its level in an economy with a polarized labour market. And this argument is valid for the Portuguese economy. Indeed, recent research has concluded that polarization is a characteristic of the Portuguese labour market (Centeno & Novo, 2014; Fonseca, Lima & Pereira, 2018; Maia, 2019).

Centeno and Novo (2014) analysed the explanatory factors for wage inequality trends in Portugal since the mid-1980s up to 2009 and concluded for the contribution of education and technology to explain such trends, using *Quadros de Pessoal*, an administrative dataset collected annually by the Portuguese Ministry of Labour. Evidence of such trends is the rise of wage inequality in upper and lower tails of wage distribution until the mid-1990s, a pattern that the authors interpret as the result of a skill-biased technological trend (SBTC hypothesis) in this period, matched with a lack of skill supply, due to

the openness of the Portuguese economy to technological shocks after joining the European Community in 1986. After that, since the mid-1990s up to 2009, it occurred a work polarization, that is “relative employment and wage gains for low- and high-skill workers” (Centeno & Novo, 2014: 17). After 1995, the upper-tail inequality increased less because of a great increase in the supply of skills, and the lower-tail inequality reduced, due to job polarization and the effect of minimum wage. (Centeno & Novo, 2014).

Fonseca, Lima and & Pereira (2018), using the same data source (*Quadros de Pessoal*), show that the Portuguese economy experimented both *job polarization* and *wage polarization* (that is wages around the median declined compared to both wages at the top and at the bottom) in the sub-periods analysed: 1986-1994 and 1995-2007, but mostly in the latter subperiod. These authors conclude that “it is within-industry employment changes in occupations that account for the larger growth in top and bottom paid occupations versus the middle paid, ruling out industry shifts as the major cause of job polarization” (op. cit., p. 332). This job polarization was characterized by “an increase in employment in abstract-intensive occupations in both manufacturing and services and a decline in routine manual-intensive occupations, but only in the second period for manufacturing (...) routine cognitive-intensive occupations also show a declining trend for both sectors (...) and routine cognitive occupations are much more predominant in services than manufacturing (...)” (op. cit., p. 332).

Maia (2019) made a follow-up of this research by extending it to the period 2010-2017 and, using the same data base (*Quadros de Pessoal*), showed the maintenance of *job polarization* in this period (with an increase of the weight of non-routine tasks and reduction of the manual workers) (**Table 1**), and *wage polarization* (with non-routine cognitive abstract tasks with greater growth when compared to manual occupations).

Table 1

Composition of the number of workers by type of tasks: comparison of two statistical sources

	Quadros de Pessoal		EU-SILC 2018	%
	a)			
	2010	2017		
Manual	19.2	16.3	20.9	
Non-routine cognitive abstract	8.1	8.9	7.0	
Non-routine cognitive interpersonal	26.6	29.0	29.7	
Routine cognitive	23.7	23.8	17.5	
Routine manual	22.5	22.0	24.9	

Sources:

a) Maia (2019), using Quadros de Pessoal, Ministry of Labour

INE: EU-SILC 2018

The convergence of conclusions drawn by these three research studies on the Portuguese labour market gave us support to accept the existence of a polarized labour market in Portugal and the ALM hypothesis with explanatory power for it, and to start our investigation using this approach. Then, we have used the classification of Araújo (2019) of the routineness level of an occupation and the five categories used by of Fonseca, Lima and Pereira (2018) to classify the ISCO occupational categories as were used in the EU-SILC 2018 for Portugal: manual (M), non-routine cognitive abstract (NRCA), non-routine cognitive interpersonal (NRCI), routine cognitive (RC) and routine manual (RM). The classifications were as described in **Table 2**.

Table 2

Classification of workers in the EU-SILC PT sample by type of tasks of their occupation (ISCO-08)

Type of Tasks		Nr workers in the EU-SILC PT sample	%
Manual (M)		5315	20.9
61	Market-oriented skilled agricultural and fishery, and forestry workers	1133	
62	Subsistence farmers, fishers, hunters and gatherers	192	
71	Extraction and building trades workers	1302	
74	Electrotechnology trades workers	336	
83	Drivers and mobile-plant operators	1050	
93	Labourers in mining, construction, manufacturing and transport	728	
96	Refuse workers and other elementary service workers	574	
Non-routine Cognitive Abstract (NRCA)		1770	7.0
21	Science and engineering professionals	389	
24	Business and administration professionals	466	
25	Information and communications technology (ICT) professionals	117	
26	Legal, social and cultural professionals	405	
34	Policing, legal, social, cultural and related associate professionals	221	
35	Information and communications technicians	172	
Non-routine Cognitive Interpersonal (NRCI)		7573	29.7
11	Chief executives, senior officials and legislators		
12	Administrative and commercial managers	1315	
13	Production and specialised services managers		
14	Hospitality, shop and related services managers		
22	Health professionals	561	
23	Teaching professionals	1208	
51	Personal and protective services workers	1358	
52	Sales workers	1947	
53	Workers in personal assistance	1142	
95	Street and related sales and service workers	42	
Routine Cognitive (RC)		4467	17.5
31	Science and engineering associate professionals	502	
32	Health associate professionals	210	
33	Business and administration associate professionals	1318	
41	Office clerks	804	
42	Customer services clerks	520	
43	Accounting professionals	387	
44	Other administrative professionals	96	
54	Protective services	630	
Routine Manual (RM)		6337	24.9
72	Metal, machinery and related trades workers	807	
73	Precision, handicraft, printing and related trades workers	462	
75	Food processing, wood working, textile and other craft and related trades workers	1026	
81	Stationary plant and machine operators	894	
82	Assemblers	113	
91	Cleaners and helpers	2111	
92	Agricultural, fishery and forestry labourers	536	
94	Food preparation assistants	388	
TOTAL		25462	100.0

Source: INE ICOR 2018

The number of workers in the EU-SILC 2018 sample classified according to the type of task performed is roughly comparable with the structure evidenced from the *Quadros de Pessoal* census data² (Table 1), although with some overrepresentation of manual workers and underrepresentation of routine cognitive workers. This comparison is supportive for the use of EU-SILC to analyse some relevant traits of such polarized labour market, linking the existing wage polarization to the household characteristics, namely household income and minimum household needs and the corresponding minimum income standard.

We should then investigate the characteristics of such task categories of workers in several dimensions. One of them is the educational level reached by these workers classified by the type of tasks performed (Table 3).

Table 3
Composition of the workers by type of tasks by the highest education level attained (2018)

	No formal education	Lower Basic Education	Higher Basic Education	Secondary Education	Post-Secondary Education	University Education	Total
Manual	12.2	61.5	16.3	8.5	0.3	1.1	100.0
Non-routine cognitive abstract	0.0	4.0	6.9	18.5	1.7	69.0	100.0
Non-routine cognitive interpersonal	1.9	29.9	18.4	19.1	0.8	30.0	100.0
Routine cognitive	0.6	19.8	25.8	38.5	1.7	13.6	100.0
Routine manual	15.4	60.1	14.4	8.9	0.3	0.9	100.0
Total	7.1	40.5	17.5	17.7	0.8	16.6	100.0

Sources:
INE: EU-SILC 2018

The manual workers and the routine manual workers (those who get lower share in total employment in the last decade) are low educated, while the non-routine cognitive (mainly the abstract type) (those who got a bigger share in total employment in the last decade) are highly educated.

Looking at the task composition of the labour force by sectors (Table 4) it emerges a clear pattern of sectoral allocation of human capital through the nature of the tasks required in their production activity: the manual tasks predominate in agriculture, construction and transportation and routine manual tasks predominate in manufacturing activities and services. The non-routine cognitive interpersonal tasks predominate in services (trade, hotels and restaurants, education, and health sectors), while routine cognitive task predominate in financial, consultancy and research and public administration.

These data also elucidate about the heterogeneous character of two task categories: the “non-routine cognitive interpersonal” and the “routine cognitive”. Such heterogeneity exists both on their sectoral allocation (Table 4) and their educational level (Table 3). Indeed, in the case of the *non-routine*

² *Quadros de Pessoal* is a compulsory survey of all firms, conducted annually by the Ministry of Labour, in October, for purposes of monitoring compliance with labour law provisions. The dataset contains information on every wage earner in the Portuguese economy, except for civil servants and independent workers, as well as on their employers (firm-level and establishment-level). Data cover information on each establishment and firm, such as size, location, economic activity, and employment, as well as information on each employee, such as gender, age, education, skills, occupation, tenure, monthly wages, and hours worked.

cognitive interpersonal task workers, almost 1/3 attained university education, and the same share only performs lower basic education, working in a variety of sectors, both hotels, restaurants, and trade (sales workers) and in education (professors), health (doctors) or culture. In the case of *routine cognitive* task workers, although the basic and secondary education predominates, the tasks range from science associate professionals to costumers service clerks or civil servants. This means that other factors account for wage differences “within” such task categories, namely the endowment of human capital and the sector of activity.

Table 4

Task composition of labour force by sectors

						%
	Manual	Non routine cognitive abstract	Non routine cognitive interpersonal	Routine cognitive	Routine manual	Total
Agriculture	72.5	2.4	4.3	4.7	16.1	100.0
Manufacturing Industry	16.2	6.4	7.6	17.6	52.3	100.0
Construction	76.3	6.1	5.8	9.5	2.2	100.0
Trade	12.1	3.5	53.9	17.4	13.1	100.0
Transportation	49.7	2.4	8.2	36.1	3.6	100.0
Hotels and Restaurants	3.1	1.9	64.1	8.4	22.6	100.0
Communications	4.4	62.4	12.9	19.2	1.1	100.0
Financial activities	0.8	27.5	15.0	55.8	0.8	100.0
Consultancy, scientific and administrative activities	8.6	29.3	10.0	36.2	15.8	100.0
Public administration	22.2	19.3	7.1	46.7	4.7	100.0
Education	3.5	4.2	79.1	9.1	4.1	100.0
Health	3.7	6.5	67.3	15.9	6.6	100.0
Cultural activities and other services	7.6	11.8	26.1	10.9	43.6	100.0
TOTAL	20.9	7.0	29.7	17.5	24.9	100.0

Source: INE - ICOR 2018

The Portuguese wage structure reflects such job polarization³. **Table 5** shows the mean wages⁴ of the Portuguese workers classified by tasks, which evidences a very well-marked hierarchy of earnings, with the routine manual wages being less than 50% the national average wage up to the non-routine cognitive abstract workers earning over twice such national average. Putting together Table 3 and Table 5 evidence the indirect effect of education (and the corresponding technical abilities to perform professional tasks) on earnings, and then the potential effect of educational inequality among workers on earnings structure by tasks.

Table 5

Mean annual wages by tasks (2018)

	Mean annual wage	Mean annual monetary wage
Manual	4440.9	4422.6
Non routine cognitive abstract	16170.0	15961.8
Non routine cognitive interpersonal	9106.4	9025.4
Routine cognitive	9357.2	9292.3
Routine manual	3547.0	3538.9
Total	7283.9	7228.1

Source: INE-ICOR 2018

These characteristics of the labour market reveal structural characteristics that will be explored further on linking the workers with their families and then, to link wage inequality with household income inequality.

4. Low wages and the very low wage workers

We will explore this topic focusing on the objective of this article considering, at an early stage, low wages as wages which are close to the national minimum wage. Since we are using EU-SILC PT 2018 data, the reported incomes (including wages) refer to 2017. The national minimum wage in 2017 was 557,0 euros monthly, so that its conversion into annual wage is $557,0 * 12 = 6684$ euros. This will be the reference to the legal national minimum wage in Portugal in the following analysis.

³ Only partly, given the different extent of homogeneity of such task categories, as was said above.

⁴ In this Table 5, mean annual wage is equal to mean annual monetary wage plus mean annual non-monetary wage. It looks evident that such non-monetary component of wages is larger in non-routine task workers, mainly the non-routine cognitive abstract task workers.

If we want to compare real wages⁵ with the national minimum wage, the above data in Table 5 should not be used, because the EU-SILC data include full-time and part-time workers. We consider as full-time (FT) workers those who declared 35 or more working hours in the main economic activity⁶. **Table 6** compares full-time workers and total workers according to the task performed. Considering our definition of FT, they account for 44.7% of total workers (employees)⁷. But the percentage of workers who work full-time is lower for the workers that perform manual (37.3%) and routine manual tasks (31.7%). The difference of mean monetary wage for FT workers when compared to total workers is high, as Table 6 evidence. This means that the low wages observed for manual tasks in Portugal is also explained by shorter working time, more frequent in the cases of less skilled workers more involved in manual and routine manual tasks: the ratio of mean monetary wage of FT workers and total workers is about 2.5 for manual and routine manual workers and about 1.5 for non-routine workers.

It is important to look at the reasons for working less than full-time (the question in the EU-SILC survey refers to working weekly less than 30 hours), shown in **Table 7**.

⁵ This analysis will be made comparing monetary wages reported in 2017 in EU-SILC 2018 with the NMW in 2017. By monetary wages we mean Gross employee cash or near cash income (PY010G): This refers to the monetary component of the compensation of employees in cash payable by an employer to an employee. It includes the value of any social contributions and income taxes payable by an employee or by the employer on behalf of the employee to social insurance schemes or tax authorities. Gross employee cash or near cash income includes the followings items: Wages and salaries paid in cash for time worked or work done in main and any secondary or casual job(s); Remuneration for time not worked (e.g. holiday payments); Enhanced rates of pay for overtime; Fees paid to directors of incorporated enterprises; Piece rate payments; Payments for fostering children; Commissions, tips and gratuities; Supplementary payments (e.g. thirteenth month payment); Profit sharing and bonuses paid in cash; Additional payments based on productivity; Allowances paid for working in remote locations; Allowances for transport to or from work; Additional payments made by employers to their employees or former employees and other eligible persons to supplement the sick, disability, maternity leave or survivor's pay entitlement from social insurance schemes, where such payments cannot be separately and clearly identified as social benefits (in case these payment can be identified they should be included in appropriate benefits variables instead); Payments made by employers to an employee in lieu of wages and salaries through a social insurance scheme when unable to work through sickness, disability or maternity leave where such payment cannot be separately and clearly identified as social benefits.

⁶ This information refers to the activity in 2018 (date of the inquiry) and not to 2017 to which the wage income is reported. This originates some bias in the analysis.

⁷ Where counted as FT workers those workers (employees) who declared to normally work 35 hours per week or above in 2018 (EU-SILK, question PL060). This question originates many missing cases, and this ratio is obtained by relating this number to the total sample of workers/employed and not the total number of valid cases. Only those employees who declared to be in such situation were considered in this analysis. This may originate an overrepresentation of part-time workers. If we use labour census data *Quadros de Pessoal*, in 2019 the number of reported part-time workers are 7.5% of total workers (GEP Estatísticas em Síntese, 26 May 2019). It should be however noted that it is expected that such statistics differ among household or firm survey data, being higher in the former case, because they reflect a broader set of causes for working less than full-time working load.

Table 6**Mean annual wages by tasks (2018): full-time and part-time workers**

	total workers		full-time workers		% full-time workers
	Nr.	Mean annual monetary wage	Nr	Mean annual monetary wage	
Manual	5315	4422.6	1982	10639.3	37.3
Non routine cognitive abstract	1770	15961.8	1122	23497.2	63.4
Non routine cognitive interpersonal	7573	9025.4	3711	16579.1	49.0
Routine cognitive	4667	9292.3	2546	15245.1	54.6
Routine manual	6337	3538.9	2008	9746.1	31.7
Total	25462	7228.1	11369	14720.7	44.7

Source: INE-ICOR 2018

The main reason for working less than full time is the fact that such workers cannot find such a FT job, that is involuntary part-time work, and this is more evident in manual and routine manual task workers. To work less for reasons of improvement education (so voluntary intending the accumulation of human capital) occurs for the non-routine task workers. Homework (to take care of home and family) is another reason to work part-time mainly in manual and routine manual task workers, what may be seen as another involuntary reason to accept lower wages associated to less hours worked.

Looking again to Table 7, it looks evident that voluntary part-time work (related to a specific preference of not to working FT) occurs for only 12% of the Portuguese workers, crossing almost equally all workers by the kind of task performed, although slightly higher for non-routine cognitive abstract task workers.

Table 6 identifies those workers to whom the national minimum wage (NMW) applies, and we can compare the mean monetary wage⁸ for FT workers (14720.7 euros in 2017, that is 1051.5 euros as monthly monetary wage) with NMW (7798 euros in 2017, that is 557 euros as monthly national minimum wage), what corresponds to 53% the mean wage of the Portuguese full-time workers⁹. The sample in Table 6 will be that used to analyse minimum wage in this paper¹⁰.

⁸ By monetary wages we mean Gross employee cash or near cash income (PY010G), as was explained in footnote 5.

⁹ In a report of the Portuguese Ministry of Labour, the Kaitz index (ratio of the NMW in relation to the mean or the median wage) in Portugal was 43% (in relation to the mean) and 61% (in relation to the median), above the general European pattern (GEP, 2019:21).

¹⁰ The sample should refer to those employees who worked full-time in all months during 2017. Our approach, however, consisted of considering those employees who declared that the number of hours that he/she normally works in his/her main job, in 2018, is 35 or above. Therefore, our estimations of wage in 2017 may be biased. In the future developments of this work, we will consider the variables related to work duration in the income reference period.

Table 7**Reasons for working less than 30 hours in a week**

								%
	To study	health	cannot find a FT job	prefers to work not FT	the working hours is considered as FT in the firm	home work	other reasons	Total
Manual	2.6	11.5	51.3	14.1	2.6	7.7	10.3	100.0
Non routine cognitive abstract	4.9	2.4	36.6	17.1	12.2	4.9	22.0	100.0
Non routine cognitive interpersonal	7.9	2.5	53.2	8.9	10.3	4.9	12.3	100.0
Routine cognitive	0.0	1.9	46.2	11.5	11.5	9.6	19.2	100.0
Routine manual	0.3	9.4	57.7	13.3	1.7	11.9	5.6	100.0
Total	3.2	6.5	53.3	12.1	5.9	8.6	10.3	100.0

Source: INE-ICOR 2018

We can now make a preliminary analysis of the wage distribution for all FT workers, considering their classification by the type of task performed. This is made in **Table 8**: 17.9% of the Portuguese full-time workers were below the NMW in 2017. This figure is not far from what was expectable: according to the data published by the Ministry of Labour using the Ministry of Labour Survey of Earnings and Labour Duration, the number of employees who earned the NMW were 25.7% in April 2017 and 21.6% in October 2017 (GEP, 2019:29).

Table 8**Distribution of full-time workers by number of NMWs earned in 2017**

					%
	less than NMW	higher than 1 and less than 2 NMW	higher than 2 and less than 3 NMW	higher than 3 NMW	Total
Manual	22.1	66.5	8.2	3.2	100.0
Non routine cognitive abstract	11.4	26.1	26.8	35.7	100.0
Non routine cognitive interpersonal	17.7	46.5	14.5	21.3	100.0
Routine cognitive	10.8	54.6	19.8	14.8	100.0
Routine manual	26.5	64.8	6.6	2.1	100.0
Total	17.9	53.0	14.4	14.7	100.0

Source: INE-ICOR 2018

Table 8 provides a comparison among full-time workers (using our approach)¹¹ classified by the type of tasks performed, confirming again the relevance of this classification on comparing the earnings distribution. The workers more affected by the national minimum wage were the manual (22.1%) and the routine manual workers (26.5%), while the routine cognitive and the non-routine cognitive workers were much less. In the latter categories, a high percentage of workers earn more than 3 * NMWs. We are then in face of rather distinctive wage distributions among these five categories of the Portuguese labour market.

To investigate the characteristics of the very low wage workers we need to specify a delimitation of those who, being employed and earning wages, may be considered as earning low wages. An earlier very strict definition of very low wage workers led us to include, in this category, two situations:

- a) the *involuntary underemployed*, that is those who work less than full time not as a matter of choice but, instead, because the conditions of the labour market. In the EU-SILC sample those who declared to work less than 35 hours corresponds to 14.5% of total number of employees¹². However, when asked for the reasons to work less than FT, only 1.4% of the total number of employees declared to do it for involuntary reasons, because cannot find a FT job. This low number is due to a big number of missing values, since 53.3% of the valid respondents declared who work less than 30 hours do it because cannot find a FT job – Table 8). We decided to accept only the valid cases, what originate a small number of involuntary underemployed (those who responded as such in the household survey);
- b) the *full-time very low wage workers*, that is the FT workers who earn a monetary wage less than the NMW, that is 17.9% of total FT employees. This means that the number of FT very low wage workers corresponds to 9.2% of the total number of employees.

This means that, according to this earlier definition of very low wage workers, which is very strict, the size of the sample of very low wage workers corresponds to 10.6% of total employees (1.4% are involuntary unemployed and 9.2% are full-time very low wage workers).

Two remarks are due at this stage. Firstly, it should be noted that we are supporting this analysis on a household survey (EU-SILC PT) and not on a firm survey for the reasons presented in the beginning of this paper: we need to link the information on workers to the characteristics of the households they belong to. For this reason, it is expectable that some results got from the analysis that follow will not coincide with that would be originated from *Quadros de Pessoal*, the mostly used data basis to study Portuguese labour market. Secondly, we start this analysis of the very low wage workers based on a rather strict delimitation of those that are considered as poor. A less strict approach will be used in the next section.

We should then investigate who are these very low wage workers, looking at their attributes, either personal (sex, age) or characteristics of the workers' economic activity (type of task performed in the firm, sector, and firm size).

Table 9 presents the sample data on working poverty in the sense above considering two relevant attributes: sex and age. A breakdown is made of working poverty in these two components: the

¹¹ Those employees who declared, in 2018, to normally work 35 hours or more.

¹² The EU-SILC PT evidence a big number of missing values for these questions. In Table 6 the part-time workers cannot be obtained as the difference of the two columns, because we considered as FT workers those who declare to work 35 or more hours a week, and many respondents did not respond to this question. See footnote 7, above.

involuntary underemployment and the wage low pay of full-time workers. They evidence some distinctive pattern among male and female workers, and differently for these two components of working poverty. Involuntary underemployment is a predominantly female characteristic, while full-time working poverty affects almost equally male and female workers (9.0/9.5%).

Table 9

Very low wage workers by personal attributes of the workers (age, sex)

	Total workers		involuntary underemployed			FT very low wage workers			Total very low wage workers		
	nr	a) %	nr	a) %	b) %	nr	a) %	b) %	nr	a) %	b) %
Total	22164	100.0	311	100.0	1.4	2048	100.0	9.2	2359	100.0	10.6
Sex											
Male	10329	46.6	79	25.4	0.8	925	45.2	9.0	1001	42.4	9.7
Female	11835	53.4	235	75.6	2.0	1123	54.8	9.5	1358	57.6	11.5
Age											
< 25	1081	4.9	49	15.8	4.5	375	18.3	34.7	424	18.0	39.2
25 - 40	4142	18.7	84	27.0	2.0	624	30.5	15.1	708	30.0	17.1
40 - 65	11153	50.3	175	56.3	1.6	1033	50.4	9.3	1208	51.2	10.8
> 65	5788	26.1	3	1.0	0.1	16	0.8	0.3	19	0.8	0.3

Source: EU-SILC PT 2018

a) Composition of the very low wage workers according to the value of the attribute.

b) Percentage of poor for each value of the attribute.

Considering the characteristics of the labour market, additional evidence comes to characterize working poverty. **Table 10** presents data from the same household survey data source (EU-SILC PT) only for the full-time very low wage workers, in the sense above (workers earning, in 2017, a wage less than the NMW decided by the government for that year).

The incidence of wage poverty (the percentage of workers who are full-time wage earners below one NMW) differs among the type of task performed in the firm, the highest for the manual (10.4%) and routine manual workers (9.2%), that predominates in industry, but also for the non-routine cognitive interpersonal (10.7%), what predominates in low-paid service sectors. This contrasts with lower incidence for non-routine cognitive abstract (8.3%) and routine cognitive workers (6.4%), mainly in high paid service sectors. What emerges from these figures is that one could expect larger contrasts among task categories. The relatively small differences among task categories evidence the larger role played by sector of activity and the firm size to explain the differences of wage poverty among Portuguese workers. This is evident in the second part of Table 10.

There are very expressive differences of wage poverty among sectors. The highest incidence is in Agriculture, Construction, Hotels and Restaurants and Cultural Activities and Other Services. The lowest incidence are Financial Activities and Education.

The third part of Table 10 refers to wage poverty by firm size. This reveals very clear decreasing pattern with size, from 22.5% in the very small firms, up to 12% in the larger ones in our classification (above 50 workers).

These dimensions (sector of activity and firm size) are then two important variables to consider in the discussion of feasibility of the implementation of living wage in Portugal.

Table 10

Very low wage workers by characteristics of the labour market

	Total workers		FT very low wage workers		
	nr	a) %	nr	a) %	b) %
Total	22164	100.0	2048	100.0	9.2
tasks					
Manual	4209	19.0	438	21.4	10.4
Non routine cognitive abstract	1541	7.0	128	6.3	8.3
Non routine cognitive interpersonal	6141	27.7	658	32.1	10.7
Routine cognitive	4309	19.4	276	13.5	6.4
Routine manual	5791	26.1	532	26.0	9.2
sectors					
Agriculture	325	1.5	86	4.2	26.5
Manufacturing Industry	1922	8.7	313	15.3	16.3
Construction	731	3.3	150	7.3	20.5
Trade	1709	7.7	317	15.5	18.5
Transportation	504	2.3	66	3.2	13.1
Hotels and Restaurants	1174	5.3	304	14.8	25.9
Communications	249	1.1	24	1.2	9.6
Financial activities	227	1.0	11	0.5	4.8
Consultancy, scientific and administrative activities	824	3.7	134	6.5	16.3
Public administration	1355	6.1	137	6.7	10.1
Education	1321	6.0	122	6.0	9.2
Health	1365	6.2	227	11.1	16.6
Cultural activities and other services	695	3.1	153	7.5	22.0
firm size					
1 - 4 workers	2054	9.3	463	22.6	22.5
5 - 9 workers	1495	6.7	304	14.8	20.3
10 - 19 workers	1753	7.9	284	13.9	16.2
20 - 49 workers	1822	8.2	266	13.0	14.6
50 workers and above	4363	19.7	522	25.5	12.0

Source: EU-SILC PT 2018

a) Composition of the very low wage workers according to the value of the attribute.

b) Percentage of poor for each value of the attribute.

5. From MIS to LW: what is a decent wage

So far, the economic conditions of the workers were analysed considering his/her link with the *firm*, that is, his/her participation in the *labour market*. Moreover, the national minimum wage (NMW) is an amount legally fixed by the government, supported in a negotiation among social partners, and then it is not a normative reference for an adequate wage level. So, the above analysis of working poverty is not supported by any consensual concept of dignity of living that such wage level can afford. This is the next step in our analysis.

Two changes will be made from now in the orientation of the analysis. On the one hand, the economic conditions of the worker will be analysed considering his/her link to the *household*, and then the worker will be also considered as a *consumer* (needs satisfaction) and as a *citizen* (with human and social rights and with fiscal duties). The second change is the income level to be considered for reference of the analysis, which cannot be the value of the NMW but, instead, that amount of adequate income (which may include tax credits and monetary transfers) that can provide human dignity in living conditions: if income source is only composed of wages, it will determine the minimum value of wages that may originate such human dignity. This is the concept of living wage (LW).

Regarding the first issue, an analysis will be conducted considering several types of families with diversity of sociodemographic characteristics, with a distinction of living alone or in couple, and the number of children (considering the cases of one or two children). The analysis will be made only for those households, single person, or couple, where adults are all at the working age (18 to 64 years old), with or without dependent children, being wages the most important income source. This is a simplification that excludes, in this paper, the case of wages earned by households composed by several generations.

Regarding the second issue (reference income), it should be noted that in Portugal, the only recent study known which gave rise to estimates, for different types of households, of adequate income levels that may originate to live with dignity, is the adequate income study in Portugal, whose results were published in Pereirinha et al. (2020). The method used in this study combined the consensus method of budgetary standards (which reflects what the *population thinks*) with the normative approach of experts (which reflects what *science teaches* us) to estimate the adequate level of income, replicating, with some adaptations to the Portuguese reality, the methodology for determining a minimum standard income (MIS) used in the United Kingdom.

It is a method widely established in the scientific literature and with a strong tradition in the United Kingdom and which, based on the original works of William Petty in the sec. XVII, had expression at the end of the XIX century with the works of Rowntree in the measurement that this author made of poverty in the city of York, which he considered to be representative of the living conditions of the cities of the province of the United Kingdom. It was these reference budgets, calculated by Rowntree (at the time, very frugal) that came to be used by W. Beveridge in the calculation of care benefits, and the influence of this method lasted until the 1980s. In 1985, the Family Budget Unit (FBU), established in the United Kingdom, linked to the University of York, and funded by the Joseph Rowntree Foundation, has continued the construction of reference budgets, based on family expenditure surveys and expert opinions. In the 1990s, the Centre for Research in Social Policy (CRSP) at Loughborough University developed the method used by that research unit and introduced, in the calculation of reference budgets, the participation of the population in focus groups with a view to obtain informed agreements on what constitutes an acceptable minimum in society from these

groups. After the extinction of the FBU in 2011, the CRSP of Loughborough University gained precedence in estimating reference budgets, developing the MIS method that combines two sources of information to determine the normative value of adequate income: what the population thinks is necessary to live worthily in society (consensual approach) and, on the other hand, informed opinion of the experts.

This was the method used in the research on adequate income in Portugal (Pereirinha et al., 2020), conducted between November 2012 and November 2014, involving 31 discussion groups¹³ and 212 voluntary participations of the population, with a diversified socio-economic profile that, in a consensual approach of opinions on needs (needs, and not wants), spoke in a first step about what is a decent standard of living and, then, on which goods should be acquired to reach it, the respective quantities and the form and place of acquisition, thus enabling information to be obtained to calculate the value of the minimum income considered sufficient to achieve this standard of living. In some key areas (nutrition, housing, and health) the opinion of experts informed the research team of adequate minimums, which were transmitted for discussion with the groups. These groups, with a composition reflecting the diversity of familiar types relevant to the analysis (those considered in the previous section, and which will be used again in this paper), considered this information from the experts to decide on the level of satisfaction of the needs corresponding to that decent standard of living.

To understand well the meaning of the adequate income calculated for Portugal, it is important to know the conception agreed by the initial discussion groups, and used later by all in the research, of what is a decent standard of living:

A decent standard of living today in Portugal includes, in addition to food, housing and clothing, everything that is necessary for a person to be able to have health, feel safe, relate to others, and feel respected and integrated into society. It allows free and informed choices about practical things in life and forms of personal fulfillment, including access to education and work, culture, and leisure.

This being the concept of decent standard of living, the method described above allowed the construction of reference budgets and the calculation of the adequate income for the year 2014 for several family categories. **Table 11** presents the values updated for 2016 and 2017, obtained from the 2014 values by applying, separately by consumer goods groups (COICOP classification), the values of the Consumer Price Index.

It is important to clarify that the construction of reference budgets required the mobilization of a vignette (imaginary case), assuming as assumptions a set of characteristics related to sex, age and health of individuals, housing, and place of residence, among others (see Pereirinha *et al.*, 2020), and correspond to *disposable income* values (after social security contributions and income taxes).

Also related to the estimation of adequate income for these family types is the estimation of equivalence scales. The method used in Pereirinha *et al.* (2020) to construct reference budgets and estimate adequate incomes for several family types also originated an equivalence scale for those households with a disposable income close to that adequate income. Such equivalence scale (that we

¹³ These groups worked in different locations of the country: in the first stage, in which they spoke and consensualized the content of what is the decent standard of living, took place in Vila Franca de Xira, Vila Nova de Gaia and Beja. In the following stages these groups took place in Vila Franca de Xira, understood as a non-atypical place that, not seeking to be representative of the national population, reflects characteristics that combine traces of rurality with those of an urban periphery of Lisbon, in whose metropolitan area is located.

name as *consensual* equivalence scale) evidence, for these households, an undervaluation of the economic costs of the second adult and of the children of the modified OECD equivalence scale usually used in poverty analyses (see Table 11). The underestimation of children costs is also observed in a comparative analysis made for Portugal and other European Union countries (Hirsch *et al*, 2020), and in most countries examined, the OECD modified scale also underestimates costs for single adults relative to couples (op. cit., p. 162).

Table 11 describes the amount of the adequate income, estimated for 2016 and 2017, for those five family types that will support our further analyses after linking the workers to the households they are member of. One should notice the level of the monetary values of the household MIS. If we compare with the monetary poverty threshold using the EUROSTAT criterion (60% of the median household equivalised disposable income, using the modified OECD equivalence scale), the adequate income (MIS) for a single person is 70% higher than the monetary poverty threshold.

Table 11

Household Minimum Income Standard (MIS) for some family types

	Household MIS (€/month)		Household size		
	2016	2017	nr. Persons	nr. Equiv. adults OECD mod	nr. equiv adults (consensual scale)
Single person, working age (18 - 64), no children	767	781	1.0	1.0	1.00
Single person, working age (18 - 64), 1 child (12 yrs.)	1351	1374	2.0	1.5	1.79
Couple, working age (18 - 64), no children	1280	1304	2.0	1.3	1.67
Couple, working age (18 - 64), 1 child (12 yrs.)	1765	1797	3.0	1.8	2.33
Couple, working age (18 - 64), 2 children (2 & 12 yrs.)	2235	2272	4.0	2.1	2.92
Monetary Poverty threshold (60% median equiv. disposable income)	454	467			

Source: Pereirinha, J. *et al*. (2020: 247-254)

This difference, considering relative poverty threshold or MIS income as reference income, has important implications on poverty measurement. This is evident in **Table 12** for those households that we included in our analysis: the single and couple households of working age population. The relative difference of the MIS threshold (adequate income) in relation to the relative poverty threshold observed in single person households is bigger in the other family types, mainly for those with children. This is related to the difference of the consensual equivalence scale in relation to the modified OECD equivalence scale since the latter underestimates the economic costs of children.

One should also point out other important difference relevant to interpret poverty incidences in Table 12 is the type (concept) of income considered. Indeed, in the case of relative poverty rate, we are comparing household monetary disposable income with the EUROSTAT poverty threshold, while in the case of the percentage of households below MIS, we are considering total disposable income (monetary plus non-monetary income) and to compare it with the adequate income (MIS)¹⁴.

Table 12

Relative poverty and social deficit of working age households in Portugal (2016)

	Single person, working age (18 - 64), no children	Single person, working age (18 - 64), 1 child (12 yrs.)	Couple, working age (18 - 64), no children	Couple, working age (18 - 64), 1 child (12 yrs.)	Couple, working age (18 - 64), 2 children (2 & 12 yrs.)
reference income thresholds					
monetary poverty threshold (€/month)	453.6	636.4	680.4	856.4	1015.0
adequate income - MIS (€/month)	767.0	1351.0	1280.0	1765.0	2235.0
ratio MIS/Rel Pov Threshold	1.69	2.12	1.88	2.06	2.20
relative poverty and social deficit incidence					
% hh below rel pov threshold	25.6	26.4	19.9	17.8	19.8
% hh below MIS	50.9	79.3	47.6	63.0	67.5
% hh in the "grey zone"	25.3	52.8	27.7	45.2	47.8

Source: Pereirinha, J. et al. (2020)

The other consequence, also evident in Table 12, is the estimated values for poverty incidence considering these two thresholds. We distinguish three groups of households: a) households in *relative poverty*, which are those with equalized monetary disposable income below the EUROSTAT poverty threshold, considering the modified OECD equivalence scale; b) the households that we name as in *social deficit*, which are those with total (monetary plus non-monetary) disposable income below the MIS adequate income, where we are considering, in the estimation of the household adequate income, the consensual equivalence scale; c) the households in a *grey zone*, with disposable equalized monetary income above the EUROSTAT poverty threshold (and so cannot be considered as poor) and with a total disposable household income below the adequate income (and then cannot assure to have decent living conditions, living with human dignity) (Pereirinha & Pereira, 2019).

Looking at Table 12 we conclude that, for the working age households, the *relative poverty* rates are higher in the single person households when compared with the couple households, that the single parent households and single no parent households face the same poverty incidence (about 26%) and that there is also no effect of having children (up to two) on household poverty of the couples: all couple households (with no children, with one and with two children) evidence similar poverty incidence (18 - 20%). A distinct pattern emerges on computing the incidence of *social deficit*. In this case, the incidence rates are for all cases much higher (as expected considering that the reference

¹⁴ The ratio of non-monetary income with total (monetary plus non-monetary) disposable income is decreasing with total income, from 10% in the 1st income decile up to 3% in the 10th decile (Pereirinha & Pereira, coords, 2021, chapter 10).

incomes are higher when compared to the relative EUROSTAT poverty thresholds). But, contrary to relative poverty, the incidence of social deficit for non-children households (single persons and couple with no children) is more similar (48 – 51%) and considerably rise with the presence of children in the family, both for couples or single parent households, evidencing in this latter case a very high social deficit incidence (79%). This important conclusion relates to the different percentage of the number of households in the grey zone, much higher for the households with children (around 50%) in relation to those with no children (around 25%).

These results have relevant consequences to the design of Living Wages policy in Portugal, with special attention having to be devoted to the households with children, as we will discuss below. A preliminary approach to this issue is done in **Table 13**, by assessing the national minimum wage in terms of its adequacy, considering as reference the adequate income (MIS), that is, the income level that allows the households to live with human dignity in the society, that will be our reference threshold from now. We consider, again, the five types of families we are assuming in this analysis.

Table 13

Adequacy of the National Minimum Wage (NMW) in Portugal (2017)

	Single person, working age (18 - 64), no children	Single person, working age (18 - 64), 1 child (12 yrs.)	Couple, working age (18 - 64), no children	Couple, working age (18 - 64), 1 child (12 yrs.)	Couple, working age (18 - 64), 2 children (2 & 12 yrs.)
nr. of persons	1	2	2	3	4
nr. adult-equiv (OECD mod)	1	1.50	1.30	1.80	2.10
nr. adult-equiv (consensual scale)	1	1.79	1.67	2.33	2.92
nr. of wage earners	1	1	2	2	2
legal monthly gross NMW (€)	557	557	1114	1114	1114
legal anual gross NMW (€)	7798	7798	15596	15596	15596
monthly gross NMW (€)	650	650	1300	1300	1300
monthly net NMW (€)	578	653	1157	1206	1372
distribut net <i>minus</i> gross (euros/month)	-71.8	3.2	-142.7	-93.7	72.3
distribut net <i>minus</i> gross (%)	-11.1	0.5	-11.0	-7.2	5.6
net NMW/gross NMW (%)	88.9	100.5	89.0	92.8	105.6
MIS (€/month)	781	1374	1304	1797	2272
degree of adequacy (NMW/MIS) (%)	74.0	47.5	88.7	67.1	60.4

Source: Pereirinha, J. *et al.* (2020: 263-266)

These five types of families are distinct in the household size, in the number of adult equivalent persons (according to the equivalence scale considered) and, as well, on the assumption that we can make regarding the number of wage earners. We assume, in this Table, that all adult population is a wage earner and that all earn the national minimum wage (NMW). These assumptions allow to compare the situation of these five family types that result from earning NMW and then, its adequacy.

A distinction is made in this Table regarding two concepts of national minimum wage, the gross NMW (what the firm pays to the workers) and the net NMW (what the workers really earns, that is the gross wage less contributions to social security plus monetary and non-monetary social benefits, namely family allowances). On comparing gross and net NMW it is evident its role on rising income for those households with children.

Two major conclusions result from this Table. On the one hand, for the families with no children, the adequacy rate is higher than for the families with children: it is 74% for single persons and higher, close to 90%, in the case of the couple with no children. On another hand, the NMW adequacy is less than 50% for single parents and below 70% for couples with children, decreasing with the number of children. This reflects a very low level of children costs compensation in Portuguese welfare state, a result observed in other European welfare states (Penne et al., 2019).

6. Low wages and household income poverty and social deficit

The above sections were focused on the workers as income earners, and now we turn to the household by looking at the wage earners in their contribution to the household income. The main question is: in which kind of families are located the very low wage workers just identified?

Table 14 provides a preliminary answer to this question, by looking at the internal composition of the poor and non-poor households in terms of the number, relative to the household size, and the economic profile and incidence of working poverty. Three major conclusions emerge from this Table. Firstly, household income poverty and social deficit are related to the work intensity in the household: on average for all the households, the number of workers per household member is 0.75, while it is lower (0.61) in the case of relative poor households. Secondly, household income poverty and social deficit are related to involuntary underemployment: in the case of households above the MIS it almost does not exist, while for the income poor households this happens for 2.5% of the workers in the household. Thirdly, full-time working poverty is more severe in the income poor households: 13.6% of workers in the household face this situation, and it reduces to 2.4% for the households above the MIS.

Table 14

Internal composition of the households with relation to very low wage workers

	Relative Poor households	Grey Zone households	social deficit households	non-deficit households	Total households
					%
Very low wage workers	16.1	12.9	13.8	2.9	10.0
involuntary underemployed workers	2.5	1.6	1.9	0.5	1.4
Full-Time Very low wage workers	13.6	11.4	11.9	2.4	8.7
Total workers	100.0	100.0	100.0	100.0	100.0
Nr of workers/size	0.61	0.75	0.71	0.83	0.75

Source: INE EU-SILC PT 2018

Table 15 and Table 16 make a similar analysis for two groups of family types, according to the typology that has been used so far, separately for families with no children and families with children.

For the families with no children (**Table 15**), the work intensity (ratio of the number of workers to the number of household members) of the households in social deficit is lower than for the total households, mainly for the couple. The households with children (both the single parents or couples) (**Table 16**), have a work intensity close to the average and, for these households, those in social deficit are close to the total.

Table 15

Working poverty in households with no children

	Single person, working age (18 - 64), no children		Couple, working age (18 - 64), no children	
	Total	social deficit households	Total	social deficit households
very low wage workers	11.0	20.2	12.4	20.4
involuntary underemployed workers	1.2	1.7	2.0	3.3
Full-Time very low wage workers	9.8	18.6	10.5	17.1
Total workers	100.0	100.0	100.0	100.0
Nr of workers/size	0.87	0.84	0.84	0.76

Source: INE EU-SILC PT 2018

What looks more impressive on comparing households with no children and households with children is the higher percentage of very low wage workers in total workers in the social deficit households with no children and, for the households with no children, the bigger difference of such percentage between the social deficit households and the total households of this type.

Table 16

Working poverty in households with children

	Single person, working age (18 - 64), one child		Couple, working age (18 - 64), one child		Couple, working age (18 - 64), two children	
	Total	social deficit households	Total	social deficit households	Total	social deficit households
very low wage workers	15.1	18.6	11.7	17.0	11.1	16.1
involuntary underemployed workers	1.3	1.7	1.4	1.9	1.5	2.2
Full-Time very low wage workers	13.8	16.9	10.3	15.0	9.6	14.0
Total workers	100.0	100.0	100.0	100.0	100.0	100.0
Nr of workers/size	0.65	0.66	0.75	0.73	0.72	0.71

Source: INE EU-SILC PT 2018

7. Alternative LWs: a sketch of simulation analyses and policy trade-offs

As it was said above, the implementation of Living Wage involves three major policy dimensions: the *adequacy* of the wage income (that will originate a decent standard of living for the workers and his/her family members), the *social acceptability* of the income distribution that results from such implementation, and the *feasibility* of such implementation (considering either the rise of the firm costs or the change of fiscal costs, what involves changes in social security contributions, social benefits and taxes). It is our purpose in this section to present a sketch of a simulation exercise intending to support a policy discussion with the social partners involved: trade unions, firms, and government. The analyses done in previous sections helps to sustain either the selection of the domains and variables for this simulation, to support assumptions for the modelling of the major economic variables involved, and to roughly support the magnitude of the policy trade-offs that emerge from this policy discussion. It will be then one step further intending to implement the scheme presented in the Figure 1.

As a first step, from the above analysis we get support to assume, as an objective, that the net value of the legal minimum wage should be the amount of the disposable adequate income, the MIS that was estimated as 781 euros in 2017 (see Table 13). This would be the amount of the household income of a single person with no children. It is justifiable that in case of a couple of workers with no children the net amount would be 1304 euros, the MIS income estimated for this type of family (Table 13), considering the consensual equivalence scale for this type of family, which means 258 euros less than twice one legal minimum wage proposed above ($1304 = 2 \times 781 - 258$). This would roughly correspond to the fiscal duties of this family as income tax (IRS), at the rate of 17% ($258 = 0.17 \times 2 \times 781$). So, for the no-children households we can support amounts of net minimum wage supported on sound normative principles, rather consensualized and supported in a scientific method. But this amount is a starting point for negotiation. Indeed, we should consider that this amount of net value of the legal minimum wage would imply that its gross value, assuming the same rate as in Table 13, should be 879 euros ($781/0.889 = 879$). Considering that the monthly gross minimum wage in Portugal was 649 euros ($= 557 \times 14/12$), this would correspond of a rise of 35% of the legal (gross) minimum wage, what would imply a great increase of the firms costs. According to the EU-SILC PT 2018 data, this would correspond to the situation of about 45% of the Portuguese full-time very low wage workers in 2017 that, according to these figures, would be levelled up to human dignity in their living conditions. This value (35%) is our estimation of the wage deficit for this category of workers in these families. At this stage we would get positive effects on wage earners and on the government accounts (the rise of social security contributions and of income taxes).

The second step of this simulation exercise relates to families with children, either single parents or couples with children. It was evident from the above analyses in this paper that when we compare families with children with families without children it comes a clear distinction regarding the adequacy of the 2017 minimum wages for these two groups of families (Table 13): for the families with children, the minimum wage adequacy is much lower (67.1% for couple with 1 child, 60.4% for couple with 2 children and only 47.5% for single parents with 1 child) in comparison with those with no children (74% for a single person household and 88.7% for a couple with no children). So, additional fiscal costs come to accommodate minimum wages to the household needs. For a couple with one child, we assume that both in the couple earn minimum wage and then, their minimum wage income

(2 x 781 euros = 1562 euros) is less than the adequate (MIS) income for these households (1797 euros). This would then require one mix of fiscal deductions and social benefits that would rise wage income by 15%. For a couple with two children, the MIS adequate income (2272 euros) is much higher (45% higher) than their gross wage income (2 x 781 = 1562 euros), what would require a similar mix of tax and social security policies to reach this objective. The bigger fiscal effort is required to the single parent families with one child, for whom the difference between MIS (1374 euros) and the wage income (781 euros) is larger (75%) and then, the mix of fiscal policies requires a bigger fiscal cost¹⁵.

The summary of these results as described in **Table 17**.

Table 17
From MIS to LW: preliminary simulation exercise

	Single person,	Couple, working	Single person,	Couple, working	Couple, working
Adequate Income	781	1304	1374	1797	2272
National Minimum Wage	781	1562	781	1562	1562
Redistributive transfers	0	-258	593	235	710
Transfer (+) / tax (-) rate	0.00	-0.17	0.76	0.15	0.45

Source: Table 13

The third step of our simulation exercise is related to the impact of such changes on wage income distribution. This exercise, that is presented in **Table 18**, consisted of starting from the wage income distribution in 2017 considering, in a very aggregative form, the number of full-time workers by brackets of the number of national minimum wages they earn in that year (column [2]). This wage income distribution is in column [3].

This simulation consisted of keeping the distribution as it is defined but considering three alternatives only changing the variation rate of the NMW. The Situation 1 is the most progressive (it is a Rawlsian alternative), only changing the 1st NMW, the alternative 2 is moderately progressive, assumes that the wages above the 1st NMW rises at a rate that is ½ of that wage rate (that is, 17.5%) and, finally, the alternative 3 assumes that all workers rise their wages at the same rate (35%), that is, a “proportional” alternative. It should be noted that the alternative 3 keeps the relative wage inequality unchanged (all wages rise at the same rate) but originating a great change in the firm costs (35.2%), while the alternative 1 reduces very much the wage income inequality, and originating a modest variation on the firm costs, but rising the Portuguese Kaitz index (ratio of the NMW in relation to the mean), which is already one of the highest in the EU.

¹⁵ It should be noted that in case of divorce, civil law establishes the principle of parent sharing of expenses of children costs, what will reduce such financial burden.

Table 18

Alternative changes on wage income distribution					
Income brackets	share workers (%)	base 2017	Situation 1 a)	Situation 2 b)	Situation 3 c)
[1]	[2]	[3]	[4]	[5]	[6]
< 1 NMW	17.9	649	879	879	879
1 NMW - 2 NMW	53.0	974	974	1202	1319
2 NMW - 3 NMW	14.4	1623	1623	1907	2198
> 3 NMW	14.7	1947	1947	2288	2617
average wage		1152.3	1193.5	1405.3	1557.6
average wage change relative to the base			3.6	22.0	35.2

a) Only rise (35%) of wages of minimum wage workers

b) NMW rises 35%, all the others rise 17.5%

c) All wages rise as the NMW (35%)

8. Conclusive remarks

This paper is rather exploratory in the sense that it is illustrative of the relevance of introducing the topic of Living Wage in the discussion of public policies, and of the major trade-offs that the implementation of this public policy will originate in its design and implementation.

Working poverty is a great policy concern in Portugal, namely regarding the low pay of full-time workers. But average wage is also low. The national minimum wage has been a policy that successfully have raised the low wages, but rather constrained by the low competitiveness of the firms, what implies that the national minimum wage remains quite below the income level required for a decent level of living, either for the workers or their families. The low adequacy of the national minimum wage is more serious for the case of families with children, what is a disincentive for natality, given the economic costs of the children, undervalued by the commonly used equivalence scale. The need of such a Living Wage policy is a good instrument to promote natality, an argument well supported by the data presented above. In addition, the Kaitz index is high, what is a political constraint for improving the national minimum wage without considering the need of the rise of the average wage and of the reduction of wage inequality. All these findings point out into the need of discussion of a Living Wage policy that, being focused on wages and on the wage earners, consider the conditions of the household the workers belong to, and includes, beyond minimum wage as a firm cost, fiscal policy (income taxation and social security transfers) as a fiscal cost.

The design of a public policy on Living Wage faces, as this paper argues with illustration supported in data and preliminary research, several trade-offs. It is not easy to reconcile all the objectives involved in the design of a Living Wage policy. This means, and the paper intends to illustrate it, that the

presence of such trade-offs require consultation and negotiation among the social partners (employers, workers, and government). This paper only concludes for such need, with quantification of some magnitudes of the difficulty to face them, and not for the goodness of the results that may come from such negotiations.

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