

Overtime and Wage Adequacy in the European
Union: Evidence from Survey Data and Collective
Agreements

*Report on non-standard working time rewards in the
ESES*

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BARTIME

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Most Collective Agreements (CBAs) fix pay levels based on a standard working week and typically include provisions for monetary rewards related to non-standard working hours. However, there is a lack of understanding of the specificities of these provisions across European countries. BARTIME examines the rewards for non-standard hours across 24 EU countries. BARTIME aims to contribute to the social dialogue in Europe by deepening the understanding of monetary rewards of non-standard working time arrangements and the related agreements in collective bargaining.

BARTIME is led by the WageIndicator Foundation and is joined in the project by University of Utrecht, Central European Labour Studies Institute (CELSI) and the University of Girona. The European Trade Union Institute (ETUI) is associate partner to the project.

WageIndicator Foundation

WageIndicator Foundation is a global, independent, non-profit organisation operating in 208 countries across the world that collects, analyses and shares information on Minimum Wages, Salaries, Living Wages, Living Income and Living Tariff, Labour Laws, Collective Agreements and Gig and Platform Work. It aims to improve labour market transparency for workers, employers and policy makers worldwide by providing accessible labour market information worldwide through 220 websites in 70+ national languages.

Utrecht University

University of Utrecht (UU), Department of Interdisciplinary Social Sciences, in the Netherlands is one of the largest Dutch universities with over 35,000 students. The Department of Interdisciplinary Social Sciences has a staff of more than a hundred professors, assistant professors, and PhD and post doc researchers. Its research covers issues such as discrimination in the job market, reintegration at work, growing up in a multicultural neighbourhood, developing your individual identity, high-risk behaviour in young people, growing inequality and the accessibility of care.

Central European Labour Studies Institute (CELSI)

Central European Labour Studies Institute (CELSI) is a non-profit research institute based in Bratislava, Slovakia. It fosters multidisciplinary research about the functioning of labour markets and institutions, work and organizations, business and society, and ethnicity and migration in the economic, social, and political life of modern societies. CELSI strives to make a contribution to the cutting-edge international scientific discourse.

University of Girona

The University of Girona's Department of Economics is affiliated to the Faculty of Economics and Business Sciences and offers teaching in several bachelor's and master's degree studies. The department is very active in research and its interests range from statistics, applied economics and health to public economics, services and industry. Its research covers issues such as labor economics, monetary policy, basic income, transition economies, and the impact of education on the labor market.

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Bibliographical information

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1. Introduction

The negotiation of premium rates for workers who exceed their standard work hours is a core issue in collective bargaining on wages and working time. Bargained overtime premiums serve to discourage the (excessive) use of overtime by employers and to compensate workers for the inconvenience of long hours. While overtime premiums are a common feature of both working time legislation and collective agreements across the EU Member States, there is surprisingly little insight into the relation between the negotiation of overtime premiums and the incidence of actual overtime pay in the economy. This knowledge gap sparks questions about the extent to which bargained overtime premiums effectively raise workers' incomes and, if so, which group benefits from them most.

The BARTIME project on the monetary rewards of working time dimensions in collective bargaining and in the working population, funded by the European Commission's Directorate General for Employment, Social Affairs and Inclusion (Project No. 101126498), studies this relation. This report, which constitutes deliverable 3.1 of the BARTIME project, focuses on the question to what extent paid overtime premiums contribute to workers' ability to earn an adequate wage. Together with two further studies into the wider incidence of premiums for non-standard hours and the pervasiveness of unpaid overtime, BARTIME investigates the relation between collectively bargained arrangements on paper, and the way in which they work out in the labour market.

The aim of this report was, first, to understand how much income workers across EU member states derive from overtime premiums, and to what extent these premiums help low-wage workers attain adequate wages. Secondly, the report aims to show how paid overtime premiums are related to bargained overtime premiums. Combining microdata on wages and paid overtime premiums from the EU Structure of Earnings Survey (ref) with data on collectively bargained premium rates from the WageIndicator CBA Database (Medas et al., 2024), this report critically interrogates the role of (collectively bargained) overtime premiums as an instrument for in-work poverty reduction.

In the following sections of this report, we first briefly review the current knowledge on the contribution of non-standard hours to workers' earned wages. Section 3 introduces the data used for this report and measurement strategy taken. The findings of the study are presented in section 4, and core take-aways summarized in the concluding 5th section.

2. Premium pay for non-standard hours and wages

2.1 Paid overtime

A large share of Europeans report working overtime hours on a regular basis, with approximately 9% to 20% stating they regularly work overtime across EU Member States (Eurofound, 2022). The number of workers doing *paid* overtime hours, lies substantially lower for several reasons (Anxo & Karlsson, 2019). First, only a share of the reported overtime hours are technically considered overtime hours according to legal and statistical definitions, i.e., hours worked in excess of the standard full-time work week (Anxo & Karlsson, 2019). This discounts, for example, hours in excess

of contractual hours but below standard full-time hours, such as extra hours worked by part-time employees (Beckers et al., 2007; Conway & Sturges, 2014). Thus, while working extra hours may be commonplace among part-time workers, these workers tend to receive regular basic wages for extra hours, rather than being paid at overtime rates (Beckers et al., 2014). Secondly, a large share of overtime hours is entirely unpaid. This is especially the case among professionals and employees in other salaried occupations, which are paid a fixed salary per month based on regular (contractual) hours, rather than by the number of actual hours worked (Anxo & Karlsson, 2019; Chung & van der Horst, 2020; Eurofound, 2022; Lewis, Campbell, & Huerta, 2008; Wharton & Blair-Loy, 2016).

Finally, there are indications that the incidence of paid overtime is declining due to practices that, at least theoretically, arrange the compensation for overtime hours through additional leave hours instead of premium payments (Bell & Hart, 2023; Boumans, 2024; Eurofound, 2022; Ilsøe, 2012; Piasna et al., 2024). This development is attributed, in part, to evolving insights into the harmful effects of long work hours on physical and mental health (Kawaguchi & Kasai, 2016; Shahidi et al, 2024; Wong, Chan, & Ngan, 2019). Concurrently, it appears to be an effect of the introduction of *time accounts* or *annualized hours* in many businesses. In these time accounts, working hours are balanced over prolonged time periods – designating hours above weekly full-time hours as regular instead of overtime hours, as long as they are compensated by shorter work weeks (Boumans, 2024; Doellgast & Berg, 2018; Grimshaw et al., 2017; Haipeter & Lehndorf, 2005).

2.2 (Bargained) premium pay for overtime and its incidence

It is common for paid overtime hours to be paid at a premium (Bishow, 2009; Cousineau et al., 1992; Hart & Ma, 2010). There is little evidence showing exactly how much more employees effectively earn for overtime hours, compared to regular working hours. More research has studied the premium rate at which overtime should be paid according to regulation (e.g., legal provisions) and bipartite agreements (e.g., collective agreements) (for an overview, see: Anxo & Karlsson, 2019). Comparing national regulatory frameworks, Eurofound (2022) reports that the most common premium pay rate for overtime performed during daytime on normal week days was 50% on top of basic wages. Besamusca's (2025) comparison of 2001 European collective agreements for the second BARTIME project report, showed that two third has negotiated payment of overtime premiums, with differences across countries and sectors. Overtime premiums were almost universally included in collective agreements in Austria, Cyprus, Finland, Luxembourg, the Netherlands, Slovenia and Sweden. In contrast, they were included in less than half of Belgian, Estonian, Greek, Lithuanian and Slovakian collective agreements; with workers being able to fall back on legal provision for overtime premiums in some but not all of these countries. Across sectors, the inclusion of collectively bargained provisions on overtime varied from 40% in arts and entertainment to over 80% in administrative services, agriculture, construction and manufacturing.

2.3 Wage effects of paid overtime

The relationship between legal and collectively bargained provisions and the incidence of paid overtime is complex: agreements on premium pay rates for overtime hours may affect both the preferences of employees for these hours, and employers demand for overtime work (Dawkins et al., 1986; Gardiner & Millar, 2006; Yu & Kuo, 2022). Theorizing on compensating wage differentials often justifies overtime premiums on the grounds that higher marginal labour costs will discourage employers from relying structurally on overtime work (Cousineau et al., 1992; Hart, 2004; Lewis, 2014). The relatively high cost of overtime hours, is thus expected to prompt employers to hire sufficient workers to meet the needs of production or service delivery rather than rely on a smaller workforce to tackle peaks in demand (Martins, 2016), especially since several studies indicate that regular overtime negatively affects the health and wellbeing of employees (Kawaguchi & Kasai, 2016; Wong et al., 2019).

Empirical evidence of employer responsiveness to decreases and increase in overtime premiums is mixed, with the majority of studies finding no or limited effects (Cahuc & Carcillo, 2014; Reizer, 2022). Martins (2016), in contrast, found that Portuguese firms that reduced the level of overtime premiums in the aftermath of the 2008 financial crisis, were also likely to increase their reliance on paid overtime hours. In Germany, Jirjahn (2008) also found firms covered by collective bargaining reduced overtime usage, but attributed the decrease to greater compliance with working time regulation rather than the size of premiums.

Overtime premia can shape workers' behaviour as well. Several qualitative studies indicate that low wage workers in particular, rely on overtime and other premiums (e.g., night work) to boost their incomes and make ends meet (Datta et al., 2007; Dawkins et al., 1986; Gardiner & Millar, 2006; Peetz et al., 2019). This dynamic is echoed in trade-union narratives, which frequently portray overtime—alongside other forms of premium-paid work such as night and weekend shifts—as a tool through which low-paid workers can supplement inadequate base wages (Ilsøe, 2012; Rubery et al., 2005). From this perspective, overtime pay functions as a *de facto* wage-raising mechanism in contexts where regular hourly wages do not reach socially defined adequacy thresholds, like the “living wage,” which refers to a level of pay sufficient to secure a decent standard of living, including the capacity to meet basic needs and participate meaningfully in society (Balestra et al., 2023; Ford & Gillian, 2017; Guzi & Kahanec, 2019; ILO 2024). However, very few studies actually measure the impact of overtime on earned wage income or the adequacy of these incomes and the effectiveness of overtime premiums as a tool to fight in-work poverty therefore remains unclear (c.f., Anxo & Karlsson, 2019).

3. Data Sources

This study combines three complementary data sources to analyse the relationship between collectively bargained pay premiums for non-standard hours and the adequacy of workers' wages in the European Union. The integration of individual-level earnings data with information on collective bargaining provisions enables a unique, cross-country assessment of how overtime work and negotiated premiums contribute to wage adequacy.

3.1 Structure of Earnings Survey (SES)

The primary source of individual-level information is the Structure of Earnings Survey (SES), conducted by Eurostat across all EU Member States. The SES provides harmonised and comparable microdata on employees' earnings and working time characteristics. The dataset contains detailed information on gross monthly and hourly earnings, hours worked (both standard and overtime), paid overtime hours and overtime compensation, as well as socio-demographic characteristics such as gender, age, education level, type of employment contract, occupation, and tenure. It also includes firm-level characteristics, including sector of activity, firm size, and collective bargaining coverage.

The SES data allow for the calculation of both standard and overtime hourly pay rates, and for the estimation of full-time equivalent earnings. A key feature of the dataset is that it records only paid overtime hours; as a result, it does not capture unpaid overtime, which is known to occur in certain sectors and occupations. This limitation should be taken into account when interpreting results related to overtime compensation.

3.2 Labour Force Survey (LFS)

The Labour Force Survey (LFS), conducted by Eurostat, provides harmonised microdata on individuals' labour market participation, working hours, and employment conditions across EU Member States. While it does not include information on earnings, the LFS contains detailed measures of both paid and unpaid overtime hours, allowing us to quantify the full extent of overtime work performed in the labour market. For comparability with the SES sample, the analysis is restricted to employees working in firms with more than ten workers and to the same set of economic sectors used in the SES. The LFS is used primarily to assess the prevalence of unpaid overtime and to estimate how workers' earnings would change if these unpaid hours were remunerated at the overtime premium rates calculated from the SES. This complementary dataset therefore plays a key role in understanding the gap between actual paid overtime compensation and the total amount of additional work performed by employees.

3.3 Collective Agreements Database

The second data source is the Collective Agreement (CA) Database, developed and maintained by the WageIndicator Foundation. This database systematically collects, codes, and standardises provisions from collective agreements across EU Member States, with particular attention to clauses regulating non-standard working hours, such as overtime, night work, weekend work, and shift work.

For the purposes of this study, the analysis focuses on the provisions specifying overtime pay premiums. The database includes information on the existence and level of these premiums, the coverage and scope of collective agreements by sector and country, and whether such premiums are explicitly negotiated in agreements that apply to the workforce. Its extensive coverage enables detailed cross-sectoral and cross-national comparisons of collectively agreed premium rates.

Table 1 - Overview of variables from the Structure of Earnings Survey

Main variables from the Structure of Earnings Survey used in the analysis	
Overtime	Binary indicator (yes/no) measuring whether the work hour is overtime or not.
Overtime earnings	Earnings from overtime hours.
Gross monthly earnings	Monthly earnings (including overtime pay)
Hours paid	Hours paid
Overtime hours paid	Overtime hours paid
Location	Region identifier
Sector	Economic sector in NACE
Gender	Binary indicator for men and women
Contract type	Type of employment contract
Occupation	Occupation in the reference month (ISCO-08)
Coverage	Binary indicator for collective bargaining coverage
Tenure	Length of service in enterprise
Country	Country code

Table 2 - Overview of variables from the Labour Force Survey

Main variables from the Structure of Earnings Survey used in the analysis	
HWOVERP	Paid overtime in the reference week in the main job
HWOVERPU	Unpaid overtime in the reference week in the main job

Sector	Economic sector in NACE
Country	Country code

Table 3 - Overview of variables from the Collective Agreements Database

Main variables from the Collective Agreements Database used for the analysis	
Overtime_trigger	Binary indicator (yes/no) measuring whether the collective agreements contains any provisions on overtime hours at all
Overtime_allowance_type	Variable indicating what overtime provisions are included in the collective agreement i.e. premium as percentage of regular wage or days off.
Country	Country code
Sector	Economic sector in NACE

4. Results

4.1 How Much Does Paid Overtime Raise Wages?

A key objective of this study is to determine whether overtime work contributes meaningfully to raising workers' wages to an adequate level, understood as pay sufficient to meet basic needs and ensure a decent standard of living. Using the Structure of Earnings Survey (SES), we distinguish between remuneration for standard and overtime hours to simulate counterfactual earnings in the absence of overtime pay differentials. Because the SES records only paid overtime hours, we focus in this section on paid overtime. In the next section, we turn to unpaid overtime.

Analytical approach. For each worker in the SES, total monthly earnings are computed based on both standard and overtime hours. We then simulate a counterfactual scenario in which overtime hours are remunerated at the same rate as standard hours. The difference between actual and simulated earnings represents the incremental effect of overtime pay on total income. This approach provides a consistent measure of how much overtime contributes to overall earnings and whether these additional earnings are sufficient to lift workers above commonly used wage adequacy thresholds, such as 60 percent of the national median or 50 percent of the national mean wage.

Results. The findings indicate that overtime work plays only a marginal role in improving workers' wage adequacy across EU Member States. On average, paid overtime accounts for a small fraction

of total earnings, even among those who perform overtime regularly. The average increase in total earnings attributable to overtime compensation amounts to about 2.4 percent, and only around 3 percent of workers experience an income rise of more than 10 percent as a result of overtime pay. Figure 1 shows the distribution of the percentage increase in earnings derived from overtime work. The density is heavily concentrated near zero, with most workers gaining only a few additional percentage points of income from overtime. A small right-hand tail indicates that a minority of employees obtain more substantial earnings boosts, but these cases are exceptional.

Interpretation. The limited impact of overtime on wage adequacy suggests that overtime compensation—while beneficial to some individual workers—does not function as a broad mechanism for lifting workers out of low pay. The modest premiums and low incidence of overtime hours result in limited overall gains, primarily among workers already positioned around or above the median wage. Since unpaid overtime is not captured in the SES, the actual economic return on extra working hours may be even smaller for many employees. In sum, overtime pay contributes modestly to earnings but is unlikely to alter wage adequacy outcomes in a systematic way. The following sections explore the structural reasons behind this result, including the incidence of overtime work and the extent to which collective agreements provide for premium pay.

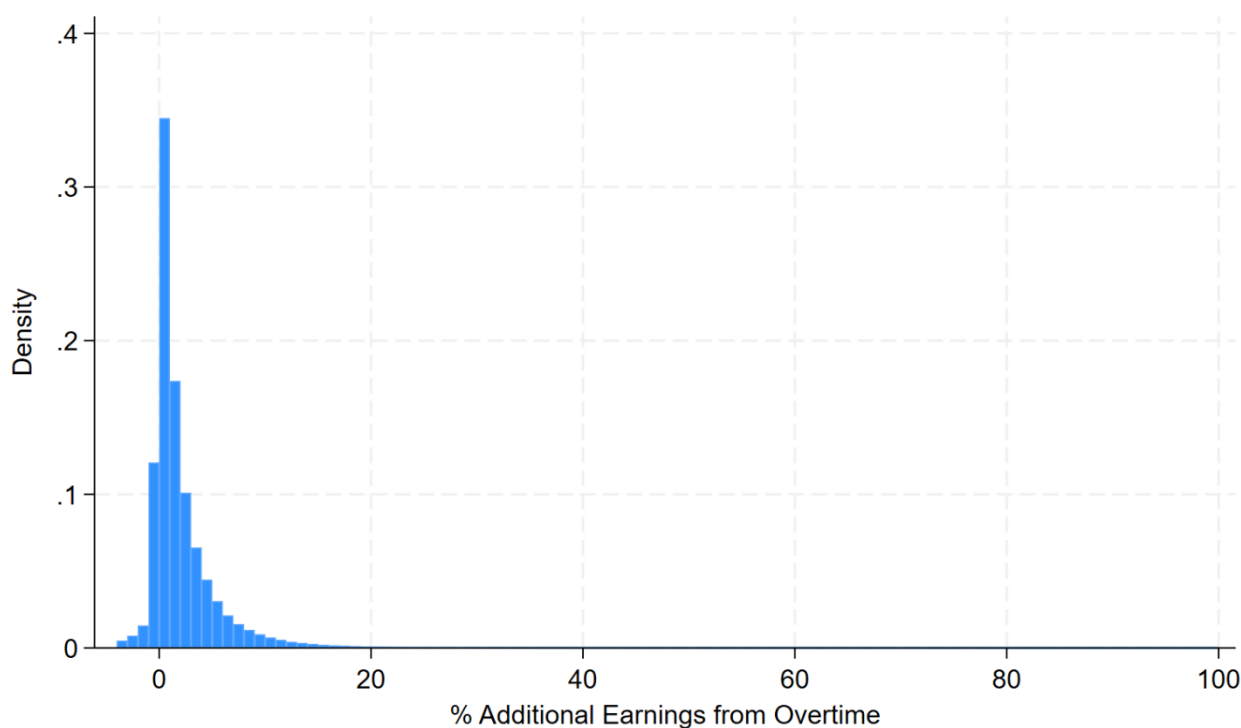


Figure 1: Percentage of Workers with Overtime Earnings. Source: SES.

4.2. How Much Could Unpaid Overtime Raise Wages?

To complement the analysis of paid overtime, this section examines the extent to which unpaid overtime contributes to total working hours and how much workers' earnings would increase if such hours were compensated. Because the SES contains information only on paid overtime hours, we use the Labour Force Survey (LFS) to quantify both paid and unpaid overtime. To ensure

comparability with the SES sample, the LFS is restricted to employees working in firms with more than ten workers and employed in the same set of sectors used in the SES-based analysis.

Figure 2 presents a heatmap showing the ratio of unpaid overtime to total overtime hours (paid + unpaid) for each country–sector pair. In most combinations, this ratio is below 0.5, indicating that the volume of unpaid overtime is generally less than half of all overtime performed. This suggests that, although unpaid overtime occurs and may be sizeable in some sectors, it is unlikely to have a larger impact on earnings than paid overtime, even if it were fully compensated.

To assess the potential effect on earnings, we merge the LFS-based counts of paid and unpaid overtime hours with the overtime premium estimated from the SES for each country and sector (as reported in Report 3, Deliverable 3.1, Elias and Besamusca, 2025). This allows us both to validate the SES findings from Section 4.1 using an independent dataset and to estimate how much earnings would rise if unpaid overtime were remunerated at the applicable premium.

The results, summarised in Figure 3, show that paid overtime increases earnings by 3.85 percent according to the LFS—very similar in magnitude to the increase obtained using SES microdata. If unpaid overtime were also compensated at the same premium, workers' earnings would increase by 3.63 percent. While not trivial, this additional increase remains modest and is unlikely to materially change workers' positions in the overall wage distribution.

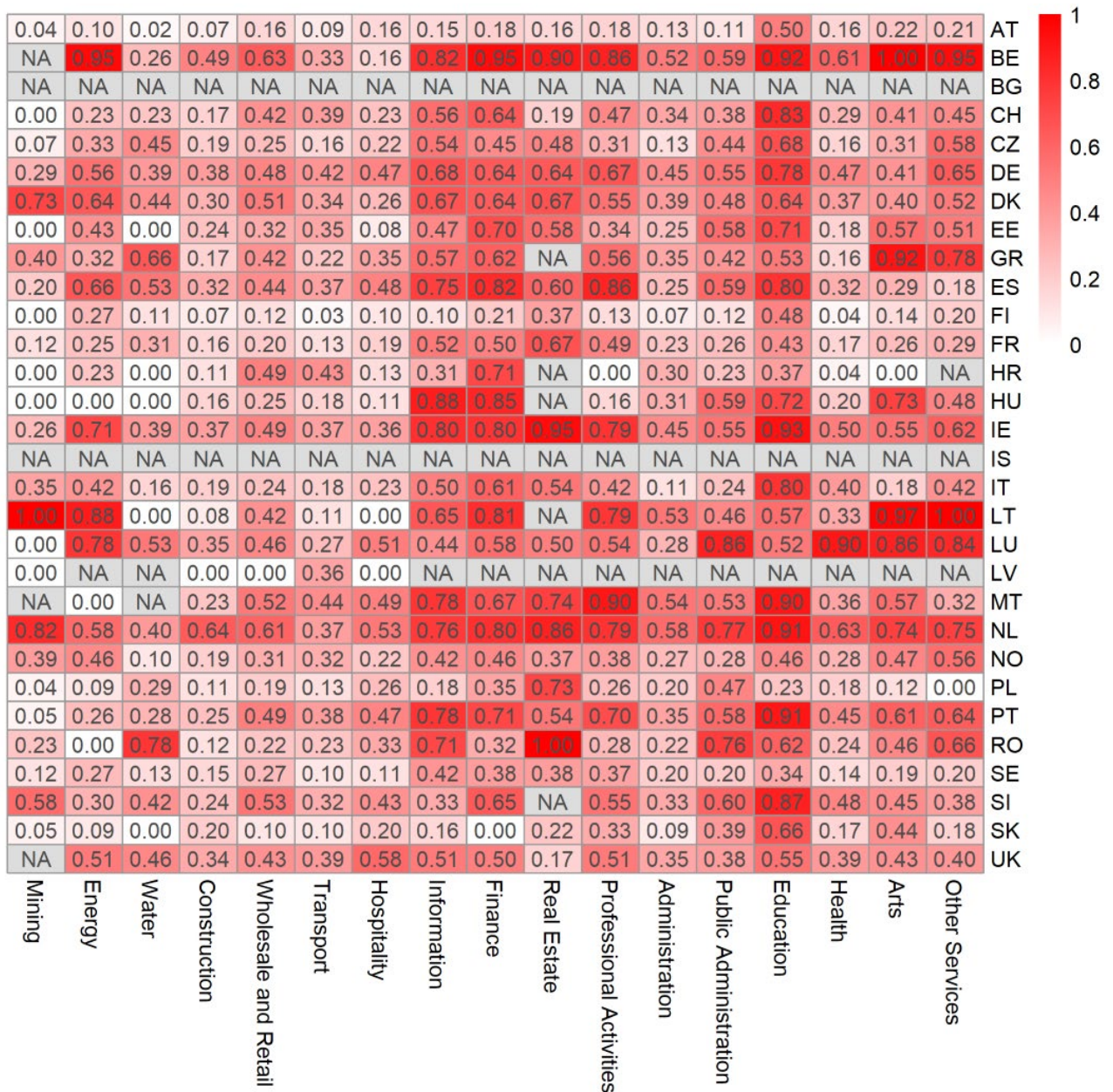


Figure 2: Ratio of Unpaid Overtime Relative to All Overtime Hours. Source: EU-LFS.

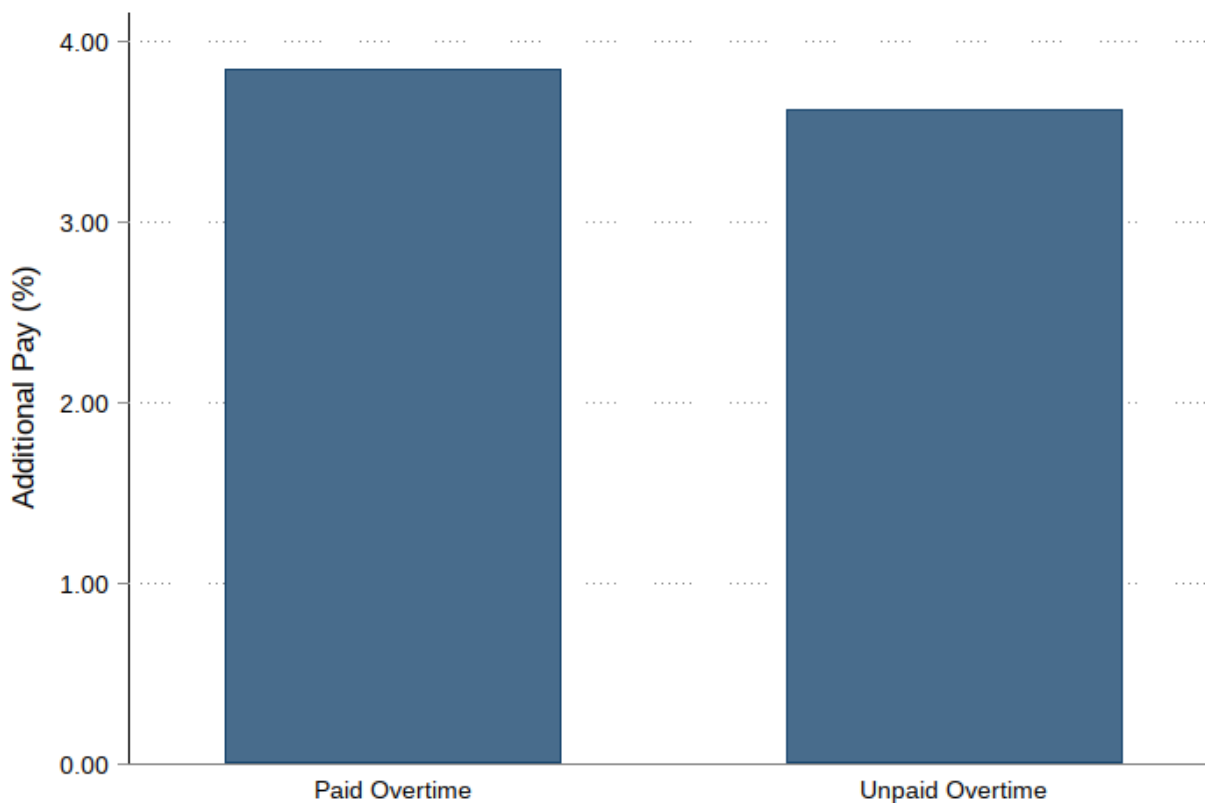


Figure 3: Additional Pay from Paid and Unpaid Overtime. Source: EU-LFS.

4.3. How Many Workers Reach Adequate Wages with Overtime?

Beyond its overall contribution to earnings, the analysis examines whether overtime pay enables workers to reach wage adequacy thresholds. Two relative indicators of wage adequacy are used in this study: 60 percent of the national median wage and 50 percent of the national mean wage. These benchmarks are widely applied in research on low pay and provide consistent measures for cross-country comparison.

Analytical approach. Using individual-level data from the Structure of Earnings Survey (SES), we identify whether each worker’s total earnings, including paid overtime compensation, place them above or below the adequacy thresholds. To assess the effect of overtime pay, we apply the same counterfactual scenario described in the previous section, in which overtime hours are remunerated at the same rate as standard hours. Comparing actual and counterfactual earnings then reveals how many workers move above the adequacy thresholds as a result of paid overtime.

Results. The results confirm that the impact of paid overtime on achieving adequate wages is extremely limited. Only a very small proportion of workers are lifted above adequacy thresholds when overtime pay is included. On average, 0.46 percent of workers move above 60 percent of the median wage, 0.40 percent exceed 50 percent of the mean wage, 2.2 percent cross the median

wage, and 2.3 percent exceed the mean wage. These figures show that even when overtime pay premiums are applied, the effect on overall wage adequacy is marginal.

The distribution of workers' distance from the adequacy thresholds, shown in Figures 2 to 5, reinforces this conclusion. Most overtime workers are clustered around the median and mean wage levels, with very few situated in the lower tail of the wage distribution. The density curves peak near zero, indicating that overtime primarily affects workers whose base pay is already above the adequacy thresholds, rather than those well below them. This pattern highlights that overtime compensation rarely provides a sufficient earnings boost to lift low-paid workers above adequacy benchmarks.

Interpretation. The analysis suggests that overtime pay does not substantially benefit low-wage workers. Instead, overtime opportunities—and the corresponding pay premiums—are concentrated among occupations and sectors where base pay levels are already moderate or above average. Since unpaid overtime is not captured in the data, the actual benefit for some workers may be even smaller than observed. Overall, overtime contributes modestly to earnings but fails to act as an effective mechanism for reducing low pay or improving wage adequacy across the EU labour market.

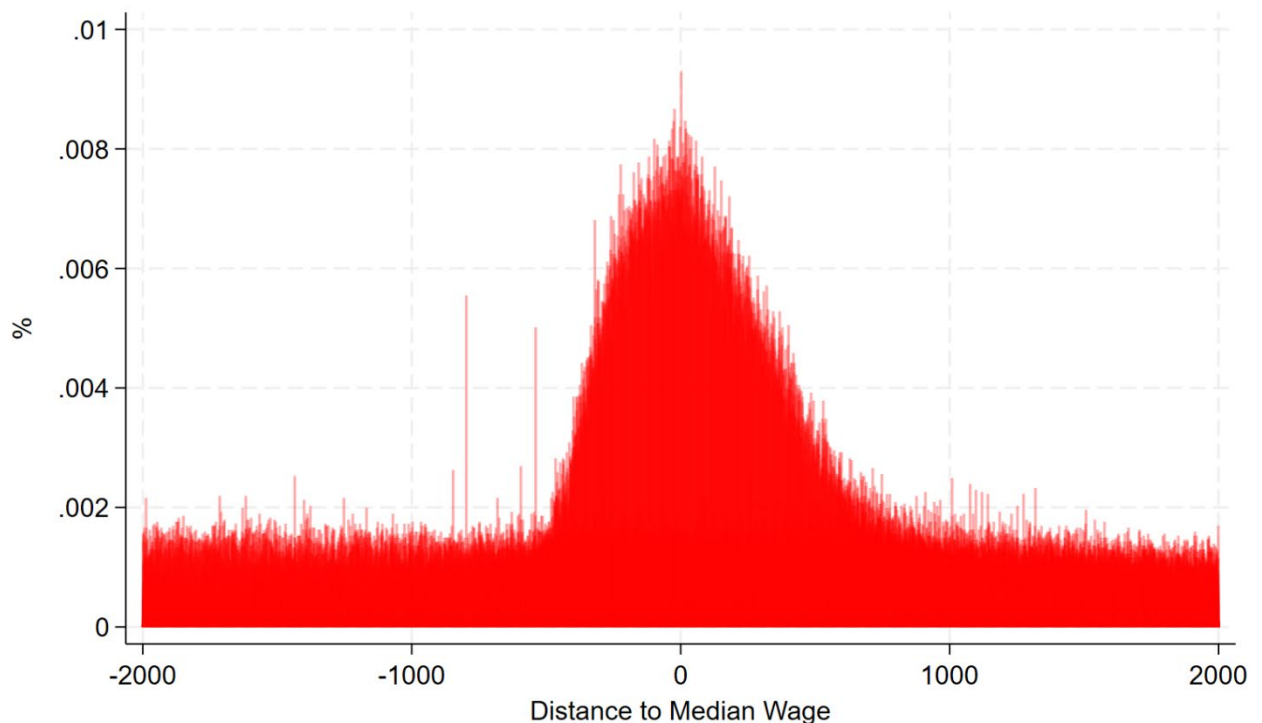


Figure 4: Percentage of Workers Relative to the Median Wage. Source: SES.

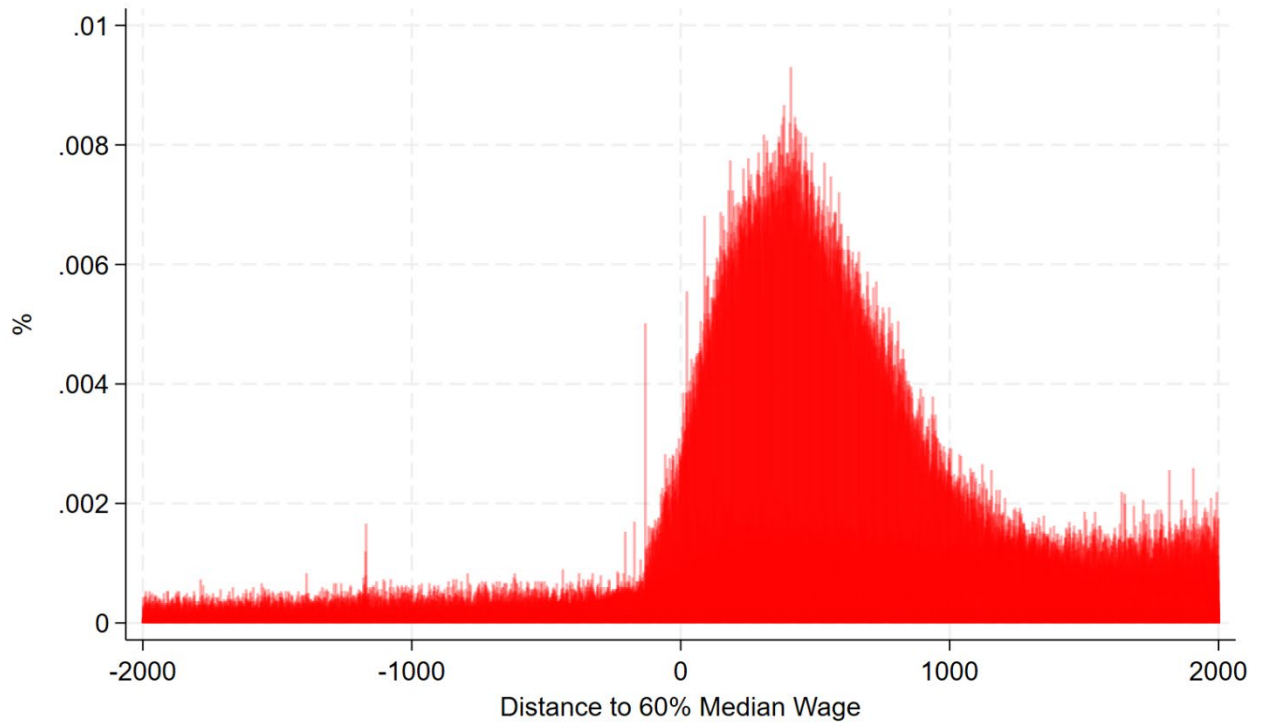


Figure 5: Percentage of Workers Relative to 60% Median Wage. Source: SES.

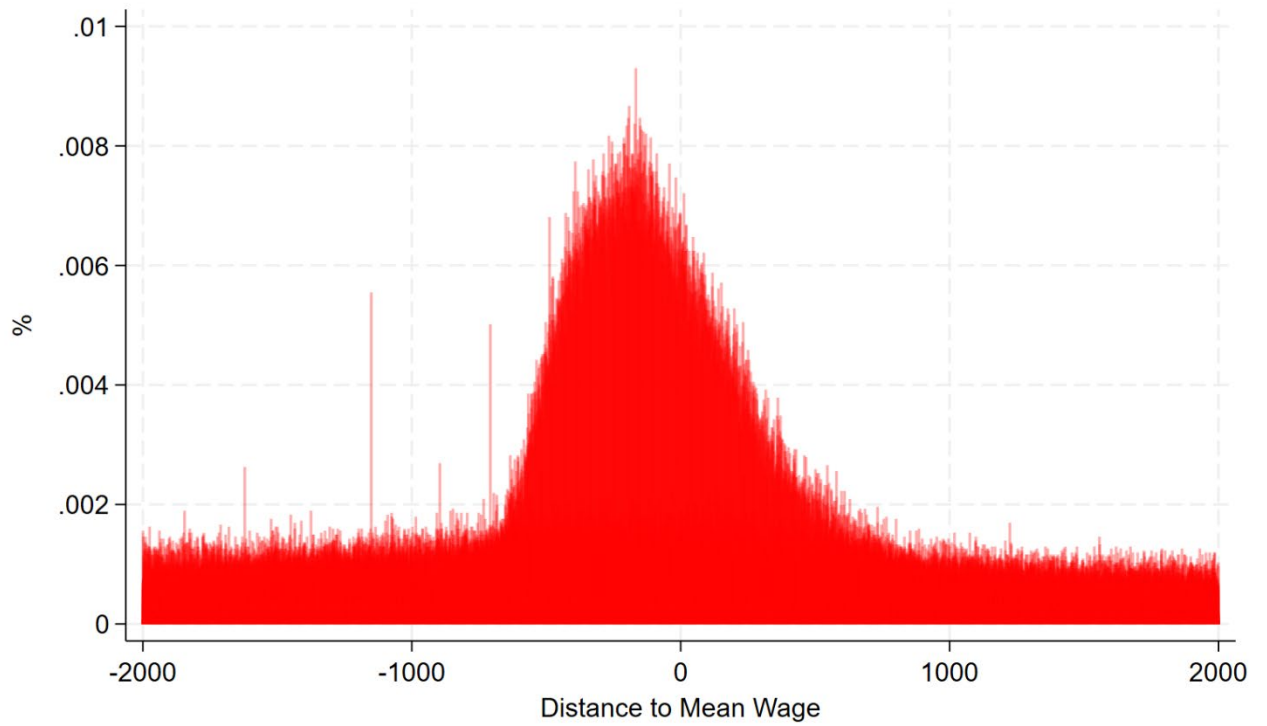


Figure 6: Percentage of Workers Relative to the Mean Wage. Source: SES.

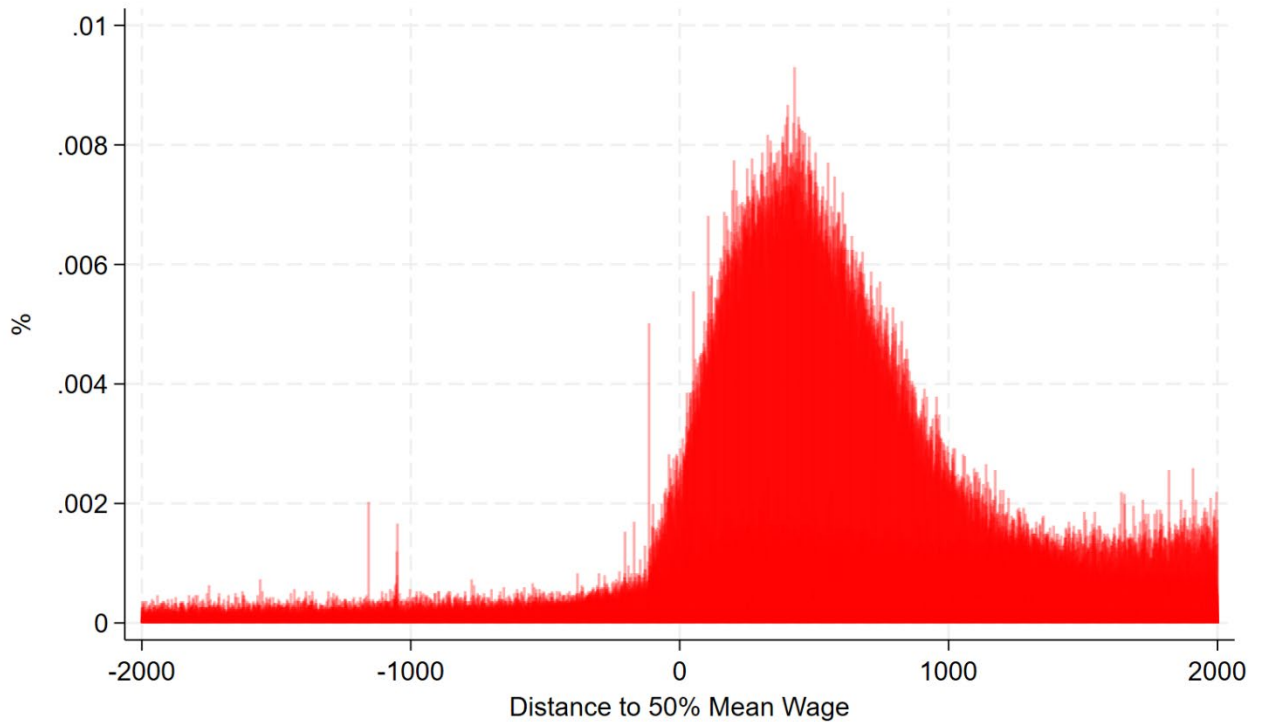


Figure 7: Percentage of Workers Relative to 50% Mean Wage. Source: SES.

4.4. Why Does Overtime Not Raise Wages to Adequacy?

The previous sections have shown that the contribution of overtime pay to overall earnings is limited and that only a very small proportion of workers are lifted above wage adequacy thresholds once overtime compensation is taken into account. This raises a key analytical question: why does overtime fail to significantly enhance wage adequacy across the European Union?

To address this question, this section examines three potential explanations. First, it considers whether overtime hours are in fact rewarded with pay premiums and whether the size of these premiums is sufficient to meaningfully increase earnings. Second, it explores the incidence of paid overtime hours, assessing whether the limited number of overtime hours performed restricts their impact on total pay. Finally, it investigates whether collectively negotiated overtime pay premiums are concentrated in the sectors and countries where overtime work is most common.

Each of these mechanisms is analysed using a combination of microdata from the Structure of Earnings Survey (SES) and information from the Collective Agreement (CA) Database. Together, these analyses help clarify the structural and institutional factors that limit the effectiveness of overtime compensation as a tool for improving wage adequacy.

4.4.1. Are Overtime Hours Rewarded with Premiums?

As described in Elias and Besamusca (2025), the estimation of overtime premiums is based on a comparison of hourly remuneration between standard and overtime work. We follow their methodology. The analysis controls for a range of individual and sectoral characteristics, including gender, education, occupation, contract type, tenure, and fixed effects for location and sector. The full specification and technical details are available in Elias and Besamusca (2025).

Findings. The results confirm that paid overtime hours are indeed compensated with a pay premium, typically amounting to around 20 percent above standard hourly pay. This magnitude aligns closely with the rates commonly specified in national or sectoral collective agreements across EU Member States. In other words, when overtime hours are performed and paid, workers do receive higher remuneration for those hours.

Interpretation. The presence of these premiums indicates that additional work effort and unsocial working time are financially compensated. However, their existence also helps clarify an important conclusion: the limited contribution of overtime work to wage adequacy cannot be explained by the absence of overtime premiums. Instead, the challenge lies elsewhere — namely, in the low incidence of paid overtime hours and the fact that overtime opportunities are concentrated among workers already earning around or above the median wage. Thus, while the average 20 percent premium demonstrates that compensation mechanisms are in place, they are not sufficient to make overtime a meaningful tool for raising overall wage adequacy in the European Union.

4.4.2. Low Incidence of Paid Overtime Hours

Analytical approach. Even when overtime hours are rewarded with a pay premium, their contribution to overall earnings depends on how frequently such hours are worked. Using data from the Structure of Earnings Survey (SES), we calculate the share of paid overtime hours as a percentage of total paid hours for each country–sector combination. As in the previous analyses, these measures refer exclusively to paid overtime; unpaid overtime, which is known to exist in certain occupations and industries, is not captured in the SES and therefore cannot be quantified here.

Results. The results, shown in Figure 8, reveal that the incidence of paid overtime hours is generally low across European Union countries and sectors. In most country–sector pairs, overtime represents less than 3 percent of total paid hours. Higher values—exceeding 5 percent—are concentrated in a few specific contexts, notably in mining, manufacturing, and construction, and in certain smaller economies such as Italy, Malta, and Hungary. These are also sectors where extended operating hours or production peaks are more common, which may explain the relatively greater reliance on overtime work. Conversely, in public administration, education, and health, the share of paid overtime hours remains very limited, often below 1 percent.

The heatmap illustrates considerable heterogeneity across both dimensions. Within some countries, overtime use varies sharply by sector, reflecting differences in production cycles and

collective bargaining coverage. Across countries, similar sectors display divergent overtime patterns, suggesting that institutional and regulatory frameworks play an important role in determining how much paid overtime is used.

Interpretation. The low overall incidence of paid overtime hours is a central reason why overtime pay contributes so little to workers' total earnings and wage adequacy. Even with existing premiums, the limited number of paid overtime hours prevents them from becoming a substantial source of income. Moreover, since unpaid overtime is not recorded in the data, the true amount of additional work performed may be higher, but without corresponding pay.

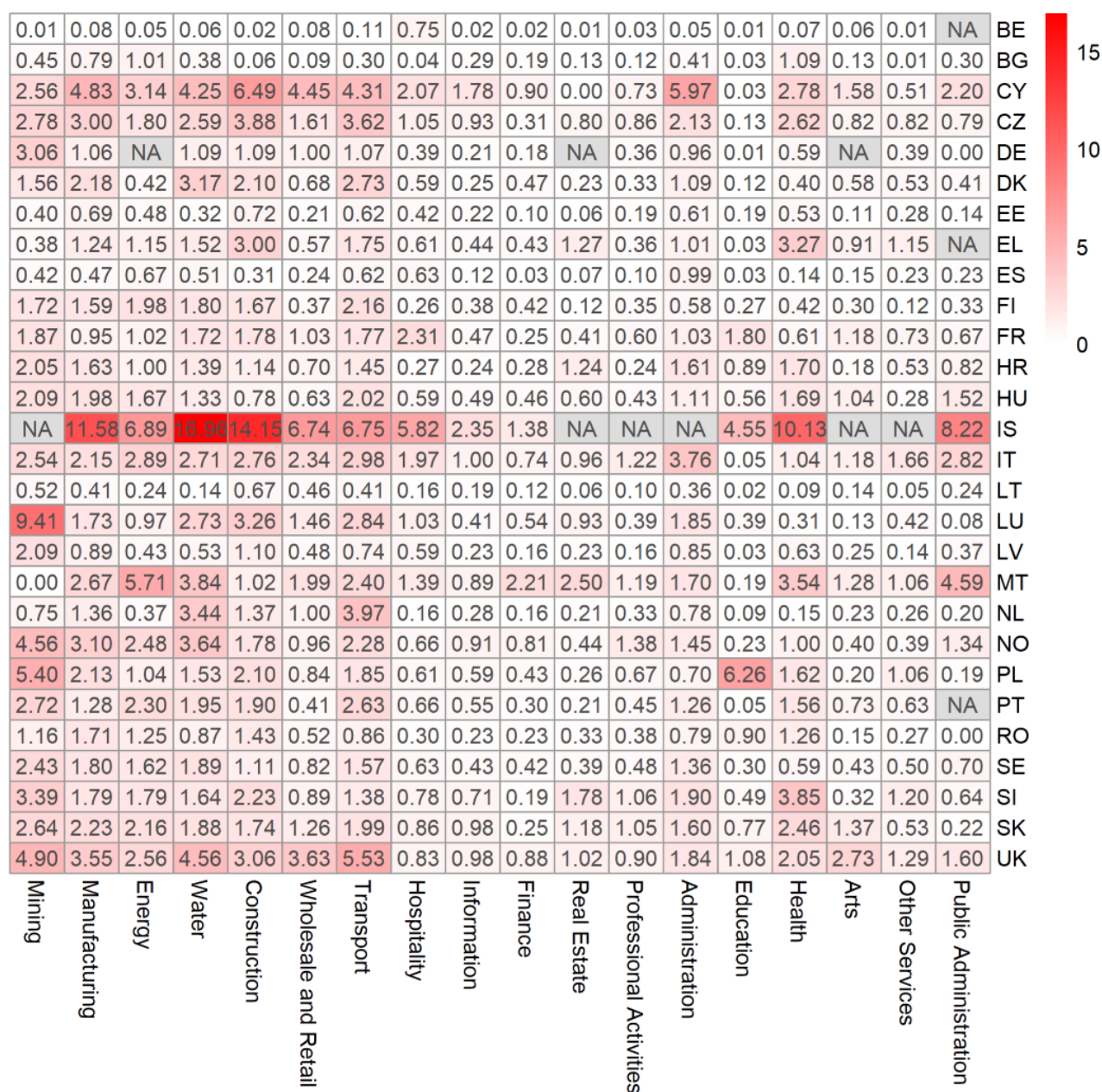


Figure 8: Percentage of Paid Overtime Hours in each Country and Sector. Source: SES.

4.4.3. Are Premiums Negotiated Where Workers Do Non-Standard Hours?

Analytical approach. The combination of the Structure of Earnings Survey (SES), the Labour Force Survey (LFS), and the Collective Agreement (CA) Database makes it possible to examine whether collective agreements include overtime-related provisions in sectors and countries where overtime work is actually performed. The analysis now incorporates both paid and unpaid overtime, using SES to capture formal paid overtime activity and LFS to measure the broader set of paid and unpaid overtime hours worked in each country–sector pair. Two types of collective agreement clauses are considered: those that specify an overtime pay premium and those that allow overtime to be compensated through time off, such as annualised-hours systems. At the country–sector level, we estimate a regression of the share of agreements containing each clause on indicators of overtime activity, while controlling for country fixed effects. The model therefore evaluates the extent to which bargaining provisions correspond to the actual structure of working time. We estimate the following specification at the country–sector level:

$$Y_{sc} = \alpha + \delta_c + \beta X_{sc} + \varepsilon_{sc}$$

where Y_{sc} denotes the percentage of collective agreements that include an overtime premium in sector s and country c , and X_{sc} captures indicators of overtime activity.

Results. The estimates reported in Table 4 show a substantial relationship between overtime activity and collective bargaining outcomes. Measures of paid overtime—whether expressed as the share of workers performing paid overtime or the share of hours worked as paid overtime—are consistently and strongly associated with the presence of overtime premium clauses in collective agreements. These coefficients are large in magnitude and statistically significant, indicating that sectors with more extensive paid overtime are more likely to negotiate explicit overtime pay provisions. The indicators based on unpaid overtime do not display a similar pattern, suggesting that unpaid overtime does not translate into stronger overtime protections in collective agreements. For the analysis of annualised-hours clauses, the results show that hours-based indicators matter but operate in different directions depending on the type of overtime recorded. Paid overtime hours are positively associated with the likelihood that agreements allow compensation through time off, whereas total overtime hours—including unpaid components—display a negative association. This suggests that time-off arrangements are more common where overtime is formalised and monitored, and less likely where overtime is irregular or unrecorded.

Interpretation. Taken together, the results indicate that collective agreements are more responsive to the structure of paid overtime than to the broader reality of overtime work. Where paid overtime is widespread, agreements are more likely to include overtime premium clauses and to establish mechanisms such as annualised-hours systems. This alignment suggests that bargaining institutions do react to observable and formally recorded patterns of working time. In contrast, the absence of any positive association with unpaid overtime underscores a blind spot: sectors where overtime is widespread but informal do not appear to secure stronger protections through collective bargaining. This disconnect highlights that unpaid overtime remains insufficiently captured in regulatory frameworks and is not systematically addressed through negotiated provisions. Overall, the evidence points to a partial alignment between bargaining

outcomes and actual working-time practices, with strong responsiveness where overtime is recorded and paid, but limited coverage of sectors characterised by informal or unpaid overtime.

	% Agreement s Overtime (1)	% Agreement s Overtime (2)	% Agreement s Overtime (3)	% Agreement s Overtime (4)	% Agreement s Overtime (5)	% Agreement s Overtime (6)	% Agreement s Overtime (7)	% Agreement s Overtime (8)	% Agreement s Overtime (9)	% Annualize d Hours (10)	% Annualize d Hours (11)
% Workers Paid Overtime (SES)	0.788*** (0.070)										
% Workers Paid Overtime (LFS)		0.922*** (0.274)									
% Workers Overtime (LFS)			0.569** (0.248)								
% Workers Unpaid Overtime (LFS)				-0.170 (0.259)						-0.671*** (0.254)	
% Hours Paid Overtime (SES)					3.992*** (0.724)						
% Hours Paid Overtime (LFS)						1.922*** (0.654)					
% Hours Overtime (LFS)							-0.894 (0.687)				
% Hours Unpaid Overtime (LFS)								-2.606*** (0.691)			-0.595 (0.848)
% Earnings Overtime (SES)									4.656*** (0.609)		
N	252	230	230	230	252	214	214	214	252	106	104

Table 4: Relationship between Actual Overtime and Collective Agreement Clauses. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Sources: SES, EU-LFS, Collective Agreements Database.

5. Conclusions

The analyses presented in this report provide a comprehensive assessment of how overtime—both paid and unpaid—contributes to workers' earnings and whether it plays a meaningful role in helping workers achieve adequate wages across the European Union. Taken together, the findings show that overtime compensation is not an effective mechanism for lifting workers out of low pay, and they clarify the structural reasons for this.

First, while paid overtime is compensated with a premium of around 20 percent, this premium—even though consistent with collectively bargained norms—translates into only small increases in monthly earnings. Most workers perform very few paid overtime hours, resulting in an average earnings gain of merely 2–4 percent, depending on the dataset used. Only a small minority of employees experience substantial improvements. Because workers performing overtime are typically located around or above the median of the earnings distribution, rather than concentrated among the lowest-paid, paid overtime does not substantially affect wage adequacy outcomes.

Second, the analysis of unpaid overtime demonstrates that although unpaid hours exist across countries and sectors, they generally constitute less than half of all overtime performed. Even if all unpaid hours were remunerated at the applicable premium, the resulting income gain—around 3.6 percent—would remain modest and unlikely to materially change workers' position in the earnings distribution. This confirms that the limited contribution of overtime to wage adequacy is not primarily due to unpaid hours being left uncompensated, but rather to the overall low intensity of overtime work, whether paid or unpaid.

Third, the report finds a clear and systematic association between actual paid overtime activity and the presence of overtime-related provisions in collective agreements. Sectors with higher levels of paid overtime are more likely to have agreements that include overtime premiums or allow compensation through time off. This indicates that bargaining systems do respond to observable patterns of recorded overtime. However, no such association exists for unpaid overtime. Where overtime is informal or unrecorded, stronger bargaining provisions do not emerge. This disconnect highlights that unpaid overtime lies outside the scope of institutional regulation and collective bargaining, limiting its visibility and the extent to which it can be addressed.

Overall, the findings point to a structural limitation in the role of overtime compensation as a tool for improving wage adequacy. Although premium rates exist and collective agreements regulate the compensation of non-standard hours, overtime—whether paid or unpaid—does not provide a substantial or reliable avenue for raising workers' incomes to adequate levels. Low earnings stem not from a lack of premiums, but from the limited number of overtime hours performed, the distribution of overtime among mid- and high-wage workers, and the institutional blind spot surrounding unpaid overtime. These results emphasise the importance of focusing on base

wages—rather than overtime compensation—as the primary mechanism for ensuring wage adequacy across the European Union.

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