



Impact of Corporate Governance Factors on Financial Distress in the European Banking Industry

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Abstract

This dissertation delves into the dynamics of financial distress within the European banking sector, covering the period from 2007 to 2021. Utilizing a binary random effects logistic regression model, the study investigates the interplay of internal corporate governance, financial ratios, regulatory policies, and economic factors in shaping the stability of publicly listed banks. The study uncovers that governance mechanisms and their impact on financial distress vary significantly across different economic periods. Notably, factors like board size, CEO-Chairman duality, and ownership concentration have diverse effects during economic crises. The empirical results reveal an intriguing relationship between increased capital adequacy and heightened financial distress, suggesting complexities in regulatory frameworks. The findings highlight the importance of adaptable and dynamic governance and regulatory compliance in managing financial distress. This thesis contributes to the understanding of banking governance and stability, offering insights for policymakers, bank managers, and academics in formulating responsive strategies to mitigate financial distress and enhance stability in the European banking sector.

Key Words: Financial Distress, European Banking, Corporate Governance, CAMEL ratios, Regulatory Policies, Global Financial Crisis, COVID-19 Pandemic, Logistic Regression

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Resumo

Esta dissertação investiga a dinâmica das dificuldades financeiras no sector bancário europeu, abrangendo o período de 2007 a 2021. Utilizando um modelo de regressão logística de efeitos aleatórios binários, o estudo investiga a interação entre a governação interna das empresas, os rácios financeiros, as políticas regulamentares e os factores económicos na formação da estabilidade dos bancos cotados na bolsa. O estudo revela que os mecanismos de governação e o seu impacto nas dificuldades financeiras variam significativamente em diferentes períodos económicos. Nomeadamente, factores como a dimensão do conselho de administração, a dualidade CEO-Presidente do Conselho de Administração e a concentração da propriedade têm efeitos diversos durante as crises económicas. Os resultados empíricos revelam uma relação intrigante entre o aumento da adequação dos fundos próprios e o aumento das dificuldades financeiras, sugerindo complexidades nos quadros regulamentares. As conclusões sublinham a importância de uma governação adaptável e dinâmica e da conformidade regulamentar na gestão das dificuldades financeiras. A presente tese contribui para a compreensão da governação e da estabilidade bancárias, oferecendo perspectivas aos decisores políticos, gestores bancários e académicos na formulação de estratégias reactivas para mitigar as dificuldades financeiras e reforçar a estabilidade no sector bancário europeu.

Palavras-chave: Dificuldades Financeiras, Banca Europeia, Governação Empresarial, Rácios CAMEL, Políticas de Regulação, Crise Financeira Global, Pandemia de COVID-19, Regressão Logística

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List of Abbreviations

GFC	Global Financial Crisis
COVID-19	Coronavirus Disease 2019
EU	European Union
ECB	European Central Bank
EBA	European Banking Authority
SSM	Single Supervisory Mechanism
SRB	Single Resolution Board
ESG	Environmental, Social, and Governance
BIS	Bank for International Settlements
BCBS	Basel Committee on Banking Supervision
CRD IV	Capital Requirements Directive IV
CRR	Capital Requirements Regulation
CAMEL	Capital Adequacy, Asset Quality, Management Quality, Earnings, Liquidity

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1 Introduction

The banking sector, as a cornerstone of global financial stability, faces a constantly evolving landscape of challenges and risks. In order to ensure stability of the broader financial system, governments and banks alike put a strong emphasis on measures improving risk management with the paramount goal of diminishing the risk of financial institutions facing financial distress.

Banking regulation significantly influences the sector's capacity to support the real economy. In the current context, banks are navigating a critical crossroad, being tasked with not only sustaining economic stability during uncertain times, but also driving the European economy's shift towards more sustainable and green methodologies. This role is particularly crucial in Europe, where banks intermediate about 70% of corporate borrowing¹. Consequently, when devising regulatory frameworks, it is imperative for authorities to thoughtfully assess possible implications for financial institutions and the broader trajectory of Europe's economic development.

This dissertation embarks on a comprehensive exploration of the complex phenomena of financial distress in the banking sector, with a particular focus on financial institutions in Europe. Beginning with the pivotal period of the Global Financial Crisis (GFC) in 2007 and ending in the upheavals of the COVID-19 pandemic, this study endeavours to analyse the interplay between internal corporate governance, financial ratios, regulatory policies, and the overarching economic environment shaping the stability of the banking sector.

This research is based on a wide range of academic studies and seeks to build upon and examine existing theories and findings in the field. It closely looks at important research, such as Chiaramonte and Casu's study on capital and liquidity ratios, Gillani et al.'s work on how companies are governed, and the impactful research by Baklouti, Gautier, and Affes on how governance affects financial distress. This thesis aims to strengthen and further broaden these studies, highlighting how governance methods and regulations can change in different economic environments.

The core of this analysis is an investigation of the internal mechanisms of corporate governance, such as board size, CEO-Chairman duality, committee structures, and the nuances of ownership concentration, and their effects on the likelihood of financial distress in banks. Additionally,

¹ [The EU Banking Regulatory Framework and its Impact on Banks and the Economy](#)

the study explores the impact of financial and regulatory factors, including capital requirements, on the financial robustness of banking institutions.

Utilizing a binary random effects logistic regression model, this dissertation aligns methodologically with the sophisticated approach of Baklouti et al., while expanding the analysis period to gain a broader insight into the complexities of the banking industry in crisis times. The outcome is an in-depth analysis that not only provides valuable understanding on financial distress in the banking sector but also offers actionable insights for bank managers and regulatory roles.

Eventually, this dissertation underscores the critical need for flexible and context-aware strategies and policies in the realms of banking governance and regulation. It aims to contribute valuable perspectives to scholars, industry professionals, and policy makers, aiding their ongoing efforts to navigate the nuanced and ever-evolving landscape of the financial sector.

The remainder of this paper is structured as follows: Section 2 gives an overview of relevant literature in the field and develops hypotheses of this study. Section 3 outlines the sample, data and variables, introduces the statistical methodology and displays key descriptive statistics. The regression results and comparison with the developed hypotheses are presented in section 4. Following, Section 5 covers the discussion of results. Limitations and further research in the field are presented in section 6 before the conclusion in section 7.

2 Literature Review & Hypothesis Development

2.1 Financial Distress

Financial distress in the banking industry is a multifaceted phenomenon, being defined as “... a condition where a company cannot meet or has difficulty paying off its official obligations to its creditors. The chance of financial distress increases when a firm has high fixed costs, illiquid assets or revenues sensitive to economic downturns” (Sofat, 2015).

For the banking industry, the path towards this condition is typically represented by a deterioration of certain indicators, such as an increase in non-performing loans, a decline in earnings, or deteriorating capital adequacy, each representing a red flag for impending financial instability (Chiaramonte & Casu, 2017). On corporate level, the impact of financial distress is extensive and oftentimes affects various stakeholders at once. Shareholders face the erosion of value, depositors must deal with the loss of confidence, and employees are confronted with job

insecurity – not to mention the systemic risk posed to the financial system at large (Allen & Carletti, 2013; Muhammad et al., 2018). To mitigate these risks, banks themselves have increasingly adopted sophisticated risk management strategies, including but not limited to enhanced internal governance structures, dynamic risk provisioning, and asset diversification (Rampini et al., 2020).

Regulatory bodies like the Federal Reserve (Fed) in the U.S. as well as the European Central Bank (ECB) or the European Banking Authority (EBA) in Europe play a pivotal role in monitoring and steering these indicators across the industry. For that reason, they developed a well-defined risk management framework for banks under their supervision, including mechanisms like capital adequacy requirements, stress testing, and in extreme cases even direct interventions (European Central Bank, 2023). This regulatory toolbox does not only aim to provide guidance and safeguard individual institutions as well as the broader financial system (Pilsma, 2013), but also improves consumer protection for single private individuals (Gaganis et al., 2020).

The Global Financial Crisis (GFC) of 2007/ 2008 served as a catalyst for a re-evaluation of the effectiveness of existing risk management practices and regulatory frameworks by competent authorities, leading to significant reforms like the Dodd-Frank Act in the United States and the Banking Union in the European Union (EU) (Young, 2013). As part of the Banking Union, the EU further established the Single Supervisory Mechanism (SSM), which led to much better capitalisation across the industry coming along with a decrease in exposure to liquidity risks and improved transparency for market participants and supervisors (Clifton et al., 2017). Furthermore, the Single Resolution Board (SRB) has been employed to manage financial distress in a predefined way, including measures like government bailouts, liquidations or forced mergers, as demonstrated with Banco Popular in Spain in 2017 (Economic Governance Support Unit - Lehmann, 2018). The improved robustness was demonstrated by banks' resilience through the COVID-19 crisis.

On the other hand, the described mechanisms often come with their own sets of challenges, such as moral hazard and the risk of creating 'too big to fail' institutions (Carmassi et al., 2010). From a geographical point of view, revenue growth, profitability and valuations of European banks have been falling behind those of US peers - partly explained by macroeconomic vulnerabilities and different business models, but with supervisory and regulatory requirements being significant contributing factors (Feng & Wang, 2018). Furthermore, regional European

differences in the implementation of capital requirements exist, often influenced by local economic conditions and regulatory philosophies (Teixeira et al., 2014). These requirements have a varying impact on banks of different sizes. While larger banks usually profit from the usage of economies of scale, smaller banks have the potential to higher marginal gains in scale (Berger & Humphrey, 1994; Gianni de Nicoló, 2001). In the context of risk taking, big banks often tend to run riskier strategies than smaller counterparts due to moral hazards (R. Gropp et al., 2011).

Concluding, the effective management of financial distress becomes increasingly important for economies globally – not merely as a regulatory requirement but as a critical necessity for ensuring the long-term stability and sustainability of the banking industry (Riegler, 2023). The varying impact for banks of different sizes leads to the first hypothesis.

H1: Larger banks are more likely to face financial distress compared to smaller banks due to the riskier strategies they pursue.

2.2 Agency Theory in the Context of the Banking Industry

Agency theory, a fundamental concept in corporate governance, addresses the challenges arising from the separation of ownership and control within a company. It focuses on the relationship between principals, being the shareholders, and agents, represented by the managers, emphasizing potential conflicts of interest and moral hazards (Grove et al., 2011).

In the banking industry, excessive risk-taking is one of the main agency problems arising due to the high level of leverage (Chen et al., 2017). The information advantage from holding private information on all sorts of customers and access to industry-specific safety net protections further incentivises risk shifting or inadequate risk management. To offset such incentives, regulatory bodies set minimum capital requirements, directly affecting banks' capital structures. Several studies, such as those of Berger & Bonaccorsi di Patti (2006) or R. E. ; Gropp & Heider (2009) highlight the role of regulatory minimum requirements and capital buffers as protective measures against potential agency costs. Recurring examinations and stress testing are further regulatory tools to reduce agency costs (Berger & Bonaccorsi di Patti, 2006).

On the other hand, there is a considerable number of scientific studies coming to a different conclusion about the relationship between agency theory and excessive risk taking in the banking industry. Whether managers make less riskier decisions in order to save their jobs or

decide to take on more risks to increase their personal compensation - if there is a trade-off between managerial incentives and stakeholder objectives, agency problems can still lead to severe financial consequences for institutions, even though corporate governance mechanisms in the industry are strongly distinct (Smith, 2010).

In summary, the findings in scientific literature generally favour the use of capital requirements to ensure a certain alignment between managerial interests and stakeholder objectives in order to reduce excessive risk taking and increase financial stability in the industry.

2.3 Internal Corporate Governance Mechanisms

In the contemporary banking landscape, corporate governance mechanisms have gained unprecedented importance, particularly in the aftermath of the GFC as well as in the context of sustainability, representing the ‘G’ when considering Environmental, Social, and Governance (ESG) factors (Bătae et al., 2020). Corporate Governance mechanisms are crucial for ensuring the stability and integrity of banks, especially within a European context, where regulatory scrutiny and stakeholder expectations are on a high level, yet increasing (Khan et al., 2022). In recent years, internal governance mechanisms have evolved significantly, strongly influenced by regulatory frameworks published as a consequence of the GFC, such as the Basel III requirements, or various guidelines released by the European Banking Authority (EBA) (Alexandre & Bouaiss, 2011).

Key factors influencing governance efficiency identified by several studies are board size as well as the deployment of relevant board committees. The bigger the board, the better it is equipped to oversee complex banking operations and make balanced decisions, particularly when being diverse in terms of gender and origin of its members (García-Meca et al., 2015). Additionally, specialized board committees for corporate governance, remuneration and nomination serve as critical checks and balances, ensuring transparency and accountability (Fernández Sánchez et al., 2020), eventually serving as robust internal controls.

H2a: An increased board size and the deployment of relevant committees decrease the likelihood of financial distress in banks.

Another important aspect regarding internal corporate governance is the ownership structure of publicly listed institutions. On the one hand, large shareholders, e.g. institutional investors, often bring expertise and exert pressure for performance and compliance, thereby enhancing governance quality (Köhler, 2012). They have a strong incentive to closely monitor company

performance and corresponding management decisions as they aim to protect their investment. On the other hand, having the power to influence desired changes and leading the management into investors' direction can also result in a moral hazard fostering excessive risk-taking (Anderson et al., 2000).

Moreover, Finkelstein & D'aveni (1994) find a negative relationship between corporate governance compliance and a dual role of the CEO simultaneously serving as chairman of their institution. Their findings are justified with the agency theory, stating that the CEO-Chairman duality promotes their entrenchment, eventually leading to CEO domination and reduced board monitoring.

H2b: High ownership concentration and a CEO-Chairman duality increase the likelihood of financial distress in banks.

Concluding, empirical evidence supports the efficiency of strong internal governance mechanisms. For instance, banks with robust governance structures have shown greater resilience during financial downturns, while those with poor governance have been more susceptible to financial distress (Ayadi et al., 2019; Baklouti et al., 2016). Generally, internal corporate governance mechanisms are not just regulatory mandates but essential frameworks significantly influencing the financial stability of a bank.

2.4 Capital Requirements and Investor Protection

Capital requirements serve as a cornerstone of external corporate governance mechanisms in the banking industry, tracing their origins to the need for ensuring financial stability and mitigating systemic risks from an independent external point of view (González et al., 2016).

Governing bodies in Europe like the Bank for International Settlements (BIS) and the European Central Bank have been instrumental in shaping these requirements, particularly in the aftermath of the Global Financial Crisis (GFC) (Moshirian, 2011). Milestones such as the Basel regulations, developed by the Basel Committee on Banking Supervision (BCBS) and the Capital Requirements Directive IV (CRD IV)/ Capital Requirements Regulation (CRR), have had a profound impact on external banking governance. The measures require banks to hold more and higher-quality capital as well as larger liquidity buffers to withstand potential economic downturns, leading to improved financial stability, risk mitigation, and consumer protection (King et al., 2011; Ojo, 2016). A safety net including additional capital buffers, measures allowing recovery or eventual resolution of a failing bank and multiple layers of funds

provide the financial instruments for such measures without risking taxpayers' money (King et al., 2011).

The level of investor protection is another crucial aspect influenced by capital requirements. By ensuring that banks maintain adequate capital buffers, investors are assured of the financial stability of the institution, thereby fostering trust, and encouraging investment (Imperatore & Trombetta, 2023). Although the level of investor protection influences the riskiness of investors' decisions, continuous investment and trust for financial institutions will still have a positive impact on liquidity and therefore decrease the likelihood of potential distress (Teixeira et al., 2020).

On the other hand, the structural reform of the banking system triggered by the Basel regulations in 2014 not only leads to a more robust financial sector, but also causes challenges for the institutions to face. Regulatory capital requirements come with additional costs for the banks and therefore negatively affects their cost income ratios. In turn, the increased cost base also affects shareholders, end-customers, and the economy as a whole since banks will eventually forward the associated expenses (Idowu et al., 2018). It shows that investor protection comes with its downsides in the current regulatory environment, where joint provision of financial services is prohibited showing economies of scope are not adequately taken into consideration.

Concluding, capital requirements are not merely regulatory tools but are essential for the holistic governance of banks, affecting financial stability of institutions and investor confidence alike, despite further room for improvement from a legislative point of view. This leads to hypothesis number 3:

H3: Increased capital adequacy decreases the likelihood of financial distress in banks.

2.5 The CAMEL Rating System and its applicability in Europe

The CAMEL Rating System, an acronym for Capital Adequacy, Asset Quality, Management Quality, Earnings, and Liquidity, has a notable history and evolved into a globally recognized framework for evaluating the financial health of banking institutions (Barr, 2002). Initially developed in the United States, the system employs a range of ratios and components to assess a bank's stability and risk profile (The Federal Reserve, 1997). The exact definitions of all relevant components of the system can be found chapter 3.3. For the purposes of this paper, the CAMEL Rating System will be preferred to models based on accounting information only, such

as Altman's Z-Score, due to the tailored approach developed for evaluating the total functionality of a bank (Ben Lahouel et al., 2022).

Today, the CAMEL system is widely applicable both in the U.S. and Europe, with regulatory bodies, like Fed and ECB, using it for supervisory purposes. The primary objectives of employing the CAMEL system include supervisory actions as well as adequate risk assessment and capital allocation. It serves as a tool for regulators to identify banks that may require closer monitoring or intervention and helps banks themselves in their internal risk management processes and procedures (Betz et al., 2013).

In terms of governance, the CAMEL system has had a significant impact, especially in the context of deciding for the needs of special help during the GFC by competent authorities. The system's comprehensive approach to evaluating various aspects of a bank's operations makes it a valuable tool for governance, enabling banks to identify weaknesses and take corrective actions proactively (Dang, 2011).

Therefore, the CAMEL Rating System represents a robust and versatile tool for assessing the financial health of banks. Its wide applicability across different regulatory environments underlines its utility and effectiveness in ensuring the stability and integrity of the banking sector and therefore is a fitting control component for the following aspired regression analysis.

3 Sample, Data & Methodology

The following section of this thesis presents a detailed description of the empirical framework employed to investigate the dynamics of financial distress within the banking industry. The methodology presented is closely aligned with the work of Baklouti et al. (2016). It gives an overview of the sample included in the analysis, explains the methodology behind the statistical model in detail and provides a deep dive into the variables used. To conclude, the descriptive statistics as well as the correlation between the independent variables are displayed.

3.1 Sample Selection

The data employed in this study covers a comprehensive 15-year period, starting with the GFC in 2007 spanning to the latest data available in 2021. This study segments the dataset into three distinct time slices for analytical comparison: The GFC period from 2007 to 2009, a recent three-year span from 2019 to 2021, and the entire period from 2007 to 2021. The sample comprises 57 publicly listed banks from the ten largest European economies to select countries

with similar macroeconomic environments, namely Germany, France, Italy, Spain, Netherlands, Poland, Belgium, Sweden, Ireland and Austria, following the approach of Ayadi et al. (2019).

The primary data source for this analysis is Refinitiv Eikon's Datastream, which provided the bulk of the required data. Ownership percentages and specific dates of bank failures, where applicable, were meticulously extracted manually from Refinitiv Eikon's Web Access. Supplementary macroeconomic information was sourced from World Bank databases. The data compilation process included the utilisation of Python to shape a long-format panel data table, structured for the subsequent econometric analysis using Stata 18. The panel data is of balanced nature, represented by a uniform set of observations across the 57 banks over the 15-year observation period, thereby facilitating a methodologically sound and comprehensive statistical analysis.

3.2 Model Specification

3.2.1 Methods, Assumptions and Robustness

The statistical model used in this analysis is a binary random effects logistic regression. The paramount variable of interest for this work is financial distress. It takes the value 1 if the respective bank shows signs of distress across the sample period and 0 otherwise. Financial distress does not only cover bankruptcy but is defined as shown in the subsequent chapter. The logistic regression approach was used due to several reasons: First being the binary nature of the dependent variable, as it models the probability of financial distress. Secondly, following the approach of Betz et al. (2013), the relationship between financial distress and the independent variables used in the model is assumably not linear because the frequency of banking crises and distress events in the industry rather correspond to a fat-tailed error distribution (van den Berg et al., 2008). Lastly, the goal of this study is to predict financial distress in banks based on governance factors and financial variables. With the help of a logistic regression, we result in the desired outcome indicating a change in the likelihood of financial distress with a one-unit change in the predictor variables.

As the focus of this study is to analyse the impact of selected governance variables on the likelihood of financial distress, these variables were a crucial factor when deciding for a random effects model. Key explanatory variables such as the CEO-Chairman duality or the governance committee dummies vary only very little to none over time. The low level of variation in many

of the explanatory variables represents the main reason a random effects model was chosen over a fixed effects model, which would omit time-invariant variables and therefore not serve a purpose when ensuring the best model fit. Finally, after running both random and fixed effects regressions, it became apparent that only the random effects regression generates robust results without omitting relevant independent variables.

In order to avoid reverse causality issues, the variable representing ownership concentration was lagged by one year in the panel data. This approach ensures the independent variable to not be affected by the dependent variable within the same period.

3.2.2 Regression Model

Financial distress (P) can be modelled as a function of independent variables being grouped by relevant governance factors, financial information represented by the CAMEL variables and country-specific macroeconomic indicators as well as bank size as controls. When including the necessary error term, the main regression equation shows as follows:

$$P_{ijt} = f [\text{GOVERNANCE}_{ijt}, \text{CAMEL}_{ijt}, \text{CONTROLS} (x_{it}, y_{jt})] + e_{ijt}$$

P_{ijt} represents the binary financial distress variable for bank i in country j at time t which is to be explained by the independent variables of the different groups.

The GOVERNANCE vector measures the variables representing the governance factors included in the analysis, namely the existence of committees for corporate governance (CGCOM_{ijt}), nomination (NOMCOM_{ijt}) and remuneration (REMCOM_{ijt}). Additional governance variables included in the vector represent board size (BRSIZE_{ijt}), concentration of equity ownership (BLOCK_{ijt}), and a dual role of CEO and Chairman of the respective banks (DUALITY_{ijt}).

Moreover, financial information relevant for the banking sector is represented by the CAMEL vector, including variables for capital adequacy (CAP_{ijt}), asset quality (ASSET_{ijt}), management quality (MGMT_{ijt}), earnings (ROA_{ijt}) and liquidity (LIQ_{ijt}).

Lastly, variables controlling for differences in size of the institutions (SIZE_{it}), as well as country-specific macroeconomic factors such as annual growth of the gross domestic product (GROWTH_{jt}) and the level of investor protection (PROTECTION_{jt}) in the respective economies are comprised in the vector CONTROLS.

3.3 Variables and Operationalisation

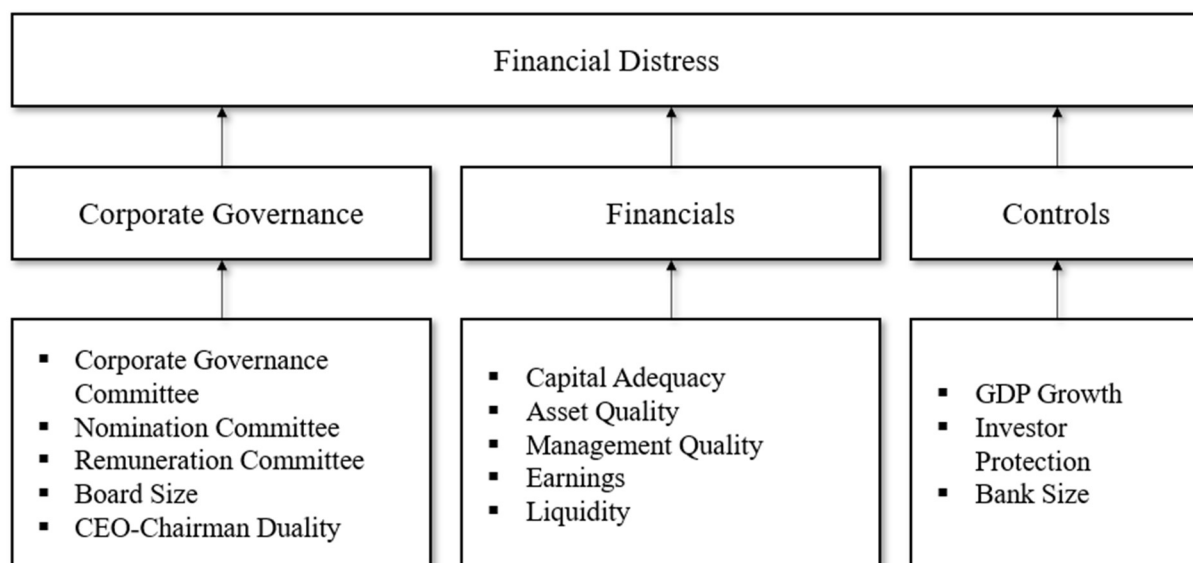


Figure 1: Variables Structure

3.3.1 Dependent Variable

The dependent variable of the analysis put forward is financial distress. It is defined as a binary variable taking the value 1 if the bank meets a predefined financial distress condition in the analysis period and zero otherwise. Following the criteria of Baklouti et al. (2016), the variable takes the value 1 if one of the following criteria is met:

- The operation of the bank is temporarily or permanently suspended,
- The bank is recapitalized or receives liquidity support from the monetary authority,
- The bank is merged with another bank because of financial difficulties (merger in distress),
- The bank is closed by the government,
- The ratio of non-performing loans to total loans for two consecutive years belongs to the fourth quartile of this report in the empirical distribution of the sample.

If a bank in the sample does not meet any of the criteria stated above during the analysis period, it is considered a bank without financial distress.

3.3.2 Corporate Governance Variables

Key factors in evaluating internal corporate governance levels of banks are integrated committees, board size, ownership concentration and CEO-Chairman duality. For this study,

following the approach of Baklouti et al., 2016, there are three committees selected that were analysed for their existence and included as a dummy variable in the data set taken from Refinitiv Eikon's Datastream.

Corporate Governance Committee

First being the corporate governance committee, which is appointed to uphold the principles of good corporate governance in the institution. Its tasks include the development and improvement of corporate governance principles, ensuring compliance with legal and regulatory requirements, overseeing bank's ethical standards and corporate social responsibility activities as well as the assessment and management of governance related risks.

Nomination Committee

The next important committee to be taken into consideration when evaluating the corporate governance performance of a bank is the nomination committee. Besides its core purpose of identifying and recommending adequate candidates for board positions, it is further responsible for ensuring nomination processes compliant with governance codes and regulatory requirements, overseeing the succession planning for key roles in the institution and promoting diversity and inclusion in the boardroom.

Remuneration Committee

Lastly, the remuneration committee is included in this analysis. The committee focuses on setting executive compensation and incentive plans being fair, competitive, and aligned with the bank's strategic goals. Again, the information is included as a binary variable indicating the prevalence of such committee in the sample.

Board Size

The board size is represented as the total number of board members at the end of the fiscal year taken from Refinitiv Eikon Datastream. Baklouti et al. (2016) did not include geographical or ethnical backgrounds into their analysis but focused on size only. The number of board members gives insights whether the board size has an impact on the likelihood of financial distress, potentially due to more diverse competency levels and backgrounds to oversee operations.

Ownership Concentration

Another important aspect of corporate governance is the ownership structure of the institution. To analyse the impact of concentrated ownership on the likelihood of financial distress, information on the percentage of common shares held by the largest shareholders of the respective banks is gathered for every year of the observation period from Refinitiv Eikon's web access. To retrieve meaningful information for the following analysis, the ownership concentration was derived as follows: It is the sum of all shareholders owning a share of at least 5% in the company. If there is no shareholder above this threshold, the share of the single largest shareholder, even if owning less than 5% of common stock, was added to the data set. After the data was gathered, the variable was lagged by one year for the analysis to prevent causality problems. In years where banks faced financial difficulties, it was often times observed that the ownership concentration increased tremendously due to distressed mergers or state interventions. To separate this effect of distressed ownership accumulation from usual ownership concentration, the lag was introduced in the data set.

CEO-Chairman Duality

The last variable included in the data set regarding corporate governance is representing the dual role of CEO and Chairman. It takes the value 1 if the role of the Chief Executive Officer and the Chairman of the Board are held by the same person and 0 otherwise. The goal is to observe the impact of concentration of power, potential conflicts of interest and governance effectiveness on financial distress.

3.3.3 CAMEL Variables

The CAMEL variables are included to represent financial ratios relevant for the banking sector, playing a crucial role when examining financial distress in the industry. The framework developed by the Fed is tailored to the financial services industry and therefore can be used as proxy for the financial health of the respective companies. The input parameters are extracted from Refinitiv Eikon's Datastream and then computed as follows:

- **Capital Adequacy:** $(\text{Equity Capital} + \text{Loan Loss Reserve Allowance}) / \text{Total Assets}$
- **Asset Quality:** $\text{Non-performing Loans} / \text{Total Loans}$
(Note: Derivation from the paper of Baklouti et al. (2016) as their approach of using the Loans/ Total Assets Ratio does not represent the asset quality of a bank adequately)
- **Management Quality:** $\text{Total Operating Expense} / \text{Total Assets}$
- **Earnings:** $\text{Net Income} / \text{Total Assets}$

- **Liquidity:** Liquid Assets/ Total Assets

3.3.4 Control Variables

Control variables are included in the analysis to account for differences in between banks and economies the banks are located in. The goal is to separate the effect of the independent variables on the dependent variable from that of the control variables.

The level of investor protection is retrieved from World Bank's Doing Business data base², and represents an index ranging from 0 to 30, computed as the sum of the extent of disclosure index, the extent of director liability index and the ease of shareholder suits index, all published by World Bank. The higher the value, the higher the level of investor protection in the respective economy.

The annual growth rate of the gross domestic product is again retrieved from World Bank, this time using the World Development Indicators data base³.

The bank size is represented by the natural logarithm of total assets. All relevant variables including name, type and method of measurement are comprised in the following table:

3.4 Descriptive Statistics and Correlation

After compiling all relevant data into a long format panel data table, the sample is divided into three sub samples. The following analyses are processed by STATA 18.

Table 2 shows the number of banks per country included in the sample, the share of banks facing financial distress and the respective average index of investor protection for the overall period. It becomes apparent that all banks in Ireland face some kind of financial distress in the overall sample period, followed by Spain and Belgium with 50%. Banks in Austria and the Netherlands did not face financial distress at all:

² [Doing Business | DataBank \(worldbank.org\)](https://data.worldbank.org/Doing-Business)

³ [World Development Indicators | DataBank \(worldbank.org\)](https://data.worldbank.org/World-Development-Indicators)

Country	Number of Banks	Share of Banks in Financial Distress	Level of Investor Protection
Austria	2	0%	16
Belgium	2	50%	21
France	4	25%	16
Germany	5	40%	15
Ireland	3	100%	26
Italy	13	38,5%	17
Netherlands	2	0%	13,7
Poland	8	12,5%	18,1
Spain	12	50%	16,7
Sweden	6	16,7%	19,8

Table 2: Overview of Banks and Levels of Investor Protection

The descriptive statistics of the regression analysis for all subsamples are presented in table 3. The overall sample spans an observation range with a minimum of 623 and a maximum of 855 observations. Comparing the numbers over the different time periods studied, the results generally reveal substantial variability. The proportion of banks experiencing financial distress in the aggregate sample is 21%. Appendix 8.3, Figure 2: Share of Banks in Distress over time (cum) displays the cumulative number of banks in distress, showing a sharp increase during and after the GFC with a lower distress rate in the years after.

The prevalence of corporate governance committees in the sample remains at a comparable level over the entire period, recorded at 31%, 34% and 33% for the overall, crisis, and recent period, respectively. The incidence of CEOs holding dual roles as chairmen shows a decrease from 27% during crisis to 8% recently, averaging at 14% across the entire sample (cf. Appendix 8.4, Figure 3: Development of CEO-Chairman Duality over time). Nomination and remuneration committees both demonstrate widespread adoption across the sample, with averages of 91% and 96%, both peaking in the recent period with 95% and 98% respectively. Regarding board size, a reduction is observed from an average of 15,4 members during the GFC to 12,4 in recent years, with the maximum board size diminishing from 28 to 24. Ownership concentration, defined as the sum of investors holding at least 5% of the company (or solely the largest shareholder if none holds 5% or more), averages 30,58%. The ratio has risen from 25,31% during the GFC to 34,24% in the recent period. Notably, these results

show a considerable variation, evidenced by standard deviations of 28,68% and 28,99%, respectively.

The ratio of total operating expenses to total assets shows a decrease from 5,63% (with a maximum of 18,07%) to 2,99% (maximum of 8,06%), averaging 4,16% throughout the sample period. Asset quality, indicated by the ratio of non-performing loans to total loans, has marginally declined from an average of 3,22% during the GFC to 4,95% in the recent period. Conversely, the liquidity ratio has improved from 2,51% to 9,11%. The return on assets, computed as net income divided by total assets, has experienced a slight reduction from 0,59% to 0,37% in recent times. Capital adequacy, measured as ratio of equity capital and loan loss reserve allowance to total assets, averages 8,97% across the sample, increasing from 7,37% during the GFC to 8,67% in the latest period. This suggests that banks maintained their highest capital buffers in the period between 2009 and 2019.

Bank size, represented by the natural logarithm of total assets, constantly increased over the examined period, with an overall average of 18,79. The growth rate of the gross domestic product averaged 1,28% throughout the sample, reaching annual values of 0,24% during the GFC and 0,76% in recent years, indicating that, similar to bank's capital buffers, economic growth was the highest between 2009 and 2019. Finally, the index of investor protection has incrementally increased over time, from an initial value of 17,12 to 18,21 (cf. Appendix 8.5, Figure 4: Index of Investor Protection over time).

Descriptive Statistics

Period	Overall (2007-2021)					GFC (2007-2009)					Recent (2019-2021)				
Variable	N	Mean	Std. Dev.	Min	Max	N	Mean	Std. Dev.	Min	Max	N	Mean	Std. Dev.	Min	Max
DISTRESS	855	0.21	0.41	0	1	171	0.06	0.24	0	1	171	0.33	0.47	0	1
CGCOM	645	0.31	0.46	0	1	110	0.34	0.48	0	1	146	0.33	0.47	0	1
DUALITY	644	0.14	0.35	0	1	110	0.27	0.45	0	1	145	0.08	0.27	0	1
NOMCOM	645	0.91	0.28	0	1	110	0.83	0.38	0	1	146	0.95	0.23	0	1
REMCOM	645	0.96	0.19	0	1	110	0.95	0.23	0	1	146	0.98	0.14	0	1
BRSIZE	644	13.86	4.82	2	30	109	15.44	4.56	6	28	146	12.4	4.16	5	24
BLOCK	855	30.64	30.20	0	100	171	25.31	28.68	0	100	171	34.24	28.99	0	100
MGMT	731	4.22	2.02	0.24	18.07	133	5.63	2.28	0.24	18.07	146	2.99	1.33	0.51	8.06
ASSET	659	6.67	7.09	0	55.18	119	3.22	2.47	0	12.73	140	4.95	7.17	0.3	55.18
LIQ	752	4.90	5.16	0	53.48	139	2.51	1.91	0	11.04	149	9.11	6.06	0.26	34.11
ROA	757	0.4	1.29	-16.69	6.55	139	0.59	0.87	-4.38	4.25	149	0.37	0.68	-2.73	2.52
CAP	623	8.97	4.46	-0.02	24.21	115	7.37	3.91	1.15	20.51	99	8.67	3.82	3.51	20.77
SIZE	757	18.79	1.67	11.86	21.93	139	18.78	1.59	15.19	21.64	149	18.93	1.68	13.6	21.93
GROWTH	855	1.28	3.82	-11.33	24.37	171	0.24	3.57	-5.69	7.06	171	0.76	5.94	-11.33	13.59
PROTECT	855	17.61	2.64	13	26	171	17.12	2.49	13	26	171	18.21	2.84	14	26

Table 3: Descriptive Statistics

After examining the descriptive statistics of the sample, the next step is to analyse the multicollinearity of the independent variables to ensure robust results in the following regression model. The Pearson Correlation matrix, as presented in table 4, methodically quantifies the linear relationships among the independent variables under study presenting the degree and direction of associations among these variables.

In the matrix, each cell represents the Pearson correlation coefficient between pairs of variables, with coefficients ranging from -1 to +1. A coefficient close to 1 either way implies a strong linear correlation, suggesting a change in one variable also causes a negative or positive change in another variable. High correlations above 0,8 might already indicate potential multicollinearity (Kennedy, 1998). If the coefficient is around 0, there is no linear correlation between the variables.

In the sample of this study, the observed correlations do not exceed +0,510 or -0,532, suggesting that multicollinearity among the independent variables is relatively subdued, thereby contributing to the robustness of the regression outcomes. Nevertheless, certain variable pairings, per definition, lead to higher correlation coefficients.

A notable correlation of 0,510 between the variables representing the nomination and remuneration committee underscores a moderately strong positive association, likely reflecting the interconnected roles and responsibilities these committees play in corporate governance mechanisms.

Further, asset quality exhibits a positive correlation of 0,399 with capital adequacy, indicating that an increase in the non-performing loan ratio necessitates an augmented capital buffer. On the other hand, it is moderately strong and negatively correlated (-0,520) with the size proxy, suggesting larger banks tend to have a more favourable non-performing loan ratio.

Additionally, the size variable is moderately strong inversely correlated with capital adequacy (-0,532), implying that larger banks maintain relatively smaller capital buffers.

Finally, the positive correlation of 0,335 between the index of investor protection and GDP growth likely reflects the symbiotic relationship between investor protection and economic growth. These macroeconomic control variables, moving in similar direction, may reflect the role of a stable investment environment in supporting economic development.

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) CGCOM	1.000													
(2) DUALITY	0.093	1.000												
(3) NOMCOM	0.191	0.011	1.000											
(4) REMCOM	0.141	0.035	0.510	1.000										
(5) BRSIZE	0.058	0.148	0.122	0.183	1.000									
(6) BLOCK	-0.158	-0.227	0.031	-0.029	-0.283	1.000								
(7) MGMT	0.013	0.129	-0.106	-0.035	0.067	0.023	1.000							
(8) ASSET	-0.195	-0.070	-0.190	-0.090	-0.248	-0.041	0.099	1.000						
(9) LIQ	0.076	-0.088	0.097	0.095	-0.145	0.054	-0.285	-0.160	1.000					
(10) ROA	-0.128	-0.033	-0.062	0.044	-0.150	0.176	-0.209	0.040	0.170	1.000				
(11) CAP	-0.192	-0.130	-0.132	-0.044	-0.270	0.276	0.118	0.399	-0.047	0.114	1.000			
(12) SIZE	0.216	0.107	0.189	0.152	0.209	-0.201	-0.154	-0.520	0.213	0.004	-0.532	1.000		
(13) GROWTH	-0.027	-0.118	0.024	-0.029	-0.206	0.275	-0.139	0.029	0.100	0.218	0.209	-0.047	1.000	
(14) PROTECT	0.085	-0.068	0.004	0.039	-0.280	0.282	-0.013	0.201	0.134	-0.050	0.313	-0.115	0.335	1.000

Table 4: Pearson's Correlation Matrix

4 Data Analysis and Empirical Results

The regression analysis conducted across the three time slices reveals several significant relationships between the selected independent variables and the incidence of financial distress among the banks covered by the sample. The theoretical hypotheses developed in chapter 2 could not consistently be supported by the empirical results, leading to further interesting insights into the industry's development over time and the importance of adequate banking regulation.

4.1 Regression Outputs for Period Estimates

By analysing the overall regression outcomes first, it becomes apparent that the χ^2 -value is positive and significant in the overall and recent period. This suggests the model with the explanatory variables fits the data significantly better than a model without them, meaning the predictors collectively have a significant effect. However, during the GFC, the χ^2 -value drops and is not significant anymore, likely indicating model estimation issues or peculiarities of the data during this tumultuous period.

In the overall sample, it shows that neither the prevalence of analysed committees nor the dual role of CEO and chairman have a significant influence on the financial distress variable. The remaining governance variables, being board size and ownership concentration exhibit significant results on a 5% level. Board size has a negative coefficient, indicating that larger boards lead to increased financial distress. Conversely, higher ownership concentration with a coefficient of 0,059 seems to slightly increase the likelihood of financial distress. Looking at the CAMEL variables, negative coefficients significant on a 1% level can be derived for management quality and earnings. This suggests that banks with higher earnings and, per definition of management quality, higher operating expenses are protective against distress. Further, capital adequacy is significant on a 5% level. The positive coefficient of 0,302 indicates that better capitalized banks face a slightly increased probability of distress. The same goes for the control index of investor protection, which is significant on a 10% level and resulted in a positive coefficient of 0,843.

During the Global Financial Crisis from 2007 to 2009, CEO-Chairman duality has a significant positive coefficient on a 5% level, indicating that banks with CEOs who also serve as chairmen were more likely to face distress. Conversely, the prevalence of remuneration committees has a significant negative coefficient, which may imply that the presence of such committee plays a role in mitigating distress risks. Ownership concentration remains positively associated with distress on a 5% level, suggesting it continued to increase the likelihood of distress. The analysis yielded a similar result for the capital adequacy and the index of investor protection on a 10% and 5% level, respectively. Bank size has a positive coefficient on a 10% significance level, suggesting that larger banks are more likely to face financial distress. Finally, it should be mentioned that the significance of the constant indicates an estimation issue, which is in line with the trajectory of χ^2 as described above.

The analysis of the more recent period from 2019 to 2021 shows that none of the governance variables yields a significant result anymore. The nomination committee variable is omitted because it predicted failure perfectly whereas the variable representing the remuneration committee is dropped due to perfect collinearity. Looking at the CAMEL variables, management quality is significant on a 10% level and negative, reinforcing the idea of increased operating expenses leading to decreased distress likelihood. Asset quality and earnings are significant on a 5% level and yield negative coefficients, suggesting that more profitable banks with lower non-performing loan ratios are less likely to experience distress. Conversely to the GFC period, the analysis in this period suggests that larger banks are less likely to face financial distress. Finally, the index of investor protection continues to be positively correlated with distress, indicating a consistent association across different periods with increasing significance.

Random-effects Logistic Regression

Period	Overall (2007-2021)		GFC (2007-2009)		Recent (2019-2021)	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
CGCOM	2.139	2.166	0.142	2.057	1.817	4.048
DUALITY	-2.082	1.805	5.359**	2.554	-6.1	5.458
NOMCOM	7.388	4.584	2.561	2.533	0	omitted
REMCOM	-0.739	5.593	-6.99*	3.716	0	omitted
BRSIZE	-0.421**	0.194	-0.201	0.168	0.68	0.641
BLOCK	0.059**	0.028	0.155**	0.063	0.056	0.099
MGMT	-1.758***	0.554	-0.257	0.265	-2.798*	1.538
ASSET	0.105	0.076	0.002	0.05	0.23**	0.117
LIQ	0.234	0.189	-2.151	1.312	-0.239	0.276
ROA	-3.298***	0.797	-2.358	1.628	-4.743**	2.412
CAP	0.302**	0.153	1.509*	0.809	0.735	0.632
SIZE	-1.421	0.891	1.946*	1.004	-2.827**	1.307
GROWTH	-0.002	0.114	-0.169	0.264	0.047	0.163
PROTECTION	0.843*	0.442	0.948**	0.4	1.933***	0.61
Constant	-8.138	19.574	-61.16**	27.865	19.866	29.451
Insig2u	5.429	0.338	-12.659	761.867	4.332	0.679
Mean dependent var	0.199		0.097		0.207	
Number of obs	543		93		92	
Chi-square	70.827		10.132		24.168	
Prob > chi2	0.000		0.752		0.019	

Table 5: Regression Outputs

4.2 Comparison of Empirical Results and Theoretical Hypotheses

Overall, the significant findings across the different time slices underline the evolving nature of factors contributing to financial stability in the banking industry, particularly stressing the critical importance of sound management practices, adequate governance structures and the regulatory environment in mitigating the risk of financial distress. When comparing the regression results with the hypotheses developed in chapter 2, deep dives into the three time slices lead to different conclusions:

H1: Larger banks are more likely to face financial distress compared to smaller banks due to the riskier strategies they pursue.

The results representing the impact of bank size on the likelihood of financial distress lead to different directions. Over the entire sample period, the size coefficient is negative but not statistically significant. In the period during the global financial crisis, it yields a positive value of 1,946 and is significant on a 10% level. However, in the more recent period, the algebraic sign changes and the coefficient now yields a negative -2,827, significant on a 5% level. The results suggest that the relationship between bank size and financial distress is complex and varies over time. While the hypothesis holds true during the GFC, indicating that larger banks are more likely to face distress, possibly due to the riskier strategies they pursue, the overall and recent periods do not support this hypothesis. Contrarily, larger banks seem to either have no significant difference in distress likelihood or are less likely to face distress, possibly due to improved risk management practices or other factors not captured by the size variable alone.

H2a: An increased board size and the deployment of relevant committees decrease the likelihood of financial distress in banks.

Looking at the effect of board size, the regression results again indicate different results across the different time periods. In the overall period from 2007 to 2021, the findings support the hypothesis that larger boards are associated with a lower likelihood of distress. However, this relationship is not statistically evident during the specific periods of the GFC and recent years.

The deployment of committees only results in one statistically significant outcome, being the prevalence of the remuneration committee during the GFC with a coefficient of -6,99, significant on a 10% level. This result implies deploying a remuneration committee in crisis times leads to decreased risks of facing financial distress. However, the results for the other

committees and time slices show in different directions without being statistically significant which does not allow for an unambiguous conclusion.

H2b: High ownership concentration and a CEO-Chairman duality increase the likelihood of financial distress in banks.

The investigation of the relationship between ownership concentration and financial distress reveals findings being somewhat counterintuitive to the initial hypothesis. Coefficients for all time slices yield positive results, being statistically significant on a 5% level in the overall sample as well as during the GFC. Even though the result is not significant for the more recent period, the results imply that in contrast to the expected risk elevation, higher ownership concentration can be associated with a reduced likelihood of financial distress.

For the relationship between the CEO-Chairman duality and financial distress in banks the regression analysis yields results varying considerably across the different time slices. During the global financial crisis, the coefficient of 5,359 is statistically significant on a 5% level. This underscores the hypothesis of governance weaknesses being associated with the dual role, such as reduced board independence and potential conflicts of interest, eventually resulting in an increased likelihood of financial distress. Contrarily, the overall as well as the more recent time slices do not support the hypothesis as the respective coefficients yield negative results, even though being not statistically significant. Concluding, the results do not consistently support the hypothesis that a CEO-Chairman duality increases the likelihood of financial distress across all periods.

H3: Increased capital adequacy decreases the likelihood of financial distress in banks.

The empirical results covering the relationship between capital adequacy and financial distress in the banking sector do not support the initial hypothesis. The coefficients are positive across all time slices, being statistically significant on a 5% level for the overall period and on a 10% level for the period covering the global financial crisis, while there is no significance found for the more recent period. These results indicate a positive relationship between capital adequacy and the likelihood of financial distress, which can be attributed to several factors. Higher capital requirements, while theoretically introduced as a safeguard, might lead to considerable financial and operational constraints on banks, particularly in times of economic challenges. Additionally, banks facing higher capital requirements might engage in riskier strategies to maintain their profitability while increasing their likelihood of distress. Furthermore, additional capital buffers imposed by regulatory bodies or banks themselves might also reflect a response

to perceived risks within the banking sector. These results underscore the complexity of regulatory impacts on bank stability. While adequate capital requirements are intended as protective measure, their practical impact may vary depending on various different factors, including banks' operational environment, their risk management practices as well as the broader economic and regulatory context.

Concluding, the data analysis reveals that the impact of governance structures like board size, CEO-Chairman duality, and ownership concentration on financial distress is not static and varies across different economic periods. Key findings include the counterintuitive positive correlation between higher ownership concentration as well as increased capital buffers and increased financial distress, and a significant impact of CEO-Chairman duality on distress during the Global Financial Crisis. The results also show significant shifts in the impact of various factors, including bank size and capital adequacy, across different periods.

5 Discussion

With the following part, the thesis dives into the discussion and findings derived from the empirical analysis of the various determinants covered, particularly corporate governance factors, financial ratios, and macroeconomic factors. The objective is to unravel the complex dynamics and relationships underscoring financial stability or distress in banks by contextualizing the findings within the broader spectrum of financial economics and banking regulation.

5.1 Key Findings

The empirical results of the governance factors analysed reveal a multifaceted landscape, characterised by temporal variations and dynamic developments, particularly during periods of crises.

During the global financial crisis, the significance of governance variables was markedly pronounced. Banks were facing an increased sensitivity to financial distress in relation to certain governance structures, particularly noted in the case of CEO-Chairman duality. However, in more recent years, there has been a noticeable shift, initiated by the implementation of regulatory frameworks like the Basel requirements forcing banks to increase their focus on corporate governance. As a consequence, financial institutions have been required to improve capital and liquidity ratios, increase transparency and disclosure standards or strengthen their

board diversity. The descriptives show that the share of banks having implemented relevant committees generally increased whereas only 8% of CEOs were still chairman at the same time. This transition underscores a general improvement in corporate governance across the banking sector, likely triggered by intensified regulatory oversight and banks' increased efforts to enhance corporate governance standards.

Interestingly, the more recent period from 2019 to 2021, even though covering the COVID-19 pandemic, did not exhibit significant relationships between the analysed corporate governance factors and financial distress anymore. Despite the profound impact of the pandemic on the banking sector, underscored by a distress ratio of 33% in the sample period, this result implies that factors other than traditional corporate governance mechanisms have played a significant role in influencing banks' financial health during this period.

In contrast to the initial hypothesis, ownership concentration emerged as a pivotal factor, with a higher concentration correlating with a decreased likelihood of financial distress. This phenomenon might be attributed to more cautious risk management practices and enhanced governance oversight, as major shareholders with significant stakes are likely to advocate for risk-averse strategies in crisis times and exert greater influence on managerial decisions. Such concentrated ownership structures could therefore serve as a protection against financial instability, enhancing the overall financial health of banks.

Additionally, the analysis revealed that larger board sizes are associated with decreased financial distress for the overall period. This finding aligns with the hypothesis that larger boards, likely offering an improved diversity of expertise and perspectives, contribute to governance quality positively and thus bolster bank stability.

The examination of the CAMEL variables offers valuable insights for risk management practices in the banking industry, particularly in relation to management quality, earnings, and capital adequacy. Not only do they challenge conventional financial theories but, again, shed light on the dynamics of financial stability in banks.

The analysis indicates that higher operating expenses, represented by the variable management quality, contrarily to common expectations, are associated with a decreased likelihood of financial distress. Under normal circumstances, superior management quality, reflected in a lower ratio of operating expenses to total assets, is linked to better firm performance. However, the findings imply a more complex relationship in distress management. It appears that banks with higher operating expenses might have invested these funds towards programs fostering

growth, improving operational efficiency, or ensuring regulatory compliance. While increasing short-term expenses, such investments potentially contribute to long-term stability of the respective institutions. This suggests that, in the context of financial distress management, higher expenses may not necessarily denote inefficiency but rather strategic investments in increasingly important sustainable banking practices.

Consistent with financial theory, the study reveals that banks with higher profitability demonstrate a lower likelihood of encountering financial distress. This finding underscores the fundamental role of earnings as a buffer against financial instability. The more profitable a bank is, the better it is equipped to absorb shocks, manage risks efficiently, and maintain resilience in crisis times. The positive impact of profitability on financial stability reaffirms the importance of robust revenue-generating strategies.

The relationship between capital adequacy and financial distress presents a counterintuitive picture, especially during the global financial crisis. In contrast to the protective intent of higher capital buffers by the regulatory bodies, the analysis suggests that increased capital requirements are correlated with an elevated likelihood of financial distress. This outcome might reflect the multifaceted and complex impact of regulatory mandates on bank operations. On the one hand, higher capital requirements aim to protect banks against potential risks. On the other hand, they may inadvertently incentivise banks to adopt riskier strategies to maintain profitability under increased capital constraints. This highlights the fine line regulators must strike in setting adequate capital requirements. They have to ensure sufficient capital buffers to protect against risks while avoiding undue burdens on banks' operational and strategic flexibility.

Looking at the impact of the control variables, it becomes apparent that the size variable can be taken as a blueprint for many of the results found in the empirical analysis. During the Global Financial Crisis, results indicate that larger banks are more vulnerable to financial distress whereas in the more recent period, the relationship becomes significantly negative. There is no consistent direction of impact to be observed, which is counterintuitive to the initial theoretical hypothesis. The impact of various factors on financial distress is not static but varies over time. This variation highlights the importance of considering the economic, regulatory, and market contexts when assessing the risk of financial distress.

The findings for the index of investor protection again show a consistent direction of effect. The direction of effect is again counterintuitive but in line with the findings regarding capital

adequacy. The results indicate that banks operating in environments with stronger investor protection are associated with an increased likelihood of financial distress. Similar to the effect of capital adequacy, it shows that stringent regulatory and protective measures, while aimed at safeguarding investors and further stakeholders, could impose operational and compliance challenges on banks, eventually increasing distress risk.

5.2 Comparison with Previous Literature

In the area of financial distress within the banking sector, this thesis builds upon important works in the field. As presented in chapter 2, it shows that there is a lot of scientific papers published on specific topics but rather few covering a broader range of determinants with the goal to derive practical implications for the industry.

Chiaramonte and Casu's exploration of capital and liquidity ratios (Chiaramonte & Casu, 2017) highlights the crucial role these factors play in predicting financial distress, similar to the findings of this study. The emphasis on liquidity and capital adequacy is particularly relevant, considering the complex relationship these factors have with financial distress, as found in the current analysis. The thesis extends Chiaramonte and Casu's work by offering a deeper dive into how regulatory changes and evolving economic conditions impact these relationships.

Muhammad et al.'s review of corporate governance practices in predicting financial distress (Muhammad et al., 2018) also provides important ideas for this thesis. Their work underscores the significance of governance mechanisms in financial stability, a topic this study elaborates on by demonstrating how these mechanisms' effectiveness can vary over time and in different economic contexts. This thesis complements their findings by showing that while governance structures like board size and CEO-Chairman duality are significant, their impact on financial distress is not static but subject to temporal shifts and regulatory changes.

However, it is Baklouti, Gautier, and Affes' (Baklouti et al., 2016) comprehensive analysis that served as cornerstone for this work, delivering the idea for the methodology and variable selection. Their approach of examining governance factors in the banking industry, particularly in the context of financial distress, serves as a great benchmark. This dissertation extends their work by delving deeper into the dynamic nature of governance factors across different time periods, particularly focussing on possible implications to be derived for

management and regulatory bodies. By building on Baklouti et al.'s foundational research, this thesis not only reaffirms some of their findings but also demonstrates the evolving nature of financial distress in the banking sector, influenced by a complex interplay of internal governance, regulatory frameworks, and broader economic conditions.

5.3 Theoretical Implications

The empirical findings from this thesis offer interesting theoretical implications for the understanding of corporate governance mechanisms in the banking sector against the backdrop of temporal and contextual dynamics and the challenges faced by regulators in context with agency theory.

Corporate governance mechanisms play a fundamental role in the banking sector, shaping the overall health and performance of an institution, ensuring responsible and ethical management aligned with the long-term interests of all stakeholders.

However, the identified changing impact of governance factors, for instance CEO-Chairman duality or board size, over time, particularly in response to crises, highlights the importance of considering the temporal and contextual aspects in corporate governance theory. What works in one period or under certain circumstances may not be effective in another anymore. This variability challenges the approach of universally applicable governance models and underscores the need for governance structures being flexible and responsive to changing circumstances.

Additionally, the shift in corporate governance practices over time also reflects a broader understanding of risk management in the banking sector. The transition to more diversified and accurate governance models indicates an increasing awareness of the need for robust mechanisms to manage and mitigate risk, particularly in volatile market environments.

Agency theory, in the context of the banking industry, traditionally emphasizes the importance of effective management and control structures within banks to ensure that managerial decisions and shareholder interests are aligned.

The counterintuitive relationship observed between higher capital adequacy and an increased likelihood of financial distress challenges conventional agency theory assumptions. Typically, increased capital buffers are seen as one way to align the interests of managers and shareholders by providing a cushion against risk. However, the empirical findings suggest that higher capital

requirements intended to protect banks might inadvertently pressure managers to engage in riskier behaviour to achieve desired profitability levels. This implies that regulatory measures, although well-intentioned, can sometimes create unintended agency problems by altering the risk appetite of bank managers.

Similarly, the results for the relationship between stronger investor protection and increased financial distress suggest that in environments with stringent protection, banks might face operational and compliance challenges that, again, could unintentionally increase distress risk. This indicates a paradox where mechanisms designed to protect investors and reduce agency conflicts may impose burdens on banks that counterintuitively increase their vulnerability.

These theoretical findings suggest a need for a distinct application of agency theory in the banking sector, recognising that governance mechanisms and regulatory frameworks, while being an essential tool protecting the industry, can have complex effects on bank stability and performance. They highlight the fragile balance regulators and banks must maintain in designing and implementing governance structures and capital regulations. Understanding these dynamics is crucial for developing more effective strategies to mitigate agency conflicts and enhance financial stability in the industry.

5.4 Practical Implications

Moving on from the theoretical implications, the empirical findings of this thesis also offer thought-provoking ideas for practical implications regarding both regulatory frameworks and bank-specific strategies to protect the industry against financial distress.

Firstly, Policymakers in Europe should intensify their efforts to complete the banking and capital markets union, with a focus on capital requirements balanced with the operational realities of banks. Given the varying impact of Basel III across the EU, it is apparent that the regulation might not be uniformly suitable for all member states, considering the different stages of development and specific needs. As Basel III and further upcoming regulations are being fully implemented, it is crucial to ensure that neither banks from certain EU states nor EU banks in general, e.g., when compared to US peers, are disadvantaged. The result of increased capital buffers correlating with financial distress suggests that regulators might need to recalibrate capital ratios or introduce more flexible and risk-based capital requirements. Over-regulation could potentially increase distress risks, implying the need for equilibrium between regulatory initiatives and financial stability.

Secondly, from a bank-specific perspective, the findings highlight the importance of adaptability in banks. Given the variability in the impact of different factors across time periods, banks need to develop flexible and responsive strategies adjusting to evolving economic conditions and regulatory changes. This adaptability is key, not only in managing risks but also in taking advantage of opportunities presented by a dynamic economic landscape. The association between higher ownership concentration and decreased financial distress suggests that banks might benefit from strategies promoting concentrated ownership. This could involve even closer investor relations with major shareholders and an increased focus on profitability. Strategic foresight adaptability, in combination with an understanding of the changing regulatory landscape and close investor relations, will be crucial for banks to maintain resilience and a competitive advantage in the fast-paced financial sector.

In summary, the practical implications highlight the importance of a differentiated and adaptive approach in both regulatory practices and bank-specific strategies. For regulators, this involves balancing the objectives of investor protection and financial stability, while ensuring that regulatory frameworks are flexibly tailored to the specific needs of different regions and institutions. For banks, the focus should be on fostering concentrated ownership where beneficial, and developing flexible strategies that can respond effectively to changes in the economic and regulatory environment.

6 Limitations and Further Research

This dissertation serves as a basis of understanding the relationship between corporate governance and financial distress risk of European commercial banks, while enhancing previous studies in the field as much as possible. However, it is restricted to some limitations that are presented with suggestions for further research in the following paragraph.

One key limitation lies in the model specification and variable selection of the empirical analysis. The current choice of statistical model and many static variables may not cover all relevant factors influencing financial distress and alternative specifications could yield different insights. Additionally, the empirical findings, particularly amid the variations across the different time slices, might not fully be captured in the current analysis due to a lack of generalizability across various supervisory systems, economic contexts, or periods.

Another significant constraint is related to data as there is a strong reliance on information available in Refinitiv Eikon in this work. Particularly for smaller economies and smaller institutions, it was hard to find the data needed to pursue the empirical analysis, which is why

it was limited to the largest economies in Europe, yet many samples had to be dropped due to incomplete data. The limited access to more detailed bank internal information might not fully reflect the complexities of financial distress across the industry.

Furthermore, the quantitative approach using panel data might overlook crucial qualitative aspects such as corporate culture, leadership styles or nuances of the regulatory environment, all of which can be important factors when analysing the likelihood of financial distress.

Future research could build on these foundations by changing or expanding model variables and exploring alternative model specifications to gain a more holistic understanding of financial distress determinants. Complementing the quantitative analysis with qualitative methods, e.g. expert interviews, could provide even deeper insights into the underlying corporate governance mechanisms. Studies covering different geographical areas would be beneficial in understanding how different banking systems and regulatory environments affect financial distress. Investigating how banks' crisis management strategies during economic downturns influence their recovery and stability could yield even more important insights.

By exploring these areas, future research can significantly contribute to our understanding of financial distress in the banking sector, supporting the development of more effective management and regulatory strategies.

7 Conclusion

The empirical analysis put forth in this dissertation examines the impact of corporate governance mechanisms and financial ratios on the distress probability of publicly listed European commercial banks over a time span of 15 years. The goal was to include a more extensive time frame than other relevant studies before while covering a broad set of determinants at the same time.

The results offer a multifaceted view of financial distress within the banking industry, addressing various dimensions from corporate governance mechanisms to the efficacy of regulatory frameworks. The study's findings reveal the complexity and evolving nature of financial distress, influenced by a number of factors including internal governance structures, regulatory environments, and broader economic conditions.

The thesis underscores the dynamic interplay between governance factors and financial distress, particularly during periods of crises. While certain governance structures, such as a CEO-Chairman duality, showed a significant impact on financial distress during the Global Financial

Crisis, recent years have seen a shift in this relationship, possibly due to enhanced regulatory oversight and a general improvement in corporate governance standards. This evolution reflects the importance of adaptive governance practices in the face of changing economic and regulatory landscapes.

Ownership concentration, contrary to initial hypotheses, emerged as a protective factor against financial distress. This suggests that concentrated ownership might lead to more prudent risk management practices and enhanced governance oversight. Similarly, larger board sizes were associated with decreased financial distress, indicating the value of diverse expertise and perspectives in governance.

The role of capital adequacy and investor protection also presented intriguing insights. The counterintuitive relationship between higher capital adequacy as well as increased levels of investor protection and increased financial distress suggests the complexity of regulatory impacts on banks. These findings contribute to the broader discourse on banking stability, emphasizing the need for nuanced approaches in assessing the risk profiles of banks and formulating regulatory policies. It highlights the challenge for regulators in balancing the need for sufficient capital buffers while avoiding constraining banks' operational flexibility.

For the banking industry, the analysis points to the importance of considering temporal effects and regulatory changes when developing flexible and responsive risk management strategies to adjust to the “constantly evolving landscape of challenges and risks” mentioned in the introduction of this work. Adaptability as well as close investor relations will be key factors to gain a competitive edge in the future.

In conclusion, this thesis contributes to the understanding of financial distress in the banking sector, highlighting the interplay between internal governance structures, regulatory frameworks, and economic conditions. The findings provide a foundation for future research to build upon, with the potential to deepen our comprehension of this complex phenomenon and guide the development of more effective management and regulatory strategies in the banking industry.

8 Appendix

8.1 Table 1: Overview of Variables and Operationalisation

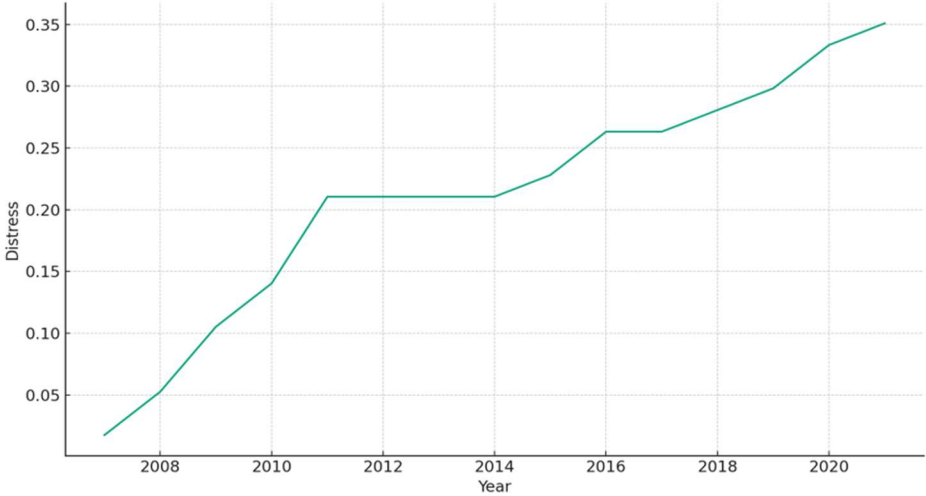
Variable	Variable Name	Type of Variable	Measurement
Financial Distress	Distress	Dependent Variable (binary)	= 1 if the bank meets predefined distress criteria and 0 otherwise
Corporate Governance Committee	CGCOM	Independent Variable (binary)	= 1 if such committee exists and 0 otherwise
Nomination Committee	NOMCOM	Independent Variable (binary)	= 1 if such committee exists and 0 otherwise
Remuneration Committee	REMCOM	Independent Variable (binary)	= 1 if such committee exists and 0 otherwise
Board Size	BRSIZE	Independent Variable	Total number of board members
Ownership Concentration	BLOCK	Independent Variable	Sum of all shareholders owning at least 5% of common shares. Percentage of largest shareholder if all are below 5%.
CEO-Chairman Duality	DUALITY	Independent Variable (binary)	= 1 if CEO and Chairman roles are held by the same person and 0 otherwise
Capital Adequacy	CAP	Independent Variable	$(\text{Equity Capital} + \text{Loan Loss Reserve Allowance}) / \text{Total Assets}$
Asset Quality	ASSET	Independent Variable	$\text{Non-performing Loans} / \text{Total Loans}$
Management Quality	MGMT	Independent Variable	$\text{Total Operating Expense} / \text{Total Assets}$
Earnings	ROA	Independent Variable	$\text{Net Income} / \text{Total Assets}$

Liquidity	LIQ	Independent Variable	Liquid Assets/ Total Assets
Bank Size	SIZE	Control Variable	Natural Logarithm of Total Assets
GDP Growth	GROWTH	Control Variable	Annual growth rate of the gross domestic product
Level of Investor Protection	PROTECTION	Control Variable	Index ranging from 0 to 30 – the higher the better the investor protection

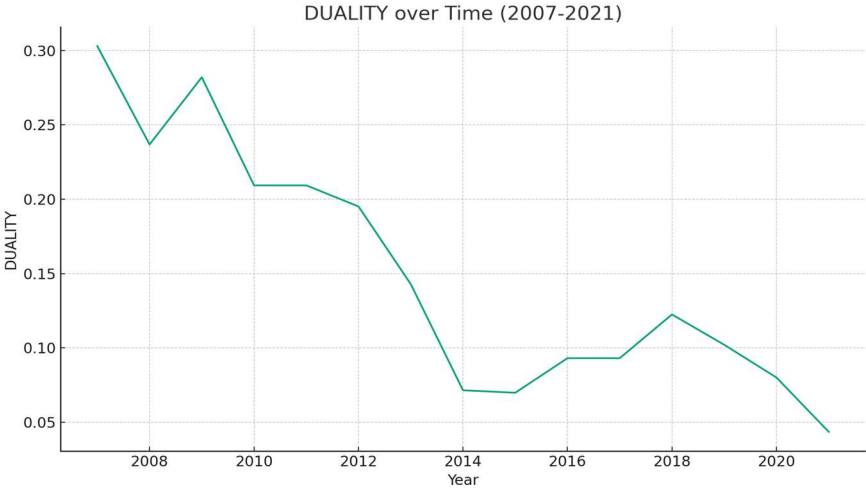
8.2 Table 3: Descriptive Statistics

Variable	Overall (2007-2021)					GFC (2007-2009)					Recent (2019-2021)				
	N	Mean	Std. Dev.	Min	Max	N	Mean	Std. Dev.	Min	Max	N	Mean	Std. Dev.	Min	Max
DISTRESS	855	0.21	0.41	0	1	171	0.06	0.24	0	1	171	0.33	0.47	0	1
CGCOM	645	0.31	0.46	0	1	110	0.34	0.48	0	1	146	0.33	0.47	0	1
DUALITY	644	0.14	0.35	0	1	110	0.27	0.45	0	1	145	0.08	0.27	0	1
NOMCOM	645	0.91	0.28	0	1	110	0.83	0.38	0	1	146	0.95	0.23	0	1
REMCOM	645	0.96	0.19	0	1	110	0.95	0.23	0	1	146	0.98	0.14	0	1
BRSIZE	644	13.86	4.82	2	30	109	15.44	4.56	6	28	146	12.4	4.16	5	24
BLOCK	855	30.64	30.20	0	100	171	25.31	28.68	0	100	171	34.24	28.99	0	100
MGMT	731	4.22	2.02	0.24	18.07	133	5.63	2.28	0.24	18.07	146	2.99	1.33	0.51	8.06
ASSET	659	6.67	7.09	0	55.18	119	3.22	2.47	0	12.73	140	4.95	7.17	0.3	55.18
LIQ	752	4.90	5.16	0	53.48	139	2.51	1.91	0	11.04	149	9.11	6.06	0.26	34.11
ROA	757	0.4	1.29	-16.69	6.55	139	0.59	0.87	-4.38	4.25	149	0.37	0.68	-2.73	2.52
CAP	623	8.97	4.46	-0.02	24.21	115	7.37	3.91	1.15	20.51	99	8.67	3.82	3.51	20.77
SIZE	757	18.79	1.67	11.86	21.93	139	18.78	1.59	15.19	21.64	149	18.93	1.68	13.6	21.93
GROWTH	855	1.28	3.82	-11.33	24.37	171	0.24	3.57	-5.69	7.06	171	0.76	5.94	-11.33	13.59
PROTECT	855	17.61	2.64	13	26	171	17.12	2.49	13	26	171	18.21	2.84	14	26

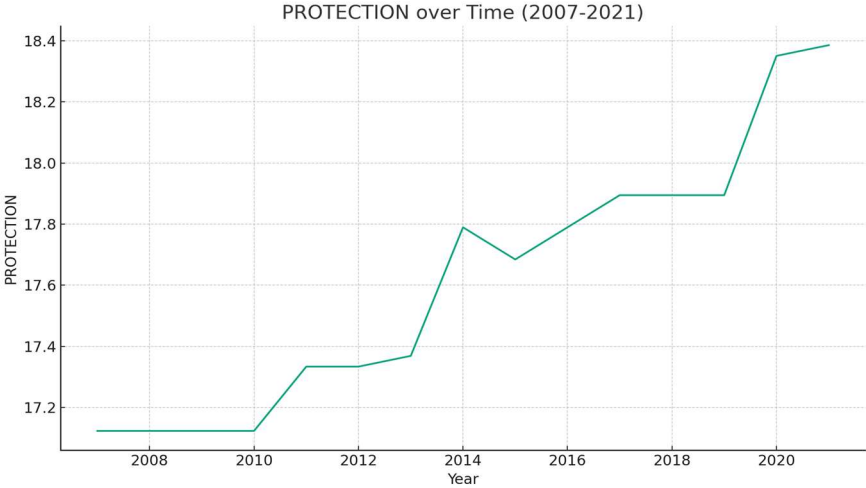
8.3 Figure 2: Share of Banks in Distress over time (cum)



8.4 Figure 3: Development of CEO-Chairman Duality over time



8.5 Figure 4: Index of Investor Protection over time



8.6 Table 4: Pearson's Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) CGCOM	1.000													
(2) DUALITY	0.093	1.000												
(3) NOMCOM	0.191	0.011	1.000											
(4) REMCOM	0.141	0.035	0.510	1.000										
(5) BRSIZE	0.058	0.148	0.122	0.183	1.000									
(6) BLOCK	-0.158	-0.227	0.031	-0.029	-0.283	1.000								
(7) MGMT	0.013	0.129	-0.106	-0.035	0.067	0.023	1.000							
(8) ASSET	-0.195	-0.070	-0.190	-0.090	-0.248	-0.041	0.099	1.000						
(9) LIQ	0.076	-0.088	0.097	0.095	-0.145	0.054	-0.285	-0.160	1.000					
(10) ROA	-0.128	-0.033	-0.062	0.044	-0.150	0.176	-0.209	0.040	0.170	1.000				
(11) CAP	-0.192	-0.130	-0.132	-0.044	-0.270	0.276	0.118	0.399	-0.047	0.114	1.000			
(12) SIZE	0.216	0.107	0.189	0.152	0.209	-0.201	-0.154	-0.520	0.213	0.004	-0.532	1.000		
(13) GROWTH	-0.027	-0.118	0.024	-0.029	-0.206	0.275	-0.139	0.029	0.100	0.218	0.209	-0.047	1.000	
(14) PROTECT	0.085	-0.068	0.004	0.039	-0.280	0.282	-0.013	0.201	0.134	-0.050	0.313	-0.115	0.335	1.000

8.7 Table 5: Regression Outputs

Period	Overall (2007-2021)		GFC (2007-2009)		Recent (2019-2021)	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Distress						
CGCOM	2.139	2.166	0.142	2.057	1.817	4.048
DUALITY	-2.082	1.805	5.359**	2.554	-6.1	5.458
NOMCOM	7.388	4.584	2.561	2.533	0	omitted
REMCOM	-0.739	5.593	-6.99*	3.716	0	omitted
BRSIZE	-0.421**	0.194	-0.201	0.168	0.68	0.641
BLOCK	0.059**	0.028	0.155**	0.063	0.056	0.099
MGMT	-1.758***	0.554	-0.257	0.265	-2.798*	1.538
ASSET	0.105	0.076	0.002	0.05	0.23**	0.117
LIQ	0.234	0.189	-2.151	1.312	-0.239	0.276
ROA	-3.298***	0.797	-2.358	1.628	-4.743**	2.412
CAP	0.302**	0.153	1.509*	0.809	0.735	0.632
SIZE	-1.421	0.891	1.946*	1.004	-2.827**	1.307
GROWTH	-0.002	0.114	-0.169	0.264	0.047	0.163
PROTECTION	0.843*	0.442	0.948**	0.4	1.933***	0.61
Constant	-8.138	19.574	-61.16**	27.865	19.866	29.451
Insig2u	5.429	0.338	-12.659	761.867	4.332	0.679
Mean dependent var	0.199		0.097		0.207	
Number of obs.	543		93		92	
Chi-square	70.827		10.132		24.168	
Prob > chi2	0.000		0.752		0.019	

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Further References:

- Footnote 1: https://www.ebf.eu/wp-content/uploads/2023/02/The-EU-banking-regulatory-framework-and-its-impact-on-banks-and-the-economy_30Jan-1.pdf
- Footnote 2: <https://databank.worldbank.org/source/doing-business>
- Footnote 3: <https://databank.worldbank.org/source/world-development-indicators/Series/NY.GDP.MKTP.KD.ZG>