The effects of executive compensation disclosure regulation on incentive policy: A quasi-experiment in countries with weak legal protection

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1. Introduction

The exorbitant salaries and failures in the transparency of executive compensation (Gipper, 2021) motivated the search for improvements regarding the regulation of executive compensation disclosure (Blanes et al. 2020). Given this demand for transparency, international bodies and national regulators have developed a wide range of rules and codes on executive compensation, with accounting, tax and disclosure requirements (Chang et al., 2023; Murphy & Jensen, 2018). Governments in several countries promoted the inclusion or reform of their legislative bases, with stricter rules (Hitz & Müller-Bloch, 2015), with the main objective of mitigating agency problems. (Chu et al., 2020).

Developed markets with strong corporate governance, such as the United States and the United Kingdom, were pioneers in regulating the disclosure of information regarding executive compensation (Wahyuni et al., 2020). Since the 1930s, the Securities and Exchange Commission (SEC) has required the disclosure of executive compensation for companies listed on the US market. (Bao, et al., 2022). In the United Kingdom, the first formal instrument requiring the disclosure of information on executive compensation, the Greenbury Report, was published in 1995. In general, in countries with weak legal protections and systems originating from French civil-law, regulation of executive compensation transparency appears to proceed at a slower pace. Mandatory disclosure of executive compensation in Brazil started in 2010, Belgium in 2011, Italy in 2012, Argentina and Spain in 2013.

Despite regulatory advances, empirical evidence on the economic impacts of compensation disclosure is not clear (Gipper, 2021), not conclusive regarding the efficiency of compulsory disclosure, exposing the complex aspect of the practical effects of executive compensation (Chu et al., 2020; Costa et al., 2016; Yang, 2021). By establishing the obligation to disclosure the executive compensation policy, regulatory bodies expect to mitigate agency problems by reducing the discretion of managers and increasing the power of shareholders in negotiating more efficient contracts (Chu et al., 2020) and the sensitivity of compensation to performance in order to create value for shareholders (Cieslak et al., 2021).

In this sense, studies such as Chang et al., (2023), Cieslak et al., (2021), Jiang et al., (2016) and Yang (2021) suggest that regulating compensation disclosure would allow for greater monitoring, which would reduce executives' managerial power (Lu & Shi, 2018). Thus, stricter remuneration disclosure requirements would be necessary to contain executive greed by regulating compensation levels (Ndzi, 2019), which would balance the salary levels paid to executives. On the other hand, studies like Chu et al., (2020), Grinstein et al., (2017) and Gipper (2021) argue that regulation of executive compensation disclosure fails to combat agency problems (Chu et al., 2020). The mandatory disclosure would deregulate market-mediated incentive contracts, which would increase executive compensation levels (Chu et al., 2020).

For La Porta et al., (1998) the origin of legislative systems is a preponderant factor in the structuring and development of governance practices and capital markets. Legal institutions that provide protection of property rights increase value and opportunities for growth and decrease capital expenditures (Cain et al., 2017). Countries with legal guarantees to owners' rights would have larger and more developed markets, compared to countries with weak legal protection (La Porta et al. 1998). In this context, the problem question of this study is: What is the impact of executive compensation regulation on the remuneration policy of firms in countries with legal origin in French civil law? The purpose of this study is to identify the effect of mandatory disclosure of executive compensation on the remuneration policy of firms in countries with weak legal protection.

We investigate countries with weak legal protection for two reasons: First, empirical studies on executive compensation disclosure focus on Anglo-Saxon markets (Cieslak et al., 2021), with strong legal protection for shareholders (Wahyuni et al., 2020). Thus, our study adds empirical evidence of markets and corporate governance systems still in development, in Latin American and Latin European countries. Second, countries where the legal protection of owners' rights is weak would have a context conducive to the expropriation of minority shareholders and would face specific agency problems, with conflicts of interest between majority and minority shareholders. As a result, stricter requirements for disclosure executive compensation may have relevant effects in countries with weak legal protection.

Our study contributed to the theoretical-empirical discussion first because we investigated little explored and inconclusive questions about the disclosure of information and the compensation package paid to executives. Thus, we present evidence on the effects of mandatory disclosure of remuneration on the compensation policy of firms in countries with weak legal protection. Second, our results can be useful in evaluating and formulating improvements in the legal instruments issued by regulatory agents in each country. In addition, our findings can be of great value to executives, especially to those responsible for setting up and defining the internal remuneration policies of firms.

2. Mandatory disclosure of executive compensation: Conceptions and hypotheses:

Countries with strong legal protection, consolidated governance systems and developed markets were pioneers in regulating the disclosure of information regarding executive compensation (Wahyuni et al., 2020). In the United States, the first rule regarding the disclosure of executive compensation was enacted by the Securities and Exchange Commission (SEC) in 1938 and, since then, the information disclosure requirements are published and provided in Item 402 of Regulation S-K (Yang, 2021). Furthermore, in response to criticism from society in general regarding the high salaries paid to executives and to improve corporate governance practices, in 1995 the United Kingdom published the *Greenbury Report* (Chu et al., 2020; Harvey et al., 2020). This report was the first formal instrument requiring disclosure of information on executive pay for UK listed companies (Harvey et al., 2020), with a focus on improving the link between pay and performance (Elmagrhi et al., 2020).

Following this worldwide trend, but a little later, countries with weak legal protection also regulated the mandatory disclosure of amounts paid to executives. In Brazil, the *Securities and Exchange Commission (CVM) Instruction No. 480 of December 7,2009*, regulates the disclosure of executive compensation for listed companies, with effect from 2010. Later, in Argentina, the *Decree No. 1,023 of July 29, 2013*, which regulates the *Ley de Mercado de Capitales*, determines that publicly traded companies disclosure the remuneration policy for directors and executives, already in the reports referring to the year 2013.

In a short period of time, European countries with Latin origin and weak legal protection also implemented stricter remuneration disclosure requirements. In Belgium, the Corporate Governance Law of April 6, 2010 and the Royal Decree of June 6, 2010 made it mandatory to adopt the Belgian Companies Code (BCC). Thus, companies listed on the Belgian market are required to show executive compensation from 2012 onwards. In Italy, *Commissione Nazionale per le Societá e la Borsa (Consob) Resolution No. 18049 of December 23, 2011,* requires disclosure of executive compensation. Thus, companies listed on the Italian stock exchange are required to disclosure information regarding the compensation of their executives as of the 2012 annual reports. For Spanish companies, this requirement has been in place since 2013. The ECC Order No. 461 of March 20, 2013 of the Ministry of Economy and Competitiveness determined the disclosure of the total compensation of executives.

There seems to be a consensus among regulators that improving disclosure of information regarding executive compensation is important for corporate governance (Costa et al., 2016). Because it would reduce the participation of executives in the definition of compensation packages (Chu et al., 2020). Directors and executives would be more sensitive to political pressures and public scrutiny, which would inhibit excess remuneration (Chang et al., 2023; Gipper, 2021). Corroborating these theoretical arguments, Chang et al., (2023) investigated the effects of changes in regulations regarding the compulsory disclosure of executives in the United States and suggest that, after the effectiveness of new requirements, compensation levels decrease by around 3%. In the Swedish market, Cieslak et al., (2021) suggest that mandatory compensation disclosure would reduce executive compensation levels, as it would reduce executives' bargaining power.

On the other hand, for Hermalin and Weisbach (2012) this improved monitoring would negatively affect executives, who start to demand higher levels of remuneration as a compensating differential. Executives seek to increase their explicit incentives to compensate for the reduction of their implicit incentives (Lu & Shi, 2018). Studies such as Grinstein et al. (2017) in the United States suggest that compensation levels increased after the implementation of new disclosure requirements. Balsam et al., (2016), in a multi-country survey, suggest that stricter information disclosure requirements result in higher levels of remuneration. In China, Lu and Shi (2018) suggest that new legal requirements raise compensation levels by around 15%, as a result of increased transparency and monitoring, which can generate loss of informational power and increase the risk of dismissal of executives (Lu & Shi, 2018). According to these assumptions, we formulate following theoretical hypotheses:

Hypothesis 1. Mandatory disclosure of executive compensation generates a lower level of total compensation for executives of firms in countries with weak legal protection.

Hypothesis 2. Mandatory disclosure of executive compensation generates a lower level of base salary for executives of firms in countries with weak legal protection.

Studies such as Craighead et al., (2004) in the United Kingdom and Kim et al. (2017) in South Korea suggest that mandatory remuneration disclosure would improve the sensitivity of remuneration to results and positively impact the performance of companies with good governance practices. However, the lack of best practices for measuring corporate performance (Ndzi, 2019) and the inefficiency of the board of directors in filtering out exogenous shocks to performance (Jenter & Kanaan, 2015) question the effective sensitivity of executive compensation to performance (Elmagrhi et al., 2020).

These issues support criticisms regarding the lack of alignment executive compensation with the creation value for shareholders (Ndzi, 2019) and reinforce the idea that executives receive excessive compensation (Blanes et al., 2020; Murphy & Jensen, 2018). In this sense, the disclosure of remuneration would improve the monitoring of executives' actions, which would inhibit excessive remuneration linked to the results of short-term projects, which are not always advantageous for companies in the long term (Bennett et al., 2017). According to these assumptions, we formulate the following theoretical hypothesis:

Hypothesis 3. Mandatory disclosure of executive compensation generates a lower level of bonus for executives of firms in countries with weak legal protection.

In recent years, companies have increased the use of stock and option compensation as a governance mechanism capable of preventing powerful executives from building empires (Chen et al. 2020). This type of compensation is part of the ideal compensation policy, in the

sense of aligning the interests of executives and owners (Zhou et al., 2021). On the other hand, compensation for shares and options could increase the likelihood of accounting manipulations (Harvey et al., 2020). Executives paid by shares and options would be inclined to manipulate the firms' information disclosure policy, aiming to obtain private benefits (Chen et al., 2020).

Studies such as Chen et al., (2020) present empirical evidence that executives who receive higher compensation for shares and options try to obtain personal benefits by buying shares at a lower price, taking advantage of private information. Disclosure of executive compensation would be a device for monitoring the behavior of managers (Cieslak et al., 2021). Thus, mandatory disclosure of remuneration would discourage executives from manipulating information, which would reduce incentives for sharing (Chen et al., 2020). According to these assumptions, we formulate the following theoretical hypothesis:

Hypothesis 4. Mandatory disclosure of executive compensation generates a lower level of Shares and options for executives of firms in countries with weak legal protection.

3. Methodological aspects

We conducted a quasi-experiment using the Difference in Differences (DID) method and assumed as an exogenous shock the legal framework regarding the regulation of disclosure of executive compensation. Thus, we assume as a legal framework the validity of the legislation that instituted the mandatory disclosure of information regarding executive compensation, in each country. This normative change would impact a part of the sample of companies (treatment group), not verified in the other part (control group). To determine the effect of the treatment on the companies that were affected by the framework and the control on those that were not affected. We constituted the independent variable coefficient DID, which is generated by two main dummy variables of the model: framework and group.

The framework variable corresponds to the period of validity of the law that made disclosure of executive compensation mandatory, with a value of "1" being attributed to the year of legal intervention, as well as the following two years, and "0" to the three years before. Likewise, the group variable captures the differentiation of companies that were affected by the framework (treatment) and those that were not (control). Thus, a value of "1" was attributed to companies in the treatment group, and "0" it in the control group. The interaction between the framework and group variables generated the DID estimator, according to equation (1):

$$Y_{it} = \delta_0 + \delta_1(treated_i \; x \; post_t) + \delta_2 \; x \; post_t + \delta_3 \; x \; treated_i + \varepsilon_{it} \qquad (1)$$

Where *i* represents the company and *t* the time; *Yit* the dependent variable of the study; δ_0 the average result of the control group in the pre-treatment period; δ_1 parameter of interest; δ_2 captures permanent differences between treatment and control groups; δ_3 common trends between treatment and control groups and ε_{it} the standard error.

The DID coefficient of interest (δ_1) is calculated by averaging the difference between the treatment group before and after the framework and the control group before and after the start of treatment, as shown in Equation (2):

$$\hat{\delta}_1\left(\hat{y}_{(treat, \; post=1)} - \hat{y}_{(treat, \; post=0)}\right) - \left(\hat{y}_{(control, \; post=1)} - \hat{y}_{(control, \; post=0)}\right) \quad (2)$$

The main premise for estimating a Different in Different model is the called "parallel trends" (Chowdhury et al., 2020) which assume the outcome variable for the treatment and control groups has a similar trend, before treatment (Robert & Whited, 2013). Assuming that this premise is not testable (Robert & Whited, 2013) and in order to validate the DID models,

we subject our DID models to robustness tests. First, we performed the placebo test, which consists of falsifying the legal framework, considering that the possible effects of the shock began in a different period from the true milestone (Roberts & Whited, 2013). We used as an alternative framework: Placebo#1, two years after the true milestone. Second, with the objective of evaluating the internal validity of the estimate of the original DID models, the Difference in Difference in Differences test (triple difference - DDD) was performed, considering multiple treatment and control groups.

The population of our study comprises firms from countries with weak legal protection, according to the classification by La Porta et al., (1998). Next, we investigated with the regulatory bodies of the countries and in studies by the Organization for Economic Cooperation and Development (OECD, 2019), which countries have a legal obligation disclosure of information regarding the remuneration of executives of publicly traded companies. Among the countries with French civil laws, which have legal provision for disclosure executive compensation, we chose to investigate Latin American and European countries, with Latin origin, in addition to Belgium, a country with strong French influence. Thus, the final sample includes 873 companies from the following countries: Argentina (72), Belgium (106), Brazil (296), Spain (165) and Italy (234).

To identify companies in the treatment and control groups, we use dual listing criteria because companies subject to SEC requirements that issue American Depositary Receipts (ADRs) or Depositary Receipts (DR) on the London Stock Exchange are required to disclosure information on executive compensation, therefore, are not affected by the adoption of the new legal framework in their respective countries. Therefore, we classified as a control group, the companies with dual listing in at least one of the two markets, for at least three years before the start of the legal framework in their countries. These firms would already have the obligation to disclosure executive compensation, even before the start of the obligation in their home market.

The companies' financial data were collected from the S&P Global Capital IQ® and Economática® databases; information on executives was obtained from the Bloomberg®. In addition, as each country has a specific regulatory framework regarding the disclosure of executive compensation, data collection and analysis took place in a segregated manner, which causes the analysis period of this research to vary three years before and after the effective date of each country's regulatory framework.

As a complement to the main analysis, we estimate regression models with control covariates, fixed time and sector effects, and the DID estimator (δ_1), using the Ordinary Least Squares (OLS) method with additional exogenous controls, which would reduce the error variation (Roberts & Whited, 2013). Equation (3) includes the econometric model (OLS):

$$Y_{igt=} \; \alpha \, treated + post + \; \delta_1 \, (treated_i \; x \; post_t) + \; \beta . X_{igt} + Y_g + \lambda_t + \varepsilon_{it}, \qquad (3)$$

Where Y_{igt} corresponds to the dependent variables of the study, δ_1 is the variable of interest (DID estimator), X_{igt} represents the model control variables, Y_g is the industrial fixed effects, λ_t is the fixed effects of time. Finally, i represents the companies, g the sector and t the period and ε_{it} the error parameter.

To estimate the OLS models, we used the Propensity Score Matching 2 (PSM-2) based on the variable total assets (TA) and industry in order to match companies in the treatment and control groups. The PSM-2 includes a set of propensity score matching methods in order to match observable differences between treated and untreated companies, using as a basis one or a set of established covariates. For each country, a paired subsample (matching sample) was constituted, which was used to estimate the Ordinary Least Squares models.

In addition, our dependent variables correspond to types of compensation paid to executives as dependent variables, such as total compensation (TOTAL), base salary (BASE), bonuses (BONUS) and incentives for shares and options (SHARES). Table 1 includes the dependent variables, their descriptions and the main studies that used them.

Table 1 – Dependent Variables.

Dependent Variables – Remuneration		
Variables	Description	Authors
TOTAL	Total Executive Compensation / number of executives.	Chen et al., (2020); Gipper (2021)
BASE	Salaries + Other base Compensations.	Cieslac et al., (2021); Gipper (2021); Zhou et al., (2021)
BONUS	Compensation of executives through bonus.	Cieslac et al., (2021); Gipper (2021)
SHARES	Compensation of executives through shares and options.	Cieslac et al., (2021); Gipper (2021)

Note: TOTAL. Total Executive Compensation; BASE. Base Executive Compensation; BONUS. Bonus executive compensation. SHARES. - Shares and Options Owned by executives.
Source: Elaborated by the authors.

The control variables correspond to the size, performance and indebtedness of the companies and aspects related to the entrenchment of the executives and characteristics of the board of directors. Table 2 contemplates these variables, their descriptions, main authors and the expected signal according to the theory.

Table 2. Control Variables

Variables	Description	Authors	Signal
NEX	Number of executives.	Sonza and Kloeckner (2014)	+
TEX	Average tenure of the executives.	Chang et al., (2023)	+/-
DUAL	1 – CEO and Chairman are the same person; 0 – Otherwise	Chang et al., (2023); Chen et al., (2020); Zhou et al., (2021)	+
AGE	Average age of the executives.	Chang et al., (2023)	+
BSIZE	Numbers of directors.	Chen et al., (2020); Lu and Shi (2019); Zhou et al., (2021)	+
BIND	Number of independent directors/ number of directors	Lu and Shi (2019); Jiang et al., (2016); Xu et al., (2020)	-
ROA	Operating income/Total Assets	Cieslac et al., (2021); Xu et al., (2020); Zhou et al., (2021)	+/-
ROE	Net profit/Equity	Chen et al., (2020); Gipper (2021);	+/-
MB	Market Value/Total Assets	Chen et al., (2020); Gipper (2021); Xu et al., (2020)	+/-
AT	Natural logarithm of the Total Assets	Chen et al., (2020); Gipper (2021); Xu et al., (2020); Zhou et al., (2021)	+
PL	Natural logarithm of the Equity	Cieslek et al., (2021)	+
REC	Natural logarithm of the Revenue	Hoi et al., (2019); Lu and Shi (2019)	+
AL	Current Liabilities + Non-Current Liabilities) / Equity	Chang et al., (2023); Lu and Shi (2019); Xu et al., (2020)	+

Note: NEX. Number of executives; TEX. Average tenure of executives; DUAL. Duality; AGE. Average age of executives; BSIZE. board size; BIND. Proportion of independent directors ROA. Return on assets; ROE. Return on Equity; MB. Market-to-Book; AT. Total assets; PL. Equity; REC Total Revenue; AL. Leverage.
Source: Elaborated by the authors.

The reliability of the results of the OLS models presupposes the satisfaction of certain requirements, verifiable through validation tests of the proposed regressions. To test the normality of the data, the Doornik-Hansen test was performed, which assumes as a null hypothesis that the data have a normal distribution. Multicollinearity was tested using the Variance Inflation Factor (VIF) and the Wooldridge test for serial autocorrelation, which assumes the non-serial autocorrelation of the data as a null hypothesis. In addition, to verify the problem of heteroscedasticity in the data, the Breuch-Pagan test was applied, and the Dorbin-Wu-Husman test to verify endogeny.

4. Analysis of results

We divided this section into three parts: "Descriptive statistics and correlation.", "Regressions results" and "Robustness tests".

4.1. Descriptive statistics and correlation

Before carrying out the analysis of the results, we checked the correlation between the variables. According to Hair et al. (2005), those with a correlation above 0.70 should be avoided. In all models, only the variables of size: total asset (AT), equity (PL) and total revenue (REC) showed high correlation with each other, opting to use only one of them in the analyses. Then, we applied the VIF (Variance Inflation Factor) test, which indicated that no variable had a value greater than 5, showing that there is no multicollinearity.

In addition, Table 3 presents the descriptive statistics of the dependent variables for the treatment and control groups, before and after the milestone, and the results of the median differences test (Wilconox). The results of the median difference test (Wilconox), before and after the milestone, referring to the companies in the treatment group in Brazil, indicate that the medians of the variables total remuneration (TOTAL), base salary (BASE), Bonus (BONUS) and shares and option compensation (SHARES) are statistically significant at 1%. In the companies in the control group, the medians of the base salary variable (BASE) are statistically relevant at 5%. In Italy, the Wilconox test indicates that the medians of the variable Bonus of the companies in the treatment group are statistically significant at 10%. These results would be, a priori, an indication that mandatory disclosure of executive compensation would affect the behavior of compensation variables in firms in Brazil, and compensation per Bonus, in Italy.

Comparing the characteristics of variables between treatment and control groups, the results of table 3 indicate that executives of companies that were not affected by the legal framework, in Argentina, Belgium, Brazil and Spain, receive higher amounts of compensation, both before and after the legal framework. Executives of control group companies in Italy are better compensated by bonuses and shares and options, both before and after the legal framework. On the other hand, the base salary of the executives of the companies in the treatment group is higher, before and after the milestone, as well as the total compensation before the disclosure regulation. After the milestone, total compensation at control firms is higher compared to firms in the treatment group.

Table 3. Descriptive analysis of dependent variables.

	Descriptive analysis of dependent variables												
	Argentina												
Variables	**Treatment group - Before**			**Treatment Group – After**				**Control group – Before**			**Control group – After**		
	Mean	**Median**	**SD**	**Mean**	**Median**	**SD**	**W**	**Mean**	**Median**	**SD**	**Mean**	**Median**	**SD**	**W**
TOTAL	0.06	0.03	0.09	0.05	0.03	0.07	0.52	0.08	0.05	0.12	0.09	0.04	0.19	0.30
BASE	0.10	0.07	0.17	0.09	0.07	0.14	0.05	0.23	0.11	0.36	0.24	0.12	0.37	-0.27
BONUS	0.02	0.02	0.04	0.02	0.02	0.03	0.47	0.05	0.03	0.09	0.05	0.03	0.05	-0.33
SHARES	0.12	0.02	0.26	0.15	0.02	0.50	-1.52	0.13	0.02	0.24	0.10	0.03	0.18	-0.01
	Belgium												
	Treatment group - Before			**Treatment Group – After**				**Control group – Before**			**Control group – After**		
TOTAL	0.13	0.11	0.16	0.11	0.10	0.09	0.18	0.36	0.23	0.33	0.32	0.17	0.36	0.67
BASE	0.32	0.12	0.46	0.42	0.11	1.07	-0.09	0.58	0.60	0.36	0.57	0.60	0.40	0.22
BONUS	0.12	0.03	0.15	0.18	0.03	0.45	-0.06	0.28	0.14	0.34	0.23	0.06	0.31	0.59
SHARES	0.06	0.02	0.09	0.09	0.02	0.18	-0.62	0.26	0.02	0.80	0.41	0.02	1.09	0.21
	Brazil												
	Treatment group - Before			**Treatment Group – After**				**Control group – Before**			**Control group – After**		
TOTAL	0.03	0.02	0.04	0.06	0.04	0.09	*-8.26****	0.12	0.04	0.20	0.12	0.07	0.20	-0.84
BASE	0.08	0.06	0.10	0.14	0.09	0.18	*-5.70****	0.23	0.10	0.35	0.24	0.16	0.35	*-1.94***
BONUS	0.02	0.00	0.27	0.03	0.00	0.10	*-2.86****	0.09	0.00	0.26	0.09	0.00	0.23	-1.32
SHARES	0.02	0.00	0.13	0.06	0.01	0.26	*-4.49****	0.14	0.02	0.33	0.13	0.02	0.32	0.96
	Spain												
	Treatment group - Before			**Treatment Group – After**				**Control group – Before**			**Control group – After**		
TOTAL	0.41	0.12	1.38	0.25	0.14	0.27	-0.69	0.51	0.29	0.50	0.74	0.27	1.41	0.38
BASE	1.04	0.48	2.84	0.66	0.60	0.63	-0.87	1.45	1.13	1.19	2.24	1.25	6.34	-0.10
BONUS	0.58	0.12	1.79	0.49	0.23	1.05	-1.28	1.18	0.52	1.65	1.22	0.75	1.44	-1.13
SHARES	0.02	0.00	0.10	0.14	0.01	0.47	-1.26	0.21	0.00	0.63	0.66	0.00	1.73	0.71
	Italy												
	Treatment group - Before			**Treatment Group – After**				**Control group – Before**			**Control group – After**		
TOTAL	0.70	0.41	0.93	0.89	0.45	1.23	-0.86	0.61	0.48	0.65	0.97	0.48	1.14	-1.29
BASE	1.64	0.80	2.95	1.70	1.01	2.88	-0.62	1.38	0.97	1.65	1.61	0.96	2.12	-0.40
BONUS	0.52	0.00	1.10	0.76	0.70	1.82	*-1.65**	0.65	0.00	1.29	0.87	0.03	1.58	-1.30
SHARES	0.07	0.00	0.14	0.12	0.00	0.45	0.58	0.11	0.00	0.33	0.23	0.00	0.92	0.91

Note: The dependent variables: TOTAL (Total Executive Compensation); BASE (Base Executive Compensation); BONUS (Bonus) and SHARES (Shares and Options Owned by executives) are expressed in millions converted in dollars (U$$) according to the quotation available on the website of the Central Bank of Brazil (https://www.bcb.gov.br/). SD. Standard Deviation. W. Wilconox test.

Source: Elaborated by the authors.

4.2. Regressions results and validation tests

To identify the impact of compensation disclosure on executive compensation, we estimated Differences in Differences (DID) models using the Kernel Propensity Score Matching (K-PSM) method. Table 4 presents the results of the DID models for each remuneration-dependent variable and for each country. The results of the regressions referring to the total compensation of the executives (TOTAL) suggest that in Belgium, before the event studied, the impact of the treatment in companies that were affected by the legal framework, of 0.16 is lower than the influence of the control in the companies that were not affected by the legal intervention, of 0.24. Thus, there is a difference before the event studied, of -0.08, is significant at 10% to the model. In the post-regulation period of remuneration disclosure, the treatment effect decreases to 0.11, and the control effect decreases to 0.07, which results in a non-significant difference of 0.04 and a DID coefficient of 0.12 statistically significant to the model at 10%.

Similarly, in Brazil, before the framework, the influence of the treatment on treated firms of 0.04, is lower than the effect of control on untreated firms, of 0.08, which generated a difference of -0.04 significant to the model at 1% model. After the studied event, the effect of the treatment in the companies of this group increases to 0.06, and the control effect in the companies that did not suffer the action of the legal framework decreased to 0.07, resulting in a difference of -0.01, without statistical significance. Thus, the Difference-in-Differences estimator of 0.03 is statistically significant at 5% to the model. In Spain, in the pre-milestone period, the effect of treatment on treated companies, of 0.35, is lower than the impact of control on companies that were not affected by the milestone, of 0.92. Thus, there is a difference before the studied event of -0.57 significant to the 1% model. After the legal milestone, the treatment effect decreases to 0.26 and that of the control to 0.30, which generated a non-significant post-milestone difference of -0.04 and a DID coefficient of 0.52 statistically significant to the model at 1%.

The results of the models with variable dependent base salary (BASE) suggest that, in Spain, the effect of treatment on treated firms, of 0.87 is lower than the impact of control on untreated firms, of 1.82, which generated a difference, before the framework, of -0.94, statistically significant for the 1% model. After the studied event, the effect of the treatment on the firms that suffered the action of the milestone decreased to 0.66, and of the control to 1.02, generating a difference of -0.36, statistically significant to the model at 10%. Thus, there is a difference-in-differences coefficient (DID) of 0.57, statistically significant for the model at 5%. These results are similar to studies by Chu et al., (2020), Gipper (2021), Grinstein et al, (2017) and Lu and Shi (2018) and suggest that mandatory disclosure of compensation would increase total executive compensation.

Stricter requirements regarding the disclosure of executive compensation would put shareholders and directors in a better position to monitor the actions of managers, which would make it difficult to obtain private benefits (Balsam et al., 2016; Lu & Shi, 2018). This improved monitoring would lead executives to demand higher levels of compensation as a compensatory differential (Hermalin & Weisbach, 2012), in which a greater burden of explicit incentives would compensate for the difficulty in obtaining implicit benefits (Balsam et al., 2016; Lu & Shi, 2018). Corroborating this idea, compulsory disclosure would lead to a loss of informational power and an increased risk of dismissal of executives (Lu & Shi, 2018). Furthermore, making executive compensation more transparent would encourage firms to grant competitive advantages in the market, resulting from the benchmarking of incentive policies (Grinstein et al, 2017). With increased competition in the labor market, firms would be willing to pay higher wages to hire and/or retain the best professionals (Lu & Shi, 2018).

Table 4. Results Differences in Differences (DID) models

Differences in differences (DID) models - Kernel Propensity Score matching

	TOTAL					BASE				
	ARG	BEL	BRA	ESP	ITA	ARG	BEL	BRA	ESP	ITA
BEFORE										
Treatment	0.10	0.16	0.04	0.35	0.74	0.12	0.25	0.10	0.87	1.61
Control	0.05	0.24	0.08	0.92	0.76	0.11	0.24	0.13	1.82	1.51
Difference	0.05	**-0.08****	**-0.04*****	**-0.57*****	-0.02	0.01	0.01	-0.03	**-0.94*****	-0.10
DP	0.03	0.04	0.01	0.09	0.23	0.05	0.20	0.02	0.17	0.38
AFTER										
Treatment	0.07	0.11	0.06	0.26	0.71	0.09	0.38	0.14	0.66	1.32
Control	0.05	0.07	0.07	0.30	1.21	0.09	0.24	0.20	1.02	1.32
Difference	0.02	0.04	-0.01	-0.04	**-0.49****	0.00	0.14	**-0.06*****	**-0.36***	0.00
DP	0.02	0.05	0.00	0.08	0.20	0.03	0.30	0.01	0.18	0.34
DID	-0.03	**0.12***	**0.03****	**0.52*****	-0.46	0.00	0.13	-0.02	**0.57****	-0.09
DP	0.04	0.06	0.01		0.30	0.06	0.36	0.02	0.25	0.51

	BONUS					SHARES				
	ARG	BEL	BRA	ESP	ITA	ARG	BEL	BRA	ESP	ITA
BEFORE										
Treatment	0.03	0.11	0.04	0.53	0.78	0.10	0.08	0.03	0.03	0.01
Control	0.09	0.22	0.04	0.54	0.63	0.04	0.14	0.04	0.61	0.08
Difference	-0.06	-0.11	0.00	-0.01	0.15	0.06	-0.06	-0.01	**-0.57*****	-0.07
DP	0.02	0.11	0.01	0.16	0.39	0.08	0.07	0.03	0.09	0.15
AFTER										
Treatment	0.02	0.18	0.03	0.46	0.61	0.14	0.09	0.06	0.14	0.11
Control	0.02	0.12	0.06	0.81	0.98	0.06	0.07	0.09	0.28	0.50
Difference	0.00	0.06	**-0.03*****	**-0.35***	-0.36	0.08	0.02	**-0.03***	-0.14	**-0.39*****
DP	0.01	0.17	0.01	0.18	0.27	0.06	0.06	0.01	0.10	0.09
DID	**0.05****	0.18	-0.03	-0.34	-0.51	0.02	0.09	-0.01	**0.43*****	**-0.31***
DP	0.02	0.21	0.02	0.24	0.48	0.10	0.10	0.03	0.14	0.18

Note: TOTAL - Total Executive Compensation; BASE – Base executive compensation; BONUS – Bonus; SHARES – Shares and options owned by executives; ARG - Argentina; BEL - Belgium; BRA - Brazil; SPA - Spain; ITA – Italy; Before - period before the framework; After – period after the framework; SD - Standard Deviation; DID - Difference of Difference. *** - Significante a 1%; ** - Significante a 5%; * - Significante a 10%.

Source: Elaborated by the authors.

Regarding the models with the bonus dependent variable (BONUS), the results indicate that in Argentina, before the legal intervention, the effect of the treatment in companies that were affected by the milestone (0.03) is lower than the influence of the control in companies that were not affected (0.09) which generated a difference of -0.06, not significant to the model. In the post-milestone period, the effect of treatment on treated companies and control on untreated companies decreased to 0.02, nullifying the difference between them. Thus, the difference-in-differences coefficient (DID) of 0.05 is significant for the model at 5%. In the same line, the results of the models with the dependent variable compensation for shares and options (SHARES) indicate that, in Spain, before the studied event, the influence of treatment in treated companies, of 0.03, is smaller than the effects of control in non-treated companies, of 0.61, which generated a difference of -0.57 statistically significant to the model at 1%. After the milestone, the treatment effect increased to 0.14, and the control effect decreased to 0.28, generating a difference of -0.14 without statistical significance. However, the DID coefficient of 0.43 is significant for the model at 1%.

These results are similar to studies by Chu et al., (2020), Grinstein et al., (2017) e Lu and Shi (2018) and suggest that mandatory compensation disclosure increases executive compensation for bonuses and shares and options. This increase in compensation levels would be an indication of the inability of compensation disclosure regulations to inhibit executive opportunistic behavior (Gipper, 2021). For Ndzi (2019) regulatory reforms, by promoting greater disclosure of information, have strengthened the bargaining power of executives and fail to achieve their objectives of mitigating agency problems (Chang et al., 2023). These issues reinforce the idea of "optimal contraction", that external market forces shape an ideal hiring, by combining managerial talent and the "optimal" efforts of executives (Chu et al., 2020), a context in which mandatory disclosure would unbalance compensation packages (Gipper, 2021).

On the other hand, the results of the DID model with the dependent variable compensation for shares and options (SHARES), in Italy, point out that before the milestone the effect of treatment on treated firms is 0.01, and of control on untreated firms is 0.08, the which generated a difference of -0.07 without statistical significance. After the legal intervention, the influence of the treatment increased to 0.11 and that of the control to 0.50, generating a difference of -0.39 statistically significant to the model at 1%. Thus, the Difference-in-Differences coefficient of -0.31 is statistically significant for the model at 10%. These results are similar to studies by Chang et al., (2023), Jiang et al., (2016) and Kim et al., (2017), and suggest that in Italy, legal intervention aimed at greater remuneration disclosure would be a regulatory tool for executive compensation levels (Ndzi, 2019). Improved disclosure of incentive packages would increase the sensitivity of directors and executives to public scrutiny and external pressures, disciplining compensation arrangements, which would inhibit compensation excesses (Jensen & Murphy, 1990; Chang et al., 2023).

As a complement to the main analysis, we estimated models including covariates through the standard DID structure by the Ordinary Least Squares (OLS) method. First, we estimate validation tests regarding the assumptions of the OLS models. In general, the results of these tests indicate that the assumption of data normality was not fully met, there are regressions in which the variance of the residuals is not constant, and the error terms are not independent. Thus, we estimate robust OLS regression models, which relax the assumption of normality, even with the occurrence of heteroscedasticity and autocorrelation. In the OLS models, we used a matching between treatment and control companies through the Propensity Score Matching 2 (PSM-2) based on the variable total assets (TA) and sector of the companies. Table 5 presents the results of the OLS models.

Table 5. Results OLS models

	TOTAL					BASE				
	ARG	BEL	BRA	ESP	ITA	ARG	BEL	BRA	ESP	ITA
DID	-0.04	-0.01	**0.04***	-0.05	0.08	-0.05	0.02	0.02	-0.21	0.43
SIZE	0.01	**0.12***	**0.02***	**0.16***	0.04	**0.08***	**0.16***	**0.03***	**0.40***	0.59
AL	-0.01	0.00	-0.01	**0.02***	**0.46****	-0.01	**0.02***	-0.01	**0.07****	**-1.61***
DUAL	**0.05***	**0.11***	**0.04****	**0.15***	-0.13	**0.13***	0.03	**0.11***	**0.29****	**1.73***
B_SIZE	**-0.01***	**-0.04***	-0.03	**-0.02****	-0.05	**-0.01***	**-0.05***	**-0.01***	0.02	-0.02
B_IND	**0.29***	**-0.10***	**0.07****	**-0.77***	-0.87	**0.63***	-0.10	**0.18***	0.39	-0.15
AGE	**-0.01***	**-0.01***	**-0.01****	**0.01****	-0.02	0.00	**-0.01***	0.01	**0.01***	**0.42***
TEX	0.00	**0.06***	0.00	-0.01	-0.03	-0.01	**0.08***	-0.01	0.02	**-0.26***
NEX[1]						**0.01***	**0.02***	**0.02***	-0.01	**-0.37***
PERF	**0.13***	**-0.42***	-0.11	0.32	4.84	**0.25***	-0.01	-0.20	0.41	0.14
MB	0.02	-0,01	0.00	**0.01***	-0.17	**0.02***	-0.01	0.01	**0.03***	-0.15
Constant	0.23	**0.90***	-0.03	**-1.20***	1.30	**-0.62***	0.38	-0.13	**-3.82***	**-16.72***

	BONUS					SHARES				
	ARG	BEL	BRA	ESP	ITA	ARG	BEL	BRA	ESP	ITA
DID	-0.01	0.05	0.03	-0.47	0.23	-0.02	0.03	0.05	-0.30	**-2.05***
SIZE	0.01	**0.08***	**0.03***	**0.57***	**1.04***	0.00	**0.21***	0.01	**0.33***	0.18
AL	**-0.01***	0.00	-0.01	0.02	**-0.63***	**-0.01****	**-0.10***	**-0.02****	0.08	0.45
DUAL	**0.01****	0.00	**0.07***	0.32	**0.84***	-0.02	0.20	0.00	0.05	**1.98****
B_SIZE	**-0.01***	**-0.02****	-0.01	0.04	-0.01	-0.01	-0.04	0.00	**-0.14***	0.22
B_IND	**0.06****	0.03	-0.02	**1.10***	0.97	0.10	**-1.52***	-0.03	-0.35	-4.41
AGE	**-0.01***	0.00	-0.01	**-0.03***	0.02	0.00	**-0.03***	-0.01	0.01	0.04
TEX	0.00	0.01	-0.01	0.02	**-0.07****	**0.04***	**0.09****	0.00	-0.04	-0.19
NEX	**-0.01****	-0.01	-0.01	0.00	**-0.12***	**0.03***	-0.01	**0.02****	0.02	0.09
PERF	-0.02	-0.06	**0.44***	1.38	**-7.77***	0.13	**-2.64***	-0.01	0.26	-6.92
MB	**0.01****	-0.01	**0.01***	0.01	0.02	0.00	-0.01	0.00	0.03	-0.04
Constant	**0.17***	0.32	**-0.20***	**-3.91***	**-6.78***	**-0.62***	**2.05****	0.14	-1.27	-7.36

Note: [1] In the models with the dependent variable the total executive's compensation, we did not include the variable number of executives (NEX), as this is part of the methodology for calculating the TOTAL variable. TOTAL. Total Executive Compensation; BASE. Base executive compensation; BONUS. Bonus; SHARES. Shares and options owned by executives; ARG. Argentina; BEL. Belgium; BRA. Brazil; SPA. Spain; ITA. Italy; DID. Difference of Difference; AL. Leverage; DUAL. Duality; B_SIZE. Board size; B_IND. Independent Directors; TEX. Average tenure of executives; NEX. Number of executives; PERF. Accounting performance; MB. Market-to-Book; *** - Significante a 1%; ** - Significante a 5%; * - Significante a 10%.
Source: Elaborated by the authors.

Regarding the DID estimator, the results of the OLS models confirm the findings of the Difference-in-Differences models reported in Table 5, and report that the DID coefficient is statistically significant, with a positive effect on total executive's compensation (TOTAL) in Brazil. Likewise, in the model with the dependent variable compensation for shares and options, in Italy, the coefficient Difference-in-Differences is statistically significant with a negative effect. In the other models, the DID estimator is not significant. An explanation for these different results refers to the fact that in the DID models Kernel Propensity Score Matching (K-PSM) was used as a matching method, and in the OLS models Propensity Score Matching 2. The use effects controls temporal and sectoral fixed may have influenced these different results.

Regarding size controls, in general, the results indicate that larger companies would be better able to capture and retain good executives, paying them higher salaries. Likewise, the results also indicate that the CEO's interference in the board of directors (duality) would weaken management monitoring, encouraging executives to obtain personal benefits through excess compensation. With regard to market performance, the results point to a positive effect of the market-to-book variable on executive compensation, suggesting that there is a certain sensitivity of compensation to performance. In general, the board size impacts negatively executive compensation levels, which reinforces the idea that the larger the board of directors, the better the monitoring of managers' actions. With regard to market performance, the results point to a positive effect of the market-to-book variable on executive compensation, suggesting that there is a certain sensitivity of compensation to performance.

4.3. Robustness tests

As robustness tests, we performed the falsification the original exogenous shock (Placebo). Thus, we constituted the Difference-in-Differences from Placebo estimator, which keeps the treatment and control groups constant, but assumes that the legal intervention period began two years after the milestone. We chose this placebo period due to three reasons: First, the exogenous shock of the present study consists of a law, and that, not infrequently, there are discussions prior to its effective effectiveness. Second, in periods prior to the adoption of the International Financial Reporting Standard (IFRS) it is possible that there was a weakening of the standardization of information, which would impair the comparability of results between countries. Third, we avoided study periods that included events such as the subprime crisis (2007-2008), and the Covid-19 pandemic (2020), which could influence the results. As expected, indicate that the estimator of difference-in-differences Placebo is not statistically significant, in all models. These results reinforce the idea that mandatory disclosure of executive compensation would be an exogenous framework that influences compensation policy in countries with weak legal protection.

After falsifying the framework, we constituted the triple difference estimator (DDD), in which we kept the original framework, and added the variable group 2, referring to the alternative group. Thus, the third-difference estimator is the result of multiplying the variable group (original), group 2 (alternative) and milestone. As expected, in all models, the triple difference estimators (DDD) are not statistically significant. These results, combined with the findings of the placebo tests, reinforce the idea that mandatory disclosure of executive compensation would be an exogenous shock that would increase total compensation (Belgium, Brazil and Spain), base compensation (Spain), bonuses (Argentina) and shares and options (Spain) and would decrease compensation for shares and options in Italy (Table 4).

5. Final Considerations

To identify the impact of compulsory disclosure of remuneration on executive

incentive policy we have performed an almost experiment by the Difference-in- Difference Method (DID). Our findings indicate that the legal intervention aimed at disclosure of remuneration increased the levels of total compensation in Firms of Belgium, Brazil and Spain and the base salary of Spanish executives. These results indicate the rejection of hypotheses 1 and 2 of this study and suggest that the mandatory disclosure of remuneration improves monitoring of executives (Lu & Shi, 2018), who are now requiring higher levels of remuneration as a compensatory differential (Hermalin & Weisbach, 2012).

In the same line, the regulation of the disclosure of the remuneration increases compensation by executive bonuses of Argentine firms, which indicates the rejection of hypothesis 3 of this study. Based on the assumption that remuneration contracts would be regulated by external forces of the market, and would be in balance (Chu et al., 2020), the legal intervention aiming at greater disclosure strengthens the bargaining power of executives (Ndzi, 2019) which would unbalance the compensation packages (Gipper, 2021). In addition, the mandatory disclosure increases incentives for shares and options for executives of Spain firms. These results suggest that stricter disclosure requirements increase executives' bargaining power, which limits their ability to mitigate agency problems in Spanish firms.

However, in Italy, disclosure of executive compensation decreases compensation for stocks and options, suggesting that mandatory compensation disclosure would increase monitoring by discouraging opportunistic behavior by executives and compensation excesses. Increases in monitoring make it difficult to obtain private benefits through the accounting manipulation of powerful executives, reducing compensation through stocks and options in Italian firms. Differences in the criteria and requirements for granting compensation for shares and options in Italy and Spain would explain the difference in the effect of mandatory disclosure.

Finally, data from this study may present some endogeny and are limited to the information available by regulatory agencies regarding the effective regulation of the compulsory disclosure of the executives' remuneration in each country. In addition, the sample composition of countries with poor legal protection requires some parsimony regarding generalized analyzes of the results. Thus, it is suggested for future research, expand analysis to other countries with poor legal protection, as well as compare the effects of compulsory disclosure of executive's compensation on other markets.

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