

Pay me Right: Reference Values and Executive Compensation¹

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Abstract

This paper examines the importance of reference values for executive compensation contracts. We rely on a quasi-experimental setting (the adoption of pay guidelines), and a well-defined measure of individual-specific reference values to provide evidence on how a change in CEO reference compensation leads to subsequent changes of actual pay. We find that executive compensation adjusts gradually towards the new reference values, and that the speed of the adjustment depends on the corporate governance characteristics: the firm ownership structure, the role of the State and of the employees in the firm decision making. These results provide evidence for an introduction of reference values in theoretical models of bargaining.

Keywords: CEO compensation, pay guidelines, reference values, corporate governance, CEO power.

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1. Introduction

Recent literature on executive compensation recognizes that CEOs possess significant bargaining power in negotiations over their pay with the boards of directors (Bebchuk and Fried, 2003; Ruiz-Verdú, 2008). According to standard bargaining theory (Rubinstein, 1982), executive compensation contracts should thus reflect the outside options of both parties (i.e. the CEO and the board of directors), and their relative bargaining power. Consequently, the better paid executives are those with higher outside options and/or those who negotiate their pay terms with weaker boards of directors, while the compensation changes when shifts in the outside options and/or the bargaining power of parties take place.

In this paper we provide evidence that reference values, rather than outside options alone, may determine the outcomes of the bargaining process over executive pay and thereby challenge standard bargaining theory. We rely on a unique quasi-experimental setting related to an introduction of pay guidelines in Slovenia, through which the executives outlined what they considered a fair or appropriate compensation. The guidelines provide a well-defined measure of new (higher) reference values that do not coincide with outside options.¹ Since an introduction of pay guidelines and an associated increase in CEO reference values do not change the CEOs outside options, they should have no effect on actual pay according to standard bargaining theory. However, by estimating a dynamic pay equation using a data set for 668 CEOs (firms) over a period of ten years (1995-2004), which includes the year of introduction of the guidelines (1997), we show that the change in CEO reference values triggered extensive upward adjustment of executive pay. Thus, we confirm that reference values influence the bargaining outcomes even when they deviate from outside options.

Our results are consistent with recent theoretical contributions in the field of behavioral economics (e.g. Compte and Jehiel, 2007; Hart and Moore, 2008). These papers

¹ If reference values only contain information on the outside options, they merely serve as a mechanism for achieving the outcome that is consistent with the standard bargaining theory.

build on prospect theory (Kahneman and Tversky, 1979) and modify the Nash bargaining setup to feature the objective functions (typically net utility functions) defined over deviations of actual values from respective reference values.² Consequently, an increase in the reference value of the executive³ should motivate her to bargain for higher compensation. The impact of a new reference value on actual CEO pay, however, ultimately depends on the relative power of the CEO to the board, and the reference value of the board of directors. For example, the board is more likely to allow adjustment of compensation towards the CEO's reference value when it would also be in the interest of the board (i.e. when the board internalizes the CEO's reference value). In addition to this, various arguments have been proposed in the literature as to why it may be reasonable for a board to respond to the CEO's reference value rather than to her outside option. Generally, these arguments are based on the recognition that, in important ways, individuals adapt their behavior in relation to the reference points. Thus, Adams (1963), and Akerlof and Yellen (1990) put forward the idea that employees, who are paid below their reference wage, are likely to respond by reducing effort.

Our paper also corroborates the results of recent empirical studies that provide evidence on the importance of reference values on individual behavior. For example, Georgellis et al. (2008) and Rizzo and Zeckhauser (2003) provide empirical evidence on the impact of reference pay on an individual's work motivation and job satisfaction. The extensive use of benchmark and peer-group comparisons in compensation practices further supports the notion that reference values play an important role in the determination of executive pay (see Porac et al., 1999, Ezzamel and Watson, 1998 and Bizjak et al., 2008). However, these studies do not measure reference values directly, which makes it hard to distinguish them from the outside options. This paper overcomes this problem by exploiting a

² Prospect theory modifies the standard utility function by postulating that individuals make choices upon considering gains and losses rather than initial or final states of wealth. The reference values determine whether the individual will frame a certain outcome as a loss or a gain (Kahneman and Tversky, 1979).

³ The words executive, manager and CEO are used interchangeably.

unique event that enables us to clearly define the managers' reference points and distinguish them from the outside options. The adoption of pay guidelines introduced reference values that were much above average CEO pay (i.e. the CEOs' outside options). Given that they were advocated by Slovenian Executives, we can interpret the proposed values as CEO-firm-specific reference values, and test whether these new reference values stimulated the subsequent adjustment in the executive pay. We find that the adjustment of actual pay toward the new reference levels was gradual, which reflects the fact that compensation contracts are normally agreed for a longer period and not renegotiated annually. The adjustment was stronger for executives whose actual salaries were further away from their reference values. In line with other studies that attempt to measure the impact of the reference values on individuals' behavior (e.g. Bizjak et al., 2008, Georgellis et al., 2008), we also test for asymmetry of adjustment of executive pay by allowing a different speed of adjustment below and above the reference values. Surprisingly, we fail to find any difference in the speed of adjustment, which implies that pay guidelines also had a role in limiting pay levels. We further explore whether the speed of adjustment depends on various characteristics of firm governance, such as firm ownership, State influence and employee participation in firm management. We find that the gap between actual and reference pay led to faster adjustment in stock corporations than in private limited liability firms. For the sample of stock corporations we find that executive pay adjusted more slowly in the firms that were under supermajority control of an outside private owner. On the other hand, the adjustment towards the CEO reference value was faster in the firms with significant state ownership and in firms with employee representation in the firm management. We interpret these findings as evidence in support of both managerial power in pay bargaining and alignment of interests between executives and some influential representatives on the board of directors.⁴

⁴ Slovenia adopted a two-tier corporate governance system. The managerial and supervisory functions are thus performed by the management board and the supervisory board, respectively. For simplicity, we shall use the

This study makes three important contributions to the literature. First, by analyzing the process of adjustment of actual pay to reference values, our paper adds to the literature that explores the impact of reference values on individual behavior. We also contribute to the general executive compensation literature by providing new empirical evidence on the factors determining the power of the CEO in the compensation setting process, and on the role of the CEO's own perception on the appropriate levels of her rewards on her actual pay. Finally, we add to relatively scarce empirical evidence on the rewards to the CEOs in the parts of the world other than Western Europe and the USA. In particular, few studies used data for transition economies, with the notable exceptions of Eriksson (2005) and Jones and Kato (1996). As argued by Zajac and Westphall (1995), studies for transition economies contribute to the general understanding of compensation practices in different institutional environments.

The remainder of the paper is organized as follows. The next section describes the institutional context, the introduction of the pay guidelines as the new reference values, and the main hypotheses. Data, sample and descriptive statistics are presented in the third section. The fourth section describes and discusses the results. The fifth section concludes.

2. Institutional setting and hypotheses

2.1 Slovenian transition and the adoption of the Criteria for executive pay

Prior to transition, firms in Slovenia were “socially owned”. Officially they were owned by “society as a whole”, while in practice they were governed jointly by managers, employees and political organizations.⁵ These specifics of firm governance were also reflected in the characteristics of executive compensation. The remuneration contracts for top managers and all other employees were set in the same way: their salaries were determined in a general wage pool at the country level, while educational attainment and job complexity

terms “supervisory board”, the “board of directors” and “board” interchangeably.

⁵ This type of ownership was unique for the former Yugoslavia, to which Slovenia belonged until 1991.

explained most of the pay premium of executive pay over pay of other employees. The first market reforms that Slovenia enacted in the late eighties, however, opened the door for wage liberalization. Consequently, the bulk of adjustments in the salaries of managers and other skilled workers took place during the early transition period, 1987-1993 (Orazem and Vodopivec, 1997). The differentiation of managers from other employees got a further push in 1994, when the interest group consisting of the top Slovenian executives (the Association of Slovenian Executives, hereafter the Association) proposed a general increase in executive pay to a level of 5:1 relative to the pay of the average employee. The continuous rise of executive pay after the initiation of market reforms, and the demands of the Association, provoked sharp public protests, which reflected the egalitarian social values in the country and the prevailing belief that managers should be treated in the same manner as other workers. The public outrage stimulated a parliamentary discussion on the adoption of legislation that would set an upper limit for executive pay and ensure comparable pay levels across different firms. To prevent the adoption of such legislation, in 1997 the Association proposed new pay guidelines, called *Criteria on Executive Pay* (hereafter the *Criteria*). The *Criteria* were publicly discussed and finally recognized by the Chamber of Commerce, the Chamber of Craft and Small Business, and the Association of Employers. The document was published in the Official Gazette and adopted a form of professional self-regulation. Although not obligatory, the guidelines introduced a substantial change in the definition of the appropriate pay levels for Slovenian managers. They introduced pay differentiation in relation to firm size, and at the same time raised the recommended executive compensation to 4, 6 and 8 times the average wage for small, medium and large firms, respectively.⁶ Specifically, the recommended base pay (i.e. *base* reference pay) for the CEO in firm i (index of the CEO-firm match) in period t was:

⁶ Size classification was made in accordance with the Slovenian Company Act, *Official Gazette of the Republic of Slovenia*, No. 30/93, 1993.

$$(1) \text{ RefPay}_{it}^{\text{Base}} = \frac{\left(\overline{Wage}_t^{\text{Econ}} + \overline{Wage}_{it} \right)}{2} \text{ Multiplier}_{it},$$

where $\overline{Wage}_t^{\text{Econ}}$ and \overline{Wage}_{it} denote the average gross wage in the economy and in the firm, respectively, and Multiplier_{it} denotes the respective firm size multiplier (4, 6 or 8).

A rule that relates executive pay to firm size and average wage in a firm may provide incentives for better performance since productivity improvements enable pay to rise through increases in the average wage in the firm. However, such a rule is inefficient since it distorts the managers' incentives by inducing them to maximize labor costs rather than firm value. Moreover, the effect of tying executive pay to firm size through a multiplier is a step function that allows only limited variation of pay between three firm-size classes. An additional diluting effect stems from the term that links executive pay to the average wage in the economy. Thus, the CEO is not rewarded for her performance or job complexity, but on the basis of factors over which she has no influence. This component provides a pay premium in firms with below-average productivity and penalizes those with above-average productivity levels. To some extent the distorting incentives in base pay were curtailed as the *Criteria* allowed for the reference pay to vary with firm performance. Namely, CEO pay could be increased by up to 25% of the *base* pay if a firm outperformed the industry average and vice versa. Executives were also entitled to a bonus (up to 30 percent of base pay), contingent on meeting prespecified performance targets. Thus, the recommended total pay (i.e. *total* reference pay), inclusive of the variable cash-compensation, was constrained within the following lower and upper bound:

$$(2) \text{ RefPay}_{it}^{\text{Min}} = 0.75 \frac{\left(\overline{Wage}_t^{\text{Econ}} + \overline{Wage}_{it} \right)}{2} \text{ Multiplier}_{it},$$

$$(3) \quad RefPay_{it}^{Max} = 1.3(1.25 \frac{(\overline{Wage}_t^{Econ} + \overline{Wage}_{it})}{2} Multiplier_{it}).$$

The *Criteria* listed a limited set of performance measures, such as net earnings, growth of exports and employment, return on equity (ROE) or on assets (ROA), market value and value added per employee to be used in performance evaluation. However, no guidance was provided regarding the weight that the firms should attach to a specific performance measure. Bonuses had to be paid from firm profits and were subject to double taxation, which made this type of reward less attractive (Slapničar, 2002).⁷

Based on this description we model the *total* reference pay as:

$$(4) \quad RefPay_{it}^{Total} = RefPay_{it}^{Base} \left(\frac{1 + \pi_{it-1}}{1 + \pi_{t-1}^{med}} \right)^{\varepsilon_{\pi}} \left(\frac{1 + Size_{it-1}}{1 + Size_{t-1}^{med}} \right)^{\varepsilon_l},$$

where π denotes the measure of performance (e.g. labor productivity, ROA, ROE), $Size$ denotes the firm size (e.g. number of employees, annual sales, total assets), and ε_{π} and ε_l are the parameters that capture the responsiveness of the *total* reference pay to measures of performance and size.⁸ Here π and $Size$ are lagged for one period as the performance and size related part of compensation is paid in the subsequent year and accordingly included in the personal income tax statements, the source of data for executive compensation. Variables with superscript *med* denote industry-specific median values.

⁷The *Criteria* also defined a list of luxurious non-quantifiable fringe benefits, a provision for severance payments and some guidance for compensation with stock options. For instance, they suggested that the option exercise price should not be lower than the average stock price from the preceding year with no adjustments for general market index. However, given the poor liquidity of the Slovenian capital market, even the largest Slovenian firms refrained from rewarding their managers with options.

⁸ By relating the total pay to a continuous measure of firm size we attempt to capture the fact that the managers of larger firms (within the same size-group) may be rewarded for the greater complexity of their work. This assumption is in line with the relevant size effect that is observed in other studies on executive pay.

It is important to note that the *Criteria* were drafted in the mid-nineties, coinciding with the major wave of privatization, which brought the first proper owners to previously “socially owned” firms. However, since the dominant mode of privatization included a mix of discount sale of shares to employees and a give-away voucher privatization, the firms ended up with a few relatively small blockholders and a sizeable share of dispersed ownership. Among the blockholders, two state-controlled funds were each entitled to a 10-percent block in every privatized firm, while other blocks were held by privatization investment funds (PIFs). Ownership started to consolidate only after the end of privatization (1998). During the period of our analysis we thus observe a gradual redistribution of power from the managers, employees and other privatization owners to financial holdings (PIFs’ successors), domestic industrial firms, private individuals and (in a few cases) foreign owners (see Gregoric and Vespro, 2009). Considering the period in which they were introduced, the purpose of the *Criteria* is clear. In addition to raising the publicly acceptable levels of CEO compensation, they also aimed to protect the CEOs from bearing the costs of firm restructuring, and to increase (or at least maintain) the share in the total value added, which was presumably challenged by the entrance of new owners. As stated by one of the constitutive members of the Association: “*The Criteria were designed to guarantee an appropriate pay in the times of financial distress. There is no pay limit for a good executive. The upper pay limit is determined by public acceptance. We need to actively influence this upper bound by proposed pay levels. As pay ratios are now larger than before, we need to keep reconciling ours and public views on the subject as long as the new pay ratios are not perceived as appropriate and fair*” (Piskar, 2004, p. 19).

In summary, the *Criteria* defined what managers considered to be fair remuneration for their work. However, since they tied executive pay to the average wage in the firm, they incorporated a consensus solution, balancing the interests of the most powerful groups at that

time: the managers, the employees and the State. The State in particular was sensitive to the public appeals for limited pay differentials and preservation of egalitarian income distribution.

2.2 Hypotheses

A number of studies argue that bargaining over pay between the CEO and the board of directors is far from an arm's length transaction and that shareholders are often not sufficiently strong to ensure the formulation of an optimal contract (Bebchuk and Fried, 2003).⁹ Yet, even if we assume that CEOs actively influence their compensation contract, a change in their reference values should in principle not induce them to demand pay adjustments. In standard bargaining theory a mere change in the executives' perceptions of what they should be paid (i.e. their reference values) should have no influence on the bargaining outcome, if such a change has no immediate impact on the CEOs' outside options. However, Compte and Jehiel (2007) extend the standard bargaining model by assuming that the best offers in the previous bargaining phases enter as the reference values in the subsequent bargaining phase. They show that the parties are willing to delay the agreement to reach an outcome that is higher than any offer obtained in the prior bargaining phases (see also Li, 2007). Interpreted in their framework, the *Criteria* represent the reference pay that is an outcome of collective bargaining at the national level. In other words, we can view their adoption as a result of a first bargaining stage, where the executives argued for their demands in the face of the interests of the most powerful public institutions (i.e. employees and the State) and with the views that these constituencies had regarding the acceptable levels of CEO compensation. In line with Compte and Jehiel (2007), we expect that this first stage bargaining outcome will influence the subsequent bargaining stages at the firm level by

⁹ For example, CEO power over the board of directors in pay negotiation may arise from personal relations between the board members and the CEO, and from directors' and CEO's membership of the same social networks (Subrahmanyam, 2008). CEOs may gain power also through persuasion, selective use of information, promotion of "friendly" directors on the supervisory board, granting benefits and favors to directors, etc. (Wade et al., 1990).

influencing the reference values. Alternatively, we could argue that the *Criteria* expressed the expectations of the CEOs and influenced the expectations of some members of the board of directors; these expectations in turn represented their reference values in pay bargaining (see Koszegi and Rabin, 2006). Thus, our general hypothesis is that *executive compensation would adjust towards the newly determined reference values for executives*. Finding this effect after controlling for initial compensation levels, would confirm the relevance of reference values for the actual pay of executives.

In line with determination of *total* reference pay (4) and allowing for gradual adjustment, the actual pay of CEO changes in response to: (i) the change of the average wage in the firm and the economy, (ii) the change in the firm size classification, and (iii) CEOs' attempts to narrow the gap between reference pay and actual pay. We expect the actual pay to respond differently to each of these factors. Since simultaneous shifts of executive pay and average wage in the firm preserve the shares of different groups of employees in the total labor cost, they should face less opposition (i.e. adjust more quickly) from the bargaining parties than pay adjustment that would increase the relative share of the CEO. Distinguishing between the different factors underlying the reference values is also important because adjustment of CEO pay along the changes in employee wage is consistent with any rent-sharing rule in the firm, and therefore does not necessarily reflect the influence of the *Criteria*. Thus, only a significant positive effect of the other two constituting elements of reference pay can be solely assigned to the effect of the new reference values on actual executive pay. Consequently, we refine the general hypothesis stated above as follows:

Hypothesis 1: The adjustment of actual pay is positively related to shifts in the firm size class, average wage in the firm and in the economy, and the size of the pay gap.

The next hypothesis is based on empirical observations of developed countries (e.g. Ezzamel and Watson, 1998; Bizjak et al., 2008) that find downward rigidity of executive pay. In the present context, we translate this observation to a hypothesis of asymmetric adjustment of actual pay depending on it being below or above the reference value. This test also verifies whether the *Criteria* actually managed to limit pay increases above the reference value. Hence,

Hypothesis 2: The adjustment of actual pay is positive if reference pay is above actual pay. If reference pay is below actual pay, adjustment does not take place.

So far we have assumed that the impact of the reference values on actual CEO pay does not vary across different types of firms. However, the existing literature suggests that the influence of the CEO's reference values may depend on the relative power of the manager in the firm. First, in line with fair wage-effort hypothesis (Adams, 1963; Akerlof and Yellen, 1990) we expect that, unless the principal can actively monitor executive's effort, the owners (or board of directors) may agree to pay increases following a change in the CEO reference values because otherwise the CEO may exert less effort or even search for a new job. Thus, in firms with stronger shareholder control over the CEO, such as private limited liability firms or stock corporations with highly concentrated ownership, executive pay is likely to adjust towards the executives' reference values to a lesser extent, as the anticipated cost of shirking is lower. The hypothesis of a negative relationship between the adjustment towards the CEO reference and the extent of the owners' control is also in line with managerial power approach to studying executive compensation, which advances the idea that firm governance characteristics reflect the power of the CEO in the negotiation process (e.g. Bebchuk and

Fried, 2003; Florackis and Ozkan, 2009) and, in turn, the ability of the CEO to promote her demands in the pay negotiations.

The power of the CEO is approximated with two groups of variables. In the first group are variables that capture the organizational form of firms, while in the second are measures of ownership concentration, State ownership (reflected in the composition of the firm supervisory board) and employee representation on the management board. We distinguish two types of organizational form: stock corporations (corresponding to Plc in the UK or AG in Germany) and private limited liability companies (corresponding to private Ltd in the UK or GmbH in Germany).¹⁰ Since Slovenian Company Act (1993) limits the number of individual owners in private limited liability firms, we can assume that in these firms ownership is more concentrated and owners have a greater interest in the active control of management. On the other hand, we expect greater power of CEO's vis-à-vis the board and owners in stock corporations, and that the adoption of the *Criteria* is more likely and will be faster than in private limited liability firms. However, this may not be the case for stock corporations that have a controlling owner; a large outside owner is active in monitoring CEO effort and is a stronger bargaining party in pay negotiation (Sapp, 2008). Consequently, the adjustment towards the *Criteria* in stock corporations with a controlling owner should be slower than in stock corporations with more dispersed ownership. Thus,

Hypothesis 3: The adjustment of actual pay to reference pay is slower in private limited liability companies than in stock corporations.

¹⁰ We could further distinguish between the listed and unlisted stock corporations. However, the sample of listed firms includes only about 20 percent (100 firms) of all Slovenian stock corporations and among these only 30 firms are listed on the official market with stricter regulation. Also, given the inefficiencies of the Slovenian stock market, there is no relevant difference in the ownership structure and governance characteristics of listed and unlisted firms. The latter suggests that further distinction of stock corporations would give little additional insight into the impact of reference values on executive compensation.

Hypothesis 4: The adjustment of actual pay to reference pay in stock corporations with a controlling blockholder is slower than in other stock corporations.

An important feature of Slovenian corporate governance is the strong role of employees (i.e. co-determination). During the period of our analysis, the employees had the right to appoint one third of the supervisory board members in the firms with up to 1000 employees.¹¹ In the firms employing more than 1000 employees, the employees elected half of the supervisory board members. Moreover, in firms with more than 500 employees, they appointed one member to the management board (i.e. an employee director). Since the *Criteria* align the incentives of executives and other employees by tying their compensation to the average firm wage and the number of employees in the firm, we expect that boards with a greater proportion of members elected by employees are more likely to internalize the pay determined as guidelines and thereby change their own reference values. In addition, other empirical studies show that employee board members are likely to collude with firm managers and thus support their claims (Atanasov and Kim, 2009), which may be particularly strong in firms with employee-elected member of the management board. Thus,

Hypothesis 5: The adjustment of actual pay to reference pay is positively related to the representation of employees in firm management.

The last feature of Slovenian corporate governance that is relevant for our study is the substantial ownership and board representation by the State.¹² Its involvement in firm governance is subject to many conflicting interests (i.e. political versus economic), which

¹¹ The provisions refer to the Employee Co-determination Act, *Official Gazette of the Republic of Slovenia*, 42/1993 and 56/2001.

¹² The State may be a direct owner or an indirect owner through state controlled funds, such as the pension fund or the restitution fund.

makes them more prone to collude with managers. For example, financial support from the corporate sector for public projects may be more valuable to the State representatives than optimizing shareholder value. Moreover, during the period of our analysis, these board members in particular had little experience of “being a shareholder” and lacked appropriate knowledge of corporate governance. Hence the State representatives may have relied on the publicly accepted *Criteria* to legitimize their decisions regarding CEO compensation. Also, by linking CEO pay to a multiplier of the average wage in the economy, the *Criteria* set an upper limit for the labor income inequality at the national level, a major concern in Slovenian society. Last but not least, given that public officials have no personal financial investment in the firms, they may be weaker negotiators than private owners. For these reasons we expect that the State representatives may find it more convenient to support the alignment of CEO compensation with the *Criteria*. Thus,

Hypothesis 6: The adjustment of actual pay is positively related to the ownership share of the State and state-controlled funds.

3. Data and descriptive statistics

The empirical testing of the stated hypotheses imposes significant data requirements. For this purpose we merged four data sets that contain confidential information on executive pay and publicly available firm-level accounting data.¹³ The identity of the CEO for each firm was established from the Statistical Registry of the Labour Force (SRDAP), which contains employment records for all employees in each firm, including executives with regular

¹³ Public disclosure of executive compensation has only been mandatory since 2002. Yet, the requirement is limited to the disclosure of the total compensation of the management board, and requires no individual disclosure for the CEO. A requirement for individual disclosure has been put forward in the Corporate Governance Code in 2007 and only applies to listed companies. Consequently, the data used in our empirical analysis are confidential. All the empirical work was carried out in the “safe room” at the Slovenian Statistical Office.

employment contracts. The employment record for each person contains information on the person's occupation (a unique code in the International Standard Classification of Occupations, ISCO) and personal characteristics, such as age and educational attainment. Information on the total annual compensation of both CEOs and employees was retrieved from the income tax records compiled by the Slovenian Tax Office. The Slovenian Agency for Public Records (AJPES) collects the accounting information of all registered firms. From the same data source we use information on the industry affiliation of firms (1-digit NACE code), while the Slovenian Business Registry (PRS) contains information on the organizational forms of firms. Micro and small firms are excluded from the analysis as compensation practices in these firms are distorted by tax considerations. We also exclude firms for which we could not identify the CEO. Our full data base contains information on all relevant variables from 1995 to 2004 for a total of 668 stock corporations and private limited liability firms.

The key characteristics for the entire sample of firms are summarized in Table 1. The average firm has 325 employees, generates 29.1 million Euros of sales in domestic and foreign markets and operates with 35.1 million Euros of assets. The average value added per employee (in constant 2004 prices) is 23,200 Euros. The average ROA is 2.2%, whereas the average ROE amounts to 5.8%. 64.8% of firms in the sample are stock corporations. In 16.1% of these employees have the right to appoint a director to the management board, in addition to appointing representatives to the supervisory board. In 31.1% of these firms the State controls more than 25% of the votes, while 5.6% of the firms are controlled by an outside private owner who holds more than 75% of the votes. Most of the firms (55%) belong to the manufacturing sector with mining, followed by construction industry, and retail and wholesale trade.

[INSERT TABLE 1 and TABLE 2 HERE]

Table 2 reports the descriptive statistics for executives that managed firms in the full sample. The average age of these executives is 46 years and 16.8% are women. More than 80% of them hold at least a three-year university degree. On average, 11.9% of executives per year were replaced during the period of our analysis. The average annual gross pay for the CEOs over the period of our analysis is 66,800 Euros. A breakdown of the total salary in the corporations and private limited liability firms is presented in Table 3. The average executive pay in stock corporations increased from 56,000 Euros to 86,800 Euros (in constant 2004 prices); the increase in executive compensation is more moderate in private limited liability firms, in which the salaries increased by approximately 18,500 Euros, in comparison to nearly 31,000 Euros increase in the stock corporations. We also observe an increase in the standard deviation of total pay, which reflects increasing dispersion of compensation practices across firms. Part of this increase may be attributed to increasing pay differentiation according to firm size and performance (as proposed in the *Criteria*), and an increasing role of new owners in executive pay setting.

[INSERT TABLE 3 HERE]

The introduction of the *Criteria* in 1997 led to a gradual adjustment of executive pay towards the recommended pay ratios. This is shown in Table 3 that reports the average and median value of the total (base and variable) annual executive pay relative to the average wage in the firm and the economy. In 2004 the average ratio for stock corporations amounted to 7.03, which represents a 29% increase of the ratio from 5.46 in 1995. The ratio of a typical private limited liability company was 5.30 in 2004, which is only 7% higher than 4.94 in

1995. Figure 1 shows the dynamics of distribution for the log of this ratio for two size groups of firms, the medium-size and large firms.¹⁴ The large right-hand shift of distributions for both groups of firms can be clearly seen, although with important differences between large and medium-size firms. The group of medium-size firms consists of a greater proportion of private limited liability firms, which explains why the shift of their distribution is weaker than that for large firms. Table 4 complements Table 3 and Figure 1 and reports CEO pay relative to the average pay in the firm and the economy (pay ratio) separately, for the two size groups of firms.

[INSERT FIGURE 1 and TABLE 4 HERE]

Finally, we report CEO pay ratios for groups of firms with different governance characteristics. For brevity, we show only differences in the pay ratios of firms with and without employee engagement in the firm management. In particular, Table 5 compares the pay ratios for firms with and without an employee director, i.e. a member of the management board that is nominated by the employees. However, since employees can only nominate their representative in very large firms, the table shows statistics only for this group of firms. Again, the pay ratio increased in the two groups of firms, and by 2004 it had risen above eight in half of the firms with an employee director. On the other hand, the median and mean ratios are lower in firms without an employee representative on the management board (6.78 and 7.10, respectively). Note also that in Tables 3, 4 and 5 we observe moderate upward “jumps” in executive pay in 1997 and 1998, the first two years after the adoption of the *Criteria*.

[INSERT TABLE 5 HERE]

¹⁴The densities for the pay ratios are estimated using the method of stochastic kernels. This method is convenient when the total number of observations is not large.

To conclude, the descriptive statistics presented in this section suggest that actual CEO salaries were increasing towards the pay levels proposed in the *Criteria*. In order to establish the causal relationship between the recommended pay and the actual pay, we next present and discuss the results of our empirical model.

4. Results and discussion

4.1. Results

To test *Hypotheses 1-6* we estimate a dynamic model of actual pay, which allows us to take into account the fact that contracts are not negotiated annually. We assume that a constant proportion, λ , of the difference between *total* reference pay and actual pay is eliminated in each period. Controlling for lagged actual pay, we specify the following model:

$$(5) \quad \ln Act Pay_{it} - \ln Act Pay_{it-1} = \delta \ln Act Pay_{it-1} + \lambda (\ln Ref Pay_{it}^{Total} - \ln Act Pay_{it-1}).$$

We split the last term of the dynamic pay equation (5) to two parts; i) the difference between the lagged reference pay and actual pay called *total* pay gap ($\ln Gap_{it-1}^{Total}$) and ii) the change in the *total* reference pay. In the next step, we split the change in the *total* reference pay to its two constitutive elements (i.e size multiplier and average wage) allowing for heterogeneous adjustment rates, and substitute the expression for *total* reference pay, defined in equation (4), to obtain the basic estimation equation:

$$(6) \quad \begin{aligned} \Delta \ln Act Pay_{it} = & \lambda_1 \Delta \ln Multiplier_{it} + \lambda_2 \Delta \ln Wage_{it} + \lambda_3 \ln Gap_{it-1}^{Base} + \beta_1 \ln Act Pay_{it-1} + \\ & + \beta_2 (\ln Size_{it-1} - \ln Size_{it-1}^{med}) + \beta_3 (\ln Size_{it-2} - \ln Size_{it-2}^{med}) + \\ & + \beta_4 (\ln \pi_{it-1} - \ln \pi_{it-1}^{med}) + \beta_5 (\ln \pi_{it-2} - \ln \pi_{it-2}^{med}) + \\ & + \alpha_j + \tau_t + \alpha_i + \xi_{it}. \end{aligned}$$

Here Gap^{Base} denotes the *base* pay gap, defined as the difference between the log of lagged *base* reference pay and the log of lagged actual pay. α_j , τ_t and α_i are the standard industry, time and CEO-firm fixed effects and ξ is the error term.

The results of the dynamic pay equation are presented in Tables 6 and 7. Due to endogeneity of the right-hand side variables and the presence of fixed CEO-firm effects, we use the system-GMM estimator, proposed by Blundell and Bond (1998).¹⁵ With the exception of Column 3, the estimates in Table 6 are obtained for a sample of CEOs that held executive positions for at least four consecutive years (periods $t-2$, $t-1$, t , $t+1$). This restriction reduces the sample from 668 to 611 firms or 2,599 CEO-firm-year observations but is necessary in order to obtain the measure of annual growth rates for executive compensation and the corresponding instruments. Due to limitations on ownership data, the estimates in Table 7 are based on the sample of stock corporations.

We start the presentation of empirical results with evidence in support of *Hypothesis 1* (Table 6, Column 1 and 2). In the basic version of the empirical model (Table 6, Column 1), we show that the growth rate of actual pay responds significantly to the growth rate of base reference pay ($\Delta \ln \text{RefPay}^{Base}$) and to the distance between the base reference and actual executive pay ($\Delta \ln \text{Gap}^{Base}$). The coefficient for reference pay indicates that an increase in the *base* reference pay by 1% leads to an increase in actual pay by 0.508%, while the coefficient for the *base* pay gap implies that 0.324% of the pay gap is eliminated in each period. Note that here the *base* reference pay refers to the fixed part of *total* reference pay, which is the part of reference pay that we can measure accurately. The estimation equation also contains terms that capture the impact of firm performance (ROA) and firm size ($\ln \text{Size}$)

¹⁵ Due to downward bias of the standard two-step estimator of the standard errors, we use the Windmeijer corrected robust standard errors (Windmeijer, 2005). The Arellano-Bond (1991) test for the first and second-order serial correlation in the first-differenced residuals confirms the absence of second-order autocorrelation, while the Sargan test for the over-identifying restrictions confirms the overall validity of the instruments.

on actual pay (in line with our definition of *total* reference pay in equation (4)), and lagged actual pay.

In Column 2 *base* reference pay is split to two parts: the change in the firm size multiplier ($\Delta \ln Multiplier$) and the change in the average wage in the firm and in the economy ($\Delta \ln Wage$). The response of executive compensation to the change in average wage (1.088) is roughly four times greater than the response to the change in the size multiplier (0.234), and suggests that shifts in executive pay which take place along with increases in average pay in the firm and the economy face little opposition from the board of directors. In this specification, the coefficient for the pay gap is lower, but still statistically significant.

Above we established that actual pay of incumbent executives adjusts gradually to the reference pay due to infrequent renegotiation over terms of executive contracts. Thus, the pay of newly appointed executives should adjust faster to the pay gap. For this purpose, we extend our sample of executives to include those that were replaced between periods $t-1$ and t , and include interaction terms for newly appointed executives with three main variables of interest ($\ln Gap^{Base} \times D^{New}$, $\Delta \ln Wage \times D^{New}$ and $\Delta Multiplier \times D^{New}$). The results reported in Column 3 suggest that actual pay responds twice as fast to the *base* pay gap in the firms with newly appointed executives ($0.593 = 0.308 + 0.285$) relative to the firms with incumbent executives. Namely, almost 60 percent of the difference between actual pay and reference pay of the replaced executive is eliminated in one period for newly appointed CEOs. The other two interaction terms are not significantly different from zero. With regards to the interaction term between the change in the average wage and the dummy for newly appointed executives ($\Delta \ln Wage \times D^{New}$), this finding is not surprising. It suggests that all firms use rent-sharing rules, which postulate simultaneous adjustments of wages and executive pay (coefficient close to 1). On the other hand, since in only 25 cases we observe shifts in the firm size (up or down) and

replacements of the executive simultaneously, the identification of this parameter suffers from a small sample problem. Hence, the insignificant coefficient should not be given great importance.

To test for the presence of asymmetry in the adjustment towards the reference pay (*Hypothesis 2*) we extend the model presented in Column 1 of Table 6. Following Canarella and Nourayi (2008), we account for the asymmetric adjustment by a joint estimation of coefficients for $\Delta \ln RefPay^{Base}$ and its absolute value $Abs(\Delta \ln RefPay^{Base})$. Similarly, the inclusion of the log of *base pay gap* ($\ln Gap^{Base}$) and its absolute value allows us to test for the presence of an asymmetric adjustment of actual pay to the pay gap. For positive values of pay gap (*base reference pay*), the effect on actual pay is calculated as a sum of coefficients of these two terms, and for negative values of pay gap (*base reference pay*), the effect on actual pay is calculated as the difference between the first and the second coefficient. The results for this model, presented in Column 4 of Table 6, show that none of the absolute terms is significantly different from 0, which allows us to conclude that there is no asymmetry in the speed of adjustment.¹⁶ In other words, the newly introduced reference values seem to be motivating pay increases of CEOs with actual pay below reference pay, while also leading to the gradual downward adjustment of actual pay that exceeds reference pay. However, given that only 17.6% CEO-firm observations exhibit executive pay above the corresponding reference value, the prevailing direction of adjustment is upwards.

Among the control variables, the lagged firm size and performance have a positive effect on the growth of actual pay, although the coefficient for firm performance is statistically significant only in the basic specification (Column 1, Table 6). The weak predictive power of firm performance can be explained by the fact that the average firm-level wage is tightly related to various measures of labor productivity and, in turn, firm

¹⁶ Additional tests that further split the reference pay into change in the average wage and change in the size are therefore omitted from this presentation.

performance. The positive effect of firm size suggests that, controlling for the size class, executives are rewarded for job complexity (approximated by firm size) over and above the level reflecting their industry and size class.¹⁷ The coefficient for lagged actual pay is positive and significant in two specifications (Column 3 and 5, Table 6), which implies no conclusive evidence to the claim that compensation of poorly paid CEOs is catching up with that of the better paid, after controlling for the change in the base reference pay and pay gap.

Finally, to account for corporate governance characteristics that proxy for the CEO and board's power and interests in pay bargaining (*Hypotheses 3-6*), we introduce a set of dummy variables. First, we introduce a dummy variable for the organizational form of the firm (D^{Corp}), which we assign the value of 1 if the CEO manages a stock corporation and 0 if she heads a private limited liability firm. In line with *Hypothesis 3*, a significant and positive coefficient for the interaction term between the *base* pay gap and the corporate organization dummy ($\ln \text{Gap}^{\text{Base}} \times D^{Corp}$) shows that the adjustment of CEO compensation towards the reference value is faster in stock corporations than in private limited liability firms (Column 5, Table 6).

[INSERT TABLE 6 ABOUT HERE]

Due to lack of data on ownership structure for private limited liability firms and on stock corporations' ownership for the period before 1999, *Hypotheses 4 to 6* are tested for stock corporations only for the period 1999-2004. Clearly, the estimates based on the limited sample may not be directly comparable to the estimates based on the full sample. To establish

¹⁷ For the sake of brevity, we only present the estimates in which we measure firm size as the deviation of the log of the number of employees from the industry median, while we measure firm performance as the deviation of ROA from the industry median. These results are, however, robust to the inclusion of alternative measures of size and performance, such as total annual sales, total assets and ROE. Also, our results do not change if we use non-adjusted firm size and performance measures, such as log of employment and ROA.

the basis for comparison, we thus report the estimates of the basic model with separate elements of the reference pay (Table 6, Column 2) for the limited sample (Table 7, Column 1). The estimates based on this sample yield slightly higher effects of the reference values on actual pay. This applies to both the pay gap and the elements of reference pay. For example, the coefficient for the size multiplier is 0.292 for the limited sample of stock corporations and 0.234 for the full sample, while the coefficient for the pay gap is 0.279 for the limited sample and 0.249 for the full sample. These differences indicate that the *Criteria* played a greater role in influencing executive pay in the stock corporations.

To measure the impact of ownership structure on pay bargaining, we define a variable D^{Cont} , which is equal to 1 in the firms with the largest owner holding at least 75 percent of the voting rights, and 0 otherwise.¹⁸ To measure employee representation on the management board, we introduce a variable D^{Emp} , which assumes value 1 for all stock corporations with more than 500 employees and 0 otherwise. The dummy variable D^{State} equals 1 for all firms where the State has at least a 25 percent ownership share and 0 otherwise.¹⁹ The results of the specification that includes the interaction terms between the components of reference pay and pay gap are shown in Column 2 of Table 7.

[INSERT TABLE 7 ABOUT HERE]

The empirical results in Table 7 only partially support *Hypothesis 4*, which states that the adjustment of CEO compensation to the pay gap is slower in the firms with a supermajority owner. The coefficient for the interaction term $\ln Gap^{Base} \times D^{Cont}$ is -0.119 and

¹⁸ According to Slovenian Company Act (1993), a 75% ownership share provides the owner with super-majority control. The law requires super-majority for many important corporate decisions regarding strategy, major restructuring, lay-offs or board changes.

¹⁹ The 25% ownership share gives the State the power to veto the key decisions in a firm. In addition, 25% generally also provides the State with one or two seats on the board of directors.

significant at 10 percent. The interaction terms for supermajority ownership with change in the size multiplier and growth of average wage are, however, not significant. In line with *Hypothesis 5*, we observe that the adjustment of actual pay to the *base* pay gap is faster in firms with an employee elected member of the management board (the coefficient for $\ln Gap^{Base} \times D^{Emp}$ is 0.150).²⁰ The interaction term that captures the impact of change in the average wage on actual pay growth is not significantly different from 0. Finally, the impact of *Criteria* is stronger in the firms with at least 25% of State ownership ($\ln Gap \times D^{State}$), which is in line with *Hypothesis 6*. Again, all the remaining interaction terms between state ownership and the components of reference pay are not statistically significant.

To sum up, our empirical results confirm that the *Criteria*, by introducing new reference values for executive pay, led to significant adjustment of actual pay of Slovenian executives. We also find some indication that the adjustment of CEO compensation towards the new reference values was faster in the firms whose governance is characterized by a stronger role of employees and the State, but slower in firms with large private outside owners. Since we cannot measure the supervisory boards' reference values for executive pay, the observed results allow two complementary interpretations. First, in line with the managerial power approach to executive compensation (Bebchuk and Fried, 2003), the stronger pay adjustment in the stock corporations and in firms without a large outside owner may be related to greater bargaining power of executives. In the absence of alternative controlling mechanisms, weaker owners are also more likely to accommodate the CEO claims in order to avoid a reduction in CEO effort. Alternatively, the observed influence of the CEOs' new reference values on their compensation may stem from the alignment of interests between the executives and some board members, such as employee and State representatives. The interests of these members were in fact partly represented by the pay guidelines because

²⁰ Note that a test for the effect of shift in firm size multiplier is not possible for this sample since there were no shifts in the firms with an employee director on the management board.

they reinforced the relationship between executive pay and the average wage at “socially acceptable” levels. Apart from the faster adjustment observed in the corporations with stronger State and employee involvement in firm governance, the conclusion that these board representatives may have adopted the new reference values as their own is confirmed by the fact that the average ratio between executive pay and the pay determined in the guidelines for stock corporations gradually rose to 1. Such strong compliance with the guidelines can only happen if the reference values of both bargaining parties are very close to the reference levels proposed in the pay guidelines.

Finally, keeping in mind the limited number of CEOs with above-reference pay, our empirical results suggest that CEO compensation also adjusts downward to the level stipulated by the *Criteria*. To add more evidence to the last point, we look at the characteristics of executives and firms that may explain the likelihood of compensation above the *base* reference pay. Since the *base* reference pay only refers to the fixed part of CEO compensation, we would expect that the total compensation of a CEO (which we measure) in a better performing firm well exceeds the *base* reference compensation, since the CEO also receives a variable part for her above-average performance. In addition to firm performance, other factors may explain the above-reference compensation of a CEO, such as firm size, job complexity, personal characteristics (CEO gender, age and educational attainment), and corporate governance characteristics. Table 8 shows the results of regressions of various CEO-firm characteristics on a dummy variable that assumes value 1 if the *total* actual pay exceeds the *base* reference pay and 0 otherwise, and a set of time and industry dummies. We find that larger, better performing firms, State-owned and employee co-managed corporations with older male executives are more likely to pay above the *base* reference pay.

When confronted in a static probability model (probit) in Table 9 for full and restricted samples (Column 1 and 2), only a few variables remain statistically significant. Among the

personal characteristics, we find that older CEOs are more likely to be paid above the *base* reference pay. We relate this to the fact that older CEOs tend to have longer tenure and are well integrated in the social and political networks, which presumably provide a stronger bargaining position. Another robust variable is firm size, while firm performance variables (ROA, value added per employee and average wage) are statistically significant only for the full sample. However, similar values of coefficients suggest that the loss of significance may be due to lower degrees of freedom. The above-reference pay is also more likely in stock corporations (Column 1, Table 9), although we cannot attribute this effect to any of the corporate governance characteristics (see the insignificant effect of dummies for different governance characteristics in Column 2, Table 9). In conclusion, since variables explaining above-reference pay coincide with those outlined in the *Criteria*, this reinforces our belief that the *Criteria* significantly shaped executive compensation in Slovenia.

[INSERT TABLES 8 and 9 ABOUT HERE]

4.2. Caveats

Above we argued that the *Criteria* influenced the adjustment of executive compensation through reference values. However, our study refers to a specific time period of transition from a socialist to a market economy during which executive pay would have adjusted upwards anyhow. Thus, an alternative explanation for the observed pattern could be that executive compensation adjusted to the reference values because the *Criteria* reflected the “equilibrium” CEO pay. If this were the case, the pay adjustment would follow the observed pattern anyway, with or without the introduction of the *Criteria*. To disentangle the equilibrium and reference effect, we would need to define the compensation level in equilibrium, which cannot be done. However, we can think of several reasons for rejecting the

“equilibrium” explanation of the observed adjustments in the compensation of Slovenian CEOs. To begin with, our interviews with the members of the Association who actively participated in the drafting of the *Criteria* revealed that the recommended values were not based on any calculation or estimation of the equilibrium CEO pay levels. The reference values in the *Criteria* were merely the result of the CEOs’ aspirations for higher salaries, adjusted by their expectations as to what would be publicly acceptable. Thus, rather than economic factors, political and societal considerations played the most important role in shaping the formulation of the *Criteria*. Second, wage liberalization in Slovenia started in 1987, which is ten years before the introduction of the *Criteria*. In 1995, the average CEO salary was 3 (5) times the average employee salary in medium-size (large) firms, implying that the bulk of adjustments towards the equilibrium pay structure had already taken place before 1997. Third, our results show that the impact of the *Criteria* varies between different governance structures, reflecting the different relative power of the CEO or the board of directors. If the *Criteria* indeed reflected the equilibrium CEO compensation, we should observe no such differences. Finally, the *Criteria* were introduced after parliamentary discussion about imposing a “cap” on executive pay. Even if we assume that the compensation proposed by the *Criteria* reflected the equilibrium in the labour market, there is still a role for the *Criteria*. At worst, by creating reference values for pay negotiations, the *Criteria* stimulated pay adjustment that may have been prevented by political pressure and general disagreement with income inequality.

5. Conclusion

Theoretical and empirical studies in psychology and behavioral economics argue that individuals evaluate their position according to where they “stand” in relation to their reference point. Our empirical analysis shows that reference values have an important role

also in pay negotiations and thereby supports the introduction of reference values in theoretical models of bargaining. We provide evidence that the introduction of non-obligatory pay guidelines, which we interpret as executives' reference values, led to significant adjustment of actual compensation. The ability of executives to reduce the difference between reference and actual pay varied with firm governance characteristics reflecting the power/interests of the two bargaining parties: it was slower in private limited liability firms and in corporations with a controlling outside owner and faster in firms with an employee director or/and higher State representation on the board of directors.

What are the implications of this study for other countries? We have recently been witnessing a number of proposals aiming to set the norms for executive pay (e.g. G20 Statement on strengthening the financial system, *Financial Times*, September 5, 2009). Notwithstanding the fact that a few countries imposed direct limits on CEO pay in the past (e.g. the tax exemptions of fixed pay above a certain level in the USA, see Rose and Wolfram, 2000), all recently proposed codes on remuneration in the financial sector have refrained from doing so, in order to maintain market competition for talented managers. Furthermore, the costs and benefits of such measures are not yet well understood. In this regard, our study advocates that debates on CEO pay might change the perception of what is the "acceptable" level of executive compensation and thereby change the reference values of negotiating parties. Further, our results suggest that the impact of public debates on actual CEO pay will be stronger when the proposed changes reflect a consensus solution for all parties involved in pay bargaining. Finally, our case shows that perceptions of CEOs of what is a fair reward for their work are influenced by the norms and values in society. While they might have a greater role in a transition economy that features weaker shareholders' rights and formal governance, the impact of societal norms and attitudes towards executive compensation may be relevant also in other countries (Falk et al., 2006).

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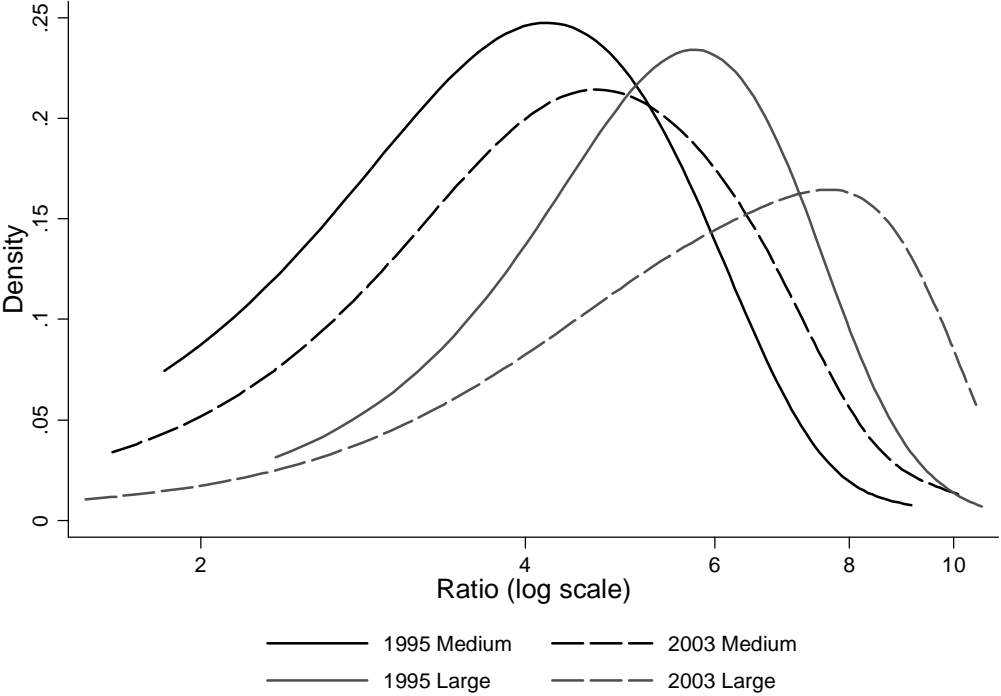
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Tables and Figures

Figure 1: Ratio of CEO pay to average employee wage in medium and large sized firms, 1995-2003



Source: *AJPES, SORS, PRS and own calculations.*

Table 1: Descriptive statistics for firms

Number of firms	668	
Average number of observations per firm	9.64	
Size and Financial Indicators	Mean	Std.Dev.
Number of employees	325	514
Turnover (in million Euros)	29.1	68.8
Assets (in million Euros)	35.1	85.1
Value added per employee (in thousand Euros)	23.2	19.7
Debt to assets ratio	0.364	0.209
Return on assets	0.022	0.072
Return on equity	0.058	0.320
Ownership variables	1999	2004
Share of incorporated firms	0.648	0.600
Share of firms with employee director on the management board	0.161	0.165
Share of firms with 75 share of largest owner	0.056	0.214
Share of firms with 25 State share	0.311	0.121
Sectoral structure of firms	Share	
Agriculture, Hunting and Fishing	0.017	
Mining and Manufacturing	0.554	
Utilities	0.042	
Construction	0.112	
Trade	0.089	
Catering	0.028	
Transport and Communications	0.048	
Business Services	0.058	
Health Care	0.029	
Cultural and Recreational Services	0.024	
Total	1.000	

Source: AJPES, PRS and own calculations.

Notes: All nominal variables are given in constant 2004 prices.

Table 2: Descriptive statistics for CEOs

	<i>Mean</i>	<i>Std. Dev.</i>
Age (years)	46.0	10.9
Women (share)	0.168	0.374
University degree or higher (share)	0.816	0.388
CEO turnover (share)	0.119	0.323
Gross annual salary (in thousand Euros)	66.8	34.4

Source: AJPES, PRS and own calculations.

Notes: Tenure is calculated from 1999 onwards. Gross annual salary is reported in constant 2004 prices.

Table 3: Executive compensation by organizational type

	<i>Total CEO pay</i> <i>(in thousand Euros)</i>				<i>CEO Pay</i> <i>Average wage</i>			
	Corporations		Private limited Liability firms		Corporations		Private limited liability firms	
Year	Mean	Std. Dev.	Mean	Std.Dev.	Mean	Median	Mean	Median
1995	56.0	21.0	47.7	19.1	5.46	5.31	4.94	4.70
1996	59.0	22.6	54.0	24.3	5.65	5.55	5.23	4.99
1997	65.4	27.5	55.8	24.7	6.14	5.88	5.44	5.02
1998	71.8	28.8	57.7	26.8	6.56	6.39	5.61	5.10
1999	77.9	30.6	60.2	28.9	6.88	6.52	5.69	4.96
2000	79.8	33.7	61.1	26.6	6.99	6.76	5.69	5.14
2001	81.7	35.9	62.9	43.4	7.03	6.77	5.64	5.16
2002	84.0	40.3	61.0	34.6	7.17	6.64	5.47	5.98
2003	85.9	40.4	63.4	40.1	7.17	6.80	5.46	4.93
2004	86.8	47.0	66.2	44.3	7.03	6.63	5.30	4.90

Source: AJPES, PRS and own calculations.

Notes: Gross annual compensation is reported in constant 2004 prices. The average employee wage is the unweighted average of the average wage in the firm and in the economy.

Table 4: Executive compensation by firm size

	<i>CEO Pay</i> <i>Average wage in the firm</i>				<i>CEO Pay</i> <i>Average wage in the economy</i>			
	Medium firms		Large firms		Medium firms		Large firms	
Year	Mean	Median	Mean	Median	Mean	Median	Mean	Median
1995	4.51	4.31	5.73	5.62	4.39	3.99	6.21	6.00
1996	4.81	4.68	5.85	5.72	4.02	3.71	5.67	5.43
1997	4.90	4.81	6.28	6.14	3.99	3.54	6.01	5.50
1998	5.08	4.84	6.67	6.48	4.06	3.78	6.39	5.89
1999	5.37	4.79	6.82	6.56	4.14	3.92	6.52	6.08
2000	5.31	5.02	6.87	6.67	4.17	3.80	6.48	6.13
2001	5.20	4.97	6.84	6.49	3.90	3.80	6.40	5.81
2002	5.78	5.52	7.81	7.74	4.95	4.67	7.55	6.91
2003	5.67	5.33	7.80	7.64	4.91	4.62	7.54	6.99
2004	5.60	5.20	7.70	7.45	4.91	4.71	7.60	6.68

Source: AJPES, PRS and own calculations.

Table 5: Executive compensation by employee representation

Year	<i>CEO Pay</i>			
	<i>Average wage in the firm</i>			
	Mean ratio		Median ratio	
	No employee director	With employee director	No employee director	With employee director
1995	5.46	6.40	5.33	6.38
1996	4.81	6.86	5.79	7.15
1997	4.99	7.66	5.79	7.15
1998	6.30	8.31	6.25	7.92
1999	6.43	8.81	6.41	8.74
2000	6.49	8.80	6.43	8.90
2001	6.43	8.87	6.13	8.60
2002	7.18	9.03	6.99	8.61
2003	7.18	9.17	7.02	8.80
2004	7.10	8.90	6.78	8.10

Source: AJPES, PRS and own calculations.

Table 6: Dynamic pay equation for CEOs, all firms

<i>Dependent Variable: $\Delta \ln Act Pay_{it}$</i>					
	1	2	3	4	5
Reference Pay and Pay Gap					
$\ln Gap_{t-1}^{Base}$	0.324*** (0.087)	0.249*** (0.070)	0.308*** (0.081)	0.341*** (0.10)	0.273*** (0.063)
$\ln Gap_{t-1}^{Base} \times D^{New}$			0.285*** (0.12)		
$Abs(\ln Gap_{t-1}^{Base})$				0.0125 (0.063)	
$\ln Gap_{t-1}^{Base} \times D^{Corp}$					0.139*** (0.054)
$\Delta \ln RefPay_{t-1}^{Base}$	0.508*** (0.075)			0.518*** (0.078)	
$Abs(\Delta \ln RefPay_t^{Base})$				0.0552 (0.048)	
$\Delta \ln Multiplier_t$		0.234*** (0.059)	0.293*** (0.088)		0.262*** (0.069)
$\Delta \ln Multiplier_t \times D^{New}$			-0.080 (0.48)		
$\Delta \ln Multiplier_t \times D^{Corp}$					0.0981* (0.060)
$\Delta \ln Wage_t$		1.088*** (0.13)	0.978*** (0.21)		1.284*** (0.16)
$\Delta \ln Wage_t \times D^{New}$			-0.072 (1.01)		
$\Delta \ln Wage_t \times D^{Corp}$					-0.198 (0.19)
D^{New}			-0.179*** (0.064)		
D^{Corp}					0.0260 (0.028)
$\ln Act Pay_{t-1}$	0.0982 (0.076)	0.100 (0.061)	0.164** (0.074)	0.109 (0.073)	0.149*** (0.057)
Firm Characteristics					
$\ln Size_{t-1}$	0.118*** (0.042)	0.124*** (0.038)	0.084** (0.035)	0.126*** (0.035)	0.104*** (0.034)
$\ln Size_{t-2}$	-0.0365 (0.030)	-0.0580* (0.032)	-0.051* (0.031)	-0.0261 (0.028)	-0.0439 (0.029)
ROA_{t-1}	0.299** (0.13)	0.136 (0.12)	0.193 (0.13)	0.114 (0.12)	0.130 (0.097)
ROA_{t-2}	-0.0918 (0.073)	-0.0860 (0.076)	-0.099 (0.065)	-0.114 (0.071)	-0.0417 (0.069)
Constant	-1.307 (0.89)	-1.327* (0.72)	-2.035** (0.87)	-1.444* (0.86)	-1.880*** (0.66)
Specification					
Firms (observations)	611	611	630	611	611

	(2599)	(2599)	(2868)	(2599)	(2599)
Industry and time fixed effects	Yes	Yes	Yes	Yes	Yes
Wald chi2 test	270.3	339.2	366.39	321.1	446.3
p-value	0.00	0.00	0.00	0.00	0.00
AR(1) test	-8.933	-8.705	-8.771	-8.864	-8.500
p-value	0.00	0.00	0.00	0.00	0.00
AR(2) test	-0.0409	-0.226	0.686	-0.0730	-0.233
p-value	0.97	0.82	0.49	0.94	0.81
Sargan Chi2 test	164.93	251.4	265.5	215.37	326.34
p-value	0.12	0.09	0.08	0.44	0.09

Source: *AJPES, SORS, KDD, PRS and own calculations.*

Notes: Log of number of employees and ROA are included as deviations from the industry median values.

Two-step GMM results. Windmeijer (2005) robust standard errors in parentheses. ***, ** and * denote statistical significance at 1, 5 and 10 percent, respectively. Sargan χ^2 test of overidentifying restrictions is calculated for the two-step estimates. Instruments for level equation: differences for all variables in the model with lags 1 to 3. Instruments for differenced equation: levels of all variables in the model with lags 1 to 3. For employment and ROA we use lags 2 to 4 for both sets of equations.

Mnemonics: Size refers to the number of employees and is included as a deviation from the industry median value. ROA refers to return on assets and is included as deviations from the industry median values. Gap^{Base} is the difference between base reference pay and actual CEO pay. $\text{Ref Pay}^{\text{Base}}$ is base reference pay, as defined in (1). D^{Corp} is the dummy indicating stock corporations. Multiplier equals 6 for medium sized firms and 8 for large firms. ActPay is the actual pay of the CEO. Wage is the average employee wage (in the firm and in the economy). Δ stands for the first difference, ln stands for logarithm.

Table 7: Dynamic Pay Equation for CEOs in stock corporations,*Dependent Variable: $\Delta \ln \text{Act Pay}_{it}$*

	<i>1</i>	<i>2</i>
Reference pay and Pay gap		
$\ln \text{Gap}_{t-1}^{\text{Base}}$	0.279*** (0.082)	0.184*** (0.079)
$\ln \text{Gap}_{t-1}^{\text{Base}} \times D^{\text{Cont}}$		-0.119* (0.070)
$\ln \text{Gap}_{t-1}^{\text{Base}} \times D^{\text{Emp}}$		0.150** (0.066)
$\ln \text{Gap}_{t-1}^{\text{Base}} \times D^{\text{State}}$		0.138** (0.057)
$\Delta \ln \text{Multiplier}_t$	0.292*** (0.078)	0.162** (0.080)
$\Delta \ln \text{Multiplier}_t \times D^{\text{Cont}}$		0.00428 (0.16)
$\Delta \ln \text{Multiplier}_t \times D^{\text{State}}$		-0.0534
$\Delta \ln \text{Wage}_t$	1.229*** (0.17)	1.237*** (0.22)
$\Delta \ln \text{Wage}_t \times D^{\text{Cont}}$		0.0466 (0.43)
$\Delta \ln \text{Wage}_t \times D^{\text{Emp}}$		-0.159 (0.38)
$\Delta \ln \text{Wage}_t \times D^{\text{State}}$		-0.0945 (0.42)
D^{Cont}		-0.0355 (0.054)
D^{Emp}		-0.0296 (0.049)
D^{State}		0.00275 (0.047)
$\ln \text{Act Pay}_{t-1}$	0.0876 (0.074)	0.0286 (0.063)
Firm Characteristics		
$\ln \text{Size}_{t-1}$	0.0780 (0.052)	0.0891** (0.042)
$\ln \text{Size}_{t-2}$	-0.0141 (0.052)	-0.0213 (0.043)
ROA_{t-1}	-0.0454 (0.14)	-0.0280 (0.11)
ROA_{t-2}	-0.0900 (0.12)	0.123 (0.11)
Constant	-1.164 (0.85)	-0.455 (0.72)
Specification		
Firms (observations)	348 (1302)	333 (1132)

Industry and time fixed effects	Yes	Yes
Wald chi2 test	239.17	346.62
p-value	0.00	0.00
AR(1) test	-7.487	-5.241
p-value	0.00	0.00
AR(2) test	0.601	0.0261
p-value	0.55	0.98
Sargan Chi2 test	212.16	232.37
p-value	0.15	0.63

Source: AJPES, SORS, KDD, PRS and own calculations.

Notes: Two-step GMM results. Windmeijer (2005) robust standard errors in parentheses. ***, ** and * denote statistical significance at 1, 5 and 10 percent, respectively. Sargan χ^2 test of overidentifying restrictions is calculated for two step estimates. Instruments for level equation: differences for all variables in the model with lags 1 to 3. Instruments for differenced equation: levels of all variables in the model with lags 1 to 3. For employment and ROA we use lags 2 to 4 for both sets of equations.

Mnemonics: Size refers to the number of employees and is included as deviation from the industry median value. ROA refers to return on assets and is included as deviations from industry median values. Gap^{Base} is the difference between reference pay and actual CEO pay. D^{Cont} is the dummy indicating firms with a supermajority outside owner, D^{Emp} is the dummy indicating firms with an employee director on the management board, and D^{State} is a dummy indicating firms with relevant state ownership. Multiplier equals 6 for medium sized firms and 8 for large firms. ActPay is the actual pay of the CEO. Wage is the average employee wage. Δ stands for difference, \ln stands for logarithm.

Table 8: The characteristics of firms with total pay exceeding the base reference pay

Variable	Coef.	Std. Err.
Total firm assets	0.806***	0.042
Total firm sales	0.715***	0.037
Number of employees	0.548***	0.029
Value added per employee	0.194***	0.019
Average wage	0.110***	0.009
Return on assets	0.013***	0.003
Return on equity	0.001	0.011
CEO age	2.374***	0.256
Female CEO dummy	-0.024*	0.013
Corporations (dummy)	0.196***	0.016
Controlling owner dummy	-0.021	0.017
Employee-director dummy	0.189***	0.011
State control dummy	0.061**	0.020

Notes: The table represents the values and the corresponding standard errors of the coefficients from 13 separate regressions of the firm characteristics on the dummy indicating the above-reference total pay of the CEO and the time and industry dummies. The variables are expressed in monetary terms and calculated in logs. The regression coefficients can be interpreted as the average premia of firms with total pay exceeding base reference pay. The average wage denotes the average wage in the firm. ***, ** and * denote statistical significance at 1, 5 and 10 percent, respectively.

Table 9: Probit model for total pay above the reference pay

	1	2
Personal characteristics		
D^{Male}	-0.184 (0.10)	0.187 (0.16)
D^{Uni}	-0.0535 (0.10)	0.122 (0.15)
$\ln Age$	0.618** (0.21)	0.971** (0.32)
Firm performance		
ROA_{t-1}	1.272* (0.52)	0.964 (0.94)
$\ln Productivity_{t-1}$	0.239** (0.090)	0.232 (0.15)
$\ln Wage_t$	0.367* (0.15)	0.363 (0.25)
Firm size		
$\ln Size_{t-1}$	0.478*** (0.034)	0.513*** (0.077)
Corporate governance		
D^{Corp}	0.576*** (0.072)	
D^{Cont}		-0.0192 (0.15)
D^{Emp}		-0.0984 (0.12)
D^{State}		0.0563 (0.17)
Constant	-8.870*** (2.30)	-10.01** (3.76)
Specification		
Observations	6091	1798
Log-likelihood	-1261	-602.9
Chi2	438.5	195.2
p-value	0.00	0.00
Pseudo R2	0.195	0.169

Source: *AJPES, SORS, KDD, PRS* and own calculations.

Notes: Probit regression estimates. ***, ** and * denote statistical significance at 1, 5 and 10 percent, respectively.

Mnemonics: D^{Male} and D^{Uni} are dummy variables for male executives and executives with at least 2-year UG degree. Size refers to the number of employees and is included as deviation from the industry median value. ROA refers to return on assets and it is included as deviations from the industry median values. Productivity is the log deviation of the value added per employee in firm from the corresponding industry median. Age is the log of age of the CEO. D^{Corp} is the dummy indicating corporations. D^{Cont} is the dummy indicating the firms with a supermajority outside owner, D^{Emp} is the dummy indicating the firms with an employee director, and D^{State} a dummy indicating the firms with relevant state ownership. Multiplier equals 6 for medium sized firms and 8 for large firms. ActPay is the actual pay of the CEO. Wage is the average employee wage.