

Local Religious Beliefs and Property-Liability Insurance Companies' Loss Reserving Decisions

Abstract

We empirically examine the effect of local religious beliefs on property-liability insurers' loss reserving decisions. Insurers headquartered in areas with a relatively *low* Protestant or relatively *high* Catholic population report *lower* loss reserve values for future insurance claim payments on their balance sheet. Reporting lower values for future losses has two effects: It increases current earnings and it increases the risk of a potential reserve shortfall if future claim payments are higher than expected. Assuming local religious beliefs are an important component of local culture, our results suggest that local culture significantly influences accounting choices in a regulated industry.

JEL classification: M41; Z12; G22; G23

Keywords: Local Religious Beliefs; Earnings Management; Loss Reserve Error; Insurance Companies

1. Introduction

There is a growing body of literature on behavioral and cultural aspects of corporate decisions. Most local cultures are hard to observe, measure and examine in an empirical framework. Religious beliefs are a notable exception; they can be quantified with a simple measure: affiliation with a church. Therefore, a number of studies investigate whether religious beliefs in a geographic area impact business decisions of corporations headquartered in that area. Recent work in finance provides empirical evidence that local religious beliefs impact corporate investment and growth rates (Hilary and Hui, 2009), manager compensation packages (Grullon, Kanatas, and Weston, 2010), decisions to offer employee stock option plans (Kumar, Page, and Spalt, 2011), and investment decisions of mutual funds (Shu, Sulaeman, and Yeung, 2012). In the accounting literature, recent studies examine how local religious beliefs affect accounting irregularities and tax avoidance (McGuire, Omer, and Sharp, 2012), as well as accruals based earnings management (Grullon, Kanatas, and Weston, 2010; Dyreng, Mayew, and Williams, 2012). However, little evidence exists regarding behavioral or cultural aspects of business decisions in financial institutions in general and insurance companies specifically.¹

The goal of our research is twofold. First, we empirically examine the effect of local religious beliefs on property-liability insurance companies' loss reserving decisions. Loss reserves are the largest liability on a property-liability insurer's balance sheet, and loss reserves are carefully monitored by regulators because those funds back insurers' obligations towards policyholders. A significant relationship between local religious beliefs and loss reserves would

¹ There is one notable exception. Berry-Stölzle and Xu (2015) examine whether local religious beliefs impact life insurance companies' risk taking behavior. They document that U.S. annuity writers headquartered in counties with a relatively large Catholic population invest more on risky assets, have a higher investment return volatility as well as a higher volatility of their overall return on assets than annuity writers headquartered in counties with a relatively large Protestant population.

provide evidence that local culture matters even in a highly regulated industry. Second, we explicitly examine managerial discretion with respect to the loss reserving decision and whether there is a systematic relationship between local religious beliefs and managerial discretion. The measure of managerial discretion we use is more precise than the standard measure used in previous studies on local religious beliefs and earnings management. Thus, our research also contributes to the earnings management literature.

Most studies on earnings management measure the degree of managerial discretion with abnormal accruals which are estimated as the residuals from a regression model (see, e.g., Jones, 1991; Grullon, Kanatas, and Weston, 2010; Dyreng, Mayew, and Williams, 2012; McGuire, Omer, and Sharp, 2012). However, such estimates are imprecise and McNichols (2000, p. 338) explicitly recommends to work with explicit measures of accounting discretion that contrast “the behavior of specific accruals with and without manipulation.” Focusing on the property-liability insurance industry allows us to follow exactly this approach. Property-liability insurance companies are required to file financial statements with state regulators that include updated estimates of the initial loss reserve separately for insurance coverage provided in different accounting years. Assuming that the updated loss reserve estimate is a good proxy for the unbiased expectation of outstanding claim losses, we can interpret the differences between the initial loss reserve set by management and the updated estimate after five years as a direct measure of managerial accounting discretion (see, e.g., Petroni, 1992; Beaver, McNichols, and Nelson, 2003). Accounting choices related to the loss reserve directly impact reported earnings: an initial loss reserve below (above) the unbiased expectation of outstanding claim losses increases (decreases) reported earnings compared to the benchmark of an unbiased reserve. Managers of insurance companies have substantial discretion in setting the loss reserve and, hence, in reporting earnings. A relatively

large fraction of claims is not paid in the year they occur, but in later years and those incurred but not-yet-paid claims need to be estimated. The estimation leads to a range of acceptable reserves, and managers can choose from that range.

Arguably, local religious beliefs are an important component of local culture. There are two main arguments why we expect the local culture to influence business decisions within property-liability insurance companies. Social identity theories argue that individuals identify with social groups and derive utility from conforming to group norms (Tajfel, 1978; Turner and Reynolds, 2010). We therefore expect individuals living in a certain geographic area to adjust their behavior to the dominant cultural norms in that area. The other argument is that individuals searching for employment might prefer to seek employment with firms located in a region with a culture they feel comfortable with (Schneider, 1987; Hilary and Hui, 2009).

There is substantial empirical evidence linking religious beliefs to risk aversion; Protestants tend to be more risk-averse than Catholics on average (see, e.g., Barsky et al., 1997; Halek and Eisenhauer, 2001; Kumar, 2009; Benjamin, Choi, and Fisher, 2013; Noussair et al, 2013). Since loss reserves back insurers' obligations towards policyholders, decreasing the loss reserves increases the risk of a potential reserve shortfall if future claim payments are higher than expected. We therefore expect property-insurance companies located in regions with a relatively high fraction of Protestants in the population to have higher loss reserves than insurers located in regions with a relatively high fraction of Catholics in the population.

Although property-liability insurers' reserving decisions may be impacted by local religious beliefs, regulation and market competition may mitigate these cultural effects. Insurance commissioners have the power to liquidate failing companies quickly (Cummins, Harrington, and Klein, 1995) and the risk sensitivity of insurance demand creates pressure on insurance companies

to stay financial strong (Epermanis and Harrington, 2006). Thus, whether local culture ultimately impacts property-liability insurers' behaviors is an empirical question. This research question is the focus of our analysis.

2. Data and Methodology

2.1 Sample Selection

Our initial sample consists of all individual U.S. property-liability insurance companies for the years 1990-2014. Annual statements are available in the NAIC Infopro database. These statements follow Statutory Accounting Principles and are the primary source of insurer characteristics used in this study. Loss reserve error calculation requires five lead years of data so our analysis sample does not include data from the most recent five years (2010-2015). Data on local religious beliefs come from the American Religion Data Archive (ARDA).²

Our initial sample consists of 46,669 firm-year observations. Following Petroni (1992), we require the firm to be a U.S. stock or mutual company, not primarily be a reinsurer, and to have positive reserves. We control for extreme errors in the loss reserve accrual and exclude observations with a loss reserve estimate that differs from the revised estimate by greater than 50 percent in absolute value. Following Grace and Leverty (2010), we require firms to have positive reserves. In addition, firms that cede greater than 25% of their premiums in either workers compensation, accident and health, surety, credit, or reinsurance are excluded. Our final sample with the necessary control variables for analysis consists of 2,136 unique firms and 22,017 firm-year observations.

²ARDA is jointly sponsored by the Association of Statisticians of American Religious Bodies and the Glenmary Research Center. It is distributed by the Association of Religion Data Archives (<http://www.theARDA.com>).

2.1 Religiosity Measures

The ARDA data on local religious beliefs are based on a series of surveys conducted approximately every 10 years. Each survey provides statistics by county for Judeo-Christian church bodies, including information on their number of churches and members. As full “members” are reported by congregation and some congregations have different definitions of confirmed members (such as whether or not children qualify as a full “member”), the number of adherents is used in this study which is common in the literature.³

We utilize the surveys conducted in 1990, 2000, and 2010 for this study. The number of church bodies included are 133, 149, and 236, respectively. Similar to Shu, Sulaeman, and Yeung (2012), we construct the *Protestant Ratio* (*Catholic Ratio*, *Religious Ratio*) of a county by summing the numbers of adherents of Protestant denominations (Catholic denominations, all religious denominations) within the county and dividing it by the total population of the county. ARDA classifies congregations into five main groups: Catholics, Evangelical Protestants, Mainline Protestants, Orthodox, and other groups. Traditionally, Mainline Protestants and Evangelical Protestants are combined to create the Protestant congregation group (see, e.g., Hilary and Hui, 2009; Kumar, Page, and Spalt, 2011; Shu et al., 2012). We take advantage of the extensiveness of the recent 2010 survey and include African American religious bodies.⁴

³ Congregational “adherents” include all full members, children, and others who regularly attend services or participate in the congregation. Therefore, using adherents allows for more meaningful comparisons between groups.

⁴ The 2010 Religion Census improved coverage of predominantly African American religious bodies. The following twelve Black Protestant denominations are included in the Religious Congregations & Membership Study 2010: African Methodist Episcopal Church, African Methodist Episcopal Zion Church, Christian Methodist Episcopal Church, Church of God in Christ, Church of Our Lord Jesus Christ of the Apostolic Faith, Inc., Cumberland Presbyterian Church in America, Full Gospel Baptist Church Fellowship, National Baptist Convention of America, Inc., National Baptist Convention, USA, Inc., National Missionary Baptist Convention, Inc., Progressive National Baptist Convention, Inc., and United Holy Church of America, Inc.

Specifically, we combine the Evangelical, Mainline, and Black Protestants to form the group of Protestant congregations.⁵ Following Kumar et al. (2011), we also define the *Catholic-to-Protestant Ratio* as the ratio of Catholics to Protestants in a given county.

As our sample spans from 1990-2009, we linearly interpolate religiosity ratios for non-survey years. In order to match the county-level religiosity data with insurance companies' finance statement data, we first collect the zip code of the corporate administrative office.⁶ We then use a zip code database to match each corporate administrative office zip code to its respective county.⁷ Finally, we merge the religious data with the insurance companies' financials and assign religiosity ratios to each insurer.

2.2 Reserve Error Calculation

The unscaled loss reserve error is measured as the difference between total losses incurred at time t and the revised estimate of incurred losses at time $t+n$. Following previous studies (see, e.g., Petroni, 1992; Gaver and Paterson, 2001; Grace and Leverty, 2010), we construct five-year errors ($n=5$). If a firm's initial reserves are greater than the revised estimate five years later, this difference will be positive and the initial reserve is overstated (over-reserved). On the other hand, if a firm's initial reserves turn out to be insufficient and the revised estimate is greater, this difference will be negative and the initial reserve is understated (under-reserved).

⁵ The census used mailing lists and on-line resources to gather data on the twelve Black Protestant denominations. As this data is incomplete and in order to more fully compare our results with the literature, we also form a group of Protestant congregations using only Evangelical Protestants and Mainline Protestants. Our results are robust to either measure.

⁶ As the Main Administrative Office location is not available in the NAIC InfoPro database prior to 2007, we collect corporate administrative office addresses from *Best's Insurance Reports, Life-Health Edition* for the years 2003-2006. For years prior to 2003, we make the assumption that the corporate headquarter county did not change, and we use the most recent location we have access to from our two sources.

⁷ The database used to merge zip codes to counties can be found at <http://www.unitedstateszipcodes.org/>.

Consistent with previous studies (see, e.g., Petroni, 1992; Beaver, McNichols, and Nelson, 2003; Berry-Stölzle, Eastman, and Xu, 2015) the raw loss reserve error is scaled by the firm’s total assets and total developed reserves. Many studies using these two scaling factors generally find results robust to either choice of scaling. These two dependent variables are defined as RE_1 and RE_2 , respectively.

2.3 Model Specification

As discussed in section 2.1, past studies have examined the effect of local religious beliefs on corporate behaviors. Berry-Stölzle and Xu (2015) find that local religious beliefs affect insurer risk-taking behaviors. Specifically, they find that insurers who write predominantly risky annuities are more common in regions with a larger Catholic or smaller Protestant population. In addition, Grullon, Kanatas, and Weston (2010) find firms headquartered in more religious counties are less likely to backdate options, practice aggressive earnings management, and be the target of class action securities lawsuits, especially in highly Protestant locations.⁸ Although these authors are not using the insurance industry and examine manipulated earnings through the use of accruals, we suspect the general findings will hold in our scenario. In order to test these hypotheses and distinguish the effects of our measures, we estimate multivariate regressions where our main variables of interest are the religiosity ratios. Our baseline regression specification is as follows:

$$RE_{i,t} = \beta_0 + \beta_1 \text{Religious Measure}_{i,t} + \beta_2 X_{i,t} + \beta_3 I_t + \epsilon_{i,t} \quad (1)$$

where $RE_{i,t}$ is the 5-year reserve error scaled by either total assets or developed reserves for firm I in year t , $\text{Religious Measure}_{i,t}$ refers to our four religiosity ratios (*Religious Ratio*, *Catholic Ratio*,

⁸ These authors did not include Catholics in their multivariate regression setting. In addition, although the number of Protestant adherents was found to significantly affect accruals management, the total number of religious adherents was found to be positive and significant.

Protestant Ratio, *Catholic-to-Protestant Ratio*), X is a matrix of firm characteristics, I_t is year dummies, and ϵ is the random error term. We also cluster standard errors at the firm level. To be with consistent with previous studies, we expect a negative β_1 slope estimate (under-reserve) for the *Catholic-to-Protestant Ratio*. We also expect a negative coefficient for total *Religious Ratio* (consistent with the overall finding but not the estimated coefficient of Grullon et al., 2010). The signs on *Catholic Ratio* and *Protestant Ratio* are to be determined; a statistically significant coefficient on *Catholic Ratio* would be consistent with Berry-Stölzle and Xu (2015) as these firms are more likely to gamble with their reserves; a negative coefficient on *Protestant Ratio* would be consistent with Grullon et al. (2010), yet the findings from Berry-Stölzle and Xu (2015) would suggest a positive coefficient implying that these firms are more conservative with their initial reserve estimates.

To better estimate the effect of the religiosity measures, we control for other firm-level factors. Insurers with more business written in long-tailed lines have more discretion over their reserves (see, e.g., Beaver et al., 2003; Grace and Leverty, 2012). Thus, we include *Longtail* which is measured as net premiums written in long-tail lines divided by total net premiums written.⁹ We also control for the number of states the insurer operates in, line-of-business diversification, and firm size, net income, and reinsurance. Year fixed effects are also included to control for any time trends.

3. Results

Table 1 provides brief summary statistics for firms in our sample. The mean and median values for RE_1 and RE_2 are both positive, implying the typical firm in our sample over-reserved.

⁹ We follow Eckles and Halek (2010) definition of long-tailed lines: farmowners', homeowners, commercial, medical malpractice, workers' compensation, product liability, auto liability, and other liability

The average religious ratio (for adherents of all denominations) is 53.5% and the average Catholic and Protestant ratios are similar and approximately 24%. However, the distributions are non-symmetric and the average county has relatively more Catholics than Protestants (mean and median of *Catholic-to-Protestant Ratio* is greater than 1).

Table 2 provides univariate comparisons between firms located in predominately Catholic (*Catholic-to-Protestant Ratio* > 1) and predominantly Protestant counties. In column 3, the differences are reported at varying significance levels. In this simple univariate setting, it appears that firms with predominantly Catholic local beliefs under-serve relative to firms with predominantly Protestant local beliefs. In addition, the firms in Catholic counties tend to write more business in long-tail lines, are slightly larger, and are less concentrated across states and lines of business.

Tables 3 and 4 provide the estimated coefficients from the multivariate regression with the same controls, year fixed effects, and clustered standard errors. The only difference is the dependent variables: the dependent variable is RE_1 (scaled by total assets) in Table 3 and the dependent variable is RE_2 in Table 4. In both tables, Column (1) – Column (4) shows the estimated coefficients on the effect of *Religious Ratio*, *Catholic Ratio*, *Protestant Ratio*, and *Catholic-to-Protestant Ratio* on the reserve error, one at a time.

In Table 3 and 4, the total number of religious adherents is negative and not significant (consistent with the findings of Grullon et al. (2010)). Interestingly, the ratio of Catholic adherents is negative and statistically significant, implying that firms located in areas with a high number of Catholic adherents (relative to county population) are more likely to under-serve. The estimated coefficient is still negative, but no longer significant in Table 4 when RE_2 is used. When using both RE_1 and RE_2 , the coefficient on *Protestant Ratio* is found to be positive and significant,

consistent with the more consistent theory and in contrast to Grullon et al. (2010). Finally, the coefficients on *Catholic-to-Protestant* ratio are negative and statistically significant in both Table 3 and 4, thus confirming the findings from the univariate tests. Firms located in areas with relatively high Catholic local beliefs are found to be more likely to under-reserve; firms located in areas with relatively high Protestant local beliefs are found to be more likely to over-reserve. These findings are consistent with numerous studies providing evidence that local religious beliefs, which is a large part of local culture, impacts corporate behaviors.

References

- Barsky, R. B., F. T. Juster, M. S. Kimball, and M. D. Shapiro, 1997, Preference Parameters and Behavioral Heterogeneity: An Experimental Approach in the Health and Retirement Study, *Quarterly Journal of Economics*, 112:537–579.
- Beaver, W. H., M. F. McNichols, and K. K. Nelson, 2003, Management of the Loss Reserve Accrual and the Distribution of Earnings in the Property-Casualty Insurance Industry, *Journal of Accounting and Economics*, 35(3): 347-376.
- Benjamin, D. J., J. J. Choi, and G. Fisher, 2013, Religious Identity and Economic Behavior, Working paper, National Bureau of Economic Research, Cambridge, MA.
- Berry-Stölzle, T. R., A. P. Liebenberg, J. S. Ruhland, and D. W. Sommer, 2012, Determinants of Corporate Diversification: Evidence From the Property-Liability Insurance Industry, *Journal of Risk and Insurance*, 79(2): 381-413.
- Berry-Stölzle, T. R., E.M. Eastman, and J. Xu, 2015, CEO Overconfidence and Earnings Management: Evidence from the Property-Liability Insurance Industry, Working paper.
- Berry-Stölzle, T. R. and J. Xu, 2015, Local Religious Beliefs and Insurance Companies' Risk-Taking Behaviors, Working Paper.
- Cummins, J. D., S. E. Harrington, and R. Klein, 1995, Insolvency Experience, Risk-Based Capital, and Prompt Corrective Action in Property-Liability Insurance, *Journal of Banking and Finance*, 19: 511-527.
- Dyreng, S. D., W. J. Mayew, and W. D. Williams, 2010, Religious Social Norms and Corporate Financial Reporting, *Journal of Business Finance and Accounting*, 39: 845–875.
- Eckles, D. L., and M. Halek, 2010, Insurer Reserve Error and Executive Compensation, *Journal of Risk and Insurance*, 77(2): 329-346.
- Epermanis, K. and S. E. Harrington, 2006, Market Discipline in Property/Casualty Insurance: Evidence from Prmeium Growth Surrounding Changes in Financial Strength Ratings, *Journal of Money, Credit and Banking*, 38(6): 1515-1544.
- Gaver, J. S., and J. S. Paterson, 2001, The Association between External Monitoring and Earnings Management in the Property-Casualty Insurance Industry, *Journal of Accounting Research*, 39(2): 269-282.
- Grace, M. F., and J. T. Leverty, 2010, Political Cost Incentives for Managing the Property-Liability Insurer Reserve Error, *Journal of Accounting Research*, 48(1): 21-49.
- Grullon, G., G. Kanatas, and J. Weston, 2010, Religion and Corporate (Mis)Behavior, Working paper, Rice University, Houston.

- Halek, M., and J. G. Eisenhauer, 2001, Demography of Risk Aversion, *Journal of Risk and Insurance*, 68:1–24.
- Hilary, G., and K. W. Hui, 2009, Does Religion Matter in Corporate Decision Making in America? *Journal of Financial Economics*, 93:455–473.
- Jones, J., 1991, Earnings Management During Import Relief Investigations, *Journal of Accounting Research*, 29(2): 193-228.
- Kumar, A. 2009, Who Gambles in the Stock Market? *Journal of Finance*, 64: 1889-1933.
- Kumar, A., J. Page, and O. Spalt, 2011, Religious Beliefs, Gambling Attitudes, and Financial Market Outcomes, *Journal of Financial Economics*, 102: 671–708.
- McGuire, S. T., T. C. Omer, N. Y. Sharp, 2012, The Impact of Religion on Financial Reporting Irregularities, *Accounting Review*, 87(2):645–673.
- McNichols, M. F., 2000, Research Design Issues in Earnings Management Studies, *Journal of Accounting and Public Policy*, 19: 313-345.
- Noussair, C. N., S. T. Trautmann, G. van de Kuilen, and N. Vellekoop, 2013, Risk Aversion and Religion, *Journal of Risk and Uncertainty*, 47: 165-183.
- Petroni, K. R., 1992, Optimistic Reporting in the Property-Casualty Insurance Industry, *Journal of Accounting and Economics*, 15: 485-508.
- Schneider, B., 1987, The People Make the Place, *Personnel Psychology*, 40:437–453.
- Shu, T., J. Sulaeman, and P. E. Yeung, 2012, Local Religion Beliefs and Mutual Fund Risk-Taking Behaviors, *Management Science*, 58: 1779–1796.
- Tajfel, H., 1978, *Differentiation Between Social Groups: Studies in the Social Psychology of Intergroup Relations*, (London: Academic Press).
- Turner, J. C., and K. J. Reynolds, 2010, The Story of Social Identity, *Rediscovering Social Identity: Core Sources*, (Psychology Press).

Table 1: Summary Statistics

	N	Mean	St Dev.	Percentile				
				5th	25th	Median	75th	95th
Religiosity Ratios								
Religious Ratio	22017	0.5350	0.1157	0.3610	0.4558	0.5347	0.6028	0.7334
Catholic Ratio	22017	0.2421	0.1412	0.0458	0.1237	0.2251	0.3562	0.4892
Protestant Ratio	22017	0.2465	0.1429	0.0869	0.1358	0.2041	0.3319	0.5274
Catholic-to-Protestant Ratio	22017	1.6397	1.6015	0.0997	0.4269	1.1282	2.5232	4.9416
Earnings Management Measures								
RE ₁	22017	0.0078	0.3262	-0.1350	-0.014	0.0119	0.0461	0.1327
RE ₂	22017	0.0213	0.1059	-0.1270	-0.014	0.0124	0.0468	0.2178
Firm Characteristics								
Longtail	22017	0.7370	0.3305	0.0000	0.6269	0.8770	0.9838	1.0000
Size	22017	17.996	1.9741	14.8840	16.623	17.928	19.296	21.369
Reinsurance	22017	0.3897	2.4403	0.0000	0.1251	0.3235	0.6084	0.9004
Geo Herf	22017	0.5952	0.3840	0.0587	0.1867	0.6207	0.0000	1.0000
Prod Herf	22017	0.5993	0.3058	0.1892	0.3243	0.5202	0.9730	1.0000
Indicator: Small Profit	22017	0.0297	0.1696	0.0000	0.000	0.0000	0.0000	0.0000
Indicator: Profit	22017	0.6903	0.4624	0.0000	0.000	1.0000	1.0000	1.0000
Indicator: Small Loss	22017	0.0084	0.0913	0.0000	0.000	0.0000	0.0000	0.0000

Note: Religious Ratio is the total number of religious adherents of any denomination of a county divided by the county's total population. *Catholic Ratio (Protestant Ratio)* is the total number of Catholic (Protestant) adherents of a county divided by the county's total population. *Catholic-to-Protestant Ratio* is measured as the ratio of Catholics to Protestants of a county. *RE₁* is defined as the reserve error (difference in the initial loss reserve in year t and the developed reserves in year t+5) scaled by net admitted assets (in 000s). *RE₂* is reserve error scaled by developed reserves. *Longtail* is the proportion of business written in long-tailed lines. *Size* defined as the natural logarithm of total net admitted assets. *Reinsurance* is the percentage of gross premiums written ceded to reinsurers. *Geo Herf* is the geographical Herfindahl index. *Prod Herf* is the line of business Herfindahl index. *Small Profit (Profit)* is an indicator variable equal to 1 for insurers with net income in the bottom 5 (90) percent of the positive net income distribution. *Small Loss* is an indicator variable equal to 1 for insurers in the top 5 percent of the negative net income distribution.

Table 2: Univariate differences: Catholic (N=11663), Protestant (N=10354)

	(1) Catholic		(2) Protestant		(1) - (2)	
	Mean	Median	Mean	Median	Mean	Median
RE ₁	-0.0001	0.0096	0.0167	0.0142	-0.0167***	-0.0046***
RE ₂	0.0163	0.0105	0.0270	0.0139	-0.0108***	-0.0034***
Longtail	0.7456	0.8792	0.7273	0.8745	0.0183***	0.0047
Size	18.3528	18.2880	17.5931	17.5188	0.7597***	0.7692***
Reinsurance	0.3905	0.3647	0.3889	0.2852	0.0015	0.0795***
Geo Herf	0.5565	0.5200	0.6389	0.7371	-0.0824***	-0.2172***
Prod Herf	0.5865	0.5114	0.6136	0.5280	-0.0271***	-0.0167*
Small Profit	0.0232		0.0369		-0.0137***	
Profit	0.6616		0.7226		-0.0610***	
Small Loss	0.0063		0.0107		-0.0044***	
No. of observations	11663		10354			

Note: This table provides univariate tests for significant differences between predominantly Catholic and predominantly Protestant counties. Counties are labeled as (1) Protestant if the ratio of Protestant adherents to Catholic adherents is greater than one. Counties are labeled as (2) Catholic if the ratio of Protestant adherents to Catholic adherents is less than one. Denomination categorization is explained in Section x. Statistical significance of differences is based on *t*-tests for means and nonparametric *k*-sample tests for medians. *RE*₁ is defined as the reserve error (difference in the initial loss reserve in year *t* and the developed reserves in year *t*+5) scaled by net admitted assets (in 000s). *RE*₂ is reserve error scaled by developed reserves. *Longtail* is the proportion of business written in long-tailed lines. *Size* defined as the natural logarithm of total net admitted assets. *Reinsurance* is the percentage of gross premiums written ceded to reinsurers. *Geo Herf* is the geographical Herfindahl index. *Prod Herf* is the line of business Herfindahl index. *Small Profit (Profit)* is an indicator variable equal to 1 for insurers with net income in the bottom 5 (90) percent of the positive net income distribution. *Small Loss* is an indicator variable equal to 1 for insurers in the top 5 percent of the negative net income distribution. ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively.

Table 3: Regression of RE₁ on Religiosity Variables and Controls

	(1) Religious	(2) Catholic	(3) Protestant	(4) Cath-to-Prot
Religious Ratio	-0.0299 (-1.41)			
Catholic Ratio		-0.0361** (-2.28)		
Protestant Ratio			0.0453** (2.33)	
Catholic-to-Protestant Ratio				-0.0030** (-2.09)
Longtail	-0.0028 (-0.44)	-0.0024 (-0.37)	-0.0022 (-0.35)	-0.0021 (-0.33)
Size	0.0034* (1.77)	0.0038* (1.93)	0.0042** (1.97)	0.0039** (1.97)
Reinsurance	-0.0005 (-1.24)	-0.0005 (-1.30)	-0.0005 (-1.36)	-0.0005 (-1.28)
Geo Herf	0.0223* (1.75)	0.0227* (1.78)	0.0238* (1.84)	0.0231* (1.81)
Prod Herf	0.0337*** (2.96)	0.0324*** (2.89)	0.0323*** (2.89)	0.0330*** (2.91)
Small Profit	0.0003 (0.05)	0.0008 (0.15)	0.0003 (0.05)	0.0001 (0.02)
Profit	0.0091* (1.90)	0.0089* (1.88)	0.0090* (1.91)	0.0089* (1.87)
Small Loss	0.0302* (1.94)	0.0305* (1.95)	0.0297* (1.90)	0.0297* (1.89)
Intercept	-0.0644 (-1.32)	-0.0795* (-1.78)	-0.1075** (-2.06)	-0.0856* (-1.88)
Year FE	Yes	Yes	Yes	Yes
R ²	0.006	0.006	0.006	0.006
Observations	22017	22017	22017	22017

Note: This table reports estimated coefficients from four models. The dependent variable is reserve error scaled by total assets (in 000s), RE₁. *Religious Ratio* is defined as the total number of adherents of any denomination divided by the county's total population. *Catholic Ratio* (*Protestant Ratio*) is the total number of Catholic (Protestant) adherents of a county divided by the county's total population. *Catholic-to-Protestant Ratio* is measured as the ratio of Catholics to Protestants of a county. *Longtail* is the proportion of business written in long-tailed lines. *Size* defined as the natural logarithm of total net admitted assets. *Reinsurance* is the percentage of gross premiums written ceded to reinsurers. *Geo Herf* is the geographical Herfindahl index. *Prod Herf* is the line of business Herfindahl index. *Small Profit* (*Profit*) is an indicator variable equal to 1 for insurers with net income in the bottom 5 (90) percent of the positive net income distribution. *Small Loss* is an indicator variable equal to 1 for insurers in the top 5 percent of the negative net income distribution. Year fixed effects are included in each regression. The t-statistics (in parentheses) are calculated using robust standard errors clustered by firm. The reported significance levels are based on t-statistics. ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively.

Table 4: Regression of RE₂ on Religiosity Variables and Controls

	(1) Religious	(2) Catholic	(3) Protestant	(4) Cath-to-Prot
Religious Ratio	-0.0119 (-0.87)			
Catholic Ratio		-0.0181 (-1.64)		
Protestant Ratio			0.0263** (2.45)	
Catholic-to-Protestant Ratio				-0.0025** (-2.43)
Longtail	-0.0307*** (-4.95)	-0.0305*** (-4.93)	-0.0304*** (-4.90)	-0.0303*** (-4.88)
Size	0.0045*** (4.18)	0.0047*** (4.38)	0.0049*** (4.59)	0.0049*** (4.53)
Reinsurance	-0.0004 (-1.47)	-0.0004 (-1.52)	-0.0004 (-1.55)	-0.0004 (-1.52)
Geo Herf	0.0171*** (3.38)	0.0172*** (3.39)	0.0179*** (3.54)	0.0175*** (3.46)
Prod Herf	0.0453*** (8.30)	0.0447*** (8.17)	0.0446*** (8.15)	0.0450*** (8.25)
Small Profit	-0.0105 (-1.61)	-0.0102 (-1.56)	-0.0104 (-1.59)	-0.0105 (-1.60)
Profit	0.0142*** (6.05)	0.0141*** (5.99)	0.0142*** (5.99)	0.0140*** (5.94)
Small Loss	0.0303*** (3.30)	0.0305*** (3.32)	0.0300*** (3.28)	0.0300*** (3.27)
Intercept	-0.0702*** (-2.94)	-0.0760*** (-3.38)	-0.0920*** (-4.03)	-0.0803*** (-3.58)
Year FE	Yes	Yes	Yes	Yes
R ²	0.052	0.052	0.053	0.053
Observations	22017	22017	22017	22017

Note: This table reports estimated coefficients from four models. The dependent variable is reserve error scaled by developed reserves, RE_2 . *Religious Ratio* is defined as the total number of adherents of any denomination divided by the county's total population. *Catholic Ratio* (*Protestant Ratio*) is the total number of Catholic (Protestant) adherents of a county divided by the county's total population. *Catholic-to-Protestant Ratio* is measured as the ratio of Catholics to Protestants of a county. *Longtail* is the proportion of business written in long-tailed lines. *Size* defined as the natural logarithm of total net admitted assets. *Reinsurance* is the percentage of gross premiums written ceded to reinsurers. *Geo Herf* is the geographical Herfindahl index. *Prod Herf* is the line of business Herfindahl index. *Small Profit* (*Profit*) is an indicator variable equal to 1 for insurers with net income in the bottom 5 (90) percent of the positive net income distribution. *Small loss* is an indicator variable equal to 1 for insurers in the top 5 percent of the negative net income distribution. Year fixed effects are included in each regression. The *t*-statistics (in parentheses) are calculated using robust standard errors clustered by firm. The reported significance levels are based on *t*-statistics. ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively.