

Determinants of bank performance in Southern Europe

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In September 2019, the author continued his studies at Faculdade de Economia do Porto to pursue his MSc study in Finance. From June 2020 to December 2020, he has worked for Charge Digital Solutions as manager and from January 2021 to date he has held the position of project manager at Sociedade de Estudos Económicos e Financeiros, dealing with government financing support programmes to businesses.

Francisco's desire to work in the banking industry, fundamentally affected the choice of topic for the following dissertation. It resulted in this bank-related thesis in an attempt to find new evidence, in Europe, of the determinants of performance in the industry.

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Abstract

This study examines the extent to which CAMEL variables and corporate governance factors influence the performance of banks in southern Europe. Panel data from 12 banks over the period of 2013 to 2020 is estimated by three different econometric models, including the pooled ordinary-least-squares, random effects, and generalized method of moments. The regression results point to the significance of quality assets as a determinant of performance. Banks with a lower loan loss provision to net interest revenue had higher returns, which highlights the importance of asset separation and guarantee schemes implemented by policymakers to reduce bad claims and thorough reviews of clients' default risk. This study also found that efficient management is key to an increase in profitability. Managers should be able to maximize the income produced by the bank for a certain level of operating costs, generating better profit margins. The estimated coefficients for capital adequacy and liquidity are insignificant in explaining performance. Board size showed a negative relation to bank earnings, indicating smaller boards are more efficient due to lower costs in the decision-making process. Remuneration and independence of the board presented mixed results for the different models applied, therefore these coefficients should be considered insignificant as determinants of performance. The study contributes to the literature by providing new evidence on factors affecting bank's earnings in Portugal, Spain, France and Italy.

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1. Introduction

In the aftermath of the Great Recession (2007-2009), the determinants of bank performance have gained heightened attention. The subprime mortgage crisis was one of the most ferocious financial crises of modern times due to its ferocity and quickly spread around the world, affecting all developed economies. Banks in the United States, incentivised by the government with bonuses to concede credit to families, lent large amounts of money without a proper risk assessment of mortgagees. This was only possible due to mortgage-backed securities¹ and other complex financial products designed to transfer the risk of default to third parties and hide a bundle of subprime mortgages. Investment and commercial banks were inflated with these products on their balance sheets, sometimes without understanding the true nature behind these assets. At the time borrowers stopped paying their mortgages, banks were fed up with houses that they could not sell leading to a downward spiral in the price of houses. Thus, families who didn't default were now paying for overpriced mortgages and banks started raising awareness that the assets they possess were mispriced and overvalued. The financial system was flooded with these securities worldwide, generating a serious liquidity problem in the industry. The financial system collapsed in August 2007 when the interbank lending market froze due to uncertainty about the value of the securitized mortgage derivatives leading to liquidity problems that promptly spread throughout the world, with depositors rushing to withdraw their money from troubled banks. The result of this tragic loan strategy was bailouts sponsored by governments, central banks, and international organizations, mergers, and acquisitions between financial institutions, and bankruptcies.

The outcome of the financial crisis was motivated by inconsequential board decisions and reckless lending policies adopted by managers exploiting the lax of regulation and oversight at the time (Acharya, Philippon et al. 2009). Capital adequacy, poor asset quality, management ineffectuality, imprudent liquidity running, and weak corporate governance were pointed as possible explanations for the global crisis.

At the end of 2009, several European countries were unable to repay sovereign debts and banks were highly indebted. Governments, banking authorities, and international

¹ Mortgage-backed securities are shares of a pool of mortgages the bank owns and sell to the public.

institutions prepared a response to promote stability in the system and mitigate future risks. The Basel Committee on Banking Supervision² launched the Basel III framework (2010), a set of reforms meant to prevent future systemic risk within the international banking sector, by demanding specific capital requirements and proper leverage and liquidity levels, aimed at safeguarding against excessive borrowing. With European legislation in place, the recommendations were gradually implemented in 2013.

In this study, I test several determinants of bank performance for twelve banks in southern Europe from 2013 to 2020, offsetting the reflection of a change in competitive conditions after the great recession and the sovereign debt crisis that might have reduced the profit margins available to banks. This paper reviews the various types of performance measures and governance factors that are commonly used to evaluate the overall financial situation of a bank. Specifically, this study looks at the CAMEL rating system and corporate governance variables, with a special focus on capital adequacy, asset quality, management efficiency, liquidity, board size, independence, and executive remuneration. The study contributes to the literature as follows. First, this study provides new evidence on factors affecting bank's earnings in Portugal, Spain, France, and Italy. Second, three different analytical tools were applied to the panel data to identify determinants of bank performance.

The banking system is a complex organization but highly regulated and supervised, particularly after 2008. Despite all the norms that rule banks and try to maintain the safety and soundness of the system, boards still have the managerial power inside an institution resulting in performances within financial institutions. The banking industry often seeks growth opportunities in riskier investments, even though there are mechanisms and restrictions to prevent banks from incurring potential harmful ventures. This emphasises the importance to analyse the determinants of performance in such a competitive environment as the bank industry.

The rest of the study proceeds as follows: section 2 reviews the literature, section 3 provides a comprehensive description of the data and methodology, section 4 shows the estimation output and presents the analysis and section 5 summarizes and presents the main conclusions.

² The primary global standard setter for the prudential regulation of banks

2. Literature Review

To create a competitive environment for banks, many countries decided to restructure their financial institutions after the 2007/08 financial crisis. Several studies have been conducted to examine the factors that affect the stability and profitability of the banking system. This study aims at the analyse of the determinants of financial performance of banks in southern European countries. The two most elemental performance measures are return on assets (ROA) and return on equity (ROE), but since the former represents a profitability measure that dismisses the consideration of leverage (Golin and Delhaise 2013), I use this financial ratio as a proxy for bank performance. The study will then explain the various factors that affect the performance of the banking sector with focus on corporate governance characteristics and CAMEL³ variables.

Corporate governance as a determinant of a firm's performance has already been subject to extensive review but gained heightened attention for financial institutions after the burst of the US housing bubble. Many researchers have studied the circumstances that originated this event and identified "*failures and weaknesses in corporate governance arrangements*" (Kirkpatrick 2009) as one possible explanation for the poor performance of banks and the beginning of the global recession. Moreover, country-level governance and regulation at the time seem to be a key factor as large banks based in countries with strict regulations performed better with lower non-performing loans (Beltratti and Stulz 2012). Although corporate governance alone doesn't justify the severe crisis faced during this period and the years afterward, it helps understand the deficiencies of the bank system at the time, the exaggerated risk financial institutions exposed themselves and the lack of control and supervision over the banks' operations. According to the Basel Committee on Banking Supervision "*The board has ultimate responsibility for the bank's business strategy and financial soundness, key personnel decisions, internal organisation and governance structure and practices, and risk management and compliance obligations*", which emphasize the position of the board as fundamental to guarantee the safety and soundness of the banking system through effective risk management and supervision while addressing agency problems.

³ Rating system implemented in 1979 by the Federal Financial Institutions Examination Council. In 1996 the system was revised to include a sixth component addressing sensitivity to market risk

For Shleifer and Vishny (1997) “*Corporate governance deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment*”. For the authors, the concentration of ownership is key to the success of corporate governance in the way managers are more controlled and supervised. Dey (2008) found that companies with a higher level of agency conflicts have better procedures over corporate governance, also “governance mechanisms are likely to positively affect overall firm performance only under certain circumstances”. The author specifies that firms with high agency conflicts, require more control over managers and so firmer governance structures will lead to better firm performance, instead of firms with low agency conflicts, where the governance structures do not seem to be as relevant. Mulherin (2005) also supports that “the internal governance mechanisms at a given firm endogenously evolve in response to changes in the firm’s economic environment”.

Many European countries, in the aftermath of the financial crisis, introduced or reviewed their banking governance codes in order to prevent another disaster in the financial system while maintaining competitiveness in the industry. Additionally, the Basel Committee rolled out the Basel III framework originally published in 2010 and reviewed in 2011, a set of reforms that were implemented to prevent systemic risk in the international banking industry. It required banks to maintain a proper leverage ratio and keep a high level of reserve capital on hand. In 2013, the European Parliament approved the Capital Requirements Directive (CRD) IV, legal support to implement Basel III and standardise EU regulatory reporting of financial firms.

The turmoil of the 2007/2008 crisis motivated by the burst of the American real estate bubble proved to have large repercussions worldwide as many banks realized their balance sheets were inflated with overvalued securitized mortgage derivatives and needed state help to solve liquidity deficiencies and avoid bankruptcies. Former FED chairman Alan Greenspan said in 2009 “If they’re too big to fail, they’re too big” and many European countries began bailout programmes and nationalizations to avoid the collapse of the banking system and the bankruptcy of these large financial institutions. Many scandals related to weak corporate governance erupted in Europe during the

following years as Northern Rock, ABN-Amro, Royal Bank of Scotland Group, Anglo Irish Bank, Arcandor, Schlecker, or Banco Espírito Santo.

At this time, literature on corporate governance was already extensively reviewed but few regulators and supervisors realized that there were important differences between financial and non-financial institutions. Walker (2009) states that bank governance structures are ineffective as they fail to account for the existing disparities to non-financial institutions and comparisons made on previous studies about governance structures show this clearly. These systematic differences emphasize that corporate governance concerns are industry-specific, mainly because of the investment opportunities seek by bank holding companies and the tight regulation these institutions face in comparison to others (Adams and Mehran 2003). Becht, Bolton et al. (2011) debate on their paper the distinctions of bank governance. Firstly, banks are institutions that incur in complex risky activities very rapidly and that require supervision by qualified institutional investors, directors, or independent specialists, which is expensive for stakeholders. Secondly, banks operate under very strict regulations and that limits their corporate governance mechanisms in favour of stability in the financial system. Furthermore, banks are subject to political influence that might interfere with the initial strategy of the board, meaning they are not independent of these forces. Lastly, depositors and bondholders account for the majority of capital a financial institution has available, however, the decisions about the future are taken by the board and the banks' shareholders, creating a conflict between the stakeholders.

“The board of directors in principle monitors management on behalf of shareholders” (Tirole 2006). According to the author, the main functions of the board can be resumed in the approval or disapproval of major decisions related to the firm's operation, outlining executive compensation, risk management, carry out audits, and offer guidance to managers. Before the financial crisis, boards were seen as “ineffective rubber-stampers controlled by, rather than controlling”, a view that changed since 2008 as financial intuitions boards became more answerable. Board structure and compensation plan are defined by one another, as well as by other factors such as firm size, regulation, or cash flows, and have an impact on the bank performance (Jensen and Meckling 1976).

Looking at previous evidence regarding the size of boards, the literature suggests, most commonly, that small boards tend to be more effective since the costs of decision-making are lower (Adams, Hermalin et al. 2010). The authors also state that board size can be associated with other already known economic literature like free-rider behaviour or the teams' problem once increasing the number of board members can reduce the effort of each individual resulting in a less vigilant board and giving opportunity for the manager to incur in more risky investments. On larger boards, each director has more difficulties to voice their opinion and discuss it due to limited time in meetings (Lipton and Lorsch 1992) and due to lower incentives to gather information and supervise managers' activity (Jensen 1993). On bank-specific literature, findings over the impact of size on performance are mixed. In accordance with what was previously stated, some authors verified a negative relation, Wang, Lu et al. (2012) for a sample of 68 US banks utilizing data from 2007 or Pathan and Faff (2013) using a sample of 212 listed US banks comprising data from 1997 to 2011. Other scholars defend a positive relation, meaning larger boards tend to generate better performances probably due to more valuable experience and expertise brought by a larger number of directors and higher control over management avoiding unnecessary risks that in the long term would translate into bad results (Aebi, Sabato et al. 2012, García-Meca, Martínez-Ferrero et al. 2015, Merendino and Melville 2019). Ultimately, some academics found no connection or significance between board size and bank performance both during and before the crisis (Erkens, Hung et al. 2012, Minton, Taillard et al. 2014)

Board independence is a key element in several studies concerning corporate governance. "A director is labelled independent if she is not employed by the firm, or more generally does not have a conflict of interest in the accomplishment of her oversight mission" (Tirole 2006). In a study comprising 100 US banks in four different periods (1998-2001, 2002-2006, 2007-2009, 2010-2016), it was found that independence of the board and operating performance were negatively related until 2002 when it shifted to being positively correlated as a result of a growing number of independent directors present in firms (Bhagat and Bolton 2019). Opposite to this previous paper, "(...), although board independence is generally seen to be a good thing, in the case of banks, greater independence may be a bad thing because a more

independent board will not have sufficient expertise to monitor the actions of the CEO” (Adams 2012). Since independent directors at banks usually don’t work for other banks to avoid possible conflicts of interests, their ability to supervise the bank’s complex activities might be compromised as they lack experience and knowledge to thorough the bank’s operations. Also, a non-independent board is more capable to protect shareholders' interests except in situations with great agency costs (Harris and Raviv 2006). In the period during the financial crisis 2007-2008, evidence from 296 financial firms placed in 30 different countries shows firms with more independent boards had the worst stock returns (Erkens, Hung et al. 2012). Furthermore, Haan and Vlahu (2013) discuss in their survey that empirical findings on non-financial firms show a positive relation between board independence and performance, but this does not hold for banks.

The incentives and compensation of the board of directors in the banking industry raise a dilemma between shareholders, debtholders, and policymakers. For shareholders, compensation based on equity enhances the appetite for risky investments that allow a boost on shareholders’ value, which can be dangerous in the banking industry given that the higher the risk is taken by a financial institution the higher its probability to fail, default creditors and compromise the stability of the system. Bank executives' incentives differ from other industries as boards rely less on long-term compensation strategies leading to a lower share of pay in stock and options (Adams and Mehran 2003). In 2009, in the Financial Stability Forum, compensation and incentives of executives were defined as one of the elements responsible for the crisis, with many countries taking action, launching new regulations to balance the incentives directors receive to embrace risk. The Basel Committee on Banking Supervision “Enhancements to the Basel II framework” (2009), also blames compensation practices as one factor among many that contributed to the credit crisis. The BIS defends the mix of cash, equity and other forms of compensation should be proportional to the risk incurred as well as the time horizon of such risks. In 2015, the European Banking Authority imposed limits to variable pay over the base pay.

Performance-related pay seems to be an important factor in a bank’s profitability. Mishra and Nielsen (2000) implied that the remuneration policies of the largest commercial bank holding companies have a positive and significant impact on

accounting performance. The authors state that the relative tenure of directors is key to align the financial interest of shareholders. In accordance, Magnan and St-onge (1997) suggested a positive impact of executive pay on firm performance measures such as ROA or stock market returns, particularly in banks with a higher level of managerial discretion. Conyon and Peck (1998) discovered for a sample of UK companies that top management pay and corporate performance are more aligned in companies with outsider-dominated boards and remuneration committees. Rehman, Ali et al. (2021) found in their study a positive and significant association between corporate profitability and executive pay for a sample of firms listed on the Chinese stock exchanges. Brunello, Graziano et al. (2001), Doucouliagos, Haman et al. (2007), on the contrary, studied the determinants of executive pay and found no sensitivity of incentive pay to firm performance.

Following the recent financial crises in the banking industry, the CAMEL rating system has grown in importance as a tool for monitoring bank soundness. Banking failures were attributed to a variety of issues, including poor asset quality and a low capital basis. Past research on the impact of CAMEL on finances has been undertaken. However, as a result of institutional discrepancies and measurement choices, these studies are typically characterized by contradictory findings.

The Basel Committee has been increasing bank's capital requirements since Basel I (1988), augmenting the importance for banks to maintain a proper level of capital. Capital adequacy evaluates a financial institution's compliance with minimum capital reserve requirements. Literature suggests that increases in the capital may raise expected earnings by lowering the expected costs of financial distress (Mathuva 2009). High capitalized banks reduce their bankruptcy risk, thus lowering the cost of funding. The lower the capitalization of a bank, the higher the leverage it resorts to, increasing the probability of default which will ultimately raise the costs of funding and reduce the profitability level. Ezike and MO (2013), Olalekan and Adeyinka (2013), Muhmad and Hashim (2015) reported that capital adequacy contributed to better bank performance.

Although asset quality is important for all businesses, it is especially so for banks, which are vital components of financial markets and national economies. The credit quality of banks is linked to the quality of loans and can be accessed through several

dimensions, for instance using loan loss provision or non-performing loans. Robust credit quality will reduce the chances of default and boost profitability. ul Mustafa, Ansari et al. (2012), Daly and Zhang (2014), Islam (2018) found a positive relation between asset quality and profitability, which translates into well-managed banks have fewer loan loss provisions and non-performing loans prompting higher profitability rates.

Management efficiency refers to the maximization of the profitability-risk relation. Inefficient management can lead the bank to incur higher costs, liquidity problems, or poor asset quality through bad investment decisions, which will ultimately result in lower profit margins. The cost to income ratio is a ratio to measure such efficiency. Almumani (2014) and Hess and Francis (2004) observed an inverse relation between the cost to income ratio and the bank's earnings. Lee (2018) also noted that highly efficient banks tend to perform better. Although the cost to income might be a significant measure to point the bank's ineffectuality, it can be misleading if, for a given level of cost, a decrease of income is a consequence of a change in the environment, for example, an economic downturn (Tripe 1998).

The concept of liquidity risk has become very important in the complex process of risk management. It is a requirement for banks to maintain sufficient liquid resources to withstand various stress events. During the financial crisis, many banks failed to manage their liquidity in a prudent manner. This led to the downfall of several banks and gave heightened attention to the maintenance of adequate liquidity in order to prevent a financial institution from running into trouble (Marozva 2015). As it would be expected, profitability, credit quality, and liquidity increased considerably in the years before the financial crisis and shifted the trend on the verge of the subprime mortgage crises (Kumbirai and Webb 2010). Chen, Shen et al. (2018) state in their study that liquidity risk may lower a bank's earnings because of the higher cost of funds, yet increasing bank's net interest margins. Arif and Anees (2012) also exposed that liquidity problems may adversely impact the profitability of banks. Cash reserves may help mitigate liquidity issues and meet depositors' demands. Nugraha, Yahya et al. (2021) studied the loan to deposit ratio in Indonesian banks and realized a significant and positive relation towards return on assets.

3. Data and methodology

3.1 Data

The sample examined in this study comprises all commercial banks present in the main stock indexes of Portugal (PSI-20), Spain (IBEX 35), France (CAC 40), and Italy (FTSE MIB). The number of banks accounts to 13, but due to lack of information on executives' remuneration of Banco BPM (Italy), prior to 2017 when Banco Popolare and Banca Popolare di Milano merged to form Banco BPM, the sample was reduced to 12 banks. Investment banks are not included in the study. The period of analysis covers 8 years from 2013 to 2020. The financial data used in this work was obtained from Thomson Reuters Eikon and Moody's Analytics BankFocus, while data regarding Corporate Governance variables, such as board size, board independence, and board remuneration was hand collected from the banks' annual reports.

3.2 Methodology

Given the key role banks represent in the economy, it is important to assess the performance of financial institutions so that stakeholders and decision-makers can have a clear perspective of these organizations' soundness. In order to rate financial institutions, banking supervisory authorities use the CAMEL system, based on five factors as the acronym suggests. The "C" stands for capital adequacy, "A" for asset quality, "M" for management efficiency, "E" for earnings performance, and "L" for liquidity. In addition to the CAMEL factors, I will also include corporate governance metrics to test whether these internal factors had an effect on bank performance. Return on Assets (ROA) is the accounting measure that will represent bank performance.

Panel data from 12 banks across 8 years is estimated by three different models, including the Ordinary-least-square (OLS), random effects (REM), and generalized method of moments (GMM). The difference GMM model estimators are displayed as instrumental variables in the endogenous regressors and the current values of the exogenous variables. This methodology is more efficient as it focuses on the presence of unnoticed bank-specific effects, which are removed by taking the first differences of all variables. Thus, the GMM procedure controls for endogeneity problems associated with the explanatory variables in dynamic models. Arellano and Bond (1991)

demonstrate that additional instruments can be obtained in a dynamic panel data model if one utilizes the orthogonality conditions that exist between the lagged values of the dependent variable and the disturbances ε_i . The authors propose a two-step difference GMM estimator since this analytical tool is both efficient and robust to heteroskedasticity. The two-step difference GMM is the third approach utilized in this paper to address the determinants of performance.

(1) The Ordinary-least-square (OLS) may be written as follows:

$$ROA_{it} = \alpha + \beta_1 EQU_ASS_{it} + \beta_2 LLPNIR_{it} + \beta_3 CTIR_{it} + \beta_4 LOAN_DEP_{it} + \beta_5 BREM_{it} + \beta_6 BSIZE_{it} + \beta_7 BIND_{it} + \varepsilon_{it}$$

(2) The random effect (REM) can be stated as follows:

$$ROA_{it} = \alpha + \beta_1 EQU_ASS_{it} + \beta_2 LLPNIR_{it} + \beta_3 CTIR_{it} + \beta_4 LOAN_DEP_{it} + \beta_5 BREM_{it} + \beta_6 BSIZE_{it} + \beta_7 BIND_{it} + \varepsilon_{it}$$

(3) The generalized method of moments (GMM) that includes a lag dependent variable in the explanatory variables might be described as follows:

$$ROA_{it} = \alpha + \lambda ROA_{it-1} + \beta_1 EQU_ASS_{it} + \beta_2 LLPNIR_{it} + \beta_3 CTIR_{it} + \beta_4 LOAN_DEP_{it} + \beta_5 BREM_{it} + \beta_6 BSIZE_{it} + \beta_7 BIND_{it} + \varepsilon_{it}$$

Return on assets (*ROA*) is the dependent variable of the model and is measured as operating income divided by average total assets in a financial year. As explanatory variables, I used four out of five CAMEL variables since earnings performance is linked to the dependent variable by the same numerator in both ratios. Capital adequacy (*EQU_ASS*) consists of the equity value of preferred shareholders, general and limited partners, and common shareholders, but does not include minority shareholders' interest, divided by the average of total assets at the beginning and at the end of the fiscal period. Asset quality (*LLPNIR*) is given by the provision for loan losses for the fiscal year as a proportion of net interest revenue for the same period and is expressed as a percentage.

Management (*CTIR*) quality is expressed through the ratio of operating expenses to operating income. Liquidity (*LOAN_DEP*) is measured by total loans to customers, reduced by possible default losses and unearned interest income divided to the sum of non-interest bearing deposits, interest-bearing deposits, and other deposits. Moreover, three corporate governance variables are also included in the model. Total remuneration accrued by the Board of Directors (*BREM*), which includes cash payments and other related incentives which are reported in annual reports of listed firms. Board size (*BSIZE*) as the total members of the Board of Directors at 31 December of each year in the study. Board independence (*BIND*) is represented by the ratio of independent directors to the total number of directors. This study has used the log values of total aggregated remuneration of directors and the log values of board size. ε_{it} denotes the remaining disturbance term, while the subscripts i denote individual banks, $i=1, 2, \dots, 12$, and t is the time period, $t=2013, 2014, \dots, 2020$. Table 1 shows the variables used in this study as well as its measurement and source.

Table 1. Variable description

Variables	Measurement	Data Source
Dependent variable		
Return on assets (ROA)	Pre-tax income to average total assets (%)	Thomson Reuters Eikon
Independent variables		
CAMEL variables		
Capital adequacy (EQU_ASS)	The ratio of equity to average total assets (%)	Thomson Reuters Eikon
Asset quality (LLPNIR)	The ratio of loan loss provision to net interest revenue (%)	Moody's Analytics BankFocus
Management efficiency (CTIR)	Cost to income ratio (%)	Moody's Analytics BankFocus
Liquidity (LOAN_DEP)	The ratio of net loans to total deposits (%)	Thomson Reuters Eikon
Corporate governance variables		
Board remuneration (BREM)	Log of total board compensation	Annual Reports
Board size (BSIZE)	Log of total board members	Annual Reports
Board independence (BIND)	The ratio of independent directors to total board members (%)	Annual Reports

4. Results

4.1 Descriptive statistics

Table 2 represents the descriptive statistics for all study variables. From 2013 to 2020 the banks' profitability as measured by return on assets averages 0,4%. For the ratio of equity to assets, the mean was 6%, varying between 8,5% and 2,7% which indicates that the banks' capital structure is similar among the sample. Asset quality reveals a mean of 34%, which reveals a good coverage of expenses with the provisions for impaired loans from the interest the bank collects. The cost to income ratio shows a mean of 62,6%, meaning the bank's operating costs account for more than half of its operating income. The table also shows that the average of loans to deposits is 87,8% with a maximum value of 143,7%, implying banks loan on average almost the total amount of deposits they receive, with some banks lending more money than the accounting sum of deposits.

Regarding corporate governance variables, the remuneration accrued by the board of directors presents a mean of 9527 thousand euros and a median of 7545 thousand euros. This infers more executives are receiving compensation that is lower than the overall average pay. Additionally, the range of total board remuneration is wide across the southern European banks, revealing different bank remuneration policies adopted. As for board size, the maximum number of members is 21, the minimum is 10, and the median is 15. Board independence report that more than half of the board is composed of independent directors (55,5%).

Table 2. Descriptive statistics

Variables	Mean	Median	Maximum	Minimum
Return on assets (ROA)	0,004	0,004	0,012	-0,017
Capital adequacy (EQU_ASS)	0,060	0,063	0,085	0,027
Asset quality (LLPNIR)	0,341	0,300	1,157	0,025
Management efficiency (CTIR)	0,626	0,622	0,928	0,388
Liquidity (LOAN_DEP)	0,878	0,879	1,437	0,405
Board remuneration (BREM)	9526,938	7545	31634	2224
Board size (BSIZE)	15,844	15	21	10
Board independence (BIND)	0,555	0,558	0,895	0,222

Table 3 corresponds to the correlation matrix, whereby multicollinearity seems to be non-existent because correlation coefficients values between explanatory variables are well within acceptable ranges.

Table 3. Correlation matrix

Variables	1	2	3	4	5	6	7	8
Return on assets (ROA)	1							
Capital adequacy (EQU_ASS)	0,231	1						
Asset quality (LLPNIR)	-0,673	0,170	1					
Management efficiency (CTIR)	-0,443	-0,443	-0,009	1				
Liquidity (LOAN_DEP)	0,005	0,637	0,343	-0,293	1			
Board remuneration (BREM)	0,344	0,134	-0,163	-0,234	0,029	1		
Board size (BSIZE)	-0,346	-0,128	0,226	-0,004	-0,188	-0,120	1	
Board independence (BIND)	-0,018	0,055	-0,104	0,223	0,283	0,290	-0,329	1

4.2 Regression results

The empirical results based on the estimate of pooled OLS (1), random-effects model (2), and two-step difference GMM (3) estimators are presented in Table 4. The return on assets is the dependent variable (ROA). A series of diagnostic tests on the models utilized in this study may be found at the bottom of Table 4. The Hausman test was used to assess whether it was appropriate to employ random-effects models rather than fixed-effects models. The null hypothesis of using the random effect cannot be rejected (p-value > 0.05) since the Hausman test p-value is 0.064. As a result, the random effect model is chosen and yields efficient outcomes.

This study employs the Sargan (1958) test to assess under/over-identification and Arellano and Bond (1991) test for checking the presence of second-order correlation to determine the consistency of the two-step difference GMM estimators. The former test p-value reveals to be insignificant, thus the model is free of over-identification and the instruments are valid. The latter test looks at the assumption that there is no serial correlation in the errors of the levels. The Arellano-Bond test confirms the null hypothesis of no autocorrelation. This indicates that the dynamic model specification is reliable.

The last column of Table 4 shows the results of the difference GMM model. The coefficient for lagged ROA is negative and insignificant at 10%, suggesting the lagged ROA has no impact on the current ROA.

Table 4. Regression results on bank performance determinants

Variable	OLS	REM	GMM
Return on assets (ROA-1)			-0,095 (0,223)
Constant	0,020 (0,001)***	0,022 (0,009)***	
CAMEL variables			
Capital adequacy (EQU_ASS)	0,052 (0,260)	0,033 (0,261)	0,095 (0,175)
Asset quality (LLPNIR)	-0,012 (0,000)***	-0,012 (0,000)***	-0,014 (0,000)***
Management Efficiency (CTIR)	-0,016 (0,001)***	-0,015 (0,000)***	-0,011 (0,057)*
Liquidity (LOAN_DEP)	0,001 (0,597)	0,001 (0,560)	0,005 (0,687)
Corporate governance variables			
Board Remuneration (BREM)	0,001 (0,007)***	0,001 (0,104)	0,003 (0,417)
Board size (BSIZE)	-0,005 (0,000)***	-0,005 (0,009)***	-0,012 (0,024)**
Board independence (BIND)	-0,004 (0,081)*	-0,004 (0,068)*	0,006 (0,699)
Hausman Test <i>p</i> -value		0,064	
Sargan <i>p</i> -value			0,321
Arellano-Bond <i>p</i> -value			0,857

In Table 4 ***, ** and * corresponds to significance level of 99%,95% and 90% respectively. Values in parentheses correspond to *p*-values.

Capital adequacy and liquidity both reveal a positive relation to bank performance as major literature suggests, however, results prove to be insignificant for this sample and time series. A possible explanation is the record low-interest rate levels. Well-capitalized banks tend to be safer and present lower costs of funding compared to banks that are less capitalized. More leveraged banks imply a higher default risk and increase their costs of funding, accounting for lower profitability rates. With historically low-interest rates in the Euro Area, reaching 0% in 2016, the capital structure of banks proves to be insignificant as a determinant of performance since banks can fund themselves at low costs. Furthermore, with interbank lending at such low levels, even

though banks might have more loans over deposits, smaller interest rate spreads lead to lower performance, reducing the impact of liquidity on earnings. Also, it can be argued that excessive borrowing might be inconsequential for profitability if these assets of the bank do not perform.

The ratio of loan loss provision to net interest revenue shows a negative and significant relation to the bank's profitability at a significance level of 99% for all three models. Since the financial crisis, banks have been enhancing their credit risk ratios through asset purchase programmes of the European Central Bank and tighter control of loan applicants' default risk. This strategy results in lower loan loss provisions and improves the overall profit margins. These findings are in line with ul Mustafa, Ansari et al. (2012), Daly and Zhang (2014), Islam (2018), who also found that the higher the quality of assets in bank's balance sheets, the better the performance.

The cost to income ratio disclosed a positive relation to the bank's earnings for the dynamic models used in the study. These results are valid for a significance level of 99% for the pooled OLS model and the random-effects model, and 90% for the generalized method of moments. Efficient managers capable of controlling the operating costs of the bank, yield better profit margins. These results were also observed by Hess and Francis (2004), Almumani (2014).

Board remuneration happens to be insignificant to determine bank performance, except for the results of the pooled OLS model. These findings might be a consequence of regulation imposed on remuneration policies. Since the amount of variable pay is limited, boards are not sufficiently incentivised in a way that performance is induced by the payable amount to board members. Additionally, the amounts paid to the board of directors are very dispersed because of different remuneration policies applied to the sampled banks, which can cause insignificant results.

The results regarding board size demonstrate strong and negative evidence of the effect of this corporate governance coefficient on performance. Larger boards have higher costs of decision-making, therefore boards with more directors are less effective. Although an increasing number of board members will bring more expertise and experience to the meetings, they will also hamper the judgement process as directors won't be able to voice their opinion as often and it will be harder to reach a consensus.

Moreover, small boards enhance the effort of each board member resulting in a more active, vigilant, and enveloped group, preventing free-rider behaviour or the teams' problem. The negative association between board size and performance is also verified in previous literature regarding corporate governance and its impact on banks (Wang, Lu et al. 2012, Pathan and Faff 2013).

Board independence shows mixed results in the different econometric estimations. For OLS and REM, board independence is significant at 10% and has a negative relation towards the profitability of the bank. Board independence is generally considered to be good, but in the case of banks, it may lead to worst performance since independent directors will have less experience to monitor the actions of the CEO (Adams 2012). In addition, independent directors at banks usually don't work for other banks to avoid any conflicts of interests, hence they are less capable of supervising and discuss the bank's complex activities. For GMM, the estimated coefficient is insignificant. This implies that an increase in the percentage of independent directors is insignificant for bank performance.

5. Conclusion

Determinants of bank performance have long been debated by both stakeholders and scholars. This study investigates the impact of CAMEL variables and corporate governance factors on the performance of commercial banks in southern Europe. The paper comprises a sample of twelve commercial banks operating in Portugal, Spain, France, and Italy over the period of 2013 to 2020. This period coincides with reforms in European governance standards and the implementation of the recommendations of the Basel Committee on Banking Supervision (BCBS) better known as Basel III of 2010 that were gradually implemented since 2013. Also, the timeline intends to offset the effect of the European debt crisis, which affected both Portugal and Spain. Three different econometric models were applied to the panel data, including OLS estimation, random-effects model, and the generalized method of moments.

The regression results point to the significance of quality assets as a determinant of performance. Banks with a lower loan loss provision to net interest revenue had higher returns, which highlights the importance of asset separation and guarantee schemes implemented by policymakers to reduce bad claims and thorough reviews of clients' default risk. This study also found that efficient management is key to an increase in profitability. Managers should be able to maximize the income produced by the bank for a certain level of operating costs, generating better profit margins. The estimated coefficients for capital adequacy and liquidity are insignificant in explaining performance. Board size showed a negative relation to bank earnings, indicating smaller boards are more efficient due to lower costs in the decision-making process. Remuneration and independence of the board presented mixed results for the different models applied, therefore these coefficients should be considered insignificant as determinants of performance.

The study presents some limitations apart from the relevance and reliability of the results. First, future studies should include a larger sample of countries and banks to increase the robustness of the findings. Secondly, the model is limited to internal factors of the bank and does not include external factors as determinants of performance. And finally, upcoming literature may resort to market measures of performance, as an extension to performance based on an accountable ratio.

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Appendix

Table 5. Banks included in sample

i	BANK	Country
1	BANCO SANTANDER SA	Spain
2	BANCO BILBAO VIZCAYA ARGENTARIA SA	Spain
3	CAIXABANK, S.A.	Spain
4	BANKINTER SA	Spain
5	BANCO DE SABADELL SA	Spain
6	BANCO COMERCIAL PORTUGUES, SA	Portugal
7	BNP PARIBAS	France
8	SOCIETE GENERALE	France
9	CREDIT AGRICOLE SA	France
10	BPER BANCA S.P.A.	Italy
11	INTESA SANPAOLO	Italy
12	UNICREDIT SPA	Italy