

# Religiosity and Earnings Management: International Evidence from the Banking Industry

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Received: 17 July 2013 / Accepted: 26 July 2014 / Published online: 13 August 2014  
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**Abstract** Using an international sample of banks, we study how differences in religiosity across countries affect earnings management. Given that religiosity is a major source of morality and ethical behavior, it may reduce excessive risk taking and act as deterrence for earnings manipulations. Therefore, we predict lower earnings management in societies that have higher religiosity. Consistent with expectations, our cross-country analysis indicates that religiosity is negatively related to income-increasing earnings management for loss-avoidance and just-meeting-or-beating prior year's earnings. We also find that religiosity reduces income-increasing earnings management through abnormal loan loss provisions. In additional tests, we document that religiosity increases the information value of bank earnings, with both earnings persistence and cash flow predictability being enhanced by higher religiosity. For the crisis period analysis (i.e., 2007–2009), our evidence shows that banks in countries with higher religiosity exhibit lower probability of reporting asset deterioration and lower probability of having poor performance.

**Keywords** Religion · Ethics · Morality · Earnings management · Earnings benchmarks · Loan loss provisions

**JEL Classification** G14 · G21 · M41 · M42

## Introduction

Employing a country-level measure of religiosity and an international sample of banks, we examine the effect of religion on bank earnings management. Cross-country differences in earnings management are likely to be affected by differences in bank regulation and monitoring across countries, as well by softer dimensions such as religion that may reduce excessive risk taking and act as deterrence for earnings manipulations. Such differences became apparent in the recent financial crisis which had a considerably larger adverse effect on banks in certain countries than in others. In a global survey on factors that created the conditions for the credit/banking crisis conducted in May 2008 by PricewaterhouseCoopers and the Economist Intelligence Unit, 31 % of survey participants put the blame on “monetary policy,” 58 % on “ineffective regulatory oversight,” and an impressive 73 % on “culture and excessive risk-taking” (PricewaterhouseCoopers 2008). Given these findings, an examination of the influence of religion, which is an important aspect of a nation's culture, on financial reporting quality of banks clearly is warranted.

Culture is usually thought to influence economic outcomes by affecting personal traits such as honesty, thrift, willingness to work hard, and openness to strangers (Barro and McCleary 2003). In particular, La Porta et al. (1997) and Guiso et al. (2006, 2008) argue that religion is more primitive than other cultural values and can be considered a primary driver of personal traits. Weber (1930) argues that religious practices and beliefs have important

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consequences for economic development. Specifically, religious beliefs in a personal god can have a positive contribution to morality by way of vision and motivation (Sia 2008). Understanding the impact of religion on financial reporting practices is important following earlier results documenting the influence of cultural beliefs on earnings quality (Nabar and Thai 2007; Douplik 2008; Han et al. 2010; Kanagaretnam et al. 2011).

Ghoul et al. (2012) note that despite the wealth of studies reporting significant social and economic effects of religion at the individual level, only recently have researchers begun examining its effects at the firm level and, in particular, its effects on financial reporting.<sup>1</sup> For example, Dyreng et al. (2012) find that firms located in more religious areas in the U.S. have higher accruals quality, and are less likely to opportunistically manage earnings, meet analyst expectations, engage in fraudulent accounting, restate their financial statements, avoid taxes, and backdate options. McGuire et al. (2012) also report that firms headquartered in areas of the U.S. with strong religious social norms are generally associated with lower incidences of financial reporting irregularities. Omer et al. (2010) provide further evidence implying that religion amounts to an important external monitoring mechanism evident in audit quality by showing that auditors located in areas with strong religiosity are more likely to issue going concern audit opinions.

By contrast, using an international setting, Callen et al. (2011) document that earnings management is unrelated to both religious affiliation and degree of religiosity. Callen et al. (2011) employ an aggregate ranked measure of earnings management, consisting predominantly of accruals-based measures which proxy for both opportunistic earnings manipulations and earnings management for efficiency reasons, such as signaling future performance. Our research differs from Callen et al. (2011) in several important ways. First, unlike Callen et al. (2011) who study several industries other than banking, we focus on a single homogenous industry that has several advantages (discussed in the next three paragraphs). Second, we use two measures of earnings quality, benchmark beating and income-increasing earnings management through abnormal loan loss provisions (LLP), that specifically reflect opportunistic earnings management, and in additional tests, we use earnings persistence and predictability of future cash flows, two measures that specifically reflect the information enhancing role of earnings. Third, Callen et al.'s (2011) sample period spans 1990–1999, whereas ours spans both the period before the recent financial crisis (i.e.,

1995–2006) as well as the crisis period (i.e., 2007–2009). Thus, we are able to provide evidence on the effects of religion on earnings management in the pre-crisis period, as well as on selected accounting outcomes (i.e., large LLP and poor performance) in the crisis period.

In summary, the literature examining the relation between religion and financial reporting incentives has excluded firms in banking and financial services and has primarily focused only on religious differences within the U.S. (e.g., Dyreng et al. 2012; McGuire et al. 2012). Unlike that research, our study focuses on the banking industry in an international setting that spans 29 countries. Given the importance to national and global economies of this highly leveraged sector of the economy, and given that firms in this sector are markedly different from industrial firms, it is important to understand the role of religion on earnings management of banks. In addition, the influence of religion may be of greater importance in industries such as banking, where information uncertainty is higher relative to industrial firms due to the greater complexity of banking operations and difficulty of assessing risk on the large and diverse portfolio of loans (Autore et al. 2009).

Because banks operate in a highly regulated environment, in that they are monitored by Central Banks and other regulatory agencies (such as deposit insurance corporations), softer dimensions such as religion may not be as important in constraining earnings management. However, if we find a negative relation between religiosity and earnings management in this highly regulated environment, it would suggest that religiosity likely is even more relevant for firms in other industries that are not subject to such direct regulatory scrutiny. To our knowledge, no other study has examined how religiosity is related to earnings management in the international or the U.S. banking industry.

Another reason for studying banks is that LLP are banks' largest and most important accrual and bank managers have considerable discretion in estimating LLP. This discretion allows them flexibility in using LLP for managing their earnings. As a result, studying banks, and specifically LLP, is well-suited to investigate the income-increasing aspect of earnings management. We reason that income-increasing earnings management through LLP is a better proxy for earnings quality than the abnormal accrual measures used in prior research.<sup>2</sup> In particular, our study mitigates error in measuring managerial discretion by

<sup>1</sup> Prior research documents that religion affects, among other things, individuals' wages (Chswick 1983), level of education (Chswick 1985; Gruber 2005), criminal behavior (Evans et al. 1995), risk aversion (Miller and Hoffman 1995; Halek and Eisenhauer 2001), and social ethics (Arruñada 2010).

<sup>2</sup> Prior research argues that proxies of abnormal accruals commonly used to detect earnings management are subject to serious measurement error (Guay et al. 1996; McNichols 2000, 2002; Jones et al. 2008). For example, McNichols (2002) questions the construct validity of a proxy based on aggregate accruals because of the complexity associated with modeling the estimation errors in aggregate accruals.

focusing on a single accrual and a single industry. Focusing on a single accrual facilitates a sharper separation into its normal (non-discretionary) and abnormal (discretionary) components. We use a number of industry-specific variables to better isolate the normal LLP from the abnormal LLP. Also, focusing on a single, relatively homogeneous industry provides control over other determinants of cross-sectional differences in accruals, thus increasing the reliability of the inferences from our empirical analysis.

Prior research in banking has examined the relation between earnings management and international institutional factors, bank monitoring variables, auditor reputation and national culture (Shen and Chih 2005; Fonseca and Gonzalez 2008; Kanagaretnam et al. 2010b, 2011). Shen and Chih (2005), using earnings benchmark tests, document that most banks manage their earnings. They also show that stronger investor protection and greater transparency in accounting disclosure reduce a bank's incentives to manage earnings. Fonseca and Gonzalez (2008) focus on factors influencing income-smoothing through LLP, the major bank accrual. They find that income-smoothing is lower in jurisdictions with greater bank regulation and supervision. How auditor reputation constrains opportunistic earnings management is the focus of Kanagaretnam et al. (2010b), who document that both auditor type and auditor industry specialization moderate income-increasing earnings management. Kanagaretnam et al. (2011) study the relation between cultural factors and bank earnings quality during the pre-financial crisis and crisis periods. They find that cultural factors influence income-smoothing and benchmark-beating behaviors in the pre-crisis period, and result in large losses and large LLP in the crisis period.

We extend this line of research by examining the effects of religion on earnings quality of banks. Although our primary analysis of earnings management through benchmark beating tests and income-increasing abnormal LLP focuses on opportunistic earnings management, we explore the effects of religion on the information enhancement role of earnings in additional tests. The information perspective indicates that earnings quality increases as managers' report less noisy or more accurate earnings, or take reporting actions that reveal information about banks' future earnings and cash flows. In addition, we also examine the relation between religion and selected accounting outcomes in the banking industry during the recent crisis period.

Our main prediction is that religiosity is negatively related to opportunistic earnings management in banks even after controlling for several previously identified international institutional factors and bank monitoring factors. We employ three traditional proxies of earnings management, managing earnings to avoid losses, managing

earnings to just-meet-or-beat the prior year's earnings, and an accrual-based proxy, to test income-increasing earnings management through bank LLP. By using two different tests (accruals- and non-accruals-based tests), we strengthen the validity and robustness of our results. Our loss-avoidance and just-meeting-or-beating prior year's earnings tests closely resemble the methodology used by Beatty et al. (2002), Altamuro and Beatty (2010), and Kanagaretnam et al. (2010b). Our test for income-increasing earnings management through abnormal LLP is based on prior banking research on LLP (Kanagaretnam et al. 2010a).

Prior literature indicates that there are three distinct dimensions of religiosity: cognitive (knowing), affective (feeling), and behavioral (doing) (Cornwall et al. 1986; Parboteeah et al. 2008). Following this research, we use three variables from World Values Surveys (WVS) that capture these three different dimensions of religiosity and also extract the first principal component of these three variables to construct an aggregate religiosity variable, which we use as our primary measure of religiosity.<sup>3</sup> The three variables are based on responses to WVS questions about religious affiliation, religious importance, and attending religious services.

We use an international bank sample from the *BankScope* database representing 29 countries over the period 1995–2006 to test our main predictions. We focus on the pre-financial crisis period in our main analysis, since large losses during the financial crisis (post-2006 period), if included, will likely skew our earnings management tests.<sup>4</sup> We find that religiosity moderates benchmark-beating (loss-avoidance and just-meeting-or-beating prior year's earnings) behavior in banks. We also find that religiosity is negatively related to income-increasing abnormal LLP.

Our results are robust to several sensitivity tests including using a reduced sample that excludes U.S. or Japanese banks, controlling for cultural effects using Hofstede's uncertainty avoidance and individualism dimensions of national culture, incorporating additional controls for investor protection from Leuz et al. (2003), and including smaller banks in the sample.

In additional tests, we document that religion greatly increases the information value of bank earnings. We find that earnings persistence and cash flow predictability are enhanced by higher religiosity. For the crisis period analysis (i.e., for the period 2007–2009), our evidence shows that banks in countries with higher religiosity exhibit lower

<sup>3</sup> We obtain similar inferences for all our main tests, when we replace the aggregate religiosity variable with the three individual dimensions of religion.

<sup>4</sup> It is generally accepted that the most recent financial crisis in the US and UK started in 2007 (Ryan 2008). However, the financial crisis spread to other countries in 2008 (Laeven and Valencia 2010).

probability of reporting asset deterioration (proxied by incidence of large LLP) and lower probability of having poor performance.

Our results contribute to the literature in several ways. First, they extend prior research on the relation between religion and earnings management to the banking industry and to the international setting. By focusing on a single, homogenous industry we are able to provide consistent evidence on the relations between religion and non-accrual-based and bank-specific, accrual-based earnings management. Second, in an international banking setting, our study can be viewed as identifying softer dimensions such as religion, in addition to previously identified international institutional factors, that influence financial reporting behavior of banks. Third, our study contributes to research investigating the relation between culture and corporate and individual decision making (e.g., Hilary and Hui 2009; Chui et al. 2010). We show that religious differences between societies have a profound influence on several accounting outcomes at the firm level. Our findings support the growing awareness among researchers studying international financial markets that informal institutions such as religion that affect ethics and morality matter in financial decisions, even when those decisions are made by sophisticated professional managers.

The rest of this article is organized as follows. The next section develops the hypotheses. Section three explains the empirical models used for tests of earnings management. Section four describes the sample selection process. Section five discusses the results and section six concludes the study.

## Research Background and Hypotheses

To our knowledge, there are only a few studies that examine the financial reporting quality of banks in an international setting. Notable exceptions are Shen and Chih (2005), Fonseca and Gonzalez (2008), Kanagaretnam et al. (2010b), Kanagaretnam et al. (2011), and Kanagaretnam et al. (2014), who examine the relations between international institutional factors, bank monitoring variables, auditor reputation, national culture, and earnings management. Our main research question is whether and how religion influences earnings management of banks in an international setting.

Only recently has the academic literature begun exploring the influence of national culture as a potential factor in explaining cross-country variations in earnings quality (Nabar and Thai 2007; Douppnik 2008; Han et al. 2010; Kanagaretnam et al. 2011). Gray (1988) proposes a model that maps cultural patterns discussed by Hofstede (1980) to societal values expressed at the level of

accounting subculture. He indicates that culture is an essential element in understanding how social systems change because culture influences both the norms and values of such systems and the behavior of groups in their interactions within and across systems. Religion is one of the important dimensions of culture. However, there is sparse evidence on the relation between religion and earnings management in a cross-country setting, the one exception being Callen et al. (2011) who document that earnings management is unrelated to both religious affiliation and degree of religiosity.

We expect that religion is related to earnings management in banks for several reasons. First, as stated in Callen and Fang (2013), major religions uniformly condemn manipulation of one's fellow man. This anti-manipulative ethos of religion forms a powerful reason against opportunistic income-increasing earnings management. Second, there is a growing academic literature showing that religiosity is a major source of morality and ethical behavior (Vitell 2009, for a review of empirical literature). For example, Walker et al. (2012) document that religious attitude measures are related to ethical judgment. In particular, participants who were intrinsically motivated in their religiosity were less accepting of the ethically questionable scenarios. Their results also reveal a negative relation between a loving view of god and ethically questionable scenarios. In addition, according to McGuire et al. (2012), when religion is central to a person's self-identity, departures from religious role expectations generate higher levels of cognitive and emotional discomfort, which motivates adherents to keep their behavior in line with role expectations. Consistent with this reasoning, prior research finds that individuals who score highly on measures of religiosity tend to hold traditional views on moral issues and have more conservative moral standards than those with lower levels of religiosity (Terpstra et al. 1993; Barnett et al. 1996).

Third, the social norm perspective of religion also suggests a dampening of income-increasing motives for earnings management. Sunstein (1996) defines norms as "... social attitudes of approval and disapproval, specifying what ought to be done and what ought not to be done ...". Stavrova et al. (2013) assert that religiosity is an example of a social norm. Society utilizes control mechanisms such as "open criticism" and "withdrawal of social support" (Hechter and Opp 2001; Horne 2009) to punish individuals who violate these norms. Conversely, those who behave in accordance with these norms may receive "higher levels of social recognition (public acknowledgment of their status, merits, or personality) and respect" (Stavrova et al. 2013). Unethical behavior (e.g., intentionally misstating financial statements) clearly violates the teachings of all religions. Therefore,



management of a corporation located in a more religious society would be less likely to act in a manner that violates a social norm or face social sanctions.

Fourth, risk aversion provides another potential link between religion and earnings management (Callen et al. 2011). For example, Hilary and Hui (2009) find that U.S. companies located in counties with higher religiosity have lower return on assets and return on equity variability, indicating that they are relatively more risk-averse. Shu et al. (2012) demonstrate that mutual fund risk taking is negatively related to local religiosity. Risk-averse managers are less likely to engage in opportunistic income-increasing earnings management if only because of potential litigation costs.

Recent literature has studied whether religion matters for financial accounting outcomes. For example, Dyreng et al. (2012) find that firms located in more religious areas have higher accruals quality, and are less likely to opportunistically manage earnings, meet analyst expectations, engage in fraudulent accounting, restate their financial statements, avoid taxes, and backdate options. McGuire et al. (2012) also 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 implying that religion amounts to an important external monitoring mechanism evident in audit quality. Specifically, they show that auditors located in areas with strong religiosity are more likely to issue going concern audit opinions.

Given our arguments for the relation between religion and earnings management and the above evidence, we predict a negative relation between religiosity and opportunistic (income-increasing) earnings management, which we measure using benchmark-beating behavior and income-increasing earnings management through abnormal LLP. Accordingly, we hypothesize the following (stated in alternate form):

**Hypothesis 1** Income-increasing earnings management is negatively related to religiosity.

We note that because banks operate in a highly regulated environment in that they are monitored by Central Banks and other regulatory agencies (such as deposit insurance corporations), religiosity may not be as important in constraining income-increasing earnings management in banks relative to industrial firms. Therefore, we may not find evidence in support of Hypothesis 1.

## Measures of Religiosity and Earnings Management

Our general prediction is that religiosity constrains bank earnings management. We employ three traditional proxies

of earnings management to strengthen the validity/robustness of the results of our tests relating earnings management to religiosity.

### Measure of Religiosity

Following prior literature (Cornwall et al. 1986; Parboteeah et al. 2008; McGuire et al. 2012), we define religiosity by (1) its cognitive (knowing) element, which relates religious beliefs or religious knowledge, (2) its affective (feeling) element, which deals with individuals' 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 responses to the following three questions asked by WVS: (1) Would you say you are a religious person? (*MEMBER\_RELI*); (2) How important is religion in your life? (*RELI\_IMP*); (3) How often do you attend religious services? (*RELI\_SERVICE*). Using the data from WVS, we calculate the strength of each of these three elements of religiosity for each of the countries in the sample. Our main variable of interest is the first principal component of the above three variables that we use as an aggregate religiosity measure (*RELIGIOSITY*). Appendix 2 reports the procedure for computing these three dimensions of religiosity.

### Managing Earnings for Loss-Avoidance or to Just-Meet-or-Beat Prior Year's Earnings

Beatty et al. (2002), Altamuro and Beatty (2010), and Kanagaretnam et al. (2010b) report that bank managers have incentives to manage earnings for benchmark beating. We examine how religiosity constrains this incentive. We focus on two earnings benchmarks: loss-avoidance (*LOSS\_AV*) and just-meeting-or-beating prior year's earnings (*JMBE*).<sup>5</sup> We include all available additional control variables at the bank level and the country level, and estimate the following logistic model:

$$BM_{i,k} = \alpha R_k + \beta X_{i,k} + \gamma E_k + \sigma W_k + \langle \text{Year Controls} \rangle + \varepsilon_{i,k} \quad (1)$$

where  $BM_{i,k}$  is the earnings benchmark for bank  $i$  in country  $k$ , i.e., loss-avoidance (*LOSS\_AVOID*) or just-meeting-or-beating prior year's earnings (*JMBE*),  $R$  is the aggregate religiosity measure in country  $k$ ,  $X$  is a vector of bank characteristics,  $E$  is a vector country level economic variables, and  $W$  is a vector of other country characteristics.

<sup>5</sup> A survey of managers by Graham et al. (2005) finds that just-meeting-or-beating prior period's earnings is one of the most important benchmarks for corporate managers. In addition, Burgstahler and Dichev (1997) and Degeorge et al. (1999) provide empirical evidence indicating that loss-avoidance is also an important benchmark for managers.

If religion constrains earnings management, we expect a negative coefficient on  $R$ . On the other hand, if religious variables are not important in a highly regulated industry such as banking, the coefficient on  $R$  will not significantly differ from zero.

Following Beatty et al. (2002), Altamuro and Beatty (2010), and Kanagaretnam et al. (2010b), we include several bank-level variables ( $X$ ) to control for cross-sectional differences in bank characteristics that may influence the relationship between religion and benchmark beating. These variables include size, leverage, loan charge-offs, growth, loans, leverage, change in cash flow, and loan loss allowance.<sup>6</sup> The details of these variables are provided in Appendix 1.

In separate regressions, we control for country level macro-economic conditions ( $E_k$ ) by including annual growth in GDP and logarithm of real GDP per capita. We also include several country-level variables ( $W_k$ ) to isolate the effect of religion from the effects of other country characteristics that may influence bank earnings management (Fonseca and Gonzalez 2008; Kanagaretnam et al. 2010b). These variables include creditor rights, rule of law index to proxy for investor protection, bank environment and private monitoring index. We present the details of these country-level controls in Appendix 1.

#### Income-Increasing Earnings Management Through Loan Loss Provisions

We use a two-stage approach to examine the relation between religiosity and income-increasing earnings management through LLP. We first estimate the normal or non-discretionary component of LLP by regressing LLP on total loans outstanding ( $LOANS$ ), change in total loans outstanding ( $CHLOANS$ ), net loan charge-offs ( $LCO$ ), beginning non-performing loans ( $BEGNPL$ ), change in non-performing loans ( $CHNPL$ ), loan categories, and controls for period and country effects using the following model<sup>7</sup>:

$$\begin{aligned}
 LLP = & \lambda_0 + \lambda_1 LOANS + \lambda_2 CHLOANS + \lambda_3 LCO \\
 & + \lambda_4 BEGNPL + \lambda_5 CHNPL \\
 & + \langle LOAN CATEGORIES \rangle + \langle YEAR CONTROLS \rangle \\
 & + \langle COUNTRY CONTROLS \rangle + e
 \end{aligned}
 \tag{2}$$

The detailed definitions of the variables are provided in Appendix 1. The residuals from Eq. (2) are the abnormal or discretionary component of LLP, referred to as  $ALLP$ .

<sup>6</sup> Since bank size is highly correlated with all four of our religion variables, we include size in separate regressions with other country level variables.

<sup>7</sup> These variables have also been used in several prior studies (e.g., Wahlen 1994; Kanagaretnam et al. 2004) to estimate the normal component of LLP.

In the second stage, we test the association between religiosity and the absolute value of negative (income-increasing)  $ALLP$ . Negative  $ALLP$  are of particular interest because of their positive impact on reported earnings. Because we use the absolute value of negative (income-increasing)  $ALLP$ , higher values indicate more income-increasing earnings management. Our model is as follows:

$$\begin{aligned}
 ALLP_{i,k} = & \alpha R_k + \beta X_{i,k} + \gamma E_k + \sigma W_k + \langle Year Controls \rangle \\
 & + \varepsilon_{i,k}
 \end{aligned}
 \tag{3}$$

The detailed definitions of the variables are provided in Appendix 1. The coefficient of interest is the coefficient on religiosity ( $R$ ). If religion constrains income-increasing earnings management through abnormal LLP, we expect a negative coefficient on  $R$ . On the other hand, if religious variables are not important in a highly regulated industry such as banking, the coefficient on  $R$  will not significantly differ from zero.

We include several bank-specific variables ( $X$ ) that prior research has documented to be associated with abnormal accruals (Ashbaugh et al. 2003; Kanagaretnam et al. 2010b): firm size, asset growth, level of past accruals, and performance. We use log of assets to measure size and prior period's LLP to proxy for level of past accruals. We represent performance by earnings before LLP. As before, we also control for country-level economic variables ( $E_k$ ) and several country-level institutional factors ( $W_k$ ), in separate regressions.

#### Data Description

Following Barro and McCleary (2003), McCleary and Barro (2006), Roth and Kroll (2007), and Eum (2011), we use the data provided by WVS to estimate different dimensions of religiosity. The WVS contain survey data on thousands of respondents from 99 countries: 21 in the 1981 surveys, 28 in the 1990–1993 surveys, 55 in the 1995–1997 surveys, 65 in the 1999–2002 surveys, and 99 in the 2005–2006 surveys. We use measures of religion variables over the three most recent WVS because our sample period starts from 1995 and ends in 2006.<sup>8</sup>

We obtain financial data for the international banks for the period 1995–2006 from the *BankScope* database to test our main predictions.<sup>9</sup> We select sample countries from the 49 countries listed in LaPorta et al. (1998). We omit 12

<sup>8</sup> The 29 countries in our sample are all represented in the three most recent World Values Surveys. We match bank-year financial data with the most recent survey to obtain the religious values.

<sup>9</sup> We extend the sample period to 2009 to compute large loan loss provisions and poor performance during the crisis period.

countries (Austria, Belgium, Denmark, Ecuador, Greece, Ireland, Israel, Malaysia, Kenya, Sri Lanka, Singapore, and Portugal) because the religion variables are missing. We delete another eight countries (Colombia, Ecuador, Hong Kong, Germany, Norway, Pakistan, Uruguay, and Zimbabwe) for which Barth et al. (2001) do not report the private monitoring index. We retain the remaining 29 countries in our study. These include Argentina, Australia, Brazil, Canada, Chile, Egypt, Finland, France, India, Indonesia, Italy, Japan, Jordan, South Korea, Mexico, Netherlands, New Zealand, Peru, Philippines, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Kingdom, United States, and Venezuela.

As prior literature indicates that larger banks are more likely to have higher levels of technical efficiency (Miller and Noulas 1996) and shorter and less exclusive relationships (Berger et al. 2005), and are less likely to engage in corrupt lending practices (LaPorta et al. 2003), we keep only banks with total book assets >500 million (Alam 2001).<sup>10</sup> Our results are robust when we include banks with assets exceeding 100 million.

Our final sample consists of 27,543 and 17,943 bank-years for the earnings benchmark and income-increasing abnormal LLP tests, respectively.<sup>11</sup> The sample for the benchmark tests is larger than the sample for the income-increasing abnormal LLP test because of the less stringent data requirements. There is significant variation in the number of bank-year observations across countries due to differences in capital market development, country size, and availability of complete financial accounting data (Tables 1, 2). We note that the United States constitutes more than 50 % of the total bank-years in the sample with Japan representing the second largest number of observations. In a sensitivity analysis, we find that our results are robust to excluding U.S. or Japanese banks.

## Empirical Results

The residuals from the regression models may be serially and/or cross-sectionally correlated. We therefore use OLS/logistic regressions with clustered robust errors to account for both serial and cross-sectional correlations (Rogers 1993; Williams 2000; Petersen 2009). For all tests, we report Wald or *t* statistics based on clustered standard errors after correcting for both serial and cross-sectional

<sup>10</sup> We follow Alam (2001) to set 500 millions of total assets as big banks criterion.

<sup>11</sup> We winsorize each of the continuous control variables used in Eqs. (1)–(3) at the top and bottom one percent to remove the effects of extreme values.

**Table 1** Sample distribution

Year	Meet-or-beat		ALLP tests	
	Freq.	Percent	Freq.	Percent
Panel A: Distribution by year				
1995	682	2.48	362	2.02
1996	978	3.55	576	3.21
1997	1,058	3.84	615	3.43
1998	1,186	4.31	659	3.67
1999	1,062	3.86	620	3.46
2000	1,267	4.60	632	3.52
2001	2,956	10.73	1,889	10.53
2002	3,173	11.52	2,166	12.07
2003	3,335	12.11	2,283	12.72
2004	3,475	12.62	2,405	13.40
2005	4,205	15.27	2,851	15.89
2006	4,166	15.13	2,885	16.08
Total	27,543	100	17,943	100
Country name	Freq.	Percent	Freq.	Percent
Panel B: Distribution by country				
Argentina	469	1.700	143	0.800
Australia	274	0.990	141	0.790
Brazil	485	1.760	169	0.940
Canada	250	0.910	150	0.840
Chile	425	1.540	75	0.420
Egypt	214	0.780	7	0.040
Finland	20	0.070	6	0.030
France	359	1.300	7	0.040
India	368	1.340	55	0.310
Indonesia	417	1.510	237	1.320
Italy	143	0.520	95	0.530
Japan	4,846	17.59	1,298	7.230
Jordan	68	0.250	45	0.250
Korea	413	1.500	30	0.170
Mexico	455	1.650	116	0.650
Netherlands	18	0.070	6	0.030
New Zealand	67	0.240	45	0.250
Peru	221	0.800	54	0.300
Philippines	352	1.280	106	0.590
South Africa	357	1.300	126	0.700
Spain	810	2.940	526	2.930
Sweden	582	2.110	–	–
Switzerland	9	0.030	4	0.020
Taiwan	205	0.740	108	0.600
Thailand	95	0.340	58	0.320
Turkey	187	0.680	95	0.530
United Kingdom	441	1.600	116	0.650
USA	14,843	53.89	14,035	78.220
Venezuela	150	0.540	90	0.500
Total	27,543	100	17,943	100

The table reports sample distribution. All variables are described in Appendix 1. The sample period is 1995–2006

Table 2 Descriptive statistics of religion and institutional variables

	MEMBER_RELI	RELI_IMP	RELI_SERVICE	RELIGIOSITY	ECON_GRO	GDP_CAP	RULE_LAW	CREDITOR_R	BANK_ENV	MONITOR_INDEX
Argentina	0.794	0.692	0.503	1.160	0.071	8.649	5.350	1.000	1.040	8.000
Australia	0.571	0.464	0.353	0.809	0.071	10.130	10.000	3.000	0.938	10.000
Brazil	0.863	0.903	0.767	1.465	0.149	8.541	6.317	1.000	1.269	8.000
Canada	0.729	0.637	0.535	1.103	0.107	10.260	10.000	1.000	1.214	7.000
Chile	0.691	0.763	0.520	1.151	0.091	8.590	7.017	2.000	1.448	8.000
Egypt	0.973	0.998	0.686	1.550	0.030	7.167	4.167	2.000	1.047	8.000
Finland	0.559	0.449	0.333	0.783	0.031	10.310	10.000	1.000	0.617	9.000
France	0.464	0.411	0.274	0.672	0.048	10.460	8.983	0.000	0.768	6.000
India	0.741	0.787	0.758	1.315	0.136	6.445	4.167	2.000	1.385	6.000
Indonesia	0.709	0.991	0.884	1.486	0.173	6.894	3.983	2.000	1.619	8.000
Italy	0.850	0.752	0.783	1.371	0.039	10.340	8.333	2.000	1.111	6.000
Japan	0.225	0.189	0.538	0.522	0.002	10.440	8.983	2.022	2.633	8.000
Jordan	0.873	0.994	0.664	1.476	0.105	7.655	4.350	1.000	-0.146	7.000
Korea	0.313	0.509	0.471	0.740	0.096	9.432	5.350	3.000	1.417	6.000
Mexico	0.725	0.853	0.802	1.368	0.106	8.676	5.350	0.000	1.291	6.000
Netherlands	0.512	0.321	0.294	0.656	0.055	10.610	10.000	3.000	0.688	6.000
New Zealand	0.464	0.370	0.293	0.657	0.023	9.885	10.000	4.000	0.575	7.000
Peru	0.830	0.820	0.791	1.406	0.051	7.753	2.500	0.000	1.348	8.000
Philippines	0.801	0.972	0.879	1.527	0.036	6.958	2.733	1.000	0.783	8.000
South Africa	0.819	0.912	0.789	1.456	0.053	8.192	4.417	3.000	0.737	8.000
Spain	0.629	0.518	0.496	0.949	0.086	9.823	7.800	2.000	0.794	8.000
Sweden	0.348	0.324	0.195	0.509	0.071	10.420	10.000	1.000	1.163	6.000
Switzerland	0.608	0.460	0.459	0.883	0.030	10.690	10.000	1.000	0.392	8.000
Taiwan	0.516	0.498	0.338	0.790	0.031	9.606	8.517	2.000	0.119	9.000
Thailand	0.355	0.937	0.894	1.243	0.134	7.958	6.250	2.000	1.062	6.000
Turkey	0.769	0.913	0.543	1.302	0.137	8.544	5.183	2.000	1.098	6.000
United Kingdom	0.470	0.393	0.327	0.691	0.070	10.250	8.567	4.000	0.441	8.000
USA	0.786	0.796	0.658	1.298	0.055	10.530	10.000	1.000	1.677	8.000
Venezuela	0.788	0.865	0.633	1.329	0.085	8.315	6.367	3.000	1.177	6.000



**Table 3** Descriptive statistics and correlations of variables used in benchmark tests

	LOSS_AVOID	JMBE	SIZE	LEV	GROWTH	LOANS	ΔCFO	ALLOW
Panel A: Descriptive statistics (mean values)								
Argentina	0.077	0.013	7.880	0.151	0.203	0.530	0.000	0.038
Australia	0.015	0.051	8.640	0.080	0.149	0.835	0.000	0.008
Brazil	0.023	0.012	8.501	0.145	0.238	0.485	-0.003	0.027
Canada	0.036	0.084	8.948	0.088	0.117	0.740	0.001	0.013
Chile	0.002	0.028	13.520	0.148	0.146	0.715	0.000	0.017
Egypt	0.098	0.089	8.647	0.107	0.164	0.638	-0.001	0.065
Finland	0.050	0.200	9.443	0.097	0.057	0.549	-0.001	0.009
France	0.028	0.103	8.779	0.088	0.113	0.673	0.001	0.026
India	0.038	0.022	11.650	0.098	0.173	0.583	0.000	0.023
Indonesia	0.022	0.024	15.190	0.145	0.183	0.602	-0.002	0.036
Italy	0.007	0.056	7.510	0.109	0.110	0.773	-0.001	0.014
Japan	0.218	0.082	13.000	0.067	0.022	0.617	0.000	0.020
Jordan	0.059	0.088	7.658	0.116	0.139	0.493	0.000	0.033
Korea	0.090	0.036	16.150	0.077	0.167	0.667	0.000	0.019
Mexico	0.042	0.029	9.931	0.160	0.221	0.746	0.000	0.036
Netherlands	0.000	0.056	9.419	0.083	0.057	0.545	-0.001	0.012
New Zealand	0.000	0.075	9.193	0.066	0.168	0.953	0.001	0.006
Peru	0.077	0.023	8.145	0.130	0.148	0.715	-0.002	0.050
Philippines	0.068	0.043	10.640	0.175	0.160	0.617	-0.002	0.035
South Africa	0.003	0.017	9.608	0.166	0.212	0.792	-0.002	0.030
Spain	0.032	0.101	8.796	0.083	0.129	0.716	0.000	0.016
Sweden	0.067	0.076	9.686	0.112	0.086	0.803	0.000	0.009
Switzerland	0.000	0.111	12.860	0.071	0.238	0.253	0.001	0.003
Taiwan	0.073	0.029	12.610	0.123	0.129	0.688	-0.002	0.010
Thailand	0.011	0.032	11.520	0.183	0.120	0.753	-0.006	0.042
Turkey	0.005	0.011	8.500	0.161	0.288	0.642	0.000	0.024
United Kingdom	0.025	0.091	8.502	0.082	0.117	0.665	0.000	0.009
USA	0.010	0.060	7.712	0.110	0.143	0.753	0.000	0.010
Venezuela	0.000	0.007	8.329	0.189	0.382	0.589	-0.001	0.038
Total	0.055	0.061	9.336	0.106	0.128	0.707	0.000	0.016

Panel B: Correlations

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
RELIGIOSITY	1														
LOSS_AVOID	-0.280***	1													
JMBE	-0.054***	0.043***	1												
SIZE	-0.554***	0.222***	0.021***	1											
LEV	0.283***	-0.157***	-0.075***	-0.201***	1										
GROWTH	0.228***	-0.105***	-0.046***	-0.121***	0.415***	1									

Table 3 continued

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
LOANS	G	0.112***	-0.087***	-0.010*	-0.169***	0.139***	0.482***	I							
ΔCFO	H	-0.030***	-0.00900	0.00900	0.018***	0.103***	0.204***	0.104***	I						
ALLOW	I	-0.00500	0.041***	-0.050***	0.165***	0.200***	0.102***	0.126***	0.023***	I					
ECON_GRO	J	0.257***	-0.110***	-0.026***	-0.085***	0.127***	0.088***	0.015**	0	I					
GDP_CAP	K	-0.258***	0.011*	0.053***	-0.256***	-0.190***	-0.123***	0.034***	-0.448***	-0.211***	I				
RULE_LAW	L	-0.097***	-0.042***	0.045***	-0.344***	-0.161***	-0.091***	0.027***	-0.482***	-0.179***	0.934***	I			
CREDITOR_R	M	-0.512***	0.140***	0.011*	0.484***	-0.129***	-0.076***	0.00400	0.078***	-0.066***	-0.206***	-0.266***	I		
BANK_ENV	N	-0.458***	0.237***	0.030**	0.367***	-0.224***	-0.202***	0.019***	-0.055***	-0.298***	0.406***	0.338***	0.039***	I	
MONITOR_INDEX	O	0.075***	0.012**	0.013**	-0.130***	-0.063***	-0.057***	-0.011*	-0.144***	-0.152***	0.281***	0.328***	0.063***	0.221***	I

The table provides descriptive statistics (mean values) for variables used in the loss-avoidance and just-meet-or-beat test at the country level. Definitions of the variables are provided in Appendix 1

correlations in the residuals through double clustering by firm and time.

### Loss-Avoidance and Just-Meeting-or-Beating Prior Year's Earnings Tests

Table 3 shows the descriptive statistics and correlations of variables used in Eq. (1). In Panel A, on average, 5.5 % of our sample banks report a small profit (i.e., they just avoided reporting a loss) and 6.1 % of our sample banks report a small increase in earnings over the prior year (i.e., they just-meet-or-beat prior year's earnings). Panel B shows the correlations among the bank-specific variables used in the regression. Consistent with the prediction that religiosity reduces earnings management, our aggregate measure of religiosity is negatively related to both loss-avoidance and to just-meeting-or-beating prior year's earnings.

In Table 4, we report the estimation results of logistic regressions for the loss-avoidance and just-meeting-or-beating prior year's earnings tests. For the main variable of interest (i.e., religiosity), we report the regression coefficient, followed by the Wald statistic in parentheses, and the marginal effect (in %) in square brackets. The marginal effect indicates the change in the probability of meeting the benchmark per standard deviation change in the religiosity variable (holding other independent variables constant).<sup>12</sup> In the regressions, a negative sign for  $\alpha$ , the coefficient for religion, indicates that banks are less likely to manage earnings to avoid losses. We report results of two separate regressions, with and without country level institutional controls.

We find a negative relation between religiosity and loss-avoidance and just-meeting-or-beating prior year's earnings behavior. The coefficient estimate for *RELIGIOSITY* is negative and significant (at the 1 % level for the loss-avoidance tests and at the 10 % level for just-meeting-or-beating prior year's earning tests) for both specifications across the two benchmark tests, indicating strong support for Hypothesis 1. The marginal effects of religiosity indicate that the results are economically significant as well. For example, a one standard deviation increase in *RELIGIOSITY* reduces a bank's propensity to avoid losses by 7.73 % (see column (2) of Table 4). Considering that only 6 % of our sample of banks narrowly avoids losses, the economic impact of religiosity on loss avoidance seems important. Overall, the evidence exhibits that religion plays an important role in constraining earnings management by

<sup>12</sup> The marginal effect per standard deviation (SD) change for a religious variable is computed as  $p \times (1 - p) \times \beta \times SD$ , where  $p$  is the base rate (0.11) and  $\beta$  is the estimated coefficient from the logistic regression (Liao 1994).

**Table 4** Regression results for loss-avoidance test and just-meet-or-beat prior year’s earnings test

	(1) <i>LOSS_AVOID</i>	(2) <i>LOSS_AVOID</i>	(3) <i>JMBE</i>	(4) <i>JMBE</i>
<i>RELIGIOSITY</i>	-2.677*** (-10.30) [-5.97 %]	-3.487*** (-11.96) [-7.73 %]	-0.247* (-1.80) [-0.58 %]	-0.309* (-1.89) [-0.72 %]
<i>SIZE</i>		-0.040 (-0.88)		0.016 (0.98)
<i>LEV</i>	-10.615*** (-6.46)	-10.697*** (-6.01)	-5.969*** (-7.74)	-6.042*** (-7.42)
<i>GROWTH</i>	0.0300 (0.09)	-0.183 (-0.59)	-0.690*** (-4.65)	-0.622*** (-3.63)
<i>LOANS</i>	-1.233*** (-3.81)	-0.423 (-1.15)	0.398*** (2.59)	0.293 (1.61)
<i>ΔCFO</i>	-4.545 (-0.62)	-3.435 (-0.51)	9.422*** (3.56)	10.055*** (3.97)
<i>ALLOW</i>	7.237 (1.47)	-8.334* (-1.89)	-16.220*** (-7.03)	-13.462*** (-4.60)
<i>ECON_GRO</i>		-0.544 (-0.98)		-1.184** (-2.14)
<i>GDP_CAP</i>		-0.228*** (-2.59)		0.155 (1.62)
<i>RULE_LAW</i>		-0.350*** (-7.40)		-0.028 (-0.56)
<i>CREDITOR_R</i>		-0.475*** (-3.26)		-0.104 (-1.64)
<i>BANK_ENV</i>		0.457*** (3.12)		-0.208 (-1.62)
<i>MONITOR_INDEX</i>		0.308*** (2.95)		0.069 (0.91)
Constant	0.856*** (2.70)	5.101*** (4.17)	-2.000*** (-9.49)	-3.295*** (-4.74)
Year fixed effect	Included	Included	Included	Included
Observations	27,543	27,543	27,543	27,543
Pseudo R <sup>2</sup>	0.216	0.244	0.026	0.028

We report the results for the Eq. (1). The definitions for the variables are provided in Appendix 1. We estimate the regression clustered by firm and year, and with year indicators. To conserve space, we do not report the coefficient estimates for the year indicators. For each variable, we report the regression coefficient, followed by the Z statistic in parentheses. For the main variable of interest (religion variable), we also report the marginal effect (in percent) in the square brackets. The marginal effect indicates the change in the probability of meeting bench mark per standard deviation change in each respective religion variable (holding other independent variables constant)

\* Significance at 10 % level, two-tailed

\*\* Significance at 5 % level, two-tailed

\*\*\* Significance at 1 % level, two-tailed

banks to avoid losses or to just-meet-or-beat prior year’s earnings.

With regard to the bank-level controls, we find highly leveraged banks and banks with a high level of loan loss allowance are less likely to manage earnings to avoid losses or to just-meet-or-beat prior year’s earnings. Regarding the country-level institutional controls, we find that rule of law (*RULE\_LAW*) is negatively associated with loss avoidance, whereas bank environment (*BANK\_ENV*) and monitoring (*MONITOR\_INDEX*) are positively associated with loss avoidance.

Income-Increasing Abnormal LLP Tests

Table 5 shows the descriptive statistics and correlations of variables used in the abnormal LLP tests. The descriptive

statistics for variables used in the regression are reported in Panel A. Panel B shows the correlations among the bank-specific variables used in the regression. As expected, *RELIGIOSITY* and income-increasing abnormal LLP are negatively correlated.

Panel A of Table 6 reports the results of the first-stage regression for estimating abnormal LLP. Consistent with prior studies (e.g., Wahlen 1994; Kanagaretnam et al. 2004, 2010b), *LCO*, *LOANS* and *BEGNPL* and *CHNPL* are positively associated with *LLP*. The residuals from Eq. (2) represent the abnormal or discretionary component of LLP.

We are primarily interested in how religion may affect income-increasing earnings management; hence we report, in columns (1) and (2) of Table 6 Panel B, the regression results for the absolute value of the negative (income-increasing) *ALLP* values. If religion has an important effect

**Table 5** Descriptive statistics and correlations of variables used in ALLP test

	<i>Income-increasing ALLP</i>	<i>Income-decreasing ALLP</i>	<i>EBTP</i>	<i>SIZE</i>	<i>GROWTH</i>	<i>LOSS</i>	<i>PASTLLP</i>		
Panel A: Descriptive statistics (mean values)									
Argentina	0.019	0.016	0.024	8.042	0.203	0.329	0.016		
Australia	0.002	0.002	0.017	9.090	0.155	0.007	0.002		
Brazil	0.006	0.009	0.053	8.852	0.304	0.065	0.010		
Canada	0.002	0.002	0.015	9.781	0.095	0.020	0.003		
Chile	0.003	0.003	0.027	14.830	0.166	0.027	0.007		
Egypt	0.003	0.002	0.025	8.775	0.108	0.000	0.007		
Finland	0.001	0.003	0.009	9.911	-0.054	0.000	0.002		
France	0.001	0.001	0.012	10.690	0.061	0.000	0.002		
India	0.005	0.006	0.021	11.650	0.189	0.127	0.009		
Indonesia	0.009	0.009	0.033	15.360	0.177	0.076	0.010		
Italy	0.002	0.002	0.015	7.415	0.091	0.000	0.003		
Japan	0.006	0.005	0.012	14.640	0.011	0.223	0.008		
Jordan	0.003	0.003	0.028	7.871	0.165	0.022	0.004		
Korea	0.002	0.006	0.017	16.820	0.131	0.000	0.007		
Mexico	0.006	0.010	0.030	11.590	0.152	0.172	0.010		
Netherlands	0.002	0.001	0.009	11.440	0.088	0.167	0.001		
New Zealand	0.001	0.001	0.019	9.513	0.132	0.000	0.000		
Peru	0.011	0.011	0.030	8.705	0.083	0.056	0.014		
Philippines	0.005	0.007	0.020	11.290	0.126	0.132	0.010		
South Africa	0.004	0.005	0.032	10.860	0.205	0.111	0.007		
Spain	0.002	0.002	0.017	9.111	0.127	0.000	0.004		
Switzerland	0.000	0.000	0.007	14.340	0.123	0.000	0.000		
Taiwan	0.005	0.012	0.014	13.230	0.115	0.324	0.007		
Thailand	0.009	0.006	0.019	12.260	0.075	0.103	0.004		
Turkey	0.005	0.009	0.035	8.676	0.311	0.158	0.007		
United Kingdom	0.002	0.002	0.016	10.000	0.107	0.017	0.003		
USA	0.002	0.002	0.023	7.697	0.148	0.020	0.003		
Venezuela	0.007	0.010	0.073	8.333	0.362	0.033	0.015		
Total	0.004	0.022	0.004	0.746	-0.007	0.014	0.004		
	A	B	C	D	E	F	G	H	
Panel B: Correlations									
<i>RELIGIOSITY</i>	A	1							
<i>Income-increasing ALLP</i>	B	-0.196***	1						
<i>Income-decreasing ALLP</i>	C	-0.083***	.	1					
<i>EBTP</i>	D	0.206***	0.113***	0.428***	1				
<i>SIZE</i>	E	-0.559***	0.301***	0.209***	-0.050***	1			
<i>GROWTH</i>	F	0.152***	0.124***	0.074***	0.337***	-0.081***	1		
<i>LOSS</i>	G	-0.202***	0.164***	0.298***	-0.219***	0.204***	-0.084***	1	
<i>PASTLLP</i>	H	-0.089***	0.380***	0.626***	0.439***	0.214***	-0.022***	0.190***	1

The table provides descriptive statistics (mean values) for variables used in the abnormal LLP test at the country level. Definitions of the variables are provided in Appendix 1

on income-increasing earnings management behavior, then the coefficient on *RELIGIOSITY* is expected to be negative, consistent with the notion that religion constrains

opportunistic earnings management. Consistent with expectation, our aggregate measure of religiosity is negatively related (at 1 % level) to income-increasing abnormal

**Table 6** Regression results for the abnormal loan loss provisions tests

	(1) LLP			
Panel A: Stage one regression for estimating abnormal LLP				
<i>LOANS</i>				0.003*** (6.91)
<i>CHLOANS</i>				-0.002*** (-6.09)
<i>LCO</i>				0.578*** (21.41)
<i>BEGNPL</i>				0.031*** (3.40)
<i>CHNPL</i>				0.254*** (18.88)
Constant				-0.009*** (-4.30)
Loan categories				Included
Year fixed effect				Included
Country dummies				Included
Observations				18557
Adj <i>R</i> <sup>2</sup>				0.621
	(1) <i>Income-increasing ALLP</i>	(2) <i>Income-increasing ALLP</i>	(3) <i>Income-decreasing ALLP</i>	(4) <i>Income-decreasing ALLP</i>
Panel B: Stage two regression for testing the association between income-increasing ALLP, income-decreasing ALLP and religiosity				
<i>RELIGIOSITY</i>	-0.002*** (-4.89) [24.4 %]	-0.006*** (-8.52) [73.2 %]	-0.001** (-2.12) [8.13 %]	-0.004*** (-5.52) [32.5 %]
<i>EBTP</i>	0.027*** (2.99)	0.027*** (3.60)	0.051*** (6.03)	0.053*** (5.93)
<i>SIZE</i>	0.000*** (4.97)	-0.000** (-2.10)	0.000*** (2.74)	-0.000** (-2.32)
<i>GROWTH</i>	0.002*** (5.34)	0.002*** (6.42)	0.001** (2.53)	0.001** (2.13)
<i>LOSS</i>	0.002*** (3.03)	0.001* (1.70)	0.005*** (8.30)	0.005*** (9.55)
<i>PASTLLP</i>	0.206*** (4.84)	0.134*** (3.65)	0.279*** (16.18)	0.263*** (15.30)
<i>ECON_GRO</i>		0.001 (0.62)		-0.004 (-1.20)
<i>GDP_CAP</i>		-0.002*** (-4.00)		-0.001*** (-3.30)
<i>RULE_LAW</i>		-0.000** (-2.26)		-0.000 (-0.91)
<i>CREDITOR_R</i>		-0.001*** (-4.16)		-0.001* (-1.76)
<i>BANK_ENV</i>		0.001*** (3.82)		0.000 (1.05)
<i>MONITOR_INDEX</i>		0.000 (1.36)		-0.000 (-0.39)



**Table 6** continued

	(1) <i>Income-increasing ALLP</i>	(2) <i>Income-increasing ALLP</i>	(3) <i>Income-decreasing ALLP</i>	(4) <i>Income-decreasing ALLP</i>
Constant	0.001 (1.32)	0.026*** (7.43)	0.000 (0.05)	0.020*** (5.07)
Year fixed effect	Included	Included	Included	Included
Observations	10,262	10,262	7,681	7,681
Adj $R^2$	0.228	0.317	0.501	0.529

We report the results for the Eqs. (2) and (3). The definitions for the variables are provided in Appendix 1. We estimate the regression clustered by firm and by year, and with year indicators. To conserve space, we do not report the coefficient estimates for the year indicators. For each variable, we report the regression coefficient, followed by the  $t$  statistic in parentheses

\* Significance at 10 % level, two-tailed

\*\* Significance at 5 % level, two-tailed

\*\*\* Significance at 1 % level, two-tailed

LLP. These results are also economically significant.<sup>13</sup> These results strongly support Hypothesis 1.

For the bank-level control variables, *EBTP*, *SIZE*, *GROWTH*, and *PASTLLP* are all positively and significantly associated with income-increasing earnings management. For the country-level institutional variables, the coefficients on *GDP\_CAP*, *RULE\_LAW*, and *CREDITOR\_R* are all negative and significant, whereas the coefficient on *BANK\_ENV* is positive and significant.

We report results for positive (income-decreasing) ALLP in columns (3) and (4) of Table 6 Panel B. Although income-decreasing ALLP is not our main focus, we find that religiosity is again negatively related to income-decreasing ALLP. This result indicates that in addition to religiosity being negatively associated with opportunistic income-increasing ALLP, its negative association with income-decreasing ALLP suggests a positive impact on earnings transparency.

#### Sensitivity Checks

We conduct several additional tests to assess the robustness of our findings. First, we exclude U.S. and Japanese banks from the analysis because they represent a large fraction of our sample and may be driving the results. The results are robust and the inferences unchanged after exclusion of these U.S. or Japanese banks.

Second, we repeat the analysis after including smaller banks (banks with assets between \$100 and \$500 million)

in the sample. The untabulated results indicate that our main inferences hold for this alternative sample.

Third, we assess whether the effect of religion on earnings quality of banks holds after controlling for national culture. Han et al. (2010) and Kanagaretnam et al. (2011) report that national culture constrains earnings management for industrial firms and banks, respectively. We test whether our results for religion hold after including country level cultural variables for individualism and uncertainty avoidance (from Hofstede 2001). The untabulated results indicate that our main inferences hold even after controlling for national culture.

Fourth, we assess the robustness of our results to adding several other country-level control variables. Following Leuz et al. (2003), we include Anti-Director Rights, Efficiency of Judicial Systems, Corruption Index, Account Rules, and Ownership Concentration as control variables. The main results are robust and inferences unchanged even after including these variables.

Finally, since bank size is highly correlated with religiosity, we examine the robustness of our results to sub-sample analysis based on size partitions. We partition the banks into five groups, based on bank size by year and country, and re-estimate all our main regressions for top and bottom quintiles based on this size partition. Our main inferences are similar for these two sub-samples, indicating that our results are not influenced by bank size.<sup>14</sup>

<sup>13</sup> The impact of a one standard deviation increase in religion (*RELIGIOSITY*) on income-increasing abnormal LLP is computed as  $-0.002$  (coefficient on *RELIGIOSITY*)  $\times$  0.244 (the sample standard deviation of *RELIGIOSITY*)  $\div$  0.002 (the mean of *Income-increasing ALLP*) =  $-24.4$  %. The other comparative statics are computed analogously.

<sup>14</sup> In addition to these sensitivity checks, we also examine whether our results are robust to country-year clustering. Overall, we find that our results still hold after clustering by country-year instead of by firm-year.

**Table 7** Regressions results for earnings persistence and cash flow predictability tests

	Earnings persistence test (1) $EBT_{t+1}$	Cash flow predictability test (2) $EBTP_{t+1}$
<i>EBT</i>	0.635*** (29.83)	0.715*** (20.20)
<i>RELIGIOSITY</i>	0.007*** (2.97)	0.005 (1.63)
<i>EBT * RELIGIOSITY</i>	0.384*** (3.09)	0.662*** (4.35)
<i>SIZE</i>	0.000 (0.85)	-0.000 (-0.06)
<i>DEPOSIT</i>	0.001* (1.93)	-0.000 (-0.23)
<i>CAPRATIO</i>	0.002 (0.64)	-0.004 (-0.84)
<i>ECON_GRO</i>	0.008** (2.49)	0.005** (2.31)
<i>GDP_CAP</i>	-0.001 (-0.43)	0.001 (0.37)
<i>RULE_LAW</i>	0.001 (1.15)	-0.001 (-0.74)
<i>CREDITOR_R</i>	0.002*** (2.61)	0.002*** (2.58)
<i>BANK_ENV</i>	-0.002** (-2.38)	-0.000 (-0.03)
<i>MONITOR_INDEX</i>	-0.002** (-2.31)	-0.003*** (-3.05)
Constant	0.017 (1.20)	0.034* (1.94)
Year fixed effect	Included	Included
Observations	10,968	10,968
Adj $R^2$	0.549	0.511

We report the results for the Eqs. (4) and (5). The definitions for the variables are provided in Appendix 1. We estimate the regression clustered by firm and by year. To conserve space, we do not report the coefficient estimates for the year indicators. For each variable, we report the regression coefficient, followed by the  $t$  statistic in parentheses

\* Significance at 10 % level, two-tailed

\*\* Significance at 5 % level, two-tailed

\*\*\* Significance at 1 % level, two-tailed

### Earnings Persistence and Predictability of Cash Flows

Next, 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 future 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 LLP (a proxy for cash flow) on current period net income before taxes.<sup>15</sup> We estimate the following regressions for the period 2000–2005 to investigate the effect of religion on these earnings quality measures (these models closely follow Kanagaretnam et al. 2014)<sup>16</sup>:

$$EBT_{t+1} = \alpha R + \alpha_1 EBT_t + \alpha_2 R * EBT_t + \beta X + \gamma E + \sigma W + \langle \text{Year Controls} \rangle + \varepsilon_{i,k} \quad (4)$$

$$EBTB_{t+1} = \alpha R + \alpha_1 EBT_t + \alpha_2 R * EBT_t + \beta X + \gamma E + \sigma W + \langle \text{Year Controls} \rangle + \varepsilon_{i,k} \quad (5)$$

Following prior studies (e.g., Altamuro and Beatty 2010; Kanagaretnam et al. 2014), we include two bank-level variables ( $X$ ), bank size and bank deposits. We also include the full set of country level economic controls ( $E_k$ ) and country level institutional controls ( $W_k$ ) used in our earlier empirical analysis.

In Eqs. (3) and (4), the coefficient of interest is the coefficient on the interaction variable  $R * EBT_t$ , which is predicted to have a positive sign, consistent with the argument that religious factors enhance earnings persistence and predictability of cash flows in banks.

The results for the earnings persistence test are reported in column (1) of Table 7. Here,  $EBT$  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). Of primary interest is  $\alpha_2$ , the coefficient on the interaction variable  $R * EBT_t$ . A positive  $\alpha_2$  indicates higher earnings persistence in higher religious environments. Consistent with our prediction, after controlling for the bank-specific and country-specific institutional controls in the regression analysis, we find that  $\alpha_2$  is positive and significant at the 1 % level, indicating strong support for the expectation that religious factors enhance earnings persistence in banks.

Column (2) of Table 7 reports results for the cash flow predictability test. Results in Table 7 show that future cash flow is positively and significantly associated with  $EBT$ , consistent with the finding in Altamuro and Beatty (2010). More importantly, after controlling for the bank-specific and country-specific institutional differences, the coefficient on the interaction term  $\alpha_2$  is positive and significant at

<sup>15</sup> Prior research in banking (e.g., Wahlen 1994) uses earnings before taxes and loan loss provisions as a proxy for cash flow, since loan loss provisions are the single largest accrual for banks.

<sup>16</sup> We terminate our sample period in 2005 to avoid the abnormal crisis period fluctuations in earnings and cash flows.

the 1 % level. This evidence is consistent with our prediction that religious factors enhance the ability of earnings to predict future cash flows in banks.

### Crisis Period Analysis

In this section, we provide preliminary evidence on whether religion helps to explain bank financial trouble during the recent financial/banking crisis spanning the period 2007–2009. We expect higher religiosity to dampen reckless risk taking and enhance financial transparency. Therefore, we expect banks in countries with higher religiosity to have a lower incidence of financial trouble during the crisis period. In this exploratory analysis, we focus on two related accounting measures of financial trouble, asset deterioration and poor performance during the 2007–2009 period. We define financial trouble based on (1) asset deterioration, defined as banks recognizing large LLP (i.e., LLP/total loans >10 %), or (2) poor performance, defined as banks having a relatively low income (i.e., ROA <0.5 %). These benchmarks are reasonable because the mean (median) values of LLP to loans ratio, and ROA during the pre-crisis period are 0.40 % (0.29 %), and 1.61 % (1.22 %), respectively. In particular, only the bottom 5 % of the banks had ROA of 0.5 % or lower in the pre-crisis period. To ensure that these banks were not troubled prior to 2007, 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 2007–2009.

We use the following logistic model to test the association between religion and bank financial trouble during the crisis period. This test specification follows Beltratti and Stulz (2012):

$$TB_{i,k} = \alpha R_k + \beta X_{i,k} + \gamma E_k + \sigma W_k + \langle \text{Year Controls} \rangle + \varepsilon_{i,k} \quad (6)$$

The dependent variable, Troubled Bank (*TB*), equals 1 if the bank meets the corresponding criterion for classification as a troubled bank, and 0 otherwise. We include bank-level controls (*X*) that may affect the financial health of banks (earnings, size, growth, loss, and past LLP). We also include the full set of country-level economic (*E<sub>k</sub>*) and country-level institutional controls (*W<sub>k</sub>*) used in our earlier empirical analysis. All control variables are from the end of 2006, just prior to the start of the financial crisis.

The results for the crisis period analysis are reported in Table 8. We report test results for large LLP and for poor performance in columns (1) and (2), respectively. We find that *RELIGIOSITY* is negatively related to large LLP and to poor performance during the crisis period. Overall, our preliminary evidence suggests that banks in more religious societies had a lower incidence of financial difficulties

**Table 8** Crisis period accounting outcomes

	Large LLP test (1) LARGE_LLIP	Poor performance test (2) POOR_PERFORMANCE
<i>RELIGIOSITY</i>	−1.592* (−1.81)	−2.105*** (−7.91)
<i>EBTP</i>	32.356*** (7.34)	−13.534*** (−5.56)
<i>SIZE</i>	−0.093 (−1.29)	0.052** (2.48)
<i>GROWTH</i>	−1.592*** (−2.97)	1.074*** (6.79)
<i>LOSS</i>	0.494 (0.90)	
<i>PAST_LLIP</i>	25.966** (2.44)	25.179*** (4.16)
<i>ECON_GRO</i>	3.336** (2.36)	3.184*** (4.10)
<i>GDP_CAP</i>	−0.837* (−1.94)	0.725*** (3.86)
<i>RULE_LAW</i>	0.241 (1.08)	−0.031 (−0.33)
<i>CREDITOR_R</i>	−0.161 (−0.58)	−0.625*** (−6.23)
<i>BANK_ENV</i>	0.700 (1.49)	0.094 (0.88)
<i>MONITOR_INDEX</i>	−0.361 (−1.58)	−0.006 (−0.06)
Constant	5.390 (1.32)	−5.482*** (−2.88)
Observations	4,310	4,310
Pseudo <i>R</i> <sup>2</sup>	0.246	0.0841

We report the results for the Eq. (6). The definitions for the variables are provided in Appendix 1. For each variable, we report the regression coefficient, followed by the Z statistic in parentheses

\* Significance at 10 % level, two-tailed

\*\* Significance at 5 % level, two-tailed

\*\*\* Significance at 1 % level, two-tailed

during the crisis period, likely due to the less opportunistic financial reporting and lower risk taking in the pre-crisis period.<sup>17</sup>

<sup>17</sup> As a sensitivity test, we re-estimate model (6) after pooling the crisis and non-crisis periods together, and adding a crisis period indicator variable and its interaction with Religiosity to the model. We find that the coefficient on the interaction term is insignificant for the *LARGE\_LLIP* regression but is negative and significant for the *POOR\_PERFORMANCE* regression, indicating that the effects of religiosity on *POOR\_PERFORMANCE* are more pronounced during the crisis period.

## Conclusion

The primary research questions addressed in this study are whether and how religion, which is a major source of morality and ethical behavior, influences bank non-accrual- and accrual-based earnings management. We address these questions by analyzing a sample of banks from 29 countries over the period 1995–2006, just prior to the financial/banking crisis.

Our empirical results indicate that religiosity moderates benchmark-beating (loss-avoidance and just-meeting-or-beating prior year's earnings) behavior in banks. The aggregate measure of religiosity is negatively related to the likelihood of benchmark beating. In tests related to income-increasing abnormal LLP, religiosity is negatively related to income-increasing through abnormal LLP behavior of banks, consistent with our prediction. In additional tests, we document that religion greatly increases the information value of bank earnings. Earnings persistence and cash flow predictability are enhanced by higher religiosity. For the crisis period analysis (i.e., for the period 2007–2009), our evidence shows that banks in countries with higher religiosity exhibit lower probability of reporting asset deterioration (proxied by incidence of large LLP) and lower probability of having poor performance.

Our primary contribution is to document that differences in religiosity between countries are related to differences in both non-accrual- and accrual-based earnings management. We extend prior research on the relation between religion and earnings management to the banking industry and to

the international setting. By focusing on a single, homogeneous industry we are able to provide consistent evidence between religion and non-accrual- and accrual-based earnings management. In addition, in an international banking setting, our study can be viewed as identifying softer dimensions such as religion, in addition to previously identified international institutional factors, that influence financial reporting behavior of banks. Overall, our findings support the growing awareness among researchers studying international financial markets that informal institutions such as religion, which is a major source of morality and ethical behavior, matter in financial reporting and financial decisions, even when those decisions are made by sophisticated professional managers.

Our study is subject to the following limitations. First, the religion variables are measured at the country level whereas our tests are primarily based on bank-level analysis. Second, we note that the reported relations between religion and bank earnings management are observed associations and may not result from underlying causal relations.

**Acknowledgment** Kanagaretnam and Lobo thank the Social Sciences and Humanities Research Council of Canada (SSHRC) for its financial support. We thank two anonymous referees, Nathan Berglund, Dennis Whalen and participants at the 2014 American Accounting Association Annual Meeting for helpful comments.

## Appendix 1

Variable name	Variable definitions and constructions
<b>Religion variables</b>	
<i>MEMBER_RELI</i>	The proportion of respondents who indicate they are affiliated with a religion based on the WVS
<i>RELI_IMP</i>	The proportion of respondents who indicate the religion is important to themselves based on the WVS
<i>RELI_SERVICE</i>	The proportion of respondents who indicate they attend religious services based on the WVS
<i>RELIGIOSITY</i>	Principal component factor derived from the above three religion variables: <i>MEMBER_RELI</i> , <i>RELI_IMP</i> , and <i>RELI_SERVICE</i>
<b>Bank-level variables</b>	
<i>LOSS_AVOID</i>	Indicator variable taking the value one if the bank has a small ROA (income before taxes scaled by total assets) in the interval between 0 and 0.002, 0 otherwise
<i>JMBE</i>	Indicator variable taking the value one if the bank has a change in ROA (income before taxes scaled by total assets) from year $t + 1$ to year $t$ in the interval between 0 and 0.0005, zero otherwise
<i>Income-increasing ALLP</i>	The absolute value of negative ALLP, which is the error term from ALLP estimation model
<i>Income-decreasing ALLP</i>	The value of positive ALLP, which is the error term from ALLP estimation model
<i>SIZE</i>	Log of total assets at the beginning of the year
<i>GROWTH</i>	Growth in total assets from the beginning to the end of the year
<i>LOSS</i>	Indicator variable taking the value one if the bank has a negative net income, 0 otherwise
<i>LEV</i>	Total equity at the end of the year divided by total assets at the beginning of the year

continued

Variable name	Variable definitions and constructions
$\Delta CFO$	Change in annual cash flows (income before taxes and loan loss provisions) scaled by total assets at the beginning of the year
$ALLOW$	Allowance for loan losses at the end of the year scaled by total assets at the beginning of the year
$LLP$	Provision for loan losses deflated by beginning total assets
$EBTP$	Income before taxes and loan loss provisions deflated by beginning total assets
$PASTLLP$	Last year's LLP deflated by total assets at the beginning of the year
$LOANS$	Total loans outstanding deflated by beginning total assets
$CHLOANS$	Change in total loans outstanding deflated by beginning total assets
$LCO$	Net loan charge-offs deflated by beginning total assets
$BEGNPL$	Beginning balance of nonperforming loans deflated by beginning total assets
$CHNPL$	Change in nonperforming loans deflated by beginning total assets
$LOAN$ $CATEGORIES$	Loans to municipalities/government (MUN), mortgages (MORT), hire-purchase/lease (LEASE), other loans (OTH), loans to group companies/associates (GRP), loans to other corporations (OCORP) and loans to banks (BK), each deflated by beginning total assets
Country characteristics	
$ECON\_GRO$	Annual growth of total GDP. <i>Sources</i> International Financial Statistics (IFM)
$GDP\_CAP$	The logarithm of real GDP per capita. <i>Sources</i> International Financial Statistics (IFM)
$CREDITOR\_R$	An index reflecting creditor rights. It is formed by adding (1) when the country imposes restrictions, such as creditors consent or minimum dividends to file for reorganization; (2) secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay); (3) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of the assets of a bankrupt firm; and (4) the debtor does not retain the administration of its property pending the resolution of the reorganization. The index ranges from 0 to 4. <i>Sources</i> LaPorta et al. (1998), Djankov et al. (2007)
$RULE\_LAW$	Measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. Scale from 0 to 10, with higher scores for greater tradition for law and order. <i>Source</i> Djankov et al. (2007)
$BANK\_ENV$	Principal component factor derived from the following four variables: Total assets of development banks as share of GDP (Devta), Total assets of bank like institutions as share of GDP (Bia), Share of the assets of three largest banks in total banking assets (Conc) and Ability of banks to engage non-banking activities (Restrict). <i>Source</i> Beck et al. (1999)
$MONITOR\_INDEX$	The private monitoring index from Barth et al. (2001). Higher values indicating more private oversight. <i>Source</i> Barth et al. (2001)

## Appendix 2

We compute religion elements in the following steps:

(1) (Cognitive element). Independently of whether you attend religious services or not, would you say you are: Missing; Unknown; Not asked; Not applicable; No answer; Don't know; A religious person; Not a religious person; A convinced atheist; other answer. Specifically, we compute MEMBER\_RELI as

$$MEMBER\_RELI = \frac{\text{Respondents who answer "A religious person"}}{\text{All respondents}}$$

(2) (Affective element). For each of the following, indicate how important it is in your life. Would you say religion is: Missing; Unknown; Not asked; Not applicable; No answer; Don't know; Very important; Rather important;

Not very important; Not at all important. Specifically, we compute RELI\_IMP as

$$RELI\_IMP = \frac{\text{Respondents who answer "Very IM" or "Rather IM"}}{\text{All respondents}}$$

(3) (Behavioral element).

Apart from weddings and funerals, about how often do you attend religious services these days? 1: More than once a week; 2: Once a week; 3: Once a month; 4: Only on special holy days; 5: Once a year; 6: Less often; 7: Never, practically never.

Specifically, we compute RELI\_SERVICE as

$$RELI\_SERVICE = \frac{\text{Respondents who attended religious services more than once a year}}{\text{All respondents}}$$



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