OPEN ACCESS
Journal of Financial Management, Markets and Institutions
(2025) 2550004 (41 pages)

DOI: 10.1142/S2282717X25500045

DOES CORRUPTION-RELATED DISCLOSURE TRIGGER MARKET DISCIPLINE? EVIDENCE FROM THE BANKING SECTOR OF THE GIPSI COUNTRIES

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Received 5 November 2024
Revised 5 May 2025
Accepted 22 May 2025
Published 2 July 2025

This paper investigates the relationship between corruption-related disclosure in banking and the market discipline exercised by depositors. We examine to what extent depositors penalize banks that are opaque with reference to their corruption-related disclosures by demanding higher interest rates for their deposits. By focusing on the banking industry of the GIPSI countries (Greece, Ireland, Portugal, Spain and Italy), we show that banks which disclose less on corruption-related issues tend to be penalized by depositors, who ask for higher interest rates, likely to counterbalance the negative consequences of possible involvement of such banks in corruption scandals. These basic relationships are shaped by specific bank-level characteristics and by the features of each country in terms of institutional quality.

Keywords: Corruption; disclosure; market discipline; banking; GIPSI countries.

JEL Classifications: G20, G30, K40

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1. Introduction

After the publication of the second Basel Accord (Basel Committee on Banking Supervision 2004), it became clear that the role of official supervisory and regulatory authorities needs to be complemented by effective market discipline. Previous research has provided strong evidence that market discipline plays a pivotal role in ensuring the soundness and resilience of the banking system by complementing conventional supervisory tools such as regulatory capital requirements and official supervisory inspections (Flannery 2001). From a regulatory perspective, market discipline represents the third pillar of Basel regulation and involves thorough scrutiny by a wide range of stakeholders with reference to banking activities, risk exposure and any information that could significantly influence bank profitability, financial position and, in a wider perspective, its integrity. An adequate exercise of market discipline critically hinges upon sufficiently low levels of information asymmetry between bank management and a wide range of stakeholders (De Ceuster & Masschelein 2003).

While market discipline can be exercised by current and potential investors (Jagtiani & Lemieux 2001), also depositors have a stake in contributing to discipline bank behavior by demanding higher interest rates, withdrawing their deposits to punish banks for their bad conduct (Martinez Peria & Schmukler 2001) and pushing banks to be more transparent (Wu & Bowe 2012). Against this background, banks are urged to provide sufficient amount of information on various topics including risk exposure and management, banking operations, competitive position (Maffei *et al.* 2014, Giner *et al.* 2020) and also corruption-related topics, including their internal mechanisms preventing these events from occurring (de Andrés *et al.* 2024).

Corruption events have the potential to substantially harm a bank's image in the eyes of its depositors, with negative consequences not only on profitability and financial position (Altunbaş *et al.* 2018), but also on its ability to get funding. Broadly speaking, banks involved in corruption scandals can be considered riskier compared to banks that have not experienced any corruption problem. Given that riskier financial intermediaries are less capable of attracting depositors and pay higher interest rates (Park & Peristiani 1998), banks may be willing to use disclosure as a tool to provide depositors with information on their (lack of) involvement in corruption events.

The disclosure related to corruption belongs to a wider category of disclosure practices on corporate social responsibility (CSR). Such disclosures are extremely important to keep investors and stakeholders informed on a broad range of nonfinancial topics including the impact on the bank activities on the environment, society, employees (Farina *et al.* 2019, Schröder 2021), and various aspects related to corruption such as anti-corruption mechanisms and involvement in corruption scandals (Blanc *et al.* 2017, 2019).

In this paper, we aim to analyze the relationship between market discipline and corruption-related disclosure in the banking industry. More specifically, we examine

the relationship between bank interest expense on deposits and a tailor-made index of corruption-related disclosure in bank annual financial reports. In doing so, we aim to understand whether higher levels of transparency on corruption-related issues represent an effective tactic for banks to attract more depositors and pay lower interest rates because of the aforementioned market discipline mechanism.

From a theoretical standpoint, the stakeholder theory (Freeman 1984) proposes valid explanations of the reasons why banks provide disclosure in general and corruption-related disclosure in particular. According to this theory, stakeholders have a significant influence on managerial decisions and banks need their approval and support to carry out their activities (Polizzi 2022). Hence, banks use disclosure as a tool to communicate and interact effectively with their stakeholders, including depositors. This communication channel is particularly relevant when it comes to the involvement in corruption events, given that corruption can negatively affect bank reputation and, consequently, long-term profitability (Forcadell & Aracil 2017). Along the same lines, the resource dependence theory (Pfeffer & Salancik 1978) posits that banks' survival and growth depend on scarce resources that are available in the external competitive environment. Amongst these resources, funding from depositors is vital for the banking activity, and banks can use disclosure to interact with them. Based on these considerations, banks are incentivized to be highly transparent, by using disclosure as a tool to convince depositors to provide them with this important resource (Grassa *et al.* 2021).

In this paper, we analyze a sample of 88 banks located in the so-called GIPSI countries (Greece, Italy, Portugal, Spain and Ireland) because they are characterized, on average, by higher levels of perceived corruption (Transparency International 2019) and consequently corruption is considered a severe problem in these countries. To preview the main findings of this paper, we show that, when it comes to corruption-related disclosure, opaque banks tend to be penalized by depositors who ask for higher remuneration in terms of interest rates, likely to counterbalance the possible involvement of such banks in corruption scandals. Hence, corruption-related disclosure triggers a market discipline mechanism by depositors thereby incentivizing banks to be transparent with reference to their involvement in corruption scandals. In addition, it emerges that country-level characteristics and institutional quality significantly influence this relationship.

We contribute to the literature in several ways. First, we examine the effects of an under-researched type of disclosure, namely corruption-related disclosure in the banking industry. While some aspects of corruption-related disclosure have been examined — such as disclosure strategies in response to corruption scandals (de Andrés *et al.* 2024, Blanc *et al.* 2019) and cross-country comparisons of corruption disclosure practices (Joseph *et al.* 2016) — we examine it from a novel angle by investigating how it triggers market discipline mechanisms. Specifically, to the best of our knowledge, we are the first to empirically assess how depositors react to such a type of disclosure and its impact on banks' cost of funding. Second, we contribute to the scant strand of literature that analyzes the relationship between bank

transparency and market discipline. Third, we study how bank- and country-level characteristics may shape the relationship between bank disclosure on corruption-related topics and the market discipline exercised by depositors.

The remainder of this paper is structured as follows. Section 2 provides a review of the related literature on market discipline, CSR disclosure and corruption in banking. Section 3 describes the sample selection strategy, and the methodology employed in our empirical analysis. Section 4 presents and discusses our results. Lastly, Sec. 5 concludes.

2. Literature Review and Hypothesis Development

This paper contributes to three strands of literature: First is the strand that analyzes the role of market discipline in the banking industry; second is the literature that studies disclosure and, more specifically, nonfinancial disclosure and corruption-related disclosure; and third, the stream of literature focuses on corruption in the banking sector.

2.1. *Market discipline in banking*

Numerous studies have analyzed the role of market discipline in the banking industry. The first seminal studies on market discipline date back to the period between the 1970s and the 1980s, when an unprecedented rise in bank failures in the U.S. pushed regulators and scholars to substantially revise the architecture of banking supervision and regulation, mainly based on minimum capital requirements (Avery *et al.* 1988). According to some of these studies, market discipline plays an important role in incentivizing banks to avoid excessive risk exposure (Baer & Brewer 1986, James 1988), whilst others argue that it has limited positive consequences on bank stability (Pettway 1976, Fraser & McCormack 1978, Avery *et al.* 1988). These seminal studies have mainly focused on the relationship between bank risk and stock prices (Pettway 1976) and interest rates on deposits (Herzig-Marx & Weaver 1979) and subordinated debt (Fraser & McCormack 1978). Subsequent studies in the 1990s and at the beginning of 2000s provided more robust evidence supporting the effectiveness of banking supervision (Flannery & Sorescu 1996, Park & Peristiani 1998, Sironi 2002), thereby influencing decisions by banking supervisors at the international level to rely more on market discipline. However, some studies have shown that the existence of deposit insurance schemes can limit their effectiveness (Billett *et al.* 1998, Lee & Kwok 2000, Demirgüç-Kunt & Huizinga 2004).

The literature gained momentum after the enforcement of Basel II regulation, whose third pillar involves thorough scrutiny by a wide range of stakeholders with reference to banking activities, risk exposure and any information that could significantly influence bank profitability, financial position and, in a wider perspective, bank integrity (Basel Committee on Banking Supervision 2004). This pillar is based

on the idea that conventional supervisory and regulatory tools, such as minimum capital requirements and the supervisory review and evaluation process, are not sufficient to ensure the soundness of banking institutions, and they need to be supported by market discipline (Flannery 2001). In this sense, various studies supported the effectiveness of market discipline under different settings after the implementation of Basel II regulation. By analyzing a sample of 95 debt instruments in Europe, North America and Japan, Pop (2006) provides results that are consistent with the effectiveness of market discipline in the banking industry. Goyal (2005) shows that debtholders exercise market discipline not only by means of higher interest rates, but also, by means of restrictive covenants in bank debt. Curry *et al.* (2008) find that equity market variables are able to predict bank rating, especially when it comes to rating downgrades, showing once again the effectiveness of market discipline. Uchida & Satake (2009) provide evidence that depositors and investors exercise market discipline even to push banks to enhance their levels of efficiency. However, even after the implementation of Basel II, the literature was not unanimous on the effectiveness of market discipline in banking (Hall 2006).

Even more recent literature has not yet provided conclusive results. Some authors provide evidence that supports the effectiveness of market discipline by analyzing the period during the global financial crisis. Bennett *et al.* (2015) show that creditors are in the position to differentiate between risky and safe banks and that market discipline mechanisms provide early signals to supervisors and banks that corrective actions should be taken. Cutura (2021) provides evidence that the European Banking Recovery and Resolution Directive,[a] having reduced bailout expectations, has incentivized debtholders to actively monitor bank risk-taking. Other authors argue that market discipline works only under certain circumstances. For example, Cubillas *et al.* (2012) analyze the functioning of market discipline in turbulent times by examining the effects of 79 banking crisis episodes across 66 countries. Their results show that, while depositors generally penalize riskier banks by demanding higher interest rates, market discipline tends to be weaker during banking crises. However, according to these authors, this result seems to be ultimately conditioned to the characteristics of each country in terms of the legal and institutional environment. Bertay *et al.* (2013) find that the relationship between bank risk and funding cost is stronger for systemically important large banks, suggesting that market discipline exercised by increasing funding costs does not impede banks from becoming systemically important, even if it is not in the interest of their shareholders. Danisewicz *et al.* (2018) show that the effectiveness of market discipline is strictly related to debt priority structure. In particular, monitoring intensity by creditors changes depending on their position on the debt priority ladder. Tran *et al.* (2019) provide evidence that debtholders' discipline is less effective than regulatory pressure in incentivizing banks to reduce their risk-taking. Lastly, other studies provide evidence of the ineffectiveness of market discipline. Karas *et al.* (2013) show that deposit

[a]See European Union (2014).

insurance mechanisms wipe out the effectiveness of market discipline, even during a financial crisis. Similar findings have also been obtained by other studies (Berger & Turk-Ariss 2015, Calomiris & Jaremski 2019). Given the inconclusive results of the literature in this field of study, additional contributions are needed to understand whether and under which circumstances market discipline works.

An important prerequisite for the correct functioning of market discipline is a high level of transparency by banks (Polizzi 2022). However, surprisingly, the literature that analyzes the relationship between market discipline and disclosure is still very scant. Amongst the few contributions, Nier & Baumann (2006) show that higher levels of disclosure are associated with strong market discipline, although the high probability of a bailout significantly reduces the effectiveness of this mechanism. Semenova (2012) argues that transparency, accompanied by information availability and interpretability, may be an effective tool to stimulate market discipline. Simion *et al.* (2020) show that a forward-looking disclosure requirement on loan risk imposed on Italian banks contributes to improving investors' capability to price loan risk. From the analysis of this specific strand, it emerges that further efforts are necessary to study the impact of various types of disclosure on market discipline, including not only the disclosure of financial risks, but also nonfinancial risks that could severely damage bank image, profitability and financial position, resulting in potential losses for current and potential investors.

2.2. *CSR disclosure in banking*

This paper is also related to the strand of literature that focuses on corporate disclosure practices and, more specifically, on CSR disclosure in the banking industry. While several studies focus on the disclosure on the conventional risks of the banking industry, such as credit risk (Frolov 2006), market risk (Pérignon & Smith 2010, Polizzi & Scannella 2020) and operational risk (Helbok & Wagner 2006, Barakat & Hussainey 2013), there is also an expanding body of literature on nonfinancial disclosure.[b]

Different authors have studied banks' disclosure practices on various aspects related to the concept of CSR. Adams & Harte (1998) analyze the disclosure on gender and employment in a sample of British banks and retail companies covering a 59-year period. An interesting result that emerges from Adams & Harte's (1998) study is that corporate annual reports have largely ignored the role of women, thereby denying the opportunity to foster a debate on an important aspect related to CSR. Jizi *et al.* (2014) analyze a sample of U.S. commercial banks over the 2009–2011 time horizon and show that higher levels of protection of shareholders' interests are positively associated with more comprehensive CSR disclosure. Laidroo & Sokolova (2015) analyze the CSR disclosures of a sample of internationally active banks in the period before and after the global financial crisis, by carrying out a content analysis

[b]Numerous studies also analyze CSR disclosure in nonfinancial firms. See for instance Chowdhury *et al.* (2021) and Lu & Wang (2021).

of banks' CSR reports and websites. Their main results show that, although banks attempted to address the severe legitimacy gap that emerged after the global financial crisis by improving their CSR disclosure, there is room for improvements when it comes to the information on CSR initiatives and environmental management policies. Similarly, other studies have focused on banks' websites to examine CSR-related disclosure (e.g. Douglas *et al.* 2004, Branco & Rodrigues 2006, 2008). For instance, Branco & Rodrigues (2006) carry out a content analysis of the CSR disclosures provided by Portuguese banks in their websites. It emerges that websites are the favorite means for CSR disclosure when it comes to information related to consumers and community involvement, whilst annual reports are generally preferred for environmental disclosures. Along the same lines, Branco & Rodrigues (2008) analyze CSR disclosure in banks' websites under the lens of the legitimacy theory (Suchman 1995) and find that banks subject to greater visibility tend to provide more comprehensive CSR disclosure on their websites. Broadly speaking, while banks' websites and sustainability reports are widely analyzed, annual financial reports remain largely unexplored, and consequently, the study of CSR disclosures directed towards current and potential investors, as well as other stakeholders that can trigger an effective market discipline mechanism is far from being fully developed.

More recently, Sethi *et al.* (2017) examine the influence of legal, national and firm-level factors on CSR disclosure by analyzing a sample of 104 large financial institutions. Their main findings are that the level of CSR disclosure is higher in common law countries. Moreover, country-level regulations on CSR positively affect CSR disclosure. According to their results, specific categories of CSR disclosure (e.g. environmental disclosure) are positively influenced by the size of the financial institutions. Khan *et al.* (2020) study the influence of regulatory guidelines and standardized reporting framework (GRI guidelines) on the quality of sustainability reporting of a sample of 315 banks. Their main finding is that the adoption of GRI guidelines by banks results in a significant increase in the quality of their sustainability reporting. Khan *et al.* (2021) focus on a specific type of CSR disclosure, namely the disclosure on green banking activities (e.g. preservation of natural environment, waste reduction, climate change, etc.) and its association with bank performance. Their results show that although green banking disclosure is positively related to bank performance, the amount of NPLs in bank balance sheet negatively moderates the positive relationship between disclosure and bank value.

While our paper is broadly related to the literature on CSR disclosure, more narrowly, we contribute to the literature on corruption-related disclosure. This specific strand of literature is very scant, especially when it comes to the banking industry. The contributions proposed by Joseph *et al.* (2016) and Blanc *et al.* (2017, 2019) are amongst the few studies that have focused on this topic in nonfinancial firms. Joseph *et al.* (2016) examine anti-corruption disclosure in firms' CSR reports, sustainability reports and annual reports. By focusing on six different categories of corruption-related disclosure, these authors show that, although the amount of

information provided in certain categories is relatively high (e.g. disclosure on whistleblowing), anti-corruption disclosure is far from being satisfactory and considerable efforts are still necessary by regulatory authorities. Blanc *et al.* (2017) explore the relationship between anti-corruption disclosure and media exposure. These authors provide evidence of a positive and significant association between anti-corruption disclosure and media exposure and, in addition, high press freedom at the country level is positively related to anti-corruption disclosure. Blanc *et al.* (2019) examine the disclosure related to compliance and anti-corruption by conducting a case study of a corruption scandal that occurred at Siemens AG. Their main results show that Siemens AG increased its anti-corruption disclosure after the corruption scandal in an attempt to regain its lost legitimacy.

With specific reference to the disclosure related to corruption in the banking industry, to the best of our knowledge, de Andrés *et al.* (2024) is the only related contribution in the academic literature. de Andrés *et al.* (2024) explore the relationship between corruption scandals and corruption-related disclosure by analyzing a sample of 88 banks over the 2011–2019 time horizon by drawing on an expert-validated disclosure dictionary and the content analysis methodology. Their main findings are as follows: (i) those banks that are involved in corruption scandals tend to provide higher levels of disclosure than "uncorrupted" banks, in an attempt to restore their institutional legitimacy; (ii) "uncorrupted" banks provide higher levels of disclosure after the spread of the news of the involvement of other banks in corruption events; (iii) these relationships are strongly influenced by country-level institutional and regulatory factors (e.g. control of corruption and limits on non-conventional banking activities).

It is surprising that, despite the practical and theoretical importance of the topic in question, the study of corruption-related disclosure in the banking sector has largely escaped researchers' attention. We aim to contribute to this strand of literature by investigating the relationship between corruption-related disclosure and market discipline and by bridging the gap between two strands of the banking literature that are tightly related to each other.

2.3. *Corruption in banking*

Although the literature focusing on corruption in the banking sector is less developed compared to the previous two strands analyzed, some studies have examined some interesting and highly relevant aspects (Bahoo 2020).

Amongst the most relevant studies, Beck *et al.* (2006) analyze the impact of different supervisory approaches in terms of corruption in bank lending, and find that while traditional interventionist supervisory strategies are largely ineffective, pushing private monitoring by means of market discipline turns out to be the most suitable approach to reduce corruption. This finding confirms the importance of private monitoring pressures and market discipline to fight against corruption in bank lending (Akins *et al.* 2017). In addition, it emerges that the effectiveness of such

market discipline mechanisms is contingent upon the soundness of countries' institutional framework, thereby highlighting the importance of country-level characteristics to prevent corruption events (Zheng *et al.* 2013). Thus, focusing on small groups of countries or even in single-country settings might be particularly interesting to examine the impact of corruption in the banking industry. For instance, Weill (2011a) focuses on the Russian banking sector and finds that corruption has a negative effect on the correct functioning of the bank lending industry, thereby suggesting that combating corruption is a pivotal strategy to foster the development of the financial system and the real economy. Along the same lines, Chen *et al.* (2015) highlight the detrimental effects of corruption in the banking sector by analyzing the relationship with bank risk-taking, and showing that high levels of corruption are significantly associated to high levels of risk-taking and, consequently, to a less stable banking system.

However, although the vast majority of the literature finds that corruption has negative effects (e.g. on bank profitability as remarked by Yakubu (2019), on bank efficiency as highlighted by Hassan *et al.* (2022) and on financial sector development as shown by Sharma (2021)), the literature is not unanimous on this regard. For instance, Weill (2011b) shows that although corruption generally has a negative effect in bank lending, this relationship is completely reversed when banks are particularly risk averse, thereby shedding light on potential beneficial effects of corruption under certain circumstances. Thus, in light of these mixed results, further research is definitely necessary to shed further light on the role of corruption in the banking sector. Although other topics associated to bank corruption have been analyzed in the extant literature (e.g. its relationship with fraudulent accounting practices (Ozili 2019), with bank ownership structure, regulatory environment and economic development (Barry *et al.* 2016) and the beneficial effects of bank-specific anti-corruption policies (Azim & Kluvers 2019)), there are still relevant gaps, especially when it comes to the role of bank transparency about corruption-related topics and its market discipline role that has not been hitherto investigated, to the best of our knowledge.

2.4. *Hypothesis development*

Previous research has shown that corruption-related disclosure is generally provided for two main specific reasons: First, in order to provide information on the anti-corruption strategies and mechanisms in place within the organization (Blanc *et al.* 2017); and second, to reassure investors after the occurrence of a corruption scandal (Blanc *et al.* 2019). The main theoretical frameworks that can describe the relationship between these motives to provide corruption-related disclosure and market discipline are the stakeholder theory, the resource dependence theory and the signaling theory.

According to the stakeholder theory (Freeman 1984), banks are strongly influenced by their stakeholders given that their primary purpose is to satisfy their needs.

Thus, banks need the approval and support of a wide range of stakeholders for their survival and growth. Such a range of stakeholders includes various categories such as government, regulators, employees, and, most importantly, depositors. In this context, banks use disclosure as a means to interact more effectively with depositors and keep them informed on the matters they are most interested in. Corruption-related disclosure represents valuable information for depositors, because the involvement in corruption problems may pose a threat to their deposits. In addition, depositors are interested in banks' anti-corruption strategies, because, if they are not sufficiently effective, there might be a risk that the bank could be involved in legal procedures that could be costly (Cheng & Ma 2009) and consequently could damage bank financial position, thereby increasing the probability that depositors cannot withdraw their money from their deposits. In addition, corruption scandals can negatively affect a bank reputation, thereby jeopardizing its long-term profitability. Apart from this utilitarian aspect, bank customers have recently become more and more sensitive to CSR (McDonald & Rundle-Thiele 2008), and consequently depositors might penalize banks which could be perceived as more likely to be involved in corruption scandals.

The resource dependence theory (Pfeffer & Salancik 1978) posits that banks compete to gain control over scarce resources, which are available in an external competitive environment. This theory is strictly intertwined with the stakeholder theory because stakeholders are often the owners of such scarce resources. Hence, banks compete to get control over depositors' money, which is their main source of funding. Also in this case, disclosure represents an effective tool that allows banks to communicate effectively with their depositors.

Although it is generally used in studies focusing on financial disclosure (Dicuonzo 2018), the signaling theory (Spence 1973) offers another important perspective for the purposes of our analysis. According to this theoretical framework, banks provide information to the public in order to send a signal of their superior performance compared to other banks (Polizzi 2022). Such a concept of superior performance should be interpreted not only with reference to financial performance, but also in terms of the effectiveness of banks' anti-corruption strategies (de Andrés *et al.* 2024). On the other hand, lack of transparency on these aspects might be interpreted as a negative information (Lev & Penman 1990). In addition, banks may be willing to send a signal to remark on the fact that they have not been involved in corruption scandals. The disclosure of this type of information would significantly contribute to reducing information asymmetries between bank managers and depositors, and consequently the latter may be willing to deposit their money in banks that are more transparent when it comes to corruption-related disclosure, while penalizing banks that are more opaque and consequently more likely to be involved in corruption scandals. In other words, corruption-related disclosure may trigger a market discipline mechanism that leads depositors to penalize opaque banks by demanding higher interest rates to punish banks for their (potential) bad conduct (Martinez Peria & Schmukler 2001) and for their lack of transparency, which

could be interpreted as "withholding the worst possible information" (Lev & Penman 1990, p. 50).

Based on these theoretical arguments, we develop our first research hypothesis as follows:

> ***H*$_1$:** *There is a negative relationship between the extent of corruption-related disclosure and bank interest expenses.*

While our expectation is that corruption-related disclosure directly affects bank interest expenses, there might be several bank- and country-level characteristics that may contribute to shaping this relationship. In particular, some bank-level characteristics that might induce depositors to feel safer, thereby decreasing the effectiveness of their market discipline role. In this regard, an extensive body of literature has analyzed the too-big-to-fail (TBTF) phenomenon (Polsiri & Jiraporn 2012, Kaufman 2014, Shimizu & Ly 2017), showing that some regulatory interventions in the past have provided full insurance for the depositors of TBTF banks (O'hara & Shaw 1990), and that the TBTF effect is stronger in those countries that do not impose losses on depositors during banking crises (Cubillas *et al.* 2017). Thus, bank size might play an important role in shaping the relationship between corruption-related disclosure and bank interest expenses. Furthermore, we expect higher deposit rates from larger banks as these entities may pay higher deposit rates than small banks if they have better investment options or compete more intensively than smaller banks. This idea is based on the fact that bank size and bank competition are strictly interrelated with each other (Gilbert 1984). Another important characteristic that might influence this relationship is the level of bank risk. In particular, our expectation is that depositors of riskier banks are more concerned about excessive risk-taking by banks rather than their possible involvement in corruption scandals. In case of excessive risk-taking, according to the impression management theory (Goffman 1959), banks may use corruption-related disclosure simply as a tool to divert depositors' attention from their risk-taking decisions and induce them to focus more on other aspects such as corruption. Some depositors may understand in advance bank managers' intention to require higher interest rates, regardless of their higher levels of transparency, thereby weakening the market discipline role triggered by corruption-related disclosure. Based on these considerations, we develop our second research hypothesis as follows:

> ***H*$_2$:** *The relationship between corruption-related disclosure and bank interest expenses is weaker for larger and riskier banks.*

As for the country-level characteristics that might influence the relationship between disclosure and bank interest expenses, numerous studies, covering different periods and several countries, show that the effectiveness of market discipline by depositors is lower in countries that adopt an explicit deposit insurance scheme (Mondschean & Opiela 1999, Demirgüç-Kunt & Huizinga 2004, Karas *et al.* 2013). These findings are

related to the fact that depositors perceive that their deposits are safe, because they are guaranteed by the deposit insurance, and consequently they are not incentivized to penalize banks that take on too much risk. Along the same lines and from a wider perspective, we argue that higher levels of institutional quality contribute to reducing the effectiveness of market discipline. This expectation is based on the idea that, in countries characterized by high levels of institutional quality, legal protection and enforcement of creditor rights, depositors are in a safer position, and therefore they are less incentivized to exercise market discipline by demanding higher interest rates when there is a chance that banks might be involved in corruption scandals. Based on this argument, we develop our third research hypothesis as follows:

> ***H_3:*** *The relationship between corruption-related disclosure and bank interest expenses is weaker in countries characterized by high levels of institutional quality, legal protection and enforcement of creditor rights.*

The basic relationship between corruption-related disclosure and bank interest expenses described through H_1 might also be mediated by bank financial risk exposure. Specifically, in light of the well-known relationship between risk-taking and disclosure in the banking industry (Altunbaş *et al.* 2023), we hypothesize that higher levels of disclosure by banks could be associated with lower levels of risk, which can have, in turn, a positive effect in terms of market discipline, beyond the direct effect of disclosure on market discipline. Thus, we develop our fourth research hypothesis as follows:

> ***H_4:*** *The relationship between corruption-related disclosure and market discipline is mediated by the level of bank risk.*

3. Method

3.1. *Sample*

The sample selection process adopted in this paper consists of various phases that allowed us to include a group of banks that experienced corruption-related problems during the last decade, and another group of comparable banks that were not involved in corruption scandals.

First, we focus on the so-called GIPSI countries for two main reasons: (i) numerous banks in these countries have been involved in corruption problems, thereby allowing us to identify a sufficient number of corruption scandals; (ii) Transparency International (2019) has shown that these countries are characterized by relatively higher levels of perceived corruption. Second, we detected those banks that were involved in corruption scandals by manually searching for news related to corruption scandals on specific news publication websites. In particular, we focus on the most reputable European economic and financial newspapers (Financial Times, City

A.M., Expansión, Il Sole 24 Ore, Milano Finanza, Reuters and The Economist). Amongst these corruption scandals, some of them were borderline cases. Aiming to mitigate any problem related to the subjectivity of the selection of the corruption scandals, we adopted a clear definition of corruption and included in our analysis only those scandals that fall under this exact definition. Specifically, we follow Pellegrini (2011) and define corruption as follows:

"The misuse of entrusted power for private gain; it is behaviour which deviates from the formal duties of a given role because of private-regarding (personal, close family, private clique) pecuniary or status gains; or violates rules against the exercise of certain types of private regarding influence. This includes such behaviour as bribery (use of a reward to pervert the judgment of a person in a position of trust); nepotism (bestowal of patronage by reason of ascriptive relationship rather than merit); and misappropriation (illegal appropriation of public resources for private regarding uses)."

By adopting this definition, we identified and included in the sample 22 banks in total (from now onwards, we refer to these banks as "corrupted banks"). After the detection of these 22 banks, we selected a group of comparable banks that have not been involved in corruption scandals (from now onwards, we refer to these banks as "uncorrupted banks"), thereby allowing us to differentiate between "corrupted" and "uncorrupted" banks. For each "corrupted bank", we included in the sample the three comparable "uncorrupted banks" which have the closest levels of three important determinants of bank disclosure, namely: size, profitability and deposits (Wu & Shen 2013). Specifically, for each "corrupted bank" in country j, we included in our sample an "uncorrupted bank" from country j with the closest level of total assets, an "uncorrupted bank" from country j with the closest level of net interest margin and an "uncorrupted bank" from country j with the closest level of the ratio between customer deposits and total funding by using the data provided by the Orbis BankFocus database (Bureau van Dijk). However, for certain countries (such as Ireland and Greece), we were forced to select some "uncorrupted banks" from the other GIPSI countries, when we could not find any comparable bank from the same country. Following Altunbaş *et al.* (2022), we adopt this strategy, rather than starting from the whole population of banks in GIPSI countries, to ensure that the "corrupted" and "uncorrupted" banks of our sample are comparable in terms of the potential market discipline mechanism enacted by corruption-related disclosure. As reported in Table 1, the final sample includes 22 "corrupted banks" and 66 "uncorrupted banks" and they are analyzed over the 2011–2019 time period. The full list of banks is reported in Table A.1.

3.2. *Variables*

3.2.1. *Key variables: Market discipline and corruption-related disclosure*

We test the presence of market discipline by assessing whether depositors penalize banks that are perceived to be riskier by requiring higher interest rates. The

Table 1. Descriptive statistics.

Panel A: Bank-level variables

Country	#Banks	#Obs.	Discipline	Disclosure	Size	Equity	Liquidity	Non-interest	Reserves
Greece	5	38	1.4412	0.6687	17.345	0.1475	0.1833	0.4512	0.1003
Ireland	5	27	0.9016	−0.4492	18.237	0.1048	0.2773	0.5645	0.1109
Italy	44	266	0.8939	−0.3376	16.610	0.1024	0.3028	0.5035	0.1044
Portugal	15	81	2.2992	−0.2236	16.366	0.0983	0.3877	3.2831	0.1001
Spain	19	120	0.9303	0.5886	18.127	0.0828	0.2780	0.8157	0.1034
All	88	532	1.1556	0.0000	17.050	0.1007	0.2968	0.4598	0.99
Median			0.8607	−0.3796	17.513	0.0759	0.1860	0.5373	0.1042
St. Dev.			1.3115	1.0270	2.0487	0.1036	0.2469	4.7045	0.2424

Panel B: Country-level variables

Country	GDPpc	Private credit	Creditor	Bankruptcy	Collateral	Control of corruption	KKZ	Deposit insurance
Greece	10.0332	1.0530	0.7793	0.5195	0.2597	0.6408	0.2625	0.5602
Ireland	11.0929	0.5871	11.048	6.3133	4.7349	1.5530	1.4149	0.3280
Italy	10.4485	0.8337	0.6262	0.3131	0.3131	0.1070	0.5050	0.3987
Portugal	10.0178	1.1416	2.2458	1.1229	1.1229	0.8965	1.0368	0.7480
Spain	10.3442	1.1634	4.8766	1.9506	2.9260	0.6407	0.8228	0.6234
All	10.3625	0.9586	2.3714	1.1250	1.2464	0.4072	0.6865	0.5111
Median	10.4227	0.9070	0.8058	0.4033	0.4029	0.2357	0.5245	0.4235
St. Dev.	0.2424	0.2247	2.6536	1.3806	1.3348	0.4362	0.2842	0.1412

dependent variable is therefore the cost of deposits for bank i in country j in year t (COSTD_{ijt}). As Orbis BankFocus does not provide specific data on the interest paid by banks on different types of deposits, we follow previous papers on market discipline in banking (Martinez Peria & Schmukler 2001, Demirgüç-Kunt & Huizinga 2004, Cubillas *et al.* 2012, among others) and use an implicit interest rate. It is measured by the annual ratio of interest expense over average interest on bearing liabilities.[c]

We measure disclosure by using the corruption-related disclosure index defined in de Andrés *et al.* (2024). This index has been specifically designed to estimate the extent of disclosure on corruption topics provided by banks in their annual financial reports. We focus on annual financial reports for two main reasons: (i) the Financial Stability Board (2017) has recommended including nonfinancial information (e.g. environmental disclosure) within annual financial reports as long as they might have financial implications that are relevant for investors and stakeholders; (ii) other sources such as bank websites and sustainability, CSR and nonfinancial reports have already been widely examined in the literature (e.g. Branco & Rodrigues 2006, Laidroo & Sokolova 2015). de Andrés *et al.* (2024) drew upon the content analysis framework proposed by Krippendorff (2004) and created a disclosure dictionary

[c]In additional analyses, we check the robustness of our results by considering alternative dependent variables. The results are presented in Sec. 4.5.

specifically tailored to analyze corruption-related disclosure in bank annual reports. The decision to use this tailored dictionary is based on the idea that applying standardized dictionaries outside the context for which they were created might invalidate the results of the analysis (Loughran & McDonald 2011, Beattie 2014, Kearney & Liu 2014).[d]

Similarly to previous studies on disclosure (Tetlock *et al.* 2008, Bushman *et al.* 2017) and CSR disclosure (Gamerschlag *et al.* 2011), the number of occurrences of these words in annual financial reports is counted. Hence, the disclosure index per bank and year is created as follows:

$$\text{DISCLOSURE}_{ijt} = \sum_{k=1}^{n} \frac{\text{Number of occurences of word } k}{\text{Total number of words in the report}}, \tag{1}$$

where i, j and t denote the bank, country and year, respectively. Hence, DISCLOSURE_{ijt} is our disclosure index for bank i in period t, and n is the number of words included in the dictionary (88 words). Higher values of this index will indicate more corruption-related disclosure. The disclosure index was subsequently standardized (Tetlock *et al.* 2008).

3.2.2. *Control variables*

Following previous literature (Altunbaş *et al.* 2022, Barakat & Hussainey 2013), we include bank-level and macroeconomic variables as control variables. Among bank-specific characteristics are the bank's asset size (Size), computed as the natural logarithm of total bank assets; the equity-to-assets ratio (Equity); the level of liquidity (Liquidity) proxied by the ratio liquid assets-to-total assets; a measure of bank's business diversification (Non-Interest) calculated as the ratio noninterest income-to-total operating revenues; and the ratio loan loss reserves over total impaired loans (Reserves). These variables have been collected from Orbis BankFocus (Bureau van Dijk).

As for the macroeconomic variables, we follow Demirgüç-Kunt & Huizinga (2004), Cubillas *et al.* (2012), among others, and control for the natural logarithm of the GDP per capita (GDPpc) and for the level of financial development in each country proxied by the ratio private credit by deposit money banks and other financial institutions over the GDP (Private Credit). Both variables have been collected from the World Bank Global Financial Development Database.[e]

Country-level institutional variables have been collected from the World Bank Doing Business and Governance Indicator databases, whilst deposit insurance data have been collected from the Deposit Insurance Scheme Database provided by the European Banking Authority (EBA).

[d] As illustrative examples of how banks provide corruption-related disclosures in their most recent annual financial reports, we report some sentences in Table A.3. The full list of keywords of the dictionary are reported in Table A.4.

[e] Table A.2 reports more detailed information about the variable definition and the main data sources.

Table 1 reports the descriptive statistics of the main bank- and country-level variables. As can be observed, the higher values of the market discipline variable are found in Portugal; whereas banks in Italy have lower levels of interest paid on deposits, on average. As for the disclosure index, Greek banks are those that disclose more on corruption-related topics. The lowest value of the disclosure index is found in Portugal.

3.3. *Econometric model*

Our empirical approach relies on a linear regression with panel data estimators. We regress our proxy for market discipline on our main variable of interest: the disclosure index. Apart from explicitly controlling for traditional bank- and country-level variables explaining both market disciplines in the banking sector, in all the estimates we use a fixed-effect estimator to capture the effects of potential unobserved heterogeneity

$$\text{DISCIPLINE}_{ijt} = \beta_0 + \beta_1 \text{DISCLOSURE}_{ijt-1} + \sum_{l=1}^{6} \beta_l \text{BANK}_{ijt-1} + \sum_{h=1}^{2} \beta_h \text{COUNTRY}_{jt-1} + \mu_i + \lambda_t + \varepsilon_{ijt}, \quad (2)$$

where i, j, t refer to the bank, country and year, respectively. We lag all dependent variables by one period in order to reduce potential endogeneity concerns. The dependent variable is the measure of market discipline. DISCLOSURE is the main explanatory variable and captures the extent to which banks in our sample disclose corruption-related topics in their annual reports (de Andrés *et al.* 2024).

The vector (BANK) includes the abovementioned bank-level control variables. Additionally, the vector (COUNTRY) includes country-level controls.

μ_i is a set of bank dummy variables to control for characteristics that are specific to each bank, provided these are persistent over time. These specific controls allow us to capture any unobserved bank-invariant effects that are specific to each bank and that are not directly included in the regressions. λ_t is a set of year dummy variables to capture any unobserved bank-invariant time effects not included in the regression. ε_{ijt} is a white-noise error term. Moreover, in order to account for possible correlations of the dependent variable, standard errors are clustered at the bank level.

Another question of interest is whether certain characteristics at a bank level and at a country level may shape the influence of corruption-related disclosure and market discipline. To this end, the baseline model (2) is extended in a double dimension. First, in order to include the set of bank-level controls and their interaction with the main explanatory variable, the disclosure index. Second, we include a set of variables reflecting features of the legal and institutional environment of each country and their respective interactions with DISCLOSURE. These extended

models (3) and (4) are thus specified as follows:

$$\text{DISCIPLINE}_{ijt} = \beta_0 + \beta_1 \text{DISCLOSURE}_{ijt} + \beta_2 \text{DISCLOSURE}_{ijt} * \sum_{l=1}^{6} \beta_l \text{BANK}_{ijt-1} + \sum_{l=1}^{6} \beta_l \text{BANK}_{ijt-1} + \sum_{h=1}^{2} \beta_h \text{COUNTRY}_{jt} + \mu_i + \lambda_t + \varepsilon_{ijt}, \tag{3}$$

$$\text{DISCIPLINE}_{ijt} = \beta_0 + \beta_1 \text{DISCLOSURE}_{ijt} + \beta_2 \text{LEGAL}_{jt} + \beta_3 \text{DISCLOSURE}_{ijt} * \text{LEGAL}_{jt} + \sum_{l=1}^{6} \beta_l \text{BANK}_{ijt-1} + \sum_{h=1}^{2} \beta_h \text{COUNTRY}_{jt} + \mu_i + \lambda_t + \varepsilon_{ijt}, \tag{4}$$

where LEGAL_{jt} is the vector of variables that capture the quality of the legal and institutional environment. Inclusion of these variables allows us to study whether the effects attributed to the level of corruption-related disclosure are caused by alternative country characteristics related to legal and institutional quality.

Specifically, we consider five different variables that proxy for the level of legal and institutional quality in each country. First, we consider the legal rights index developed by the World Bank (Doing Business Database) to measure a borrower country's overall creditor rights (Creditor). The strength of the legal rights index measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders. Higher values of this variable indicate better protection of creditor rights. Second, following Haselmann *et al.* (2010) and Fernández *et al.* (2018), we break down the overall index of creditor rights into its main components: (1) legal rules designed to protect individual creditors' claims outside bankruptcy (Collateral), and (2) the collective enforcement regime established for bankruptcy (Bankruptcy). The index for the collateral regime is the sum of seven indicators measuring: (1) If a general, rather than specific, description of assets is permitted in collateral agreements; (2) If a general, rather than specific, description of debt is offered in collateral agreements; (3) If any legal or natural person may grant or take security in the property; (4) If a unified registry that includes charges over movable property operates; (5) If secured creditors have priority outside of bankruptcy; (6) If parties may agree on enforcement procedures by contract; (7) If creditors may seize and sell collateral out of court. Higher values of this index indicate higher protection of creditor rights in terms of collateral. As an indicator of the bankruptcy regime, we use the traditional index developed by Djankov *et al.* (2007). This index is the sum of four indicators: (1) creditor consent for reorganization; (2) no automatic stay; (3) secured creditors first and (4) management out. As effective protection of creditor rights requires both explicit rules and also enforcement of the law, we interact the above indicators of the legal protection of creditor rights with a variable capturing countries' law enforcement. In particular, and following Fernández *et al.* (2018), we

use the rule of law measure provided by the World Bank in Kaufmann *et al.* (2009) to define these interaction terms.

Third, we consider the annual index of control of corruption (Control of Corruption) for each country from the Worldwide Governance Indicators (WGI) dataset. This variable specifically captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Hence, higher values of this indicator imply greater control over corruption.

Fourth, we consider the KKZ index (KKZ) defined by Kaufmann *et al.* (2009) and computed as the average value of the individual governance indicators for six dimensions of governance: voice and accountability; political stability and absence of violence/terrorism; government effectiveness; regulatory quality; rule of law; control of corruption.

Finally, we use a variable measuring the amount of country-level bank deposits covered by deposit insurance schemes as a percentage of GDP (Deposit Insurance). Including coverage limits and the specific conditions under which depositors are protected may be insightful, as it could explain differences in market discipline behavior across countries. Furthermore, considering its interactive term with the disclosure index, allows us to understand if the relationship between corruption-related disclosure and market discipline is homogeneous across countries or if it is dependent upon the different features of each banking system in terms of deposit insurance schemes.

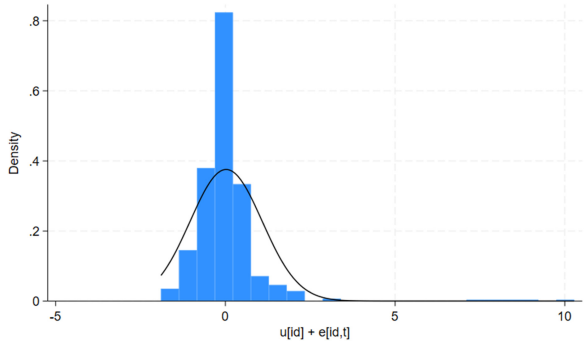
We also carry out a mediation test (Hayes 2009) to examine the mediating role of bank risk (proxied by Reserves) on the relationship between disclosure and market discipline. Formally, we employ the following models:

$$\begin{aligned}\text{RESERVES}_{ijt} = \beta_0 + \beta_1 \text{DISCLOSURE}_{ijt-1} + \sum_{l=1}^{6} \beta_l \text{BANK}_{ijt-1} \\ + \sum_{h=1}^{2} \beta_h \text{COUNTRY}_{jt-1} + \mu_i + \lambda_t + \varepsilon_{ijt}, \end{aligned} \tag{5}$$

$$\begin{aligned}\text{DISCIPLINE}_{ijt} = \beta_0 + \beta_1 \widehat{\text{RESERVES}}_{ijt-1} + \sum_{l=1}^{6} \beta_l \text{BANK}_{ijt-1} \\ + \sum_{h=1}^{2} \beta_h \text{COUNTRY}_{jt-1} + \mu_i + \lambda_t + \varepsilon_{ijt}. \end{aligned} \tag{6}$$

While in model (5) we regress our disclosure index (DISCLOSURE) on the bank risk proxy (Reserves), in model (6) we use the fitted values of regression (5) (i.e. $\widehat{\text{RESERVES}}$) to estimate the indirect impact of disclosure on market discipline mediated by bank risk.

To ensure the reliability of our statistical tests and the unbiasedness of our estimates, we report the histogram of the distribution of the residuals of our baseline



Notes: This histogram shows the distribution of the residuals of our baseline regression model (2). u[id] and e[id, t] indicate the individual-specific error component and the idiosyncratic error, respectively.

Fig. 1. Distribution of residuals.

regression (i.e. regression model (2)) in Fig. 1. It emerges that the normal distribution and zero-mean conditions are satisfied, thereby resulting in reliable statistical tests and unbiased estimates.[f]

4. Results

4.1. *Corruption-related disclosure and market discipline*

In this section, we present the results for our baseline models, explaining how corruption-related disclosure affects market discipline in the banking sector. The results are presented in Table 2. In columns (1)–(3), we report the baseline results using a fixed-effect estimator and different control variables. In column (1), we present the results obtained when only the Disclosure variable is included as the main explanatory variable, jointly with the year- and bank-fixed effects. Column (2) reports the results of the regression model, including the bank-level control variables. The complete regression model, including the macroeconomic controls, is reported in column (3). In columns (4) and (5), different specifications of the random effects estimation model are shown. In both of them, we include a dummy variable that identifies banks that have been involved in corruption scandals (Corrupt) according to de Andrés *et al.* (2024). The alternative inclusion of the Corrupt dummy, bank-fixed effects and year-fixed effects in columns (1)–(5) of Table 2 enables us to assess the robustness of our baseline results across different econometric specifications.

The negative and statistically significant coefficients of the Disclosure variable obtained for all the estimates reported in Table 2 reveal that banks that disclose more on corruption-related issues are rewarded by lower values of the interest expense-to-interest-bearing liability ratio. This result is in line with our first research hypothesis (H_1) and indicates that the market discipline mechanism triggered by

[f]We also check that multicollinearity does not affect our empirical results by means of a correlation matrix. We do not include this table here for the sake of brevity, but it is available from the authors upon request.

Table 2. Corruption-related disclosure and market discipline.

Dependent variable: Discipline	(1)	(2)	(3)	(4)	(5)
Disclosure	−0.0540**	−0.0558***	−0.0593***	−0.0610***	−0.0659***
	(−2.47)	(−2.67)	(−2.78)	(−2.79)	(−2.95)
Corrupted				−0.0839	−0.1017
				(−0.26)	(−0.33)
Size		−0.2151	−0.2147	−0.0979	−0.0867
		(−1.40)	(−1.40)	(−1.36)	(−1.32)
Equity		−1.4858**	−1.3999*	−0.8600	−0.6823
		(−2.09)	(−1.96)	(−1.34)	(−1.10)
Liquidity		−0.0062	−0.0059	−0.0057	−0.0053
		(−1.09)	(−1.05)	(−1.09)	(−1.05)
Non-Interest		0.0070***	0.0063**	0.0067***	0.0059**
		(2.93)	(2.57)	(2.83)	(2.41)
Reserves		−0.00007***	−0.00007***	−0.00007***	−0.00007***
		(−4.21)	(−3.94)	(−4.25)	(−3.95)
GDPpc			0.3772		0.5527
			(0.38)		(0.56)
Private Credit			0.0054		0.0068
			(0.81)		(1.01)
Bank-fixed effects	Yes	Yes	Yes	No	No
Country dummies	No	No	No	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Bank-level cluster	Yes	Yes	Yes	Yes	Yes
F test (p-value)	0.0000	0.0000	0.0000	—	—
Wald test (p-value)	—	—	—	0.0000	0.0000
R^2-within	0.6488	0.5736	0.6761		
R^2				0.3352	0.3475
#Obs.	532	532	532	532	532
#Banks	88	88	88	88	88

Notes: This table shows the results examining the impact of corruption-related disclosure on the cost of deposits. All the estimates include year-fixed effects. Robust standard errors are clustered by bank. ***, ** and * indicate statistical significance at 1%, 5% and 10%, respectively.

corruption-related disclosure works, given that the depositors of those banks that are less transparent demand higher remuneration in terms of interest rate. The weakening of market discipline in the case of banks with higher levels of corruption-related disclosure is consistent with the idea that depositors are less concerned as they are able to anticipate that their deposits will be safe from corruption scandals. In other words, as market discipline is strengthened for those banks that do not provide comprehensive corruption-related disclosure, these results provide evidence that efforts on increasing transparency (reducing opacity) related to corruption issues are associated with lower risk perception by depositors (*risk-reducing effect*). This result should be interpreted in light of the negative relationship between corruption events and corruption-related disclosure (de Andrés *et al.* 2024). Specifically, banks not involved in corruption scandals tend to send signals to stakeholders through disclosure, in an attempt to show their actual commitment to fighting corruption. Such a disclosure strategy is particularly implemented after the involvement of other

banks in corruption scandals. Thus, depositors can use corruption-related disclosure to distinguish between corrupted and uncorrupted banks, by demanding higher interest rates to opaque banks that might be involved in corruption scandals.

Regarding the traditional explanatory factors of market discipline, we obtain negative and statistically significant coefficients for Equity and Reserves in most estimates reported in Table 2. The proxy for bank activities diversification (Non-Interest) presents a positive and statistically significant coefficient at conventional levels in all estimates. Size and Liquidity show a negative coefficient in all estimates reported. However, their coefficients are not statistically significant at conventional levels. Macroeconomic variables (GDPpc and Private Credit) do not present statistically significant coefficients either in column (3) nor in column (5). As for the Corrupt dummy included in columns (4) and (5), we do not obtain any statistically significant results.

4.2. *The role of bank-level characteristics*

In this section, we examine if the characteristics of each individual bank entity may shape the extent to which corruption-related disclosure affects bank interest expenses. To do this, we extend our baseline model and include interaction terms between each bank-level characteristic and the proxy of corruption-related disclosure, as specified in model (3).

The empirical findings are reported in Table 3. As can be seen, in all the estimates, the coefficient of the disclosure index is negative and statistically significant at conventional levels (β_1). This finding remarks the robustness of our previous finding. As for the interactive terms, we obtain statistically significant effects for the interaction terms of the disclosure index with the bank-level variables Size and Reserves (β_2). In particular, these results indicate that the influence of corruption-related disclosure on market discipline varies across banks depending on the specific characteristics of each bank entity in terms of size and amount of reserves. Both interaction terms have a positive and statistically significant coefficient, suggesting that, although there is, on average, a negative effect of corruption-related disclosure on deposit rates, the effect seems to be reduced if the bank is large and with higher levels of reserves. Hence, while corruption-related disclosure is associated with a reduction in the risk perception of depositors related to corruption events, it seems that this reduction is counteracted in the case of large banks and banks with higher levels of reserves. This could be consistent with the TBTF effect on large banks and with the higher deposit rates expected in the case of larger banks as these entities may pay higher deposit rates than small banks if they have better investment options or compete more intensively than smaller banks. Therefore, this behavior could partially compensate for the reduction in deposit rates provoked by higher levels of corruption-related disclosure. As for the result of bank reserves, the result would be also consistent with our expectation that banks with higher levels of loan loss reserves being perceived as riskier are not strongly affected by the market discipline mechanism triggered by corruption-related disclosure that induces depositors to

Table 3. The role of bank-level characteristics.

Dependent variable: Discipline	(1)	(2)	(3)	(4)	(5)	(6)
Disclosure	−0.6818**	−0.0750***	−0.0795**	−0.0803**	−0.0957***	−0.0933***
	(−2.58)	(−2.91)	(−2.59)	(−2.29)	(−4.19)	(−3.75)
Disclosure*Size	0.0354**					
	(2.36)					
Disclosure*Equity		−0.1340				
		(−0.40)				
Disclosure*Liquidity			0.0027			
			(1.10)			
Disclosure*Non-Interest				0.0012		
				(0.90)		
Disclosure*Reserves					0.0005***	
					(8.75)	
Disclosure*Corrupted						0.0415
						(0.68)
Size	−0.2350	−0.2550	−0.2047	−0.2040	−0.2422	−0.0951
	(−1.48)	(−1.50)	(−1.43)	(−1.42)	(−1.65)	(−1.53)
Equity	−1.4511*	−1.5747*	−1.4155**	−1.4070*	−1.4463**	−0.7576
	(−1.80)	(−1.91)	(−1.99)	(−1.97)	(−2.07)	(−1.12)
Liquidity	−0.0081	−0.0072	−0.0062	−0.0063	−0.0057	−0.0060
	(−1.39)	(−1.26)	(−1.17)	(−1.20)	(−1.03)	(−1.23)
Non-Interest	0.0054**	0.0052**	0.0063**	0.0064**	0.0064**	0.0051**
	(2.27)	(2.28)	(2.59)	(2.62)	(2.65)	(2.10)
Reserves	−0.00009***	−0.00008***	−0.00006***	−0.00007***	−0.00007***	−0.00008***
	(−4.29)	(−4.08)	(−3.24)	(−3.87)	(−3.96)	(−3.75)
Corrupt						−0.0920
						(−0.21)
Bank-fixed effects	Yes	Yes	Yes	Yes	Yes	No
Country dummies	No	No	No	No	No	Yes
Country controls	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Bank-level cluster	Yes	Yes	Yes	Yes	Yes	Yes
F test (p-value)	0.0000	0.0000	0.0000	0.0000	0.0000	—
Wald test (p-value)	—	—	—	—	—	0.0000
R^2-within	0.6566	0.6445	0.6800	0.6785	0.6966	—
R^2	—	—	—	—	—	0.3549
#Obs.	532	532	532	532	532	532
#Banks	88	88	88	88	88	88

Notes: This table shows the results examining the impact of corruption-related disclosure on the cost of deposits and the influence of bank-level characteristics in shaping this relationship. All the estimates include year-fixed effects. Robust standard errors are clustered by bank. ***, ** and * indicate statistical significance at 1%, 5% and 10%, respectively.

accept lower interest rates from more transparent banks. These findings are in line with our second research hypothesis.

We also obtain a negative coefficient for the interaction term between the disclosure index and the equity-to-assets ratio, indicating that the risk-reduction effect is strengthened in the case of banks with higher levels of equity. The interaction terms with bank liquidity, the noninterest ratio and the dummy Corrupted, present

positive coefficients. However, these results are not statistically significant at conventional levels.

Overall, these results show that while the *risk-reducing effect* associated with corruption-related disclosure dominates, this risk-reducing effect is less relevant in the case of large banks and banks with higher levels of loan loss reserves.

4.3. *The role of the legal and institutional environments*

Another question of interest is whether the characteristics of the legal and institutional environment may also moderate or magnify the strength of the relationship between bank corruption-related disclosure and market discipline. Hence, according to the extended model (4), we sequentially introduce each legal and institutional variable (creditor rights, bankruptcy and collateral protection, the index of control of corruption, the KKZ index and the deposit insurance scheme measure) and the interaction terms between the disclosure index and each of the characteristics of the legal and institutional environment.[g]

The results are reported in Table 4. As can be seen, the coefficient for the disclosure index remains negative and statistically significant in all estimates reported. These results suggest that, even when accounting for the features of the legal and institutional environment, corruption-related disclosure negatively influences deposit rates. Regarding the interaction terms between Disclosure and each of the country-level variables, the results show that the effect of corruption-related disclosure on deposit rates differs across countries depending on the features of the legal and institutional environment. In particular, in columns (1)–(3) and (5), we obtain positive and statistically significant coefficient for the interaction terms. These results indicate that the *risk-reducing effect* of corruption-related disclosure is counteracted in countries with higher protection and enforcement of creditor rights (both in bankruptcy and in terms of collateral) and higher institutional quality, represented by the KKZ index. These results provide empirical evidence supporting our third research hypothesis. Although positive, the interaction terms between the disclosure index and the variables measuring the control of corruption and the deposit insurance scheme coverage are not statistically significant at conventional levels.

In other words, it emerges that the role of corruption-related disclosure to reduce deposit rates is more relevant in the case of countries with lower levels of institutional quality. This is to some extent in line with a risk-increasing effect associated with depositors in the case of countries where the quality of institutions is higher, thereby pushing banks to take higher levels of risk.

Hence, it can be stated that although we have found evidence consistent with the *risk-reducing effect* associated with corruption-related disclosure, particular characteristics of the legal and institutional environment may affect this relationship.

[g]We introduce these variables sequentially rather than all together because they are highly correlated.

Table 4. The role of the legal institutional environment.

Dependent variable: Discipline	(1)	(2)	(3)	(4)	(5)	
Disclosure	−0.1435**	−0.2497***	−0.2031***	−0.1243***	−0.2010***	−0.0645**
	(−2.51)	(−3.66)	(−3.33)	(−3.14)	(−3.12)	(−2.18)
Disclosure*Creditor	0.0233*					
	(1.84)					
Disclosure*Bankruptcy		0.1146***				
		(3.16)				
Disclosure*Collateral			0.0630***			
			(2.80)			
Disclosure*Control of Corruption				0.0798		
				(1.43)		
Disclosure*KKZ					0.1782**	
					(2.33)	
Disclosure*Deposit Insurance						0.0542
						(1.06)
Creditor	−0.0039					
	(−0.05)					
Bankruptcy		0.5766***				
		(3.52)				
Collateral			0.4281**			
			(2.11)			
Control of Corruption				−0.5987*		
				(−1.86)		
KKZ index					0.1098	
					(0.12)	
Deposit Insurance						0.8265
						(0.35)
Bank-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Bank and country controls	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Bank-level cluster	Yes	Yes	Yes	Yes	Yes	Yes
Wald test (p-value)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R^2-within	0.6785	0.6184	0.6100	0.6106	0.6106	0.4275
#Obs.	532	532	532	532	532	369
#Banks	88	88	88	88	88	86

Notes: This table shows the results examining the impact of corruption-related disclosure on the cost of deposits and the influence of country-level characteristics in shaping this relationship. All the estimates include year-fixed effects. Robust standard errors are clustered by bank. ***, ** and * indicate statistical significance at 1%, 5% and 10%, respectively.

The negative relationship between disclosure and deposit rates seems to be less strong in the case of banks with higher levels of corruption-related disclosure from countries where the quality of the institutional environment is higher. Hence, in countries where the quality of institutions and the legal protection and enforcement of creditor rights is higher, the benefits associated with the corruption-related disclosure to reduce deposits interest rates are lower.

4.4. *The mediating role of bank risk*

In this section, we aim to analyze the potential mediating role of bank risk within the disclosure-market discipline relationship. Table 5 shows the results of regression models (5) and (6) in which we carry out our mediation test (Hayes 2009). In doing so, we check whether the association between corruption-related disclosure and

Table 5. The effect of corruption-related disclosure and risk on depositors' discipline: mediation and residuals analyses.

Panel A: Mediation test		
	(1)	(2)
Dependent variable: Discipline		
Disclosure → Reserves	−0.0909**	
	(−2.41)	
Reserves → Discipline		0.1407**
		(2.23)
Disclosure → Discipline		−0.1259**
		(−2.29)
Panel B: Residuals test		
	(1)	
Dependent variable: Discipline		
Residuals	−0.0007***	
	(−3.30)	
Size	−0.2138	
	(−1.41)	
Equity	−1.4661**	
	(−2.06)	
Liquidity	−0.0053	
	(−0.93)	
Non-Interest	0.0067***	
	(2.75)	
GDPpc	0.2949	
	(0.30)	
Private Credit	0.0046	
	(0.70)	
Bank-fixed effects	Yes	
Year dummies	Yes	
Bank-level cluster	Yes	
Wald test (p-value)	0.0000	
Obs.	532	
Banks	88	

Notes: This table shows the results of the effects of corruption-related disclosure on bank reserves, as a proxy for bank risk, and how this relationship affects depositors' discipline. Panel A presents the results of the mediation test for all the banks included in our sample. Panel B reports the results of the residuals analysis. Variables are defined on Table A.1. *** and ** indicate statistical significance at 1% and 5% levels, respectively.

depositors' discipline is due, at least in part, to the mediating role of bank risk. We also focus on testing whether the residual component of the equation for bank risk in terms of the disclosure index (i.e. the portion of bank risk not explained by corruption-related disclosure) affects the market discipline exercised by depositors.

The results of the mediation model are shown in Panel A of Table 5. The dependent variable is Discipline. We use Reserves as a proxy for bank risk and Disclosure is the corruption-related disclosure index. The results reported in Table 5, columns (1) and (2), respectively, are consistent with the claim that higher levels of corruption-related disclosure reduce bank risk and that higher levels of bank risk increase discipline exercised by depositors. Hence, it emerges that bank risk-taking acts as a mechanism through which the higher levels of corruption-related disclosure affect discipline by depositors. This finding supports our fourth research hypothesis H_4. In addition, in line with our baseline estimations, we provide evidence to show that higher levels of our disclosure index are negatively correlated with the extent to which depositors exercise discipline.

In Panel B of Table 5, we show the results of the residuals analysis. We specifically examine whether, once the impact of corruption-related disclosure is removed, bank risk still significantly reduces and affects depositors' discipline. Our empirical strategy combines a residual component analysis with panel data estimators. We regress our bank risk proxy on the disclosure index, while controlling for the other relevant bank- and country-level factors appearing in the baseline regression. We obtain the residual component of this equation, which will be included as an additional explanatory variable for the equation explaining the depositors' discipline. Our results provide evidence of a negative and statistically significant coefficient for the Residuals variable, indicating that the part of bank risk not explained by corruption-related disclosure still reduces the market discipline exercised by depositors. Overall, our findings appear to indicate that, at least to some extent, it is necessary to consider that changes in depositors' discipline could be due to corruption-related disclosure influencing the level of bank risk.

4.5. *Robustness tests*

In further analysis, we perform additional robustness tests of our results. First, one important methodological concern of our empirical approach is that corruption-related disclosure might be endogenously determined in our model. Indeed, disclosure practices by banks could not be deemed fully exogenous but might partly be driven by bank-level characteristics and also by market discipline. In such a setting, where observations could not be randomly assigned to different groups, panel data linear regressions may not provide consistent estimates. Although the original construction of our dependent and explanatory variables in the baseline models could partially mitigate this aspect, we now aim to strengthen our empirical analysis as regards this specific econometric concern. To this aim, we apply an instrumental variables (IV) methodology, which enables us to focus on the effect on market discipline of the

exogenous component of corruption-related disclosure. As explanatory variables, we consider the whole set of variables explaining market discipline in the second stage plus an additional control acting as an exogenous variable. This additional variable in the first-stage equation must explain the corruption-related disclosure index without affecting the second-stage dependent variable — the market discipline index — directly. We consider the dummy variable that identifies corrupted banks (Corrupted) as the instrument for the first-stage estimates. On one hand, banks involved in corruption scandals may exhibit higher levels of corruption-related disclosure after the corruption scandal in order to restore their legitimacy (Blanc *et al.* 2019). On the other hand, according to the signaling theory (Spence 1973) and to the results obtained by de Andrés *et al.* (2024), it could be the case that banks not involved in corruption problems exhibit higher levels of corruption-related disclosure compared to banks that do experience corruption issues.

The results of the first-stage regressions are reported in column (1) of Table 6. In line with de Andrés *et al.* (2024), the coefficient for the Corrupted dummy is negative and statistically significant, suggesting that the instrument is valid and that, in particular, banks involved in corruption scandals disclose less on corruption-related issues than banks that were not involved in such types of problems. Column (2) presents the results of the second-stage regression. As can be seen, the predicted value of the disclosure index is negative and statistically significant at conventional levels. This indicates that, after explicitly controlling for potential endogeneity

Table 6. Robustness tests.

	IV estimator		Alternative measures of market discipline		Without Italian banks
	(1)	(2)	(3)	(4)	(5)
Disclosure		−0.8224***	−0.0353	0.0282***	−0.0536**
		(−4.17)	(−2.31)	(4.08)	(−2.57)
Corrupted	−0.2207*				
	(−1.91)				
Bank and country controls	Yes	Yes	Yes	Yes	Yes
Bank-fixed effects	No	No	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Bank-level cluster	Yes	Yes	Yes	Yes	Yes
Wald test (p-value)	0.0000	0.0000	0.0000	0.0000	0.0000
R^2	0.2318	0.2714	0.0114	0.1325	0.1548
#Obs.	532	532	532	443	274
#Banks	88	88	88	85	44

Notes: This table shows the results of robustness tests run in order to examine the impact of corruption-related disclosure on the cost of deposits. All the estimates include year-fixed effects, bank and country control variables. Robust standard errors are clustered by bank. ***, ** and * indicate statistical significance at 1%, 5% and 10%, respectively.

concerns, the baseline relationship between corruption-related disclosure and market discipline remains invariant.

Second, we define alternative dependent variables to proxy for market discipline. Following Martinez Peria & Schmukler (2001), Demirgüç-Kunt & Huizinga (2004), Cubillas *et al.* (2012), among others, we define the annual ratio of interest expense to interest-bearing debt of the bank minus the average interest rate in the country for the same year. Additionally, we consider the annual growth on bank consumer deposits as the dependent variable. As Goyal (2005) shows, debtholders may exercise market discipline not only by means of higher interest rates, but also, by means of restrictive covenants in bank debt or even withdrawing their savings. The results obtained are reported in columns (3) and (4), respectively. As can be observed, the coefficient of the corruption-related disclosure variable remains negative and statistically significant in column (3). In column (4), we obtain a positive coefficient for the corruption-related disclosure variable suggesting that the growth rate of deposits is higher in the case of those banks that disclose more on corruption-related issues, compared to those that disclose to a lesser extent. In other words, banks are penalized by depositors.

Third, in column (5), we re-run the basic estimations excluding Italian banks since, as reported in Table 1, they represent around 50% of the bank–year observations in our sample. The coefficient of the corruption-related disclosure index is still negative and statistically significant after excluding this subsample of bank–year observations.

5. Conclusions

This paper analyzed the market discipline mechanism triggered by corruption-related disclosure in the banking industry. We examined whether and to what extent depositors penalize banks that are more opaque with reference to their anti-corruption mechanisms and their involvement in corruption scandals by demanding higher interest rates for their deposits.

Corruption scandals and misconduct can negatively influence bank reputation, posing a threat on long-term profitability (Altunbaş *et al.* 2018). Although corruption events are potentially disruptive for any kind of firm (Joseph *et al.* 2016, Blanc *et al.* 2017, 2019), they are particularly threatening for banks because banking activities critically hinge upon trust, which could be jeopardized by a corruption scandal. Furthermore, a corruption scandal in a single bank could cause a *domino effect* resulting in a loss of trust in the entire banking system.

We performed our analysis on a sample of 88 "corrupted" and "uncorrupted" banks located in the GIPSI countries, being considered the most troubled countries of the Eurozone from an economic standpoint and with reference to the perceived level of corruption. We analyzed this sample over the 2011–2019 time horizon by means of fixed-effects panel data regression and of a corruption-related disclosure

index based on the content analysis methodological framework (de Andrés *et al.* 2024).

In line with stakeholder theory (Freeman 1984), resource dependence theory (Pfeffer & Salancik 1978) and signaling theory (Spence 1973), our results show that there is a negative and statistically significant relationship between our measure of corruption-related disclosure and bank interest expenses on deposits. This finding provides evidence of the effectiveness of the market discipline mechanism triggered by anti-corruption disclosure, showing that opaque banks are penalized by depositors and forced to pay higher interest rates compared to more transparent banks.

In addition, we showed that this relationship is shaped by both bank- and country-level characteristics. In particular, these results indicate that the influence of corruption-related disclosure on market discipline varies across banks depending on the specific characteristics of each bank entity in terms of size and amount of reserves. In a similar vein, the results also vary in the cross-section according to country-level characteristics related to the institutional environment. Specifically, in countries where the quality of institutions, the legal protection and the enforcement of creditor rights is higher, the benefits associated to the corruption-related disclosure to reduce deposits interest rates are lower. This heterogeneity across countries is a pivotal point for the implications of our study with reference to regulatory and supervisory interventions in different countries. Lastly, we provide evidence of a mediating role of bank risk within the disclosure-market discipline relationship, as higher levels of disclosure are associated with lower levels of reserves which, in turn, results in stronger market discipline by depositors.

From a theoretical perspective, we contribute to the literature by examining the effects of an under-researched type of CSR disclosure (namely corruption-related disclosure) and highlighting the importance of stakeholder theory (Freeman 1984) in the enactment of market discipline to penalize more opaque banks.

The main policy implication of our paper is that regulators and supervisors can rely on the market discipline mechanism triggered by corruption-related disclosure to complement their conventional supervisory tools such as capital requirements and on-site inspections. Given that such conventional approaches are particularly costly for supervisors (Estrella 2004), market discipline represents a suitable approach to reduce the burden and the cost of supervisory actions, while still preserving the stability and soundness of the banking system. However, regulators and supervisors should bear in mind that the effectiveness of this mechanism is strongly influenced by bank- and country-level characteristics. Given that this mechanism is weaker in countries characterized by high levels of institutional quality, legal protection and enforcement of creditor rights, in these countries supervisors should rely more on the conventional supervisory tools in order to guarantee the stability and soundness of the banking system. In addition, supervisors should monitor more closely those banks that are large or take on too much risk, given that market discipline is less effective for these entities.

This paper paves the way for several avenues for future research. First, enlarging the sample, including other banks at European and international levels, would allow to exploit cross-country and bank-level heterogeneity that could potentially play a role in influencing the level of interest expenses or shaping the disclosure–market discipline relationship (e.g. examining the role of inflation and informal institutions at country level). Second, analyzing the potential moderating effects of corporate governance characteristics such as board gender diversity represents another promising line of research. Specifically, given that board gender diversity plays a moderating role on the relationship between the frequency of fraudulent events and financial performance (Cumming *et al.* 2015), extending this analysis to the frequency and severity of corruption scandals would be an interesting avenue for further research. Lastly, given the high level of development of the literature focusing on analysts' forecasts (e.g. Engelberg *et al.* 2020), examining their potential moderator role represents another area worthy of investigation.

Acknowledgments

P. de Andrés, E. Scannella and N. Suárez acknowledge financial support from the Spanish Ministry of Economy and Competitiveness, Projects PID2020-118064GB-I00 and PID2023-149010NB-I00, and the Professorship Excellence Program through the multi-year agreement signed by the regional government of Madrid and the Universidad Autónoma de Madrid (Line #3). Salvatore Polizzi and Enzo Scannella acknowledge the funding provided by the Santander Financial Institute (SANFI) - research project PRJ-1853 (RiMaDiTERiBa) entitled "Risk Management and Disclosure of Traditional and Emerging Risks in Banking: New Insights from Quantitative and Qualitative Computer-Assisted Content Analysis Methodologies" (XV Convocatoria "Ayuda SANFI a la Investigación para Jóvenes Investigadores"). Salvatore Polizzi acknowledges the funding provided by the European Union - NextGenerationEU, Mission 4, Component 2, in the framework of the GRINS - Growing Resilient, INclusive and Sustainable project (GRINS PE00000018 – CUP B73C22001260006). The views and opinions expressed are solely those of the authors and do not necessarily reflect those of the European Union, nor can this institution be held responsible for them.

Appendix A

Table A.1. List of banks.

ABANCA NOVAGALICIA
AIB
ALLIANZ BANK FINANCIAL ADVISORS SPA
ALPHA BANK AE
ATLANTICO EUROPA
BANCA AGRICOLA POPOLARE DI RAGUSA
BANCA CARIGE
BANCA DELLA NUOVA TERRA SPA
BANCA DI CREDITO COOPERATIVO DI ALBA LANGHE ROERO E CANAVESE SCRL
BANCA DI CREDITO COOPERATIVO VALDOSTANA
BANCA DI CREDITO POPOLARE SCRL
BANCA DI PISA E FORNACETTE CREDITO COOPERATIVO SCPA
BANCA FARMAFACTORING SPA
BANCA INTERMOBILIARE DI INVESTIMENTI E GESTIONI
BANCA MARCH SA
BANCA MEDIOLANUM SPA
BANCA MONTE DEI PASCHI DI SIENA SPA
BANCA NAZIONALE DEL LAVORO SPA
BANCA PICCOLO CREDITO VALTELLINESE
BANCA POPOLARE DI BARI
BANCA POPOLARE DI SONDRIO SOCIETA COOPERATIVA PER AZIONI
BANCA PROFILO SPA
BANCA PUEYO
BANCA SELLA HOLDING SPA
BANCA SISTEMA SPA
BANCA VALSABBINA SOCIETA COOPERATIVA PER AZIONI
BANCO BPI
BANCO BPM
BANCO CAMINOS
BANCO CARREGOSA
BANCO COMERCIAL PORTUGUES
BANCO COOPERATIVO
BANCO DE INVESTIMENTO GLOBAL
BANCO DI DESIO E DELLA BRIANZA SPA
BANCO DI SARDEGNA SPA
BANCO INVEST
BANCO SABADELL
BANCO SANTANDER SA
BANCO SANTANDER TOTTA
BANCO CTT
BANK OF IRELAND
BANKIA
BANKINTER
BANKOA
BBVA
BPER BANCA SPA
CA INDOSUEZ WEALTH ITALY SPA
CAIXA BANCO INVESTIMENTO
CAIXA ECONOMICA MONTEPIO GERAL
CAIXA GERAL DE-DEPOSITOS
CAIXABANK SA

Table A.1. (*Continued*)

CASSA DI RISPARMIO DI ASTI SPA
CASSA DI RISPARMIO DI BOLZANO SPA
CASSA PADANA BANCA DI CREDITO COOPERATIVO SOCIETA COOPERATIVA
CONAFI PRESTITO SPA
CECA BANK
CREDIT AGRICOLE ITALIA SPA
CREDITO EMILIANO SPA
CRITERIA CAIXA
DEPFA BANK PLC
DEUTSCHE BANK SPA
EUROBANK
FCA BANK SPA
FEDLO BCC
FIDEURAM INTESA SANPAOLO PRIVATE BANKING SPA
FINANTIPAR SGPS SA
FINECOBANK BANCA FINECO SPA
HAITONG BANK
IBERCAJA BANCO SA
ICCREA BANCA SPA
INTESA SANPAOLO
INVEST BANCA SPA
KUTXABANK
LABORAL KUTXA
LIBERBANK
MEDIOBANCA
NATIONAL BANK OF GREECE SA
NOVOBANCO
OPTIMA BANK SA
PERMANENT TSB
PIRAEUS BANK
SANFELICE 1893 BANCA POPOLARE SOCIETA COOPERATIVA PER AZIONI
SANTANDER CONSUMER BANK SPA
SANTANDER TOTTA SGPS
ULSTER BANK
UNICAJA BANCO
UNICREDIT
UNIONE DI BANCHE ITALIANE SPA

Note: This table provides the full list of the banks of our sample.

Table A.2. Variables definitions and sources.

Variable	Definition	Source
Panel A: Bank-level variables		
Discipline	It is the ratio interest expense over average interest bearing liabilities.	Orbis BankFocus (Bureau van Dijk)
Alternative measures of market discipline	Annual ratio of interest expense to interest-bearing debt of the bank minus the average interest rate in the country for the same year.	Orbis BankFocus (Bureau van Dijk)

Table A.2. (*Continued*)

Variable	Definition	Source
Disclosure	It is the standardized disclosure index on corruption issues computed for each bank on an annual basis.	de Andrés *et al.* (2024)
Size	The natural logarithm of total bank assets in the balance sheet.	Orbis BankFocus (Bureau van Dijk)
Equity	The ratio equity-to-assets.	
Liquidity	The ratio liquid assets-to-total assets	
Non-Interest	The ratio noninterest income-to-total operating revenues.	
Reserves	The ratio loan loss reserves over total impaired loans.	
Corrupted	Dummy variable that takes value 1 when and after a bank corruption scandal becomes public and 0 otherwise.	Own calculations with information about bank corruption scandals following the definition of corruption proposed by Pellegrini (2011).
Panel B: Legal and institutional environment		
Creditor	Country-level index measuring the overall extent of creditor rights.	Own elaboration with data from the WB Doing Business Database and WB Governance Indicators Database
Bankruptcy	Country-level index measuring the quality of bankruptcy regulation.	
Collateral	Country-level index measuring the quality of the legal rules designed to protect individual creditors' claims outside bankruptcy.	
Control of Corruption	It is a country-level index proxying for the degree of control of corruption.	WB Governance Indicators Database
KKZ	It is the average value of the individual governance indicators for six dimensions of governance: Voice and Accountability; Political Stability and Absence of Violence/Terrorism; Government Effectiveness; Regulatory Quality; Rule of Law; Control of Corruption.	
Deposit Insurance	Ratio of country-level bank deposits covered by a deposit insurance scheme (% GDP).	EBA Deposit Guarantee Schemes Database
Panel C: Macroeconomic controls		
GDPpc	Natural logarithm of the GDP per capita (constant prices).	WB Global Financial Development Database
Private Credit	Ratio of private credit by deposit money banks (% GDP).	

Notes: This table describes the variables used in the paper and indicates the sources from which the data were retrieved.

Table A.3. Examples of corruption-related disclosure.

Corruption-related disclosure sentences	Source — Bank (year)
"In line with its firm and unwavering position against corruption, bribery and fraud, the Bank has established a system of relevant policies (on the Prevention of Conflict of Interests, Related Parties Transactions, Whistleblowing, etc.) and control mechanisms in order to mitigate the relevant risks."	Alpha Bank AE (2019)
"[Our] Anti-Corruption Policy defines all those actions that would be included in the concept of corruption, as well as those related actions that would not be allowed. With regard to the identification and control of corruption-related risks, the institution has a Programme for the Prevention of Corporate Crime, which has a specific section on the fight against corruption."	Banco Sabadell (2019)
"Considering the fight against corruption as crucial for the pursuit of the greater of the company and the community in which we live and operate, the FCA Bank embraces and respects honesty, integrity, loyalty, transparency, and impartiality as the principles that inspire its daily conduct."	FCA Bank (2019)

Note: This table reports some examples of corruption-related disclosure sentences provided by banks in their annual financial reports.

Table A.4. List of the keywords of the corruption-related dictionary.

Abuse	Facilitation payments	Malefactor	Scam
Asset forfeiture	Favoritism	Malfeasance	Scandal
Bluff	Felon	Manipulation	Secrecy jurisdiction
Breach of trust	Fraud	Misappropriation	Sextortion
Bribery	Gift giving	Misbehavior	Shell company
Cheat	Graft	Misconduct	Spoliation
Clientelism	Grease money	Miscreancy	State capture
Collusion	Illegal	Misdemeanor	Suspicious
Conflict(s) of interest	Illicit	Misdoing	Suspicious activity reports (SARs)
Corruption	Illicit financial flows (IFFs)	Misfeasance	Swindle
Crime	Immoral	Mismanagement	Tax avoidance
Crookedness	Incident(s) of corruption	Mispricing	Tax evasion
Cronyism	Influence peddling	Misuse	Tax haven
Debarment	Injustice	Money laundering	Terrorist financing
Deceit	Insider trading	Neopatrimonialism	Theft
Dishonest	Interest peddling	Nepotism	Thief
Double-dealing	Intimidation	Offshore financial center	Trading in influence
Elite capture	Kickback	Patronage	Transgression
Embezzlement	Kleptocracy	Politically exposed persons (PEPs)	Unlawful
Entrusted authority	Laundering of proceeds of crime	Predicate offence	Violation
Exploitation	Larceny	Prosecution	Whistleblow
Extortion	Lawbreaker	Reprobate	Wrongdoing

Note: This table reports the list of the keywords of the corruption-related dictionary proposed by de Andrés *et al.* (2024).

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