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Abstract

We investigate the effects of informal institutions (trust, religiosity and the media) on the relationship between accounting-based risk measures and bank distress. We conduct our analysis in two stages. In the first stage, we extend the prior literature by documenting a link between accounting-based risk measures and bank distress during the 2008-2009 financial crisis. In particular, given the environment characterized by rapid growth in financial innovation and complex financial transactions prior to the crisis, simple accounting-based risk measures continue to predict bank distress during this crisis period. In the second stage, we address our main research question related to the effects of selected informal institutions (societal trust, religiosity, and the media) in enhancing the predictive ability of accounting-based risk measures. As hypothesized, we find that these informal institutions enhance the predictive ability of accounting-based risk measures. Our results inform regulators that the focus on strengthening formal institutions should not ignore country-specific informal institutional structures.

JEL classification: G21; G28; G34

Keywords: Informal institutions; Accounting-based risk measures; Trust; Religion; Media; Bank failure; Bank financial trouble; Financial crisis

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1. Introduction

Researchers have long been interested in how institutions evolved and whether and how they affect economic outcomes. Williamson's (2000) synthesis proposes a multi-level framework to study the economics of institutions (starting at the highest level with informal institutions, followed by formal institutional environments, governance structures, and incentive structures), where a higher level imposes constraints on the succeeding level. Consistent with the idea that it is important to consider informal institutions in the study of economic phenomena, Duong et al. (2015) state, "At the inception of this process are informal institutions, including national culture, religious values, norms, and other conventions. These informal institutions arise from both the instincts and life experiences of the people of a nation over a significant period, and are the root of the more formal institutions that arise later." Motivated by these observations, we study the implications of selected country-level informal institutions for the ability of accounting information to predict bank distress.

We focus on the banking industry to examine our research questions for the following important reasons. First, the banking sector is an important and highly regulated industry in every economy around the world. Given the call option nature of bank equity, banks have greater risk-taking incentives and opportunities relative to other industries (Merton 1977). Therefore, it is important to understand the factors that predict bank distress for regulatory and policy making purposes. Second, a large proportion of banks in the U.S. and around the world are private, and given that market-based risk measures are unavailable for the majority of banks, accounting-based risk measures are important as early warning signals in predicting distress for these private banks. Third, the financial crisis of 2008-2009 has led many to question the ability of traditional

accounting-based measures to predict bank failure and financial trouble due to the rapid growth in financial innovation and complex financial transactions prior to the crisis. It has also been suggested that accounting-based measures may have lost their relevance in predicting financial distress (Kaplan 2011). Hence, the financial crisis provides a unique setting for examining whether accounting-based risk measures estimated in the period prior to the financial crisis are good predictors of bank failure and financial trouble during the crisis.

In the first stage of this study, we re-examine the ability of selected accounting-based risk measures to predict bank distress during the financial crisis. More specifically, we address the following research question: Are accounting-based risk measures from the pre-crisis period good predictors of bank failure and financial trouble in the crisis period? In the second stage, we examine our main research question about the role of three selected informal institutions -- societal trust, religiosity, and the media -- in enhancing the predictive ability of accounting-based risk measures. More specifically, we ask whether the ability of accounting-based risk measures to predict bank failure and financial trouble during the 2008-2009 financial crisis varies systematically with differences in country-level informal institutions.

We use an international sample of banks to study our two research questions. To address the first question, we employ three commonly used accounting-based measures of bank risk estimated in the pre-financial crisis period (i.e., 2000 - 2006), and assess the ability of these measures to predict bank failure and financial trouble in the crisis period (i.e., 2008 - 2009).[1] The first two measures, standard deviation of return on assets and standard deviation of net interest margin, capture the degree of risk taking in a bank's operations (Laeven and Levine 2009; Houston et al. 2010; Kanagaretnam et al. 2014a). The third measure, z-score, is a commonly

[1] We exclude the year 2007, since it is generally accepted that the financial crisis started in the latter half of 2007 (Ryan 2008; Erkens et al. 2012). Therefore, we define the pre-crisis period as 2000-2006 and the crisis period as 2008-2009.

used measure of bank stability (e.g., Laeven and Levin 2009; Houston et al. 2010; Kanagaretnam et al. 2014a) that indicates the distance from insolvency. If these pre-crisis accounting-based risk measures are good predictors of financial distress, we expect them to be positively related to bank failure and financial trouble during the crisis period.

We use actual bank failures as well as measures of asset quality and profitability to assess whether a bank is in financial trouble. In the U.S., bank examiners use the CAMELS rating system, which relies on several financial ratios and management characteristics, to identify banks that may be in financial trouble.[2] Because the CAMELS rating and other indicators of troubled banks used by bank examiners are not publicly available for banks around the world, we classify banks as troubled using publicly available data that reflect asset quality and profitability.[3] In particular, we use the ratio of loan loss provisions to total loans to measure asset quality and the ratio of net income to total assets to measure profitability.

Our main research question is whether informal institutions relate systematically to the ability of accounting-based risk measures to predict bank failure and financial trouble during the crisis period. Prior research suggests that a society's culture affects its behavior and values. Licht et al. (2005, p 234) state that a "common postulate in cross-cultural psychology is that all societies confront similar basic issues or problems when they come to regulate human activity. The key dimensions of culture are derived from these issues, because the preferred ways of

[2] CAMELS stands for Capital adequacy, Asset quality, Management, Earnings, Liquidity, and Systematic risk. The Uniform Financial Rating System, informally known as the CAMEL rating system, was introduced by U.S. regulators in November 1979 to assess the health of individual banks. Following an onsite examination, bank examiners assign a score on a scale of one (best) to five (worst) for each of the five CAMEL components; they also assign a single summary measure, known as the "composite" rating. In 1996, CAMEL evolved into CAMELS, with the addition of a sixth component ("S") to summarize Sensitivity to market risk. It is important to note that the CAMELS rating system is primarily based on accounting numbers from regulatory filings and therefore a reliable financial reporting system is critical to its effective functioning.

[3] We do not identify troubled banks based on capital adequacy because different countries have different requirements for capital adequacy ratios. Hence, we may wrongly classify a bank in a particular country as troubled when it is highly leveraged.

dealing with them are expressed in different societal value emphases. It is thus possible to characterize the culture of different societies by measuring prevailing value emphases on these key dimensions. This yields unique cultural profiles." Prior research shows that the financial reporting environment is shaped by country-specific informal institutional structures, including trust and religiosity (Dyreng et al. 2012; McGuire et al. 2012; Nanda and Wysocki 2013; Kanagaretnam et al. 2015; Pevzner et al. 2015). Drawing on this research, and relying on the argument that informal structures improve the quality of financial statements by dampening managers' opportunistic behaviors as well as enhancing the information value of accounting-based risk measures, we examine whether trust, religiosity, and media reach, improve the ability of accounting-based risk measures to predict bank failure and bank financial trouble.

We use an international bank sample from the *BankScope* database representing 35 countries over the 2000-2006 pre-crisis period to test our predictions on the relations between accounting-based risk measures and bank failure and financial trouble during the 2008-2009 crisis period. We find that all three accounting-based risk measures are positively related to bank failure and bank financial trouble. Additionally, the relations between these risk measures and bank failure are economically nontrivial and suggest that accounting-based risk measures are useful in predicting bank distress in the 2008-2009 crisis. In the main tests employing informal institutions, consistent with our predictions, we find that higher societal trust, religiosity, and media reach enhance the ability of accounting-based risk measures to predict bank failure and financial trouble. We subject our main results to a battery of sensitivity tests, including using alternate proxies for trust, religion, and the media, using a common factor as a summary measure for informal institutions, accounting for over-representation of German and U.S. banks in the sample, using an alternative definition of bank trouble, excluding public banks from our analyses, focusing on a subsample of large and "too big to fail" banks, focusing on a subsample

of commercial banks and bank holding companies where bank failure rates were higher during the crisis, and using two alternative definitions of accounting-based risk measures. Our inferences are robust to these sensitivity tests.

In additional tests, we examine possible channels through which informal institutions enhance the predictive ability of accounting-based risk measures. We explicitly test whether informal institutions play an information enhancement role by examining two related but distinct measures of earnings quality -- earnings persistence and ability of current earnings to predict future cash flows.[4] Consistent with the notion that informal institutions enhance the information value of accounting disclosure, we find strong evidence that the informal institutions represented by societal trust, religiosity, and the media enhance earnings persistence and cash flow predictability in banks.

Our study contributes to the literature in at least two important ways. First, we demonstrate that even in an opaque and complex industry such as banking, accounting-based risk measures capture the predicted relations between bank risk and bank failure and financial trouble. In particular, our results show that, contrary to popular belief, accounting-based risk measures still are relevant for predicting bank distress in the 2008-2009 financial crisis. This is important evidence, given that the overwhelming majority of banks around the world are private and, consequently, do not have market-based risk measures. Hence, accounting-based risk measures may be the principal information used in predicting bank distress. Second, our results provide evidence that informal institutions enhance the predictive ability of accounting information in the banking industry. Whereas prior studies focus on the implications of formal institutions such as regulation and governance (e.g., Laeven and Levine 2009; Houston et al.

[4] We do not explicitly test for the effects of informal institutions on opportunistic earnings management because there is already a well-established body of research suggesting that informal institutions constrain earnings manipulations (e.g., Dyreng et al. 2012; McGuire et al. 2012; Nanda and Wysocki 2013; Kanagaretnam et al. 2015).

2010), we show that, in addition to these institutional and regulatory characteristics, informal institutions such as trust, religion and the media also matter. These results lend strong support to our main hypothesis that informal institutions enhance the value of accounting-based risk measures in predicting bank distress.

The rest of this study is organized as follows. We discuss related research on accounting-based risk measures and the effects of informal institutions on the predictive ability of these measures, and develop hypotheses on the relations between these risk measures and bank failure and financial trouble in the next section. We present the research design and describe the data in section three, discuss the results in section four, and provide our conclusions in the final section.

2. Related Literature and Hypotheses

Our main hypothesis is that stronger informal institutions enhance the ability of accounting-based risk measures to predict bank distress. Before testing our main prediction, we re-examine the hypothesis that accounting-based risk measures are good predictors of distress in the banking industry, particularly in the 2008-2009 financial crisis.

2.1 The Use of Accounting-based Risk Measures in Predicting Financial Distress

There is a well-established literature focusing on balance sheet data to predict firm distress. This approach stems from early studies by Beaver (1966) and Altman (1968), who use accounting data to discriminate between healthy and troubled firms. Since then, many studies have assessed the ability of financial ratios to predict the financial health of banks (e.g., Meyer and Pifer 1970; Estrella et al. 2000). Various studies have also tested the superiority of a specific assessment technique over others (e.g., Martin 1977; Boyacioglu et al. 2009). Demyanyk and Hasan (2010)'s recent review of this extensive literature shows that the combination of operations research techniques with statistical methods substantially improves the prediction of bank failure. Other

recent studies have focused on the ability of select accounting variables to predict bank stability during the 2008-2009 financial crisis (Jin et al. 2011; Cole and White 2012).[5]

There is relatively limited research investigating bank stability during financial crises outside the U.S. Notable exceptions in an international setting include Bongini et al. (2001, 2002), who find that during the 1997 East Asian crisis, traditional CAMELS-type indicators help to predict subsequent distress and closure of financial institutions, and that information based on stock prices or on judgmental assessments of credit rating agencies does not outpace historical and backward looking information contained in balance sheet data.

We begin our analysis by re-examining the ability of summary accounting-based risk measures to predict bank distress around the world during the financial crisis of 2008-2009 for three important reasons. First, little is known about whether accounting-based risk measures can explain financial distress in the banking industry outside the U.S. Prior research in the U.S. provides evidence that accounting information is useful in predicting financial trouble during the financial crisis (e.g., Jin et al. 2011; Cole and White 2012), but it is not clear ex-ante whether accounting information is useful for such prediction outside the U.S. because bank financial information may be less forthcoming in non-U.S. countries due to different regulatory and institutional environments.

Second, most banks are private (for example, over 80% of U.S. banks) and hence market data are not available for these private banks. It is therefore important to investigate whether accounting-based risk measures help to assess bank risk in the absence of market data. Because earlier studies focus on public banks from a few countries (e.g., Bongini et al. 2001, 2002), their results may not be generalizable to both private and public banks over the broader set of

[5] Jin et al. (2011) document that lack of loan diversification (i.e., less diversified loan mix), problem loans (i.e., higher nonperforming loans and higher loan loss provisions), and growth in risky loans (i.e., higher growth in real estate and commercial loans) increase the probability of bank failure and financial trouble. Cole and White (2012) find that real estate loans played a critical role in determining which banks survived and which banks failed.

countries examined in the current study. Our aim is not to study the relations between accounting-based and market-based risk measures; rather, it is to assess whether accounting-based risk measures are good predictors of bank distress during the 2008-2009 financial crisis.

Third, banks have offered many innovative financial products in recent years that increased their profitability but, at the same time, exposed themselves to substantial risk and increased the complexity of their business. It is not clear ex-ante whether traditional summary accounting-based risk measures could still capture the risk exposure of these banks. Our study is also partly motivated by the suggestion that accounting-based measures may have lost their relevance in predicting financial distress in recent times (Kaplan 2011).

2.2 Role of Informal Institutions

In the second stage, we address our main research question on the effects of informal institutions in enhancing the information value of accounting-based risk measures. We focus on two cultural variables, societal trust and religiosity, and the role of the media in enhancing the value of accounting-based risk measures in the context of predicting bank distress. The link between culture and individual behavior is predicated on social norm theory. According to Liu et al. (2014), "… social norms are rules and standards understood by members of a group that guide and constrain social behavior …" Akerlof (1980) claims that social norms, although costly, nevertheless exist because of perceived loss of reputation to followers for deviating from these norms. Burchell et al. (1985) argue that wider social forces can influence accounting practice and that accounting itself functions in the realm of the social, influencing as well as merely reacting to it.

Stavrova and Siegers (2014) assert that religiosity is an example of a social norm. Unethical behavior (e.g., intentionally misstating financial statements and manipulating accounting numbers) clearly violates religious principles and trust. Therefore, management of a

corporation located in a highly religious and/or high trust area would be less likely to act in a manner that violates a social norm or face social sanctions. Thus, we hypothesize that informal institutions such as trust and religion will enhance the information value of accounting disclosures. On the other hand, effective media as an informal monitoring mechanism constrains manager's incentives for intentional misreporting.

2.2.1 Effects of Trust

The extant literature finds that societal trust affects a broad set of social and economic outcomes. For instance, prior studies find that societal trust facilitates economic growth and social efficiency (Knack and Keefer 1997; La Porta et al. 1997; Zak and Knack 2001), international trade and investment (Guiso et al. 2009), financial development (Guiso et al. 2004, 2008), corporate financing and merger and acquisition (M&A) transactions (Bottazi et al. 2011; Duarte et al. 2012; Ahern et al. 2015). In short, there is a well-established literature supporting the notion that trust matters in various economic exchanges.

At a more conceptual level, Fukuyama (1995) proposes that trust is a form of social capital, i.e., it is an economic asset that benefits society. Khalil (1994) notes that trust is especially important in market-based societies, where individuals are motivated by rational, self-interested behavior, because it serves as a control mechanism for individual behavior. This is consistent with Arrow (1974), who indicates that trust stimulates the economy by facilitating economic exchange that would otherwise be hindered because of asymmetric information, incomplete contracts, and monitoring costs.

To date, very few studies have explored the implications of trust for information quality, with the notable exceptions of Nanda and Wysocki (2013) and Pevzner et al. (2015), who examine the impact of trust on financial transparency and investor reaction to earnings

announcements, respectively.[6] Nanda and Wysocki (2013) report that firms in high-trust societies have higher earnings quality and engage in lower earnings management and other opportunistic reporting practices. Pevzner et al. (2015) document that corporate earnings are more credible in more trusting societies. Specifically, they find that trust is positively associated with a country's aggregate earnings quality and that higher quality earnings generate stronger investor reactions. However, even after holding earnings quality constant, Pevzner et al. (2015) still find evidence of significantly stronger investor reactions to earnings announcements in more trusting countries.

Rotter (1967, p. 651) defines trust "as an expectancy held by an individual or a group that the word, promise, verbal or unwritten statement of another individual or group can be relied upon." Gambetta (1988, p. 217) states that "trust … is a particular level of the subjective probability with which an agent assesses that another agent or group of agents will perform a particular action." Although there are several different definitions of trust, Starnes et al. (2010) argue that they all refer to some aspect of "(1) integrity, character, and ability of a leader; (2) reciprocal faith in one's intentions and behaviors; and (3) a confident reliance on the integrity, honesty, or justice of another." Higher levels of societal trust can also create conditions for less opportunistic behavior, and this could manifest in lower levels of managerial rent extraction. In our context, we interpret the literature on trust as saying that at the margin, trust is associated with less moral hazard. Therefore, banks located in countries with greater societal trust may experience less opportunistic behavior in the form of intentional misreporting, which in turn would increase the ability of accounting-based risk measures in predicting bank distress.

[6] Garrett et al. (2014), employing survey data that proxies for intra-organizational trust (i.e., employees' trust in management), also document a positive relation between trust and financial reporting quality.

Further, greater trust in an economy promotes the development of institutions that complement financial reporting and disclosure and thus increases the returns to firms' reporting and disclosure activities (Carlin et al. 2009; Boduh-creed 2011). Given this extant evidence of the effects of trust on credibility of financial reporting, we expect societal trust to enhance the ability of accounting-based risk measures to predict bank distress.

2.2.2 Effects of Religion

Previous research demonstrates that religion affects a wide array of behaviors (e.g., crime, drug and alcohol abuse, health, and marriage) that impact an economy (Iannaccone 1998). Weber (1930) argues that religious practices and beliefs have important consequences for economic development. More recently, researchers in the disciplines of accounting and finance have been focusing on the link between religion and corporate decision-making. Accounting researchers have emphasized the role of religion as an external monitoring mechanism. For instance, Dyreng et al. (2012) find that firms located in more religious areas have higher accruals quality and are less likely to opportunistically manage earnings, more likely to report bad news, and less likely to restate financial statements. McGuire et al. (2012) report that firms headquartered in areas with strong religious social norms are generally associated with lower incidences of financial reporting irregularities. Omer et al. (2010) provide further evidence that religion is an important external monitoring mechanism by showing that auditors located in areas with strong religiosity provide higher audit quality, proxied by the issuance of going concern audit opinions. In the banking context, Kanagaretnam et al. (2015) document that religiosity is negatively related to income-increasing earnings management for loss avoidance and just-meeting-or-beating the prior year's earnings. They also find that religiosity reduces income-increasing earnings management through abnormal loan loss provisions.

We expect religion to enhance the ability of accounting-based risk measures to predict bank distress for several reasons. First, major religions uniformly condemn the manipulation of one's fellow man, thus creating disincentives for opportunistic financial reporting practices (Callen and Fang 2015). Second, religiosity is a major source of morality and ethical behavior. For example, Walker et al. (2012) document that participants who were intrinsically motivated by their religiosity were less accepting of ethically questionable scenarios. McGuire et al. (2012) note that individuals with higher levels of religiosity exhibit higher levels of cognitive and emotional discomfort with deviations from religious role expectations. Thus they are less likely to deviate from these expected behaviors. Third, risk aversion is another reason for a negative relation between religion and earnings manipulation. For example, Hilary and Hui (2009) find that U.S. companies located in counties with higher religiosity are more risk averse; they exhibit lower variability in return on assets and return on equity. Risk-averse managers are less likely to engage in opportunistic financial reporting practices because of the risks to their reputations and also because of potential litigation costs.

2.2.3 Effects of the Media

In the context of financial transparency and credibility, our main focus is on the monitoring role of the media. The media's monitoring role comprises two functions: dissemination of news the public should know, including information about financial reporting practices, and investigation of the actions of decision makers such as managers, external advisors, auditors, and governments. Another role of the media that is relevant for our research is agenda setting. As an agenda setter, the media informs both the public and governments about new developments at home and abroad on financial reporting practices of banks. Additionally, the media can also keep the issues at the forefront by repeating the news with follow-up articles.

In general, the media in its monitoring role helps to enhance transparency, promote accountability of public officials, and reduce corruption (Brunetti and Weder 2003; Djankov et al. 2003; Leeson 2008; Coronel 2010; Houston et al. 2011; Chen et al. 2013). In a recent study, Kim et al. (2015) argue that the media has a watchdog function to produce externally generated corporate transparency. Even if reporters are unable to uncover all the complex financial misreporting, Bednar (2012) and Bednar et al. (2013) document that articles with negative tone can influence corporate policies even if the coverage does not always highlight illegal acts.[7] Consistent with the media acting as a monitor of financial misreporting, Miller (2006) finds that the press acts as a watchdog for corporate fraud by rebroadcasting information from other information intermediaries and by undertaking investigative reporting, and Dyck et al. (2010) document that the media plays an important role in detecting corporate fraud, especially for the more severe fraud cases. Consequently, media exposure increases the political costs associated with misreporting, which opens the door for potentially large penalties and also imposes costly reputational damage on the firm and its managers. Reputational concerns from media exposure could potentially act as a strong deterrent against opportunistic financial reporting practices by managers.

According to World Bank Institute (2002), "as important providers of information, the media are more likely to promote better economic performance when they are more likely to satisfy three conditions: the media are independent, provide good-quality information, and have a broad reach." Following this World Bank Institute report, our main focus is on the broad reach of the media, which we proxy by per capita newspaper circulation. Dyck et al. (2008) reason that the impact of the media is greater when it reaches a larger audience, and when the

[7] As discussed in Dyck et al. (2010), even though journalists might be less specialized, they benefit from revealing complex issues because high profile stories might help establish their career and reputation.

news it disseminates is perceived as more credible. Ceteris paribus, the wider the media reach and the more credible the media, the greater will be the reputational impact of its reports. Accordingly, we expect the media's monitoring role through its reach to enhance the ability of accounting-based risk measures to predict bank distress.

3. Research Design and Data

3.1 Research Design

In order to assess the effects of pre-crisis period accounting-based risk measures on bank failure and financial trouble during the crisis period, we regress the bank failure and financial trouble indicators on bank risk, while controlling for other bank-level and country-level factors. Our main cross-sectional logistic regression specification is as follows:

$$T_{i,k} = \alpha R_{i,k} + \beta X_{i,k} + \gamma W_k + \varepsilon_{i,k}, \quad (1)$$

where, T is an indicator variable that equals one if the bank fails or if the bank is in financial trouble during the 2008-2009 crisis period, and zero otherwise, R is a risk measure for bank i in country k, X is a vector of bank characteristics, and W is a vector of country characteristics. We estimate standard errors clustered by country to account for within-country correlations.[8]

We measure bank risk taking using two traditional accounting-based measures of bank risk as well as by z-score. The first two measures, *σ(ROA)* and *σ(NIM)*, measure the volatility of return on assets and net interest margin, respectively, over the period 2000-2006. They reflect the degree of risk taking in a bank's operations (Laeven and Levine 2009; Houston et al. 2010; Kanagaretnam et al. 2014a). The third measure, *z-score*, is a measure of bank stability (e.g., Laeven and Levine 2009; Houston et al. 2010; Kanagaretnam et al. 2014a). In particular, z-score is the sum of return on assets and capital to assets ratio, divided by the volatility of return on

[8] These are bank-level regressions (i.e., one observation for each bank), as such we cluster by country.

assets. It indicates the number of standard deviations that a bank's profits can fall below its expected value before its equity is depleted and the bank is insolvent. Thus, a higher *z-score* indicates that the bank is further from insolvency and hence more stable. Because all three measures of risk-taking are highly skewed, we log transform these measures. If the accounting-based risk measures predict bank distress, we expect the coefficients on *σ(ROA)* and *σ(NIM)* to be positive, and the coefficient on *z-score* to be negative. We provide detailed definitions of these variables and other control variables in the Appendix.

We include several bank-level variables to control for cross-sectional differences in bank characteristics that may influence the relationship between the accounting-based bank risk measures and bank distress. Consistent with Laeven and Levine (2009) and Houston et al. (2010), we control for bank size (*SIZE*), measured as log of total assets in U.S. dollars in 2006. Following Lel and Miller (2008) and Beltratti and Stulz (2012), we control for bank revenue growth (*REVG*), which is the growth rate of bank revenue over the year 2006, total loans (*LOANS*), total liabilities-to-total assets ratio (*LEV*), change in cash flow (*ΔCASH*), and loan loss provision (*LLP*). Because Nichols et al. (2009) find that financial reporting quality differs depending on whether the bank is publicly traded or privately held, we control for the listing status of the bank (*LISTING*). The financial reporting of commercial banks and bank holding companies may also be different from that of other types of financial institutions; hence we use an indicator to control for bank type (*COMMERICAL*).

In addition to the bank-level controls, we include several country-level controls to isolate the effects of other country characteristics that may influence bank distress. The first set of controls relates specifically to the banking industry. Demirguc-Kunt and Detragiache (2002) show that countries that have higher deposit insurance coverage limits are more likely to suffer systemic banking crises. We therefore include a control for deposit insurance (*DI*). Following

Laeven and Levine (2009) and Houston et al. (2010), we control for capital stringency (*CAPST*) in banks. *CAPST* is an index of regulatory oversight of bank capital from Barth et al. (2006). Prior studies (e.g., Kwok and Tadesse 2006; Purda 2008) indicate that a firm's perceived risk (and the associated financial trouble) is influenced by whether the financial system in the country is bank-based or market-based. We therefore control for the type of financial system (*BANK*). As suggested by Fonseca and González (2008), bank regulation and supervision may affect a bank's earnings quality and hence its financial health. We use the private monitoring index (*MONITOR*) and the official supervisory power index (*OFFICIAL*) developed by Barth et al. (2001), and the credit market regulation index (*CR_REG*) from the Economic Freedom of the World to proxy for bank regulation.

The second set of country controls relates to the formal institutional environment in a country. We control for creditor rights (*CR*) and information sharing (*IS*) because Houston et al. (2010) show that stronger creditor rights promote greater bank risk taking, and greater information sharing among creditors leads to lower bank risk and financial distress. We also control for legal origin (*COMMON*), which may affect financial distress, because Cole and Ariss (2010) show that banks in common law countries allocate a significantly larger portion of their assets to risky loans than banks in code law countries. As in Laeven and Levine (2009), we control for the degree to which the law is fairly and effectively enforced in a country (*LEGENF*). We control for disclosure quality because greater transparency in accounting disclosure can reduce banks' incentives to manage earnings and hence reduce the risk of financial distress (Fonseca and Gonzalez 2008). We use the bank disclosure index constructed by Huang (2006) as our measure of country-level disclosure quality. We also control for economic growth, measured as real GDP growth in 2006 (denoted as *GDPGR*), because countries with different growth are subject to different economic shocks and sources of volatility, which likely affect bank distress

differentially. Finally, we control for bank competition (*COMP*), which may affect the stability of the banking sector and, hence, its financial health (Boyd and De Nicolo 2005).

To address our main research question on whether the effects of informal institutions enhance the ability of accounting-based risk measures to predict bank failure/financial trouble, we modify the cross-sectional logistic model (1) as follows:

$$T_{i,k} = \alpha R_{i,k} + \beta X_{i,k} + \gamma W_k + \mu INF_k + \tau R_{i,k} * INF_k + \varepsilon_{i,k}, \quad (2)$$

where, INF_k represents either trust, religiosity, or media reach for a specific country. If these informal institutional factors enhance the ability of accounting-based risk measures to predict bank distress, we expect τ, the coefficients on the interactions between risk and trust, religiosity and media reach, to be positive when bank risk is measured by *σ(ROA)* or *σ(NIM)*, and negative when bank risk is measured by *z-score*.

Following prior literature (e.g. Guiso et al. 2008; Ahern et al. 2015; Pevzner et al. 2015), we construct our measure of societal trust based on responses to the following question from Wave 5 of the World Values Survey (WVS): "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" The two possible answers were "Most people can be trusted" and "Can't be too careful." We recode the response to this question to one if a survey participant reports that most people can be trusted, and zero otherwise. We then use the mean of the response for each country as our measure of societal trust (*TRUST*).[9] For this measure, higher values correspond to higher societal trust.[10] As

[9] To increase the number of countries that we examine, we supplement the data with survey responses to the same question from Wave 4 of the WVS if the Wave 5 survey data for a country are unavailable. This data supplement is reasonable because societal trust and religiosity of a country are not likely to change significantly over a short period of time.

[10] Prior research shows that aggregate levels of this trust proxy correlate well across countries with a number of indicators of the level of trustworthiness, such as the level of corruption (Uslaner 2002) and the prevalence of violent crime (Lederman et al. 2002). This is expected if the open-ended wording of the generalized trust question leads respondents to rely on widely different interpretations of what the question refers to.

noted by Guiso et al. (2010), an individual's response to this question captures her level of generalized trust, i.e., trust toward generic members of the population in her own country. Given that corporations are ultimately managed by individuals, we use this measure, which is based on individuals' responses, as a proxy for mutual trust between firms and individuals within a country.[11]

We follow Cornwall et al. (1986), Parboteeah et al. (2008), McGuire et al. (2012), and Kanagaretnam et al. (2015) and define religiosity by (1) its cognitive (knowing) element, which has to do with religious beliefs or religious knowledge, (2) its affective (feeling) element, which motivates people to have emotional feelings about religion, and (3) its behavioral (doing) element, which emphasizes church attendance, personal prayer or regular religious donations. To develop a comprehensive measure of religiosity, we use the responses to three different questions in Wave 5 of the WVS: (1) Are you an active member, an inactive member, or not a member of a church or religious organization? (*RELI_MEMBER*), (2) How important is religion in your life? (*RELI_IMPT*), and (3) Do you attend or do you not attend religious services? (*RELI_SERVICE*). Using the data from the WVS, we calculate the strength of each of these three elements of religiosity for each of the countries in the sample. Similar to Kanagaretnam et al. (2015), we use the average of the three measures as an aggregate religiosity measure (*RELIGIOSITY*).

We use newspaper circulation (*MEDIA*) to proxy for media reach, which may affect the financial reporting quality and risk taking behavior of banks. We measure newspaper circulation as the logarithm of the number of newspapers and periodicals circulated per thousand inhabitants in 2000, with higher values corresponding to broader media diffusion. Because the media has the potential to uncover wrongdoing and thereby impose reputation loss

[11] In a robustness test, we use an alternate measure of societal trust that is based on individuals' trust towards corporations (see Section 4.5).

on opportunistic managers, wide newspaper circulation can mitigate managers' incentives to misstate and thereby enhance the ability of accounting-based risk measures to predict bank distress. We obtain the data on newspaper circulation from Djankov et al. (2008).

3.2 Data

We obtain financial data to measure bank risk from the *BankScope* database. Our risk variables are measured over the period 2000-2006 to ensure that the effects of the financial crisis, which started in the latter half of 2007, do not distort our analysis. We measure all bank-level controls in the year 2006. We hand-collect data on failed banks primarily from government and central bank reports. We have data available for failed banks in 35 countries with data on the country controls and financial information in *Bankscope* for the failed bank analysis. Overall, our sample includes 5,655 banks, of which 256 banks (4.5%) failed during the period 2008-2009.

We next define a composite measure for financially troubled banks, coded one if it satisfies any of the following two criteria in 2008 or 2009: (1) recognizes a large loan loss provision (i.e., loan loss provision/total loans > 5%), and (2) incurs a large loss (i.e., return on average assets < -3%), and zero otherwise. These benchmarks are reasonable since the 95th percentile of LLP to loans ratio is 4.15% and 5.95% in 2008 and 2009 respectively, and the 5th percentile of ROA is -2.77% and -3.37% in 2008 and 2009, respectively. To ensure that these banks were not financially troubled prior to the crisis period 2008-2009, we delete banks that satisfy any of the above criteria in 2006. Thus, our tests relate to banks that were healthy in 2006 but are troubled in the 2008-2009 period. For the troubled bank analysis, we have 5,472 banks, of which 922 (16.8%) are classified as troubled. The number of banks used in the troubled bank analysis is smaller than the number in the failed bank analysis because we delete banks that are financially troubled in the pre-crisis period.

The number of countries included in the sample is further reduced when we include the informal institutions in the analysis. Specifically, 9 countries do not have data for *TRUST*, 11 countries do not have data for *RELIGIOISTY*, and 2 countries do not have data for *MEDIA*.

4. Empirical Results

4.1 Descriptive Statistics

Table 1 reports the sample composition and the mean characteristics for each of the 35 countries. There is significant variation in the number of bank observations across countries due to differences in capital market development, country size, and availability of complete financial accounting data. Because German and U.S. banks represent a significant proportion of the total sample (around 42%), as a sensitivity check, we also test our predictions after excluding banks from these two countries (see Section 4.6). As observed from Table 1, societal trust varies widely across countries. The Nordic countries (Finland and Sweden) and Switzerland have the highest levels of trust (more than 50% of the respondents think that most people can be trusted), while Brazil, Malaysia, Philippines and Turkey exhibit the lowest levels of trust (less than 10% of the respondents think that most people can be trusted). Bangladesh, Brazil, Philippines, South Africa and Venezuela exhibit the highest levels of religiosity where more than 80% of the respondents are classified as being religious, while Spain exhibits the lowest level of religiosity. The Nordic countries and Switzerland have the highest levels of newspaper circulation, while Brazil and South Africa have the lowest levels. Overall, we observe considerable variations in trust, religiosity and media reach across countries.

We present the descriptive statistics for the bank-level and country-level variables in Panel A of Table 2. On average, 4.5% of the sample banks failed during the financial crisis 2008-2009, which is comparable to the 4.3% reported in another international study of failed banks by

Kanagaretnam et al. (2014a). The percentage of troubled banks during the crisis is 16.8%, which is similar to the 15.9% reported by Jin et al. (2011) in their analysis of troubled U.S. banks in 2007. The mean values of our accounting measures of risk are similar to those reported in prior studies and exhibit considerable variation across countries. For example, the overall mean value for *z-score* is 3.83, whereas the corresponding values in Houston et al. (2010) and Laeven and Levine (2009) are 3.24 and 2.88 respectively.[12]

Table 2 Panel B provides the Pearson's correlation for the variables used in the regression analysis. Consistent with our prediction, we find that higher risk is associated with greater financial distress. Among the informal institutional variables, societal trust (*TRUST*) and media coverage (*MEDIA*) are positively correlated with one another, while religiosity (*RELIGIOSITY*) is negatively correlated with the other two variables. This suggests that informal institutions are multi-faceted. Accordingly, as an additional sensitivity test, we also examine our prediction on a single factor that captures the commonality among these three variables (see Section 4.5).

4.2 Relation between Accounting Risk Measures and Bank Distress

Table 3, columns 1 to 3 report the baseline results for the relation between the bank risk measures (*σ(ROA)*, *σ(NIM)*, and *z-score*) and the incidence of bank failure. Consistent with our prediction, the coefficients on *σ(ROA)* and *σ(NIM)* are positive, while the coefficient on *z-score* is negative, with all the coefficients significant at the 1% level. To assess the economic significance, we calculate the marginal effect of the risk measure on the incidence of bank failure.[13] A one standard deviation increase in *σ(ROA)* and *σ(NIM)* increases the probability of

[12] We log-transform *σ(ROA)* and *σ(NIM)* (after multiplying them by 10,000), as well as *z-score* because they are highly skewed.

[13] The marginal effect indicates the change in the probability of bank failure per standard deviation change in the risk measure (holding other independent variables constant). The marginal effect per standard deviation (SD) change in the risk variable is computed as p x (1-p) x b x SD, where p is the base rate (the actual percentage of bank failure) and b is the estimated coefficient from the logistic regression (Liao 1994).

bank failure by 1.36% and 1.60% respectively, while a one standard deviation increase in *z-score* decreases the probability of bank failure by 0.97%. Although the marginal effect is modest in absolute magnitude, it is significant when compared to the base rate for bank failure of 4.5%. Overall, the results indicate that the relation between the risk measures and bank failure is economically nontrivial, and suggests that this measure is useful in predicting the likelihood of bank failure during the 2008-2009 crisis.

With regard to the bank-level controls, we find that larger banks, banks with higher loans are more likely to fail, while banks with larger revenue growth are less likely to fail. These results are largely consistent with the evidence reported in earlier studies (e.g., Kanagaretnam et al. 2011). For the set of country controls, we find that the coefficient on the deposit insurance indicator variable (*DI*) is positive and significant, consistent with the argument that *DI* increases the moral hazard problem and hence bank failure (Demirguc-Kunt and Detragiache 2002). The coefficients on *CAPST*, *MONITOR*, *CR_REG* and *COMMON* are positive and significant, suggesting that greater capital stringency, private monitoring, credit market regulation and common law origin are associated with a higher likelihood of bank failure. We find that information sharing (*IS*) is negatively associated with the likelihood of bank failure, consistent with Houston et al. (2010) who find that better information sharing lowers bank risk. In addition, banks are less likely to fail when there is greater legal enforcement (*LEGENF*), higher disclosure quality (*DISC*), and greater competition in the banking sector (*COMP*).

We report the results for the relation between bank risk and bank trouble in Columns 4 to 6 of Table 3. As indicated earlier, we classify a bank as troubled if it satisfies any of the following two criteria in the 2008-2009 period: (1) recognizes a large loan loss provision (i.e., loan loss provision/total loans > 5%), and (2) incurs a large loss (i.e., return on average assets < -3%). We delete banks that satisfy any of the above criteria in 2006 to ensure that they were not

troubled prior to 2008. Thus, our tests relate to banks that were healthy in 2006 but are troubled in the crisis period 2008-2009.

Consistent with our predictions, the coefficients on *σ(ROA)* and *σ(NIM)* are positive, while the coefficient on *z-score* is negative, and each of these coefficients is statistically significant at the 1% level. To assess the economic significance of the findings, we calculate the marginal effect of the risk measure on the incidence of bank trouble. A one standard deviation increase in *σ(ROA)* and *σ(NIM)* increases the probability of bank financial trouble by 5.08% and 3.71% respectively, while a one standard deviation increase in *z-score* decreases the probability of bank financial trouble by 4.58%. These results indicate that the effect of the risk measure on the propensity for bank trouble is nontrivial and indicate that accounting-based risk measures are useful for predicting bank financial trouble.

For the control variables, the sign and significance of the coefficients are relatively similar to the bank failure analysis with the following exceptions. We find that the size of bank loans (*LOAN*) is not associated with the likelihood of financial trouble, while leverage (*LEV*) is associated with a lower likelihood of financial trouble. In addition, capital stringency (*CAPST*), credit market regulation (*CR*), common law origin (*COMMON*), and legal enforcement (*LEGENF*) are no longer associated with the likelihood of financial trouble.

Overall, the above results confirm that accounting-based risk measures have predictive ability for the likelihood of bank failure and financial trouble during the 2008-2009 crisis period.

4.3 Effects of Informal Institutions on the Relation between Accounting Risk Measures and Financial Distress

In this section, we investigate our main research question on the implications of informal institutional characteristics for the relation between accounting-based risk measures and bank

distress. Table 4 reports the results of the impact of societal trust on this relation.[14] We expect societal trust to enhance the ability of accounting-based risk measures to predict bank distress. Columns 1 to 3 (Columns 4 to 6) show the results for the impact of societal trust on the relation between our three measures of bank risk and bank failure (bank trouble).

There are two important features of these results. First, the main effect of the risk measure is still significantly associated with bank failure and bank trouble in the predicted direction. In other words, our hypothesis is supported even after controlling for differences in societal trust across countries. Second, and more importantly, consistent with our prediction, the coefficients on the interaction terms between the informal institution represented by *TRUST* and the risk measures represented by *σ(ROA)* and *σ(NIM)* are both positive and statistically significant at the 10% level or lower (with the exception of Column 2, which is positive but insignificant). Similarly, the coefficient on the interaction term between *TRUST* and *z-score* is negative and statistically significant at the 5% level. Overall, the results indicate that greater societal trust enhances the ability of accounting-based risk measures to predict bank financial distress.

In Table 5, we report the results for the effect of religiosity on the relation between accounting risk and financial distress. As before, we report the results for the failed-bank analysis in Columns 1 to 3, and the troubled-bank analysis in Columns 4 to 6. We expect that higher religiosity will enhance the ability of accounting-based risk measures to predict bank distress. Consistent with our prediction, in all columns, the coefficients on the interaction terms *RELIGIOSITY*σ(ROA)* and *RELIGIOSITY*σ(NIM)* are positive and statistically significant,

[14] Ai and Norton (2003) provide an alternative computation for calculating the directional effect and statistical significance of interactions in nonlinear models. However, Greene (2010) concludes that an overall statistical inference cannot be obtained from the Ai and Norton (2003) measure. Furthermore, Kolasinski and Seigel (2010) argue that it is appropriate to draw inferences from the interaction term in nonlinear models. Therefore, we use the interaction coefficient to assess the directional effect of our results.

while the coefficient on the interaction term, *RELIGIOSITY*z-score* is negative and statistically significant at conventional levels. Overall, the results provide strong support that higher religiosity enhances the ability of accounting-based risk measures to predict bank financial distress.

Finally, we report the results of the effect of media reach (*MEDIA*) on the relation between accounting risk and financial distress in Table 6. Again, the results for the failed-bank and troubled-bank analysis are reported in Columns 1 to 3 and Columns 4 to 6, respectively. We expect greater media reach to enhance the ability of accounting-based risk measures to predict bank distress. Consistent with our prediction, in all columns of Table 7, the coefficients on the interaction terms *MEDIA*σ(ROA)* and *MEDIA*σ(NIM)* are both positive and statistically significant, while the coefficient on the interaction term, *MEDIA*z-score* is negative and statistically significant at conventional levels. Overall, the evidence provides support that effective media monitoring through wider newspaper circulation enhances the ability of accounting-based risk measures to predict bank financial distress.

In sum, the results in this section support our prediction that informal institutions such as societal trust, religiosity and media monitoring enhance the predictive ability of accounting-based risk measures in explaining bank failure and financial trouble during the crisis period 2008-2009.

4.4 Relative Importance of Informal Institutions

In this section, we compare the relative importance of each of the informal institutions in enhancing the ability of accounting-based risk measures to predict bank failure and financial trouble. To meaningfully compare the relative magnitudes of the coefficients in a single model with all three informal institution variables, we standardized the informal institution variables to have a mean of 0 and a standard deviation of 1. We label these standardized variables as

ZMTRUST, *ZMELIGIOSIYTY*, and *ZMEDIA*. Our sample is reduced to only 22 countries because we require all three informal institution variables to be available for this analysis. Given that the results for the three accounting-based risk measures are qualitatively similar, we only discuss the (untabulated) results using *σ(ROA)*. We find that only *ZTRUST* exhibits a positive and statistically significant coefficient on the interaction between *ZTRUST* and *σ(ROA)* for both the failed bank and the troubled bank samples. This evidence indicates that when all three informal institution variables are considered together, societal trust has a greater impact than religiosity and media reach on the predictive ability of accounting-based risk measures for bank distress.[15]

We also examine whether informal institutions enhance the predictive ability of accounting risk measures to explain bank failure and financial trouble, *beyond* formal institutions such as bank monitoring and legal enforcement. To do so, we interact all the bank and country-level control variables with *RISK*. This empirical specification also mitigates concern that our earlier findings might be spurious due to correlation between our country-level informal institutional variables and formal institutional variables. In untabulated results, we find positive and significant coefficients on the interaction terms, *ZTRUST*RISK* and *ZRELIGIOSITY*RISK* in both the failed bank and the troubled bank samples. These results suggest that informal institutions play an incremental role beyond formal institutions in enhancing the predictive ability of accounting risk measures for bank failure and financial trouble. In terms of relative magnitude, we find that the effect of societal trust is the most important in enhancing the ability of accounting-based risk measures to predict bank distress, consistent with our earlier finding.

[15] However, the results should be interpreted with caution because the regression only considers 22 countries with available data for all three informal institutions. Moreover, there could be potential multicollinearity because of the correlation between the informal institutions variables.

4.5 Alternate Proxies for Informal Institutions

In this section, we examine the robustness of our results by considering alternate measures of informal institutions. First, we follow Pevzner et al. (2015) and replace the generalized societal trust measure with a measure of trust specifically of major corporations (*TRUST_CO*). Second, we use *RELI_MEMBER*, *RELI_IMPT*, and *RELI_SERVICE* as alternate measures to capture the religiosity in a country. Third, we use an alternate proxy for media reach from the World Values Survey (*CONFI_PRESS*). We provide definitions of these variables in the Appendix.

We report the results of the above five alternate measures of informal institutions in Table 7. For expositional convenience, we report results when risk is measured by *σ(ROA)* (the untabulated results for the other two risk measures are similar) and report only the coefficient estimates for the key variables in the model. Panel A shows the results for the failed-bank analysis and Panel B for the troubled-bank analysis. Consistent with our main results, in both panels, the coefficients on the interaction terms for four out of the five alternate proxies for informal institutions are positive and significant. Overall, the results based on these alternate measures of trust, religiosity and media are largely consistent with our main findings.

As discussed earlier, although societal trust, religiosity and media coverage may represent different dimensions of informal institutions within a country, they also have much in common with each other. We use factor analysis to extract the first principal component of these three measures and then repeat our analysis using this summary measure as a proxy for informal institutions. Our untabulated results are similar using this summary measure of informal institutions.

4.6 Other Sensitivity Tests

In this section, we discuss a series of sensitivity checks to ensure the robustness of our earlier documented results. As highlighted earlier, a significant portion of the sample consists of firms

from Germany and the U.S. To mitigate the concern that our results are driven by observations from these two countries, we re-estimate our models using two different specifications. First, we employ a weighted least squares (WLS) approach to address the concern that large proportions of the sample (e.g., Germany and the U.S.) unduly influencing the empirical results and so this approach results in each of the 35 countries receives equal weight in the regression estimations (Dittmar et al. 2003). Second, we re-estimate our analyses excluding banks from Germany and the U.S.[16] The results of these two alternate specifications are presented in Panel A of Table 8. We continue to find a statistically significant coefficient on the interaction term in the predicted direction (except for Column 2 of the WLS regression in the failed bank analysis, and Column 4 of the WLS regression in the troubled bank analysis). These analyses provide additional evidence that our results are not driven by over-representation from certain countries.

Second, we include net loan charge-offs, non-performing loans, and decompose total loans into different loan categories (residential, corporate, other mortgages and other commercial loans) as additional control variables. All these variables are deflated by total assets and we report the results in Panel B of Table 8. Our inferences are unchanged after including these additional controls.[17]

Our main tests include both public and private banks, with 962 banks (17%) in the failed-bank sample and 869 banks (16%) in the troubled-bank sample being public banks. Because the incentives for risk taking may differ between public and private banks, in our third sensitivity check, we remove the public banks from the sample and repeat the analyses on the sample of

[16] As an additional robustness check, instead of removing banks from the U.S. and Germany, we randomly select 50 banks from each of these two countries, and re-run the analysis with banks from other countries. The results continue to hold with this sample selection procedure.

[17] We do not include net loan charge-offs and non-performing loans as control variables in the main analyses because this variable is missing for more than 60% of the sample. In this robustness test, we code missing values as zero to conserve the sample size. We also do not decompose the total loans into various loan categories in the main analyses in favor of a parsimonious empirical model.

private banks to ensure that our results are not unduly affected by the presence of public banks. The results in Panel C of Table 8 indicate that all our main inferences remain unchanged with these additional robustness checks.

We also conduct a few other sensitivity checks and discuss the results here without tabulation. We use an alternate definition of troubled banks. In particular, we define bank trouble by classifying a bank as being in financial trouble if its loan loss provision is in the 99th percentile or its return on assets is in the 1st percentile in 2008-2009.[18] Our results (untabulated) are robust to this alternative definition of bank trouble. Next, we examine whether our main results hold for large banks. Large banks may be better able to diversify risk and have more stable earnings and reduced risk of insolvency. On the other hand, large banks may also take greater risks, especially if they consider themselves "too-big-to-fail." We define a bank as large if its total assets exceed the median assets in the bank sample in each country, and all other banks as small. The results indicate that the association between risk and financial distress, and the impact of informal institutions on the relation between risk and financial distress are stronger for the large banks, and weaker for the small banks.

About 47% of the failed bank sample (2,642 banks) and troubled bank sample (2,548 banks) are commercial banks or bank holding companies, with the remainder comprised of finance companies, savings banks, and other types of financial institutions. Hence, we analyze the subsample that includes only the commercial banks and bank holding companies. The results indicate that the main inferences are robust. In another robustness check, we removed 1,626 (1,732) banks that are classified as "controlled subsidiaries" or "branches" from the failed (troubled bank) analysis so that subsidiaries and bank branches are not included in the analysis.

[18] The 99th percentile of LLP to loans ratio is 10.55% and 14.70% in 2008 and 2009 respectively, and the 1st percentile of ROA is -8.86% and -9.23% in 2008 and 2009, respectively. Accordingly, we define a bank as troubled if loan loss provision/total loans > 12% or return on average assets < -8%.

Our results continue to hold with this reduced sample. In our last sensitivity check, we use alternative accounting-based measures for risk. We redefine ROA as net income plus after-tax interest expense divided by total assets and measure risk by the log of volatility of ROA over the period 2000-2006. We also redefine net interest income margin as the difference between interest income divided by average interest-earning assets minus interest expense divided by average interest-bearing liability and measure risk by the log of volatility of this variable over the period 2000–2006. Our results are robust with these alternative definitions of risk.

4.7 Tests of the Information Enhancement Role of Informal Institutions

Our evidence suggests an information enhancing role of informal institutions in the predictability of accounting-based risk measures. In this section, we formally test this mechanism through which informal institutions affect the predictive ability of accounting-based risk measures by examining the association between informal institutions and earnings quality. We examine two related but distinct measures of earnings quality: earnings persistence and ability of current earnings to predict future cash flows. We estimate earnings persistence as the coefficient on current period earnings (defined as net income before income taxes) in a regression of one-period-ahead earnings on current earnings. We measure earnings' ability to predict future cash flows as the coefficient from a regression of one-period-ahead earnings before taxes and loan loss provisions (an approximation for cash flows) on current period net income before taxes.[19] We estimate the following OLS regressions, cluster by both country and bank, and with time fixed effects, to investigate the effects of informal institutions on these earnings quality measures using the sample from 2000-2006:

$$EBT_{t+1,i,k} = \alpha_1 EBT_{t,i,k} + \alpha_2 INF_k + \alpha_3 INF_k * EBT_{t,i,k} + \beta X_{t,i,k} + \gamma W_k + \varepsilon_{t+1,i,k}, \quad (3a)$$

[19] Prior research in banking (e.g., Wahlen 1994) has used earnings before taxes and loan loss provisions as a proxy for cash flow, since loan loss provisions are the single largest accrual for banks.

$$EBTLLP_{t+1,i,k} = \alpha_1 EBT_{t,i,k} + \alpha_2 INF_k + \alpha_3 INF_k*EBT_{t,i,k} + \beta X_{t,i,k} + \gamma W_k + \varepsilon_{t+1,i,k}, \quad (3b)$$

where, *INF* represents the informal institutions for a specific country; *EBT* is earnings before taxes scaled by total assets at the beginning of the year, *EBTLLP* is earnings before taxes and loan loss provisions scaled by total assets at the beginning of the year, *X* is a vector of bank characteristics, and *W* is a vector of country characteristics.

Following prior studies (e.g., Altamuro and Beatty 2010; Kanagaretnam et al. 2014b), we control for bank characteristics such as bank size (*SIZE*), bank deposits (*DEPOSIT*), and loan categories (*LOAN CATEGORIES*) in the regression. Because Nichols et al. (2009) find that some properties of financial reporting (e.g., accounting conservatism) differ depending on whether the bank is publicly traded or privately held, we control for the listing status of the bank (*LISTING*). Because the financial reporting of commercial banks and bank holding companies may be different from that of other types of financial institutions, we use an indicator to control for bank type (*COMMERCIAL*). In the model, we also include the same set of country-level variables used in our main analysis. In models (3a) and (3b), the coefficient of interest is the coefficient on the interaction variable *INF*EBT*, which is predicted to have a positive sign, consistent with the argument that informal institutional factors enhance earnings persistence and predictability of cash flows in banks. We report the results in Table 9.

Columns 1 to 3 show the results for the earnings persistence test. In all three columns, future *EBT* is positively and significantly associated with current *EBT* at the 1% level, consistent with the results reported in prior studies (e.g., Altamuro and Beatty 2010; Kanagaretnam et al. 2014b). Of primary interest is α_3, the coefficient on the interaction variable *INF*EBT*. A positive α_3 indicates higher earnings persistence with stronger informal institutional environments. Consistent with our prediction, after controlling for the bank-specific and country-specific institutional factors in the regression analysis, we find that α_3 is positive and significant at

conventional levels, indicating strong support for the inference that informal institutions, represented by societal trust, religiosity, and media, enhance earnings persistence in banks.[20]

Columns 4 to 6 of Table 9, report results for the cash flow predictability test. Again, we find that future cash flow is positively and significantly associated with *EBT* at the 1% level, consistent with the findings of Altamuro and Beatty (2010) and Kanagaretnam et al. (2014b). More importantly, after controlling for the bank-specific and country-specific institutional variables, the coefficient on the interaction term α_3 is positive and significant at conventional levels for all the informal institutional variables. This evidence is consistent with our conjecture that informal institutions enhance the ability of earnings to predict future cash flows in banks and consequently improve the ability of accounting-based risk measures to predict bank failure and financial trouble.

5. Conclusion

The primary research question addressed in this study is whether country-level informal institutions enhance the ability of accounting-based summary risk measures to predict bank failure and bank financial trouble. This is consistent with Kaplan's (2011) call for accounting academics to focus on the study of accounting indicators of risk and its drivers. We conduct our main analyses using a sample of banks from 35 countries over the period 2000-2006. We first examine the relation between the three bank risk measures, represented by the volatility of return on assets, volatility of net interest margin, and z-score, and bank distress. We find that these bank risk measures are positively related to bank failure and bank financial trouble in the 2008-2009 financial crisis period, suggesting that accounting-based risk measures are useful in predicting bank distress. The results imply that even in an opaque industry such as banking, accounting-

[20] Kanagaretnam et al. (2015) report similar results for the informal institutions proxied by religiosity.

based risk measures capture the predicted relations between bank risk taking and bank failure and bank financial trouble. In particular, our results show that, contrary to popular belief, accounting-based risk measures still are relevant for predicting bank distress during the 2008-2009 crisis.

We then examine our main research question on whether characteristics of the informal institutional environment systematically relate to the ability of accounting-based risk measures to predict bank failure and bank financial trouble. Overall, we document that higher societal trust, higher religiosity, and greater media reach enhance the ability of accounting-based risk measures to predict bank failure and bank financial trouble during the crisis period. These results provide evidence that higher quality informal institutions enhance the predictive value of accounting information in the banking industry.

Our study is timely and relevant given the suggestions that accounting-based measures may have lost their relevance in predicting financial distress (Kaplan 2011). Contrary to these claims, our results show that accounting-based risk measures still are relevant in predicting bank distress, despite the rapid growth in financial innovation and sophisticated financial transactions prior to the crisis that increased bank opacity and complexity. Our empirical results inform policy makers and regulators who primarily depend on accounting-based measures to design bank-monitoring and early-warning systems. Our results also highlight differences in the predictive ability of accounting-based risk measures across countries with different informal institutional structures. Our results thus inform regulators that the focus on strengthening formal institutions and the design of bank-monitoring and early-warning systems should not ignore country-specific informal structures.

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Appendix
Variable Definitions

Failed Banks	=	1 if the bank fails during the crisis period 2008-2009, 0 otherwise.
Troubled Banks	=	1 if the bank is in financial trouble during the crisis period 2008-2009, 0 otherwise. A troubled bank is defined as a bank that satisfies any of the following criteria in 2008-2009: (1) recognizes a large loan loss provision (i.e., loan loss provision/total loans > 5%), and (2) incurs a huge loss (i.e., return on average assets < -3%). To ensure that these banks were not troubled prior to 2007, banks that satisfy any of the above criteria in 2006 were deleted from the sample. Thus, sample banks used in the tests include only banks that were healthy in 2006 but are troubled in 2008-2009.
Risk taking measures		
σ(ROA)	=	Log of volatility of ROA over the period 2000-2006. ROA is defined as net income divided by total assets.
σ(NIM)	=	Log of volatility of net interest margin over the period 2000–2006, where net interest margin is net interest income divided by earning assets.
z-score	=	Log of (ROA+CAR)/σ(ROA), where ROA is defined as above, CAR is capital-asset ratio, and σ(ROA) is the standard deviation of ROA. The ROA and capital-asset ratio are calculated as the mean over 2000–2006, and σ(ROA) is the standard deviation of ROA estimated over the time period 2000–2006. Higher z-score implies more stability.
Informal institutional measures		
TRUST	=	Societal trust index, based on responses to the WVS question: Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people? The two possible answers were "Most people can be trusted" and "Can't be too careful." We recode the response to this question to one if a survey participant reports that most people can be trusted, and zero otherwise. We then calculate the mean of the response for each country year. Higher values correspond to higher societal trust.
TRUST_CO	=	Country average of rescaled response to the following WVS question: Do you have a lot of confidence, quite a lot of confidence, not very much confidence, no confidence at all in the following: Major companies. We recode the response to these questions to zero if a survey participant reports that he/she has no confidence, and one otherwise. We then calculate the mean response for each country as a measure of trust towards companies.
RELI_MEMBER	=	The proportion of respondents who indicate they are affiliated with a religion based on the WVS.
RELI_IMPT	=	The proportion of respondents who indicate the religion is important to themselves based on the WVS.
RELI_SERVICE	=	The proportion of respondents who indicate they attend religious services based on the WVS.
RELIGIOSITY	=	Average of the above three religion variables: *RELI_MEMBER, RELI_IMPT and RELI_SERVICE.*
MEDIA	=	Newspaper circulation measured by the logarithmic of newspapers and periodicals circulation per thousand inhabitants in 2000. Data from Djankov et al. (2008).

CONFI_PRESS	=	Country average of rescaled response to the following WVS question: Do you have a lot of confidence, quite a lot of confidence, not very much confidence, no confidence at all in the following: Press. We recode the response to these questions to zero if a survey participant reports that he/she has no confidence, and one otherwise. We then calculate the mean response for each country as a measure of media credibility. Higher values correspond to higher media credibility.

Country-level variables

DI	=	An indicator variable that equals one if the country has deposit insurance, and zero otherwise (Demirguc-Kunt et al. 2008).
CAPST	=	Capital stringency is an index of regulatory oversight of bank capital from Barth et al. (2006).
BANK	=	Bank oriented system indicator, which equals 1 for countries whose financial system is bank-dominated and 0 for countries whose financial system is market-oriented, as per the classification of Demirguc-Kunt and Levine (1999).
MONITOR	=	The private monitoring index from Barth et al (2001)
OFFICIAL	=	The official supervisory power index from Barth et al. (2001)
CR_REG	=	Credit market regulation index that ranges from 0 to 10, with higher values indicating greater credit regulation. Data from the Economic Freedom of the World: 2005
CR	=	Index aggregating different creditor rights: the absence of automatic stay in reorganization, the requirement for creditors' consent or minimum dividend for a debtor to file for reorganization, secured creditors are ranked first in reorganization, and the removal of incumbent management upon filing for reorganization. The index ranges from 0 to 4. Data originally from La Porta et al. (1998) and updated in Djankov et al. (2007).
IS	=	Information sharing index that equals 1 if either a LISTING registry or a private bureau operates in the country, 0 otherwise. Data from Djankov et al. (2007).
COMMON	=	Indicator that equals 1 if the legal origin is common law, 0 otherwise.
LEGENF	=	Law enforcement index that ranges from 0 to 10, with higher values indicating greater law enforcement. Data from the Economic Freedom of the World: 2005.
DISC	=	Bank disclosure index constructed by Huang (2006). The index measures the actual disclosures practices of banks around the world in relation to their assets, liabilities, funding, incomes, and risk profiles.
GDPGR	=	Growth in real GDP in 2006.
COMP	=	Competition index, measured using the Herfindahl-Hirschman Index, which equals the sum of the squares of the market shares (deposits) of each individual bank in each individual countries. The index is calculated over the period 2000–2006 and ranges from 0 to 1, with a higher value indicating greater monopoly power.

Firm-level variables

SIZE	=	Log of total assets in year 2006. The assets are measured in thousand US dollars.
REVG	=	Growth in revenue from the beginning to the end of the year 2006.
LOANS	=	Total loans scaled by total assets at the end of 2006.

LEV	=	Total liabilities divided by total assets at the end of year 2006.
ΔCASH	=	Change in annual cash flows (income before taxes and loan loss provision) scaled by total assets at the end of year 2006.
LLP	=	Loan loss provision scaled by total assets at the end of year 2006.
EBT	=	Earnings before taxes scaled by total assets at the beginning of the year.
EBTLLP	=	Earnings before taxes and loan loss provisions scaled by total assets at the beginning of the year.
DEPOSIT	=	Deposits scaled by total assets at the beginning of the year.
LOAN CATEGORIES	=	Residential loans (*RESIDENT*), corporate loans (*CORPORATE*), other mortgages (*OTH_MORT*), and other commercial loans (*OTH_COMM*).
LISTING	=	1 if the bank is listed on the stock exchange, and 0 otherwise.
COMMERCIAL	=	1 if the bank is a commercial bank or bank holding company, and 0 otherwise.

Table 1: Sample Composition and Mean Characteristics by Country

Country	*Bank*	*# Failed*	*# Troubled*	*σ(ROA)*	*σ(NIM)*	*z-score*	*SIZE*	*REVG*	*LOANS*	*LEV*	*CASH*	*LLP*	*LISTING*	*COMMERCIAL*
Australia	57	3	9	2.24	2.83	4.30	8.58	0.23	0.94	0.93	0.00	0.00	0.28	0.53
Austria	237	3	30	2.97	3.13	3.63	6.89	0.07	0.60	0.92	0.00	0.01	0.05	0.25
Bangladesh	35	0	0	3.73	4.05	2.69	6.37	0.42	0.87	0.94	0.01	0.02	0.83	0.91
Belgium	55	7	14	3.35	2.81	3.06	8.90	0.30	0.51	0.92	0.00	0.00	0.07	0.65
Brazil	65	3	28	4.19	4.86	2.95	8.72	0.34	0.51	0.89	0.01	0.03	0.32	0.86
Canada	62	0	5	3.34	3.43	3.43	8.08	0.35	0.77	0.90	0.00	0.00	0.19	0.63
Chile	14	2	13	3.37	4.36	3.64	8.37	0.11	0.82	0.90	0.01	0.01	0.43	0.93
Croatia	28	0	5	3.93	4.27	3.15	6.82	0.14	0.71	0.88	0.00	0.01	0.50	0.89
Czech	22	0	2	3.00	3.32	3.79	8.34	0.11	0.66	0.91	0.00	0.00	0.09	0.77
Denmark	115	32	22	3.43	3.69	3.68	7.44	0.11	0.80	0.88	0.00	0.00	0.43	0.59
Finland	15	2	2	3.04	3.19	3.87	9.21	-0.06	0.65	0.88	0.00	0.01	0.33	0.67
Germany	1457	2	92	2.50	2.86	3.85	7.04	0.00	0.60	0.93	0.00	0.02	0.02	0.11
India	67	2	5	3.68	3.61	3.02	8.52	0.25	0.69	0.91	0.01	0.01	0.64	0.85
Ireland	23	1	7	2.56	2.56	3.96	9.92	0.45	0.54	0.92	0.00	0.00	0.09	0.70
Israel	16	0	0	3.27	2.92	3.14	9.04	0.06	0.64	0.94	0.00	0.00	0.69	1.00
Italy	687	60	61	3.07	3.31	3.95	6.81	0.23	0.73	0.89	0.00	0.01	0.06	0.21
Jamaica	11	0	0	3.95	4.65	3.14	7.16	0.05	0.32	0.87	0.01	0.00	0.55	0.73
Latvia	33	2	21	3.90	4.43	3.18	6.46	0.37	0.84	0.89	0.00	0.00	0.06	1.00
Malaysia	84	0	6	4.13	3.68	2.96	8.21	0.33	0.56	0.86	0.00	0.02	0.19	0.61
Netherlands	32	2	6	2.86	3.26	3.63	9.60	0.06	0.58	0.93	0.00	0.00	0.13	0.91
Panama	32	3	6	3.73	3.73	3.35	6.91	0.39	0.87	0.89	0.01	0.01	0.13	0.84
Philippines	41	0	4	3.21	3.85	4.01	7.69	1.33	1.68	0.87	0.02	0.02	0.56	0.76
Poland	37	4	3	3.63	3.79	3.43	8.00	0.12	0.64	0.88	0.00	0.00	0.51	0.81
Russia	486	1	79	3.83	4.38	3.71	4.67	0.60	1.03	0.82	0.02	0.02	0.16	0.97
Singapore	15	0	2	3.59	3.58	4.01	8.40	0.19	0.54	0.77	0.00	0.00	0.60	0.73
Slovenia	21	0	0	3.78	4.16	3.13	7.74	-0.81	0.00	0.91	-0.02	0.01	0.19	0.86
South Africa	37	0	1	3.45	3.60	3.67	7.90	0.19	0.71	0.83	0.01	0.01	0.24	0.84
Spain	176	31	22	1.75	2.51	4.91	9.17	0.20	0.86	0.92	0.00	0.00	0.11	0.39
Sweden	108	3	24	3.61	3.71	3.50	6.71	0.01	0.80	0.87	0.00	0.00	0.08	0.21
Switzerland	381	15	50	2.14	2.48	4.26	6.40	0.16	0.75	0.91	0.00	0.00	0.09	0.31
Thailand	45	1	4	4.88	4.24	2.33	8.04	0.40	0.74	0.81	-0.01	0.01	0.69	0.62
Turkey	32	0	3	4.39	5.00	2.90	8.74	0.02	0.66	0.86	0.00	0.01	0.63	0.63
U.K.	194	11	35	2.61	2.81	4.09	8.49	0.11	0.63	0.91	0.00	0.01	0.06	0.48
U.S.A	921	58	352	3.02	3.44	3.94	8.00	0.11	0.75	0.90	0.00	0.00	0.41	0.82
Venezuela	14	8	9	4.94	5.86	2.46	6.97	0.63	0.76	0.90	0.02	0.01	0.64	0.79

Table 1 (continued)

Country	*TRUST*	*RELIGIOSITY*	*MEDIA*	*DI*	*CAPST*	*BANK*	*MONITOR*	*OFFICIAL*	*CR_REG*	*CR*	*IS*	*COMMON*	*LEGENF*	*DISC*	*GDPGR*	*COMP*
Australia	0.48	0.51	5.08	0	9	0	10	12	9.50	3	1	1	6.23	8	0.02	0.07
Austria	-	-	5.73	1	6	1	6	14	9.33	3	1	0	6.70	3	0.03	0.16
Bangladesh	0.24	0.98	-	1	3	1	3	11	8.15	2	1	0	1.15	6	0.04	0.08
Belgium	-	-	5.03	1	8	1	6	13	9.50	2	1	0	5.65	8	0.02	0.08
Brazil	0.09	0.86	3.83	1	4	0	8	15	6.60	1	1	0	4.82	6	0.02	0.05
Canada	0.42	0.65	5.12	1	4	0	7	7	9.50	1	1	1	4.81	8	0.02	0.12
Chile	0.12	0.61	4.58	1	3	0	8	11	9.25	2	1	0	5.11	7	0.04	0.11
Croatia	-	-	4.90	1	4	1	7	12	9.06	3	0	0	5.40	1	0.04	0.15
Czech	-	-	5.54	1	2	1	5	13	9.07	3	0	0	3.54	2	0.06	0.10
Denmark	-	-	5.65	1	7	0	7	9	9.50	3	1	0	6.19	7	0.02	0.12
Finland	0.59	0.64	6.10	1	5	1	9	9	9.75	1	1	0	8.06	6	0.04	0.19
Germany	0.34	0.45	5.67	1	6	1	5	11	8.12	3	1	0	6.62	5	0.02	0.02
India	0.23	0.77	4.09	1	7	1	6	9	6.84	2	0	1	2.59	7	0.07	0.06
Ireland	-	-	5.00	1	6	1	6	11	9.00	1	1	1	4.95	10	0.04	0.07
Israel	0.23	-	5.66	0	7	1	9	8	7.64	3	1	1	3.46	7	0.04	0.10
Italy	0.29	0.64	4.69	1	6	1	6	6	7.99	2	1	0	3.18	7	0.01	0.03
Jamaica	-	-	4.14	1	6	1	6	14	9.51	2	0	0	3.44	4	0.02	0.12
Latvia	-	-	4.93	1	4	1	4	6	9.44	3	0	0	7.39	5	0.11	0.07
Malaysia	0.09	0.73	4.56	1	3	0	9	11	9.21	3	1	1	4.27	10	0.04	0.03
Netherlands	0.44	0.48	5.63	1	5	0	6	8	9.50	3	1	0	5.11	4	0.02	0.12
Panama	-	-	4.13	0	4	1	8	13	9.25	4	1	0	2.26	1	0.05	0.04
Philippines	0.09	0.88	4.19	1	6	0	8	12	8.90	1	1	0	3.42	2	0.03	0.25
Poland	0.19	0.68	4.62	1	6	1	7	12	8.79	1	0	0	4.27	7	0.05	0.05
Russia	0.27	0.48	4.65	1	6	1	5	8	8.25	2	0	0	7.53	6	0.06	0.24
Singapore	0.15	-	5.61	0	4	0	9	3	9.75	3	0	1	8.48	10	0.05	0.28
Slovenia	0.18	0.53	-	1	6	1	6	16	8.93	3	1	0	3.87	3	0.04	0.13
South Africa	0.17	0.87	3.23	0	6	0	8	4	9.50	3	1	0	3.93	8	0.05	0.07
Spain	0.20	0.41	4.59	1	6	1	8	10	9.50	2	1	0	5.54	5	0.03	0.04
Sweden	0.68	0.43	6.01	1	4	0	6	6	9.50	1	1	0	4.73	6	0.03	0.08
Switzerland	0.51	0.57	5.92	1	7	0	8	13	9.00	1	1	0	6.03	0	0.02	0.10
Thailand	0.42	0.56	5.28	1	5	0	6	11	9.00	2	0	1	6.11	10	0.04	0.79
Turkey	0.05	0.60	4.70	1	3	0	6	11	7.75	2	1	0	6.16	8	0.04	0.04
U.K.	0.30	0.46	5.79	1	9	0	8	12	9.28	4	1	1	6.00	10	0.02	0.05
U.S.A	0.40	0.73	5.28	1	6	0	8	14	9.07	1	1	1	7.33	7	0.03	0.01
Venezuela	0.16	0.85	5.33	1	5	1	6	14	9.00	3	1	0	3.97	3	0.06	0.06

This table provides the sample composition and selected mean characteristics by country. The detailed definitions of the variables are provided in the Appendix. All continuous variables are trimmed at the 1 and 99 percentiles.

Table 2
Descriptive Statistics and Correlations

Panel A: Descriptive Statistics

	Mean	Media	Q1	Q3	Std. Dev
Failed	0.045	0.000	0.000	0.000	0.208
Troubled	0.168	0.000	0.000	0.000	0.374
σ(ROA)	2.961	3.038	2.229	3.793	1.311
σ(NIM)	3.291	3.259	2.692	3.908	1.020
z-score	3.826	3.799	3.164	4.430	1.106
SIZE	7.613	7.183	5.967	8.941	2.309
REVG	0.170	0.059	-0.022	0.190	0.694
LOANS	0.722	0.700	0.547	0.861	0.545
LEV	0.899	0.919	0.887	0.943	0.086
CASH	0.003	0.001	-0.001	0.005	0.021
LLP	0.009	0.004	0.001	0.009	0.039
LISTING	0.173	0.000	0.000	0.000	0.379
COMMERCIAL	0.467	0.000	0.000	1.000	0.499
TRUST	0.337	0.341	0.292	0.396	0.106
RELIGIOSITY	0.569	0.555	0.446	0.685	0.133
MEDIA	5.250	5.280	4.691	5.673	0.546
DI	0.972	1.000	1.000	1.000	0.164
CAPST	6.012	6.000	6.000	6.000	1.062
BANK	0.610	1.000	0.000	1.000	0.488
MONITOR	6.433	6.000	5.000	8.000	1.403
OFFICIAL	10.702	11.000	8.000	13.000	2.798
CR_REG	8.618	8.250	8.117	9.073	0.642
CR	2.171	2.000	1.000	3.000	0.898
IS	0.868	1.000	1.000	1.000	0.338
COMMON	0.262	0.000	0.000	1.000	0.440
LEGENF	5.714	6.000	5.000	7.000	2.251
DISC	5.947	6.620	5.398	7.329	1.509
GDPGR	0.028	0.023	0.019	0.027	0.016
COMP	0.072	0.026	0.022	0.103	0.095

Table 2 (continued)

Panel B: Pearson's correlations

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1)	*Failed*	1.00													
(2)	*Troubled*	0.22	1.00												
(3)	*σ(ROA)*	0.01	0.14	1.00											
(4)	*σ(NIM)*	0.02	0.13	0.54	1.00										
(5)	*z-score*	-0.01	-0.10	-0.87	-0.33	1.00									
(6)	*SIZE*	0.09	0.07	0.04	0.02	-0.12	1.00								
(7)	*REVG*	-0.01	0.04	0.16	0.15	-0.09	0.10	1.00							
(8)	*LOANS*	0.02	0.02	0.00	0.06	0.04	0.08	0.66	1.00						
(9)	*LEV*	0.02	-0.10	-0.40	-0.36	0.01	0.17	-0.10	0.02	1.00					
(10)	*CASH*	0.01	0.02	0.05	0.07	0.00	0.08	0.32	0.29	-0.04	1.00				
(11)	*LLP*	-0.02	0.02	0.08	0.08	-0.04	-0.06	0.00	-0.06	-0.13	0.04	1.00			
(12)	*LISTING*	0.02	0.04	0.11	0.11	-0.08	0.32	0.05	0.04	-0.01	0.04	-0.03	1.00		
(13)	*COMMERCIAL*	0.04	0.17	0.28	0.33	-0.14	0.30	0.12	0.05	-0.18	0.08	0.04	0.38	1.00	
(14)	*TRUST*	-0.02	-0.05	-0.16	-0.23	0.08	-0.18	-0.11	-0.02	0.08	-0.10	-0.09	-0.05	-0.12	1.00
(15)	*RELIGIOSITY*	-0.08	-0.14	0.20	0.22	-0.10	0.21	0.07	0.04	-0.09	0.03	-0.07	0.37	0.35	-0.13
(16)	*MEDIA*	-0.05	-0.03	-0.25	-0.33	0.07	-0.21	-0.18	-0.12	0.21	-0.15	-0.02	-0.14	-0.31	0.70
(17)	*DI*	0.01	0.01	-0.01	0.00	0.00	-0.09	-0.01	-0.03	0.03	-0.02	0.01	-0.06	-0.09	0.03
(18)	*CAPST*	0.05	0.04	-0.21	-0.26	0.17	-0.11	-0.03	0.00	0.08	0.00	-0.04	-0.09	-0.08	0.21
(19)	*BANK*	-0.05	-0.17	-0.04	-0.03	-0.01	-0.16	0.00	-0.04	0.07	0.02	0.08	-0.26	-0.27	-0.39
(20)	*MONITOR*	0.11	0.15	-0.04	-0.05	0.10	0.17	0.01	0.03	-0.04	-0.02	-0.10	0.22	0.25	0.15
(21)	*OFFICIAL*	-0.02	-0.08	-0.11	-0.12	0.01	0.04	-0.09	-0.08	0.15	-0.09	-0.02	0.14	0.11	0.22
(22)	*CR_REG*	0.10	0.16	-0.04	-0.07	0.07	0.10	-0.01	0.04	-0.03	-0.04	-0.10	0.11	0.19	0.40
(23)	*CR*	-0.05	-0.12	-0.07	-0.13	-0.04	-0.09	-0.08	-0.11	0.12	-0.05	0.09	-0.24	-0.29	-0.35
(24)	*IS*	-0.06	0.00	-0.26	-0.36	0.11	-0.12	-0.17	-0.14	0.27	-0.16	-0.05	-0.10	-0.35	0.25
(25)	*COMMON*	0.02	0.16	0.06	0.04	-0.02	0.18	-0.01	0.00	-0.04	-0.03	-0.07	0.29	0.33	0.13
(26)	*LEGENF*	-0.05	-0.08	0.19	0.18	-0.08	0.17	0.03	-0.01	-0.11	0.03	0.00	0.14	0.19	-0.36
(27)	*DISC*	-0.07	-0.08	-0.07	-0.01	0.06	-0.07	-0.04	0.01	-0.01	0.00	0.03	0.01	0.14	0.28
(28)	*GDPGR*	-0.04	0.10	0.27	0.37	-0.12	0.23	0.16	0.15	-0.24	0.15	0.03	0.16	0.46	-0.24
(29)	*COMP*	-0.04	0.00	0.23	0.26	-0.12	0.01	0.16	0.13	-0.25	0.09	0.03	0.10	0.23	-0.04

Table 2 (continued)

		(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)
(15)	*RELIGIOSITY*	1.00														
(16)	*MEDIA*	-0.07	1.00													
(17)	*DI*	-0.08	0.21	1.00												
(18)	*CAPST*	-0.24	0.26	-0.09	1.00											
(19)	*BANK*	-0.51	-0.15	0.11	-0.09	1.00										
(20)	*MONITOR*	0.52	-0.10	-0.30	0.21	-0.79	1.00									
(21)	*OFFICIAL*	0.21	0.41	0.10	0.16	-0.42	0.41	1.00								
(22)	*CR_REG*	0.11	0.25	-0.18	0.11	-0.57	0.60	0.32	1.00							
(23)	*CR*	-0.62	0.21	-0.19	0.17	0.50	-0.45	-0.15	-0.17	1.00						
(24)	*IS*	0.13	0.40	-0.02	0.11	-0.25	0.29	0.28	0.16	0.04	1.00					
(25)	*COMMON*	0.52	-0.01	-0.11	0.14	-0.66	0.64	0.42	0.38	-0.31	0.08	1.00				
(26)	*LEGENF*	0.26	-0.36	-0.07	0.01	-0.14	0.12	-0.26	0.00	0.08	-0.06	0.56	1.00			
(27)	*DISC*	-0.31	0.46	0.13	0.18	-0.19	0.00	0.50	0.24	-0.03	-0.17	0.23	-0.09	1.00		
(28)	*GDPGR*	0.03	-0.38	-0.11	-0.23	0.04	-0.10	-0.11	0.09	-0.10	-0.83	0.05	0.03	0.23	1.00	
(29)	*COMP*	-0.11	-0.14	-0.03	-0.07	-0.01	-0.12	-0.14	0.14	-0.05	-0.66	-0.10	-0.06	0.14	0.53	1.00

This table provides the descriptive statistics (Panel A) and Pearson correlations (Panel B) of the main variables used in this study. The detailed definitions of the variables are provided in the Appendix. All continuous variables are trimmed at the 1 and 99 percentiles. All correlations with absolute values greater than 0.03 are statistically significant at the 0.01 level or better (two-tailed).

Table 3: Risk-taking and Bank Distress

	Failed Banks			Troubled Banks		
	(1)	(2)	(3)	(4)	(5)	(6)
	RISK= σ(ROA)	*RISK= σ(NIM)*	*RISK= z-score*	*RISK= σ(ROA)*	*RISK= σ(NIM)*	*RISK= z-score*
RISK	**0.242**	**0.365**	**-0.204**	**0.277**	**0.260**	**-0.296**
	(3.72)* **	**(4.63)*** **	**(-3.06)*** **	**(7.37)*** **	**(5.95)*** **	**(-7.35)*** **
SIZE	0.124	0.142	0.114	0.076	0.089	0.063
	(3.52)***	(4.01)***	(3.29)***	(3.83)***	(4.44)***	(3.18)***
REVG	-0.548	-0.468	-0.539	-0.113	-0.133	-0.118
	(-2.98)***	(-2.65)***	(-2.92)***	(-2.00)**	(-2.39)**	(-2.09)**
LOANS	0.557	0.447	0.549	-0.027	-0.038	-0.023
	(3.13)***	(2.57)**	(3.06)***	(-0.66)	(-0.85)	(-0.57)
LEV	-1.897	-1.729	0.330	-1.220	-1.658	-2.336
	(-1.53)	(-1.44)	(0.30)	(-2.85)***	(-4.00)***	(-5.78)***
ΔCASH	-8.862	-9.484	-9.723	-0.055	0.020	-0.063
	(-1.33)	(-1.40)	(-1.46)	(-0.13)	(0.05)	(-0.14)
LLP	0.997	0.910	1.008	1.518	1.476	1.574
	(0.41)	(0.37)	(0.43)	(1.70)*	(1.66)*	(1.75)*
LISTING	-0.034	-0.038	-0.015	-0.686	-0.668	-0.677
	(-0.19)	(-0.21)	(-0.08)	(-5.79)***	(-5.63)***	(-5.71)***
COMMERCIAL	0.265	0.246	0.291	0.444	0.442	0.476
	(1.69)*	(1.55)	(1.85)*	(4.66)***	(4.61)***	(5.01)***
DI	2.246	2.172	2.275	1.109	1.009	1.177
	(4.20)***	(4.13)***	(4.23)***	(3.36)***	(3.07)***	(3.56)***
CAPST	0.421	0.449	0.410	0.058	0.057	0.067
	(4.81)***	(5.00)***	(4.71)***	(1.23)	(1.19)	(1.41)
BANK	-0.033	-0.023	-0.052	-0.213	-0.258	-0.217
	(-0.15)	(-0.10)	(-0.23)	(-1.39)	(-1.69)*	(-1.42)
MONITOR	0.459	0.425	0.464	0.152	0.105	0.177
	(4.71)***	(4.36)***	(4.75)***	(2.09)**	(1.46)	(2.44)**
OFFICIAL	-0.037	-0.039	-0.036	0.012	0.014	0.010
	(-0.85)	(-0.92)	(-0.83)	(0.43)	(0.49)	(0.38)
CR_REG	0.567	0.649	0.551	0.277	0.333	0.274
	(3.21)***	(3.70)***	(3.12)***	(3.06)***	(3.59)***	(3.03)***
CR	-0.369	-0.378	-0.373	-0.104	-0.103	-0.116
	(-3.49)***	(-3.50)***	(-3.54)***	(-1.54)	(-1.52)	(-1.72)*
IS	-1.208	-1.124	-1.199	-0.638	-0.575	-0.638
	(-1.90)*	(-1.83)*	(-1.87)*	(-1.94)*	(-1.76)*	(-1.94)*
COMMON	1.681	1.620	1.703	0.043	0.111	0.008
	(4.83)***	(4.66)***	(4.91)***	(0.21)	(0.54)	(0.04)
LEGENF	-0.281	-0.289	-0.283	-0.056	0.033	-0.052
	(-3.63)***	(-3.76)***	(-3.65)***	(-1.38)	(0.81)	(-1.28)
DISC	-0.177	-0.161	-0.190	-0.054	-0.044	-0.064
	(-3.44)***	(-3.06)***	(-3.68)***	(-1.72)*	(-1.35)	(-2.08)**
GDPGR	24.963	21.366	25.371	23.164	19.667	24.630
	(1.92)*	(1.70)*	(1.94)*	(4.31)***	(3.64)***	(4.58)***
COMP	-5.655	-5.850	-5.583	-1.486	-1.417	-1.510
	(-2.73)***	(-2.84)***	(-2.69)***	(-2.16)**	(-2.03)**	(-2.22)**
Constant	-19.064	-19.690	-15.987	-7.871	-7.360	-5.013
	(-10.37)***	(-10.79)***	(-9.86)***	(-7.76)***	(-7.26)***	(-5.28)***
Observations	5,655	5,655	5,655	5,472	5,472	5,472
Pseudo R^2	0.132	0.136	0.130	0.120	0.116	0.120
Countries	35	35	35	35	35	35
% of failed (troubled) banks	4.53	4.53	4.53	16.85	16.85	16.85

The table shows the results for the logistic regression $T_{i,k} = \alpha R_{i,k} + \beta X_{i,k} + \gamma W_k + \varepsilon_{i,k}$, where T is the dependent variable, an indicator for bank failure or trouble. R is a risk measure for bank i in country k, X is a vector of bank characteristics, and W is a vector of country characteristics. Columns 1 to 3 show results for the failed-bank analysis and Columns 4 to 6 show results for the troubled-bank analysis. The z-statistics reported in parentheses are based on standard errors clustered by country. Detailed definitions of the variables are provided in the Appendix. '*', '**', and '***' denote significance at 10%, 5%, and 1% levels (two-tailed), respectively.

Table 4: Risk-taking and Bank Distress: The Role of Societal Trust

	Failed Banks			Troubled Banks		
	(1)	(2)	(3)	(4)	(5)	(6)
	RISK= σ(ROA)	*RISK= σ(NIM)*	*RISK= z-score*	*RISK= σ(ROA)*	*RISK= σ(NIM)*	*RISK= z-score*
RISK	0.249	0.302	-0.255	0.345	0.297	-0.336
	(3.36)***	(3.45)***	(-3.38)***	(5.82)***	(6.22)***	(-6.57)***
TRUST	-1.184	-1.767	-7.076	-4.055	-1.029	-2.384
	(-0.55)	(-0.64)	(-2.52)**	(-2.81)***	(-0.66)	(-1.49)
TRUST*RISK	**1.162**	**0.264**	**-1.247**	**0.925**	**0.528**	**-0.876**
	(2.21)**	**(0.36)**	**(-2.03)****	**(2.82)*****	**(1.81)***	**(-2.28)****
SIZE	0.092	0.117	0.089	0.111	0.085	0.110
	(2.25)**	(2.89)***	(2.19)**	(4.92)***	(4.01)***	(5.03)***
REVG	-0.442	-0.367	-0.426	-0.123	-0.100	-0.140
	(-2.12)**	(-1.86)*	(-2.06)**	(-1.65)*	(-1.83)*	(-2.03)**
LOANS	0.434	0.327	0.428	-0.039	-0.030	-0.055
	(2.03)**	(1.58)	(2.00)**	(-0.53)	(-0.69)	(-0.75)
LEV	-3.984	-2.756	-1.638	-1.974	-1.615	-2.653
	(-2.42)**	(-1.83)*	(-1.16)	(-3.98)***	(-3.71)***	(-5.69)***
ΔCASH	-12.591	-13.438	-12.238	0.034	0.118	0.077
	(-1.57)	(-1.68)*	(-1.56)	(0.07)	(0.34)	(0.16)
LLP	3.256	3.102	3.164	4.307	1.563	1.503
	(1.92)*	(1.81)*	(1.89)*	(1.75)*	(1.75)*	(1.63)
LISTING	-0.626	-0.607	-0.626	-0.616	-0.588	-0.613
	(-2.85)***	(-2.75)***	(-2.84)***	(-4.82)***	(-4.72)***	(-4.82)***
COMMERCIAL	0.121	0.124	0.145	0.542	0.447	0.608
	(0.69)	(0.70)	(0.82)	(4.92)***	(4.32)***	(5.65)***
DI	2.216	2.304	2.280	2.021	1.513	2.121
	(3.09)***	(3.23)***	(3.19)***	(3.56)***	(3.55)***	(3.82)***
CAPST	0.647	0.648	0.662	-0.032	-0.130	-0.062
	(3.54)***	(3.62)***	(3.64)***	(-0.37)	(-1.65)*	(-0.73)
BANK	-1.514	-1.524	-1.557	-0.727	-0.331	-0.720
	(-3.81)***	(-3.88)***	(-3.94)***	(-3.00)***	(-1.57)	(-3.09)***
MONITOR	0.579	0.568	0.578	0.165	0.310	0.172
	(3.47)***	(3.41)***	(3.48)***	(1.40)	(2.91)***	(1.49)
OFFICIAL	-0.183	-0.150	-0.183	-0.071	-0.013	-0.049
	(-2.37)**	(-1.92)*	(-2.38)**	(-1.41)	(-0.31)	(-1.01)
CR_REG	0.245	0.332	0.250	0.078	0.030	0.088
	(1.09)	(1.42)	(1.11)	(0.48)	(0.21)	(0.56)
CR	-0.994	-0.957	-1.031	-0.211	0.020	-0.152
	(-4.26)***	(-4.10)***	(-4.42)***	(-1.74)*	(0.18)	(-1.26)
IS	-3.334	-3.187	-3.533	0.303	-0.007	0.426
	(-3.40)***	(-3.31)***	(-3.62)***	(0.50)	(-0.01)	(0.71)
COMMON	1.104	1.008	1.131	-0.159	0.102	-0.176
	(2.12)**	(1.92)*	(2.18)**	(-0.53)	(0.36)	(-0.60)
LEGENF	-0.658	-0.640	-0.664	-0.129	-0.078	-0.127
	(-5.00)***	(-4.94)***	(-5.04)***	(-2.06)**	(-1.45)	(-2.12)**
DISC	-0.325	-0.297	-0.344	-0.095	0.028	-0.095
	(-3.57)***	(-3.20)***	(-3.79)***	(-1.79)*	(0.59)	(-1.82)*
GDPGR	53.091	51.251	57.050	13.697	7.159	19.234
	(2.53)**	(2.49)**	(2.74)***	(1.38)	(0.80)	(1.99)**
COMP	-3.959	-4.298	-4.249	-2.501	-1.540	-2.520
	(-1.39)	(-1.54)	(-1.49)	(-2.40)**	(-1.81)*	(-2.47)**
Constant	-23.857	-23.397	-20.492	-6.165	-5.595	-3.670
	(-8.84)***	(-9.08)***	(-8.32)***	(-4.40)***	(-4.55)***	(-2.92)***
Observations	5,099	5,099	5,099	4,956	4,956	4,956
Pseudo R^2	0.152	0.149	0.150	0.142	0.124	0.140
Countries	26	26	26	26	26	26
% of failed (troubled) banks	4.08	4.08	4.08	16.44	16.44	16.44

The table shows the results for the logistic regression: $T_{i,k} = \alpha R_{i,k} + \beta X_{i,k} + \gamma W_k + \mu INF_k + \tau R_{i,k} * INF_k + \varepsilon_{i,k}$, where T is the dependent variable, an indicator for bank failure or trouble. INF is the informal institutional variable, societal trust. R is a risk measure for bank i in country k, X is a vector of bank characteristics, and W is a vector of country characteristics Columns 1 to 3 show results for the failed-bank analysis and Columns 4 to 6 show results for the troubled-bank analysis. The z-statistics reported in parentheses are based on standard errors clustered by country. Detailed definitions of the variables are provided in the Appendix. '*', '**', and '***' denote significance at 10%, 5%, and 1% levels (two-tailed), respectively.

Table 5: Risk-taking and Bank Distress: The Role of Religiosity

	Failed Banks			Troubled Banks		
	(1)	(2)	(3)	(4)	(5)	(6)
	RISK= σ(ROA)	*RISK= σ(NIM)*	*RISK= z-score*	*RISK= σ(ROA)*	*RISK= σ(NIM)*	*RISK= z-score*
RISK	0.206	0.135	-0.201	0.448	0.382	-0.267
	(2.69)***	(1.49)	(-2.52)**	(6.25)***	(6.35)***	(-4.46)***
RELIGIOSITY	-1.198	-6.740	-5.421	-4.046	-1.977	-3.568
	(-0.56)	(-2.80)***	(-2.28)**	(-2.48)**	(-1.59)	(-2.96)***
RELIGIOSITY*RISK	**1.096**	**2.098**	**-0.801**	**0.900**	**0.686**	**-0.828**
	(2.20)**	**(3.59)*****	**(-1.66)***	**(2.37)****	**(2.20)****	**(-2.85)*****
SIZE	0.111	0.127	0.105	0.115	0.088	0.109
	(2.77)***	(3.15)***	(2.63)***	(5.09)***	(4.11)***	(4.83)***
REVG	-0.485	-0.407	-0.474	-0.130	-0.096	-0.177
	(-2.24)**	(-1.98)**	(-2.21)**	(-1.74)*	(-1.75)*	(-2.20)**
LOANS	0.406	0.297	0.409	-0.046	-0.033	-0.062
	(1.86)*	(1.40)	(1.88)*	(-0.62)	(-0.72)	(-0.82)
LEV	-3.236	-2.263	1.174	-2.047	-1.573	-3.236
	(-2.10)**	(-1.62)	(0.86)	(-4.11)***	(-3.61)***	(-6.19)***
ΔCASH	-9.255	-9.772	-10.493	0.021	0.131	0.028
	(-1.20)	(-1.20)	(-1.38)	(0.04)	(0.38)	(0.06)
LLP	2.958	2.646	2.823	4.977	1.439	4.313
	(1.61)	(1.38)	(1.57)	(1.79)*	(1.61)	(1.72)*
LISTING	-0.659	-0.675	-0.647	-0.630	-0.593	-0.624
	(-2.97)***	(-3.04)***	(-2.92)***	(-4.91)***	(-4.76)***	(-4.84)***
COMMERCIAL	0.146	0.140	0.137	0.531	0.420	0.588
	(0.82)	(0.78)	(0.77)	(4.76)***	(4.02)***	(5.24)***
DI	2.364	2.435	2.450	2.162	1.280	2.012
	(2.71)***	(2.82)***	(2.78)***	(3.41)***	(3.03)***	(3.17)***
CAPST	0.729	0.636	0.731	-0.039	0.162	0.010
	(4.48)***	(3.28)***	(4.53)***	(-0.40)	(1.76)*	(0.10)
BANK	-1.213	-1.374	-1.262	-0.534	-0.309	-0.582
	(-3.30)***	(-3.98)***	(-3.43)***	(-2.48)**	(-1.62)	(-2.76)***
MONITOR	0.409	0.203	0.442	0.254	0.317	0.147
	(2.87)***	(1.48)	(3.19)***	(2.31)**	(3.14)***	(1.36)
OFFICIAL	0.013	0.065	0.025	-0.056	-0.029	-0.068
	(0.18)	(1.03)	(0.35)	(-1.15)	(-0.63)	(-1.37)
CR_REG	0.640	0.711	0.613	0.070	0.043	0.163
	(2.42)**	(2.71)***	(2.31)**	(0.45)	(0.30)	(1.05)
CR	-0.896	-1.138	-0.886	-0.147	0.001	-0.209
	(-3.30)***	(-3.93)***	(-3.28)***	(-1.09)	(0.01)	(-1.54)
IS	-2.540	-1.965	-2.735	0.588	-0.106	0.542
	(-2.50)**	(-1.82)*	(-2.70)***	(0.86)	(-0.17)	(0.79)
COMMON	0.945	-0.367	1.065	-0.299	0.329	-0.332
	(1.72)*	(-0.70)	(1.94)*	(-0.94)	(1.08)	(-1.04)
LEGENF	-0.380	-0.445	-0.383	-0.117	-0.078	-0.144
	(-3.14)***	(-3.94)***	(-3.18)***	(-1.78)*	(-1.30)	(-2.14)**
DISC	-0.203	-0.194	-0.222	-0.120	-0.002	-0.127
	(-2.05)**	(-1.83)*	(-2.26)**	(-2.12)**	(-0.04)	(-2.24)**
GDPGR	38.219	17.608	42.494	21.758	2.859	17.171
	(1.84)*	(0.84)	(2.03)**	(1.92)*	(0.28)	(1.55)
COMP	-4.770	-3.019	-5.007	-2.059	-1.565	-2.047
	(-1.70)*	(-1.15)	(-1.77)*	(-1.94)*	(-1.73)*	(-1.92)*
Constant	-24.151	-18.300	-21.452	-8.161	-5.085	-4.450
	(-8.30)***	(-7.18)***	(-7.78)***	(-4.74)***	(-3.55)***	(-2.74)***
Observations	5,068	5,068	5,068	4,925	4,925	4,925
Pseudo R^2	0.151	0.148	0.149	0.140	0.124	0.139
Countries	24	24	24	24	24	24
% of failed (troubled) banks	4.10	4.10	4.10	16.51	16.51	16.51

The table shows the results for the logistic regression: $T_{i,k} = \alpha R_{i,k} + \beta X_{i,k} + \gamma W_k + \mu INF_k + \tau R_{i,k} * INF_k + \varepsilon_{i,k}$
where T is the dependent variable, an indicator for bank failure or trouble. INF is the informal institutional variable, religiosity. R is a risk measure for bank i in country k, X is a vector of bank characteristics, and W is a vector of country characteristics. Columns 1 to 3 show results for the failed-bank analysis and Columns 4 to 6 show results for the troubled-bank analysis. The z-statistics reported in parentheses are based on standard errors clustered by country. Detailed definitions of the variables are provided in the Appendix. '*', '**', and '***' denote significance at 10%, 5%, and 1% levels (two-tailed), respectively.

Table 6: Risk-taking and Bank Distress: The Role of Media Coverage

	Failed Banks			Troubled Banks		
	(1)	(2)	(3)	(4)	(5)	(6)
	RISK= σ(ROA)	*RISK= σ(NIM)*	*RISK= z-score*	*RISK= σ(ROA)*	*RISK= σ(NIM)*	*RISK= z-score*
RISK	0.190	0.299	-0.007	22.530	0.193	-0.321
	(2.79)***	(3.74)***	(-0.10)	(4.68)***	(3.71)***	(-6.73)***
MEDIA	-0.696	-1.185	-0.698	-1.243	-1.236	-0.130
	(-1.87)*	(-2.40)**	(-1.30)	(-4.55)***	(-3.39)***	(-0.42)
MEDIA*RISK	**0.214**	**0.362**	**-0.201**	**0.251**	**0.173**	**-0.147**
	(2.33)**	**(2.82)*****	**(-1.84)***	**(4.19)*****	**(2.11)****	**(-2.21)****
SIZE	0.115	0.139	0.143	0.112	0.039	0.094
	(3.22)***	(3.89)***	(3.94)***	(5.27)***	(1.65)*	(4.50)***
REVG	-0.601	-0.543	-0.500	0.114	0.123	0.114
	(-3.16)***	(-2.91)***	(-2.32)**	(1.57)	(1.46)	(1.78)*
LOANS	0.598	0.509	0.516	-0.036	-0.091	-0.030
	(3.32)***	(2.85)***	(2.47)**	(-0.51)	(-1.24)	(-0.46)
LEV	-2.296	-2.153	0.101	-1.904	-1.499	-2.547
	(-1.75)*	(-1.69)*	(0.09)	(-3.91)***	(-2.90)***	(-5.71)***
ΔCASH	-8.522	-9.422	-14.756	0.061	1.044	-0.013
	(-1.28)	(-1.40)	(-1.82)*	(0.13)	(1.07)	(-0.03)
LLP	0.937	1.071	1.869	4.233	-0.164	1.131
	(0.39)	(0.46)	(0.89)	(1.66)*	(-0.12)	(0.96)
LISTING	-0.036	-0.061	-0.044	-0.706	-0.672	-0.675
	(-0.20)	(-0.34)	(-0.23)	(-5.75)***	(-5.39)***	(-5.56)***
COMMERCIAL	0.250	0.216	0.253	0.506	0.443	0.567
	(1.58)	(1.35)	(1.50)	(4.86)***	(4.01)***	(5.60)***
DI	2.141	2.022	2.490	1.402	1.657	1.594
	(3.71)***	(3.59)***	(3.41)***	(3.23)***	(3.02)***	(3.80)***
CAPST	0.411	0.434	0.342	-0.068	-0.018	-0.083
	(4.71)***	(4.81)***	(3.15)***	(-1.26)	(-0.31)	(-1.59)
BANK	-0.121	-0.102	-0.445	-0.751	-0.528	-0.598
	(-0.44)	(-0.37)	(-1.18)	(-3.70)***	(-2.20)**	(-3.08)***
MONITOR	0.399	0.413	0.358	-0.077	0.050	0.001
	(3.22)***	(3.32)***	(2.12)**	(-0.77)	(0.44)	(0.01)
OFFICIAL	0.004	0.013	0.063	0.039	-0.004	0.031
	(0.10)	(0.27)	(1.23)	(1.24)	(-0.10)	(1.02)
CR_REG	0.510	0.481	0.731	0.364	0.367	0.432
	(2.59)***	(2.36)**	(2.96)***	(2.88)***	(2.84)***	(3.72)***
CR	-0.348	-0.369	-0.273	-0.033	-0.076	-0.035
	(-3.16)***	(-3.29)***	(-2.09)**	(-0.42)	(-0.89)	(-0.46)
IS	-1.298	-1.215	-1.213	-0.515	-0.542	-0.639
	(-2.00)**	(-1.93)*	(-1.76)*	(-1.39)	(-1.47)	(-1.80)*
COMMON	1.648	1.694	1.793	-0.067	-0.246	-0.052
	(4.60)***	(4.68)***	(4.16)***	(-0.28)	(-0.94)	(-0.23)
LEGENF	-0.339	-0.350	-0.486	-0.083	-0.143	-0.063
	(-3.76)***	(-3.98)***	(-4.75)***	(-1.71)*	(-2.68)***	(-1.34)
DISC	-0.181	-0.175	-0.184	-0.071	0.036	-0.062
	(-3.03)***	(-2.90)***	(-2.59)***	(-1.65)*	(0.79)	(-1.50)
GDPGR	27.565	24.681	38.215	20.727	21.444	22.404
	(2.06)**	(1.88)*	(2.69)***	(3.19)***	(3.25)***	(3.64)***
COMP	-4.924	-4.626	-10.304	-2.450	-1.352	-2.098
	(-2.40)**	(-2.25)**	(-3.45)***	(-3.01)***	(-1.72)*	(-2.76)***
Constant	-18.429	-18.507	-17.294	-6.378	-8.442	-5.646
	(-9.71)***	(-9.83)***	(-9.92)***	(-5.76)***	(-6.02)***	(-5.40)***
Observations	5,599	5,599	5,599	5,451	5,451	5,451
Pseudo R^2	0.134	0.140	0.154	0.134	0.132	0.133
Countries	33	33	33	33	33	33
% of failed (troubled) banks	4.57	4.57	4.57	16.91	16.91	16.91

The table shows the results for the logistic regression: $T_{i,k} = \alpha R_{i,k} + \beta X_{i,k} + \gamma W_k + \mu INF_k + \tau R_{i,k} * INF_k + \varepsilon_{i,k}$, where T is the dependent variable, an indicator for bank failure or trouble. INF is the informal institutional variable, media reach. R is a risk measure for bank i in country k, X is a vector of bank characteristics, and W is a vector of country characteristics. The regressions are clustered by country. Columns 1 to 3 show results for the failed-bank analysis and Columns 4 to 6 show results for the troubled-bank analysis. The z-statistics reported in parentheses are based on standard errors clustered by country. Detailed definitions of the variables are provided in the Appendix. '*', '**', and '***' denote significance at 10%, 5%, and 1% levels (two-tailed), respectively.

Table 7: Alternate Proxies for Informal Institutions

Panel A: Failed Banks

	(1)	(2)	(3)	(4)	(5)
	INF=	*INF=*	*INF=*	*INF=*	*INF=*
Variables	*TRUST_CO*	*RELI_MEMBER*	*RELI_IMPT*	*RELI_SERVICE*	*CONFI_PRESS*
RISK	1.249	0.384	0.209	0.220	0.302
	(3.21)***	(3.53)***	(2.73)***	(2.81)***	(3.93)***
INF	-8.325	-4.236	-1.883	-0.287	-30.986
	(-2.05)**	(-2.23)**	(-0.89)	(-0.18)	(-4.53)***
RISK *INF	**2.061**	**0.842**	**1.241**	**0.519**	**3.146**
	(2.57)**	**(2.19)****	**(2.51)****	**(1.27)**	**(3.09)*****
Observations	5,068	5,068	5,068	5,068	5,068
Pseudo R^2	0.151	0.159	0.153	0.150	0.161
Countries	24	24	24	24	24
% of failed banks	4.10	4.10	4.10	4.10	4.10

Panel B: Troubled Banks

	(1)	(2)	(3)	(4)	(5)
	INF=	*INF=*	*INF=*	*INF=*	*INF=*
Variables	*TRUST_CO*	*RELI_MEMBER*	*RELI_IMPT*	*RELI_SERVICE*	*CONFI_PRESS*
RISK	0.221	0.357	0.335	0.255	0.375
	(3.54)***	(6.37)***	(7.02)***	(6.01)***	(7.51)***
INF	-1.780	-0.586	-0.935	-0.242	-13.351
	(-0.87)	(-0.57)	(-0.84)	(-0.25)	(-3.48)***
RISK *INF	**0.235**	**0.337**	**0.484**	**0.054**	**2.290**
	(2.19)**	**(1.73)***	**(1.79)***	**(0.21)**	**(3.49)*****
Observations	4,925	4,925	4,925	4,925	4,925
Pseudo R^2	0.126	0.127	0.125	0.123	0.127
Countries	24	24	24	24	24
% of troubled banks	16.51	16.51	16.51	16.51	16.51

The table shows the results for the logistic regression: $T_{i,k} = \alpha R_{i,k} + \beta X_{i,k} + \gamma W_k + \mu INF_k + \tau R_{i,k} * INF_k + \varepsilon_{i,k}$, where T is the dependent variable, an indicator for bank failure or bank trouble. INF is the alternative informal institutional measure of societal trust in a company, individual components of the religiosity measure, or the alternative informal institutional measure of media reach, confidence in the press. R is a risk measure for bank i in country k, X is a vector of bank characteristics, and W is a vector of country characteristics. In the interest of parsimony, the table reports only the results based on *RISK* measured as *σ(ROA)*. Panel A shows results for the failed-bank analysis and Panel B for the troubled-bank analysis. We only report the coefficients on the key variables. The z-statistics reported in parentheses are based on standard errors clustered by country. Detailed definitions of the variables are provided in the Appendix. '*', '**', and '***' denote significance at 10%, 5%, and 1% levels (two-tailed), respectively.

Table 8: Other Sensitivity Checks

Panel A: Controlling for Differential Country Representation in the Sample

Failed Banks

	Weighted least squares regression				Removing banks from Germany and U.S.A.			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		INF= TRUST	*INF= RELIGIOSITY*	*INF= MEDIA*		*INF= TRUST*	*INF= RELIGIOSITY*	*INF= MEDIA*
RISK	0.015	0.018	0.007	0.009	0.218	0.250	0.221	0.140
	(1.72)*	(1.57)	(0.89)	(1.29)	(2.99)***	(2.98)***	(2.72)***	(1.84)*
INF		-0.076	-0.260	-0.011		-2.246	-3.326	-0.619
		(-0.54)	(-1.76)*	(-0.33)		(-0.77)	(-1.20)	(-1.50)
*RISK *INF*		0.001	0.130	0.018		1.771	1.773	0.224
		(0.03)	(2.34)**	(2.01)*		(3.01)***	(2.90)***	(2.21)**
Observations	5,655	5,099	5,068	5,599	3,277	2,721	2,690	3,221
Adjusted R^2/Pseudo R^2	0.093	0.100	0.111	0.096	0.142	0.153	0.145	0.161
Countries	35	26	24	33	33	24	22	31
% of failed banks	4.53	4.08	4.10	4.57	5.98	5.44	5.50	6.09

Troubled Banks

	Weighted least squares regression				Removing banks from Germany and U.S.A.			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		INF= TRUST	*INF= RELIGIOSITY*	*INF= MEDIA*		*INF= TRUST*	*INF= RELIGIOSITY*	*INF= MEDIA*
RISK	0.037	0.006	0.026	0.012	0.283	0.456	0.500	0.434
	(2.01)*	(0.30)	(1.65)	(0.67)	(6.03)***	(7.07)***	(5.58)***	(7.29)***
INF		-0.501	-0.155	-0.095		-4.133	-2.301	-0.635
		(-1.41)	(-0.45)	(-1.28)		(-2.37)**	(-1.15)	(-2.06)**
*RISK *INF*		0.230	0.185	0.018		1.262	0.922	0.111
		(2.13)**	(1.69)*	(1.15)		(3.11)***	(2.04)**	(1.71)*
Observations	5,472	4,956	4,925	5,451	0.0850	0.127	0.109	0.119
Adjusted R^2/Pseudo R^2	0.181	0.204	0.207	0.176	3,032	2,516	2,485	3,011
Countries	35	26	24	33	33	24	22	31
% of troubled banks	16.85	16.44	16.51	16.91	15.77	14.75	14.85	15.88

Table 8 (continued)

Panel B: Controlling for Additional Firm-level Variables

	Failed Banks				Troubled Banks			
	(1)	(2) *INF= TRUST*	(3) *INF= RELIGIOSITY*	(4) *INF= MEDIA*	(5)	(6) *INF= TRUST*	(7) *INF= RELIGIOSITY*	(8) *INF= MEDIA*
RISK	0.263	0.259	0.215	0.223	0.300	0.343	0.462	0.381
	(3.72)***	(3.20)***	(2.60)***	(3.07)***	(7.65)***	(7.37)***	(6.39)***	(7.83)***
INF		-1.030	-1.614	-0.870		-4.870	-3.973	-1.011
		(-0.43)	(-0.71)	(-2.24)**		(-3.16)***	(-2.42)**	(-3.77)***
*RISK *INF*		1.764	1.268	0.264		1.147	0.893	0.175
		(3.13)***	(2.42)**	(2.67)***		(3.25)***	(2.34)**	(2.96)***
Observations	5,655	5,099	5,068	5,599	5,472	4,956	4,925	5,451
Pseudo R^2	0.145	0.173	0.168	0.149	0.124	0.148	0.145	0.144
Countries	35	26	24	33	35	26	24	33
% of failed (troubled) banks	4.53	4.08	4.10	4.57	16.85	16.44	16.51	16.91

Panel C: Analysis based on Private Banks

	Failed Banks				Troubled Banks			
	(1)	(2) *INF= TRUST*	(3) *INF= RELIGIOSITY*	(4) *INF= MEDIA*	(5)	(6) *INF= TRUST*	(7) *INF= RELIGIOSITY*	(8) *INF= MEDIA*
RISK	0.228	0.208	0.181	0.190	0.278	0.315	0.383	0.349
	(3.17)***	(2.61)***	(2.28)**	(2.52)**	(6.80)***	(6.32)***	(5.15)***	(6.71)***
INF		-4.292	-4.121	-1.148		-4.078	-3.513	-0.823
		(-1.70)*	(-1.60)	(-2.54)**		(-2.30)**	(-2.02)**	(-2.80)***
*RISK *INF*		1.449	1.352	0.209		1.045	0.996	0.136
		(2.44)**	(2.32)**	(2.02)**		(2.70)***	(2.46)**	(2.25)**
Observations	4,693	4,230	4,219	4,670	4,603	4,173	4,162	4,586
Pseudo R^2	0.153	0.177	0.176	0.157	0.133	0.158	0.155	0.154
Countries	35	26	24	33	35	26	24	33
% of failed (troubled) banks	4.28	4.14	4.76	4.30	16.55	15.94	15.95	16.62

The table shows the results for the logistic regression: $T_{i,k} = \alpha R_{i,k} + \beta X_{i,k} + \gamma W_k + \mu INF_k + \tau R_{i,k} * INF_k + \varepsilon_{i,k}$, where T is the dependent variable, an indicator for bank failure or trouble. INF is the informal institutional variable, trust, religiosity or media reach. R is a risk measure for bank i in country k, X is a vector of bank characteristics, and W is a vector of country characteristics. In the interest of parsimony, the table only reports the results for the country level variables and their interactions, and for *RISK* measured as *σ(ROA)*.The z-statistics reported in parentheses are based on standard errors clustered by country. Detailed definitions of the variables are provided in the Appendix. '*', '**', and '***' denote significance at 10%, 5%, and 1% levels (two-tailed), respectively.

Table 9: Earnings Persistence and Cash Flow Predictability Tests

	Earnings Persistence Test			Cash Flow Predictability Test		
	(1)	(2)	(3)	(4)	(5)	(6)
	INF= TRUST	*INF= RELIGIOSITY*	*INF= MEDIA*	*INF= TRUST*	*INF= RELIGIOSITY*	*INF= MEDIA*
Variable						
EBT	0.347	0.289	0.326	0.379	0.313	0.347
	(6.87)***	(5.22)***	(7.88)***	(6.98)***	(5.47)***	(7.79)***
INF	-0.025	-0.013	-0.004	-0.030	-0.015	-0.005
	(-4.23)***	(-2.07)**	(-3.65)***	(-4.55)***	(-2.26)**	(-3.61)***
INF*EBT	**0.512**	**0.524**	**0.127**	**0.573**	**0.607**	**0.145**
	(2.88)* **	**(2.03)** **	**(1.76)***	**(2.63)*** **	**(1.80)***	**(1.93)***
SIZE	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-1.13)	(-0.71)	(-3.28)***	(-1.84)*	(-1.53)	(-3.92)***
DEPOSIT	0.000	0.000	0.000	0.000	0.000	0.000
	(2.61)***	(2.67)***	(1.62)	(5.09)***	(5.41)***	(2.15)**
RESIDENTIAL	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-1.68)*	(-1.76)*	(-1.56)	(-1.70)*	(-1.77)*	(-1.61)
OTH_MORTAGE	-0.055	-0.062	-0.060	-0.008	-0.008	-0.008
	(-1.10)	(-1.70)*	(-1.21)	(-0.13)	(-0.13)	(-0.13)
OTH_COMM	-0.000	-0.000	-0.000	-0.000	0.000	0.000
	(-2.24)**	(-2.07)**	(-1.11)	(-0.10)	(0.16)	(0.51)
CORP	0.000	0.000	0.000	-0.000	-0.000	-0.000
	(0.17)	(0.09)	(0.75)	(-4.43)***	(-4.52)***	(-0.50)
LISTING	-0.001	-0.001	-0.000	-0.001	-0.001	-0.000
	(-1.50)	(-1.70)*	(-0.57)	(-1.44)	(-1.65)*	(-0.13)
COMMERCIAL	0.001	0.001	0.002	0.002	0.002	0.002
	(1.50)	(1.54)	(3.06)***	(2.59)***	(2.71)***	(3.78)***
DI	0.001	0.010	0.000	-0.001	0.009	0.002
	(0.26)	(3.59)***	(0.24)	(-0.25)	(2.96)***	(1.39)
CAPST	0.001	0.002	-0.000	0.001	0.001	-0.001
	(2.95)***	(3.32)***	(-1.11)	(1.21)	(1.09)	(-2.54)**
BANK	-0.005	-0.005	-0.004	-0.003	-0.003	-0.003
	(-5.00)***	(-4.67)***	(-5.90)***	(-3.02)***	(-2.39)**	(-3.25)***
MONITOR	-0.001	-0.000	0.001	-0.001	-0.001	0.001
	(-1.20)	(-0.57)	(2.43)**	(-2.27)**	(-0.92)	(1.78)*
OFFICIAL	0.000	0.000	0.001	0.001	0.000	0.001
	(0.81)	(0.25)	(3.92)***	(1.47)	(0.94)	(3.10)***
CR_REG	-0.002	-0.001	-0.001	-0.002	-0.001	-0.002
	(-2.16)**	(-1.73)*	(-1.84)*	(-1.50)	(-0.97)	(-4.18)***
CR	-0.004	-0.002	-0.001	-0.003	-0.001	-0.000
	(-6.55)***	(-3.35)***	(-2.65)***	(-5.21)***	(-1.21)	(-0.09)
IS	-0.007	-0.012	-0.008	0.011	0.005	0.003
	(-4.52)***	(-7.00)***	(-6.16)***	(2.60)***	(1.07)	(1.37)
COMMON	0.000	0.001	0.000	-0.007	-0.012	-0.008
	(1.62)	(3.19)***	(1.23)	(-3.37)***	(-5.67)***	(-5.00)***
LEGENF	0.001	0.002	0.001	0.000	0.001	0.001
	(4.22)***	(6.01)***	(5.11)***	(0.68)	(2.45)**	(2.27)**
DISC	0.375	0.372	0.158	0.001	0.002	0.001
	(7.36)***	(6.79)***	(4.88)***	(2.96)***	(4.56)***	(3.55)***
GDPGR	0.011	0.008	-0.000	0.382	0.349	0.210
	(4.19)***	(2.66)***	(-0.21)	(5.89)***	(4.62)***	(5.27)***
COMP	0.007	0.004	-0.001	0.009	0.005	0.006
	(1.67)*	(0.95)	(-0.17)	(1.85)*	(0.82)	(1.65)*
Constant	0.002	-0.021	0.004	0.011	-0.012	0.015
	(0.32)	(-2.95)***	(0.94)	(1.80)*	(-1.53)	(3.03)***
Observations	22,208	22,069	24,615	22,208	22,069	24,615
Adjusted R^2	0.279	0.279	0.267	0.238	0.239	0.220
Countries	26	24	33	26	24	33

The regression for Columns 1 to 3 is $EBT_{t+1,i,k} = \alpha_1 EBT_{t,i,k} + \alpha_2 INF_k + \alpha_3 INF_k*EBT_{t,i,k} + \beta X_{i,k} + \gamma W_k + \varepsilon_{t+1,i,k,}$
while the regression for Columns 4 to 6 is $EBTLLP_{t+1,i,k} = \alpha_1 EBT_{t,i,k} + \alpha_2 INF_k + \alpha_3 INF_k*EBT_{t,i,k} + \beta X_{i,k} + \gamma W_k + \varepsilon_{t+1,i,k}$
EBT is earnings before taxes scaled by total assets, EBTLLP is earnings before taxes and loan loss provisions scaled by total assets and INF is the informal institution measured by the societal trust, religiosity and media reach. The sample period for the test is 2000-2006. The definitions of the variables are provided in the Appendix. We estimate the regression clustered by country and bank, and with year dummies. To conserve space, we do not report the coefficient estimates for the year dummies. For each variable, we report the regression coefficient, followed by the t statistics in parentheses. '*', '**', and '***' denote significance at 10%, 5%, and 1% levels, two-tailed, respectively.