



EAST-WEST

Journal of **Economics and Business**

Vol. XXI– 2018, Nos 1-2

UNPAID OVERTIME AS AN INDEX OF EMPLOYERS' RELATIVE POWER

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ABSTRACT

Unpaid overtime is a currently increasing phenomenon. It signifies a tendency for increasing work-time in developed economies that takes place contrary to the rights and wishes of the workers; at least at a first glance. The increasing significance of unpaid overtime creates also serious analytical problems for mainstream economic theories given that they deny the possibility of it being involuntary. A study of the determinants of unpaid overtime clarifies the causes of its occurrence. This study highlights elements that reinforce the idea that unpaid overtime is the result of pressure from the part of employers, particularly in times of economic crisis and high unemployment.

Keywords: Unpaid overtime, Overtime, Part-time work, Greece, The Netherlands

JEL Classification: J22

Introduction

An interesting phenomenon has been observed during the last two decades at least, which is the significant increase in the magnitude of unpaid overtime. This fact has been showcased by several surveys measuring unpaid overtime in

developed economies like the United Kingdom, the United States and Germany (e.g. Anger 2008; Hetrick 2000; Pannenberg 2005). Even more interestingly, it has been found that unpaid overtime has even surpassed paid overtime in some developed countries (See table 1 below and Anger 2005; Pannenberg 2005).

The existence of unpaid overtime, let alone its increase, has serious empirical and analytical consequences. It usually signifies a reduction of the real wage and a deterioration of the living conditions of workers. It also enhances the phenomenon of increasing working hours, which has also been observed in recent decades. Finally, it poses a series of theoretical challenges in different schools of economic thought, since unpaid working time cannot be accepted by the neoclassical theory. That is because unpaid work does not seem to maximize the utility of the employee. It can also indicate the existence of power relations within the labour market that oblige the labourer to provide unpaid work time, thus supporting the idea of labour exploitation.

Since these theoretical issues are difficult to ignore, the neoclassical theory has provided some theoretical answers to this phenomenon. Other explanations were also offered, without any attachment to a specific theory. This study is trying to test some of these explanations in a comparative context, comparing two different countries mainly with regard to specific groups of labourers with diversified characteristics.

These groups are those working part-time and in shifts. Part-timers are a category of workers with particularly bad working conditions and payment in Greece, while this does not occur in the Netherlands. This diversification between those two countries forms a basis for the comparison of the comportment of those two working class subcategories. Based on this comparison, crucial conclusions are drawn, regarding the character of unpaid overtime and its obligatory character or not for the workers.

This analysis will be conducted for the year before the onset of the economic crisis (year 2009), so that it reflects the situation that had been formed before the crisis and for three years later, when the crisis had affected both economies.

The article's structure is the following. The second chapter presents the theoretical interpretations for unpaid overtime and the third chapter discusses the empirical findings of the literature. The fourth chapter describes the working conditions of part-time workers in Greece, the Netherlands and other European countries. In the fifth chapter we carry out an econometric estimation of the

determinants of unpaid overtime in Greece and the Netherlands, before and after the start of the economic crisis. Finally, chapter six concludes.

Theoretical considerations over unpaid overtime

Many recent surveys ascertain a significant increase of unpaid overtime in the developed economies of the EU and the US (e.g. Anger 2005, 2008; Hetrick 2000; Pannenberg 2005; Ioannides et al. 2015). This phenomenon comes together with the observed halt of the downward trend of working time and its increase in some of European countries and the United States (Schor 1991; Leete and Schor 1994; Bluestone and Rose 2000). The combination of these two facts suggests that serious changes are taking place in working time; a factor that is at the heart of the production sphere of the economy.

The consequences of the existence of unpaid working time in the form of overtime are both practical and theoretical. In reality, unpaid overtime reduces the hourly wage of workers and increases their working time. The latter leads to the deterioration of both working and living conditions (since it reduces their leisure time). The expansion of the phenomenon of unpaid overtime contributes in turn to the generally observed increase in working hours.

The theoretical consequences of unpaid overtime are equally, if not more, important. The existence of unpaid working time is non-explainable on the basis of the neoclassical theory, since it negates the basic principle that every employee is remunerated for the marginal product of his labor. For this reason, several theoretical interpretations have been suggested as an explanation in the context of the neoclassical approach¹.

One of these interpretations argues that unpaid overtime is a means for achieving a Pareto optimum. The intervention of the state and of workers' unions in the regulation of working time and the remuneration of overtime may lead to a deviation from the Pareto optimum. In this case, both sides have an interest to deviate from this point. The workers would prefer more overtime, even with reduced remuneration, as would employers. This can be achieved if a part of the overtime is unpaid².

Another neoclassical explanation perceives unpaid overtime as deferred payment. The unpaid working time is rewarded in the future with increased

¹ For a detailed theoretical treatment, see Bell and Hart 1999; Ioannides et al. 2014; Papagiannaki 2014

² For an extensive review see Bell and Hart, 1999; Ioannides et al. 2014.

wages or promotions to employees who perform it. In this case it should not even be called unpaid overtime (Pannenberg 2005).

In a wider neoclassical context, a human capital theory explanation is also offered. An employee might voluntarily choose to work unpaid overtime in order to enrich his professional experience and hence his human capital, with the expectation that he will be compensated in the future with an increased income. However, it should be noted that unpaid work has resulted in the reduction of the hourly wage, especially for highly educated workers, among which this phenomenon is widely observed (Bell et al. 2000). Therefore the explanatory power of human capital theory is highly questionable.

In the logic of backward-looking conditions and not forward-looking expectations, unpaid overtime can be considered as an expression of gift exchange (Akerlof 1982). Better payment and working conditions that some businesses provide to their employees can lead them to increase their voluntary efforts, which can take the form of unpaid overtime.

In a game theoretical context it is argued that unpaid overtime is a signal device (Sousa-Poza and Ziegler 2003; Meyer and Wallete 2005; Anger 2008). The labour market is characterized by incomplete information on behalf of the employers regarding the workers' abilities. In this case the formation of the labour contract is a dynamic game where signaling plays a crucial role. An individual worker might, by offering to work unpaid overtime, choose to send a signal to the employer that his personal qualities are superior to those of others.

Unlike most previous interpretations, the Marxist approach argues that unpaid overtime is really unpaid and is a result of pressure exerted by employers to employees for the increase of unpaid working time. According to the labour theory of value, only human labour can create new wealth in addition to its cost. One part of this wealth goes to the workers so that they are able to reproduce their labour power (taking the form of wage) and the rest is profit, appropriated by the owners. In terms of working time (which is the measure of value) employees are paid only for a part of their time, while the remainder is unpaid working time. Therefore each working day consists of a paid and an unpaid part. This is concealed by the wage relationship, thus giving the impression to workers that they are paid for their total work time. The boundary between paid and unpaid working hours is not fixed, but is affected by the class balance of power; therefore by broader economic and social developments. In periods of a relative enhancement of the employers' strength; the phenomenon of increasing working hours with fixed salaries is observed, thus increasing unpaid working time.

Unpaid overtime is an obvious form of this process. In recent decades a combination of international social and economic developments has brought workers in developed economies in a worse position and this has resulted in the intensification of the abovementioned phenomena.

Finally, in the context of views that describe the technical and organizational changes that have been made within the production process, two other explanations have been proposed. One explains unpaid overtime by the uncertainty hanging upon a task's completion time (Bell and Hart 1999). This uncertainty has increased in the contemporary complex work environment resulting in an increase in unpaid overtime.

The second view argues that unpaid overtime derives from team work. In a 'post-Fordist' workplace (Perlow 1999) a process of small decisions creates a cumulative effect of increased working time. In addition, managers or other team members can voluntarily cover the reduced productivity of a member in order not to expose the team altogether and this can lead to unpaid overtime as well.

The explanatory potential of the above theoretical explanations certainly needs to be proved. A significant literature has been developed for this purpose, testing some of these interpretations. Those are summarized in the next chapter.

Empirical research on unpaid overtime

Unpaid overtime has been studied to a significant extent and several interesting findings have emerged. The main method of studying this phenomenon is to trace the determinants that may affect the likelihood of unpaid overtime and to derive theoretical conclusions that support or weaken the theoretical interpretations mentioned above.

In regard to the individual characteristics of workers, gender, age and marital status are examined. Women are likely to exhibit different behaviour than their male counterparts. From the standpoint of incentives, it is expected for women to have fewer incentives for a career and therefore it is less likely to provide unpaid overtime than men (Zapf 2015). Especially women who work part-time are expected, based on this logic, to provide even fewer unpaid overtime (Conway and Sturges 2014). However, the same topic can also be approached from the perspective of employment conditions where it is usual that women have more limited employment prospects. This makes them more vulnerable to pressure from employers and therefore potential candidates for providing unpaid

overtime. The findings of the bibliography are contradictory on this issue (Conway and Sturges 2014; Zapf 2015; Van der Meer and Wielers 2015).

Occupying a managerial position has been indicated as an important factor influencing overtime. All surveys agree that this greatly increases the chances for unpaid overtime. This can be explained by some of the theoretical interpretations mentioned above. A manager is more likely to have complicated tasks, to be influenced more by team work and to have higher career prospects., All these are factors that increase the likelihood for providing unpaid overtime.

Another factor that has been found to be significant is whether a labourer performs manual labour or not. Most studies agree that blue-collar workers do mainly paid overtime, while white-collar workers mainly work unpaid overtime (Pannenberg and Wagner 2001; Anger 2008).

A firm's size is another factor that could affect the probability for unpaid overtime and therefore is being tested in relevant investigations. It is expected that unpaid overtime is negatively associated with the size of the company, although the incidence is usually statistically insignificant. (Bell et al. 2000; Pannenberg and Wagner 2001).

Finally, a significant part of the literature examines the behaviour of part-time workers in relation to unpaid overtime. Although there is an open controversy about whether part-timers work more unpaid overtime than full-timers, the interest for them is intense, as they are a special part of the working class that constantly increases in size and their study is of particular importance (Conway and Sturges 2014). The explanations that have been suggested for the behaviour of part-timers are different and conflicting. It has been noted that their choice for reduced working time and a turn to other life interests is a factor that will prevent them from working overtime and most certainly unpaid overtime. However, there are some reasons that could lead to the opposite behaviour, such as the fact that part-time work is particularly desirable for them and so they are willing to make concessions to defend it. Similar concessions could be made to achieve recognition by their colleagues and by their employers and to reverse the common notion that they are less committed.

However, there is also the opinion (see below) that are a vulnerable part of the labour population and therefore they are more likely be subjected to pressure and exploitation and this is the explanation for their unpaid overtime. Due to the fact that this group of workers is of particular interest, we will focus a little more on the study of their behaviour toward unpaid overtime.

Part-time employment in European countries

It is generally accepted that part-time work is worse than full-time in terms of job rights, pay, quality and career prospects (Blossfeld and Hakim 1997). It has been linked to an attempt for reducing wage costs and therefore to lower salaries, lack of promotions and career prospects and reduced work benefits (Rubery 1998; McDonald et al. 2009). In relation to unpaid overtime, it has been argued that part-timers are more prone to that than their full-time colleagues and this is an indication of the existence of exploitation conditions for their labour (Conway and Sturges 2014). These findings support the arguments for the existence of exploitation (or greater exploitation) among part-time employees.

However, there are some (few) countries in Europe where part-time work presents different characteristics. The Netherlands is the most characteristic of them and this makes it an outlier in Europe with regard to part-time employment. This was expected after all, just by the fact that part-time rates exceed 50% of the labour force (table 1 below). Because of this it has been described as the first part-time economy of the world. Most part-timers in the Netherlands are protected by legislation and by collective agreements. The existing legislation protects them from wage discrimination compared to full-time workers and in most of the cases they are under full dismissal protection. Even more, by 2000 all Dutch employees are entitled by the law to carry out their work on a part-time basis. (Wielers and Raven 2013, Visser 2002). For these reasons the wage differentials between full and part-time workers are especially limited (Visser 2002). This does not imply that employment conditions are ideal for all part-timers in the Netherlands (Van Oorschot 2002). But, on the other hand, it can be argued that, with regard to their employment conditions, relationship with employers and employment protection, their situation is similar to that of full-time workers.

Unlike in the Netherlands, part-time work in Greece has very different characteristics, making it perhaps one of the worst European countries with regard to the protection of workers' rights. Traditionally, part-time in Greece was attached to lower wage rates and benefits and the lack of career prospects (Mihail 2003). It has remained very limited in the traditional sectors of the economy, while it has developed in the tertiary sector, that is dominated by small businesses and the lack of workers' unions. This has resulted in a lack of trade unionization for these workers. (Gialis and Karnavou 2008). The legislative protection came too late and was conditioned by the assent of unions, which reinforced the expansion of part time work in areas where there were no unions, making part-time employees much more vulnerable to employers. It can

therefore be argued that part-timers represent the segment of the Greek labour force with the fewest labour rights. Their situation is even more degraded than in many European countries because they received very low wages even before the crisis. The combination of even lower wages prevailing in part-time jobs with reduced working hours makes the survival of families with such incomes very difficult and therefore it makes part-time mostly undesirable, but necessary for those who perform it, since they cannot do otherwise.

The image succinctly developed above is typical of the labour insecurity and vulnerability of part-time workers in Greece. The working behaviour is that of a segment of the labour force that does not have the power to impose their preferences, or at least to mitigate the demands of employers. For this reason, they will be studied specifically as to their response towards unpaid overtime. This behaviour can manifest some of the reasons why unpaid overtime is performed. Because they possess totally different employment characteristics it is very enlightening to compare unpaid overtime between the Greek and the Dutch part-timers.

Comparison of two countries: Greece and the Netherlands

General overview

The comparison will begin with a description of the basic features of employees both in Greece and in the Netherlands (Table 1). With a similar participation of men and women, and a similar average age and education level, the major difference is that part-timers who make up a small part of the Greek workforce, whereas they are more than 50% of the Dutch equivalent. This difference certainly contributes to the much greater average working time of Greeks compared to the Dutch. Despite the very sharp economic crisis that has hit Greece, working time has slightly diminished, even despite the increase of part-time workers, the vast majority of who wishes but is unable to secure full employment. At a first glance, this seems to be a paradox since in every crisis working time is expected to decline. Indeed, too many companies in Greece have put their workers on compulsory leave for some days of the week.

However, the pressure for an increase in working hours is very strong and is assisted by the huge increase of the unemployment rate, which has reached approximately 26% of the Greek labour force, according to official measurements. Another indication of the pressure on Greek workers is the doubling of unpaid overtime within three years (2009-2012) while paid overtime recedes significantly. In Greece, the unpaid overtime has surpassed paid

overtime. The situation in the Netherlands is quite different in this regard. Overtime, paid and unpaid, is greater than in Greece. However this is amplified by the relatively smaller Dutch working time. The crisis significantly reduced unpaid overtime, which is still nearly double than the paid.

Table 1. Descriptive statistics

	Greece			Netherlands		
	2009	2011	2012	2009	2011	2012
SEX (Males/Females)	57/43	56/44	56/44	52/48	51/49	52/48
AGE (Years)	39.05	40.59	40.39	39.03	39.57	39.46
NATIONALITY (% Foreign.)	13	12	11	4	3	4
EDUCATIONAL LEVEL (0-6)	3.26	3.37	3.56	3.34	3.33	3.36
SUPERVISOR (%)	11	11	13	24	23	23
PART-TIMERS (%)	6	7	8	49	53	52
TEMPORARY WORKERS (%)	12	12	10	18	18	19
SHIFT WORKERS (%)	19	22	25	08	8	8
HOURS USUALLY WORKED per Week	39.51	39.96	38.80	29.59	28.59	29.10
PAID OVERTIME (Hours / week)	0.32	0.23	0.24	0.62	0.56	0.57
UNPAID OVERTIME (Hours / week)	0.20	0.21	0.38	1.45	0.96	1.01

Source: Own estimations using Eurostat's LFS microdata

To sum up, Greek workers perform less overtime than their Dutch counterparts, but the crisis has significantly raised the unpaid overtime. They also work much longer in total worktime, while having a small part-time rate, compared with a staggering 52% (in 2012) of the Dutch. This difference is indicative of the great divergence in employment conditions of part-time employees in Greece and the Netherlands.

Econometric estimation

We now proceed to the estimation of the determinants of unpaid overtime in Greece and the Netherlands before and during the crisis. Following the previously mentioned literature, we will examine factors such as gender, age, education level and supervisory position.

Apart from the above variables, we will examine the possibility of unpaid overtime for part-time workers, which is the focus of our investigation. In addition to part-time workers, shift workers and workers with temporary employment will be examined too, while the impact of labour time, seniority in

the company and the size of the establishment will be also considered. The estimation will examine the year before (2009) and after (2012) the imposition of the EU-ECB-IMF economic adjustment programmes, to detect possible variations brought about by the crisis and these programmes. The data used are those of Eurostat's Labour Force Survey for the years 2009 and 2012.

Econometric modeling

A binary logistic regression model (logit) will be applied four times, in order to estimate the determinants of unpaid overtime in Greece and the Netherlands before and after the beginning of the crisis. Working unpaid overtime or not can be described by the following probability function (cumulative probability distribution function) which gives the unpaid overtime probability.

Unpaid Overtime Probability =

$$P(Y_i = 1) = 1 / (1 + e^{-(\beta_0 + \beta_1 x_1 + \dots + \beta_i x_i)}) \quad (1).$$

If P is the probability of an outcome to occur, then 1-P is the probability not to occur as shown in the following equation

$$1 - P_i = 1 / 1 + e^{Z_i} \quad (2),$$

where $z = \beta_0 + \beta_1 x_1 + \dots + \beta_i x_i$.

From (1) and (2) we take:

$$P(Y_i = 1) / (1 - P(Y_i = 1)) = 1 + e^{Z_i} / 1 + e^{-Z_i} = e^{\beta_0 + \beta_1 x_1 + \dots + \beta_i x_i} \quad (3).$$

Where $P(Y_i = 1) / (1 - P(Y_i = 1))$ is the odds ratio.

The logit modification of the overtime probability $P(Y_i = 1)$, can be denoted as (Cramer, 2004; Gujarati, 2003):

$$L_i = \text{Log}[P(Y_i = 1) / (1 - P(Y_i = 1))] = Z \quad (4).$$

Where $\text{Log}[P(Y_i = 1) / (1 - P(Y_i = 1))]$ is the neperian logarithm of the odds ratio.

The equation that will be estimated is the following:

$$\text{Log} [P(y=1) / (1 - P(y = 1))] = \beta_1\text{SEX} + \beta_2\text{AGE} + \beta_3\text{CHILDNUM} + \beta_4\text{NATIONAL} + \beta_5\text{SUPERVISOR} + \beta_6\text{PARTIME} + \beta_7\text{TEMP} + \beta_8\text{SHIFTWK} + \beta_9\text{HWUSUAL} + \beta_{10} \text{HATLEVEL} + \beta_{11}\text{NONMANUAL} + \beta_{12}\text{STARTIME} + \beta_{13}\text{SIZEFIRM} \text{ (5)}$$

The variables which entered the model, are described analytically in table 2.

Table 2. Variables of the 4 models

Dep.Var.:UNPAID OVERTIME	Binary	0 = No unpaid overtime 1 = Performed unpaid overtime
Indep. Variables		
SEX	Binary	0 = Female 1 = Male
AGE	Continuous	Age in years
CHILDNUM	Continuous	Number of children
NATIONAL	Binary	0 = Greek nationality 1 = Foreign nationality
SUPERVISOR	Binary	0 = Non supervisor 1 = Supervisor
PARTIME	Binary	0 = Full-timer 1 = Part-timer
TEMP	Binary	0 = Not temporary employment 1 = Temporary employment
SFIFTWK	Binary	0 = No sift work 1 = Sift work
HWUSUAL	Continuous	Usual weekly working time (in hours)
HATLEVEL	Continuous	Highest education level (range 1-6)
NONMANUAL	Binary	0 = Manual labour 1 = Non manual labour
STARTIME	Continuous	Months on last employer
SIZEFIRM2	Continuous	Number of employees in the firm

Estimation results before the crisis (2009)

Equation (5) was estimated four times one for every case. The results are presented in table 3 for year 2009.

Table 3. Model estimation, 2009

	Greece 2009		Netherlands 2009	
	Odds ratio	P > z	Odds ratio	P > z
SEX	0.96	0.434	1.00	0.939
AGE	0.99	0.013	1.01	0.000
CHILDNUM	0.86	0.000	1.04	0.007
NATIONAL	0.82	0.026	0.73	0.001
SUPVISOR	3.13	0.000	1.80	0.000
PARTIME	1.81	0.000	0.92	0.108
TEMP	0.55	0.000	0.78	0.000
SHIFTWK	0.87	0.027	0.57	0.000
HWUSUAL	1.06	0.000	1.03	0.000
HATLEVEL	1.13	0.000	1.48	0.000
NONMANUAL	1.01	0.935	1.82	0.000
STARTIME	0.999	0.000	0.999	0.000
SIZEFIRM	1.001	0.000	0.999	0.051

Source: Own estimations using Eurostat's LFS microdata

The estimation for the year 2009 is shown in table 3, where it compares the results of the first two Logit models that were used, one for each country. Most of the coefficients are statistically significant, as the model as a whole. It is observed that in both countries gender does not affect the possibility for unpaid overtime, as it is statistically non-significant in both cases (consistent with Van der Meer and Wielers (2015) for the Netherlands). The age is within the limits of statistical significance for Greece, but has small negative impact, namely the increasing age slightly reduces the chance for unpaid overtime in Greece. In the Netherlands the probability increases with age, but to a small extent. The existence of children reduces the chances in Greece, but not in the Netherlands in which the existence of children slightly increases the probability for unpaid overtime. However, none of these factors appears important enough, to provide a substantial interpretation of unpaid overtime.

The first important determinant of unpaid overtime is supervisory position. It is particularly important that in Greece it triples the odds ratio while in the

Netherlands it increases it by 80%. The large difference between the two can be explained by the fact of having a much lesser rate of supervisors in Greece (see table 1) than in the Netherlands. This means that supervisors in Greece are fewer and thus charged with much more tasks, resulting to more unpaid overtime. In both countries the great impact of supervisory position is an indication in favour of the interpretative power of view on work complexity, which is more prominent in supervisors. Also the supervisors are usually the ones that fill the gaps of the small productivity of a subordinate in the case of teamwork. However, in Greece putting someone in a supervising position and the resulting salary increase automatically entails a change in the employer's requirements, creating a notion that there is no standardized working time for them. This affects both their effort and their working time and this increase in working hours necessarily takes the form of unpaid overtime, since the Greek legislation does not provide the possibility for an increase of official working hours.

The second most important factor affecting the realization of unpaid overtime in Greece is part-time employment. Based on the preceding analysis, part-time employees in Greece are among the most vulnerable workers, without trade union coverage and with a reduced concept of labour rights. The increase of the chances of unpaid overtime for them is a clear indication that unpaid overtime is a result of pressure on behalf of the employers. This reinforces the interpretation on the existence of power relations between employers and employees which determine the realisation of unpaid overtime.

On the contrary, in the Netherlands the possibility of unpaid overtime seems to be smaller for part-time employees, though the rate is within the limits of statistical significance even at the level of 90%. This could be interpreted as that being a part-time worker in the Netherlands does not significantly affect the likelihood for unpaid overtime and certainly does not increase it. The contrast with Greece is very sharp, as much as the contrast on employment conditions for part-timers in the two countries. This result and the comparison between the two countries provides additional support to the theoretical interpretation that claims that unpaid overtime is an indication of the exploitation of workers in the workplace.

This conclusion seems to be reinforced by the impact of shift work on the possibility of unpaid overtime. A large proportion of workers with shifts involves traditional working-class sections in large production units, where there is greater trade union protection and the defence of labour rights is guaranteed. The reduced probability of unpaid overtime among these workers is another

indication that the unpaid overtime is, to a significant extent, a result of pressure exerted by employers against the wishes of employees.

Working time is estimated to have a positive correlation with unpaid overtime in the Netherlands and even more so in Greece. This is a reasonable outcome, since both the unpaid hours and the likelihood for unpaid overtime are expected to increase the more time someone spends working. We use the 'working time' variable in order to isolate the above fact from the effect of 'part time' on unpaid overtime. Based on the combination of the coefficients of those two variables it occurs that, given their labour time, part-time employees in Greece have a greater chance to perform unpaid overtime than full-time workers.

Another important finding which verifies the results of the relevant literature is the significant (especially in the Netherlands) positive correlation of unpaid overtime to highest education level completed. This finding seems to reinforce the explanation of the work complexity and to simultaneously diminish the explanatory power of the theory of human capital, as mentioned in the theoretical section above.

The last significant determining factor for the Netherlands is non-manual labour, which increases the chance for unpaid overtime by 80%. This also reinforces the interpretative power of the theory of work complexity that makes the Dutch white collars more vulnerable to increased unpaid overtime. However, this specific result is probably due to legislative protection of blue collar employees in the Netherlands regarding overtime, which is not the case for white collars (Meer and Wielers 2015). On the contrary, in Greece there is no legal separation, so the impact is statistically insignificant.

Finally, seniority in the two countries seems to reduce, although trivially, the probability for unpaid overtime, while the size of the enterprise also doesn't seem to have any significant impact.

Estimation results during the crisis (2012)

The crisis and the austerity programmes do not seem to have created major changes regarding the determinants of unpaid overtime (table 4). For Greece, among the personal characteristics, only age seems to be statistically significant and its increase reduces the possibility of unpaid overtime; thus revealing the difficult position of young workers, given that their unemployment rate exceeds 50%. In contrast, to the Netherlands gender becomes an important factor, with women having smaller chances for unpaid overtime. Also in contrast, each child

seems to increase the chances by 7%; however this factor also has a relatively small impact.

Table 4. Model estimation, 2012

	Greece 2012		Netherlands 2012	
	Odds ratio	P > z	Odds ratio	P > z
SEX	1.03	0.653	0.82	0.000
AGE	0.97	0.000	1.01	0.000
CHILDDNUM	0.99	0.763	1.09	0.000
NATIONAL	0.91	0.374	0.84	0.100
SUPVISOR	3.05	0.000	1.62	0.000
PARTIME	1.70	0.000	1.07	0.252
TEMP	0.90	0.245	0.75	0.000
SFIFTWK	0.77	0.000	0.53	0.000
HWUSUAL	1.06	0.000	1.05	0.000
HATLEVEL	1.19	0.000	1.52	0.000
NONMANUAL	1.11	0.124	2.17	0.000
STARTIME	0.999	0.008	0.999	0.000
SIZEFIRM	1,002	0,000	0,999	0,482

Source: Own estimations using Eurostat's LFS microdata

Another difference with the pre-crisis situation is that nationality no longer reduces those chances, since it is statistically insignificant in both countries. The supervising position remains a major factor, with the difference between the two countries remaining very high.

The education level still has a similar, with the year 2009, effect in both countries, but with the position of the more educated deteriorating even further, reinforcing the relative arguments. The same difference between the two countries remains and is reinforced with regard to non-manual labour.

As to the factor that we primarily examine, the probability of a part-time worker to perform more unpaid overtime than his full-time colleague in the Netherlands is still very small (odds ratio close to one) and actually statistically non-

significant, confirming the same conclusion reached by the year before the crisis, that part-time workers do not differ from full-time ones as for unpaid overtime.

On the contrary, in Greece a much higher probability remains, now only slightly reduced to 70%. This reduction is not unexpected, since because of the huge increase of unemployment, a large part of full-time workers in Greece witnessed a deterioration of their position and to some extent tend to acquire characteristics of part-timers concerning their rights and their employment relationship. Again, however, part-time employees are in a much worse position with regard to unpaid overtime. It should be noted at this point that the results are similar for the year 2011 for both countries, but are not presented for the convenience of the reader.

The phenomenon of the positive correlation of unpaid overtime with part-time employment, that persists in the Greek labour market despite major changes during the crisis, reveals a persistent association of unpaid overtime with one of the most fragile and insecure segments of the working class in Greece. This persistent association is a strong argument for the theoretical view that unpaid overtime, apart from other factors that are likely to influence it, is a result of the pressure from employers for more unpaid work. The lack of an analogous association for part-timers in the Netherlands reinforces this explanation. As for the effect of the crisis, the determinants of unpaid overtime were not significantly affected. The observed changes are marginal and the significant differentiation among part-time workers between the two countries remained unaltered.

Conclusions

The phenomenon of unpaid overtime has come forcefully at the forefront, contributing to an increase in working hours and putting forward compelling theoretical questions. The theoretical interpretations that have been suggested should be checked with the help of actual data. This research studies the evolution of the phenomenon in two countries, Greece and the Netherlands, before and during the last economic crisis.

The reason for the choice of these two countries is the major difference between them with regard to conditions of employment, trade union protection and the consolidation or not of labour rights of part timers. Part-time workers in Greece are among the worst protected employees with precarious work, unlike part time workers in the Netherlands that do not differ from their full-time colleagues in these terms. The comparison of the two groups in those two countries indicates

that part-time workers in Greece have much greater chances for unpaid overtime compared to the rest of the workers. This does not apply to the Netherlands, where there is no statistically significant difference between full-time and part-time employees regarding the phenomenon of unpaid overtime.

This finding reinforces the idea that unpaid overtime is not the result of employees' free choice but that of pressure exerted on them. This pressure from the part of employers is much more effective when workers are most vulnerable. This is the main conclusion of our analysis. The crisis, despite the changes it has brought, especially in the Greek labour market, did not alter this basic correlation, confirming its potency. The above conclusion is reinforced even more by the reduced probability of unpaid overtime for shift workers, who are better protected in many ways. Even the significantly high probability for unpaid overtime among supervisors in Greece can be partly attributed to the increased pressure that they feel by their employers to justify their higher earnings (compared to the diminishing wages of the rest workers) with additional service to the enterprise.

The above findings highlight the deterioration of working conditions observed in recent years in the developed economies of Europe. The changing conditions in the labour market and labour relations at the expense of the working class seems to be coming as a result of broader changes occurring in the global economy, by shifting a large part of the production to countries with non-existent labour rights, and also through the creation of new categories of workers with reduced labour rights inside the developed economies combined with the inability of trade unions to react effectively. Particularly for the countries of the European Union that were strongly affected by the recent economic crisis, including Greece, the deterioration of working conditions is accelerated by a combination of factors such as the external pressure and the internal necessity for the capital to become more competitive through the deterioration of working conditions and wages. The findings of the preceding analysis highlight an important aspect of these developments: the increase of working time and most importantly of its unpaid part.

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