

## What does the wage structure depend on? Evidence from the national salary survey in Spain

Juan A. Marín-García <sup>a</sup>, Juan Martínez-Tomas <sup>b</sup>

<sup>a</sup>ROGLE. Dpto. de Organización de Empresas. Universitat Politècnica de València. Camino de Vera S/N 46021

<sup>b</sup>Private company. No academic institution. Spain

Valencia. [jamarin@omp.upv.es](mailto:jamarin@omp.upv.es) <sup>b</sup>[juamarto@gmail.com](mailto:juamarto@gmail.com)

Recibido: 2021-12-03 Aceptado: 2021-12-28

To cite this article: Marín-García, J.A.; Martínez-Tomas, J. (2022). *What does the wage structure depend on? Evidence from the national salary survey in Spain*. *WPOM-Working Papers on Operations Management*, 13 (1), 35-63. doi: <https://doi.org/10.4995/wpom.16808>

### **Abstract**

*Purpose:* This paper aims to assess extrinsic motivation in the Spanish labor market. We focus on evaluating whether remuneration programs have a sufficient prevalence in the Spanish context to be considered in research models. Besides, we are also interested in identifying which are the factors that might affect the adoption of those programs.

*Design/methodology/approach:* We gather the data from three waves (2006, 2010, and 2014) of the salary structure survey (EES) conducted by the Spanish National Institute of Statistics (INE). We use Descriptive Statistics for identifying the incidence and intensity of remuneration programs in the Spanish context. We use the Generalized Linear Model (GLM) for exploring which factors are affecting the implementation of remuneration programs.

*Findings:* Our results show that both degree of use and intensity of remuneration programs related to extrinsic motivation are low. There are not important differences between the three series of data. It seems that the rigidity of the Spanish labor legislation influences the salary structure. In this sense, the basic salary and fixed payments are the central part of the monthly gross amount. Finally, few of the factors under study have a substantial effect on the intensity of variable retribution.

*Research limitations:* Our research uses only official data provided by company payroll records and many economic participation programs are grouped into a single category within the survey, which limits the possibility of analysis. In addition, the cross-sectional nature of the data limits the possibility of establishing causal relationships.

*Practical implications:* We have concluded that remuneration programs related to extrinsic motivation are not being widely used in the Spanish context. This fact is relevant since many studies point out that employee involvement is essential for the success of organizations in the current context

*Originality/value:* The importance of the study lies in its focus on the salary structure to assess whether extrinsic motivation mechanisms are used in the Spanish labor market. We

*have studied the salary structure composition in Spain in a disaggregated way, focusing on variable remuneration, whereas most of the previous research considers the salary as a whole (total gross salary without dividing by retribution concepts). Also, we have identified which factors are affecting the implementation of remuneration programs. Also, we have clarified several issues related to the salary structure in Spain.*

**Keywords:** *Employee participation; high-performance work practices; AMO framework; Extrinsic motivation; Human resources management; remuneration; salary structure survey; INE*

---

## Introduction

High-involvement work practices are very diverse (Perello-Marin & Ribes-Giner, 2014), ranging from simple suggestion boxes to complex programs, such as autonomous work groups providing employees with full authority to manage their tasks (Beltrán-Martín & Bou-Llugar, 2018). Frequently, high involvement practices complement each other by building systems that take advantage of synergies to improve performance (Marín-García & Conci, 2012). Some authors point out that high involvement work systems include three dimensions: skill requirements, jobs designed to use those skills, and an incentive structure to induce discretionary effort (Appelbaum et al., 2000). This system is known as the Ability-Motivation-Opportunity (AMO) framework and has been studied by using a wide range of methodologies, which provide very different results (Marín-García & Martínez-Tomas, 2016). In this research, we focus on remuneration programs associated with extrinsic motivation. Extrinsic rewards play an important role in workplaces and may increase task performance (Jiang et al., 2012; Ryan & Deci, 2000). Also, they encourage employees to seek out challenges at work and acquire new skills, and therefore are related also to the ability and opportunity bundles.

Motivation can be defined as the internal factors that incite to initiate and maintain a particular behavior (James, 1989; Marín-García & Conci, 2012). Traditionally, we distinguish between intrinsic motivation, which refers to doing something for one's interest, and extrinsic motivation, which refers to doing something in exchange for a reward (Serrano-Cinca et al., 2005). Similarly, motivation practices can be classified into two groups: those related to extrinsic motivation (pay for performance, recognition, internal promotion, or job security); and those related to intrinsic motivation (such as responsibility, personal development, inner satisfaction, curiosity, or opportunity to learn) (Marín-García & Martínez-Tomas, 2016; Perello-Marin & Ribes-Giner, 2014). Nevertheless, both categories are closely related, and some authors claim that the lack of extrinsic factors can affect intrinsic motivation (Bos-Nehles et al., 2013). Also, motivation can be affected by ability, and, for instance, poorly trained employees can become demotivated if they consider that tasks are difficult (Bos-Nehles et al., 2013).

Human Resources Management (HRM) theorist point out that Human Resources practices may increase organizational performance. According to the Organisation for Economic Co-operation and Development (OCDE), the Spanish labor productivity is far from other countries such as USA, UK or northern European countries (OECD, 2019). This fact might be caused, among other reasons, to the underutilization of key drivers for competitiveness such as extrinsic motivation. The purpose of this article is to assess whether remuneration programs have a sufficient prevalence in the Spanish context to be

considered in research models or, on the contrary, they are nonexistent or irrelevant. In this sense, this investigation might lead to a better understanding of the current Spanish labor market and provide some ideas to improve HRM implementation. In the literature review described in the next section, we realized that very few articles refer to flexible remuneration within the Spanish context. Bearing in mind that in previous researches there was a notable difference in the remuneration patterns in the United States, Spain, and China (Marín-García et al., 2008; Yu et al., 2000), it is possible that specific programs typically present in the scope of Anglo-Saxon literature are not so pertinent in Spain. This may be due to differences between the Spanish and the American labor legislation or other cultural causes. As far as this objective is concerned, it is essential to identify the incidence and intensity of compensation programs in the Spanish context. Therefore, our first research question is:

RQ1: What is the prevalence and intensity of compensation programs in the Spanish labor market?

We will use three data waves of the salary structure survey (EES) published by the National Institute of Statistics (INE) of Spain. These data series correspond to the years 2006, 2010, and 2014. The INE 2006 survey reflects variable wage supplements related to performance, while in subsequent series (2010 and 2014), those supplements are not disaggregated. This may indicate that variable complements are not relevant in the Spanish context. In this sense, our second question is the following:

RQ2: Is the low incidence of these programs in the 2006 survey the cause of the disappearance in subsequent series?

Reviewing the existing literature, we observed many articles identifying adjustment variables that affect the global salary distribution in Spain (Felgueroso et al., 2008; Ramos et al., 2014). Some studies focus on factors related to organizations, while others deal with factors related to the employees. As we did not find any article relating those factors with the implementation of remuneration programs, we attempt to fill this gap in the existing literature by identifying which might be the factors related to the adoption of those remuneration programs. Clarifying these factors might help to adapt these programs to the Spanish context. Also, understanding these factors could lead to a better understanding of the problems that organizations face when implementing high involvement practices. Hence, the third question (RQ3) will be devoted to finding out which factors are associated with the implementation of bonuses not related to shiftwork:

RQ3: What factors affect the implementation of remuneration programs?

Finally, as we analyze three data waves, we can evaluate to some extent the effect of the financial crisis on salary-based motivation programs. One limitation of this analysis is the use of cross-sectional data, which are not suitable to establish causal relationships, and only provide a picture at a given point in time. Moreover, other reasons apart from the economic situation could also affect the implementation of remuneration programs. However, as the sample is wide-ranging, and the data waves are representative of quite different economic periods, we consider that this analysis allows to know the situation of remuneration programs in each case and detect any changes in this sense. Therefore, the fourth question is the following:

RQ4: Is the implementation of remuneration programs in Spain affected by economic cycles?

The work is organized as follows: first, we carry out a review of previous literature on the subject; secondly, we set out the research design, defining the sample and the variables under study; next, we

apply relevant statistical techniques to answer thoroughly the research questions raised; and finally, we state the main conclusions and possible future research.

## Conceptual framework

While reviewing the literature, we realized that few investigations aimed to study the different salary components in a disaggregated way. In fact, we did not find any article analyzing the use of economic participation programs through the INE salary structure survey. Most of the authors consider salary as a whole (total gross salary without dividing by retribution concepts). In this sense, some of them study the evolution of the salary distribution over time (Carrasco et al., 2015; Murillo Huertas & Simón, 2014), while others consider several factors that could create differences among groups of the salary distribution (Hospido & Moral-Benito, 2016; Ramos et al., 2014). Besides, very few articles refer to incentives or flexible remuneration. In this sense, only one study refers to incentive systems (Dilmé Soto, 2007); another investigation ponders that implementing remuneration programs is difficult in countries with strong rigidity and centralization of labor legislation (Messina et al., 2010); while another research explores the relationship between the characteristics of boards of directors and the structure of compensation of directors in Spain (Merino & Banegas, 2011).

The following question arises: if some authors suggest that variable remuneration fosters productivity, why is the literature so scarce? Is this caused by the Spanish labor market rigidity? Is this a consequence of the low incidence of remuneration programs in Spain? Is this because economic incentives could generate problems within the organizations and non-monetary compensations schemes are preferable to foster motivation? (Pfeffer & Sutton, 2006). In this sense, as posed in RQ1, we consider that it is interesting undertaking research to figure out the use and the incidence of remuneration programs in the Spanish context. Also, this situation is related to RQ2, in which we study if variable payments are not relevant in the Spanish context.

In this literature review, many studies identify adjustment variables affecting the composition of the global salary distribution. It is valuable to consider these factors since they could also affect the salary structure and be in this way related to our investigation. This is the reason why RQ3 posed is to identify whether any of the factors that affect salaries as a whole, are also related to the incidence of economic incentives. Next, we proceed to identify these factors for using them in further statistical analyses.

On the one hand, some authors study the factors that are related to organizations. Regarding economic activity, some authors support the existence of sensible differences concerning the industry that tends to be more relevant among qualified workers (Casado Díaz & Simón, 2016). Moreover, other authors support that pays will be higher in industry or building companies than in agriculture, services, or cooperatives because firms in more competitive markets hire the most qualified workers (Clemente et al., 2012). Similarly, some studies investigate the differences in salaries between public and private organizations. In this regard, some scholars show the existence of bonuses in the public sector (Arranz Muñoz & García Serrano, 2014). However, other authors affirm that the existence of a paid bonus in the public sector is not a consequence of remunerating workers with the same characteristics, but the composition of the workforce itself and businesses features are those that determine such differences (Ramos et al., 2014). In the same vein, other studies show that these bonuses are more frequent among

less qualified workers while they decrease or there is the opposite effect among qualified staff (Hospido & Moral-Benito, 2016; Ramos et al., 2014).

Many authors have also considered the impact of collective wage bargaining on the employment process. However, there is not a clear consensus in this sense. On the one hand, some scholars indicate that wage performances in Spain are strong and stable due to the presence of wage bargaining (Simón, 2009). Some studies show that due to the existence of collective bargaining there is less employment inequality in lower levels of distribution (Felgueroso et al., 2008). On the other hand, some investigations state that wage bargaining together with labor reforms are responsible for the lowering of wages in several groups of the wage distribution (Elisabet et al., 2007). Moreover, the high regulation of the market sometimes means that businesses are not able to find ways to invest in education due to the rigid structure of salaries (Peraita, 2005). In this sense, some scholars argue that higher wage flexibility would be positive for reducing unemployment (Bande & Fernández, 2011).

On the other hand, studies are claiming that variation in salaries is more devoted to inherent factors of the employees than to those related to organizations. In this sense, many investigations reveal gender differences in wages among workers (Simon et al., 2017; Simón & Murillo, 2014) that increased notably during the economic crisis (Murillo Huertas & Simón, 2014). Some other authors confirm the existence of a glass ceiling that increases gender income differences specially on the highest salaries (Antón & de Bustillo, 2015; Felgueroso et al., 2008).

Other investigations consider that higher educational level workers tend to have higher salaries if they are linked to positions that require more significant knowledge or responsibility (Arranz Muñoz & García Serrano, 2014). Nevertheless, several authors have noticed that the educational level is not a guarantee of a better salary (Budría & Moro-Egido, 2008). In this sense, some research has been done considering overeducation as an indicator of how the labor market does not make full use of the labor force and more qualified workers stay in lower positions concerning their skills resulting in a reduction of salary (Budría & Moro-Egido, 2008).

Other aspects, such as the length of service or the type of contract, are considered. Seniority is one of the factors that positively affect wages, either due to acquired experience assessment (Alcalá Agulló & Hernández Martínez, 2006) or due to the greater acquired rights of senior staff concerning new hires (Elisabet et al., 2007). On the other hand, part-time employees usually suffer from salary discrimination in comparison to full-time employees (Simon et al., 2017). This variable could be critical because it sometimes reflects on the level of commitment. Finally, other authors study the relationship between managerial positions and variable remuneration; In this group of employees, salary bonuses based on performance and stock options are commonly used (Grau-Grau & Parry, 2010). In this sense, as high managers tend to have higher gross salaries, it is important to notice that salaries grow along with variable remuneration.

Additionally, we found out some investigations talking about variations in salaries due to the financial crisis (Arranz Muñoz & García Serrano, 2014; Carrasco et al., 2015). It is interesting to know how the financial remuneration programs evolve during the economic downturn or growth. For that reason, RQ4 aims to know what happened with the economic motivation programs after the crisis. In this sense, we will study three different series of INE database: 2006 -before the crisis-, 2010 -amid the crisis- and 2014 -when some signs of recovery and stabilization were shown. We are aware of the cross-section nature of the data. Additionally, the EES does not guarantee to study the same individuals in each wave. However,

we consider that the sample is wide-ranging and representative of the population, and it might provide a representative picture of each economic period.

## Methodology

Our database comprises microdata from the salary structure survey (EES) published by the INE. Specifically, we employ the last three available series in the date this research was developed: 2006, 2010, and 2014. We have designed a replicable methodology that can be used with subsequent series in future research. The microdata of the series are available in the INE database, and for conducting the analysis, we have used the IBM SPSS Statistics v22 software (IBM Corp., 2013).

The EES collects data concerning both the structure and distribution of salaries. This survey is conducted every four years in the Member States of the European Union. In Spain, the survey is carried out by the INE with stratified two-stage sampling. The first stage selects works centers that are registered on the Social Security system, considering every category of the National Classification of Occupations (CNO) as an independent population. Then, CNO categories are stratified by both region and company size. In the second stage, a random sample of workers from those work centers is selected. The data is provided by the company from its payroll records. The resulting sample is more than 200.000 people in each of the surveys.

The EES includes information concerning earnings. On the one hand, it uses October as a reference month to calculate monthly payments, such as basic salary (SALBASE), earnings related to overtime (PHEXTRA), or total extraordinary payments (COMSAL). Monthly extraordinary payments include personal bonus payments (seniority or academic qualification), special payments for shift work, danger, toxicity, or physical arduousness, and variable bonuses based, for instance, on productivity or for the achievement of pre-defined objectives. The EES2006 collects total extraordinary payments (COMSAL) and differentiates the part corresponding to shift work (COMSALTT) and variable payments (COMSALV). From EES2010, only shift work is detailed. On the other hand, the EES also includes information related to payments with different periodicity than monthly payments (for instance, annual or semi-annual payments). These payments include total annual gross earnings (SALBRUTO), payments in kind (VESP), and extraordinary payments, either fixed (PEXTRAAF) such regular bonus or Christmas/holidays bonus, or variable (PEXTRAAV) such as profit-sharing bonuses or based on the achievement of the objectives. From EES2010, extraordinary annual bonuses (fixed and variable) are grouped into one category (GEXTRA).

In addition, the EES includes information concerning the local unit to which the sampled employees are attached, such as the size of the enterprise, the economic activity according to the Statistical Classifications of Economic Activities in the European Union (NACE), the type of collective wage bargaining and the principal market. Finally, it also includes information concerning each employee in the sample such as gender, age, level of education, length of service in the company, type of employment contract, supervising position, full or part-time contract, and occupation according to the CNO. Further information can be found in the Spanish INE database (Instituto Nacional Estadística, 2017) and the research protocol (Martinez-Tomas and Marin-Garcia, 2019).

In Table 1, we sum up the compensation components that have been considered to carry out our study. In the current Spanish context, the basic wage is not viewed as a high involvement work practice, since it is

usually regulated by collective or company bargaining (Marín -García & Conci, 2012). However, forms of remuneration based on collective or individual performance are considered high involvement sources, as they contribute to aligning the interests of both organizations and employees, and they are focused on improving company performance (Lawler, 1986; Marín-García & Conci, 2012).

**Table 1: Relationship between EES and remuneration programs**

Salary Structure Survey (EES- INE)		Remuneration programs
Basic salary (month) (SALBASE)		Basic salary (excluding bonuses)
Payments for overtime (PHEXTRA)		Payments for overtime
Monthly extraordinary payments (COMSAL)	Payments for shift work (COMSALTT)	Salary bonus based on the job
	Fixed bonus not related to shiftwork (COMSALnoTT)	Salary bonus based on the job Salary bonus based on personal skills or competences
	Variable bonus (COMSALV)	Salary bonus based on performance Salary bonus based on productivity
Extraordinary payments with different periodicity (GEXTRA)	Periodic fixed bonus (PEXTRAAF)	Regular bonus Christmas / Holidays bonus
	Variable bonus (PEXTRAAV)	Bonus based on the objective achievement Profit-sharing bonus
	Payments in kind (VESP)	Payments in kind
Type of employment contract (part or full-time job)		Job security
Unavailable in the EES		Non-financial incentives

Source: Martínez-Tomas and Marín-García (2019)

Variables associated with remuneration are already adjusted in the sample. Therefore, it is not necessary to consider both the length of the employment relationship or special days affecting the payroll. However, we need to create new variables which will be necessary for successive analysis. Firstly, we proceed to calculate the monthly gross salary amount as:

- $SALOCTBR = SALBASE + PHEXTRA + COMSAL$  (October is the reference month, excluding the pro-rated amount of the annual Christmas and Holiday bonus)

In the 2010 and 2014 series, extra annual bonuses (GEXTRA) and other monthly special payments (COMSAL) are not divided between fixed and variable bonuses (except for special payments for shift work), as they are in the 2006 series. To standardize the analysis process among the three series, in the 2006 series we have proceeded as follows:

- $GEXTRA = PEXTRAAF + PEXTRAAV$
- $COMSALotFIJ = COMSAL - COMSALTT - COMSALV$

In all data series, it is possible to calculate special payments not devoted to shiftwork (COMSALnoTT), by deducting them from the total amount:

- $COMSALnoTT = COMSAL - COMSALTT$

We also need to calculate both the incidence and intensity of remuneration programs. Intensity is defined as the percentage of each salary concept with respect to the monthly gross salary. For studying the incidence, we create several dichotomous variables that indicate the presence or absence of remuneration components under study; values bigger than 0 indicate the presence of those components (further

information can be found in Annex 1). As a matter of fact, the intensity and the incidence of special payment not devoted to shiftwork ( $\text{intCOMSALnoTT}$ ) are calculated as follows:

- $\text{intCOMSALnoTT} = \text{COMSALnoTT} / \text{SALOCTBR}$
- $\text{dicCOMSALnoTT} = \text{COMSALnoTT} > 0$

We analyze the whole sample. Since we are interested in relative values over the total remuneration, full or part-time employees, do not distort results. The same applies to the type of contract. However, we could use both variables to explain possible differences.

Both CNO and NACE are used as adjustment variables, if we have enough data in each stratum of the sampling. For that reason, we have recoded these variables, taking into consideration the categories proposed in the European Working Conditions Survey (EWCS) ((INSHT), 2017), reflected in Annex 2 (Tables a and b). In addition, intending to have a larger sample in each of the strata, we have recoded the CNO variable again from EWCS to categories proposed by other authors (Toch et al., 2014), which are reflected in Annex 2 (Table c). Those new variables are entitled as  $\text{CNACerecodnumEWCS}$  and  $\text{CNOrecodTOCH}$ .

For answering our first research question (RQ1), we analyze the percentage of people having variable remuneration components. In addition, we also analyze the descriptive statistics of the percentage of remuneration components over the total gross salary. These analyses allow us also to answer our second research question (RQ2). The SPSS syntax of descriptive statistics can be found in Annex 1.

Our third research question (RQ3) aims to identify which factors are affecting the implementation of remuneration programs. As the data do not follow a normal pattern, we use a generalized linear model (GLM). GLM is a flexible generalization of ordinary linear regression that allows for the response variable to have an error distribution other than the normal distribution. The relationship is encoded in the link function. Moreover, GLM is a useful framework for comparing how several variables affect different continuous variables (Rutherford, 2001). For determining each factor's effect independently, we must compare each factor one-by-one. In this sense, the GLM allows studying each factor by maintaining the other factors in the reporting category.

As extraordinary payments are not divided between fixed and variable (except for the 2006 series), we study the effects of several variables over special payments not devoted to shiftwork ( $\text{intCOMSALnoTT}$ ). In the GLM analysis, SPSS software excludes those cases in which the dependent variable is equal to zero. Hence, we have created a new variable adding 0.00001 for avoiding this circumstance without affecting the results:

The adjustment factors chosen for the analysis are the following: CNO, NACE, gender, responsibility, level of education, type of contract, and regulation by agreement. These variables are discrete. In addition, we will use two continuous variables: seniority and the gross pay for the reference month (October), as they could also influence the presence of remuneration programs. From these two variables, we have created new ones for facilitating the comprehension of the results. The reason for doing so is for having continuous variables in a similar range of values. Thus, we have proceeded as follows:

- $\text{antigu10} = \text{antigu} / 10$
- $\text{SALOCTBR1K} = \text{SALOCTBR} / 1000$

We have used a Gamma distribution with a log link function. The GLM SPSS syntax can be found in Annex 4.

Our fourth research (RQ4) question aims to explore whether the implementation of remuneration programs in Spain is affected by economic cycles. In this sense, we compare the statistical results of three data waves (2006, 2010, 2014) which give a representative picture of very different economic situations in Spain.

## Results and discussion

Concerning the incidence and the intensity of remuneration programs (RQ1), a comparative summary is shown in Table 2 (further information in Annex 5).

**Table 2.- Comparative EES 2006-2014**

	2006 % of people <sup>a</sup>	2010 % of people <sup>a</sup>	2014 % of people <sup>a</sup>	2006 mean <sup>b</sup>	2010 mean <sup>b</sup>	2014 mean <sup>b</sup>
SALBASE	100.00	100.00	100.00	73.52	72.72	73.94
PHEXTRA	6.61	5.27	3.97	00.72	00.59	0.39
COMSAL	84.43	80.31	79.98	25.76	26.69	25.68
COMSALTT	15.11	15.81	14.62	01.56	1.55	1.37
COMSALnoTT	82.88	79.08	79.13	24.20	25.13	24.31
GEXTRA	90.44	76.08	75.21	14.69	11.84	11.45
VESP	11.48	15.70	20.99	00.23	0.28	0.33

SALBASE: basic salary; PHEXTRA: earnings-related to overtime; COMSAL: total extraordinary monthly payments; COMSALTT: extraordinary payments related to shiftwork; COMSALnoTT: extraordinary payments not related to shiftwork; GEXTRA: extraordinary annual bonuses (fixed and variable); VESP: payments in kind  
<sup>a</sup>Percentage of people having remuneration components  
<sup>b</sup>intensity of the compensation components (% over the total salary)

Regarding monthly payments, the most frequent components are bonuses not related to shiftwork (83% of the sampling in 2006; 79% in both 2010 and 2014). Next, fixed supplements related to shiftwork are placed. Overtime payments affect only a little part of the sample. Concerning the annual salary, extraordinary payments (including both fixed and variable amounts) stand out. Payments in kind are much smaller. Regarding the intensity, in the three series, basic salary is the central part of the wage, followed by bonuses not related to shiftwork, and extraordinary annual payments. Supplements related to shift work, overtime payments, and payment in kind represent an insignificant part of the total salary. In this sense, our results are consistent with prior evidence demonstrating the rigidity of the wage-setting mechanisms in Spain (Martínez Matute, 2016; Moral Arce & Maza Fernández, 2010).

In the 2010 and 2014 series, extra annual bonuses (GEXTRA) and special monthly payments (COMSAL) are not divided between fixed and variable bonuses (except for special payments for shift work), as they are in the 2006 series. For that reason, it is impossible to estimate which part of them is related to variable bonuses. However, as both the incidence and intensity of each variable are similar within the three series, we analyze the 2006 series in detail for estimating those percentages (Table 3).

**Table 3.- EES 2006**

	people <sup>a</sup>	Mean <sup>b</sup>
SALBASE	1.0000	.7352
PHEXTRA	.0661	.0072
COMSAL	.8443	.2576
▪ COMSALTT	.1511	.0156
▪ COMSALV	.2869	.0557
▪ COMSALotFIJ	.7469	.1863
COMSALnoTT	.8288	.2420
GEXTRA	.9044	.1469
▪ PEXTRAAF	.8925	.1291
▪ PEXTRAAV	.2114	.0178
VESP	.1148	.0023

SALBASE: basic salary; PHEXTRA: earnings related to overtime; COMSAL: total extraordinary monthly payments; COMSALTT: extraordinary payments related to shiftwork; COMSALV: Variable supplements; COMSALotFIJ: fixed bonuses not related to shiftwork; COMSALnoTT: extraordinary payments not related to shiftwork; GEXTRA: extraordinary annual bonuses; PEXTRAAF: extraordinary annual bonuses (fixed); PEXTRAAV: extraordinary annual bonuses (variable); VESP: payments in kind

<sup>a</sup>Parts per unit of people having remuneration components  
<sup>b</sup>intensity of the compensation components (parts per unit over the total salary)

Concerning monthly payments, in the EES2006, variable supplements affect 29% of the sample. Regarding the annual salary, periodic fixed bonuses stand out, and variable bonuses affect only 21% of the sample. Concerning the intensity, both monthly variable bonuses and extraordinary variable payments represent only 5.5% and 1.8%, respectively, over the total salary. These results confirm the low incidence of variable remuneration in the 2006 survey. This fact allows us to answer RQ1: the low incidence of variable remuneration programs in the 2006 survey might be the cause of not having disaggregated variables in the 2010 and subsequent series. An explanation for the low incidence of variable remuneration could be twofold. On the one hand, some authors point out that extrinsic factors such as economic rewards usually lead to a focus on short-term gains, whereas intrinsic motivation is usually linked with an employee's long-term commitment (Schimansky, 2014). In the same vein, other authors consider that commitment is related more strongly to internal sources of motivation (Beltrán-Martín & Bou-Llugar, 2018). Therefore, external motivation-enhancing practices, such as variable remuneration, could be considered minor issues. On the other hand, the rigidity of the Spanish collective bargaining system prevents wages from being adapted to the specific conditions of each company and leads to the homogenization of wages (Martínez Matute, 2016).

RQ3 focuses on identifying which conditions (company or personal factors) are associated with greater use of bonuses not related to shiftwork. In Table 4, we present the categorical variable information concerning the three datasets. As we can see, the employment conditions are different in 2006 with respect to 2010 and 2014 (Marín-García et al., 2020). We also present information concerning continuous variables of the three series (Annex 2: Table d (2006), Table e (2010), and Table f (2014)).

**Table 4.- Categorical variable information EES 2006-2014**

Variable	EES 2006		EES 2010		EES 2014		
	N	Percent	N	Percent	N	Percent	
SEXOdic (Gender)	0 man	143644	61.1%	123657	57.0%	119872	57.3%
	1 woman	91628	38.9%	93112	43.0%	89490	42.7%
	Total	235272	100.0%	216769	100.0%	209362	100.0%
RESPONSA (Supervising position)	1 yes	43674	18.6%	175804	81.1%	175437	83.8%
	0 no	191598	81.4%	40965	18.9%	33925	16.2%
	Total	235272	100.0%	216769	100.0%	209362	100.0%
TIPOCON (Type of employment contract)	1 full-time	172649	73.4%	167416	77.2%	166393	79.5%
	2 part-tim	62623	26.6%	49353	22.8%	42969	20.5%
	Total	235272	100.0%	216769	100.0%	209362	100.0%
CNACerecodnumEWCS (Economic activity 6°EWCS)	2 Industry	90839	38.6%	60877	28.1%	59222	28.3%
	3 Construction	18304	7.8%	14167	6.5%	12900	6.2%
	4 Trade and hospitality	34781	14.8%	25050	11.6%	24764	11.8%
	5 Transportation	14535	6.2%	11445	5.3%	10891	5.2%
	6 Administrative, auxiliar and financial activities	11047	4.7%	11286	5.2%	10764	5.1%
	7 Public administration and defense	*No data available	*No data available	10018	4.6%	9454	4.5%
	8 Education	12363	5.3%	6747	3.1%	6969	3.3%
	9 Healthcare	16976	7.2%	18106	8.4%	17200	8.2%
	10 Other services	36427	15.5%	59073	27.3%	57198	27.3%
	Total	235272	100.0%	216769	100.0%	209362	100.0%
CNOrecodTOCH (Occupation according to NCO)	1 I Higher Controllers	6307	2.7%	7389	3.4%	6997	3.3%
	2 II Lower controllers	25206	10.7%	34902	16.1%	36217	17.3%
	3 III Routine non-manual employees	90062	38.3%	99357	45.8%	94775	45.3%
	5 V Skilled manual workers	80584	34.3%	50242	23.2%	49342	23.6%
	6 VI Semi and unskilled manual workers	33113	14.1%	24879	11.5%	22031	10.5%
	Total	235272	100.0%	216769	100.0%	209362	100.0%
REGULACION3k (Type of collective wage bargaining)	1 National collective agreement	86502	36.8%	64598	29.8%	62736	30.0%
	2 Sectoral or regional agreements	102870	43.7%	77045	35.5%	74985	35.8%
	3 Company agreements	45900	19.5%	75126	34.7%	71641	34.2%
	Total	235272	100.0%	216769	100.0%	209362	100.0%
ESTUrecodnum (Level of education)	1 Basic studies	144478	61.4%	115232	53.2%	128037	61.2%
	2 Vocational training	38802	16.5%	41436	19.1%	19170	9.2%
	3 University	51992	22.1%	60101	27.7%	62155	29.7%
	Total	235272	100.0%	216769	100.0%	209362	100.0%

SEXOdic: gender; RESPONSA: supervising position; TIPOCON: type of employment contract; CNACerecodnumEWCS: economic activity (EWCS); CNOrecodTOCH: occupation according to NCO; REGULACION3k: type of collective wage bargaining; ESTUrecodnum: level of education

As we stated in the methods section, we have used a generalized linear model. The dependent variable is the intensity of special payments not devoted to shiftwork. A comparative summary of results is presented in Table 5. Also, results are summarized in the chart given in Figure 1, which is found at the end of this section. More detailed information on the results can be found in Annex6.

**Table 5.- Intensity of special payments not devoted to shiftwork. Comparative EES 2006-2014**

Parameter	Vaiable	EES 2006 Exp(B)	EES 2010 Exp(B)	EES 2014 Exp(B)
(Intercept)		.097	.118	.112
[SEXOdic=,00]	Man	1.155	1.148	1.127
[SEXOdic=1,00] cor	Woman	1	1	1
[RESPONSA=0]	Yes	1.037	.945	.946
[RESPONSA=1] cor	No	1	1	1
[TIPOCON=1]	Full-time	1.031	1.036	1.069
[TIPOCON=2] cor	Part-time	1	1	1
[CNACerecodnumEWCS=2,00]	Industry	1.008	1.051	1.052
[CNACerecodnumEWCS=3,00]	Construction	1.304	1.366	1.308
[CNACerecodnumEWCS=4,00]	Trade and hospitality	.932	.910	.927
[CNACerecodnumEWCS=5,00]	Transportation	1.159	1.338	1.258
[CNACerecodnumEWCS=6,00]	Administrative, auxiliar and financial activities	1.086	1.035	1.053
[CNACerecodnumEWCS=7,00]	Public administration and defense	Not available data	1.769	1.852
[CNACerecodnumEWCS=8,00]	Education	1.279	1.472	1.456
[CNACerecodnumEWCS=9,00]	Healthcare	1.322	1.291	1.341
[CNACerecodnumEWCS=10,00] cor	Other services	1	1	1
[CNOrecodTOCH=1,00]	I Higher Controllers	.820	.835	.857
[CNOrecodTOCH=2,00]	II Lower controllers	.948	.976	.978
[CNOrecodTOCH=3,00]	III Routine non-manual employees	1.043	1.021	.975
[CNOrecodTOCH=5,00]	V Skilled manual workers	1.047	.984	.967
[CNOrecodTOCH=6,00] cor	VI Semi and unskilled manual workers	1	1	1
[REGULACION3k=1]	National collective agreement	.968	.910	.930
[REGULACION3k=2]	Sectoral or regional agreements	1.037	.954	.952
[REGULACION3k=3] cor	Company agreements	1	1	1
[ESTUrecodnum=1,00]	Basic studies	1.048	1.003	1.034
[ESTUrecodnum=2,00]	Vocational training	1.016	.983	1.040
[ESTUrecodnum=3,00] cor	University	1	1	1
antigu10	antigu10	1.122	1.144	1.140
SALOCTBRIK	SALOCTBRIK	1.400	1.264	1.248

cor: category of reference

In Table 5, Exp(B) is interpretable as a multiplicative factor that increases the analyzed categories regarding the reference category. For expressing the result as a percentage, we need to apply the following transformation:  $[\text{Exp}(B) - 1] * 100$ . Also, the intercept is the mean of the dependent variable when the explanatory variables take the reference category, and the covariate is equal to 0. Our covariate units are either ten years of seniority or 1000 euros of gross pay for the reference month. For each covariate unit, Exp(B) is multiplied by the intercept. As a matter of fact, in the 2014 series, we could select one case placed in all the reference categories (woman without responsibility, temporary contract, company agreement, the higher level of education, NACE = 10, and CNO = 6), earning 1000 euros of gross salary, and ten years of length of service. In this case, the intensity of special payments not devoted to shiftwork (the dependent variable), is expected to be about 16%, according to the following calculation:

- $\text{Exp}(B) \text{ intercept} * \text{Exp}(B) \text{ antigu10} * \text{Exp}(B) \text{ SALOCTBRIK} (0.112 * 1.14 * 1.248 = 0.159)$

In the same way, if we select the same case but substituting the reference NACE (NACE=10) for another category (e.g., NACE = 7), the intensity would be  $0.159 \cdot 1.852 = 0.294$ . That is to say, the intensity of special payments not devoted to shiftwork, in this case, will be expected to be about 29% (an increase of 85% regarding the NACE reference category (15.9%).

Taking all the above into consideration, we can compare each factor one-by-one, but always keeping the other factors in the reference categories. Thus, in Table 5 we can observe that the intensity of special payments not devoted to shiftwork is slightly higher in men than in women, although, throughout the three series, the difference has narrowed gradually. However, these differences are not relevant. As a matter of fact, in 2014, the intensity of special payments not devoted to shiftwork in the case of a woman placed in all the reference categories is expected to be 15.9%. Selecting the same situation, but replacing a woman for a man, we expect the intensity of those payments to be 18% (an increase of 12.7% regarding the gender reference category). Thus, in terms of gross earnings, differences are not relevant enough.

Concerning the responsibility within the organization, the intensity is a little high in people who occupy positions with responsibility in the 2010 and 2014 series, while in 2006 the opposite is found. In this sense, some investigations point out that the wage premium to supervision, usually associated with middle management, represents a fixed component, although middle managers are paid differently for the same task according to the context where they work (Leonida et al., 2020). The type of contract has no relevance, although the intensity is more considerable in permanent than in temporary workers. As in the case of gender, in terms of gross earnings associated with special payments, both responsibility and the type of contract are far from being relevant. Yet again, the lack of flexibility in the Spanish labor market affects to a greater extent temporary workers due to the higher redundancy costs of permanent workers (Sanromá i Meléndez, 2012). This fact reinforces the assumption of the high rigidity in the Spanish labor market.

Concerning wage bargaining, company agreements tend to have more considerable advantages on the national collective agreement. As a result, both the incidence and the intensity of salary supplements seem to be higher when employment relationships are regulated by company or workplace agreements. In this sense, some authors point out that decentralized collective bargaining reduces real wage rigidity (Martínez Matute, 2016; Messina et al., 2010). This makes sense since any agreement can never be disadvantageous compared to the one established by law. Therefore, we could affirm that workers can influence salary improvement somehow. In the Spanish system, however, the coverage of collective bargaining is very high (between 75% and 80%), in contrast with the unionization rate (about 15%) (Diez Catalán & Villanueva, 2014; Martínez Matute, 2016). Moreover, the most common level of sectoral bargaining is the province, which often fails to adapt wages to. In this sense, the interests of bargaining are usually more oriented towards avoiding inequalities between workers than in adapting them to specific situations of each company or worker (Martínez Matute, 2016).

The level of education does not appear to be significant. We observe that the higher level of studies is not indicative of increasing the intensity of salary supplements. In fact, people with basic studies tend to have greater intensity than people with intermediate or higher education. Similarly, the intensity is not affected by the occupation (CNO). The CNO classification chosen for our analyses is strongly associated with the level of education. Therefore, it makes sense that both factors influence the intensity of special payments in a similar way. Again, the high wage-rigidity in the Spanish context promotes the absence of variable remuneration systems. A higher level of education, however, seems to be related to job security (Sanromá i Meléndez, 2012).

Concerning the economic activity (NACE), some activities are likely to affect the intensity with regard to the reference category, such as education, healthcare, construction, or transportation. Those activities are related either to public healthcare or education system or to activities in which special payments for shift work, danger, toxicity, or physical arduousness are very common. However, public administration and defense stand out (NACE=7), and we observe a more significant influence over the intensity. Thus, the intensity of special payments not devoted to shiftwork in a case placed in all the reference categories (including NACE=10) is expected to be 15.9% in 2014, and 17.1% in 2010. Selecting the same case, but replacing NACE=10 for NACE=7, we expect the intensity of those payments to be about 30% in both 2010 and 2014. These make sense since Spanish public employees usually have several supplements in their salary structure, as their basic salary is usually low. As a matter of fact, military personnel have specific supplements related to position or destination, extraordinary services, among others. Many public employees also have a salary bonus based on performance or productivity. Our results are consistent with prior research demonstrating the existence of wage premium associated with working in the public sector (Antón & de Bustillo, 2015; Hospido & Moral-Benito, 2016; Ramos et al., 2014).

Finally, we observe that both seniority and gross pay for the reference month affect the intensity. The seniority effect is similar within the three data series. In the case of gross salary, in the 2006 series, the effect is bigger than in the 2010 and 2014 series. Therefore, if the length of service and the gross salary is higher, the intensity of special payments not devoted to shiftwork is likely to represent a bigger percentage over the total salary. As a matter of fact, in the 2014 series, the intensity of the dependent variable will increase by 24% for every 1000 euros of gross salary. Our results are consistent with prior investigation pointing out the existence of larger premiums for highly paid workers (Card & De La Rica, 2006). In the same vein, other authors argue that the remuneration of top executives is dominated by the variable component, and therefore the intensity of special payments is higher for those who have higher payments (Greckhamer, 2016; Leonida et al., 2020). In this sense, stock options have increased their popularity over the past few decades (Wright & Kehoe, 2008).

All the commented above is summarized graphically in Figure 1. This graph allows us to observe which variables are likely to affect to a larger extent the intensity of special payments not devoted to shiftwork. Also, in this graph, we can compare all the variables covered in the study by using the confidence interval of the  $\text{Exp}(B)$  value. Hence, if the values of the three series of data (2006-2014) are not overlapped, it means that there are differences between the years under study. As a matter of fact, we can observe differences in some economic activities (NACE), such as education and transport, among others. Moreover, there are significant differences in the effect of the gross salary (bigger difference in 2006 than in 2010 and 2014) and the effect of responsibility and wage bargaining. Concerning the CNO classification, we only observe differences in the skilled manual workers' category, also in 2006. Also, we can observe that the intercept was slightly low in 2006. That is to say, the intensity of special payments not devoted to shiftwork is lower under the same employment conditions in 2006 than in 2010 or 2014.

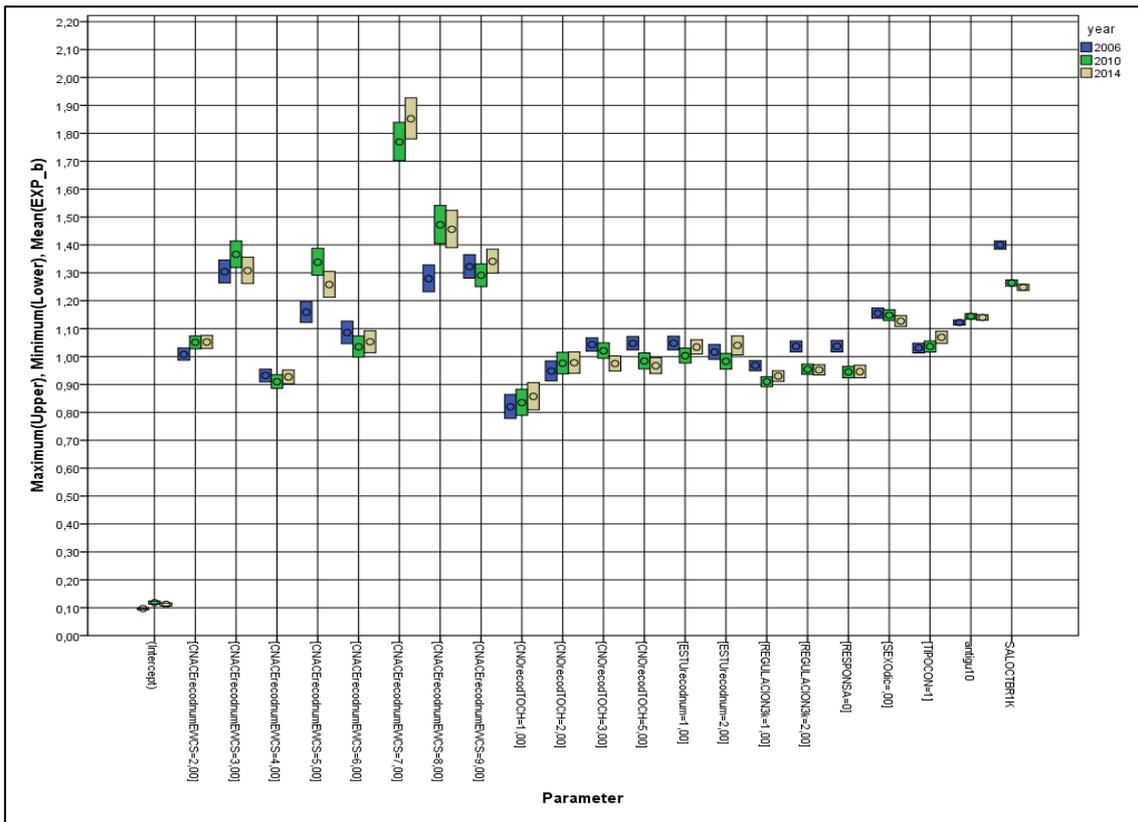


Figure 1: Comparative ExpB EES 2006-2014

RQ4 explores the influence of economic cycles on salary-based motivation programs. Again, we focus on the results presented in Table 2. Due to the cross-section nature of the data, Table 2 provides a picture at a specific point in time. Yet, it allows us to see that remuneration programs are not relevant. In this sense, we could easily suspect that economic cycles are not affecting remuneration programs, for the simple reason that they are not common in Spain. Despite this, minor changes can be noticed. The incidence of monthly supplements not related to shiftwork is lower in both 2010 and 2014 than in the 2006 survey. This also applies to extraordinary annual bonuses, in which we observe a relevant decrease. The intensity is similar in the monthly supplements, or even lower in the case of extraordinary annual payments. Hence, although those variables are not disaggregated by fixed and variable, we can assume that variable remuneration programs are not relevant in 2010 and 2014, as they were not in 2006. The incidence and intensity of overtime payments are slightly lower, whereas in the case of payment in kind is a little higher. Still, these components represent a small part of the total salary, as in 2006. The decrease of both the overtime payments and the extraordinary annual payments could be related to the financial crisis in 2008 and the subsequent reform of the Spanish labor market. Yet, we cannot appreciate greater differences between the series, which could be related to the salary structure rigidity and the low incidence of variable remuneration programs. In this sense, our results are consistent with prior evidence demonstrating that the Spanish labor market presents a high wage-rigidity and low wage-flexibility to face the economic shocks (Moral Arce & Maza Fernández, 2010; Sanromá i Meléndez, 2012). Also, since most of the salaries are regulated by collective agreements (Díez Catalán & Villanueva, 2014; Martínez Matute, 2016), we did not expect significant differences between the series. In fact, people who did not

lose their job because of the financial crisis may not have their salaries altered because of the rigid wage structure. In this sense, Spain leads the rate of companies whose response to the economic downturns is mainly based on the workforce adjustment, generating high volatility of the unemployment rate (Sanromá i Meléndez, 2012).

## Conclusions

The purpose of our research was to assess extrinsic motivation within the Spanish HRM context. Specifically, we aimed to identify whether remuneration programs are relevant in the Spanish labor market. In the same vein, we also aimed to find out why the 2006 series reflects variable supplements related to performance, whereas they are not disaggregated in subsequent series. Likewise, we were also interested in detecting which are the factors (at company and personal level) that might affect the adoption of extrinsic motivation programs. Finally, we wanted to assess the incidence of the financial crisis in salary-based motivation programs.

The overall conclusion of our study is that both the incidence and the intensity of the remuneration programs related to extrinsic motivation in the Spanish context are low. Consequently, we can affirm that, within the AMO framework, the motivation section (M) is not likely to be related to variable remuneration. It seems that the salary structure in the Spanish context is mostly influenced by the current labor legislation. In this sense, the “equal pay for equal work” argument appears to be imposed in the Spanish context, and variable remuneration seems to be an exception to the rule. In fact, our results show that the basic salary is the central part of the monthly gross amount. Moreover, both fixed bonuses not related to shiftwork and annual extraordinary-fixed payments account for a considerable proportion of the salary. On the contrary, monthly, or annual variable payments have little incidence, whereas overtime payments and payments in kind represent an insignificant part of the total income. Concerning the intensity, this fact is further amplified, since variable supplements represent a marginal part of the salary. In the 2006 series, there were specific categories collecting data from both monthly variable bonuses and extraordinary variable payments. However, in subsequent series, those payments are not disaggregated. Our results show that in 2006 these categories were not relevant. In addition, we have not observed significant differences between the three series of data. Indeed, the incidence of monthly supplements not related to shiftwork and extraordinary annual bonuses is even lower in both 2010 and 2014 than in the 2006 series. Hence, we assume that INE considered not necessary to break down these categories into fixed and variables. In other words, we believe that remuneration programs are not relevant in 2010 and 2014, as they were not in the 2006 series. This issue links directly with another of our research questions. We were also interested in understanding the impact of the financial crisis on the salary structure. For that reason, we studied three different series of data: 2006, 2010, and 2014. Only the decrease of both the overtime payments and the extraordinary payments from 2006 to 2014 could be related to the financial crisis and the subsequent reform of the Spanish labor market. However, these differences are no relevant enough. This fact could be associated with the absence of flexibility in the salary structure and the strong presence of collective bargaining agreements, which causes the homogenization among the EES series. As we said before, we are concerned about the cross-sectional nature of the data. However, we are convinced that this analysis allows us to better understand the situation of remuneration programs in Spain. If the analysis had revealed large changes between waves, it might be the starting point of future

research. On the contrary, as major changes have not been shown, we can conclude that these programs are not relevant in the Spanish context.

In the literature review section, we mentioned that many investigations deal with factors affecting salaries as a whole (total gross salary without dividing by retribution concepts). We considered that those factors could also affect the implementation of remuneration programs in the Spanish context. Therefore, we conducted a generalized linear model analysis for identifying how several factors influenced the intensity of special payments not devoted to shiftwork. Our results show that a few of the factors studied had a substantial effect on the intensity of the dependent variable. However, some aspects deserve to be mentioned. First, in the three series, we observe that intensity is slightly greater in men than in women, but this difference has been narrowed gradually. Our investigation only focuses on the incidence and the intensity of remuneration programs, but maybe this trend could be related to gender equality policies carried out during the last years. Second, although differences are minimal, the intensity tends to be greater in jobs with responsibility (except for 2006 series), and in permanent contracts than in temporary ones. Neither the level of education nor the occupation appear to be significant. Third, both the incidence and the intensity of salary supplements are greater when employment relationships are regulated by company or workplace agreements than when this is done by national or regional ones. This is a good example of how HRM can positively affect job conditions. In future research, it would be interesting to group both company and work center agreements, because these agreements are created with similar procedures, and they have similar effects over the salary components. Fourth, concerning economic activities, some of them are likely to affect the intensity. The most significant differences are shown in public administration and defense. These differences make sense since public employees usually have several supplements in their salary structure. In future research, however, it would be interesting to find out how these supplements are measured or if they are somehow fixed supplements without regard to job performance. Other activities such as education, healthcare, construction, and transportation are likely to affect the intensity, although to a lesser extent. Finally, both seniority and the amount of gross pay for the reference month affect the intensity. Consequently, if the length of service and the gross salary is higher, the intensity of special payments not devoted to shiftwork is likely to represent a bigger percentage over the total salary.

Concerning the contributions of this research, we consider that it is interesting both at an academic and a professional level. We assess whether remuneration programs are relevant in the Spanish context to be considered in research models. We have also clarified several issues related to the salary structure composition in Spain. As a matter of fact, we have revealed that remuneration programs related to extrinsic motivation are not being widely used in the Spanish context. This fact is relevant since many studies point out that employee involvement is essential for the success of the organizations in the current context. On these grounds, we must ask ourselves several questions. Are extrinsic motivation programs being used in Spain? If so, how are they implemented? Does the current regulation prevent the use of these programs? Should it be more flexible for enhancing business performance? Further studies could be devoted to answering these questions.

We consider that the EES is a quality source that allows us to explore our research questions. Moreover, the sample is wide-ranging and highly representative of the population. However, the main limitation of the study is that EES is an omnibus survey with specific questions on which we cannot intervene. In this sense, many economic participation programs are grouped into a single category within the survey, which

limits the possibility of analysis. In addition, EES survey provides cross-sectional data, which limits the possibility of establishing causal relationships. These limitations are well-known in the HRM context.

In the literature review, we have found that many studies also use data from the INE. Yet, some authors use other sources of information, such as the Continuous Sample of Working Lives (CSWL) (Arranz Muñoz & García Serrano, 2014; Messina et al., 2010) or the European community household panel survey (ECHP) (Budría & Moro-Egido, 2008; Peraita, 2005). This fact provides a possible line of future research since these sources could help us to clarify our research questions. Another important limitation is that our research only uses official data provided by company payroll records. Therefore, it does not consider the existence of unofficial data. As a matter of fact, a study of the statistical service of the Employment, Social Affairs and Inclusion of the European Commission indicates that 8.8% of the Spanish workforce operates within the framework of undeclared work (Williams et al., 2017). This could mean, for example, that the intensity of overtime payments was greater than the results obtained in our analysis. Therefore, further empirical research could be linked to identifying new sources or studies to understand the current situation better. Also, further studies could be devoted to replicate the analyses with the subsequent series of data. In this vein, we expect the 2018/2019 series to be published during 2021. Concerning the factors under study, it would be interesting to group both company and work center agreements, because these agreements are created with similar procedures, and they have similar effects over the salary components.

### **CRedit authorship contribution statement**

Authors are shown in alphabetical order.

**Juan A. Marin-Garcia:** Conceptualization, Data curation, Formal analysis, Methodology, Writing-review & editing, Software, Supervision, Validation. **Juan Martinez-Tomas:** Conceptualization, Visualization, Formal analysis, Writing-Original draft, Writing – review & editing, Data curation.

### **Bibliography**

- INSHT (2017). Encuesta Nacional de Condiciones de Trabajo. 2015 6a EWCS. España - Año 2017 - Detalle - INSST. Instituto Nacional de Seguridad e Higiene En El Trabajo (INSHT). <https://www.insst.es/-/encuesta-nacional-de-condiciones-de-trabajo-2015-6-ewcs-espa-1>
- Alcalá Agulló, F., & Hernández Martínez, P. J. (2006). Las externalidades del capital humano en la empresa española. *Revista de Economía Aplicada*, XIV(41), 61–83. [http://www.revcap.com/revista/numeros/41/pdf/alcala\\_hernandez.pdf](http://www.revcap.com/revista/numeros/41/pdf/alcala_hernandez.pdf)
- Antón, J. I., & de Bustillo, R. M. (2015). Public-private sector wage differentials in Spain. An updated picture in the midst of the Great Recession. *Investigacion Economica*, 74(292), 115–157. <https://doi.org/10.1016/j.inveco.2015.08.005>
- Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A. L. (2000). Do high performance work systems pay off? ILR Press. [https://doi.org/10.1016/S0277-2833\(01\)80022-4](https://doi.org/10.1016/S0277-2833(01)80022-4)
- Arranz Muñoz, J. M., & García Serrano, C. (2014). How green was my valley earnings differentials and the changing distribution of wages in Spain. *International Journal of Manpower*, 35(7), 1059–1087. <https://doi.org/10.1108/IJM-01-2012-0019>

- Bande, R., & Fernández, M. (2011). Wage flexibility and local labour markets : homogeneity of the wage curve in Spain. *Labour*, 34, 1–26. [http://docs.game-idega.com/documentos\\_de\\_traballo/analise\\_economica/analise\\_economica\\_44.pdf](http://docs.game-idega.com/documentos_de_traballo/analise_economica/analise_economica_44.pdf)
- Beltrán-Martín, I., & Bou-Llusar, J. C. (2018). Examining the intermediate role of employee abilities, motivation and opportunities to participate in the relationship between HR bundles and employee performance. *BRQ Business Research Quarterly*, 21(2), 99–110. <https://doi.org/10.1016/j.brq.2018.02.001>
- Bos-Nehles, A. C., Van Riemsdijk, M. J., & Kees Looise, J. (2013). Employee perceptions of line management performance: Applying the AMO theory to explain the effectiveness of line managers' HRM implementation. *Human Resource Management*, 52(6), 861–877. <https://doi.org/10.1002/hrm.21578>
- Budría, S., & Moro-Egido, A. I. (2008). Education, educational mismatch, and wage inequality: Evidence for Spain. *Economics of Education Review*, 27(3), 332–341. <https://doi.org/10.1016/j.econedurev.2006.10.005>
- Card, D., & De La Rica, S. (2006). Firm-level contracting and the structure of wages in Spain. *Industrial and Labor Relations Review*, 59(4), 573–592. <https://doi.org/10.1177/001979390605900403>
- Carrasco, R., Jimeno, J. F., & Ortega, A. C. (2015). Returns to Skills and the Distribution of Wages: Spain 1995-2010. *Oxford Bulletin of Economics and Statistics*, 77(4), 542–565. <https://doi.org/10.1111/obes.12077>
- Casado Díaz, J., & Simón, H. (2016). Wage differences in the hospitality sector. *Tourism Management*, 52, 96–109. <https://doi.org/10.1016/j.tourman.2015.06.015>
- Clemente, J., Diaz-Foncela, M., Marcuello, C., & Sanso-Navarro, M. (2012). The wage gap between cooperative and capitalist firms: Evidence from Spain. *Annals of Public and Cooperative Economics*, 83(3), 337–356. <https://doi.org/10.1111/j.1467-8292.2012.00466.x>
- Díez Catalán, L., & Villanueva, E. (2014). Contract staggering and unemployment during the Great Recession: evidence from Spain. *Documentos de Trabajo Del Banco de España*, 31, 1–53. <https://dialnet.unirioja.es/servlet/articulo?codigo=7021153&orden=0&info=link>
- Dilmé Soto, F. (2007). Optimal Wage Distribution in Hierarchies. *Cuadernos de Economía*, 30(82), 37–74. <http://web.uam.es/Economicas/AnalisisEconomicoTeoriaHistoria/1234888140248.htm>
- Elisabet, M., López Bazo, E., & Mayssun, E.-A. (2007). Cambios en la distribución salarial en España, 1995-2002, efectos a través del tipo de contrato. *Documents de Treball ( IREA )*, 12, 1–30. <http://dialnet.unirioja.es/servlet/articulo?codigo=2304318&orden=117400&info=link%5Cnhttp://dialnet.unirioja.es/servlet/extart?codigo=2304318>
- Felgueroso, F., Pérez-Villadóniga, M. J., & Prieto-Rodríguez, J. (2008). The effect of the collective bargaining level on the gender wage gap: Evidence from Spain. *Manchester School*, 76(3), 301–319. <https://doi.org/10.1111/j.1467-9957.2008.01061.x>
- Grau-Grau, M., & Parry, E. (2010). Mind the Gap: Spain: Employee perspective.
- Greckhamer, T. (2016). CEO compensation in relation to worker compensation across countries: The configurational impact of country-level institutions. *Strategic Management Journal*, 37(4), 793–815. <https://econpapers.repec.org/RePEc:bla:stratm:v:37:y:2016:i:4:p:793-815>
- Hospido, L., & Moral-Benito, E. (2016). The public sector wage premium in Spain: Evidence from longitudinal administrative data. *Labour Economics*, 42, 101–122. <https://doi.org/10.1016/j.labeco.2016.08.001>
- Instituto Nacional Estadística. (2017). Encuesta de estructura salarial. [http://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica\\_C&cid=1254736177025&menu=resultados&secc=1254736195110&idp=1254735976596](http://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736177025&menu=resultados&secc=1254736195110&idp=1254735976596)

- James, W. (1989). *Principios de psicología*. Alianza Editorial. [https://books.google.com.pe/books/about/Principios\\_de\\_psicología.html?id=0thWAAAACAAJ&source=kp\\_cover&redir\\_esc=y](https://books.google.com.pe/books/about/Principios_de_psicología.html?id=0thWAAAACAAJ&source=kp_cover&redir_esc=y)
- Jiang, K., Lepak, D. P., Hu, J., Baer, J. C., Jia, J. U., & Baer, J. C. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal*, 55(6), 1264–1294. <https://doi.org/10.5465/amj.2011.0088>
- Leonida, L., Marra, M., Scicchitano, S., Giangreco, A., & Biagetti, M. (2020). Estimating the Wage Premium to Supervision for Middle Managers in Different Contexts: Evidence from Germany and the UK. *Work, Employment and Society*, 095001702090298. <https://doi.org/10.1177/0950017020902983>
- Marin-Garcia, J. A., Bonavia, T., & Losilla, J.-M. (2020). Changes in the Association between European Workers' Employment Conditions and Employee Well-Being in 2005, 2010 and 2015. *International Journal of Environmental Research and Public Health*, 17(3). <https://doi.org/10.3390/ijerph17031048>
- Marín-García, J. A., Bonavia, T., & Miralles Insa, C. (2008). The use of employee participation in the USA and Spanish companies. *International Journal of Management Science and Engineering Management*, 3(1), 71–80. [http://www.upv.es/i.grup/repositorio/own/MarinEtAl2008The use of employee participations inUSAand Spanish.pdf](http://www.upv.es/i.grup/repositorio/own/MarinEtAl2008The%20use%20of%20employee%20participations%20in%20USA%20and%20Spanish.pdf)
- Marín-García, J. A., & Conci, G. (2012). Verification of the reflective model of first order factors for reward and empowerment constructs, based on questionnaires derived from Lawler et al. (1991). *Journal of Industrial Engineering and Management*, 5(2), 473–495. <https://doi.org/10.3926/jiem.454>
- Marín-García, J. A., & Martínez-Tomas, J. (2016). Deconstructing AMO framework: A systematic review. *Intangible Capital*, 12(4), 1040–1087. <https://doi.org/10.3926/ic.838>
- Martínez Matute, M. (2016). La rigidez del coste laboral y el crecimiento del empleo en España. *Revista de Economía Laboral*, 13(2), 135–155. <https://dialnet.unirioja.es/descarga/articulo/6038671.pdf>
- Martínez-Tomas, J., & Marin-Garcia, J. A. (2019). Protocol: What does the wage structure depend on? Evidence from the INE salary national survey (pilot study with 2006 data). *WPOM-Working Papers on Operations Management*, 10(1), 70-103. <https://doi.org/10.4995/wpom.v10i1.11753>
- Merino, E., & Banegas, R. (2011). Corporate governance issues and director compensation structure in Spanish companies. *African Journal of Business Management*, 5(22), 9164–9179. <https://doi.org/10.5897/AJBM11.299>
- Messina, J., Duarte, C. F., Izquierdo, M., du Caju, P., & Hansen, N. L. (2010). The incidence of nominal and real wage rigidity: An individual-based sectoral approach. *Journal of the European Economic Association*, 8(2–3), 487–496. <https://doi.org/10.1111/j.1542-4774.2010.tb00519.x>
- Moral Arce, I., & Maza Fernández, A. J. (2010). ¿Flexibilidad o rigidez salarial en España? un análisis a escala regional. *Revista de Estudios Empresariales. Segunda Época*, 1, 217–230. <https://dialnet.unirioja.es/descarga/articulo/3256494.pdf>
- Murillo Huertas, I. P., & Simón, H. (2014). La Gran Recesión y el diferencial salarial por género en España. *Hacienda Publica Espanola*, 208(1), 39–76. <https://doi.org/10.7866/HPE-RPE.14.1.2>
- OECD. (2019). *OECD Compendium of Productivity Indicators 2019*. In OECD Publishing. OECD. <https://doi.org/10.1787/b2774f97-en>
- Peraita, C. (2005). Firm-sponsored training in regulated labour markets: Evidence from Spain. *Applied Economics*, 37(16), 1885–1898. <https://doi.org/10.1080/00036840500194102>

- Perello-Marín, M. R., & Ribes-Giner, G. (2014). Identifying a guiding list of high involvement practices in human resource management. *WPOM-Working Papers on Operations Management*, 5(1), 31–47. <https://doi.org/10.4995/wpom.v5i1.1495>
- Pfeffer, J., & Sutton, R. (2006). Hard Facts, Dangerous Half-Truths, and Total Nonsense Profiting from Evidence-Based Management. *Strategy & Leadership*, 34, 35–42. <https://doi.org/10.1108/10878570610652617>
- Ramos, R., Sanromá, E., & Simón, H. (2014). Public-private sector wage differentials by type of contract: Evidence from Spain. *Hacienda Publica Espanola*, 208(1), 107–141. <https://doi.org/10.7866/HPE-RPE.14.1.4>
- Rutherford, A. (2001). *Introducing ANOVA and ANCOVA: a GLM approach*. In London: Sage. [https://books.google.es/books?hl=en&lr=&id=T6uvhsy8d\\_8C&oi=fnd&pg=PP1&dq=Rutherford+\(2001\).+Introducing+Anova+and+Ancova:+A+GLM+Approach.+SAGE.&ots=Kk5Vu3EneI&sig=H3rnnCwuGYph\\_j5Zc8iS4QUu73Q](https://books.google.es/books?hl=en&lr=&id=T6uvhsy8d_8C&oi=fnd&pg=PP1&dq=Rutherford+(2001).+Introducing+Anova+and+Ancova:+A+GLM+Approach.+SAGE.&ots=Kk5Vu3EneI&sig=H3rnnCwuGYph_j5Zc8iS4QUu73Q)
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Sanromá i Meléndez, E. (2012). El mercado de trabajo español en la crisis económica (2008-2012): Desempleo y reforma laboral. *Revista de Estudios Empresariales. Segunda Época*, 2, 29–57. <https://dialnet.unirioja.es/descarga/articulo/5089653.pdf>
- Schimansky, S. (2014). The Effect of a High-Commitment Work System on Innovative Behavior of Employees. [http://essay.utwente.nl/65249/1/Schimansky\\_BA\\_MB.pdf](http://essay.utwente.nl/65249/1/Schimansky_BA_MB.pdf)
- Serrano-Cinca, C., Fuertes-Callén, Y., & Mar-Molinero, C. (2005). Measuring DEA efficiency in Internet companies. *Decision Support Systems*, 38(4), 557–573. <https://doi.org/10.1016/j.dss.2003.08.004>
- Simón, H. (2009). La desigualdad salarial en España: Una perspectiva internacional y temporal. *Investigaciones Económicas*, 33(3), 439–471.
- Simón, H., & Murillo, I. (2014). ¿Sufren las mujeres inmigrantes una doble penalización salarial? Evidencia para España. *Cuadernos Económicos de ICE*, 87, 85–126. [http://www.revistasice.com/CachePDF/CICE\\_87\\_85-126\\_65068573CB6291DFD7AC1CC34DDD2BBF.pdf](http://www.revistasice.com/CachePDF/CICE_87_85-126_65068573CB6291DFD7AC1CC34DDD2BBF.pdf)
- Simon, H., Sanroma, E., & Ramos, R. (2017). Full- and part-time wage differences in Spain: an analysis along the wage distribution. *International Journal of Manpower*, 38(3), 449–469. <https://doi.org/10.1108/IJM-09-2015-0151>
- Toch, M., Bambra, C., Lunau, T., van der Wel, K. A., Witvliet, M. I., Dragano, N., & Eikemo, T. A. (2014). All Part of the Job? The Contribution of the Psychosocial and Physical Work Environment to Health Inequalities in Europe and the European Health Divide. *International Journal of Health Services*, 44(2), 285–305. <https://doi.org/10.2190/HS.44.2.g>
- Wright, P. M., & Kehoe, R. R. (2008). Human resource practices and organizational commitment: A deeper examination. *Asia Pacific Journal of Human Resources*, 46(1), 6–20. <https://doi.org/10.1177/1038411107086540>
- Yu, C.-S., Finegold, D., Lawler III, E. E., & Cochran, D. S. (2000). Does cultural fit matter? The adoption and effectiveness of the employee involvement practices in China and the United States. *Current Topics on Management*, 5.

## ANNEX 1

Intensity variables:

- intSALBASE=SALBASE/ SALOCTBR
- intPHEXTRA=PHEXTRA/ SALOCTBR
- intCOMSAL=COMSAL/ SALOCTBR
- intCOMSALTT=COMSALTT/ SALOCTBR
- intCOMSALV=COMSALV/ SALOCTBR
- intCOMSALotFIJ=COMSALotFIJ/ SALOCTBR
- intCOMSALnoTT=COMSALnoTT/ SALOCTBR
- intGEXTRA=GEXTRA/ SALBRUTO
- intPEXTRAAF=PEXTRAAF/ SALBRUTO
- intPEXTRAAV=PEXTRAAV/ SALBRUTO
- intVESP=VESP/ SALBRUTO

Incidence dichotomous variables:

- dicPHEXTRA= PHEXTRA > 0
- dicCOMSAL= COMSAL > 0
- dicCOMSALTT= COMSALTT > 0
- dicCOMSALV= COMSALV > 0
- dicCOMSALotFIJ=COMSALotFIJ > 0
- dicCOMSALnoTT=COMSALnoTT > 0
- dicGEXTRA=GEXTRA > 0
- dicPEXTRAAF= PEXTRAAF > 0
- dicPEXTRAAV= PEXTRAAV > 0
- dicVESP= VESP > 0

### Descriptive statistics

```
DESCRIPTIVES VARIABLES=intSALBASE intCOMSAL intCOMSALTT intCOMSALV  
intCOMSALotFIJ intCOMSALnoTT
```

```
intGEXTRA intPEXTRAAF intPEXTRAAV intVESP intPHEXTRA
```

```
/STATISTICS=MEAN STDDEV MIN MAX KURTOSIS SKEWNESS.
```

```
DESCRIPTIVES VARIABLES=dicPHEXTRA dicCOMSAL dicCOMSALTT dicCOMSALV  
dicCOMSALotFIJ dicCOMSALnoTT
```

```
dicGEXTRA dicPEXTRAAF dicPEXTRAAV dicVESP
```

```
/STATISTICS=MEAN
```

## ANNEX 2

Table a.- NACE recoded to NACE\_EWCS

Sections	Title	EWCS
A	Agriculture, forestry, and fishing	1. Agriculture
B	Mining and quarrying	2. Industry
C	Manufacturing	
D	Electricity, gas, steam and air-conditioning supply	
E	Water supply, sewerage, waste management, and remediation	
F	Construction	
G	Wholesale and retail trade, repair of motor vehicles and motorcycles	3. Construction
I	Accommodation and food service activities	4. Trade and hospitality
H	Transportation and storage	
K	Financial and insurance activities	5. Transportation
L	Real estate activities	
O	Public administration and defense, compulsory social security	6. Administrative, auxiliary and financial activities
P	Education	7. Public administration and defense
Q	Human health and social work activities	8. Education
J	Information and communication	9. Healthcare
M	Professional, scientific, and technical activities	
N	Administration and support service activities	
R	Arts, entertainment and recreation	
S	Other services	

Table b.- CNO recoded to CNO\_EWCS

Sections	Title	CNO_EWCS
A	Directors and managers	1. Directors and managers
B	Scientific and intellectual technicians and professionals	2. Scientific and intellectual technicians and professionals
C	Other scientific and intellectual technicians and professionals	
D	Technicians; support professionals	3. Technicians; support professionals
E	Office employees who do not deal with the public	4. Accounting and administrative employees
F	Customer service clerks	
G	Catering and trade service workers	
H	Health services and personal care workers	5. Workers in catering, personal, and protection services
I	Protective and security services workers	
J	Skilled agricultural, livestock, forestry and fishery workers	
K	Skilled construction workers, except machinery operators	6. Skilled agricultural, livestock, forestry and fishery workers
L	Skilled manufacturing industry workers, except installation and machine operators	
M	Stationary plant and machinery operators, and assemblers	
N	Mobile machine drivers and operators	7. Skilled manufacturing industry and construction craftspersons and workers
O	Unskilled services workers (except transport)	
P	Agricultural, fishing, construction, manufacturing and transport industry laborers	8. Plant and machine operators, and assemblers
Q	Armed forces occupations	9. Elementary occupations
		Missing values

**Table c.- CNO\_EWCS recoded to CNO\_Toeh**

Sections	Tittle	CNO_EWCS
1	Directors and managers	I Higher controllers
2	Scientific and intellectual technicians and professionals	II Lower controllers
3	Technicians; support professionals	III Routine non-manual employees
4	Accounting and administrative employees	
5	Workers in catering, personal, and protection services	
6	Skilled agricultural, livestock, forestry and fishery workers	V Skilled manual workers
7	Skilled manufacturing industry and construction craftspersons and workers	
8	Plant and machine operators, and assemblers	
9	Elementary occupations	VI Semi and unskilled manual workers

**Table d: Descriptive statistics of continuous variable (EES 2006)**

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	intCOMSALnoTTplus intCOMSALnoTTplus=in tCOMSALnoTT+0.00001	235272	.00	1.00	.2420	.20795
	antigu10 antigu10=antigu/10	235272	.01	5.70	.8130	.96245
Covariate	SALOCTBR1K SALOCTBR1K=SALOC TBR/1000	235272	.01	22.15	1.5398	1.01639
	intCOMSALnoTTplus: special payments not devoted to shiftwork; antigu10: seniority; SALOCTBR1K: gross pay for the reference month (October)					

**Table e: Descriptive statistics of continuous variable (EES 2010)**

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	intCOMSALnoTTplus intCOMSALnoTTplus=in tCOMSALnoTT+0.00001	216769	.00	1.00	.2513	.22465
	antigu10 antigu10=antigu/10	216769	.01	5.62	.9252	.96153
Covariate	SALOCTBR1K SALOCTBR1K=SALOC TBR/1000	216769	.01	72.41	1.8691	1.36010
	intCOMSALnoTTplus: special payments not devoted to shiftwork; antigu10: seniority; SALOCTBR1K: gross pay for the reference month (October)					

**Table f: Descriptive statistics of continuous variable (EES 2014)**

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	intCOMSALnoTTplus intCOMSALnoTTplus=intCOMSALnoTT+0.00001	209362	.00	1.00	.2431	.22020
Covariate	antigu10 antigu10=antigu/10	209362	.01	6.00	1.0399	.96924
	SALOCTBR1K SALOCTBR1K=SALOC TBR/1000	209362	.01	96.09	1.9341	1.44980
intCOMSALnoTTplus: special payments not devoted to shiftwork; antigu10: seniority; SALOCTBR1K: gross pay for the reference month (October)						

## ANNEX 4

GLM SPSS syntax for the 2006, 2010 and 2014 series:

```

GENLIN intCOMSALnoTTplus BY SEXOdic RESPONSA TIPOCON CNACerecodnumEWCS CNOrecodTOCH
REGULACION3k ESTUrecodnum (ORDER=ASCENDING) WITH antigu10 SALOCTBR1K
/MODEL SEXOdic RESPONSA TIPOCON CNACerecodnumEWCS CNOrecodTOCH REGULACION3k
ESTUrecodnum antigu10 SALOCTBR1K INTERCEPT=YES
DISTRIBUTION=GAMMA LINK=LOG
/CRITERIA METHOD=FISHER(1) SCALE=MLE COVB=MODEL MAXITERATIONS=100
MAXSTEPHALVING=5 PCONVERGE=1E-006(ABSOLUTE) SINGULAR=1E-012 ANALYSISTYPE=3(WALD)
CILEVEL=95 CITYPE=WALD LIKELIHOOD=FULL
/MISSING CLASSMISSING=EXCLUDE
/PRINT CPS DESCRIPTIVES MODELINFO FIT SUMMARY SOLUTION (EXPONENTIATED).

```

## ANNEX 5

**Table d.- EES 2006. <sup>a</sup>Parts per unit of people having remuneration components and <sup>b</sup>intensity descriptives of remuneration components parts per unit over the total salary)**

	people <sup>a</sup>	Minimum <sup>b</sup>	Maximum <sup>b</sup>	Mean <sup>b</sup>	Standard deviation <sup>b</sup>	Skewness <sup>b</sup>	Kurtosis <sup>b</sup>
SALBASE	1	.00	1.00	.7352	.2151	-.518	-.669
PHEXTRA	.0661	.00	.70	.0072	.0368	7.011	59.400
COMSAL	.8443	.00	1.00	.2576	.2123	.563	-.587
COMSALTT	.1511	.00	.86	.0156	.0532	5.116	34.793
▪ COMSALV	.2869	.00	1.00	.0557	.1226	2.772	8.283
▪ COMSALotFLJ	.7469	-.04	1.00	.1863	.1956	1.005	.202
COMSALnoTT	.8288	.00	1.00	.2420	.2080	.637	-.472
GEXTRA	.9044	.00	.92	.1469	.0869	.867	2.458
▪ PEXTRA AF	.8925	.00	.77	.1291	.0703	.329	1.697
▪ PEXTRA AV	.2114	.00	.84	.0178	.0525	4.316	23.301
VESP	.1148	.00	.47	.0023	.0139	13.806	276.089
N of valid cases 235272							

**Table e.- <sup>a</sup>Parts per unit of people having remuneration components and <sup>b</sup>intensity descriptives of remuneration components parts per unit over the total salary)**

	people <sup>a</sup>	Minimum <sup>b</sup>	Maximum <sup>b</sup>	Mean <sup>b</sup>	Standard deviation <sup>b</sup>	Skewness <sup>b</sup>	Kurtosis <sup>b</sup>
SALBASE	1	.00	1.00	.7272	.23263	-.490	-.842
PHEXTRA	.0527	.00	.74	.0059	.03496	8.346	84.992
COMSAL	.8031	.00	1.00	.2669	.23028	.524	-.797
COMSALTT	.1581	.00	.90	.0155	.05286	5.334	39.127
COMSALnoTT	.7908	.00	1.00	.2513	.22465	.584	-.721
GEXTRA	.7608	.00	.92	.1184	.09296	.811	1.999
VESP	.1570	.00	.25	.0028	.01447	9.729	120.633
N of valid cases 216769							

**Table f.- ESS 2014 <sup>a</sup>Parts per unit of people having remuneration components and <sup>b</sup>intensity descriptives of remuneration components parts per unit over the total salary)**

	people <sup>a</sup>	Minimum <sup>b</sup>	Maximum <sup>b</sup>	Mean <sup>b</sup>	Standard deviation <sup>b</sup>	Skewness <sup>b</sup>	Kurtosis <sup>b</sup>
SALBASE	1	.00	1.00	.7394	.22700	-.550	-.756
PHEXTRA	.0397	.00	.61	.0039	.02601	9.603	113.297
COMSAL	.7998	.00	1.00	.2568	.22550	.577	-.711
COMSALTT	.1462	.00	.81	.0137	.04742	5.213	35.817
COMSALnoTT	.7913	.00	1.00	.2431	.22021	.642	-.613
GEXTRA	.7521	.00	.92	.1145	.09188	.868	2.429
VESP	.2099	.00	.25	.0033	.01418	8.197	88.324
N of valid cases 209436							

## ANNEX 6

Table g. GLM parameter estimates EES 2006

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
(Intercept)	-2.337	.0187	-2.374	-2.301	15585.39	1	.000	.097	.093	.100
[SEXOdic=,00]	.144	.0081	.128	.160	317.045	1	.000	1.155	1.137	1.174
[SEXOdic=1,00]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[RESPONSA=1]	.037	.0099	.017	.056	13.679	1	.000	1.037	1.017	1.058
[RESPONSA=6]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[TIPOCON=1]	.030	.0086	.013	.047	12.296	1	.000	1.031	1.013	1.048
[TIPOCON=2]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[CNACerecodnum EWCS=2,00]	.008	.0112	-.014	.030	.565	1	.452	1.008	.987	1.031
[CNACerecodnum EWCS=3,00]	.266	.0159	.235	.297	279.911	1	.000	1.304	1.264	1.346
[CNACerecodnum EWCS=4,00]	-.071	.0126	-.095	-.046	31.263	1	.000	.932	.909	.955
[CNACerecodnum EWCS=5,00]	.148	.0165	.115	.180	80.212	1	.000	1.159	1.122	1.197
[CNACerecodnum EWCS=6,00]	.082	.0191	.045	.120	18.542	1	.000	1.086	1.046	1.127
[CNACerecodnum EWCS=8,00]	.246	.0190	.209	.284	167.361	1	.000	1.279	1.232	1.328
[CNACerecodnum EWCS=9,00]	.279	.0163	.247	.311	294.010	1	.000	1.322	1.281	1.365
[CNACerecodnum EWCS=10,00]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[CNorecodTOCH =1,00]	-.198	.0266	-.250	-.146	55.707	1	.000	.820	.778	.864
[CNorecodTOCH =2,00]	-.053	.0191	-.091	-.016	7.842	1	.005	.948	.913	.984
[CNorecodTOCH =3,00]	.042	.0117	.019	.065	12.875	1	.000	1.043	1.019	1.067
[CNorecodTOCH =5,00]	.046	.0118	.023	.069	15.488	1	.000	1.047	1.024	1.072
[CNorecodTOCH =6,00]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[REGULACION3k =1,0]	-.033	.0098	-.052	-.014	11.205	1	.001	.968	.949	.986
[REGULACION3k =2,0]	.036	.0095	.017	.055	14.264	1	.000	1.037	1.017	1.056
[REGULACION3k =3,0]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[ESTUrecodnum=1]	.047	.0119	.024	.070	15.750	1	.000	1.048	1.024	1.073
[ESTUrecodnum=2]	.016	.0133	-.010	.042	1.397	1	.237	1.016	.990	1.043
[ESTUrecodnum=3]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
antigu10	.115	.0041	.107	.123	806.163	1	.000	1.122	1.113	1.131
SALOCBR1K	.336	.0053	.326	.347	3978.488	1	.000	1.400	1.385	1.414
(Scale)	2.663 <sup>b</sup>	.0062	2.651	2.675						

Dependent Variable: intCOMSALnoTTplus=intCOMSALnoTT+0.00001

Model: (Intercept), SEXOdic, RESPONSA, TIPOCON, CNACerecodnumEWCS, CNorecodTOCH, REGULACION3k, ESTUrecodnum, antigu10, SALOCBR1K

a. Set to zero because this parameter is redundant.

b. Maximum likelihood estimate.

**Table h. GLM parameter estimates EES 2010**

Parameter	Parameter Estimates									
	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
(Intercept)	-2.136	.0240	-2.183	-2.089	7906.121	1	.000	.118	.113	.124
[SEXOdic=,00]	.138	.0087	.121	.155	252.570	1	.000	1.148	1.129	1.168
[SEXOdic=1,00]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[RESPONSA=0]	-.057	.0111	-.079	-.035	26.184	1	.000	.945	.924	.965
[RESPONSA=1]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[TIPOCON=1]	.035	.0099	.016	.055	12.804	1	.000	1.036	1.016	1.056
[TIPOCON=2]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[CNACerecodnum EWCS=2,00]	.049	.0113	.027	.072	19.104	1	.000	1.051	1.028	1.074
[CNACerecodnum EWCS=3,00]	.312	.0179	.277	.347	303.283	1	.000	1.366	1.319	1.414
[CNACerecodnum EWCS=4,00]	-.094	.0137	-.121	-.067	46.920	1	.000	.910	.886	.935
[CNACerecodnum EWCS=5,00]	.291	.0185	.255	.328	247.652	1	.000	1.338	1.291	1.388
[CNACerecodnum EWCS=6,00]	.035	.0189	-.002	.072	3.393	1	.065	1.035	.998	1.074
[CNACerecodnum EWCS=7,00]	.570	.0197	.532	.609	836.112	1	.000	1.769	1.702	1.839
[CNACerecodnum EWCS=8,00]	.386	.0236	.340	.433	267.104	1	.000	1.472	1.405	1.541
[CNACerecodnum EWCS=9,00]	.255	.0160	.224	.286	255.451	1	.000	1.291	1.251	1.332
[CNACerecodnum EWCS=10,00]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[CNOrecodTOCH =1,00]	-.181	.0286	-.237	-.125	39.889	1	.000	.835	.789	.883
[CNOrecodTOCH =2,00]	-.024	.0201	-.064	.015	1.474	1	.225	.976	.938	1.015
[CNOrecodTOCH =3,00]	.021	.0135	-.006	.047	2.388	1	.122	1.021	.994	1.049
[CNOrecodTOCH =5,00]	-.016	.0146	-.045	.013	1.191	1	.275	.984	.956	1.013
[CNOrecodTOCH =6,00]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[REGULACION3k =1,00]	-.094	.0101	-.114	-.074	86.192	1	.000	.910	.892	.928
[REGULACION3k =2,00]	-.047	.0098	-.066	-.028	22.899	1	.000	.954	.936	.973
[REGULACION3k =3,00]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[ESTUrecodnum= 1,00]	.003	.0133	-.023	.029	.054	1	.817	1.003	.977	1.030
[ESTUrecodnum= 2,00]	-.018	.0144	-.046	.011	1.486	1	.223	.983	.955	1.011
[ESTUrecodnum= 3,00]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
antigu10	.135	.0044	.126	.143	926.842	1	.000	1.144	1.134	1.154
SALOCTBR1K	.234	.0046	.225	.243	2576.510	1	.000	1.264	1.252	1.275
(Scale)	3.101 <sup>b</sup>	.0075	3.086	3.116						

Dependent Variable: intCOMSALnoTTplus=intCOMSALnoTT+0.00001

Model: (Intercept), SEXOdic, RESPONSA, TIPOCON, CNACerecodnumEWCS, CNOrecodTOCH, REGULACION3k, ESTUrecodnum, antigu10, SALOCTBR1K

a. Set to zero because this parameter is redundant.

b. Maximum likelihood estimate.

Table i. GLM parameter estimates EES 2014

Parameter	Parameter Estimates									
	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
(Intercept)	-2.191	.0252	-2.240	-2.141	7540.560	1	.000	.112	.106	.117
[SEXOdic=,00]	.120	.0088	.102	.137	184.346	1	.000	1.127	1.108	1.147
[SEXOdic=1,00]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[RESPONSA=0]	-.055	.0121	-.079	-.032	20.865	1	.000	.946	.924	.969
[RESPONSA=1]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[TIPOCON=1]	.067	.0105	.046	.087	40.635	1	.000	1.069	1.047	1.091
[TIPOCON=2]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[CNACerecodnum EWCS=2,00]	.051	.0114	.029	.073	19.866	1	.000	1.052	1.029	1.076
[CNACerecodnum EWCS=3,00]	.269	.0184	.233	.305	214.611	1	.000	1.308	1.262	1.356
[CNACerecodnum EWCS=4,00]	-.076	.0138	-.103	-.049	30.287	1	.000	.927	.902	.952
[CNACerecodnum EWCS=5,00]	.230	.0189	.193	.266	147.960	1	.000	1.258	1.212	1.305
[CNACerecodnum EWCS=6,00]	.052	.0193	.014	.089	7.153	1	.007	1.053	1.014	1.093
[CNACerecodnum EWCS=7,00]	.616	.0203	.576	.656	917.414	1	.000	1.852	1.780	1.927
[CNACerecodnum EWCS=8,00]	.376	.0234	.330	.421	256.838	1	.000	1.456	1.390	1.524
[CNACerecodnum EWCS=9,00]	.294	.0163	.262	.325	325.788	1	.000	1.341	1.299	1.385
[CNACerecodnum EWCS=10,00]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[CNOrecodTOCH =1,00]	-.155	.0290	-.211	-.098	28.486	1	.000	.857	.809	.907
[CNOrecodTOCH =2,00]	-.022	.0200	-.062	.017	1.251	1	.263	.978	.940	1.017
[CNOrecodTOCH =3,00]	-.025	.0141	-.053	.002	3.230	1	.072	.975	.948	1.002
[CNOrecodTOCH =5,00]	-.034	.0152	-.063	-.004	4.929	1	.026	.967	.939	.996
[CNOrecodTOCH =6,00]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[REGULACION3k =1]	-.073	.0103	-.093	-.052	49.484	1	.000	.930	.911	.949
[REGULACION3k =2]	-.049	.0099	-.068	-.029	24.292	1	.000	.952	.934	.971
[REGULACION3k =3]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
[ESTUrecodnum= 1,00]	.033	.0127	.009	.058	6.917	1	.009	1.034	1.009	1.060
[ESTUrecodnum= 2,00]	.039	.0167	.006	.072	5.498	1	.019	1.040	1.006	1.074
[ESTUrecodnum= 3,00]	0 <sup>a</sup>	.	.	.	.	.	.	1	.	.
antigu10	.131	.0045	.122	.140	838.004	1	.000	1.140	1.130	1.150
SALOCTBR1K	.221	.0046	.212	.230	2357.419	1	.000	1.248	1.237	1.259
(Scale)	3.095 <sup>b</sup>	.0076	3.080	3.110						

Dependent Variable: intCOMSALnoTTplus=intCOMSALnoTT+0.00001

Model: (Intercept), SEXOdic, RESPONSA, TIPOCON, CNACerecodnumEWCS, CNOrecodTOCH, REGULACION3k, ESTUrecodnum, antigu10, SALOCTBR1K

a. Set to zero because this parameter is redundant.

b. Maximum likelihood estimate.