

Managers' Compensation in Large Public Firms in Belgium: An Analysis on the BEL 20

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Abstract

Agency theory predicts that incentive compensation aligns management interests with those of shareholders, and that CEO pay is a solution to the agency costs arising from the separation of ownership and management. Amongst corporate governance literature, several researchers have focused on executive compensation and its link with firm performance. International studies document evidence that CEO remuneration is positively correlated with corporate performance and firm size. Applying Generalized Method of Moments (GMM) estimator to a sample of BEL-20 Index firms for the years 2004 to 2010, this article examines the association between remuneration — both of CEOs and top management teams — and variables such as size, performance, CEO characteristics and “corporate governance” structure. Our results document a CEO pay-size association as positive and statistically significant, and a positive weak relation between CEO compensation and performance.

Keywords: *compensation, chief executive officer, corporate governance, performance, top management team.*

JEL Code Classification: *J33, G34.*

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1. Introduction

The importance of CEO compensation is controversial and in consequence receives close attention from the media. According to Morgenson (2004), the ratio between manager and employee compensation is 531:1 in the United States, 25:1 in United Kingdom, 21:1 in Canada, 16:1 in France, 11:1 in Germany, and 10:1 in Japan. It is unimaginable that these discrepancies can be justified by the difference in manager's productivity across countries. Nevertheless, Roe (2002) indicates that ubiquity is explained by cultural factors related to each country. Facing that unclear relationship between compensation and productivity, we can ask whether high manager's compensation is an incentive to act in the shareholders' interest or an indicator that manager diverts resource from the company? The polemic arising from manager's compensation draws specific attention to the efficiency of governance mechanisms that are intended to control and moderate the level of manager's compensation.

Numerous empirical researches tend to explain compensation dispersal. Traditionally, manager's compensation is linked with firm's performance or size (Jensen, Murphy and Wruck, 2004; Conyon and Sadler, 2010; Larcker et al., 2010). Besides, collecting information and data concerning manager's compensation is hard due to the opacity surrounding that subject in several countries. Regarding the Belgian market, research has only been done once in this field by Abowd and Bognanno (1995). Our paper contributes therefore to the literature on that point.

To understand the differences in manager's compensation, our research is led in order to figure out the assumptions arising from the agency and managerial theories. According to these theories, size, performance and governance mechanisms have a significant influence on manager's compensation. In our research, we try to assess the effect of these components on manager's compensation by using elasticity calculated on basis of panel data. The purpose of this paper is therefore to investigate the effects of size and performance on manager's compensation in public firms as well as the moderating effect of board composition and ownership structure on these relationships.

Our paper is made up of several sections. Firstly, a literature review concerning the influence of governance mechanisms on manager's compensation is presented. Secondly, our methodology and our regressions are put into perspective. Our third section shows and analyses our results. Finally, discussions and our conclusions are set out in a fourth section.

2. Compensation, Agency and Managerial Theory

2.1. The Effect of Governance Mechanisms

Agency theory constitutes a well-designed framework to analyse manager's compensation (Jensen, Murphy and Wruck, 2004). According to that paradigm,

divergence of interest between shareholders and managers occur because of a delegation (or agency) problem arising from the separation of ownership and management. As mentioned by Jensen and Meckling (1976), Adam Smith (1776) is one of the first economists to investigate that issue in large public firms. He estimates that negligence and profusion dominate in that kind of company. Therefore, managers acting in large public firms would rather act in their own interest since they do not have any wealth motivation. Jensen and Meckling (1976) identify managers as agents acting in accordance with shareholders' (principals) wealth maximization. As managers do not own the firm's resources, a moral hazard may occur by concealing weak performance or inefficiency in order to avoid decrease in their compensation. Such a situation leads to agency costs beard by the principal.

In order to avoid the value destruction arising from that phenomenon, control mechanisms can be implemented by shareholders (Fama, 1980). Shleifer and Vishny (1997) indicate that corporate governance mechanisms give investors the opportunity to secure their investments. Manager's compensation is considered as a governance mechanism since it can be used to reconcile shareholders and managers interests when compensation is linked with effort or accomplished work (Jensen and Murphy, 1990). However, moral hazard impeaches shareholders to assess managers' efforts correctly since an information asymmetry occurs between agent and principal. According to Charreaux (1987), the principal-agent problem is amplified due to two factors: a divergence of interest and an uncertain and imperfectly observable environment for the shareholders. Therefore, principals are confronted to potential agent's opportunism because contracts are incomplete (Fama and Jensen, 1983).

Jensen, Murphy and Wruck (2004) highlight that although manager's compensation can be a solution to agency problems, several disadvantages creating other agency costs have to be mentioned. Shleifer and Vishny (1997) indicate that incentive contracts create an important risk of "self-dealing"¹, specifically if they are negotiated by the board rather than by majority shareholders. As an extension of agency theory, Bebchuk and Fried (2005) develop the managerial power theory according to which manager's compensation is decided by managers. Manager's compensation as a control mechanism seems to be imperfect and depends on the efficiency of other corporate governance mechanisms. Governance mechanisms can thus be complementary or substitutable among each other (Charreaux, 1996). In the manner of other governance codes, Belgian corporate governance code (2009) considers the board of directors as the ultimate structure in charge of governance. In order to be effective, the board has to be composed of internal and executive members to reduce lack of information but also of external members

¹ Self-dealing occurs when an agent takes advantage of his position in order to divert resources at his own profit, to the detriment of shareholders.

whose expertise is granted by the existence of the labour market (Fama, 1980). However, Hooghiemstra and Van Manen (2004) raise doubts regarding the quality of that control because of an information paradox. Indeed, independent board members depend on executive directors while they are supposed to supervise them and to be independent. Moreover, the literature is ambiguous on the efficiency of the board concerning its function of control. In that regard, Jensen and Murphy (1990) notice that when the manager's implication is perfectly observable by the board or the shareholders, managers are sufficiently motivated by the risk of revocation. In that case, increasing incentive compensation is superfluous provided that control mechanisms are efficient.

2.1.1. The Effect of Performance

Agency theory can justify the existence of an influence of performance (measured by the shareholder value creation) on manager's compensation. Owing the moral hazard compensation contracts are generally linked with performance indicators. Indeed, Jensen and Murphy (1990) admit that changes in the shareholder value are an appropriate measure for the principal's objectives but that measure is imperfect regarding the manager individual performance. In that case, accounting indicators are more relevant since they furnish more detailed information. However, as Gibbons and Murphy (1989) mention, accounting information are unproductive since managers can find a motivation to be involved in actions that do not create value for shareholders but immediate accounting profits. According to Gibbons and Murphy (1989), compensating manager in function of accounting indicators creates an incentive to manipulate the accounting system. In order to avoid these behaviours, shareholders can limit the choice of accounting methods used to calculate compensation or create a compensation committee to control the execution of the terms and modalities of contracts. However, managers can be more competent than shareholders to know the accounting methods that maximises the firm's value by decreasing debt as well as political costs (Watts and Zimmerman, 1986).

2.2. The Effect of Size

While agency theory justifies the effect of performance on manager's compensation, managerial theories can be used to assess the effect of size on manager's compensation. According to Rosen (1982), it is not surprising to notice an increase in compensation with the size of the firm since size is positively correlated with talent and the competences required to hold a management position. Indeed, Gayle and Miller (2009) show that large firms are more complicated to manage, therefore inducing a higher compensation to meet managers' expectations. Information asymmetry being more important in large firms, agency problems is harder to manage in these companies so that higher compensation is required in order to integrate a risk premium.

3. Methodology

3.1. Target Population

In order to assess the effects of size and performance on compensation as well as the moderating effect of governance variables, a sample of 19 public companies is made up based on the BEL20 index². The amount of managers' compensation (CEO and members of the executive committee) is analysed on the period 2004-2010. As these firms are listed on Euronext, information concerning manager's compensation is more easily available since large firms listed on Euronext have to comply with the Belgian governance code that imposes the disclosure of this information. Nevertheless, since governance codes are considered as soft law, financial disclosure can be imperfect. Such a situation implies that missing information have an impact on our panel of data that is not strongly balanced.

3.2. Descriptive Analysis of CEO Compensation

Table 1 presents CEO fixed and variable compensation. Descriptive statistics regarding all variables used in our models are gathered in table B.1. Appendix B.

Table 1: Descriptive statistics on CEO compensation (2004-2010)

Variables		Mean	Standard-deviation	Min	Max
Fixed compensation (euros)	overall	793,850	510,509	231,750	2,896,200
	between		481,370	264,083	2,414,075
	within		121,279	387,733	1,275,975
Variable compensation (euros)	overall	635,393	869,055	0	6,140,000
	between		713,328	0	3,180,000
	within		575,738	-2,544,607	3,595,393

Overall standard-deviation can be broken down in order to take into account inter-individual (between) and intra-individual (within) variability. Between standard-deviation assesses the variability of the temporal mean for each company while within standard-deviation estimates the variability over time.

Our results show that CEOs earn on average fixed compensation for 793 850 € and bonuses for 635 393€. All Standard-deviations related to fixed compensation are below the global mean. Between standard-deviation indicates that fixed compensation is very volatile between companies (89% of the global variance). Within standard-deviation is weak for fixed compensation and thus in accordance with the stable characteristic of CEO fixed compensation over time. Regarding inter- and intra-company variances related to variable compensation, higher volatility is noticed and is in accordance with our expectation. The presence of a negative minimum is due to the absence of bonus granted in 2008 in Anheuser-

²Suez has not been selected in our sample since a merger between GDF and Suez occurred in 2008, impacting therefore the compensation policy regarding the executive committee.

Busch InBev, that element having a negative influence on the calculation of the within minimum (see appendix A).

3.3. Methodology

In order to catch the size and performance effects on both fixed and variable compensation, we use Generalized Method of Moments (GMM) by the mean of the software Stata 11.2. That method takes into account the potential endogenous character of performance and managers' tenure. Indeed, it is generally accepted that a higher compensation leads to higher motivation, and therefore to higher performance. As well, manager's tenure has been considered as potentially endogenous since increasing fixed compensation is an incentive for managers to keep their job.

GMM in first differences and system are used to take into account the variables' endogeneity. GMM estimator in system combines in the same system a regression in first differences and another one in level (Arellano and Bover, 1995; Blundell and Bond, 1997). In the equation in first differences, variables are instrumented with their minimum one period lagged value. While in equation in level, variables are instrumented with their first differences. Moreover, a particularity of GMM estimator in system is that a fixed effect for industry (8 sectors) can be added to the temporal dimension (dummy variables from 2005 to 2010). In order to assess the reliability of our results, Sargan's test (1958) and Arellano-Bond (1991) second order autocorrelation test are realised (see table B.2. to B.4. in appendix B). Besides, White (1980) correction for heteroskedasticity is also taken into account in the estimations of standard-deviations. This correction allows us to correct for heteroscedasticity while keeping unchanged the values of the coefficients.

3.4. Econometric Specifications

Two types of specifications are retained to assess the size effect on fixed compensation and the performance effect on variable compensation. Furthermore, the influence of governance mechanisms on both fixed and variable compensation is controlled. CEO compensation and executive committee members' compensation are analysed separately to quantify the influence of size, performance and governance mechanisms. Regarding the executive committee, we use fixed and variable compensation granted to its members (CEO excluded).

3.4.1 Fixed Compensation and Size Effect

In order to explain fixed compensation, four explanatory variables are used: staff (ln), turnover (ln), total asset (ln) and market capitalization (ln). As fixed compensation is not linked with performance, indicators related to performance are excluded from the model. Our assumption is that the level of fixed compensation varies according to the liabilities managers have to assume, those being approached with variables related to size-effect. Our regression is presented as follows:

$$(1) \ln(\text{Fixed Comp})_{i,t} = \beta_0 + \beta_1 \ln(\text{Fixed Comp})_{i,t-1} + \beta_2 \ln(\text{Size})_{i,t} + \beta_3 \ln(\text{EC Size})_{i,t} + \delta Z_{i,t} + \Sigma \text{dummy}_{i,t} + \epsilon_{i,t}$$

with :

$\ln(\text{Fixed Comp})_{i,t}$ = the natural logarithm of fixed compensation for each firm i at time t ;

$\ln(\text{Size})_{i,t}$ = the natural logarithm of firm size for each company i at time t (staff, turnover, total asset and market capitalization);

$\ln(\text{EC Size})_{i,t}$ = the natural logarithm of the number of executive committee members. That variable is only used in the regression related to the executive committee members' fixed compensation analysis (CEO excluded);

$Z_{i,t}$ = the control variables' vector including the percentage of shares hold by the largest shareholder, the percentage of independent board members, the CEO's age and tenure in logarithm and the squared CEO's tenure (see infra);

$\text{Dummy}_{i,t}$ = the vector aggregating time and industry dummy variables.

3.4.2. Variable Compensation and Performance Effect

Regarding variable compensation, our assumption is that it is positively correlated with performance (assessed by accounting and market indicators). According to agency theory, when variable compensation is linked with market indicators, the utility curve of managers tends to converge on the shareholders' one. To test the agency theory prediction, firm's performance is measured by shareholder total return (the capital gains realised on the accounting period, net dividends included), economic profitability (net result divided by total asset), return on equity (net result divided by market capitalization), share return rate (net dividend divided by share price) and market capitalization (using its natural logarithm). Moreover, to control for size effect on variable compensation, a variable associated with size is included in our model that presents as follows:

$$(2) \text{Var. Comp}(\%)_{i,t} = \beta_0 \ln(\text{Size})_{i,t} + \beta_1 \text{Perf}_{i,t} + \beta_2 \text{Perf}_{i,t-1} + \delta Z_{i,t} + \Sigma \text{Dummy}_{i,t} + \epsilon_{i,t}$$

avec:³

$\text{Var. Comp}(\%)_{i,t}$ = the percentage of variable compensation in global compensation (in euros) for each firm i at time t ;

$\ln(\text{Size})_{i,t}$ = the natural logarithm of firm size for each company i at time t (total asset);

$\text{Perf}_{i,t}$ = Performance (in percentage) of each firm i at time t (shareholder total return, economic profitability, return on equity, share return rate and market capitalization (using its natural logarithm));

$Z_{i,t}$ = the control variables' vector including the percentage of shares hold by the largest shareholder, the percentage of independent board members, the CEO's age and tenure in logarithm and the squared CEO's tenure (see infra);

$\text{Dummy}_{i,t}$ = the vector aggregating time and industry dummy variables.

³ In order to explain executive committee variable compensation (CEO excluded), the number of executive committee members (ln) (non-significant after verification) is not included to avoid reducing degrees of freedom.

3.4.3. Control Variables

The percentage of shares held by the largest shareholder takes into account the ownership concentration that may reduce information asymmetry in favour of the manager (Shleifer and Vishny, 1986). Besides, the percentage of independent board members is integrated since the risk of collusion may be reduced when that percentage increases. The percentage of shares held by the largest shareholder and the level of independence of the board are negatively correlated. The duality CEO-president of the board as well as the presence of a family shareholder are correlated to the percentage of independent board members, and are therefore excluded from the control variables' vector to avoid multicollinearity. The contradictory effect between the percentage of shares held by the largest shareholders and the level of independence of the board is investigated later in our analysis. By privileging agency framework, the efficiency of these governance mechanisms is supposed to be negatively correlated with manager's compensation.

Furthermore, we also assume that compensation with manager's age and tenure (Zheng, 2012). On the whole observation period, managers present a mean of 7 years of tenure. 25th, 50th and 75th percentiles correspond respectively to 3, 5 and 10 years. The evolution of these percentiles indicates a valorisation of work experience. Besides, the log-transformation of the tenure variable weakens its correlation with the age and squared tenure variables. Inclusion of a quadratic term allows us to control for a potential convex relationship that could essentially be explained by the decreasing marginal propensity of compensation in function of age, this presenting a strong correlation with manager's tenure.

4. Results

4.1. CEO and Executive Committee Fixed Compensation

Table 2 shows our main results regarding fixed compensation in public firms. It can be established that fixed compensation depends on the size (reflecting the level of liabilities). Hence, when staff members, turnover, total asset and market capitalization vary from one percent, CEO fixed compensation increases respectively by 0.0699, 0.0793, 0.163 and 0.159 percent. As expected, fixed compensation is significantly linked with its lagged value (elasticity being estimated between 0.280 and 0.494 according the estimations).

Concerning the control variables, manager's age, the percentage of shares held by the largest shareholder and the percentage of independent board members show a strong probability to influence fixed compensation. Managers' age and tenure present a more significant influence on manager's fixed compensation. Moreover, squared managers' tenure confirms the existence of a convex relationship between fixed compensation and managers' tenure. We also show a positive semi-elasticity between the percentage of shares hold by the largest shareholder and fixed compensation. That result indicates that majority shareholder do not seem to exert

supervisory functions. Conversely, for each regression, the percentage of independent board members has a negative and significant influence on fixed compensation at 5% level. Temporal dummy variables associated with 2009 and 2010 confirm a sanction effect induced by bad results booked in 2008 (crisis effect) on manager's fixed compensation. Indeed, during crisis period, the part of manager's fixed compensation may be transferred to variable compensation in order to stimulate managers to adopt behaviors that maximize shareholders' utility (Jensen and Murphy, 1990).

Table 2: Fixed Compensation Regressions

GMM system, dependent variable : fixed compensation (ln)		
	CEO	Executive committee (CEO excluded)
Lagged fixed compensation (ln)	[0.280** ; 0.494***]	[0.330** ; 0.545***]
Staff members (ln)	0.0699**	0.0969
Turnover (ln)	0.0793***	0.121**
Total asset (ln)	0.163***	0.316***
Market capitalization (ln)	0.159**	0.335*
Board independence (%)	[-0.202** ; -0.301***]	[-0.424** ; -0.559**]
Shares hold by the largest shareholder (%)	[0.336** ; 0.661***]	[-0.230 ; 0.252]
Managers' age	[0.00621*** ; 0.0123**]	[0.00613* ; 0.0187***]
Squared managers' tenure	[0.000535** ; 0.000986*]	[0.00101*** ; 0.00102***]

Notes: ***/**/*: significant at 1, 5 and 10% level. Managers' tenure is considered to be endogenous. All regressions are available in appendix 2 (tables 5 and 6).

Our results also demonstrate that size effects seem to be more important when we focus on fixed compensation related to the executive committee members (CEO excluded). However, a staff member (ln) is insignificant. As well, board independence seems to be more regulatory in terms of fixed compensation related to the executive committee. The part hold by the majority shareholder is also not significant in that case. Besides, we see that squared tenure has a significant and positive impact on fixed compensation related to executive committee.

4.2. CEO and Executive Committee Variable Compensation

Table 3 presents the main results regarding CEO and executive committee variable compensation. Our results show that size effect (approached by ln total asset) is not significant for each regression. CEO's variable compensation does not seem to be influenced by liabilities factors, reflected in size (total asset). Lagged return on equity exerts a more important impact on variable compensation than on economic performance since no significant result is stated for this indicator during the two periods (t and t-1). Therefore, a single percentage point increase in return on equity is immediately reflected in a 0.0307 percentage point increase in variable compensation. Regarding share's return, it presents a more significant effect on CEO variable compensation. Conversely, the impact of share's return on executive committee compensation is significantly weaker. Indicators directly linked with

shareholders' wealth maximization (lagged return on equity, share's return, lagged market capitalization) seem to significantly explain the manager's variable compensation.

Table 3: Variable Compensation Regressions

GMM system, dependent variable: variable compensation (%)		
	CEO	Executive committee (CEO excluded)
Total asset (ln)	Non-significant	Non-significant
Economic profitability (%)	Non-significant	Non-significant
Lagged economic profitability (%)	Non-significant	Non-significant
Return on equity (%)	Non-significant	Non-significant
Lagged return on equity (%)	0.0307***	0.0268***
Operating margin (%)	Non-significant	Non-significant
Lagged operating margin (%)	0.0134***	0.0116***
Share's return (%)	8.745**	4.603*
Lagged share's return (%)	Non-significant	Non-significant
Total share's return (%)	Non-significant	Non-significant
Lagged total share's return (%)	Non-significant	Non-significant
Market capitalization (ln)	Non-significant	Non-significant
Lagged market capitalization (ln)	0.277***	0.192**
Board independence (%)	[0.682*** ; 0.791***]	[0.293** ; 0.483**]
Shares hold by majority shareholder (%)	Non-significant	Non-significant

Notes: ***/**/*: significant at 1, 5 et 10% level. Performance measures are considered to be endogenous. All regressions are available in appendix 2 (tables 7 and 8).

Regarding control variables, board independence is the only one that presents a significant effect. Indeed, a positive and significant influence is noticed between the percentage of independent board member and variable compensation without sign distinction between CEO and executive committee. That governance mechanism having a negative influence on fixed compensation, we can confirm the agency principle according to which independent board members encourage shifting from fixed to variable compensation to stimulate the managers. Nevertheless, our results show that the link between executive committee and variable compensation is less pronounced.

4.3. Discussion

Like other researchers wanting to figure out the efficiency of incentive systems linked with compensation, we test the relationship between size or performance and variable/fixed compensation. Empirical results in this field are ambiguous, significant and insignificant positive or negative links being stated in the literature. These differences may be explained by particularities associated to the data or the methodology used (see appendix C).

The assumption concerning the size effect on CEO fixed compensation, and thus the existence of a positive relationship between liabilities (estimated by company size) and increasing fixed compensation, is confirmed for staff members (ln), turnover (ln), total asset (ln), market capitalization (ln). Fixed compensation elasticity based on the firm's turnover (the most usual measure used in the literature to assess size effect) is very close to this observed for Italy (0.09) (Brunello, Graziano and Parigi, 2001), Germany (0.0839-0.1073) (Elston and Goldberg, 2003) and Spain (0.131) (Angel and Fumas, 1997). However, that size effect is lower than in the United States (0.282) (Zhou, 1997) or in the United Kingdom (0.20) (Conyon and Murphy, 2000).

On the other hand, performance effect arising from operating margin and return on equity are weakly linked with managers' variable compensation. It can be explained by the disparity of standard-deviations among performance ratios. Consequently, using high-volatility indicators may not reflect their real performance. As well, managers may be subject to pressure arising from other stakeholders. In that case, they can follow other objectives that do not meet shareholders' expectations. This weak link between performance and variable compensation is corroborated by Jensen and Murphy (1990), but criticized by Hall and Liebman (1997) who observe a relationship 33 times stronger (compensation / market capitalization = 3.3) after taking into account stock-options plans (such a mechanism was rare during the observation period used by Jensen and Murphy). Conversely, in accordance with agency theory expectations, a moderated link between market capitalization (ln) and variable compensation is noticed. Based on OLS estimator, Larcker et al. (2010) find an elasticity of 0.339 between CEO variable compensation and market capitalization on the US market while we find an elasticity of 0.277 for the Belgian market, indicating very small difference between these two countries.

5. Conclusion

Our paper contributes to the literature regarding compensation policy in public firms. Referring to agency and managerial theories, compensation is directly linked with size, performance and governance mechanisms. Our results confirm the positive and significant relationship between size and fixed compensation while a positive but weaker effect of performance on variable compensation is stated. Besides, board independence influences significantly and negatively fixed compensation, an opposite link being noticed regarding variable compensation. That situation indicates that independent board members adopt a shareholder-oriented vision, their positive influence on variable compensation being in line with shareholders' wealth maximisation objectives.

Corporate governance variable introduced in our model (board independence and shares held by the largest shareholder) was considered to have an impact on managers' compensation. By positioning in agency framework, we expected a

positive effect on variable compensation and the opposite concerning fixed compensation. However, our results suggest that among these variables, only board independence has a positive influence on variable compensation. Conversely, the percentage of shares held by the largest shareholder influence positively fixed compensation. That situation confirms the argument proposed by Bebchuk and Fried (2005) according to which the presence of a large blockholder may contribute to the strengthening of the ties with manager, this characteristic being accentuated in founding family firms.

Manager's characteristics also determine his compensation level. According to our results, manager's age and squared tenure influence significantly CEO and executive committee fixed compensation. Experience seems therefore to play an important role on that part of compensation. More accurately, experience acquired during board assignment presents a convex relationship since a quadratic relationship is noticed. Two assumptions can explain that phenomenon. CEOs' Tenure can be considered as a positive function of CEOs' entrenchment, allowing them to grant perquisites to executive committee members in order to consolidate their position. In that case, reinforced external control should be privileged by shareholders. Conversely, higher compensation is required by executive committee members in order to convince managers to keep their position by allowing them performance-based compensation.

Nevertheless, our research also presents several limitations. Indeed, our parameters may be inconsistent since the temporal horizon of our sample is relatively short. Moreover, to make our results more exhaustive so that extrapolation can be made, repeating our methods in private firms all around the world can be interesting in order to check for cultural issues. Besides, information related to compensation is hard to obtain and its reliability remains a question since financial disclosure concerning compensation is only regulated by soft law. Moreover, parameters such as competence or managers' risk aversion constitute other factors that can be taken into account to explain CEO compensation. Putting it into practice would be very interesting since heterogeneity between managers would be added as explanatory variables. Finally, distinguishing between family and non-family firms could be considered since family firms present idiosyncrasies that should have an impact on compensation policy.

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Appendix A

Eq. (A.1)

Inter-individual standard-deviation (between), intra-individual standard-deviation (within) as well as minimums and maximums associated with these measures calculated as follows:

$$\begin{aligned}\sigma_{\text{between}} &= \sigma(\sum_i (\bar{x}_i - \bar{x})) & \sigma_{\text{within}} &= \sigma(\sum_{ij} (X_{ij} - \bar{x}_i + \bar{x})) \\ \min_{\text{between}} &= \min(\sum_i (\bar{x}_i)) & \min_{\text{within}} &= \min(\sum_{ij} (X_{ij} - \bar{x}_i + \bar{x})) \\ \max_{\text{between}} &= \max(\sum_i (\bar{x}_i)) & \max_{\text{within}} &= \max(\sum_{ij} (X_{ij} - \bar{x}_i + \bar{x}))\end{aligned}$$

with:

- \bar{x}_i : temporal mean of managers' compensation for each company i ;
- \bar{x} : global mean of managers' compensation;
- X_{ij} : Managers' compensation for each company i at time j .

Appendix B

Table B.1: Descriptive statistics (2004-2010)

Variables	Mean	Standard-deviation	Min	p25	p50	p75	Max
Manager's fixed compensation (€)	793850	510509	231750	500000	700000	900000	2896200
Manager's variable compensation (€)	635393	869055	0	137903	442500	800000	6140000
Manager's global compensation (€)	1437640	1072975	316750	740000	1169038	1795198	7220000
Manager's variable compensation / Manager's global compensation (%)	36.25	21.97	0	26.17	37.91	50.84	85.04
Executive committee members	7.55	4.1390	3	5	7	9	22
Executive committee fixed compensation (€) ¹	2245894	1232362	332333	1394467	2028954	3009414	6340000
Executive committee variable compensation (€)	1583951	3082187	0	91100	716036	1850000	27100000
Executive committee global compensation (€)	3819788	3831768	386584	1822334	2998916	4759628	32300000
Executive committee variable compensation / executive committee global compensation (%)	29.26	19.50	0	14.48	30.80	42.80	83.99
Staff members	17628	24854	15	1570	9968	17833	120000
Manager's age	53.29	8.7767	39	48	52	57	84
Manager's tenure	7.48	6.59	0.15	2.65	5	10	28
Board independence (%) ²	44.46	21.46	0	30.77	37.50	54.54	92.86
Largest shareholder part (%)	31.43	17.98	34.60	16.24	30.00	48.72	67.30
Turnover (000 €)	5900000	6640000	76300	833000	3610000	8820000	36800000
Total asset (000 €)	80600000	186000000	1090000	2580000	6570000	16200000	871000000
Market capitalization (000 €)	8190000	11000000	654000	1780000	4620000	8850000	68700000
Net result (000 €)	462000	2820000	-28000000	99100	303000	833000	5880000
Share's return (%) ³	2.68	1.89	0	1.54	2.18	4.13	7.38
Total share's return (%) ⁴	12.40	37.34	-94.89	-5.93	13.03	32.91	157.41

Operating margin (%) ⁵	8.93	207.24	-2 304.88	6.96	16.96	30.02	129.65
Return on equity (%) ⁶	-1.89	106.97	-1 197.49	5.67	8.56	10.64	35.03
Economic profitability (%) ⁷	5.90	7.06	-30.15	1.41	4.92	7.41	26.80
Founding family blockholder (%)	51.15	50.18	0	0	1.00	1.00	1.00
Financial holding (%)	51.15						
Banks and assurance (%)	15.27						
Télécommunication (%)	16.03						
Chemistry / Pharmacy (%)	16.03						
Retailing (%)	21.37						
Real estate (%)	9.92						
Industrial goods (%)	10.69						
Consumptions goods (%)	5.34						

¹Executive committee compensation (CEO excluded). ² Board independence corresponds to the proportion of independent members having a seat at the board. ³ Share's return is the ratio net dividend / share's market price. ⁴ Global share's return corresponds to the global capital gain (net dividend included) during the accounting period. ⁵ Operating margin is given by operating result divided by turnover. ⁶ Return on equity is net result divided by market capitalization. ⁷ Economic profitability is net result divided by total asset.

Table B.2: CEO fixed compensation

GMM system, dependent variable : Fixed compensation (ln)				
Intercept	5.542*** (1.548)	7.290*** (1.470)	3.071*** (0.788)	6.103*** (1.435)
Lagged fixed compensation (ln)	0.494*** (0.120)	0.280** (0.116)	0.433*** (0.103)	0.251 (0.166)
Staff members (ln)	0.0699** (0.0306)			
Turnover (ln)		0.0793*** (0.0279)		
Total asset (ln)			0.163*** (0.0467)	
Market capitalization (ln)				0.159** (0.0641)
Board independence (%) ¹	-0.202** (0.0992)	-0.220* (0.137)	-0.301*** (0.0631)	-0.297*** (0.111)
Largest shareholder part (%)	0.428 (0.339)	0.671 (0.424)	0.336** (0.150)	0.661*** (0.251)
CEO's age	0.0113** (0.00463)	0.0123** (0.00605)	0.00621*** (0.00234)	0.00826** (0.00326)
CEO's tenure (ln)	-0.00466 (0.0663)	0.0224 (0.0714)	0.0106 (0.0443)	0.0545 (0.0733)
Squared CEO's tenure	0.000986* (0.000524)	0.000864** (0.000384)	0.000535** (0.000268)	0.000444 (0.000315)
Dummy : Financial holding ²	-0.0727 (0.213)	-0.246 (0.242)	0.455** (0.222)	-0.109 (0.154)
Dummy : Telecommunication	-0.0944 (0.203)	-0.346 (0.251)	0.537** (0.244)	-0.303 (0.186)
Dummy : Chemistry / Pharmacy	0.00614 (0.0872)	-0.139 (0.0950)	0.652*** (0.194)	0.0199 (0.0730)

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Dummy : Retailing	0.255** (0.119)	0.121 (0.140)	0.811*** (0.215)	0.311** (0.133)
Dummy : Real Estate	0.0350 (0.201)	-0.336* (0.185)	0.326 (0.199)	-0.346*** (0.123)
Dummy : Industrial goods	-0.00626 (0.104)	-0.207* (0.112)	0.602** (0.242)	-0.0452 (0.116)
Dummy : Consumption goods	0.0550 (0.130)	-0.0308 (0.153)	0.391*** (0.124)	-0.179 (0.142)
Dummy : year 2005 ³	-0.105* (0.0562)	-0.124* (0.0712)	-0.0732 (0.0452)	
Dummy : year 2006	0.0347 (0.0435)	-0.00388 (0.0459)	0.0222 (0.0310)	-0.221** (0.0923)
Dummy : year 2007	0.0513* (0.0298)	0.0401* (0.0237)	0.0264 (0.0266)	-0.100 (0.0640)
Dummy : year 2009	-0.0585** (0.0245)	-0.0548** (0.0240)	-0.0401* (0.0216)	-0.0629* (0.0374)
Dummy : year 2010	-0.0507** (0.0223)	-0.0598*** (0.0218)	-0.0391** (0.0195)	-0.0915*** (0.0243)
Number of observations	91	91	91	91
Number of instruments ⁴	23	23	23	23
Sargan statistic (p-value) ⁵	0.343	0.664	0.170	0.275
Arellano-Bond statistic (AR2, p-value) ⁶	0.643	0.652	0.852	0.809

Notes: ***/**/*: significant at 1, 5 and 10% level. Standards-errors robust to heteroskedasticity (White 1980) reported within brackets.

¹ Board independence corresponds to the proportion of independent members having a seat at the board. ² Sectors dummy variables whose reference sector is banks and assurance. ³ Temporal dummy variables with reference year: 2008. ⁴ Second third and fourth lagged explanatory variables are used as instruments, temporal dummy variables excluded. CEO's tenure and lagged fixed compensation are considered to be endogenous. ⁵ Overidentification Sargan test does not reject null hypotheses of instruments' validity. ⁶ AR2 statistic confirms the absence of second order autocorrelation in first differences.

Table B.3: Executive committee fixed compensation (CEO excluded)

GMM system, dependent variable : Fixed compensation (ln)				
Intercept	3.751** (1.855)	5.058*** (1.492)	3.554*** (1.260)	6.276*** (1.120)
Lagged fixed compensation (ln)	0.545*** (0.185)	0.330** (0.163)	0.0970 (0.0857)	-0.0352 (0.277)
Staff members (ln)	0.0969 (0.0936)			
Turnover (ln)		0.121** (0.0513)		
Total asset (ln)			0.316*** (0.0368)	
Market capitalization (ln)				0.335* (0.193)
Executive committee members (ln)	0.733** (0.302)	0.808*** (0.206)	0.679*** (0.141)	0.647*** (0.181)
Board independence (%) ¹	-0.559** (0.284)	-0.424** (0.165)	-0.384* (0.201)	-0.379* (0.199)

Largest shareholder part (%)	0.135 (0.472)	0.252 (0.240)	-0.230 (0.333)	-0.0395 (0.400)
Manager's age	0.0187*** (0.00649)	0.0158*** (0.00326)	0.00613* (0.00355)	0.00545 (0.00761)
Manager's tenure (ln)	-0.355 (0.296)	-0.119 (0.252)	0.0459 (0.125)	0.290 (0.350)
Squared manager's tenure	0.00129 (0.000838)	0.00102*** (0.000334)	0.00101*** (0.000278)	0.000320 (0.000528)
Dummy : Financial holding ²	0.702 (0.546)	-0.00564 (0.545)	0.656 (0.417)	-0.666 (0.604)
Dummy : Telecommunication	0.193 (0.272)	-0.300 (0.268)	1.050*** (0.382)	-0.507** (0.198)
Dummy : Chemistry / Pharmacy	0.430 (0.296)	-0.0114 (0.305)	1.075*** (0.282)	-0.186 (0.262)
Dummy : Retailing	0.799* (0.447)	0.124 (0.466)	1.101*** (0.275)	-0.171 (0.443)
Dummy : Real Estate	0.946* (0.483)	0.131 (0.487)	0.508 (0.338)	-0.886 (0.610)
Dummy : Industrial goods	-0.445 (0.425)	-0.709*** (0.268)	0.974*** (0.315)	-0.0881 (0.532)
Dummy : Consumption goods	-0.0535 (0.222)	-0.246 (0.217)	0.624*** (0.202)	-0.486** (0.230)
Dummy : year 2005 ³	-0.220 (0.161)	-0.156 (0.119)	-0.137** (0.0674)	-0.295** (0.128)
Dummy : year 2006	-0.0334 (0.125)	-0.0142 (0.0867)	0.00591 (0.0653)	-0.213 (0.162)
Dummy : year 2007	-0.00138 (0.150)	0.0322 (0.0924)	0.0528 (0.0416)	-0.0970 (0.0556)
Dummy : year 2009	-0.133 (0.127)	-0.105 (0.0858)	-0.0589 (0.0557)	-0.153** (0.0597)
Dummy : year 2010	-0.0512 (0.0909)	-0.0768 (0.0764)	-0.105 (0.0757)	-0.254* (0.151)
Number of observations	90	90	90	90
Number of instruments ⁴	24	24	24	24
Sargan statistic (p-value) ⁵	0.234	0.451	0.302	0.907
Arellano-Bond statistic (AR2, p-value) ⁶	0.835	0.582	0.152	0.755

Notes: ***/**/*: significant at 1, 5 and 10% level. Standards-errors robust to heteroskedasticity (White 1980) reported within brackets.

¹ Board independence corresponds to the proportion of independent members having a seat at the board. ² Sectors dummy variables whose reference sector is banks and assurance. ³ Temporal dummy variables with reference year: 2008. ⁴ Second, third and fourth lagged explanatory variables are used as instruments, temporal dummy variables excluded. CEO's tenure and lagged fixed compensation are considered to be endogenous. ⁵ Overidentification Sargan test does not reject null hypotheses of instruments' validity. ⁶ AR2 statistic confirms the absence of second order autocorrelation in first differences.

Table B.4: CEO variable compensation

GMM system, dependent variable : Variable compensation (%)						
Total asset (ln)	-0.00798 (0.0119)	-0.00287 (0.0107)	-0.00174 (0.00972)	-0.00401 (0.00742)	-0.319 (0.306)	0.00110 (0.0118)
Economic profitability (%) ¹	-2.322 (1.453)					
Lagged Economic profitability (%)	-0.0350 (0.485)					
Return on equity (%) ²		-0.0543 (0.0686)				
Lagged return on equity (%)		0.0307*** (0.0104)				
Operating margin (%) ³			-0.0133 (0.0174)			
Lagged operating margin (%)			0.0134*** (0.00423)			
Share's return (%) ⁴				8.745** (3.774)		
Lagged share's return (%)				0.911 (3.575)		
Global share's return (%) ⁵					-0.0333 (0.145)	
Lagged global share's return (%)					0.177 (0.154)	
Market capitalization (ln)						0.0997 (0.320)
Lagged market capitalization (ln)						0.277*** (0.0844)
Board independence (%) ⁶	0.791*** (0.286)	0.824** (0.324)	0.682*** (0.208)	0.0417 (0.242)	0.392** (0.175)	0.699*** (0.173)
Largest shareholder part (%)	0.259 (0.451)	0.0980 (0.350)	0.0732 (0.326)	-0.302 (0.280)	-0.131 (0.296)	0.141 (0.450)
CEO's age	-0.000773 (0.00604)	-0.00237 (0.00557)	-0.000972 (0.00568)	0.00211 (0.00408)	0.000632 (0.00494)	-0.00831 (0.00898)
CEO's tenure (ln)	-0.0338 (0.0570)	-0.0138 (0.0390)	-0.00128 (0.0372)	0.0480 (0.0357)	0.0201 (0.0302)	0.0745 (0.0727)
Squared CEO's tenure	0.0000725 (0.000392)	0.0000851 (0.000365)	-0.0000143 (0.000339)	-0.000458 (0.000296)	-0.000186 (0.000248)	-0.000463 (0.000489)
Dummy : Financial holding ⁷	0.0917 (0.211)	0.000344 (0.170)	-0.0361 (0.175)	0.00727 (0.161)	-0.0286 (0.168)	-0.707 (0.713)
Dummy : Telecommunication	0.364 (0.315)	0.120 (0.125)	0.0858 (0.115)	-0.0218 (0.149)	0.151 (0.122)	-1.111 (1.240)
Dummy : Chemistry / Pharmacy	0.0144 (0.125)	-0.143 (0.101)	-0.131 (0.0823)	0.00617 (0.0991)	-0.0590 (0.0875)	-1.068 (0.924)
Dummy : Retailing	0.0617 (0.123)	-0.109 (0.0903)	-0.0734 (0.0572)	0.126 (0.110)	0.0263 (0.0876)	-1.032 (0.911)
Dummy : Real Estate	0.104 (0.152)	-0.00154 (0.0965)	-0.0230 (0.0931)	-0.401*** (0.0960)	-0.0288 (0.0555)	-0.808 (0.742)
Dummy : Industrial goods	0.339* (0.183)	0.194 (0.121)	0.152 (0.101)	0.0151 (0.0854)	0.115 (0.125)	-0.676 (0.858)
Dummy : Consumption goods	0.490*** (0.167)	0.370*** (0.124)	0.344*** (0.116)	0.311*** (0.111)	0.338** (0.149)	-0.623 (1.055)

Dummy : year 2005 ⁸	0.216*	0.163*	0.129	0.180**	0.0907	0.155
	(0.115)	(0.0844)	(0.0875)	(0.0774)	(0.145)	(0.177)
Dummy : year 2006	0.269*	0.202**	0.187***	0.283***	0.148	0.168
	(0.145)	(0.0820)	(0.0722)	(0.0864)	(0.120)	(0.201)
Dummy : year 2007	0.295**	0.222***	0.197***	0.197***	0.163**	0.137
	(0.130)	(0.0743)	(0.0754)	(0.0526)	(0.0816)	(0.182)
Dummy : year 2009	0.123*	0.155**	0.110*	0.141*	0.199**	0.287***
	(0.0685)	(0.0696)	(0.0576)	(0.0757)	(0.0888)	(0.103)
Dummy : year 2010	0.245***	0.208***	0.176***	0.174***	0.0993	0.264***
	(0.0942)	(0.0644)	(0.0658)	(0.0621)	(0.154)	(0.0869)
Number of observations	100	99	100	100	99	99
Number of instruments ⁹	25	25	25	25	25	25
Sargan statistic (p-value) ¹⁰	0.213	0.214	0.330	0.292	0.445	0.690
Arellano-Bond statistic (AR2, p-value) ¹¹	0.454	0.215	0.229	0.176	0.157	0.517

Notes: ***/**/*: significant at 1, 5 and 10% level. Standards-errors robust to heteroskedasticity (White 1980) reported within brackets.

¹ Economic profitability is net result divided by total asset. ² Return on equity is net result divided by market capitalization. ³ Operating margin is given by operating result divided by turnover. ⁴ Share's return is the ratio net dividend / share's market price. ⁵ Global share's return corresponds to the global capital gain (net dividend included) during the accounting period. ⁶ Board independence corresponds to the proportion of independent members having a seat at the board. AR2 statistic confirms the absence of second order autocorrelation in first differences. ⁷ Sectors dummy variables whose reference sector is banks and assurance. ⁸ Temporal dummy variables with reference year: 2008. Second, third and fourth lagged explanatory variables are used as instruments, temporal dummy variables excluded. CEO's tenure and lagged fixed compensation are considered to be endogenous. ¹⁰ Overidentification Sargan test does not reject null hypotheses of instruments' validity. ¹¹ AR2 statistic confirms the absence of second order autocorrelation in first differences.

Table B.5: Executive committee variable compensation (CEO excluded)

GMM system, dependent variable : variable compensation (%)						
Total asset (ln)	0.000215	0.00347	0.00316	0.000331	0.00468	-0.104
	(0.00754)	(0.00673)	(0.00662)	(0.00592)	(0.00770)	(0.100)
Economic profitability (%) ¹	-1.135					
	(0.987)					
Lagged Economic profitability (%)	0.0572					
	(0.363)					
Return on equity (%) ²		-0.000663				
		(0.0410)				
Lagged return on equity (%)		0.0268***				
		(0.00746)				
Operating margin (%) ³			-0.00547			
			(0.0161)			
Lagged operating margin (%)			0.0116***			
			(0.00276)			
Share's return (%) ⁴				4.603*		
				(2.797)		
Lagged share's return (%)				3.128		
				(3.151)		
Global share's return (%) ⁵					-0.0298	
					(0.0699)	
Lagged global share's return (%)					0.0899	

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					(0.0648)	
Market capitalization (ln)						-0.0690
						(0.152)
Lagged market capitalization (ln)						0.192**
						(0.0955)
Board independence (%) ⁶	0.483**	0.369	0.434**	0.0739	0.293**	0.550*
	(0.214)	(0.230)	(0.194)	(0.176)	(0.115)	(0.289)
Largest shareholder part (%)	-0.0155	-0.186	-0.116	-0.284	-0.184	-0.0340
	(0.309)	(0.323)	(0.311)	(0.238)	(0.287)	(0.393)
CEO's age	-0.000929	-0.000103	-0.000869	-0.000177	-0.000409	-0.00461
	(0.00381)	(0.00322)	(0.00341)	(0.00217)	(0.00321)	(0.00526)
CEO's tenure (ln)	-0.00868	0.00825	0.00403	0.0345	0.0144	0.0230
	(0.0394)	(0.0269)	(0.0270)	(0.0240)	(0.0207)	(0.0347)
Squared CEO's tenure	-0.000213	-0.000301	-0.000251	-0.00046	-0.000315	-0.000331
	(0.000263)	(0.000232)	(0.000255)	(0.000193)	(0.000195)	(0.000291)
Dummy : Financial holding ⁷	0.110	0.0506	0.0491	0.0674	0.0517	-0.136
	(0.173)	(0.156)	(0.158)	(0.150)	(0.149)	(0.374)
Dummy : Telecommunication	0.217	0.101	0.0882	-0.00886	0.116	-0.294
	(0.194)	(0.109)	(0.101)	(0.148)	(0.108)	(0.488)
Dummy : Chemistry / Pharmacy	0.0631	0.00299	-0.00692	0.0655	0.0309	-0.319
	(0.116)	(0.0890)	(0.0891)	(0.0916)	(0.0902)	(0.354)
Dummy : Retailing	0.0762	0.0213	0.0100	0.123	0.0655	-0.324
	(0.102)	(0.0682)	(0.0646)	(0.0896)	(0.0573)	(0.339)
Dummy : Real Estate	-0.0210	-0.0972	-0.0880	-0.372***	-0.0782	-0.314
	(0.114)	(0.0689)	(0.0802)	(0.143)	(0.0591)	(0.308)
Dummy : Industrial goods	0.233*	0.129*	0.144**	0.0509	0.135**	-0.0711
	(0.128)	(0.0772)	(0.0702)	(0.0773)	(0.0656)	(0.362)
Dummy : Consumption goods	0.477***	0.412***	0.408***	0.365***	0.406***	0.150
	(0.122)	(0.0976)	(0.0952)	(0.0973)	(0.0999)	(0.446)
Dummy : year 2005 ⁸	0.136*	0.0940*	0.0956*	0.159**	0.0793	0.194
	(0.0781)	(0.0498)	(0.0578)	(0.0643)	(0.0798)	(0.133)
Dummy : year 2006	0.148*	0.109**	0.110**	0.201***	0.0968	0.189
	(0.0823)	(0.0487)	(0.0488)	(0.0633)	(0.0671)	(0.122)
Dummy : year 2007	0.169**	0.120**	0.122**	0.165***	0.105	0.159
	(0.0800)	(0.0491)	(0.0576)	(0.0429)	(0.0658)	(0.106)
Dummy : year 2009	0.0707	0.0867*	0.0736*	0.109	0.110**	0.229*
	(0.0517)	(0.0447)	(0.0412)	(0.0696)	(0.0542)	(0.125)
Dummy : year 2010	0.163***	0.126***	0.130***	0.161***	0.0931*	0.227**
	(0.0631)	(0.0328)	(0.0397)	(0.0377)	(0.0566)	(0.101)
Number of observations	100	99	100	100	99	99
Number of instruments ⁹	25	25	25	25	25	25
Sargan statistic (p-value) ¹⁰	0.560	0.300	0.613	0.579	0.556	0.196
Arellano-Bond statistic (AR2, p-value) ¹¹	0.195	0.976	0.232	0.167	0.234	0.395

Notes: ***/**/*: significant at 1, 5 and 10% level. Standards-errors robust to heteroskedasticity (White 1980) reported within brackets.

¹ Economic profitability is net result divided by total asset. ² Return on equity is net result divided by market capitalization. ³ Operating margin is given by operating result divided by turnover. ⁴ Share's return is the ratio net dividend / share's market price. ⁵ Global share's return corresponds to the global capital gain (net dividend included) during the accounting period. ⁶ Board independence corresponds to the proportion of independent members having a seat at the board. AR2 statistic confirms the absence of second order autocorrelation in first differences. ⁷ Sectors dummy variables whose reference sector is

banks and assurance.⁸ Temporal dummy variables with reference year: 2008. Second, third and fourth lagged explanatory variables are used as instruments, temporal dummy variables excluded. CEO's tenure and lagged fixed compensation are considered to be endogenous.¹⁰ Overidentification Sargan test does not reject null hypotheses of instruments' validity. ¹¹ AR2 statistic confirms the absence of second order autocorrelation in first differences.

Table B.6: Pearson correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Staff (1)	1.00													
CA (2)	0.90*	1.00												
TA (3)	0.56*	0.51*	1.00											
CB (4)	0.60*	0.69*	0.75*	1.00										
RE (5)	-0.04	0.06	-0.45*	0.01	1.00									
RF (6)	-0.04	0.05	-0.12	0.05	0.48*	1.00								
ME (7)	-0.15	-0.05	-0.12	0.05	0.44*	0.99*	1.00							
RA (8)	-0.25*	-0.21*	-0.11	-0.02	0.30*	0.14	0.19*	1.00						
RTA (9)	0.03	0.08	-0.09	0.10	0.20*	0.28*	0.27*	-0.19*	1.00					
Ind. (10)	0.18*	0.26*	0.05	0.01	-0.08	0.07	0.02	0.11	0.03	1.00				
Action. (11)	0.07	0.11	-0.17	0.18*	0.42*	0.14	0.11	-0.07	0.02	-0.49*	1.00			
Age (12)	-0.20*	-0.06	0.31*	0.35*	-0.12	-0.05	0.00	-0.07	0.01	-0.20*	0.27*	1.00		
Anc. (13)	-0.40*	-0.27*	-0.31*	-0.25*	-0.06	0.02	0.05	-0.15	-0.05	-0.16	0.21*	0.27*	1.00	
Anc ² (14)	-0.44*	-0.27*	-0.10	-0.02	-0.05	0.05	0.10	-0.16	-0.03	-0.22*	0.25*	0.56*	0.72*	1.00

Notes : * : significant at 5 % level. (1) : staff members (ln), (2) turnover (ln), (3) Total asset (ln), (4) market capitalization (ln), (5) Economic profitability (%), (6) Return on equity (%), (7) Operating margin (%), (8) share's return (dividend, %), (9) Global share's return (capital gain and dividend, %), (10) Board independence (%), (11) Largest shareholder part (%), (12) CEO's age, (13) CEO's tenure (ln), (14) Squared CEO's tenure.

Appendix C

Table C.1: Summary of researches related to CEO compensation

Authors	Data / Observation period	Performance and size indicators	Specification method	Heterogeneity/endogeneity/ corrections	Results
Murphy (1985)	461 senior managers in 72 large American firms (1964-1981)	Turnover, total shareholder return, sectorial performance	Fixed effect models	Yes / No	Compensation is significantly and strongly linked with turnover and shareholder return.
Abowd (1990)	75 senior managers for each of 600 firms (1981-1986)	Return on equity, Economic profitability, Cash-flow after taxes, Shareholder return	OLS	No / No	Lagged compensation is influenced by current performance indicators (dependent variable : lagged compensation).
Jensen and Murphy (1990)	1 896 CEOs in 1 092 American firms (1974-1986)	Market capitalization	First differences models	Yes / No	An increase of shareholder value by 1000 USD leads to CEO compensation rise of 3.25 USD.
Angel and Fumas (1997)	798 Italian managers (1990-1992)	Turnover, staff members	Fixed effect models	Yes/ No	Size effect on global compensation is confirmed for turnover (elasticity: 0.131) et staff members (elasticity: 0.099).
Hall and Liebman (1997)	CEOs in 478 American firms (1980-1994)	Market capitalization	First difference models	Yes/ No	An increase in market capitalization by 1% induces CEO compensation rise of 3.3%.
Bloom and Milkovich (1998)	46 senior managers for each of 500 American firms (1981-1988)	Shareholder return	Random effect models	Yes/ No	Bonuses positively vary according to specific risk and performance, and negatively according to systematic risk.
Conyon and Murphy (2000)	CEOs in 510 firms from United Kingdom and in 1666 American firms (1989-1997)	Accounting value of equity/market capitalization, turnover	Fixed effect models	Yes / No	Global compensation / Turnover elasticity higher in the United States (0.316) in comparison with United Kingdom (0.197).
Elston and Goldberg (2003)	CEOs in 1683 German firms (1970-1986).	Return on equity, turnover	Fixed effect and GMM models	Yes / Yes	Return on equity is significant but moderated for the fixed effect model. Performance measures are non-significant for the GMM model.

Brunello, Graziano and Parigi (2001)	CEOs in 88 Italian firms (1993-1995)	Turnover, net results	First differences models	Yes / No	Performance effect is significant for global compensation (semi-elasticity: 0.00024, turnover elasticity: 0.09).
Bebchuk and Grinstein (2005)	CEOs from S&P 1500 (1993-2003)	Turnover, Economic profitability, shareholder return	Fixed effect models	Yes / No	Global compensation / turnover elasticity is more important for the 5 principal managers than the CEO (0.171 against 0.138 for CEO). Economic profitability is non-significant. Return on equity has the most important influence on CEO's compensation.
Larcker et al. (2005)	22 074 senior managers for 3114 American firms (2002-2003)	Market capitalization, economic profitability, shareholder return	Fixed effect models	Yes / No	Market capitalization is more relevant to explain CEO's global compensation in comparison with performance indicators (elasticity : 0.49).
Conyon (2006)	CEOs in American listed firms on the S&P 500, S&P Mid-Cap 400 and S&P Small-Cap 600 (1993-2003)	Market capitalization, shareholder return	Fixed effect models	Yes/ No	Global compensation /market capitalization elasticity increases from 0.34 to 0.83 when incentive compensation is taken into account. Global compensation/shareholder return semi-elasticity increases from 0.00132 to 0.00477.
Ozkan (2007)	CEOs in 390 firms from United Kingdom (1999-2005)	Turnover,shareholder return, Tobin Q	GMM models including fixed effect	Yes / Yes	Global compensation/turnover elasticity amounts to 0.07.
Larcker et al. (2010)	CEOs in 2 110 American firms (2006-2007)	Market capitalization, economic profitability, shareholder return	2SLS models including fixed effect	Yes / Yes	Global compensation/global share's return lagged with one period amounts to 0.312. CEO's compensation/market capitalization elasticity is 0.339.
Conyon and Sadler (2010)	1958 firms from United Kingdom (2002-2007)	Turnover, shareholder return	GMM models including fixed effect	Yes/ Yes	Size effect is confirmed with an elasticity of 0.14 for fixed compensation. Shareholder return does not have any impact on compensation.