Radboud University

Master's Degree in Economics.
Specialization in Economics, Behaviour and Policy.

Master's Thesis

Coercive Power and Wage Theft: A Simple Model

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Date: 1st of August of 2019.

Abstract.

This Master's Thesis tries to explain and analyze a phenomenon that affects workers in many economies, the Wage Theft. Which can be defined, in general terms, as the denial of wages or other worker's rights rightfully owned by an employee.
To do so, an explanation of what is Wage Theft and what is not Wage Theft will be provided to be able to identify correctly the phenomenon. Later, as Wage Theft happens inside the production process, and thus, inside the firm, this economic institution will be analyzed, focusing in the existence of power relations or hierarchies within it, through a review of the related academic literature. As the central part of this Master's Thesis, a model of Wage Theft will be developed, this model will be based on the conflict of interest between employers and employees about the level of effort performed at work by the last ones and the time they spend working. Therefore, the existence of Wage Theft will depend on the relative forces of each side of the conflict. In that model, for the Wage Theft to happen, it will imply that the workers would be working more time than they were hired for.
To finish, an empirical analysis of the Spanish case has been made with the objective of testing my theoretical model. It has been difficult to develop the analysis due to the lack of data, so I hope that this Master's Thesis can work as a first step in a new research field in labor economics.

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Introduction.

Wage Theft is a widespread phenomenon that affects workers in many economies. Wage Theft can be understood as the denial of wages or other employee´s benefits rightfully owned by an employee; a situation that is translated in the worsening of the labor conditions to the workers.

Even though this is a common phenomenon in many economies, it was not until the year 2009, when a book by Kim Bobo was published, that the phenomena started to get importance within the academic literature. But even now, ten years after the publishing of the book, there is still a lack of academic research and publications about the topic. The objective of this paper is to be able to answer some questions related to Wage Theft and to give a theoretical approach to the issue.

The first question this Master Thesis tries to answer is: *How the Wage Theft phenomena may be conceptually explained?* This will be answered in Section 1 where there is a "clear-cut" definition of Wage Theft (emphasizing the differences with other similar situations) and in Section 2 where there will be an overview of the related literature about the firm and the different approaches that have been used to explain the intra-firm labor relations in economics. Additionally, it will be stressed the importance of hierarchies, power relations and the use of power inside the firm to explain a phenomenon as Wage Theft.

Wage Theft is a multifaceted phenomenon so variegated that its sheer diversity impedes a single and unified theoretical approach, so, because of that, and for simplicity, in this Master Thesis I will only consider two situations of Wage Theft in the theoretical model: unpaid overtime and working off-the clock.

As it will be explained in Section 2, Wage Theft will be the result of using some sort of power (coercive power) by the employers over the employees that forces the last ones to increase their effort at work or the time they spend working beyond the legal or agreed level. This leads to the second question this Master thesis will try to answer: *What are the*

factors and variables that influence the use of coercive power by the employers and how can they explain the existence and scope of the Wage Theft phenomenon? This will be answered in Section 3 with the development of a theoretical model about Wage Theft and the use of power by the employers based on the work of Bowles et al (2017) and Hirshleifer (2000).

In the empirical part of this study, in Section 4, I will run three regressions, based on the theoretical model, with the goal of providing a first empirical illustration of the Wage Theft phenomenon in the case of Spain. The need for running three regressions is due to the lack of data about the Wage Theft and the factors that can explain it nowadays. This is why this part of the Thesis is more illustrative than econometrically complete since it works as a "first step" in this research field. Because of this, I want to remark the need for more academic research about the topic.

Section 1. Questions of definition.

1.1 What is Wage Theft?

Wage Theft is a multifaceted phenomenon that affects millions of workers worldwide (see FairGoWages, https://fairgowages.com.au/portfolio-items/wage-theft-case-studies-across-globe/). The term Wage Theft may be understood as a "catch-phrase" that serves to include, under the same conceptual label, a number of different phenomena that can be found in many employer-employee relations which have, as a common characteristic, that they are *unwanted* by the employee's part. Wage Theft is, in the end, the denial of wages or other employee benefits *rightfully* owed by an employee.

According to Bobo (2011), in the US, Wage Theft is translated in billions of dollars being stolen from workers each year. This happens mostly to low wage workers as well as some middle-class workers. The three most common types of Wage Theft are unpaid overtime, "off the clock" work and employee misclassification. In a survey of 2009 of low wage industries in New York, Chicago and Los Angeles (Bobo, 2011, p.7) the results showed, for instance, that one out of four workers was not paid the minimum wage, or that around 70 per cent of the workers who worked overtime were not payed at all for it. Cooper and Kroeger (2017) estimates that in the 10 most populated US states 2,4 millions of workers

loose around 8 billion dollars annually in their paychecks. This implies, as Lee and Smith (2018, p. 3) point out, that "beyond individual workers, Wage Theft increases the poverty rate and costs the government millions of dollars annually in lost tax revenue".

In the last years the phenomenon of Wage Theft has gotten more attention, and the term is widely used by the media, labor unions and politicians (Bobo, 2011, p. xiii) but, even though the discussion about its existence and effects is receiving more attention nowadays, and that a lot of workers have experienced it by themselves, they "thought [about it as] it was an isolated incident -one bad employer, one bad apple. Unfortunately, the problems are at epidemic proportions" (Bobo, 2011, p. xii). As it will be shown in Section 2, some authors as Anderson (2017) consider the Wage Theft phenomenon as a political question that is inherent to labor relations in any industrial market society. Other authors, as Lee and Smith (2018, p. 10) consider the causes of Wage Theft to be related to the competitive pressures that drives the employers' behavior, the deregulation of the workplace promoted by governments and the inability of labor unions and the civil society to contain unlawful employer practices[1]. In the rest of this Master's Thesis, the political approach authored by Anderson will be followed.
According to Kim Bobo (2011), there are several ways in which Wage Theft can be conducted by the employers, as:

- Paying less than the minimum wage. Countries usually have wage laws that establish a minimum wage that the workers must receive in every job, but in some occasions, employers do not pay the employees the minimum wage but a wage that is below the minimum one (even though some deductions can be applied, these ones cannot push the employee's wage below the minimum wage established by the law).
- Not paying workers for all the hours they work. Employees must be paid for all the hours they work. Because of this, it is important that employers keep records of the number of hours their employees work. But in some situations, the

[1] "Most responsible [USA] governmental agencies do not sufficiently enforce the laws allowing employers to act with impunity. The agencies may lack motivation or resources to enforce the existing wage and hour laws (...) A 2018 study found that six states lacked a single investigator to investigate minimum wage violations". (Lee and Smith, 2018, p.10)

employer gives paychecks that do not reflect the total of hours worked by the employee or arbitrarily decide that some task is not worth to pay for.

- Failing to pay overtime work. Many employers fail to pay workers any overtime work they do, or they even "tell workers that they are not covered by overtime for some made-up (and not legal) reason" (Bobo, 2011, p. 27). This overtime is the not paid overtime hired (neither with wages or vacancy time). This type of Wage Theft can also be related to:
- Misclassifying workers as independent contractors or "exempt employees". This type of Wage Theft refers to the situation in which the worker is hired by a firm and performs her job as a regular employee but is contractually considered as an independent contractor (when, in reality, she is not), so she has to bear certain cost associated with labor (as can be the contributions to the social security) that should be carried by the employer. Also, and related to the other form of Wage Theft mentioned above, some employers misclassify workers as "exempt employees" (from the overtime regulations, for instance) when they "are not exempt".
- Forcing employees to work "off the clock". Employees that are forced by the employer to work more hours than they were hired for without any additional increase in their wages are suffering, obviously, a Wage Theft. This is different from unpaid overtime since working "off the clock" is working more hours than the hired amount.
- Paying by the day or the job. Employers pay workers "by the day" or "by the job" so, in the end, it can be the case that workers are receiving less than the minimum wage. Additionally, "such employers pay in cash so that none of the required payroll taxes, unemployment insurance, or workers' compensation are paid either" (Bobo, 2011, p.29). These situations are, also, examples of Wage Theft.

These are the most obvious ways in which Wage Theft happens, but there are more ways through which an employer can steal wages or other employee's benefits from the employees, as:

- Putting pressure on injured workers to not file complains to get the workers' compensation.

- Threating the workers with firing or calling to immigration services if they complain or seek redress.
- Denying workers' time-off or vacation time that they have rightfully acquired or denying payments for sick leave or vacation time.
- Failing to pay the mandatory minimum contribution of employers to employee's superannuation fund.
- Making workers pay for a job.
- Not paying the "prevailing wage" (the standard and customary wage in a particular area or job category).
- Taking illegal deductions from workers' paychecks.
- Automatically deducting wages for breaks that workers' do not get.
- Stealing workers' tips.
- Not paying people at all.
- Not paying last paychecks.

All of these variated situations serve to exemplify the multifaceted characteristics of a phenomenon as is Wage Theft and to understand how it affects workers[2].

It must be stressed that Wage Theft is a kind of *theft*. Despite some of its diverse forms require to be "accepted" -in some way- by workers, and are, in fact, "accepted" by them, this acceptance is not an entirely voluntarily agreement but a *forced* or *obligated* one, although it appears disguised as a free choice by the worker (this argument is used by some authors, as Alchian and Demsetz (1972), to neglect the existence of power relations inside of the firm as it will be shown in the next section). In fact, some of the varied forms of Wage Theft are an "all-or-nothing" deal to the worker (the worker has only two options: or to accept those illegal labor conditions or to leave the firm, with all the consequences that this decision implies -i.e. become unemployed). So, the choice for workers in a Wage Theft setting, when labelling it as a free choice, is similar to the "free"

[2] The Wage Theft phenomenon affects also other employers (indirectly) because, since unethical employers that incur in Wage Theft reduce their labor costs, ethical employers that do not commit Wage Theft to their employees are in a disadvantage position when they have to compete with the unethical ones, but this effect is outside of the scope of this Master's Thesis.

choice offered by an armed thief to his victim: *your money or your life.* Ankarloo, cited by Palermo (2000, p.582), and using the same example, makes this statement clear:

> "even a robber who offers me to exchange my life for my money gives me a choice and I would 'voluntarily' engage in such exchange, even though the conditions for this exchange are 'coercive' indeed".

1.2 What is not Wage Theft?

Once Wage Theft has been defined as a multifaceted phenomenon, it is important to point out those situations that, even when, at first sight, they could seem to be a type of Wage Theft, they are not.

To establish this distinction between what is and what is not Wage Theft, the key aspect to consider is if the worker has *voluntarily accepted* those worse labor conditions (or even if the worker is looking for these conditions in exchange of something -to obtain some prestige as a dedicated worker, for instance), or not.

In fact, it can be said that there are many situations where a worker can voluntarily accept worse labor conditions as a signaling device that is freely chosen by the worker in order to communicate to her employer her compromise with the goals and objectives of the firm, as this compromise is a mean to improve her possibilities of enhancing her professional career (for instance, working longer hours without being paid for them is very common and voluntarily provided in law firms by the most recent hired lawyers who aspire to obtain a chair within the board of the law firm), or to show her quality as a worker (for instance, a worker avoiding to take sick leaves may try to show the employers that she is a high quality worker -since she is trying to avoid taking work leaves- and also because taking sick leaves can be understood by the employer as signal of the unreliability of the worker (Ippolito, 2012, p.337)).

In a similar view, Wage Theft situations are different from the means used by the workers in the *positional competition* among them. That happens when certain types of Wage Theft are voluntarily chosen by the workers as means to improve their positional or status standing inside the workers' group or as means to get more money to acquire positional

goods (as it has been studied by Frank (2004), or Bowles and Park (2005) under the name of *Veblen Effects*).

Section 2: Firm and power.

By its own definition, Wage Theft can happen only in situations in which there is an *asymmetry of power* between employers and employees, so the first ones can push the others to "accept" those (worse) working conditions. Since inside the labor market there is no scope for those situations of power (since the labor market, as the other markets, is just the "place" of freely voluntary exchange), the Wage Theft situations happen once the worker is "outside" the labor market and inside the firm. So, to understand how Wage Theft can be conceptually explained, it is necessary to take a look at how the firm works internally and how it is organized.

2.1. The Firm as a Private Government.

As it was stated before, Wage Theft is a catch-phrase that puts under a common verbal expression a wide diversity of phenomena that can be found in labor markets with the common characteristic of having received scarce attention from the *mainstream economic approach: the neoclassical economics*[3]. An explanation for this can be found, perhaps, in the sheer diversity of situations in which workers are subjects to some kind of Wage Theft, a diversity that renders difficult to think about them as different types of the same phenomenon. However, a most likely explanation of the forget of Wage Theft in economics can be found in the conceptual domain or approach that underscore the way the organization of work inside the firm is understood in mainstream economics[4].

[3] In contrast, in Marxian economics, Wage Theft occupies the central theoretical position as it is considered the only source and explanation of profits. For the labor value theory, the kernel of Marxian economics, there can be no other source of aggregate profits (surplus value) as surplus labor, it is labor done by workers and not paid by the capitalists. So, Wage Theft, to marxists, is not a *possible* situation that can be found in non-competitive labor markets structures in capitalist economies but a *sine qua non* condition for the existence of profitable private capitalist firms. For other part, "aggregate statistics are hard to come by, because complaints about employer abuse and oppressive working conditions are so diverse, and cross industry surveys on qualitative issues are expensive and rare. Moreover, academic research on labor is marginalized and underfunded, as workers themselves are" (Anderson, 2017, p.135)

[4] As it was said before, it is not possible to model all kinds of Wage Theft, so, from now on, the only type of Wage Theft that will be considered will be the one that consists in labor time that is not being paid, that maybe is the most relevant among them.

Following Bowles (1985), there have been three ways in which the production process in a competitive economy has been considered so far. The first one is the *Walrasian approach,* that understands it as "a set of input-output relations selected from an array of feasible technologies by a process of cost minimization with respect to market-determined prices" (Bowles, 1985, p. 16), thus, the production process is just a set of exchanges. In this approach, there is no analysis of the *internal organization of the firm*, as the firm is understood only as a nexus of *internal* or *intra-firm* markets in which the owners of the different inputs that are employed in the process of production exchange the use of them in ways entirely similar to the exchanges that happen in the *external* or *extra-firm* markets.

This way of thinking about the workplace and the firm was questioned by Ronald Coase (1937) in his seminal article about the nature of the firm. According to Coase, the firm is a *social non-market organization*, a mini-command economy, due to the need of the production process inside of a firm to be flexible enough to make it easy to adapt quickly to the continuous changes in the product and labor markets and in technology. To face all these changes that happen continuously in its economic environment, and considering that there are always *transaction costs*, the labor contracts that the employers sign with the workers cannot be *complete* because they cannot anticipate all the unexpected changes that will require modifications in the way that the work has to be done. So, the labor contracts must be *incomplete* in any kind of firm in which the production process is social (in other words, in which there is a vertical and horizontal division of labor).

This incompleteness of labor contracts means that firms have to recur to some kind of hierarchical organization to organize the production process, to tell the workers what they have to do or what they do not have to do in any moment as it is necessary to adapt to changes in the condition of the external product market. So, inside the firms, there must be, more or less complex structures of power relations in which there are some people, the "bosses" (employers or managers who work for the employers), who order others, the "workers", what, when and how they must do their work. And to accomplish this task, they can discipline or punish them if they do not do what they have ordered them to do. Under firm discipline, workers must face a very constrained choice: They get the wage they receive in exchange for the submission to their employers, it is said, for the complete command of their activities and their life for a fixed period each day. The employers set

the pace of work and also dictate how workers will conduct themselves on the job and, in many cases, out of the job too, during their off-work time (Anderson, 2017).

Additionally, there are two *non-walrasian* and *post-coasian* theories or models of the production process in competitive firms depending on the type of problem the hierarchical and disciplining firm organization is trying to solve. On one hand, there is the view that Bowles calls *neo-Hobbesian* because "the key to understanding the internal structure of the firm is the concept of malfeasance. Also known as shirking or free-riding, malfeasance gives rise to the archetypical Hobbesian problem of reconciling self-interested behavior on the part of individuals with the collective or group interests" (Bowles, 1985, p.16).

According to this approach, the problem of the production process is fundamentally a problem of *coordination.* The need of workers' coordination has grown since technological developments after the Industrial Revolution have imposed extensive division of labor, and with it and with the need of more strict task coordination among workers, it has also appeared the need to discipline the behaviors that are not adequate to the soft and steady development of the process of production. Discipline that is necessary although it is unattractive: "an unfortunate corollary of new, more productive technologies" (Clark, 1994, p. 129)[5], and for that reason, a general and unavoidable consequence of technology adoption independent of the economic system or the type of firms. Then, as Paul Samuelson asserts: "in the competitive model it makes no difference whether capital hires labor or the other way around" (1957; cit. in Bowles, 1985, p. 17).

But, in this *neo-Hobbesian* approach, the managers' or employers' authority to discipline workers must not be confused with the power to *coerce* workers to suffer undesired bad working conditions or some kind of Wage Theft. Firm's discipline, in competitive labor markets, cannot force workers to do more than they would want in exchange of their wage. If bad working conditions are found in a workplace, they will not have been imposed arbitrarily by the employers, but they will have been voluntarily accepted,

[5] Studying the changes in the organization of work in the Industrial Revolution characterized by the gradual hardening of factory discipline, Clark does not explain it by social, political or strict economic factors but by a neutral non-political factor: technology. "Discipline resulted from *technological* necessity. Without the imposition of discipline, the whole production process could grind to a halt because one worker was absent, drunk, or conversing with his fellows" (Clark, 1994, p.129)

chosen or looked for by the workers themselves because "in a competitive labor market, no employer can arbitrarily impose bad work conditions. If markets are competitive, what survives will be what is efficient. Workers chose discipline because manufacturers who organized labor in this way were able to reduce costs and offer high wages. Workers, in this view, preferred discipline and high wages to freedom and low wages. Their protection was and is the market" (Clark, 1994, p.130)[6].

No one better than Alchian and Demsetz (1972) have exposed the function of this mild Hobbesian view of the kind of discipline that we can find inside firms in a competitive economy; a discipline not coercive but coordinative:

> "It is common to see the firm characterized by the power to settle issues by fiat, by authority, or by disciplinary action (...) This is delusion. The firm (...) has no power of fiat, no authority, no disciplinary action any different in the slightest degree from ordinary market contracting between any two people. I can "punish" you only by withdrawing future business or by seeking redress in the courts for any failure to honor our exchange agreement. That is exactly all that any employer can do. He can fire or sue, just as I can fire my grocer by stopping purchases from him or sue him for delivering faulty products. What then is the content of the presumed power to manage and assign workers to various tasks? Exactly the same as one little consumer's power to manage and assign his grocer to various tasks. Telling an employee to type this letter than to file this document is like telling a grocer to sell me this brand of tuna rather than that brand of bread" (Alchian, Demsetz, 1972, p.777).

This coordination or Hobbesian view of the production process is dominant, nowadays, among economists. It is the view of the neoclassical model in which there is no other kind of power in the economic relations but the economic power[7]. So, unless a firm has

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[6] As Clark says about the bad work conditions during Industrial Revolution: "Though factory discipline was coercive, forcing the worker to do what he or she would otherwise not have done, the worker was in no sense exploited by the introduction of discipline. The workers voluntarily entered into temporary servitude of the factory and were appropriately rewarded for its disamenities with higher wages" (Clark, 1994, p.129)

[7] As Bardham says: "orthodox neoclassical economics fails to handle some of the key issues of power (…) [because its] standard assumption is that there is no exercise of power if both parties voluntarily enter a transaction" (Bardham, 1991, p. 226-7). Bowles calls this perspective the "Walras' fiction", the idea that "interactions between human agents are viewed as if they were relationships between inputs and outputs". The fiction implies an "apolitical conception of the economy in which the only power wielded by economic agents is purchasing power" (Bowles and Gintis, 1993, p.86). The need to recognize that other kinds of

monopsony power in its labor market, it would have no *real power* to force workers to accept any "agreement" they do not want. Now, while this approach explains why firms exist and why they are organized in hierarchies of authority -unless it is assumed that the monopsony is the ubiquitous structure of the labor markets- it does not explain "the sweeping scope of authority over workers. It does not explain, for example, why employers continue to have authority over workers' off-duty` lives (as it happens so often nowadays), given that their choice of sexual partner, political candidature, or Facebook posting has nothing to do with productive efficiency" (Anderson, 2017, p.52). This view cannot obviously explain the phenomenon of Wage Theft either unless stringent monopsonist structures were supposed to be prevalent in labor markets.

It must be stressed, on the other hand, that the "Hobbesian problem" would be a common problem in any kind of economic system, a problem that firms must face independently of who is its owner. A state-owned firm or a labor-owned firm must face the same problems of tasks-coordination as a private owned or capitalist firm. One of these coordination problems is trying to avoid or fight the risk of shirking, the incentive that each worker has to pursue her particular self-interest, what leads her (in an environment as interdependent as the social production process typical of the modern firms) to not do the task ordered or to not do it with the level of effort needed so that other workers cannot do theirs tasks appropriately with the unavoidable consequence of inefficiency in the achieving of the *desired* levels of production.

In other words, to the neo-Hobbesian approach "the modelling of the firm as a command economy is necessary, but has nothing to do with the class structure, for hierarchical relationships between managers and workers reflect nothing more than an efficient solution to the universal problem of malfeasance" (Bowles, 1985, p.19). It must be noted, on the other hand, that many times, even in capitalist firms, this task of controlling and policing the behavior of workers to facilitate the necessary coordination among them is not done by managers or employers but by the workers themselves (Jones, 1984). They monitor the behavior of individual workers to impede their shirking in excess of the

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power besides economic power have to be included as an analytical tool inside the neoclassical economic perspective has been stressed by Ozane: "economic analysis must take into account power and politics or it risks, as Ronald Coase famously argued, only being fit to model individuals exchanging nuts for berries on the edge of the forest" (Ozane, 2016, p.22)

"desired" level of effort that the group of workers think convenient. But this poses the problem of what is the desired level of effort that workers will choose and the desired level of effort that employers would want.

The problem of controlling shirking at the workplace reaches the maximum importance in the capitalist way of organizing the production process. This third view, that is called *Marxian* by Bowles, due to the fact that in a market or capitalist economy it must be distinguished, as Marx (1968, p. 50) first does, between *labor* and *labor force*. According to Marx, in a labor market, workers do not sell their work or their labor to an employer but their *labor-force* or *capacity to do a work*. Then, every employer must face the problem of extracting labor from the labor force he has acquired. In other words, the problem to make workers do the work or do it with the level of effort he (the employer) desires, as it can be assumed that workers, after having been hired and paid for, do not have any interest to voluntarily do any effort over the minimum necessary to the survival of the firm.

In other words, as workers do not have any incentive to collaborate with their employers in the achievement of their objective of profit maximization, it can be conclude that the workplace must be thought of as a battlefield, an arena of the conflict between the interest of employers in extracting more labor from the labor force they have bought (and so getting more profits) and the resistance employees oppose to them. So, "quite apart the level of wages, employers and workers have a conflict of interest in the production process in the specific sense that the employer's interests (as measured by profits) are enhanced by being able to compel the worker to act in a manner that he or she otherwise would not choose" (Bowles, 1985, p.19).

As it is the usual in most conflicts (Schelling, 1960), this conflict between employers (firm owners or their representatives/managers) and employees that happens inside capitalist firms is not a zero-sum game either, because the conflict about the level of effort at which the workers perform their job does not imply that the employer and the workers have not a common interest in the survival of the firm, or that, if left to their own devices, workers would choose not to do any effort. As Bowles says, "it simply states that within a given legal and economic context, the employer can do better than to simply hire workers and let them work as they please. The level of profits, therefore depends -at least

to some extent- on the power of capital over labor" (Bowles, 1985, p.19). And in some economic, political and social circumstances, the coercive power or power of coercion of employers may be so big that allow them to make their employees *to work more time or extract more effort from their employees than that they would have hired*. In other words, in these circumstances, employers can get some of their profits from Wage Theft.

There are two important consequences from this Marxian perspective of the process of production in capitalist firms. First, as the amount of work done per hour will depend upon worker's perception of the cost of pursuing a non-work activity, that is, of acting on the basis of any of her non-work (and work-reducing) objectives, employers have the incentive of increasing this cost to workers. And to the fulfilment of this objective they will invest in control technologies (i.e. cameras) as well as hiring "workers" (i.e. foremen) to control the behavior of the other workers. As this surveillance labor (conceptually different to the coordination labor) and these "power-biased" technologies (Skott and Guy, 2007) are costly and do not enter into the direct transformation of inputs into outputs, they are not *productive*[8]. That is, "capitalists" (owners of firms or their representatives) will generally select methods of production which forego improvements in productive efficiency in favor of maintaining their power over workers" (Bowles, 1985, p.17). For this reason, and in opposition to one of the most cherished tenets of neoclassical economics, capitalist firms in a competitive market economy are not efficient in the sense of their behavior is not the best solution to the problem of scarcity, but rather is, at least in part guided by the class interests of their owners to improve their opportunities in the class conflict with their workers.

Second, "it will generally be in the interest of capitalist to structure pay scales and the organization of the production process to foster divisions among workers, even to the extent of treating workers differently who are identical from the standpoint of their productive capacities" (Bowles, 1985). This old and very effective "divide and rule" strategy explains the common fact that, inside a firm, it can be found the paradoxical situation in which similar workers be treated by the employers differently, using different types of power. One group may be induced to work longer hours or to raise their effort-level at work in exchange of a pecuniary compensation (an "efficiency-wage"), while

[8] They are necessary to the owners of the capitalist firm to get more profit, but they are not strictly productive investments.

another may be subject to control, discipline and punishment, that is to coercion to do what they have been ordered.

According to this perspective, the inner structure of the firm cannot be understood as the more efficient institutional way to solve a transaction cost and/or a coordination problem that technology poses to the development of the production process (as the Walrasian and neo-Hobbesian approaches to the production process hold). But it can be thought as the special way that in a market or capitalist economy, firms adopt to solve not only a technological problem but also a *political* one: the conflict of interests between employers and employees over the duration of the labor-day and/or the level or intensity of work effort. Following this line of thinking, that looks at firms as not only *economic institutions* but also as *political* ones, the most appropriate way of conceiving a capitalist firm is thinking about them as *private governments,* as the political scientist Elizabeth Anderson (2017)[9] has recently argued. By this, she does not mean merely that a private or capitalist firm operates in the private sector, but that the firm has a kind of *government* capacity that is *private* in relation to the state. A firm can be defined as a *private government* with respect to their workers if its rulers (the managers) have the authority to issue them orders and the power to backed them by sanctions and, depending on a variety of social, economic and institutional circumstances (including the legal constraints enforced by the state or *public government)*, workers would have the power to say something, little or nothing about them, about how the firm's government operates and about demanding forcibly that their interests be taken into account in the decisions that managers make[10].

In any case, even in the best possible position for the workers in the conflict with an employer; in a *private government or capitalist* firm the relationship between managers and workers is never a symmetrical one as the previous cited comments from Samuelson

[9] The Anderson's view of firms has stirred up a wide controversy as it has a big impact not only on the economic theory of firms but also on the history of social movements, the history of political thought and the sociology of organizations. It deserves to say, as a signal of the importance that has been given to her views, that in the book, they are included not only Anderson's two Tanner Lectures on Human Values delivered at Princeton University in early 2014 that began the debate, but also a long commentary of her to the responses and critics that these lectures have had (and are included also) from a leading historian (Ann Hughes), a philosopher (Niko Kolodny), a social commentator (David Bromwich) and an austrian economist (Tyler Cowen)

[10] This private capacity to govern a firm that the owner or his managers have is then a relative one, a matter of degree checked by many circumstances and factors: social norms, state regulations, competitive structure of the labour market, existence of unions, costs of rule enforcement, property structures of the firm, etc. This will be the matter of the next sections.

and Alchian and Demsetz would suggest. Quitting a job, as a worker does when she wants to put an end to a labor contract, is only superficially akin but it is not equivalent at all to firing a worker, which is the way an employer does when ending the labor contract with an employee. Workers have no power to remove or fire the bosses or managers from their position within the firms. And quitting often implies even greater costs on workers than when being fired, because it makes them ineligible for unemployment insurance. As Anderson says, quitting a job "is an odd kind of countervailing power that workers supposedly have to check their bosses' power, when they typically suffer more from imposing it than they would suffer from the worst sanction bosses can impose on them." (Anderson, 2017, p.56)[11].

Anderson, maybe a bit exaggeratedly, compares *private governments* in firms in capitalist free market societies to communist governments: "the dictator is the chief executive officer (CEO), superiors are managers, subordinates are workers. The oligarchy that appoints the CEO exists for publicly owned corporations: it is the board of directors. The punishment of exile is being fired. The economic system of the modern workplace is communist, because the government that is, the establishment owns all the assets, and the top of the establishment hierarchy designs the production plan, which subordinates execute. There are not internal markets in the modern workplace. Indeed, the boundary of the firm is defined as the point at which markets end and authoritarian centralized planning and direction begin" (Anderson, 2017, p.39) but she recognizes that there are more or less dictatorial/democratic private governments, although they are always less democratic than the states[12].

And finally, against the usual critic of her position in terms that the freedom of exit of workers in competitive labor markets guaranteed or curtailed the appearance of Wage Theft and other negative consequences and even question the idea of firms as (more or less) dictatorial *private governments*, her response is that "this is like saying that

[11] Anderson stressed that not only Wage Theft can be the only usual consequence out of the fact that a capitalist firm behaves as a *private government* in its asymmetrical relation with its particular subjects: its workers. The amount of respect, dignity, standing and autonomy of workers are being put in risk in and, also, off work.

[12] "I do not claim that private governments at work are as powerful as states. Their sanctioning powers are lower and the costs of emigration from oppressive private governments are generally lower than the costs of emigration from states. Yet private governments impose a far more minute, exacting and sweeping regulation of employees than democratic states do in any domain outside prisons and the military" (Anderson, 2017, p.63)

Mussolini was not a dictator, because Italians could emigrate. While emigration rights may give governments an interest in voluntary restraining their power, such rights hardly dissolve it" (Anderson, 2017, p.55). Nevertheless, the usual suggestion from neoclassical economists that enhancing existing rights alone would be sufficient to deal with the problems of Wage Theft and similar situations, it is not credible because it is not easy to find a good answer to the question of "from what jobs are workers supposed to exit *to*? When 90% of waitresses experience sexual harassment, they have not reliable place to escape it, other than by leaving their industry-specific skills behind -an even then, not so much since sexual harassment exists in all industries" (Anderson, 2017, p.141)[13] . That is, although a competitive labor market may weak in some degree the capacity of a firm to exert its power of coercion, it does not have real substantial effects on minimizing Wage Theft if all the firms in an economic sector or in an economy offer similar labor conditions and trade- offs to workers.

The extent of the Wage Theft, or in other words, the amount of it (unpaid overtime, time worked off the clock…), will depend on the relative power of bargaining and coercion of employers and employees[14].

2.2 Power.

As it was just stated above, the amount of Wage Theft that can be done in a firm will depend on the relative power of the employers and the employees since the relationship between them inside the firm can be thought as a conflicting one, contending about a special kind of "resource": *the level of effort of the workers* over the level voluntarily supplied by the workers, where the "equilibrium" level of effort will be the result of this conflict and will depend on the relative powers -or forces- of both sides, and also the value of some external circumstances.

Then, Wage Theft will depend on the capacity of the employers to push workers to work more hours with more intensity or under worse labor conditions than the accorded ones

[13] "Add to this the problems of unemployment, underemployment, ineligibility for unemployment insurance for "voluntary" quits, and it's easy to see how unhelpful "why don't you just leave?" is as advice to workers". (Anderson, 2017, p.141)

[14] "When workers have only exit rights and no voice, this amounts to a grant to the dictatorial employer to harvest the *entire* "producer surplus" - all the benefits that make their job better than the worker's next best alternative – that would otherwise accrue to workers before the job gets so intolerable that they quit" (Anderson, 2017, p. 141)

in the labor contract[15], and this capacity will depend on the relative power of the employers. But, before continuing, it is necessary to define the concept of power, since this issue has almost not been analyzed in mainstream economics[16].

According to Robert Dahl (1957), author of one of the most used definitions of power: "A has power over B to the extent that he can get B to do something that B would not otherwise do". Then, power is the ability of an individual, group of individuals or institutions to make others do things that, if left to their own, they will not do in the circumstances that they are at; circumstances that are based on the existence of certain temporal restrictions, of income, of prices and similar (both economic and/or non-economic).

This definition can be conceptually widened by adding some few elements that Bowles and Gintis (2008) and Bowles and Jayadev (2006) think necessary to include. Then, additionally of what Dahl says, the power has to be *interpersonal* (since it implies a relation between two or more people), *normative indeterminate* (its use can imply both a Pareto improvement or an abuse that can damage another individual in violation of certain ethical principle) and represent a *sustainable Nash equilibrium* in a properly defined game.

It is usual to say that there are three kinds of power that are employed in interpersonal or intergroup conflicts:

1. ***The power of persuasion or "soft power":*** it may be defined as the capacity to alter or modify the preferences of other people without the use of coercion or any compensation. In our case, an employer would have some power of persuasion if he can convince the employees so that their objectives/preferences change and get aligned with the ones of the employer, through, for instance, the creation of some kind of intra-firm *culture* among them so they, voluntarily, offer more effort when they are performing their job. Then, the persuasive power can be defined as that

[15] The level of effort cannot be included in the labor contract.
[16] It is not until the year 2006 that the concept "power" was included in the *New Palgrave Encyclopedia of Economics*. One of the most complete economic encyclopedias since it first publication is dated from the end of the 19th century.

power that allows that *A change the preferences of B, being this change in B's preferences voluntary and without affecting B's wage and income restrictions.*

The persuasive power[17] affects the decisions of the individual in a non-coercive way but changing her preferences through the intervention of culture, ideology, manipulation and other means. According to Joseph Nye (1990), who first uses the term "soft-power", this is the induced change in the preferences of another through the use of instruments of attraction.

2. ***The economic power:*** it is the power to change the restrictions people must face in their choices. Esteve and Muñoz de Bustillo (2005) define this type of power as the "capacity of a firm, individual or group of individuals to set prices and/or other conditions of sale or purchase in a market". Then, economic power implies that *A has the capacity to alter the position of B's income restriction, affecting, then, his behavior*. Even so, the change in the behavior of B is voluntary, as this is the result of an exchange that happens in the market.

   In our case, the employer has more or less economic power if he can alter the incentives of their employees when they choose their desired level of effort, so they increase it. This is the common thread under all wage-efficiency models.

3. ***The power of coercion or coercive or "hard power":*** it is the power an individual (or group of individuals) has of threaten another one with undesired consequences unless he behaves as the powerful wants to. Bowles and Gintis (1992), even when they do not label it as coercive (they call it just "power"), consider that this type of power requires of all the characteristics mentioned above (interpersonal normatively indeterminate and a Nash Equilibrium) plus an additional one (the one that define it as coercive): it must imply a threat of using real sanctions to be exercised. Then:

[17] The South Korean Philosopher Byun-Chul Han (2014) uses the term *intelligent power* to describe a type of power that, although it is not the same, has some similarity with the persuasive power. According to him, this power "does not operate in front of the will of the subjugated subjects, but rather directs that will in its favor. It is more affirmative than denier, more seductive than repressive. He strives to generate positive emotions and to exploit them. Seduce instead of prohibit". In other words, persuades the individual to perform certain activities.

> "For B to have power over A, it sufficient that, by imposing or threatening to impose sanctions on A, B is capable of affecting A's actions in ways that further B's interests, while A lacks this capacity with respect to B" (Bowles and Gintis, 2008, p.4).

The coercive power, then, can also be defined as *the capacity to alter A's behavior through the use of sanctions or threats in a way that A, left to her own choice, would not do.* In our case, an employer has some coercive power if he can detect and punish the employees who do not work with the required (by the employer) level of effort. Of course, workers can have ways to resist and hit back as they have its own coercive power, for instance, if they are unionized or if they have a protective labor legislation or they have easy ways or more opportunities to find alternative jobs, or if they can deceive the employer's surveillance feigning that they are performing their job with the desired level of effort.

Now that the concept of power is defined, as well as its different types, it can be used to explain how the phenomenon of Wage Theft happens in the production process, and, concretely, inside of the firm since it will be the natural outcome of the conflict between employers and employees when the coercive power of the employers is higher than the resistance power of the employees.
The next section will introduce a theoretical model that explains how, when and until which extent Wage Theft may happen.

Section 3: Theoretical Model of Wage Theft.

In this Section, a model about the exercise of coercive power inside the production process in a firm and its use as an explanation for the Wage Theft phenomenon will be presented. But, before starting with this model, it is needed to point out again that the labor relations, in all their complexity, have elements of conflict, cooperation and competition so there are different ways to approach to them. The goal of this Section is to model the existing conflict between employers and employees about the amount of effort performed at work and the total working hours that are worked per day, thus, the amount of *real work* that is obtained from the labor force that the firm has hired.

As it has been said before, there is a conflict between employers and employees because the last ones, once they have been hired and paid, do not get any utility out of putting more effort in their work over a certain level (a level that assures them to keep their jobs) while the employers, once they have paid for that capacity to work, want their employees to increase their effort levels or the time they spend at work. For the workers, their behavior will be determined by the need to get an income and the attempt to shirk for their obligations since the effort for the worker is considered as a disutility (as it will be explained in this Section). Both objectives are not compatible. So, there is an unavoidable conflict between these economic actors.

Wage Theft can be understood as the outcome of this conflict when the employers use within it their coercive power, over the capacity to resist of workers, through the use of sanctions or punishment (getting fired, for instance), which can alter the behavior of workers in a way that, if left on their own, they would not do (accept situations of Wage Theft[18]). In Section 3.1 I will try to model how and until which extent the employers can use that coercive power they have to, efficiently, obtain more effort from their labor force (i.e. work more hours than they were hired for but without any payment).

Of course, the employers use the other two types of power described in Section 2 in their conflict about the effort levels with their employees. But when they use their economic power, they get more effort from their employees without doing any kind of Wage Theft, as the employees are fully compensated for their higher effort levels with efficiency wages. In the same way, if the employers get more effort after using their persuasive power as a consequence of changing the preferences of their workers into supplying more effort levels at work, there is no Wage Theft.
But it is necessary to point out that the use of any type of power in this conflict by the employer is costly. It is costly to hire surveillance labor and to adopt control technologies (to exercise the coercive power), but it is also costly to pay efficiency wages to the workers (economic power) or to invest in both general/social and particular/firm culture (persuasive power). And, due to these costs, the firm will have to choose how to spend

[18] The reason of including a section to model the behavior of the employer and do not do the same for the employee's side is because the last one is assumed that only has to options: or accepting the job or leaving it. And the reasons for choosing one option or the other will depend of certain conditions that will be presented further on in this Section.

its resources in each type of power to be able to achieve the goal of obtaining more work from the labor force but, at the same time, minimizing the costs associated with the exercise of each type of power.

3.1. A model of Wage Theft.

Before starting to build the model, it is necessary to point out again that the Wage Theft is a multifaceted phenomenon, and it is very difficult to model each type of possible Wage Theft. For simplicity, this model will only analyze, of all the cases exposed in section 1, the most paradigmatic cases: when the worker works more hours without getting paid for or works "off the clock".

The objective here is to model the Wage Theft phenomenon as the outcome of the behavior of a representative firm that it is using coercive power to solve the problem of getting real or effective labor out of the labor force it has hired in the labor market.
For that, the following assumptions are made:

1. I will distinguish between *production* workers (L) and surveillance workers or guard labor (L_G). The first ones are the workers who directly or indirectly (coordinating the labor process) make the goods that the firm sell. The surveillance workers (or guard labor) are not *productive* in this sense because their function is controlling the effort level of the productive workers instead of producing the goods.
2. The labor technical productivity (n) of the productive workers (per hour) is *constant until full employment of the factor capital in the firms*[19]. So I do not suppose decreasing marginal labor productivity as it is usual in neoclassical models.
3. I will suppose that the economy that will be studied is a *non-walrasian* economy, in the sense that the information is not free (Stiglitz, 1993) and to obtain it is costly (thus, detect shirking is costly). Also, I will suppose the existence of *transaction*

[19] So, I am assuming a fixed-coefficient technology or *Leontief Technology*. An assumption that is common in post-keynesian economics (Godin, 2014). This assumption allows an easy modelling and does not affect the objective of the model: the analysis of Wage Theft.

costs[20] (cost related to hiring or firing workers in the labor market) and, fundamentally, *enforcement costs* (cost of enforcing the contracts -specially the labor ones-)[21].

4. As in the model of Bowles (1985) I will assume that "labor is homogeneous, that the employed and unemployed are otherwise indistinguishable, that there are not employer costs of selection or on-the-job training, that workers are risk neutral, and that all markets are competitive in the sense of a multiplicity of noncolluding buyers and sellers" (Bowles, 1985, p.20).
5. A Marxian model of the type of productive process, as described before, inside the firm will be used, since what it is sold and bought in the labor market is not *work* or labor, but the *capacity to perform a job* –or *labor force* (Marx, 1968, p. 50). The problem that the employer is facing, then, is how and how many effective work he can get out of that capacity to work that he has bought (or hired, to employ a more adequate term) in the labor market.
6. For simplicity, I will assume that the production process will be analyzed in the short run (in other words, the stock of capital is fixed).
7. The price of the product that the firm sells and the hourly wage (*w*) of the workers it hires are exogenous to it. So, I am supposing a price and wage accepting firm[22]. As I do not study changes in the product price nor the (money) wage, the model is in real terms.

3.2. The level of effort as a variable

After the above assumptions, we can understand the process of labor hiring and using by the firm as a two-part process. First, it must determine how much labor needs to hire to produce and supply the quantity of goods that its market demands, that is, that it can sell –given the product price- getting enough income to cover all the costs profit. Given a technical labor productivity, *n*, and supposing it can sell potentially *X* units of product, we can write, it will hire *L* units of labor:

$$(1)\ \boldsymbol{L = (1/n) \cdot X}$$

[20] Without transaction costs the use of power would not have any sense, since the employer could hire and fire workers or modify their contracts at any moment in time to adapt the workforce to each labor activity without any additional cost.
[21] Thus, there is not perfect competition.
[22] So the firm do not have any *economic* power and behaves in the product and labor market as if they were perfect competition markets

I will measure the labor hired in hour terms. But we can express it in number of workers employed. If *d* is the working hours per day, then *h* would be the workers hired:

$$\boldsymbol{h = L/ d}$$

But *L* is not the amount of working hours really or effectively worked because there is a conflict of interests between employers and employees, since, as it was said before, for the workers the effort of working is considered as something that is necessary but that is unpleasant[23] (Masters, 2012; ; Bowles, Foley and Halliday, 2017, p. 462) so they will try to shirk (Stiglitz and Saphiro, 1984) as much as they can do it without risking being fired, and to perform activities that are not related with the job. As Bowles et al (2017, p.462) points "The worker considers her income (…) from either the employer as a wage or other sources to be a good and her effort to be a bad". Then the utility of the worker is defined by ***u(w,e)*** where *w* is her hourly wage and *e* is the effort performed at work. The utility of the worker, then, depends positively on the first and negatively on the second: $u_w(w,e)>0$ and $u_e(w,e)<0$.

Then, as in the model of Skott and Guy, the worker's choice of effort at work "is determined by the cost of job loss and the sensitivity of the risk of job loss to variations in effort" (Skott and Guy, 2007, p.125), thus, the effort levels of workers will be determined by the effect of effort on the expected duration of the employment contract, the disutility associated with the effort, the average wage, the unemployment rate (since a higher unemployment rate works as a proxy for the probability of getting unemployed and also as a proxy of the length of unemployment in the case of being fired) and the rate of unemployment benefits. Some of these factors may lead workers to work, voluntarily, more hours than would have been hired. This is the situation studied by the efficiency-wage models.

So, due to all of this, there is a second part in the labor hiring and using process as the hours of effective work will not coincide, usually, with the hours of hired work -*L*- (if the levels of effort are reduced -or if they are lower than what the employer has hired-, the effective or real working-day is lower than the hired working-day)[24]. Then:

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[23] "Increasing the level of work intensity has been found in a variety of studies of well-being at work to lead to substantial reductions in welfare, as measured by job satisfaction and by indices of affective well-being" (Green, 2004)

[24] It is usual that in all labor contracts there are provisions that stipulate that there are periods of time of the hired working day in which, due to different reasons (lunch time, resting periods…), workers are legally allowed to not work (therefore, the effort level that is hired is $e<1$, due to these not-worked working time).

$$(2)\ \boldsymbol{L^e = L \cdot e}$$

Where L^e are the hours of effective work and e is the intensity of the work effectively performed (the effort[25]). With this in mind, the effective or real firm's output X^e can also be expressed in relation to L^e.

$$(3)\ \boldsymbol{Xe = n \cdot L^e = n \cdot e \cdot L}$$

Where X^e is the total output of the firm and n is the technical productivity of each hour of work (or potential productivity) given a technology and a stock of capital, which is the one that can be obtained if the worker is performing at the level of effort $e = 1$. With a Leontief technology, as it has been assumed, n is constant in the model. In consequence, $n \cdot e$ is the *effective productivity*[26].

In consequence, there is also a difference between the *hourly wage* -the market wage, w, and the wage for effective hour of work or *implicit wage*, w^e. The last one is referred as the "cost of a unit of effort" in Bowles, Foley and Halliday (2017, p.474).

$$(4)\ \boldsymbol{w \cdot e = w^e} \quad \text{which can be written as} \quad \boldsymbol{w^e = \frac{w}{e}}$$

As e represents the efficiency/intensity (effort) with which the employee performs her work. As this level of effort performed in the job will depend, as it was stated before, on the worker's choice, as well as on the norms established inside the working group[27] and of the pressures and incentives of the employer (Bowles et al. 2017, p. 472), which is to say, from the use of the three different sources of power defined above, it implies that the worker has some capacity to determine her effective or implicit wage . So, whenever $e<1$, the implicit hourly wage is higher than the market hourly wage. And the lower the effort level, the higher the implicit wage that the workers can get for their work.

But in this model, I will not consider this hired labor time that is not worked. So, I assume that the hired level of effort is $e=1$.

[25] As Bowles, Foley and Halliday (2017, p. 461) points out "by effort we mean the mental or physical work that is necessary for production to take place" or the amount of hours that have been worked in a day.

[26] Bowles et al (2017, p.462) consider that the output per period only depends on "the effort the worker exerts (…) and the number of hours for which workers are hired", here I just added an additional term that is the productivity, but since it is constant over time, it will not imply a significant difference with the other model.

[27] The working group can also affect the level of effort (e) performed by a worker because if the worker tries to shirk, the other workers can punish her because that situation would mean that the rest of the workers have to do the work that should be made by the shirking worker (this is the Hobbesian problem referred in Section 2). Then, the norms and control mechanism that exists between workers can help to avoid the problem of the "free-rider".

Analyzing the intensity/efficiency of work (effort) at which the workers can perform at their job, two different extreme situations can be found: one that represent the minimum level of effort and other representing the maximum.

The *minimum level of effort* performed on the work by the employee will be represented by e_m. To define this minimum level, it is necessary to look at the function of profits of the firm. It is important to point out that it is in the interest of the employee to work, at least, at a certain minimum level of effort (even though she would like to shirk of her obligations) because with that minimum level of effort she can be sure that the firm will get enough profits to avoid the capitalists to close the firm, so the worker can maintain her job. As Bowles (1985, p.19) states:

> "(…) employers and workers have a conflict of interest in the production process in the (…) sense that the employer's interests (as measured by profits) are enhanced by being able to compel the worker to act in a manner that he or she otherwise would not choose. Th[e] conception of a conflict of interest does not imply that the employer and the worker have no common interests, or that, if left to their own devices, labor would choose not to produce anything at all".

If the exogenous price at which the firm can sell its product is p, the income it gets for selling it is:

$$\boldsymbol{Y = p \cdot X^e}$$

and the *minimum level of gross profit* for a firm to stay open will be represented by B_m

$$(5)\ \boldsymbol{B_m = Y - w \cdot L = p \cdot n \cdot e \cdot L - L \cdot w = L\,(p \cdot n \cdot e - w)}$$

and the *minimum profit rate over the wage costs* as:

$$\boldsymbol{r_m = \frac{B_m}{w \cdot L}}$$

So we can express the minimum level of profit as:

$$\boldsymbol{B_m = r_m(w \cdot L)}$$

If we normalize and suppose $\boldsymbol{p = 1}$, the minimum level of effort at work performed by the worker as:

$$(6)\ \boldsymbol{e_m = \frac{w}{n}(1 + r_m)}$$

The minimum level of effort at work will be higher when the hourly wage is higher (Bowles et al, 2017; Saphiro and Stiglitz, 1984; Pacitti, 2011), the lower is the technical

productivity or the higher is the minimum level of the profit rate that the firm requires for not closing.

Bowles et al (2017, p. 472) point that "(…) additional effort is increasingly hard for the worker as she approaches the maximum (…) work effort" and that "working harder is still unpleasant" (Bowles et al. 2017, p.470-471). From this idea, we can assume that there should be an *economic maximum level of effort* at which the worker would voluntarily accept to perform. Here it will be call it e^*. This maximum level of effort[28] is determined by the worker in the point in which the utility of being employed equals the utility of not been employed, which is determined by the *reservation wage* (w_R) or fallback position, as Bowles et all (2017) call it. Then, e* is the point in which $\boldsymbol{u(w,e^*) = u(w_R)}$ and it refers to the effort level in which the worker is indifferent between maintaining the job or losing it.

For simplicity, here I will assume that the worker can access to a reservation wage -w_R- (the income the worker has once she is not in a job anymore) without needing any work effort, this means that to obtain unemployment benefits or similar she is not required to perform any type of activity or to accomplish any test (so, it can be understood as an unconditioned unemployment benefit). Then, if we suppose that the utility function of the worker is:

$$(7)\ \boldsymbol{U(w,e) = aw - be}$$

where *a* is a measure of the (marginal) utility of money (that I suppose constant), and *b* is a measure of the (marginal) disutility of work effort (that I also suppose constant)
Then, the maximum level of effort e* (voluntarily accepted by the worker), not the *biological* one but the *economic* one, is calculated by equalizing the utility derived from working (*aw-be)* with the one from not working (defined using the reservation wage):

$$aw - be = aw_R$$

$$a(w - w_R) = b \cdot e$$

[28] There is a biological maximum level of effort that the worker can perform. Here, it is defined by e_M. This level is limited by the biological characteristics of each worker, and a worker cannot perform at a higher rate or increase the maximum level of effort. Here I suppose that after that level of effort the worker would die of extenuation, so it represents an absolute limit to the level of effort. Even so, in this model this maximum level will not be considered because to achieve it will require the use of physical violence. Then, to perform at that maximum level of effort will be limited to situation as a forced labor camp. In this model I will refer the economic maximum level of effort as the maximum level of effort, and the one introduced in this footnote will not be considered.

$$(8)\ \boldsymbol{e^* = \frac{a(w-w_R)}{b}}$$

And the minimum level of implicit wage that the worker could accept is determined by[29]:

$$w^{e*} = \frac{w}{e^*} = \frac{w}{\frac{a(w-w_R)}{b}}$$

$$(9)\ \boldsymbol{w^{e*} = \frac{w \cdot b}{a(w-w_R)}}$$

So the minimum implicit wage the worker can accept depends positively on the reservation wage and negatively on the market hourly wage[30]. This minimum level of implicit wage determines the extent in which the employer can incur in Wage Theft activities against the employees.

3.3. Wage Theft and level of effort.

The acceptance or not by the worker of Wage Theft conditions in this model depends on the result of the conflict between the employer and the employee over the level of effort. On the side of the employee, the acceptance of situations of Wage Theft by the worker will depend on her bargaining power, the situation of the economy and her fallback position (defined, for instance, by her income, her reservation wage, the existence of unemployment benefits and similar). To clarify this, for instance, and as it has been stated before, the existence of unemployment forces the employee to accept worse labor conditions (as can be increase her time at work). The worker does that to avoid the risk of being fired and stay unemployed for an unknown period of time[31]. Also, her bargaining power can be influenced by being in a trade union or not (or the existence of them), since trade unions, if they have enough force (measured by their unionizing rate), can push employers to stablish better labor conditions. Another example is the existence of unemployment benefits. For instance, if they are low enough, the worker will be ready to accept situations of Wage Theft to avoid the unemployment, since her income will be reduced too much (as well as her fallback position). All of this explains how the worker

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[29] $w^{e*} > w_R$ because at w_R, outside the job, the worker does not experience disutility from working. So, to compensate this disutility associated to the increase in work effort, in the worst situation (when she is performing at a level of effort e^*), the worker must get an implicit wage higher than the reservation wage, that is, to get the same utility while working as when non-working.

[30] $\frac{\partial w^{e*}}{\partial w} = \frac{-abwe}{[a(w-w_R)]^2} < 0$

[31] Then, in the case of full-employment, the bargaining power of the employee will be higher, and she would not accept a job that implies Wage Theft since it is easy for her to find another job.

will behave and when she will accept situations of Wage Theft or when she will leave the job[32].

Figure 1 shows that, given an hourly wage (w)[33], the level of effort at performing some work will affect the implicit wage rate (w^e) and how, from this relation, we can explain the conflict inside the production process and the Wage Theft phenomenon.

The equilateral hyperbola of Figure 1 is the representation of equation 4 for a given market hourly wage (w). So, it shows for a specific hourly wage (w) the different combinations of implicit wage (w^e) and effort (e) performed by the worker that are compatible with that market hourly wage. When the worker performs at a level of effort less than $e=1$; her implicit wage (w^e) will be higher than the hourly wage that the employer pays to her. In these situations, the worker would have succeeded in shirking.

Additionally, this curve will serve to calculate the value of the Wage Theft since, if we consider situations of unpaid overtime or working off the clock, this will be calculated as the amount of unpaid overtime (in hours) multiplied for the hourly wage. Then, Wage Theft happens when the implicit hourly wage is lower than the market wage rate ($w^e<w$). In other words, when the level of effort that the employer can extract from the workers is bigger than 1 ($e>1$).

$$value\ of\ wage\ theft\ (VWT) = unpaid\ overtime \cdot hourly\ wage$$

Then,

$$VWT = w(L^e - L)$$

So:

$$\textbf{(10)} \qquad \boldsymbol{VWT = w(e^* \cdot L - L) = wL(e^* - 1)}$$[34] [35]

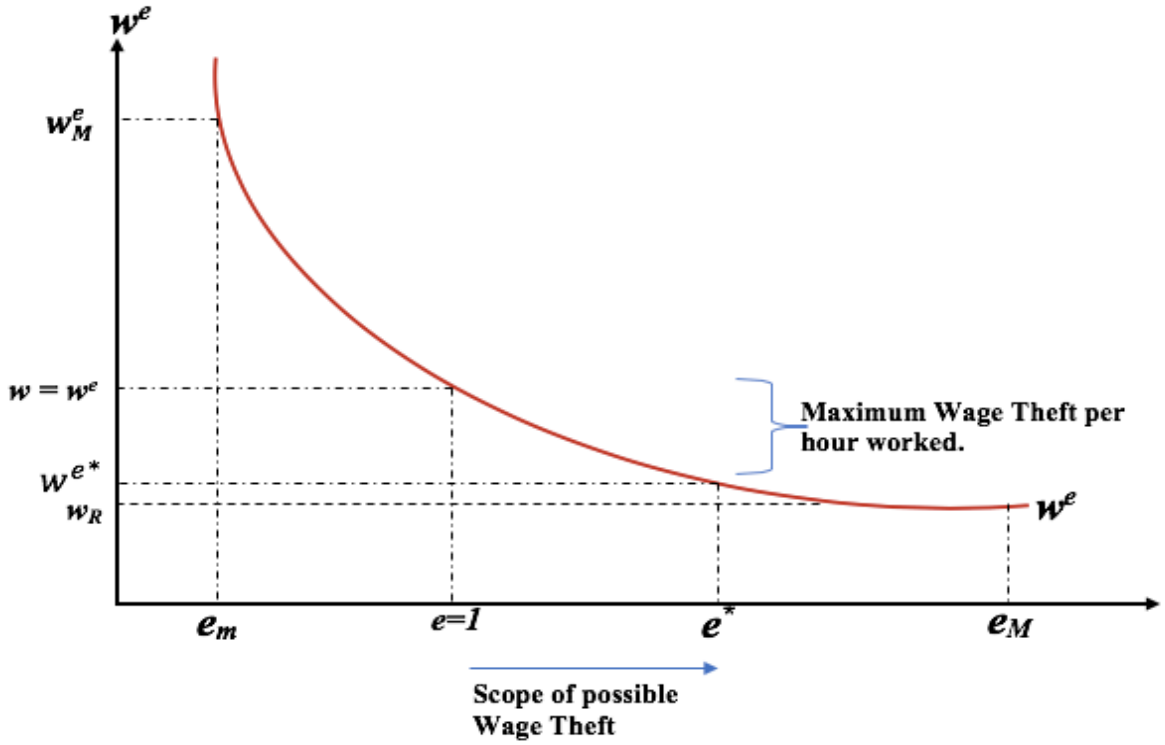
[32] If the economy is buoyant and the level of unemployment is very low, her fallback position is high, etc. The worker will not accept those worse labor conditions (as can be working more time that she was hired for).

[33] To develop the model, I will suppose that the hourly wage is fixed or exogenous to the firm so both employers and employees cannot change it.

[34] That can be written also as: $(w - w^e)L^e = wLe^* - \frac{w}{e^*}e^*L = wL(e^* - 1) = w(L^e - L) = VWT$

[35] Here I am always supposing that $e^*>1$, that is, there is Wage Theft. But when $e^*<1$ the value of Wage Theft would be negative ($wL(e^* - 1) < 0$). In this situation, workers would be shirking, and maybe I can talk about this as a Profit Theft.

FIGURE 1. Hourly Wage, Implicit Wage, Effort and Wage Theft.



Looking at Figure 1[36], we can see, as it was stated above, the minimum level of effort, e_m, performed by the worker. This is the minimum level of effort at work that the

[36] To understand the model better I will use a real case that has appeared recently in the Spanish newspaper *El País* (Vadillo, 2019). This article shows how Wage Theft happens in a real setting.
The article introduces Bachid, a day laborer worker who works picking fruits and vegetables in a firm in the south of the country, and his situation.
According to the Spanish labor law, the minimum wage has to be of 900€ per month. That is translated in an hourly wage of 6,93€ per hour of work given the legal working day. But Bachid complains that he receives only 5€ per hour of work.
If we look at Figure 1 this implies that the wage per hour according to the law should be 6,93€, and that amount corresponds with the point $w=w^e$, the wage when the level of effort e=1. This is, probably, his real level of effort, which can be assumed because he works in a small farm and he is always under the surveillance of his employer (so it is very difficult to him to shirk at work).
But as Bachid complains, he is receiving only 5€ per hour of work. In the Figure 1 this corresponds to the point w^{e*}. In other words, he is being paid less than what is established by law (his effective hourly wage, $w^e = 5€ < w = 6{,}93€$).
Then if Bachid is obtaining 5€per hour of work this would imply that he is suffering from Wage Theft. The level of Wage Theft, measured as an effort level higher than the level e=1, he is suffering each hour can be calculated as:

$$6{,}93 \cdot 1 = 5(1 + x)$$
$$x = 0{,}386$$

So, given his hourly wage, Bachid is working *AS IF* his level of effort were of 138% (this is the point e^*) because he works more (unpaid) hours in excess of his working day. The scope of the Wage Theft is of the 38% (difference between the point e^* and the point *e=1).*

employer can get from the workers since the workers themselves are interested in performing, at least, with a certain level of effort that assures them that the firm will obtain certain profits that avoid it from closing. Also, this minimum level of effort shows the intention of the worker to avoid being fired because of shirking (Bowles et al. 2017, p.466) because, as Pacitti (2011, p. 3) points out "shirking models stipulate that if any worker is detected providing an unacceptably low level of effort he will be fired".

Then, the problem the employer must face is how to make the workers to perform at a higher intensity of work than the minimum voluntary one (e_m)[37] . When workers perform at the minimum level of effort, the firm will be obtaining minimum profits while the workers would be obtaining a maximum *wage for an effective hour of work,* w^e_M:

$$(11) \qquad \boldsymbol{w^e_M = \frac{w}{e_m} = \frac{w}{\frac{w}{n}(1+r_m)} = \frac{n}{(1+r_m)}}$$

When the worker is performing her job at a rate of effort equal to unity ($e=1$), then the implicit wage (w^e) will coincide with the market hourly wage (w) and the worker would be working the total amount of the hours she has been hired for.

Because the employer's objective is to push the worker to work at a higher rate of effort than the minimum voluntary one, something that the workers, after being hired, will not do it by their own will (since the effort is a disutility to them), all the points that are at the right of the point of the *minimum effort* represent conflict situations between the employer and the employee (principal-agent problem), and the outcome of this conflict will depend on the relative power of each part, as it will be shown below.

3.4. Wage Theft and the use of power inside the firm.

Then, all the points that are at the right of the point $e=1$ until point e^* represent the *scope of possible Wage Theft* (at least the types of Wage Theft that are analyzed here) since the

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Although this is only a particular case where there is a extreme Wage Theft situation, because Bachid is an illegal worker -without official papers-, in the same article (Vadillo, 2019) it is mentioned a report from the Spanish trade unions that points out that in this agricultural sector, around an 85% of the data in the workers' official paycheck is fictitious and that this type of situations of Wage Theft are more common in the small firms than in the medium ones. As it is mentioned on the article "small firms pay on average between 5,70 and 6,20 euros per hour and the medium firms around 6,30 and 6,70 euros" (Vadillo, 2019). This implies that the scope of Wage Theft for the small firms is between 21,5% and 11,8% for the small firms and between 3,4% and 10% for the medium size firms.

[37] Using a Marxian definition, what the employer is trying to do is to extract the greatest amount of work from the labor power that they have bought (Marx, 1968).

level of effort *e=1* represents a situation where the workers are working exactly the amount of hours that they have been hired for and e^* is the maximum amount of hours that the worker would accept to work. It must be stressed that levels of effort at work higher than *e=100%=1* are impossible to achieve in the real world[38]. In this model I use these levels of effort above the unity as a mean to represent the Wage Theft phenomenon, as it is the worker working more hours than she has been hired for. So, for instance, if *e=1,5* this do not represent that the worker is working at a rate of effort of 150% (which is physically impossible), but that she is working fifty per cent more hours each day without being paid[39].

The point e^* represents the maximum effort level of Wage Theft that the employer can obtain without using physical violence (with it the employer can obtain more effort, but this would be considered as Wage Theft but with forced labor, then the use of violence represents an extreme case), because the level of utility that the worker gets by being paid an hourly wage *w* and working at a e^* level of effort would be the same that she gets by being unemployed.

If we look at Figure 1, the point e^* is at the left of the point in which the "effective hourly wage" coincides with the reservation wage. This is so because the worker would never accept to work at a higher effort than e^* because, as the effort is a disutility for her, she would rather become unemployed and to obtain the reservation wage than to work harder than the e^* level and keep the job. Then, Wage Theft situations happen from the point *e=1* until a maximum point of effort e^*.

But, as it was said before, Wage Theft situations are the outcome of a conflict between the employers and the employees about the level of effort and/or the hours worked, and more concretely, when the employer is the one who "wins" the conflict[40]. Then, it is needed to explain how the employer can win (or loose) the conflict. Or in other words, how can the employer get more hours of work from the labor force he has hired?

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[38] Only in a metaphorically way I talk that she works at a 150% rate.

[39] As a special case, all the points that are situated between the point of effort e^* and the maximum level of effort (e_M) represent situations in which the employer would need to recur to the use of violence to achieve that level of effort (as, for instance, the situation in a forced labor camp), but this situations are outside the scope of this paper.

[40] So, if e<1, the worker wins; if e=1 there is no winner and no loser and if e>1 the employer wins.

In this fight, both employers and employees can use all the powers at their hands.

One of the ways the employer has to get more effort from his employees is through the use of his *persuasive power*, in the sense that the employer may convince the employees that they share all, or part, of the employer's interest[41], so they, voluntarily, accept to "work harder" (increase their effort or, in other words, work longer hours)[42] but this would not be Wage Theft. Usually, this is made through some kind of interiorization by the workers of the so-called "firm culture" (or business culture), through which the employer makes the employee feel that she is part of a whole, that the firm is like "a family" so the worker feels a personal link with the firm and wants to achieve the objectives of her employers, so she voluntarily increases her effort at work. Even so, this type of situations will not be analyzed here since the use of persuasive power is more related to the psychology or the sociology of the firm and not to economics and, also, due to the limitation of the extension of the Master's Thesis (60 pages) and, additionally, because this type of power cannot generate situations of Wage Theft since the change in the behavior of the workers is voluntary through a change of their preferences (see section 2.2).

Another way through which the employers could increase the amount of work that they extract for the labor power they have hired is through the use of *coercive power*, that is when the employer makes the employee to work harder (increase her effort at work) in a non-voluntarily manner due to a credible threat of suffering some kind of punishment (usually by being fired, although there can be other forms of punishment as, for instance, not being promoted). For this type of power to be effective, it is needed that:
a) The employers have the capacity to detect those behaviors that do not coincide with their objectives. So, Bowles (1985) stressed that the existence of surveillance inputs[43] are positively related to the effort performed by the employee in her work and Pacitti (2011)

[41] New "techniques" to achieve this higher level of effort at work include "human resources methods such as empowerment, mentoring, and employee involvement through consultation meetings and other means of intrafirm communication, as well as paternalistic fringe benefits and training geared to engender commitment" (Green, 2004, p.718)
[42] Also, in this point, the situations in which an employee decides to increase their effort voluntarily to increase their future labor options, their status inside the firm and so on, are included.
[43] "Examples of monitoring techniques include increasing the quantity of supervisory labor and the use of surveillance equipment, such as keystroke logging, internet monitoring, surveillance cameras, and GPS tracking devices" (Pacitti, 2011, p.8) also through the automatization of the productive process since in that situation is the 'machine' the one that establish the working rhythm to the worker and the hiring of the so-called *guard labor* (Bowles and Jayadev, 2006; Perelman, 2010) -foremen and similar.

points out referring to the work of Skott and Guy (2007) that "firms can (…) employ monitoring techniques to ensure that the workers are not shirking (…) there is a positive relationship between the amount of supervision inputs and the (…) effort exerted (…) the increased use of monitoring technology reduces the bargaining power of labor" (Pacitti, 2011, p.8).

b) The employers can punish those workers that shirk. The most obvious way to do it is by firing the worker. Firing as a punishment depends on the alternatives that an unemployed worker has, it is said, it depends on the *opportunity cost* of being employed. Therefore, if her reservation wage is low, the possibility of finding another job is also low or the duration of the unemployment benefits is short, higher is this opportunity cost, and higher is the effect of firing as a threat as a weapon against shirking workers or as a mean of getting Wage Theft[44].

Thirdly, the employer can also use their *economic power* to increase the level of effort of his employees. This can be done by changing the restriction of the workers (through changes in their hourly wages) so they will, voluntarily, increase their effort at work. This idea is the one that is used in the models of *efficiency wages* (Saphiro and Stiglitz, 1984). It is important to stress that the use of economic power do not lead to Wage Theft, as the worker freely and voluntarily exchanges more working hours or more effort at work for a higher wage.

3.5. The use of coercive power: how Wage Theft happens.

As it was just stated, situations of Wage Theft can happen only through the use of the coercive power by the employer, since it would be necessary the use of this kind of power to push the worker to work more hours than she was hired for, when there is not any type of valuable compensation for that additional effort.

To explain the use of coercive power to solve the conflict of interest (in the sense of a Nash equilibrium in Game Theory, so by solving the conflict here, it cannot be understood the solution of the conflict in an ethical, equitative or even in a Paretian sense -see the definition of power in section 2.2, page 18) that exist between the employer and the

[44] To understand the importance of the existence of unemployment in determining the effort performed by the workers see Bowles et al (2017, p. 468), Saphiro and Stiglitz (1984) and Bowles (1985).

employee (principal-agent problem) I will use the approach to the use of power in the *Economics of Conflict* approach developed by Hirshleifer (2000).

From now on, *z* will represent the percentage of the maximum effort above the minimum effort supplied by the worker ($e^* - e_m$) that the employer can obtain from the worker through the allocation of resources to surveillance and control of the employees[45]. The extra effort in the work that is achieved by the use of coercive power (e_c) is:

$$(12) \qquad \boldsymbol{e_c = z(e^* - e_m)}$$

Although, it must be stressed again that only a part of this extracted effort, of this extra work extracted from the labor force over the preferred one by the workers would be Wage Theft (the effort levels over the level of effort *e=1* until the point e^*).

The *effectiveness of the coercive power (z)* in the conflict with the worker on the level of effort performed at work may be formalized using the *ratio-form* of the "contest success function" (CSF) Hirshleifer uses in his approach to the effectiveness of the relative forces two contestants use in a contest on a disputed resource. As it can be supposed, the effectiveness of the means a contestant use in a conflict not only depends on its volume and efficacy but on the volume and efficacy of the means employed by his adversary. In the *ratio-form* of the CSF, the effectiveness or relative power of a contestant depends on the *relative* level or *ratio* of the volume of "forces" or "weapons" that he and his adversary put into the contest[46].

In this case, the contested "resource" is the level of potential extra effort *(e^* - e_m),* and the "contest success" function of the employer can be defined as:

$$(13) \quad \boldsymbol{z = \frac{(\beta \cdot l_g)^{\alpha}}{s + (\beta \cdot l_g)^{\alpha}}}$$

[45] "One important explanation for the intensification of work lies in the technological changes of recent decades. (…) These changes are associated with the changing competitive environment and the changing structures of power between capital and labor (…) On the other hand, there have been pervasive developments in managerial strategies affecting the way work is organized and controlled" (Green, 2004)

[46] There are other types of CSF, as the *logistic-form*, in which the relative forces of the adversaries are measured as differences (not ratios) of their quantity of weapons. Here, I use the *ratio-form* because its mathematical use is simpler, but this choosing do not affect to the implications of the model.

This *effectiveness of the coercive power*, that is the percentage z of differential work effort that can be obtained through the use of coercive power, depends:

1) The "weapon" employer has to surveillance or control workers. Here, I will supposed that this is the guard labor and will be measured by the ratio of the "army" of the guard labor (L_G) at his disposition in relation to the productive labor workers it has to control, $l_G = L_G / L$. This relative force would reach a maximum when there would be a surveillance worker for each productive worker, then $l_G = 100\% = 1$. It is obvious that this situation will never happen because it would be completely inefficient.

The effectiveness of the coercive power of the employer grows as the proportion of guard labor increases, the same does the effectiveness of the coercive power[47]:

$$(14) \quad \boldsymbol{z'_{l_g} = \frac{\partial z}{\partial l_g} = \frac{\alpha \beta s (\beta l_g)^{\alpha-1}}{[S + (\beta l_g)^{\alpha}]^2} > 0}$$

2) The productivity of the guard labor, here represented as parameter β, that express the capacity of the guard labor to detect workers that are shirking. β[48] will be called *differential productivity of the guard labor*. This variable will depend on factors that influence the capacity to detect shirking, as can be the use of surveillance mechanisms -for instance, cameras-. As Guy and Skott (2007) points out, firms can increase their capacity to detect workers from shirking and to extract more effort from the workers through the adoption of technologies that increase the monitoring ability of the employers (or of the guard labor). The adoption of this type of technologies is called *power-biased technological change* (PBTC) and it "can be viewed as a reduction in the power of workers" (Guy and Skott, 2007).

So, in the model presented here the adoption of this type of technologies (i.e. surveillance technologies) can be understood as an increase in the *productivity of guard labor* since

[47] Then $z'_{l_g} > 0$ and I will also suppose $z''_{l_g} < 0$, which implies that the marginal productivity of the surveillance decreases when the hours of surveillance increases. That is the CSF z presents decreasing marginal returns on l_G.Then, if the amount of surveillance labor increases, the percentage of the effort of the differential work that the employer can obtain through allocating resources to surveillance and control increases slowly.

[48] It is important to note that β is positively affected by the system of payments inside the firm (i.e paying "by the job" -or *rate-pay*- will facilitate the surveillance tasks because the workers have an incentive to work harder -increase their effort- to obtain a higher wage).

the adoption of these technologies facilitate the job of the guard labor[49]. To make this point clear, I will use an example: let us assume that a firm invest in some power-biased technologies (as can be the use of cameras inside the firm), then, with the new technologies a single foreman can monitor more workers than he can do it without the technologies, so the firm do not need to hire so many guard labor (in the absence of the power-biased technologies the firm would need more guard labor to be able to monitor all the workers, since it will be harder to detect those workers that are shirking).

Green (2004) also points out the importance of the technologies used by the employers to control and monitor employees and extract more effort from them, according to Green:

> "One important explanation for the intensification of work lies in the technological changes of recent decades. Ultimately, these changes are associated with the changing competitive environment and the changing structures of power between capital and labor (…) New information technologies have revolutionized the control of workflows (…) Technological and organizational changes can both make it easier for managers to monitor the pace of work" (Green, 2004, p.713-714)

So, the effectiveness of the coercive power will grow as β grows:

$$(15)\quad z'_{\beta} = \frac{\partial z}{\partial \beta} = \frac{\alpha s \beta (\beta l_g)^{\alpha-1}}{[S + (\beta l_g)^{\alpha}]^2} > 0$$

3) Against the coercive force of the employers, the workers also have their resistance force or *countervailing power*. Historically, the response or resistance capacity of the workers against the employers has laid in the unity of the workers, in their behavior as a single individual. And here, we can think that if all the workers shirk at the same time and in the same scope, the coaction power of the employers will be reduced.

Here, in the model, this countervailing power will be represented by the proportion of workers that are unionized and can behave in common, as a monopoly, in the conflict against their employer. The force of the workers in the conflict with the employer will

[49] As the employer uses technologies in the production process that multiply the productivity of the productive workers; the employers also use technologies to multiply the productivity of their surveillance workers (guard labor). Nowadays, many information technologies are of this type of "power-biased technologies".

reach a maximum value when all workers are unionized, that is when the unionization rate, *s = S/L,* is 100%.

So, the situation or force of the labor unions in the economy can have an impact in the actions of the employer since if the union affiliation is decreasing (reducing the trade unions' bargaining power through reduction in the number of unionizing workers) the power of the bosses increases relatively (Green and McIntosh, 1998). Although this will depend on the model of collective bargaining[50].

So, in general, if the unionizing rate increases, the effectiveness of the coercive power of employer will be reduced

$$(16)\quad \boldsymbol{z'_s = \frac{\partial z}{\partial s} = \frac{1}{[s+(\beta l_g)^{\alpha}]^2} < 0}$$

4) But the conflict between employers and employees inside each firm does not depend only on the relative forces of the "weapons" each side have, but also on the social, political and economic environment in which this conflict happens. So, the real effectivity of the surveillance force depends on what it is called the *decisiveness parameter (α)* that incorporates all these factors. The value of this parameter is determined by the situation of the economy and depends, among other things, positively on the unemployment rate (thus, if the unemployment rate increases, the cost for a worker of being fired is higher since it will be more difficult for her to find another job (Bowles, Foley and Halliday, 2017)), negatively on the firing-costs that the firm has to face when firing an employee (firing becomes more costly) and also on the existing unemployment benefits (if this unemployment benefits are higher, or if it is easier for the worker to access to them, the worker will see how her fallback position is being increased, so she will incur in less costs when being fired (Bowles et al. 2017) and, for that reason, she will be less willing to accept worse labor conditions). In the parameter *(α)* would also be the type of the labor legislation frame that enforces the labor contracts (if it is more or less in favor of employers) and other factors as the number of labor inspectors to detect Wage Theft situations, the number of labor conflicts courts, etc.

[50] In a 'closed-shop' model, the relative trade union's strength will be determining. In a 'general collective agreement' model, as it is the case of Spain, the trade unions affiliation rate is not a good measure of their strength as determining of the relative standing of the workers because the collective agreements cover all the workers in an economic sector, with independence if they are unionized or not.

Then, if the unemployment levels increase, the decisiveness parameter (α) will be affected *negatively*, as it would happen if there is a reduction in the cost of firing workers. This happens because when the probability of being detected shirking and the threat of being fired, if that is the case, increase, the workers will be less willing to shirk (Bowles, Foley and Halliday, 2017, p. 471-472). In the same way, a more tolerant and deregulated labor legislation also *decreases* parameter (α). So, we have:

$$(17)\ \boldsymbol{z_{\alpha}'} = \frac{\partial z}{\partial \alpha} = \frac{s\cdot[\beta\cdot l_g]^{\alpha}\cdot ln(\beta\cdot l_g)}{[s+(\beta\cdot l_g)^{\alpha}]^2} < \mathbf{0}$$

Because

as $\mathbf{0 \leq \beta \cdot l_g \leq 1}$ then $\mathbf{\ln(\beta \cdot l_g) < 0}$

FIGURE 2. Effectiveness of coercive power.

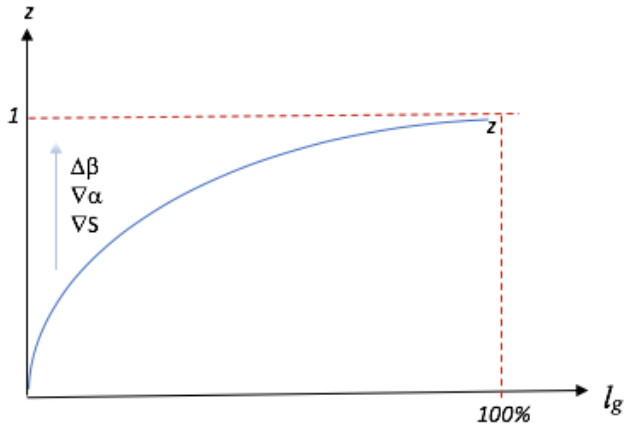

Figure 2 shows the CSF ratio-form for z depending only on l_g (thus, *ceteris paribus*) with arrows signaling the movements of the curve as α, β and s vary. From equation 17 we can see how rises in α decrease the effectiveness of the guard labor (moving downwards the curve in Figure 2), and that increases in β do the opposite (moving upwards the curve in Figure 2). An increase in the affiliation rate of trade unions move downwards the z-curve. It is important to note that, the lower the α-value the higher the augmented force of the employers because $\beta\, l_g<1$. If the value of the decisiveness parameter is 0[51], this do not imply that the employer do not have any coercive power at all, but the opposite[52].

[51] If (α=0) the effectiveness of the coercive power (z) will be $z = \frac{1}{(s+1)}$

[52] There is always coercive power because the workers when they accept a labor contract they accept to work and, in theory, to do it at a certain level of intensity (e=1). If they do not exert that effort they will not

Now the question is how much extra effort the firm can get using coercive power, in other words, how many resources (in this case, guard labor) the employer should dedicate to coercive power to maximize profits.

If we look again at the Figure 1, we observe that with the use of coercive power, the employer can move along the implicit wage curve (w^e), pushing the workers to work with a level of effort higher than the minimum one (e_m). This type of movement makes that the profits of the employer increase. Gross profits are (see equation 5):

$$B = (n \cdot e - w)L = (n\,(e_m + e_c) - w)\,L - w' \cdot L_G \quad (18)$$

Where w' is the hourly wage of guard labor. As the effort level is the sum of the voluntarily supplied effort (e_m and the effort get it by the employer thanks to his coercive power, e_c). If e increases, B does the same.

As the level of unemployment of productive labor is supposed to be determined by the product market, that is, by the product demand, maximizing profits is equivalent to maximizing profits per worker (b_c):

$$b_c = \frac{B_c}{L} = n[e_m + e_c] - w - w' \cdot l_g \quad (19)$$

If we substitute e_c by its value (equation 12), we obtain:

$$b_c = n[e_m + z(e^* - e_m)\,] - w - w' \cdot l_g \quad (20)$$

The first order condition of the maximization with respect to l_g is:

$$\frac{\partial b_c}{\partial l_g} = n \cdot z'_{l_g}(e^* - e_m)\; - w' = 0 \quad (21)$$

So, given a demand of its product, the firm maximizes its profits when it hires a level of guard labor so that (from equation 14):

$$z'_{l_g} = \frac{w'}{n} \cdot \frac{1}{(e^* - e_m)} = \frac{\alpha\beta s(\beta l_g)^{\alpha-1}}{[S+(\beta l_g)^{\alpha}]^2} \quad (22)$$

To profit maximization, then, the employer hires a level ratio of guard labor such that the slope of the CFS z_{lg} in equation 14 is equal to the equation 22. In the Figure 3, this is represented by the point l_g^*, which I will call the *optimum level ratio of guard labor*.

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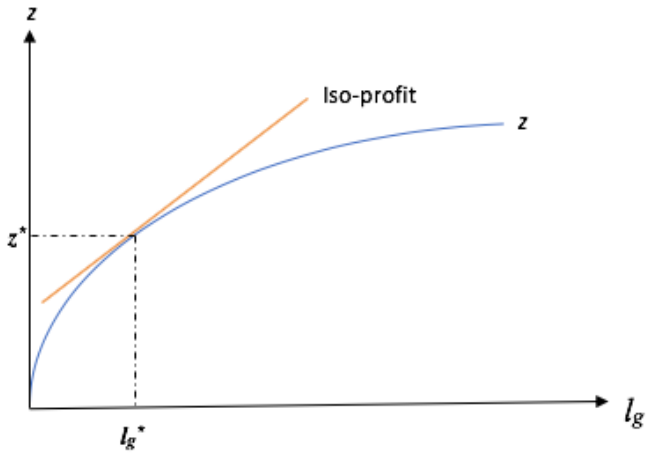
be accomplishing their contracts, and that is something that the employer can punish (but will depend on some factors as the unemployment rate of the economy)

In other words, when the condition stated by equation 22 is met, the firm reach the higher *iso-profit* curve in the space of combinations of *z* and l_g given the restriction of the CFS *z*. Then, in Figure 3 this optimum is achieved where the iso-profit curve is tangent to the restriction represented by the curve (*z*). That point corresponds to the optimum ratio of guard labor hired (l_g^*) that allows to obtain an optimum percentage *z* of the effort at work that is being disputed ($e^* - e_m$), given the wage of the guard labor (*w'*), the decisiveness parameter and the efficacy of the surveillance activities in detecting shirking.

FIGURE 3. Effectiveness of coercive power and iso-profit curves.



Once we have found the optimum ratio of guard labor, we can find the optimum level of z associated with it by substituting l_g *for* l_g^* in equation 20. Then, the optimum level of coercive power is:

$$(23)\quad \boldsymbol{z^* = \left(\frac{b^* + w + w' l_g^*}{n} - e_m\right)\frac{1}{e^* - e_m}}$$

Now, it must be remembered that Wage Theft situations happen when $e>1$, so the optimum level of coercive power (z^*) implies Wage Theft if:

$$(24)\quad \boldsymbol{e_m + z^*(e^* - e_m) > (e = 1)}$$

This will be called the *condition of Wage Theft*, from which we obtain:

$$(25)\quad \boldsymbol{z^* > \frac{1 - e_m}{e^* - e_m}}$$

If we substitute with equation the optimum level of *z* (*z**) for its value in equation 23, then we can obtain the *necessary condition for Wage Theft*:

$$(26)\quad \frac{\boldsymbol{b_c^* + w + w' l_g^*}}{\boldsymbol{n}} - \boldsymbol{e_m} > \mathbf{1} - \boldsymbol{e_m}$$

So, there will be Wage Theft if:

$$(27)\quad \boldsymbol{b_c^* + w + w' l_g^* > n}$$

From this equation we can see that the Wage Theft will happen when the optimum profit per worker, the hourly wage of productive workers and the product of hourly guard wage and guard labor ratio are higher than the technical productivity of the workers. Then, I can hypothesize that the Wage Theft that, in the short term[53], the firm can get from its employees will grow when the hourly wage increases (w), when the profit per worker (b_c) rises as well as when there is more guard labor (l_g) hired and the guard labor wage (w') is higher.

Now I have modelled the behavior of the employer to obtain more labor from the labor-force he has hired. This represent the end of this Section of the master's Thesis since it has been presented a model that describes how the Wage Theft happens as the outcome of the conflict of interest that exist between employers and employees, in the sense that the model theorizes how it happens and until which extent it could happen.

Section 4. Wage Theft in Spain: An empirical approach

4.1. Presentation: The Shortcomings.

In this Section an empirical analysis will be developed with the objective to illustrate the theoretical model presented in Section 3. To do so, I have performed a time-series analysis and run two OLS regressions on the Wage Theft phenomenon in Spain. But, before starting with the analysis, I want to clarify certain aspects of the design of this empirical section and the reasons that are behind such design.

First of all, it is important to stress from this very beginning the impossibility to contrast the theoretical model of Section 3 because both the dependent variable, in other words, the Wage Theft phenomenon, as well as some of the independent variables -that measure

[53] That is, given a constant technical labor productivity.

the relative power of each side of the conflict (between employers and employees)- still have not been measured as such, which means that, in most of the cases, there are no data available for them (as it has been stated by Anderson (2017) -see footnote 3-). This is why some of the variables that will be used here are not the best theoretical and direct indicators of what is trying to be tested here, but indirect or proxy measures because they are the only ones available, while some other important variables in the theoretical model are completely missing[54].

Given these problems of measure, I do not think this Master's Thesis to be a definitive research but, instead, I think of it as first approach trying to open a "new line" of research about this important topic in labor economics, even though it can only be illustrative due to the restrictions that have been found when collecting the data.

In the case of the dependent variable (Wage Theft), if I define it, as I do in the model, as unpaid worked hours or as extra effort level beyond the legally established, it is very difficult -or almost impossible- to find proper measures of it since it would be an illicit act carried by the employers, and, as it is obvious, employers will try to hide it, so they will not offer information of it (since that would imply that they are confessing that they are incurring in illegal actions, and they can be punished for it -both by the law or by the consumers due to the erosion in the firm image[55]) and the same happens in the case of the employees (they will not easily offer information about their labor conditions in the firm since they will not want to be punished for that -as they will be accusing the firm for

54 For instance, one of the independent variables that I wanted to include in this empirical section was the amount of guard labor (L_G) that is hired by firms in a country in a year. This variable would be very representative and useful to test the model since it is a direct measure of the relative force in the definition of the coercive power of the employers as it was showed in the model of Section 3. The reason behind not including it here is because the lack of data about this type of workers in the different databases of the country I am analyzing here -Spain-. Bowles and Jayadev (2006) did a first approach to this topic using data from the US in their analysis of guard labor obtained from the Dictionary of Occupational Terms (DOT), a publication of the US Department of Labor, but I could not use it here since, as it was mentioned before, the data is not available from the country I want to analyze (Spain) and also because in the measure of the guard labor used by Bowles and Jayadev, therefore the DOT, they include as "guard labor" some occupations that would not fit in the model introduced in Section 3. As Bowles and Jayadev (2006) state:

> "The labor force occupying the roles of guard labor identified in the model: supervisory labor, private guards, police, judicial and prison employees, military and civilian employees of the department of defense (and those producing military equipment), the unemployed, and prisoners"

In this model, for instance, I do not include as guard labor all those occupations as police, judicial and prison employees and the military employees since, even if they perform a controlling and monitoring job, they do not do it specifically to control or monitor employees in a firm, that is how I consider the guard labor here.

55 As it has happened with the Wage Theft done by transnational firms that make their production in developing countries.

performing illegal actions[56]). So, to sum up, it is very difficult to find data about unpaid overtime. Additionally, most official institutions have started to collect these types of data not so long ago. An explanation of the lack of this kind of data can be found in the first pages of Kim Bobo's book (2011), where the editor states:

> "The movement against wage theft was spurred by the first edition [in 2009] of this book illustrates the impact books can have on social change"

About the independent variables, there is a similar problem to illustrate the theoretical model presented in Section 3 as the one that happens with the dependent variable. In the model, the extent of Wage Theft that the employers can generate depends on the relative powers of both employers and employees. In that sense, at the moment of developing the empirical analysis, it is important to find correct measures of those relative powers. Again, the data about that is very difficult to obtain since there are no proper indicators of them and, in most cases, it is impossible to find out since there are not direct measures of these relative powers. Due to that, in some cases, the independent variables that are used here are proxies that will try to measure (as much as it is possible) the relative power of each side.

So, to sum up, and as it was stated before, this empirical analysis is focus on illustrate the model presented in Section 3 and to provide a "first step" in a research field that is extremely important nowadays[57] and that has received scarce attention from mainstream economics so far.

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56 Vadillo (2019) indicates, for instance, when referring to the case of Bachid (see footnote 36 for the complete story) that is not only that the workers do not provide information of their labor conditions to researchers or similar, they normally do not even complain to the justice (as suing their employers for not giving them the minimum wage or just rising a complaint about the labor conditions) for the fear of punishment. This can be exemplified when Vadillo (2019) states referring to Bachid:

> "After 20 years working in the fields of Murcia, Bachid, who prefers not to provide his real name because he is afraid of his talk can cause him problems, lost his job at the beginning of 2019 (…) Bachid is one of the few day-laborers who has dared to take the case to court and awaits the trial while he is squeezing the unemployment benefits"

And even in the case of Bachid, who is one of the few workers who has complained, he did so once he was fired, but no when he was working.

57 For instance, studies from the Spanish trade unions show that Spanish workers work around 2,36 millions of hours of overtime work per week without getting paid or compensated with break times at work (that happens in almost 50% of the cases). Also, of 753.000 employees that declare to have made overtime work during the last week, only 289.000 have been paid for it.

These situations are so common in the country that in 2019 a new law has been promulgated to enforce the regulation of overtime work by requiring to firms the establishment of controls to the worktime (as the use

Second, at the moment of collecting the data another problem has been found. This problem is the short period of time that is available for these measures. In most of the cases, the time span of the data provided by the different institutions covers only the period from year 2000 until year 2018, or even less -from 2008 until 2018-, this restriction affects principally to the measures of the dependent variables (different measures of Wage Theft) so, even though there is more data about other independent variables, this constriction forces us to restrict the length of the time period of the analysis. Again, the limitation of the data available shows the necessity to increase the empirical research about the Wage Theft phenomenon.

Due to this lack of data that force us to restrict my empirical analysis to a very limited period of time, I know that the econometric analysis is necessarily problematic. That is the reason why I have tried to compensate the lack of data by running not only one but two regressions with the goal of providing a clearer illustration of the model of Section 3 and to try to overcome, in some way, the implications of lacking data:

1) For the first regression the dependent variable will be the, officially provided, *rate of unpaid overtime over the total overtime worked* (a direct although incomplete measure of the Wage Theft phenomenon since what we need would be the total unpaid working time) and the length of the period described will be limited to the years 2008 until 2018. To avoid the problems of running an OLS regression with so scarce annual observations I have decided to take the data quarterly to have more observations in the sample, then instead of limiting the sample to 10 observations, I have 44 observations, increasing, then, its internal validity.

2) As the second regression I will introduce the *rate of absenteeism* at work as the dependent variable (an explanation for the reasons to use it will be provided bellow) and the length of time will cover a period of 19 years (2000-2018). As it was stated before, the choose of this time period is due to the lack of enough existing data about the variables I want to measure and, unlike the first regression, in this one it has been impossible to

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of clock-in at the beginning and end of the working day) to try to deter the off-the clock work and the unpaid overtime work (BOE, 12/03/2019).

find the data quarterly, so the size of the sample is limited to 19 observations. Again, even though I know that the period of time that will be used in this analysis is very short, I consider that, even so, the period used is, by itself, interesting to the full understanding of Wage Theft analysis. Between the years 2000 and 2018 the world economies have suffered different shocks and situations. For instance, the time period that is analyzed here includes the economic crash of the *dotcoms* in 2001, the global economic crisis of 2008 and its subsequent economic recession. Additionally, in Spain this period of time includes the effects of the Eurozone, two different labor reforms characterized by a deregulation of the labor market and a systematic worsening on the labor conditions of the workers of the country since the beginning of the economic crisis of 2008.

4.2.- Econometric Model.

The two models of Wage Theft I want to estimate are:

Regression 1:

$$WagT = \beta_0 + \beta_1 U + \beta_2 \mathrm{s} + \beta_3 resolconf + \varepsilon$$

Regression 2:

$$Absent = \beta_0 + \beta_1 s + \beta_2 U + \beta_3 b_c + \beta_4 Pyme + \varepsilon$$

Dependent Variables.

As the dependent variable for the first regression I will use the rate of unpaid overtime work over the total overtime done quarterly in Spain (*WagT*). This variable will try to measure the Wage Theft in one of its clearest and direct forms: unpaid overtime (here I will assume that it is involuntary). The data has been obtained from the database of the Spanish *Instituto Nacional de Estadística* (INE) and it has been completed and contrasted with the data from studies of one of the two most important Spanish Trade Unions, *Comisiones Obreras,* (CCOO, 2018 and Zarapuz Puertas, 2016). As it was stated before, there is a problem with the amount of data that is available. For Spain, the official institutions have collected this type of data from 2008[58] , so, there is no more data

58 The trade unions, the institutions that might be more interested in getting data about the impact of the Wage Theft in Spain, do not provide YET data about it. Even so, in 2019, in one of the trade union's magazines, an article about Wage Theft appeared (*Gaceta Sindical*, 2019). A fact that signal the relevance of this topic and how its importance and need to measure it is "gaining attention" of more and more researchers nowadays.

available than for a period of 10 years (2008-2018). This is the reason behind the short period of time chosen for the first regression, but, as I said before, I have tried to overcome this problem by taking the data quarterly.

For the second regression the dependent variable will be the rate of absenteeism at work (*Absent*). Absenteeism is defined as the percentage of the not worked but paid hours (excluding holidays, free-days and other legally non-worked time in the working day) respect to the effective paid working day accorded between the employers and the employees. The source data are the answers that the employers provide about the real work time their employees do, so it can be thought that it will be a very biased measure of the level of fulfillment of the labor contract both by the employees and by workers, because employers will not tell the hours that their employees do without being paid and, on the contrary, they will be very ready to point the cases where their employees fail to work. Therefore, it cannot be used as a direct measure of the Wage Theft phenomena. However, it can be argued that it can work as a proxy to it.

If we define i_a as the absenteeism index:

$$i_a = \frac{Not\ worked\ hours}{Paid\ working\ time}$$

$$i_a = \frac{Working\ time\ hired - Real\ worked\ hours}{Paid\ workingtime} = \frac{workingtime\ hired}{Paid\ working\ time} - e$$

So, we have:

$$i_a = 1 - \frac{L^r}{L} = 1 - r$$

Where L^r is the real working time the workers do, and r measures *the real working time respect to the working time hired,* r do not measure the same thing as e, the "effective" real working time (L^e/L). But it can be argued that r and e have a direct relation that allow the use of i_a as a proxy.

In fact, the same factors that increase the coercive power of the employers and that allow them to enhance their control of the real working time that the workers do, are the factors that allow them to do Wage Theft activities.

For instance, the index of absenteeism includes situations as sick leaves or hours not worked by familiar or parental motives. It is known that workers would indulge more easily in these kinds of leaves if they are more easily detected or if the risk of being fired is higher and the unemployment rate is higher too. By contrast, if the economic reality forces the employees to accept worse labor conditions under the threat of being fired, the workers will not take so many leaves as they would want or need due to the fear of losing their jobs, even though they suffer any real illness. For instance, as a survey of 2009 for the Sweden economy states: "the number of employees who fear job loss increases with the number of days that they have been on sick leave. At zero days of sick leave, 5.3% fear future job loss. In contrast, 37.3% of employees on long-term sick leave of 90 days or more express such concerns" (Kullander and Eklund, 2010). By contrast, in a "radiant" economy or in the upper phase of the economic cycle, the capacity of the employers to punish absenteeism is lower as it is their coercive power to force the worker to work more time without being paid or to perform other activities that can be considered as Wage Theft -see section 1 for examples-, because The employees would just leave the job and look for a better one). So, there are the same factors behind the capacity of the employers to fight absenteeism or to allow themselves to indulge in activities of Wage Theft.
So, if *r* grows, it can be assumed that *e* also grows and that the Wage Theft will be more probable. Therefore, in this second regression I use the index of absenteeism (*Absent*) as a proxy of Wage Theft since a decrease in this index will be associated with an increase in the Wage Theft.
Data for the dependent variable has been obtained from the Adecco informs (2013 to 2019). Again, as in the case of the other independent variable, the data available only covers a limited period of time, from 2000-2018.

Independent Variables.

Following the model in Section 3 I have looked for some empirical independent variables that can represent reliably the theoretical variables of the model, and so can be justifiably used in the regressions. These variables are:

1) The worker's unionizing rate (*s*), This variable shows the number of workers that are unionized in relation to the total of workers. The aim of this variable is to show the relative force of workers in their conflicts with employers on labor conditions since a higher rate of unionizing means that the workers have more collective bargaining power to negotiate

with the employers, so it can be suppose that it will be harder for the employers to force them to work more time than they were hired for or to avoid them from taking work leaves. Then, I expect a negative relation with the dependent variable in the first regression and a positive one in the second regression. The data from the unionizing rates in the period 2000-2018 has been estimated quarterly from OECD. For the first regression the data used will be quarterly data and annual data for the second regression.

But it must be remembered that, in Spain, the collective bargaining agreements obtained by trade unions in the negotiations with employers in an economic sector or in a region affects all the workers, being or not unionized. So, this variable, in the Spanish case cannot be so important to explain Wage Theft as the theoretical model holds.
Anyway, even in cases as it is the Spanish one, the unionizing rate can be a relevant variable as the practical or real "enforcement" of the collective bargaining agreements depends in many cases (overall in small and medium firms) on the existence of affiliated workers to some union who control that the employers comply the agreements.

2) The unemployment rate (*U*). This variable affects positively the relative power of employers as it was argued in the theoretical model. As Bowles et al. (2017) point, the existence of a high unemployment rate forces the actual employees to increase their level of effort at work. This is so because a high unemployment rate makes workers to value more their actual job, so they will increase their effort to avoid being fired since to find another job will be difficult for them. So, I expect a positive relation with the first dependent variable and a negative one with the second one. The data of the unemployment rates has been obtained from the official EPA (*Encuesta de Población Activa*) with data from the INE. For the first regression the data used will be quarterly data and annual data for the second regression.

3) The percentage of workers that work in small and medium size firms (*Pyme*). The reason to include this variable is that Wage Theft situations seems to be more common in small and medium firms (Eesley and Meglich, 2013) than in large ones because the last ones are more inclined to respect the law as they are more unionized and, also, because the bureaucratic structure inside them is bigger, and this put some difficulties in engaging in Wage Theft activities. Also, in small firms it can guess that the employers will have more control over their employees than in large firms since there is less employees to

monitor and, usually, the relationships inside of small firms are more personal, in the sense that it is common that the employer shares space and time with his employees, a fact that facilitates the monitoring and control of the last ones (Anderson, 2017).
This is why this variable is a proxy of the relative power of the employer to incur in Wage Theft situations against the employees, in the sense that it can expect that in small firms this employer's relative power will be higher. Then, in the second regression (I have removed it from the first regression because it was not statistically significant and, also, because its addition would overestimate the model) I expect a negative relation with the dependent variable (index of absenteeism). The data for the variable has been obtained from a report from the *Colegio de Economistas* de Madrid (2016), from the publications of the *Ministerio de Economía, Industria y Competitividad* (2018) and the database of the *Ministerio de Industria, Comercio y Turismo* of Spain and its publications (2004, 2019). Additionally, the data used will be annual data.

4) The amount of labor conflicts that are resolved in labor courts in favor of the worker (*resolconf*). For the first regression the data used will be quarterly data and annual data for the second regression.
The reason to include this variable in the regression is because it can work as a direct measure of the relative power of the employers since it can guess that when the number of labor conflicts resolved in favor of the workers is low that is due to the employers are having more relative power than the employees, and doing more Wage Theft activities, and the opposite case happens when the relative coercive power of the employers is lower. The data for this variable has been obtained from the database of the *Ministerio de Trabajo, Migraciones y Seguridad Social* of Spain. I expect a positive relation with the first dependent variable because if there are more labor conflicts that needs to be resolved in the courts it is because the labor conditions are worse off.

5)The last independent variable that has been included comes from the hint in equation 27 of Section 3, as it is showed there, the effort level is positively affected by the profit per worker. So, if the conditions of the product and labor markets allow a higher profit per worker, the level of effort will be higher, and Wage Theft will be more possible. To test this, I have created as an independent variable the *profit per worker measure* (b_c) that is constructed as the quotient between the gross profit and the number of contracted workers each year. The data of the gross profit has been obtained from the *Quarterly*

National Accounting provided by the INE. The number of workers has been obtained from the EPA (*Survey of Active Population*), also provided by the INE. I expect a positive relation in the second regression. The data used will be annual data (I have converted them using the mean of each year). As in the case of Pymes, I have removed this variable from the first regression to avoid an overestimation of the model.

4.3. The Results.

TABLE 1. Results of the empirical analysis.

	Wage Theft (as unpaid overtime over the total overtime) (*WagT*)	**Absenteeism index (*Absent*)**
constant.	120,6886	-0,5939502
	(0,201)	(4,95)
Unemployment rate *(U)*	1,490497	-0,0636253
	(0,2012)	(0,0238)
Unionizing rate *(s)*	0,067396	-0,0744056
	(0,89)	(0,056)
Resolution of conflicts in favor of the worker (*resolconf)*	-1,950055	---
	(0,676)	
Small and medium firms *(Pymes)*	---	-0,0744056
		(0,058)
Profit per worker *(b_c)*		0,26106
		(0,124)
R^2	0,6794*	0,6869'
R^2 adj	0,6554**	0,601''
F	28,26	7,78
Prob>F	0	0,0016
Num obs.	44	19

*Before the Prais-Winstein treatment the r-squared was 0,8406
**Before the Prais-Winstein treatment the adjusted r-squared was 0,829
'Before the Prais-Winstein treatment the r-squared was 0,7276
'' Before the Prais-Winstein treatment the adjusted r-squared was 0,6497
The variables statistically significant are underlined

Source: AUTHOR'S elaboration.

Table 1 shows the results of the two regressions. The first column shows the results of the first regression where the dependent variable was unpaid overtime over the total overtime worked (*WagT)* and the second column the second regression which has as a dependent variable the rate of Absenteeism (*Absent*). As usual, under the column of the dependent variables there are the coefficients of the independent variables, while in

parentheses are the standard errors. Additionally, the variables that are statistically significative are underlined.

Regarding the results of the first regression, if we look at column 1, the overall statistics of the general model shows that, according to the F-test, I can reject the null hypothesis with 99% or more confidence overtime). The R-squared of the model are 0,8406 and 0,829 which indicates a goodness of fit between 83%-84%.

Regarding if the model was the best linear unbiased estimator (BLUE), I have tested for some of the assumptions that are required for an OLS regression to be BLUE. First, I have conducted a VIF analysis to check for multicollinearity between the variables and the results showed that it is not the case; the same happens for the case of heteroskedasticity, were the White's test allowed me to ensure that the variables are homoscedastic; the Skewness and Kurtosis test prove that the model does right with the normality assumption. In the case of autocorrelation, I have run a Durbin Watson test and the result does not allow me to accept the null hypothesis, so there is autocorrelation. To correct this, I have run a Prais-Winsten treatment. After it, some changes have occurred to the regression. First, the R-squared has slightly fallen down to 0,6794 and 0,6554 respectively. Then, the new regression shows a goodness of fit between 65%-68%. It is important to note that the results of the second column of Table 1 are the ones obtained after the Prais-Winsten treatment.
The results of the model allow me to accept some of the theoretical hypothesis that were stated both in the theoretical section and above (when defining the independent variables). For instance, the coefficient of the unemployment rate (*U*) is 1,49 and it is statistically significant at the 95% level. Which implies that the unemployment rate has a positive impact on the Wage Theft (understood as unpaid overtime over the total overtime), thus, more unemployment is translated in more Wage Theft.

The *amount of labor conflicts that are resolved in favor of the worker (resolconf)* variable is also statistically significant and shows a coefficient of -1,95. This has shocked me since I expected a positive sign in my hypothesis, but I can suppose that the reason of the negative sign is due to the fact that when there is more resolution of labor conflicts in favor of the worker it implies that the Wage Theft phenomenon is less tolerated since the judicial power is chasing after these illicit acts.

The last variable is the unionizing rate (*s*) that, even if it has not the expected sign of the hypothesis, its coefficient is very low, 0,06, and seems not to be statistically significant (p value is 0,94). Even though, the reason of this low impact of the variable (in comparison with the others) can be due to the already explained fact that in Spain when the trade unions incur in a collective bargaining for the workers, they do it covering all the workers, with independence if they are unionized or not. Then, it would be interesting for future research to check the impact of the collective bargaining rates in the Wage Theft since it can work as a measure of the relative power of the employees.

Now, if we look at column 2 of Table 1, that is regarding the results to the second regression, we can see that the overall statistics of the general model shows that, according to the F-test, I can reject the null hypothesis with 95% or more confidence. The R-squared of the model are 0,7276 and 0,6497 which indicates a goodness of fit between 65%-73%.

Regarding if the model is the best linear unbiased estimator (BLUE), I have tested for some of the assumptions that are required in an OLS regression to be BLUE. I have conducted a VIF analysis to check for multicollinearity and I found that it was the case. To correct it I have omitted one of the variables (the *amount of labor conflicts that are resolved in favor of the worker*) and I have run the regression again with the rest of the independent variables. After the removal of the variable I have conducted the VIF analysis again and the problem of multicollinearity seems to have disappeared.
Then I have tested the regression for the case of heteroskedasticity. I have run a White's test and the result shows that the variables are homoscedastic. Also, the Skewness and Kurtosis test prove that the model does right with the normality assumption. In the case of autocorrelation, I have run a Durbin Watson test and the result does not allow me to accept the null hypothesis, so there is autocorrelation. To correct this, I have run a Prais-Winsten treatment. After it, some changes have occurred to the regression. First, the R-squared has slightly fallen down to 0,6896 and 0,6010 respectively. Then, the new regression shows a goodness of fit between 60%-69%. It is important to note that the results of the second column of Table 1 are the ones obtained after the Prais-Winsten treatment.

The results of the second regression allow me to contrast some of the hypothesis. First, the coefficient of the unemployment rate (*U*) is -0,0636253 which confirms the hypothesis that a higher unemployment rate makes the workers to take less work leaves because they are afraid of getting fired if so. This coefficient is statistically significative at the 95% level. The coefficient for the variable of the rate of workers that work in small and medium size firms (*Pymes*) is -0,0749697 and the variable seems not to be statistically significant at the 95% level. This result confirms the hypothesis that in small and medium firms the workers would take less job leaves because they are more controlled, and it is easier for the employers to punish them if they consider that the worker is not of "enough quality" because of her work leaves.

The variable *profit per worker measure* (b_c) presents a coefficient of 0,2610603 and it is also statistically significant. This result confirms the hypothesis stated in equation 27 and in the description of the variable.
The last independent variable included in this regression is the unionizing rate of workers. Here, even if it presents the opposite sign that I expected (its coefficient is negative with a value of -0,0744056), its effect on the dependent variable is very soft and, most important, the variable seems not to be statistically significant at the 95% level.

Section 5: Conclusion.

This Master's Thesis can be understood as a first attempt to model and explain a phenomenon that affects workers worldwide, the Wage Theft. Wage Theft, in general terms, can be understood as the denial of wages or other worker's rights rightfully owned by an employee; thus, I am talking about a phenomenon that can be presented in different ways within the employer-employee relation. Even so, in this work only two closely related types of Wage Theft have been considered: the unpaid overtime and the employees working "off the clock", since they represent the clearest manifestation of Wage Theft and they are the easiest forms of it to model.

By its own definition, Wage Theft is the result of an asymmetry of power between employers and employees in the conflict about the effort level at work and the work time

performed by the employee once she has been hired (the so-called principal-agent problem).

First, to understand how the Wage Theft phenomenon can happen it has been necessary to analyze the economic institution where it happens: the firm. This is so because the Wage Theft happens not "inside" the labor market, where the worker freely sells her capacity to work, but inside the firm, thus, inside the labor or production process. In institutional economics there have been three main approaches to the study of this process. Two of them, the *Walrasian* and the *Hobbesian a*pproaches, hold that inside the firms there are no coercive power relations because the production process can be thought as an exchange process between the owners of the factors of production or, if there are power relations, it is because this coercive power of the employers is just an efficient mean to allocate resources inside firms and its existence has been accepted by the employees as a mean to achieve the common goal of doing the production process in an efficient way.
The worker's gain from being under the control of employers is because the higher efficient results are translated in higher wages. In these perspectives there is no scope for Wage Theft since the worker would be voluntarily choosing to work more time (since she can always leave the job if she does not agree with her employer).

The radical and/or Marxist approach hold that inside of the firm there are coercive power relations and hierarchies that can result, in many cases, in exploitation of the workers. The firm, in this approach, is not just a technical institution to allocate, in an efficient manner, the actors of production, but it can also be considered as a political institution, as a private government (Anderson, 2017) where the managers have the authority to rule their employees and the power to back them by sanctions. However, the employer's power is not absolute because workers have some countervailing or resistence power.

When firms are understood as political institutions, with power structures ruled by their owners and their agents (managers), the relations between the owners and the workers are mixed, cooperative and conflictive at the same time. Both have a common interest in their economic success, but both are in conflict over many issues: the level of wages, the working time, etc. When in this conflict the relative force of the employers is higher than the one of the employees, Wage Theft can happen.

Second, as in any conflict, its outcome depends on the relative power of the adversaries. Wage Theft, when it happens in a firm, and by its own definition, it is something unwanted by the worker and that if she was left on her own, she would not accept (for instance, working more hours without being paid) this would be the proof that in that firm the coercive power of the employer overcomes the resistance or countervailing power of the employees in such extent that the last ones are forced to accept the worse labor conditions (as Wage Theft). By coercive power is understood the power that allows to change the behavior of workers through the use of threats and sanctions.

This Master's Thesis uses this approach of the firm and tries to model some of the Wage Theft situations that can happen inside the firm as a consequence of the asymmetries of power between workers and managers in the conflict about the effort levels at work or the working time hired in the labor market and the ones that are actually being obtained or worked. I have showed how the employers want them to be the ones they have hired (since they have paid for a capacity to work for a certain time) or even larger than what it has been hired, while the workers try to shirk from their obligations since they consider the effort as a disutility beyond a minimum level required for the survival of the firm.

The outcome of this conflict of interests will depend on many factors that can "push and pull" onwards and backwards the relative power of each side. For instance, the employers, to be able to Wage Theft their employees, require of effective means to use their coercive power as it can be the use of surveillance labor that monitors the productive workers or the adoption of power biased technologies. The efficacy of this employer's coercive forces depends on exogenous factors as the existence of unemployment in the economy that force the workers to accept the employer's desired working conditions due to the fear of going unemployed, and the legal existing framework related to the labor relations that allows the employers to use their firing capacity more or less easily or costly.

In the same way, the acceptance or not by the workers of these labor conditions, as well as their capacity to avoid their employer's orders will depend on their relative power. So, for instance, a high unionizing rate and the existence of strong trade unions can allow the workers to reject the employer's pressure to accept those worse labor conditions.

But the coercive power is not the only sort of power available to the employers. It exceeds the scope of this Master's Thesis to analyze how the use of the other two types (the persuasive power and the economic power) can operate in the conflict between Employers and employees about the effort levels, but it would be interesting in future research to analyze how the economic power and the persuasive power work out since they allow the employer to achieve his objective (to extract more effort level) without the use of coercion, but by changing the restrictions and/or the preferences of his employees so the employers accept, voluntarily, to increase their effort levels, that is, without Wage Theft. Additionally, in future research, it would be also interesting to model how and until which extent the employer will use each of the different types power he has to alter the behavior of the worker, since the use of each type of power implies certain costs, so it is needed to find the efficient proportion of each power that the employer should use in its relation with his employees to maximize his profits.

In the empirical part of this Master's Thesis, I have tried to test, or better said, to illustrate (since a complete and reliable enough empirical testing is not yet possible due to the lack of data. So I only have been able to provide a first approximation to the topic that, I hope, can work, at least, as a real illustration of the theoretical model and can open the field for future research), the theoretical model with a real world example: the Spanish labor relations case. While doing so, I have faced a lot of problems around the amount and the type of data available. For certain variables included in the theoretical model, and which I consider essential to explain it, it has been impossible to find any type of measure for them while for other variables I have had to resort to the use of proxy variables. Additionally, the data provided by the different institutions of the variables only covered a brief period of time, which have force me to limit my analysis to a "not so big as I would wanted" sample.

Even so, the results of the empirical analysis of Wage Theft in Spain seems to support some aspects of the theoretical model (although the empirical analysis is just an illustration), showing that the scope of possible Wage Theft that can be conducted by the employers depends on the relative power of each side of the conflict about the effort levels between employers and employees.

Finally, This Master's Thesis is not a definitive research or analysis about the topic but a "first approach" or a "first step" in a new research field of labor economics that I think is very important nowadays and that will, presumably, become even more important in the future. For instance, it was not until the year 2009, with the publication of Kim Bobo's book about Wage Theft that academics knew about the magnitude of the phenomenon and were conscious of the necessity of studying it not as scattered labor market failures but as a common root phenomenon that requires a unified approach.

Again, I consider this Master's Thesis as a "first step" in a research field which importance is increasing since Wage Theft seems to be starting to become an endemic phenomenon in certain economies, whose study is needed to be able to provide adequate policy recommendations to fight against and counter its effect on workers. Therefore, more research about the topic is needed and I expect that this Master's Thesis can work as a beginning.

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Apendix A. Data.

A.1. Regression 1.

$$WagT = \beta_0 + \beta_1 U + \beta_2 s + \beta_3 resolconf + \varepsilon$$

Data :

year	WagT rate	U	s	resolconf
2018Q4	46,03	14,45	17,40	52,85
2018Q3	40,89	14,55	17,35	52,70
2018Q2	43,77	15,28	17,30	52,55
2018Q1	44,23	16,74	17,25	52,39
2017Q4	44,60	16,55	17,20	52,39
2017Q3	46,23	16,38	17,15	52,20
2017Q2	45,40	17,22	17,10	52,01
2017Q1	51,42	18,75	17,05	51,82
2016Q4	47,16	18,63	17,00	51,63
2016Q3	48,93	18,91	16,95	51,51
2016Q2	53,70	20,00	16,90	51,39
2016Q1	55,99	21,00	16,85	51,27

2015Q4	54,14	20,90	16,80	51,15
2015Q3	51,33	21,18	16,06	51,39
2015Q2	58,09	22,37	15,33	51,64
2015Q1	58,63	23,78	14,59	51,88
2014Q4	54,11	23,70	13,86	52,13
2014Q3	51,87	23,67	14,29	52,55
2014Q2	54,51	24,47	14,72	52,97
2014Q1	60,63	25,93	15,16	53,38
2013Q4	57,64	25,73	15,59	53,80
2013Q3	53,20	25,65	15,89	53,82
2013Q2	56,70	26,06	16,20	53,84
2013Q1	59,33	26,94	16,50	53,86
2012Q4	53,97	25,77	16,80	53,88
2012Q3	51,97	24,79	16,86	53,66
2012Q2	56,54	24,40	16,92	53,43
2012Q1	57,17	24,19	16,98	53,21
2011Q4	48,84	22,56	17,04	52,99
2011Q3	46,09	21,28	16,98	52,76
2011Q2	46,67	20,64	16,91	52,53
2011Q1	46,66	21,08	16,85	52,30
2010Q4	46,95	20,11	16,78	52,08
2010Q3	43,05	19,59	16,88	52,69
2010Q2	44,25	19,89	16,98	53,31
2010Q1	44,57	19,84	17,08	53,92
2009Q4	42,41	18,66	17,18	54,54
2009Q3	40,00	17,75	17,26	54,24
2009Q2	42,47	17,77	17,33	53,95
2009Q1	42,27	17,24	17,41	53,66
2008Q4	40,70	13,79	17,49	53,36
2008Q3	37,86	11,23	17,39	52,23
2008Q2	39,58	10,36	17,28	51,11
2008Q1	37,91	9,60	17,18	49,98

Sources: Author stimates from: *WagT:* EPA with the database of the INE and CCOO (2018) and Zarapuz Puertas (2016); *U:* Encuesta de Población Activa (EPA) os Spain, database of Instituto Nacional de Estadística of Spain (INE); *s:* OECD.stat; *resolconf*: Ministerio de Tabrajo, Migraciones y Seguridad Social of Spain: Estadísticas: Conflictos de Trabajo y Relaciones Laborales.

A.2. Regression 2.

$$Absent = \beta_0 + \beta_1 s + \beta_2 U + \beta_3 b_c + \beta_4 Pyme + \varepsilon$$

Data:

Year	Absent	U	s	resolconf	bc	Pymes
2000	3,70	13,87	16,50	47,41	39,43	45,24
2001	3,80	10,55	16,30	48,66	39,94	46,58
2002	4,10	11,45	16,00	48,88	40,41	47,21
2003	4,30	11,49	15,80	48,09	40,50	47,92
2004	4,50	10,97	15,30	47,54	40,75	46,95
2005	4,60	9,15	14,50	49,17	40,46	48,45
2006	4,80	8,45	14,30	48,24	40,52	48,89
2007	4,95	8,23	15,50	48,72	40,82	48,68
2008	4,80	11,25	17,10	48,85	41,67	48,55
2009	4,80	17,86	17,50	53,36	42,18	47,17
2010	4,70	19,86	15,20	54,54	41,25	45,95
2011	4,70	21,39	16,80	52,08	41,98	44,62
2012	4,30	24,79	17,00	52,99	42,96	44,68
2013	4,11	26,09	16,80	53,88	42,93	46,40
2014	4,40	24,44	16,60	53,80	42,57	46,22
2015	4,70	22,06	13,90	52,13	41,94	44,80
2016	4,88	19,63	16,80	51,15	42,48	44,47
2017	5,00	17,22	17,00	51,63	42,79	44,33
2018	5,30	15,25	17,20	52,39	42,36	44,55

Sources: Author stimates from: *Absent:* Informe Adecco sobre absentismo (2013-2019); *U:* Encuesta de Población Activa (EPA) of Spain, database of Instituto Nacional de Estadística of Spain (INE), *s:* OECD.stat; *resolconf*: Ministerio de Tabrajo, Migraciones y Seguridad Social of Spain: Estadísticas: Conflictos de Trabajo y Relaciones Laborales; *bc:* Contabilidad Nacional Trimestral de España and EPA, data from the INE database; *Pymes*: Confederación Española de la Pequeña y Mediana Empresa (CEPYME), Ministerio de Economía, Industria y Competitividad (2018) and the database of the Ministerio de Industria, Comercio y Turismo of Spain and Colegio de Economistas de Madrid (2016).