

# IMPACT OF DIRECTORS' REMUNERATION ON BANKS' PERFORMANCE: EVIDENCE IN THE US BANKING SYSTEM

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## Abstract

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This paper explores the relationship between board director compensation and bank performance for the period 1999-2021, considering the US banking system. The literature in this area with reference to financial companies and banks is poorly developed and leads to mixed results. Furthermore, the studies have mainly focused on the remuneration of the chief executive officer (CEO), neglecting that of the board members (Minnick et al., 2011; Khumalo & Masenge, 2015; Iskandrani et al., 2018). The scientific analysis methodology adopted is based on the analysis of panel data. Firstly, the results of the data analysis make it possible to highlight the existence of a significant link between the remuneration policies adopted by banks concerning the corporate results obtained in terms of profitability. Secondly, the results show differences, in terms of impact on banking performance, between the remuneration of chief executive officers and the remuneration of directors. The results of this study can help banks identify best practices for bank management as well as provide useful insights to different categories of stakeholders, especially the bank regulators and supervisors.

**Keywords:** Bank Performance, Bank Profitability, Board of Directors, Corporate Governance, Director Remuneration

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## 1. INTRODUCTION

A highly debated topic in the literature on banking corporate governance continues to be the remuneration policy of the board of directors and chief executive officers (CEOs), especially in times of crisis in the economic and financial system. The remuneration policy is an important mechanism to motivate directors and managers to improve their commitment and performance.

In the current period of economic crisis produced by COVID-19 to which has been added the international economic crisis born from the war in Ukraine, which has already produced negative economic effects in the short and probably also in

the long term, banks are called to lend greater attention to limiting the inevitable negative repercussions on their performance and their assumed risk. In this difficult international scenario, there is a growing interest of banks and supervisory and regulatory authorities in the remuneration policies of directors and CEOs.

Banks, more than in the past, are called to analyze and review the remuneration structure of their management bodies to make it financially sustainable with the general crisis of the economic and financial system.

The directors' remuneration policy could influence their behavior and therefore determine effects on the bank's performance. Both fixed and

incentive-based remuneration are widely regarded as mechanisms to reduce agency problems (Eulerich et al., 2019).

To understand the effects of the remuneration policy on performance it must be considered that the theory of managerial remuneration is mainly based on the agency theory of Jensen and Meckling (1976) according to which there is a separation of roles between those who manage the company and its owners. At least two theoretical approaches can be identified within this general theoretical scheme. The dominant approach to the study of executive compensation views executive compensation arrangements as a suitable remedy to address the agency problem. Considering this approach, remuneration systems are designed to provide company managers with effective incentives to ensure the maximization of the value of the company and therefore of the shareholders.

Instead, another approach to studying the remuneration of corporate management bodies (e.g., directors, CEOs) focuses on another link between agency problems. Specifically, board remuneration is considered not only as a potential tool for addressing and trying to solve the agency problem but also as a structural part of the agency problem. As recognized by numerous scientific studies, some characteristics of salary contracts seem to reflect the pursuit of managerial characteristics rather than the provision of effective incentives.

Therefore, it is great importance to be able to understand the influence of board remuneration on the substantial costs for the shareholders, distorting managers' incentives and thus deteriorating banks' performance.

The board of directors' remuneration is a significant mechanism for soliciting work commitment, stimulating productivity, and ensuring that shareholders' interests are respected. Hence, information on directors' compensation structure is important to understand what effects it may have on the bank's performance.

The importance of remuneration policy has also been understood by banking supervisory bodies who have often set out regulatory rules requiring companies to submit a remuneration report to shareholders (Backhouse & Wickham, 2020).

Based on this theoretical framework, some recent studies have been developed which have focused on the analysis of listed companies, but which have not led to univocal results (Proctor & Murtagh, 2014; Khumalo & Masenge, 2015; Zalewska, 2016; Iskandrani et al., 2018).

Regarding the banking sector, the most recent studies are underdeveloped and lead to inconsistent results (Nulla, 2015; Alqatan et al., 2019; Soni & Singh, 2020).

This research fits into this line of research and aims to contribute to understanding whether there is a relationship between the board of directors' remuneration and banking performance in the banking system to be able to outline remuneration policies consistent with corporate performance objectives defined in terms of profitability.

The structure of this paper is as follows. Section 2 reviews the relevant literature. Section 3 analyzes the methodology that has been used to conduct empirical research on the relationship

between board member compensation and banking performance. This section explains the sample used in the linear regression analysis and the descriptive statistics data. In Section 4 the results of the regressions are analyzed and interpreted. Section 5 presents the conclusions and possible implications for bank management.

## 2. LITERATURE REVIEW

The finance literature is not unanimous in recognizing the existence of a significant relationship between the remuneration of directors and the performance of companies.

However, it must be considered that the analysis of the impact of board remuneration on corporate performance also depends on the existence of the agency problem as described by Jensen and Meckling (1976). Also, as shown by Bebchuk and Fried (2003), director compensation is viewed not only as a potential instrument for reducing the agency problem but also as part of the agency problem itself. Indeed, some features of pay arrangements seem to reflect managerial rent-seeking rather than the provision of efficient incentives. De Andrés et al. (2019) found that, after the Global Financial Crisis (GFC) of 2007, banking supervisory authorities intensively regulated the remuneration of bank executives to remove incentives to take risks in the financial sector. However, they warn that the new regulation could create an adverse selection problem for European banks, reducing the number of best-performing managers available to European banks.

Furthermore, it should be noted that a part of the literature questions the effectiveness of the corporate governance system in mitigating the opportunistic behavior of managers (Shabeeb Ali et al., 2020).

The remuneration policy has not only been the object of study in the context of the agency problem but has also constituted a sphere of analysis by the banking supervisory and regulatory authorities. In this respect, it is worth mentioning the Guidelines on remuneration policies and practices of the Committee of European Banking Supervisors (CEBS, 2010) which were intended to help remedy erroneous remuneration policies. They specify, among other things, that the information about the link between pay and performance has a significant impact on the bank's risk profile.

The business literature is not unanimous in recognizing the existence of a significant relationship between the remuneration of directors and the performance of companies. This line of research has minimally concerned the banking sector, especially before the 2007 GFC.

However, remuneration is an important mechanism for soliciting effort, rewarding productivity, and ensuring that owners' interests are respected. Therefore, it is important to understand whether the directors' remuneration structure can be considered an aspect that can stimulate the directors themselves to improve the performance of the bank.

These aspects have not always received sufficient attention in the scientific literature. Arora and Singh (2021), in their recent comprehensive literature review, show that the literature focused on the impact of other

board characteristics on financial performance (mainly board size, independence, meetings, CEO duality).

In any case, the scientific literature has not found univocal results on the effects of board remuneration on company performance.

It should be noted that many studies have focused on the analysis of listed companies, especially non-financial ones. Most of these studies support the existence of a relationship between remuneration and corporate performance. Firth et al. (2006) in examining the remuneration of CEOs in listed companies in China, highlighted that companies whose main shareholders are private shareholders correlate the remuneration of the CEO with the increase in corporate profitability. However, sensitivity to CEOs' remuneration is low and this raises questions about the effectiveness of corporate incentive systems based on remuneration policies. Ndayisaba and Ahmed (2015) have found a positive and strong association between CEO pay of major publicly traded Australian companies and company performance. Nulla (2015) has demonstrated the relationship between CEO cash compensation and corporate performance of large New York Stock Exchange (NYSE) companies and found that there was a relationship between CEO salary, bonuses, and corporate performance among NYSE companies. Alqatan et al. (2019), studying a sample of the UK Financial Times Stock Exchange (FTSE) 100 non-financial companies, concluded a significant positive correlation between board remuneration and company performance, namely the return on assets (ROA) and Tobin's Q. Soni and Singh (2020) examined the trends and patterns of directors' remuneration working for the 30 largest publicly traded companies in India. The results show a short-term bidirectional association between directors' remuneration and firm performance variables and confirm the existence of a strong remuneration-performance association for the variable components of directors' remuneration.

However, a minority of these studies demonstrate the absence of a significant relationship between remuneration and company performance. Fernandes (2008) used a panel of companies from the Portuguese stock market and demonstrates that there is no relationship between board remuneration and company performance. Ozkan (2011) observes the link between CEO pay and the performance of the UK non-financial firms from the FTSE All-Share Index and demonstrates that CEO compensation is weakly linked to firm performance (Tobin's Q). Ab Razak (2014), analyzing a sample of 150 companies listed on the Bursa Malaysia from the year 2008 until 2013, indicates that directors' remuneration is not related to the company's profitability as measured by ROA.

While the focus of most traditional studies is on non-financial institutions, studies on the financial and banking sector have increased especially after 2007, following the GFC.

Mishra and Nielsen (2000) find that both CEO pay sensitivity and the related mandate of independent external directors have a positive effect on the accounting performance of large bank holding companies and their interactive effect tends to be negative. Sigler and Porterfield (2001) have found a strong positive and significant link between Changes in CEO total compensation and bank performance (ROA). Minnick et al. (2011) examine

how managerial incentives influence acquisition decisions in the banking sector and they show that banks, whose CEOs have higher pay sensitivity, have higher have significantly better outliers over the period of takeover announcements. Doucouliagos et al. (2007) demonstrate the absence of a relationship between directors' fees and the performance of Australian banks for the same period or with the performance of the previous year. However, there is a more distant pay-performance ratio delayed by two years. Furthermore, the evidence confirms a strong positive and direct association between the CEO's remuneration and the previous year's banking performance. Grove et al. (2011), studying a sample of US public commercial banks, show that the size of executive incentive pay is positively associated with financial performance, but shows a negative association with long-term loan quality. Joyce (2001) demonstrates a small but positive relationship between bank performance (ROA) and CEO compensation (salary and bonus). Shiwakoti (2012) analyses the determinants of executive remuneration in the UK financial services sector and shows that the determinants of remuneration differ in the UK mutual and plc organizational forms and that the relationships between remuneration and size disappeared after demutualization. Bannier et al. (2013) offer a rationale for why bonuses are paid even when reducing the expected profits of banks. Proctor and Murtagh (2014) examine the impact of wage regulation on bankers' incentive pay implemented in response to criticism following the 2007 GFC and argue that such regulation has been effective. Khumalo and Masenge (2015) examine the relationship between CEO compensation and bank performance in South Africa. The results of this study proved not entirely consistent with the hypothesis that there was a relationship between bank-specific performance measures and CEO compensation. Zalewska (2016) argues that due to numerous externalities, in particular the interconnectivity and systemic risk of the banking sector, a traditional approach to remuneration based on principal-agent conflict resolution is inappropriate, and therefore the active involvement of regulators is needed. Iskandrani et al. (2018), in investigating the relationship between CEO compensation and corporate performance among commercial banks operating in Jordan, demonstrate that corporate performance as measured (return on equity (ROE) and ROA) does not influence the remuneration of the CEO. However, the results reveal a significant relationship between executive compensation and firm performance among the smallest firms in the sample. More recently, Sylos Labini and Donofrio (2021) in analyzing the interventions carried out by all European significant banks to deal with the global pandemic, have found that there have not been profound changes in terms of remuneration policies.

Although this study does not address the relationship between remuneration and risk-taking, it must be considered that remuneration policies can have effects not only on company performance but also on the company's overall risks. In this line of research, Armstrong and Vashishtha (2012) and Armstrong et al. (2013) show that stock options can be incentives for CEOs to increase the total risk of their companies. Bhagat and Bolton (2014) show that the incentives generated by

executive compensation programs are related to excessive risk-taking by banks. DeYoung et al. (2013) show that contractual risk-taking incentives for CEOs increased at large US commercial banks and that bank boards responded to higher levels of risk by moderating CEO incentives at risk-taking. Shah et al. (2017) examined the impact of CEO compensation on bank risk during the pre- and post-financial crisis periods and their findings suggested a negative relationship between CEO bonuses and bank risk in the pre-financial crisis period. Similarly, restricted shares and options granted to CEOs in the aftermath of the financial crisis also appear to de-risk banks. Jarque and Prescott (2020) argue that the connection between pay for performance and banking risk depends on the correlation of returns. If employee returns are uncorrelated, the form of compensation is irrelevant to the risk. If, however, returns are perfectly correlated, a low wage may indicate risk. Boateng et al. (2022) find evidence that suggests that incentives present in CEO compensation contracts and excess reserves exert a positive and significant impact on risk-taking and credit risk.

### 3. METHODOLOGY AND DATA

The objective of this work is to understand whether the remuneration policy of directors and CEOs is effective in improving the performance of banks. The adopted methodology is based on panel data analysis and the content analysis approach. This methodological choice is consistent with the exploratory nature of the analysis carried out. Through the analysis of the panel data, the existence of a significant relationship between the remuneration of the board of directors and the performance of banks in terms of profitability was verified. The relationship between remuneration and chairman/president/CEO performance is also investigated and different dependent banks variables and alternative performance measures are used.

To investigate the impact of board remuneration on a bank's performance, the statistical models have been defined in which the variables considered as performance proxies — the dependent variables — are return on average equity (*ROAE*), return on average asset (*ROAA*), net interest margin (*NIM*). More precisely, these are profitability variables. The *ROAE* variable is computed as the ratio between profit (loss) after tax divided by the average total equity percent. The *ROAA* variable is expressed as the ratio between profit (loss) after tax divided by average total assets percent. The profit (loss) after tax is the sum of profit (loss) before tax and net profit (loss) for the year from discontinued operations less income tax expense (benefits). The *NIM* variable is computed as the net interest income (expense) divided by the total earning assets percent.

The directors can be compensated by fixed compensation, bonuses, or by the stock option of the company. The remuneration variables — independent variables — have been classified into remuneration variables of the chairman/president/CEO and remuneration variables of other directors. The total annual remuneration of the directors and the chairman/president/CEO is given by the sum of the basic remuneration (salary), bonus, and total

equity-linked compensation. Therefore, a specific variable was defined for each of these three types of remuneration.

To make the statistical analysis more robust, specific control variables were introduced into the models. Control variables were used to reduce any potential omitted variable bias. Therefore, a few control variables are part of the empirical design, and they are classified according to the nature of the data in corporate governance control variables and bank control variables. The corporate governance control variables are board size (*BS*), independent director (*IN*), CEO duality (*DU*), the bank's control variable of the dimensional type given by bank size (*BZ*), and a macroeconomic variable expressed by gross domestic product (*GDP*) per capita. Some studies on board remuneration consider *Firm size* as a control variable (Mishra & Nielsen, 2000).

The choice of these control variables is based on the existence of studies that have found a significant relationship between them and the remuneration of the board.

The impact of the size of the board of directors on company performance has been analyzed by Guest (2009) with reference to UK-listed companies. That study found that board size has a strong negative impact on profitability, Tobin's Q, and share returns. Conversely, Abdel-Azim and Soliman (2020), analyzing a sample of Egyptian banks, show a positive impact of bank size (expressed through the natural log of total assets) and bank performance measured using ROA as an accounting-based profitability measure. Alqatan et al. (2019), studying a sample of non-financial companies, concluded a positive correlation between board size and ROA and between board independence and Tobin's Q.

Regarding the impact of board independence on company performance, there are several empirical studies with results that are not always univocal. For instance, Abdul Gafoor et al. (2018) have found a significant positive association between a board's independence and performance (ROA) while, conversely, De Andrés and Vallelado (2008) showed that there are benefits in having a greater number of outside non-executive directors. Guest (2009) examined a large sample of listed the UK companies and argues that the size of the board of directors had a strong negative impact on profitability, Tobin's Q, and stock returns. According to Bozzi and Belcredi (2019), independent directors' remuneration is increasingly, positively associated with Tobin's Q.

Regarding the CEO duality variable, the study by Grove et al. (2011) found that this variable was negatively associated with bank performance and that executive incentives and compensation were also positively related to overall bank performance. It should be highlighted that this variable is related to performance via the agency problem. Indeed, agency theory argues that separating the roles of CEO and chairman of the board can mitigate agency costs and thus also tighten the link between compensation and performance.

The statistical models used in regression analysis are indicated below.

$$ROAE_{it} = \alpha_0 + \alpha_1 CE_{it} + \alpha_2 DR_{it} + \alpha_3 GDP_t + \sum_{i=4}^n \alpha_i Z_{it} + \varepsilon_{it} \quad (1)$$

$$ROAA_{it} = \beta_0 + \beta_1 CE_{it} + \beta_2 DR_{it} + \beta_3 GDP_t + \sum_{i=4}^n \beta_i Z_{it} + \varepsilon_{it} \quad (2)$$

$$NIM_{it} = \delta_0 + \delta_1 CE_{it} + \delta_2 DR_{it} + \delta_3 GDP_t + \sum_{i=4}^n \delta_i Z_{it} + \varepsilon_{it} \quad (3)$$

where,

–  $ROAE_{it}$  is the return on average equity of the  $i$ -th bank at a time  $t$ ;  
–  $ROAA_{it}$  is the return on average asset of the  $i$ -th bank at a time  $t$ ;  
–  $NIM_{it}$  is the net interest margin of the  $i$ -th bank at a time  $t$ ;  
–  $CE_{it}$  is the vector of the remuneration variables of chairman/president/CEO expressed by  $CRS_{it}$ ,  $CRB_{it}$ ,  $CRE_{it}$ ;

–  $DR_{it}$  is the vector of remuneration variables of the board of directors expressed by  $DRS_{it}$ ,  $DRB_{it}$ ,  $DRE_{it}$ ;  
–  $Z_{it}$  is vector of the control variables expressed by  $BS_{it}$ ,  $IN_{it}$ ,  $DU_{it}$ ,  $BZ_{it}$ ,  $TI_{it}$ ;  
–  $GDP_t$  is US gross domestic product per capita (current US\$) at a time  $t$ .

The description of the analysis variables and the corresponding data sources are contained in Table 1.

**Table 1.** The variables of the models' analysis

Variable type	Variable name	Variable name extended	Description	Data source
Dependent variable	ROAE	Return on average equity	Profit (loss) after tax divided by average total equity * 100	BankFocus
	ROAA	Return on average asset	Profit (loss) after tax divided by average total assets * 100	BankFocus
	NIM	Net interest margin	Net interest income (expense) divided by total earning assets * 100	BankFocus
Independent remuneration variable	CRS	CEO remuneration salary	Average annual salary of the chairman/president/CEO	BoardEx
	CRB	CEO remuneration bonus	Average annual bonus of the chairman/president/CEO	BoardEx
	CRE	CEO remuneration equity	Average annual total equity-linked compensation of the chairman/president/CEO (stock option)	BoardEx
	DRS	Director remuneration salary	Average annual salary of board members	BoardEx
	DRB	Director remuneration bonus	Average annual bonus of board members	BoardEx
	DRE	Director remuneration equity	Average annual total equity-linked compensation of board members (stock option)	BoardEx
Corporate governance control variable	BS	Board size	Total number of directors	BoardEx
	IN	Independent director	Proportion of independent directors to the total number of directors	BoardEx
	DU	CEO duality	Executive chairman present on board or combined role of CEO and chairman is present (1 - yes, 0 - no)	BoardEx
Bank control variable	BZ	Bank size	Natural logarithm of total asset	BankFocus
Macroeconomic variable	GDP	Gross domestic product	GDP per capita (current US\$) is gross domestic product divided by midyear population	World Bank

Source: Authors' elaboration.

The starting universe considered for the construction of the sample is represented by all banks included in BoardEx database in the period 1999-2021. In particular, the analysis sample was built considering the US banks that present historical series of sufficiently long remuneration data (at least 10 years). Furthermore, to improve the significance of the data, US banks were identified from Moody's Analytics BankFocus database which, in the period under examination, had assets of at least one million dollars. The final sample is unbalanced and includes 299 bank/year observations (13 banks for 23 years). The period under consideration (1999-2021) was chosen as it is the maximum period present in the BoardEx database.

The dependents' performance variables ( $ROAE$ ,  $ROAA$ , and  $NIM$ ) are from Moody's Analytics BankFocus database. The specifics independent variables include chairman/president/CEO/chief financial officer (CFO) remuneration and the remuneration of the other members of the board.

It should be noted that in the US the CEO/CFO may not be a board appointment. These remuneration variables are from BoardEx database. The remuneration variables were calculated as an annual average. Governance control variable data was sourced from BoardEx database while the macroeconomic variable (GDP per capita) has been found from the World Bank database.

The descriptive statistics represented in Table 2 show the minimum, maximum, mean, standard deviation, variance, percentile, interquartile range (IQ range), skewness, and kurtosis for each dependent and independent variable. The mean data for the board of directors' average fixed remuneration is 109.16 (thousands of \$) while the chairman/president/CEO's average fixed remuneration is 1138.0 (thousands of \$). All distributions of the remuneration data show a positive asymmetry (skewness). The sample of banks has a size in terms of total assets much higher than the minimum selection level, as described above, in fact, the minimum level of assets

is equal to \$16,736 million. The results from this table also indicate that on average the number of independent directors (*IN*) is 12 while on average the total number of directors (*BS*) is about 15. This

means that on average the proportion of independent directors is about 80%, although it is necessary to consider the variability around the mean of both *BS* (3.4241) and *IN* (2.4917).

**Table 2.** Descriptive statistics

Variable	Mean	Median	Minimum	Maximum	Std. dev.	C. V.
ROAE	10.057	10.611	-48.806	25.347	7.6150	0.75715
ROAA	1.0191	1.1536	-5.8363	2.7252	0.77489	0.76036
NIM	3.2492	3.1903	1.5770	5.9089	0.70964	0.21840
BZ	19.191	18.765	16.736	21.943	1.4086	0.073398
BS	15.348	15.000	9.0000	27.000	3.4241	0.22310
IN	12.455	12.000	5.0000	21.000	2.4917	0.20006
DU	0.82274	1.0000	0.0000	1.0000	0.38253	0.46494
CRS	1138.0	1000.0	125.00	5600.0	534.31	0.46954
CRB	1437.3	0.0000	0.0000	29000.0	3126.1	2.1750
CRE	14777.0	9299.0	0.0000	3.7344e+05	26549.	1.7966
DRS	109.16	85.000	0.0000	1000.0	148.62	1.3615
DRB	237.76	0.0000	0.0000	10250.0	1478.4	6.2180
DRE	670.33	105.00	0.0000	80667.0	5092.4	7.5968
GDP	50445.0	48651.0	34515.0	69288.0	8983.1	0.17808
	Skewness	Ex. kurtosis	5%	95%	IQ range	Missing obs.
ROAE	-2.6607	15.040	-1.0182	19.648	7.0611	1
ROAA	-3.7280	25.417	-0.083074	1.8721	0.61182	1
NIM	0.61383	0.95124	2.0822	4.5732	0.85850	0
BZ	0.42993	-1.0285	17.168	21.542	2.2166	0
BS	0.91515	1.0672	11.000	22.000	4.0000	0
IN	0.16975	0.75824	8.0000	16.000	3.0000	0
DU	-1.6903	0.85696	0.0000	1.0000	0.0000	0
CRS	3.4127	18.728	650.00	2400.0	291.00	0
CRB	4.0061	23.976	0.0000	7000.0	1250.0	0
CRE	9.3979	114.38	1574.0	41724.0	9605.0	0
DRS	5.1336	27.552	20.000	236.00	55.000	0
DRB	6.2217	37.305	0.0000	0.0000	0.0000	0
DRE	13.631	204.70	0.0000	339.00	111.00	0
GDP	0.10576	-0.91128	36330.0	65095.0	13743.0	0

Note: This table presents summary statistics for all the variables used in the analysis for the period 1999–2021.

Source: Author's elaboration.

The correlation coefficients of the variables are shown in Table 3. This matrix measures the extent of the relationship between two variables. Concerning the relationship between chairman/president/CEO remuneration variables and performance variables, it can be stated that *CRB* and *CRE* have a positive relationship with performance variables (except *CRB*

with *NIM*). Instead, the *CRS* variable has a negative relationship with all the performance variables considered. The remuneration variables of directors (other than the chairman/president/CEO) have a clear positive relationship with the banking performance variables (except for *DRS* with *NIM*).

**Table 3.** Correlation coefficients

	ROAE	ROAA	NIM	BZ	BS	IN	DU	CRS	CRB	CRE	DRS	DRB	DRE	GDP
ROAE	1.0000	0.9629	0.3566	-0.0350	0.1987	0.0479	0.0949	-0.0295	0.1998	0.1718	0.0930	0.1812	0.1414	-0.2142
ROAA		1.0000	0.3408	-0.0424	0.2319	0.1478	0.0619	-0.0144	0.1028	0.1083	0.0252	0.0956	0.0760	-0.0940
NIM			1.0000	-0.4014	0.4731	0.1547	0.0421	-0.1247	-0.0117	0.0613	-0.0320	0.1106	0.0805	-0.5782
BZ				1.0000	-0.0057	0.1789	-0.1682	0.3690	0.4076	0.3103	0.3186	0.1981	0.1311	0.2486
BS					1.0000	0.7049	-0.0299	-0.1125	0.0900	0.0667	0.0355	0.1154	0.0867	-0.3633
IN						1.0000	-0.1093	0.0593	-0.0499	-0.0494	-0.0120	-0.0445	-0.0448	0.1119
DU							1.0000	-0.0549	-0.0171	0.0684	-0.0066	0.0751	0.0500	-0.0634
CRS								1.0000	-0.0204	0.0434	0.0633	-0.0419	-0.0235	0.2009
CRB									1.0000	0.4297	0.4983	0.5149	0.4418	-0.2412
CRE										1.0000	0.3779	0.3911	0.8154	-0.1407
DRS											1.0000	0.9430	0.6114	0.0269
DRB												1.0000	0.6423	-0.1905
DRE													1.0000	-0.1463
GDP														1.0000

Note: 5% critical value (two-tailed) = 0.1135 for  $n = 299$ .

Source: Author's elaboration.

#### 4. RESULTS AND INTERPRETATION

The results of the statistical analysis are shown in Table 4. The regressions try to verify the impact of the board members' compensation components on three profitability measures (*ROAE*, *ROAA*, *NIM*). Furthermore, the effects of the time lag of the remuneration variables on bank profitability

were considered. In fact, regressions (2), (4), and (6) contain remuneration variables calculated at time  $t-1$  to the performance variables calculated at time  $t$ . It is logical to assume that the remuneration earned by the board in a certain year could have an impact on the bank's profitability in the following year as well. The behavior of directors tends to have repercussions on the performance of the banks they

manage over several years and especially over the year following the reference year.

The results of the analysis show significant differences, in terms of impact on banking profitability, depending on whether we refer to the remuneration of CEOs rather than that of directors. The regressions in which lagged variables (2), (4), and (6) are present have a better R-squared than the regressions in which these variables are not present. This result could support the above hypothesis. Based on the analysis of the regression results, the fixed remuneration of the CEO and that

based on stock options have little relevance in terms of the CEO's incentive to improve the banking performance, except for the variable with a time lag equal to 1 (*CRS\_1*).

Conversely, the component of the CEO's remuneration expressed in bonuses has a significant positive impact on performance in terms of *ROAE* and *ROAA*, but not *NIM*. Instead, the fixed remuneration of board members has a negative impact on the three performance configurations considered.

**Table 4.** The results of the regressions

Variable	ROAE		ROAA		NIM	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	31.4995** (0.0163)	36.0838*** (0.0075)	2.06027 (0.1262)	2.40719* (0.0856)	10.9584*** (5.23e-40)	11.2991*** (9.58e-42)
<i>BZ</i>	-1.71937** (0.0161)	-2.16283*** (0.0039)	-0.151739** (0.0390)	-0.187105** (0.0162)	-0.401435*** (4.50e-22)	-0.432253*** (2.44e-24)
<i>BS</i>	0.485193** (0.0436)	0.449643* (0.0831)	0.061052** (0.0139)	0.0594946** (0.0280)	0.0571817*** (1.20e-05)	0.0674055*** (7.89e-07)
<i>IN</i>	-0.231616 (0.4538)	-0.222100 (0.5071)	-0.0173984 (0.5849)	-0.0203553 (0.5594)	-0.00968647 (0.5561)	-0.0265102 (0.1202)
<i>DU</i>	0.732700 (0.5630)	0.300044 (0.8167)	0.0225739 (0.8626)	-0.00379119 (0.9776)	0.0167788 (0.8045)	0.0122504 (0.8540)
<i>CRS</i>	0.000428668 (0.6450)	0.000276 (0.7781)	5.51020e-05 (0.5655)	2.70645e-05 (0.7908)	3.97314e-05 (0.4258)	2.31559e-05 (0.6464)
<i>CRS_1</i>		0.001672* (0.0799)		0.000184* (0.0651)		1.68552e-05 (0.7308)
<i>CRB</i>	0.000524*** (0.0039)	0.000517*** (0.0096)	4.67685e-05** (0.0122)	4.56636e-05** (0.0278)	4.19089e-06 (0.6643)	8.31298e-06 (0.4160)
<i>CRB_1</i>		0.000323* (0.0862)		2.76928e-05 (0.1581)		9.10500e-06 (0.3474)
<i>CRE</i>	5.18891e-05 (0.1173)	4.54369e-05 (0.2000)	5.09962e-06 (0.1351)	4.87095e-06 (0.1872)	4.37336e-06** (0.0141)	3.00930e-06* (0.0997)
<i>CRE_1</i>		3.59078e-05 (0.3057)		2.18917e-06 (0.5485)		4.33883e-06** (0.0167)
<i>DRS</i>	-0.030195** (0.0369)	-0.0334405** (0.0473)	-0.003626** (0.0151)	-0.00385757** (0.0282)	-0.00135060* (0.0807)	-0.000593326 (0.4900)
<i>DRS_1</i>		-0.00721835 (0.6173)		-0.000704 (0.6400)		-0.00154492** (0.0369)
<i>DRB</i>	0.003787*** (0.0060)	0.003870* (0.0523)	0.000411*** (0.0039)	0.000436** (0.0357)	0.000174712** (0.0178)	9.53228e-05 (0.3496)
<i>DRB_1</i>		0.000881 (0.6162)		5.85956e-05 (0.7488)		0.000133394 (0.1391)
<i>DRE</i>	-0.000249 (0.1983)	-0.000231 (0.3049)	-2.53881e-05 (0.2030)	2.71857e-05 (0.2457)	-2.31585e-05** (0.0261)	-1.36337e-05 (0.2390)
<i>DRE_1</i>		-0.000185 (0.3494)		-1.15666e-05 (0.5748)		-1.80176e-05* (0.0779)
<i>GDP</i>	0.000138* (0.0830)	0.000198** (0.0225)	2.46576e-05*** (0.0028)	2.97179e-05*** (0.0011)	-1.52710e-05*** (0.0004)	-8.81805e-06** (0.0487)
Observations	298	285	298	285	299	286
R-squared	0.253838	0.277038	0.235046	0.254618	0.752874	0.782501

Note: This table presents regression results testing the impact of board remuneration on bank performance (*ROAE*, *ROAA*, and *NIM*). \*, \*\*, \*\*\* statistically significant at the 10%, 5% and 1% levels, respectively. White heteroscedasticity-consistent standard errors were used. Fixed effects are statistically significant.  
Source: Author's elaboration.

This result would lead us to consider the existence of a disincentive on the part of the boards to engage in the bank's management activity as the fixed and certain portion of remuneration increases.

Conversely, the increase in bonuses represents a significant incentive for boards to improve the bank's performance. The *DRB* variable has a positive impact on all profitability variables and in almost all regressions, except in *NIM* with a lag equal to 1.

Therefore, the directors' remuneration components show how important they are in determining banking performance understood in terms of *ROAA* and *ROAE*. Instead, the effects of the *CRB* and *DRS* remuneration variable on the *NIM* performance variable are less evident.

About the part of remuneration based on stock options, it should be noted that for both the CEOs

and the members of the board there is no relationship with performance apart from the *NIM*. Regarding the part of remuneration based on stock options, it should be noted that for both the CEOs and the members of the board there is no relationship with performance except for the *NIM*. In the latter case, the relationship is positive if we refer to the CEOs and negative regarding the directors.

## 5. CONCLUSION

The results of this analysis can make it possible to define best practices for the banks' management in times of crisis and provide useful elements for reflection, also to the banking supervisory authorities and policymakers.

In times of financial crisis, banking regulators and supervisors expect banks to exercise extreme restraint regarding variable remuneration payments to the extent that such payments may lead to a deterioration in the amount or quality of the total capital of the bank.

The first results of the data analysis highlight the existence of a significant connection between the remuneration policies adopted by US banks with respect to the results obtained in terms of profitability. The improvement of bank profitability is achieved above all through the increase in the remuneration component of the bonuses of both the CEOs and the members of the board. On the other hand, the increase in the fixed remuneration of CEOs has no relevance for banking performance. The increases in the fixed remuneration of directors could even be counterproductive for bank profitability. The component of remuneration represented by shares can stimulate banking performance if attributed to CEOs while it can represent a disincentive to performance improvement if attributed to directors.

These findings are important for future research as they can help banks identify best practices for bank management during the international financial crisis, as well as provide

useful insights to different categories of stakeholders, including banking supervisors and regulators.

This result provides empirical evidence that remuneration policies can be useful for improving the profitability of banks.

However, this research has some limitations that must be considered to correctly interpret the results.

First, this study focuses on the US banking system and therefore is influenced by the specific regulation to which it is subject. It is important to verify whether these results are confirmed in other banking systems as well.

Second, the remuneration of executives may not be linearly linked to performance but be attributed according to their managerial characteristics (Mateus et al., 2020).

Third, the improvement in performance due to bonus-based remuneration policies could be associated with an increase in the bank's overall risk.

Therefore, future research on the banking system should attempt to simultaneously analyze the impact of remuneration policies on both bank performance and risk-taking for the bank to verify whether the net impact of these policies is positive in terms of overall banking performance/risk.

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