Ratings: It's Accrual World*

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Abstract

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Keywords: Accounting Discretion; Insurance; Reserve Management; Accounting Quality; Ratings; Accruals Quality

JEL classification: G22, G24, M41

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Abstract

Loss reserves are a discretionary tool for managing insurer earnings, with more accurate and/or less volatile reserve errors resulting in higher accruals quality. We investigate whether accruals quality is related to financial strength ratings. Specifically, we use insurer loss reserve errors as a measure of the quality of accruals and examine whether overall accruals quality, as well as a decomposition into innate and discretionary accruals quality, is related to insurer financial strength ratings. We find that firms with lower-quality (noisy) accruals receive lower financial strength ratings from A.M. Best. This result holds for both innate and discretionary accruals. Overall, we provide the first evidence that the quality of accounting information is a significant factor in ratings of insurance firms.

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Introduction

Insurer financial strength ratings have been studied by academics due to the usefulness of ratings to regulators, consumers, corporations, agents/brokers, and insurers. Ratings determine the price insurers can charge for their product, provide an indication of a firm's risk of insolvency, and convey new information to capital markets (Halek and Eckles, 2010). While prior studies have investigated the determinants of financial strength ratings (e.g., Pottier and Sommer, 1999; Doherty and Phillips, 2002), these studies have not considered accounting quality as a determinant of ratings.

In this paper, we examine whether accruals quality is related to a firm's financial strength rating. Consistent with (Eckles, Halek, and Zhang, 2014) who find that insurers with higher reserve error volatility have greater information risk, we suggest that insurers with higher reserve error volatility have lower quality, or noisy, accruals. Thus, based on the foregoing, we examine two research questions. First, we investigate whether overall earnings quality, as measured by the noisiness (standard deviation) of an insurer's loss reserve errors, is related to the firm's financial strength rating. Thus, the noisier an insurer's loss reserve errors, the poorer is the insurer's accruals quality. Second, we decompose accruals quality into two components, discretionary and innate, to determine whether the ratings effect differs between the two types.

This topic is of interest not only to researchers, but also to regulators, policyholders, and agents/brokers. For researchers, this provides insight into A.M. Best's (Best) process for rating insurers. Specifically, we examine whether Best uses (or appears to use) accounting information when assigning ratings. Prior studies find evidence that insurers can use discretionary accruals in an attempt to mask solvency issues (e.g., Petroni, 1992; Gaver and Paterson, 2004; Grace and Leverty, 2012). Therefore, if regulatory solvency monitoring is based on regulatory ratios that are sensitive to accounting manipulation, Best could have an advantage in detecting insolvency if they incorporate accruals quality into their ratings.[1]

Using an ordered probit model, we model financial strength ratings as a function of accruals quality and variables to control for firm risk of insolvency for a large sample of property-liability insurers from 1993 to 2006. As mentioned above, we measure accruals quality in terms of the noisiness (the standard deviation) of loss reserve errors. We also decompose accruals quality into innate and discretionary accruals (Francis et al., 2005; Eckles, Halek, and Zhang, 2014) in an effort to examine differential ratings effects.

We offer two main results. First, we find evidence that financial strength ratings are postively associated with accruals quality. That is, as measured by loss reserve error volatility, insurers with higher quality (less noisy) accruals receive higher Best ratings. This suggests that Best is able to detect poor accruals quality and assigns a lower financial strength rating to firms with lower accruals quality (higher information risk). Second, we find that reduction in financial strength ratings tends to be stronger for poor innate accruals quality relative to discretionary accruals quality. This finding suggests that Best perceives greater insolvency risk arising from poor innate accruals (uncontrollable by the firm) relative to discretionary accruals (controlled by managers).

We make several contributions to the literature. First, we contribute to the literature investigating insurer financial strength ratings. We are the first to link accounting quality when examining the determinants of financial strength ratings and find that accruals quality incrementally explains insurer ratings. Second, we contribute to the literature on insurer loss reserve errors. While the majority of extant literature examines reserve manipulation in the context of earnings management (e.g., Petroni, 1992; Beaver, McNichols, and Nelson, 2003; Eckles and Halek, 2010; Grace and Leverty, 2012), we utilize the volatility of loss reserve

[1] Pottier and Sommer (2002), for example, find evidence that private sector measures of insolvency, including Best's financial strength ratings, are better predictors of insolvency compared to measures used by the public sector. The sensitivity of public sector measures to accounting manipulation could be one potential explanation for this finding.

errors as a measure of accruals quality (e.g., Anthony and Petroni, 1997; Eckles, Halek, and Zhang, 2014). In addition, our results are of interest to regulators who are responsible for solvency monitoring of insurance firms. Prior literature has found evidence that financial strength ratings perform better in insolvency identification relative to measures used by regulators, such as the risk-based capital ratio (e.g., Pottier, 1998; Cummins, Grace, and Phillips, 1999; Pottier and Sommer, 2002). The methods used by regulators are generally ratios, which do not account for potential earnings manipulation. One potential explanation for why Best outperforms regulatory ratios is that Best ratings might incorporate the quality of earnings.

The rest of this paper proceeds as follows. The "Background" section provides institutional details and highlights prior literature on both insurer loss reserves and insurer financial strength ratings. The "Hypothesis Development" section develops our hypotheses. The "Research Design" section describes our data and explains our empirical strategy. The "Empirical Results" section presents our results and the "Conclusion" concludes the article.

Background

Loss Reserves

Insurer loss reserve errors generally have been used as a measure of managerial discretion in the accounting and insurance literature (e.g., Petroni, 1992; Beaver, McNichols, and Nelson, 2003; Grace and Leverty, 2010). Recent work also has applied loss reserve errors to measuring accounting information quality (Eckles, Halek, and Zhang, 2014). Loss reserves are usually the largest liability on a property-liability insurer's balance sheet representing the estimated cost of settling claims. In general, a firm's actuaries will present a recommended range of acceptable loss reserves, with management choosing the ultimate loss reserve. As claims occur over time, an insurer will revise their original loss reserve estimate. These revisions, called development, indicate whether the insurer initially under- or over-reserved. An insurer under-reserved if the original loss reserve was less than the developed reserve and over-reserved if the original loss reserve was greater than the developed reserve. This information, as well as information on the settlement of claims, is reported to the National Association of Insurance Commissioners (NAIC) in annual statutory filings on Schedule P.

An excerpt from Schedule P can be found in Table 1. These data are used to construct the loss reserve error as follows:

$$Error_{i,t} = Incurred\ Losses_{i,t} - Incurred\ Losses_{i,t+n} \tag{1}$$

This error is calculated as the initial loss reserve estimate in year t minus the total incurred losses in year $t+n$. The sum of the boxed values under column 6 in Table 1 are the incurred losses in year t and the sum of the boxed values under column 11 are the incurred losses in year $t+n$. The error, used in previous studies (e.g., Beaver, McNichols, and Nelson, 2003; Gaver and Paterson, 2004; Grace and Leverty, 2010), will be positive if the initial loss reserve estimate is overestimated and negative if the initial loss reserve is understated.[2] Consistent with the majority of prior literature (e.g., Petroni, 1992; Beaver, McNichols, and Nelson, 2003; Grace and Leverty, 2010), we calculate five-year reserve errors, so n is five. To control for insurer size and to express the loss reserve error as a percentage, this difference is scaled by total assets.[3]

McNichols (2000) suggests there are several advantages to using loss reserve errors as

[2]There are other measures of reserve error that also have been used in the literature. Petroni (1992), Eckles and Halek (2010), and Eastman et al. (2014) use the initial estimate minus total incurred losses after 5 years. This produces the negative of the measure we use here. Weiss (1985) and Grace and Leverty (2012) use the initial estimate minus losses paid after 5 years. Grace and Leverty (2013) use a measure based on stochastic loss reserving models as used in the actuarial science literature which they call the *full information reserve error*.

[3]Prior studies report that results are generally robust to different scaling variables. Beaver, McNichols, and Nelson (2003), Gaver and Paterson (2004), and Eckles and Halek (2010) report that their results are robust to scaling choice.

a measure of earnings management compared to other accruals-based measures. For one, it is a material accrual, as the loss reserve generally is the largest liability on an insurer's balance sheet. Also, due to reporting requirements, the development of loss estimates over time is observable, allowing for the comparison of initial estimates to the original accounting estimate. The discretionary manipulation of loss reserves has been studied frequently in the literature as a result of its strength as a measure of earnings management. Loss reserve errors have been linked to various incentives such as earnings smoothing (Weiss, 1985; Grace, 1990; Beaver, McNichols, and Nelson, 2003), financial weakness (Petroni, 1992; Gaver and Paterson, 2004; Grace and Leverty, 2012), and executive compensation (Eckles and Halek, 2010; Eckles et al., 2011; Eastman et al., 2014).

Weiss (1985), Grace (1990), and Beaver, McNichols, and Nelson (2003) provide empirical evidence that insurers manipulate loss reserves in order to smooth income. Notably, Beaver, McNichols, and Nelson (2003) find that insurers with small positive profits tend to significantly understate the loss reserve compared to firms with small negative profits. This is consistent with firms managing earnings in an attempt to avoid losses. While they find that public and mutual insurers engage in earnings smoothing, they do not find evidence of private firms smoothing income.

Prior studies have also documented that financially weak insurers undertake income-increasing loss reserve management. Petroni (1992) finds that financially weak firms, as measured by Insurance Regulatory Information System (IRIS) ratios in the "unusual" range, tend to under-reserve compared to financially strong firms. Gaver and Paterson (2004) find that firms manage reserves in order to avoid triggering a fourth IRIS ratio violation, as this requires regulatory action. Firms can improve certain ratios by under- or over-reserving, so firms with three ratios are found to manage reserves to a greater extent than firms with fewer than three violations. Grace and Leverty (2012) estimate a predicted probability of insolvency using a hazard model, and find that insurers with a higher probability of insolvency tend to under-reserve.

Studies have linked loss reserve manipulation to executive compensation. Eckles and Halek (2010) find evidence that managers of publicly traded firms manipulate reserves in a way consistent with increasing their bonus pay and stock option compensation. Eckles et al. (2011) find that strong corporate governance—measured by board independence, board size, and CEO/Chairman duality—can limit the ability of managers to extract additional compensation through reserve management. Eastman et al. (2014) find evidence consistent with Eckles and Halek (2010), suggesting that managers of stock firms manage reserves as they receive more incentive-based bonus compensation. However, they also find that managers of firms organized as mutuals do not manage reserves as they receive proportionally more bonus compensation.

The auditing literature has also used loss reserve errors as a measure of managerial discretion. Gaver and Paterson (2001) and Grace and Leverty (2013) examine whether managers can use discretionary accounting practices in the presence of high quality external auditing, as measured by Big N auditors and the presence of an external actuary. They find that the ability of external monitoring to decrease loss reserve errors requires both high quality, in the form of a Big N audit firm, and expertise, in the form of a Big N actuary. Since loss reserving is specific to the insurance industry, the expertise of an actuary is an important component of effective auditing. Gaver and Paterson (2007) examine situations when an insurer is economically important to its audit firm and find that financially weak insurers under-reserve less in these situations.

Accounting Information Quality

While the majority of prior studies investigating loss reserve errors use them as a measure of earnings management (e.g., Petroni, 1992; Gaver and Paterson, 2001; Eckles and Halek, 2010; Grace and Leverty, 2012), Eckles, Halek, and Zhang (2014) use loss reserves to measure accounting quality.[4] Specifically, they examine whether poorer accounting quality, as measured by the standard deviation of loss reserve errors over the past five years, is associated with a higher cost of debt and equity capital, measured by the price of insurance and beta, respectively. They find evidence that lower accruals quality (higher reserve error volatility) is associated with a higher cost of debt, but find no evidence that accruals quality is priced into equity capital.

The accounting literature examining the consequences of accruals quality is expansive (see Dechow, Ge, and Schrand (2010) for an excellent survey of the literature). One study of note is Francis et al. (2005) who examine whether accruals quality—as measured by the five year standard deviation of residuals from a regression relating cash flows to current accruals–is priced into debt and equity capital. One of their proxies for cost of debt capital is S&P's debt rating.[5] They find evidence that lower accruals quality is associated with a lower S&P debt rating. While this is similar in spirit to our study, we contribute in at least three important ways. First, Francis et al. (2005) examine only total accruals quality and do not decompose accruals quality into innate and discretionary components in their analysis of debt ratings. Second, we use insurer loss reserve errors as our measure of accruals quality as opposed to residual-based models of accruals (McNichols, 2000). Third, as discussed in the next section, we examine financial strength ratings instead of debt ratings.

Financial Strength Ratings

A.M. Best has provided financial strength ratings of insurers since its incorporation in 1899. These ratings represent Best's opinion on an insurer's ability to continue to pay claims to policyholders in the future. Unlike debt ratings these ratings are comprehensive

[4] Eckles, Halek, and Zhang (2014) use the term "information risk."

[5] One potential concern with our study is that our results could be capturing the relationship between cost of debt and accruals quality documented in Eckles, Halek, and Zhang (2014). To alleviate this concern, we also conduct our analysis on a subsample of our data for which we have cost of debt data for insurers. As in Eckles, Halek, and Zhang (2014) we use the inverse loss ratio as a measure of an insurer's cost of debt. Our results from this analysis are consistent with those presented in the paper.

and represent an overall assessment of each firm instead of a single security. Prior studies have found empirical evidence that lower ratings are associated with a higher probability of insolvency (Pottier, 1998) and that financial strength ratings are superior to regulatory measures of risk (e.g., RBC ratios) in predicting insolvency (Pottier and Sommer, 2002).

Ratings are important to insurance firms and also to a variety of stakeholders, including customers, agents/brokers, and regulators. Doherty and Phillips (2002) find evidence that firms increased their capital during the 1990s in order to maintain their ratings. Epermanis and Harrington (2006) find evidence that firms experiencing a ratings downgrade see a decline in net premiums written. Halek and Eckles (2010) find evidence that ratings downgrades are associated with a significantly negative stock market reaction. They find that this decline following a ratings downgrade is larger in magnitude than the positive reaction following an upgrade. They also find that abnormal market reactions are worse if a firm loses a rating of A-, consistent with certain corporate customers or brokers being unwilling to work with insurers with a rating lower than A- (Pottier and Sommer, 1999). Wade, Liebenberg, and Blau (2015) find evidence that short selling for insurers who are about to experience ratings downgrades increases prior to the announcement of their downgrade. They find that this effect is particularly strong for firms with more transparent balance sheets.

While A.M. Best provides some guidance as to what they consider in ratings, they do not provide the exact formula they use in their ratings. Since this is the case, certain studies have examined the determinants of financial strength ratings (e.g., Pottier and Sommer, 1999; Gaver and Pottier, 2005; Eckles and Pottier, 2011). While these studies find evidence that firm characteristics are significant determinants of Best financial strength ratings, we provide the first study to examine whether accruals quality appears to be a determinant of financial strength ratings.

Hypothesis Development

Accounting quality has been largely ignored in research examining insurer ratings. As noted above, Grace and Leverty (2012) links reserve manipulation with a higher probability of insolvency. It follows that insurers engaged in more active reserve manipulation may be at greater risk for insolvency, and thus we might observe a relationship between reserve manipulation and credit (insurer) ratings. Of course, there are multiple components to reserve manipulation giving rise to differing solvency-related outcomes. On the intensive margin, firms with aggressive under-reserving may well be putting themselves in a more precarious financial situation that could lead to a higher likelihood of insolvency (Grace and Leverty, 2012). Conversely, insurers that over-reserve may well be more conservative, and less likely to become insolvent. The broad use of reserving practices, i.e. on the extensive margin, also provides information. That is, if firms *always* under/over-reserve, then stakeholders (in particular, rating agencies) can either explicitly or implicitly "correct" the reserves to obtain a more accurate view of the firm. However, if a firm is inconsistent with their reserving practices, then stakeholders will find it more difficult to have an accurate picture of the financial health of the firm. We consider higher variability of accounting results to be noisy and an indication of "low quality" accounting.[6] Thus, our first hypothesis predicts that firms with more variability in their reserve errors (poorer accounting quality) will have lower ratings. Formally, our first hypothesis is:

H1: *As the accounting quality of an insurer decreases (improves), the financial strength rating of the insurer also decreases (improves).*

[6] While we note that the accounting procedures may well be correct and proper, we refer to "low quality" to reference the amount of information available from the accounting results.

Further, as discussed above, we can also decompose the accounting quality measure into an innate component and a discretionary component. As noted in Eckles, Halek, and Zhang (2014), the innate component measures the degree to which the quality of the accounting results are uncontrollable (given the lines of business the insurer writes). That is, the reserves may well be very difficult to set correctly. For example, firms entering new lines, firms entering new geographic regions, and firms writing more long-tailed lines may find it inherently more difficult to set reserves. The innate measure of accounting quality would thus be more indicative of the permanent uncertainty of the firm. Conversely, the discretionary component measures the degree to which managerial discretion is used in the accounting process. Guay, Kothari, and Watts (1996) note that managers may have an incentive to both improve and reduce the quality of the accounting results.[7] Regardless of managerial incentive to improve or reduce the quality of the accounting results, we hypothesize that the discretionary component is more transitory in nature and will have less of an impact on a firm's rating (relative to the permanence of the innate component). Formally, our second hypothesis is:

H2: *The effect of the innate (i.e. permanent) component of accounting quality on the financial strength rating will be stronger than the effect of the discretionary (i.e. transitory) component of accounting quality.*

[7] Guay, Kothari, and Watts (1996) note the performance component should improve quality while the opportunism and noise component should reduce quality.

Research Design

Sample Selection

Our initial sample consists of property-liability insurers operating in the U.S. with data available in the statutory reports filed annually with the National Association of Insurance Commissioners (NAIC) from 1991 to 2011. We require that a firm have an A.M. Best financial strength rating to be included in the analysis. We require five (5) lead years of data to construct five-year loss reserve errors.[8] Additionally, we require various lags to construct our accruals quality measures, as described in the next section. Our analysis sample consists of firms from 1993 to 2006. In our broadest sample, this consists of 10,217 firm-year observations and 1,682 unique firms.

Accruals Quality

We first define accruals quality as the standard deviation of past loss reserve errors as in Eckles, Halek, and Zhang (2014). Eckles, Halek, and Zhang (2014) use the standard deviation of the past five years of loss reserve errors. For robustness we also use three-year and four-year standard deviations:

$$AQ_{j,i,t} = \sqrt{\frac{\sum_{t-(j-1)}^{t}\left(RE_{i,t} - \frac{\sum_{t-(j-1)}^{t} RE_{i,t}}{j}\right)^2}{j-1}} \tag{2}$$

This provides our measures of overall accruals quality, $AQ_{3,i,t}$, $AQ_{4,i,t}$, and $AQ_{5,i,t}$ for each firm i in year t. As described earlier, a higher standard deviation indicates noisier information and thus lower accruals quality.

We next decompose accruals quality into innate and discretionary components. We use

[8] For example, the 2006 reserve error is calculated using data from a firm's 2011 statutory filing.

the methodology of Eckles, Halek, and Zhang (2014), who adapt the methodology of Francis et al. (2005) to insurer loss reserve errors. Specifically, we estimate the following regression (going forward, we will suppress the j-subscript, though we estimate the models below for each of our measures of accruals quality (e.g. AQ_3, AQ_4, and AQ_5) :

$$\begin{aligned} AQ_{i,t} = {} & \gamma_0 + \gamma_1 Size_{i,t} + \gamma_2 \sigma\left(CFO\right)_{i,t} + \gamma_3 \sigma\left(Total\ Premium\right)_{i,t} \\ & + \gamma_4 NegEarn_{i,t} + \epsilon_{i,t} \end{aligned} \tag{3}$$

where $AQ_{i,t}$ is the standard deviation of firm i's loss reserve error scaled by assets over the past five years. $Size_{i,t}$ is the natural log of firm i's total assets in year t. $\sigma\left(CFO\right)_{i,t}$ is the standard deviation of firm i's cash flows from operations (CFOs) over the past 10 years. $\sigma\left(Total\ Premium\right)_{i,t}$ is the standard deviation of firm i's net premiums written over the past 10 years. $NegEarn_{i,t}$ is the total number of times firm i had negative earnings over the past 10 years. For $\sigma\left(CFO\right)_{i,t}$ and $\sigma\left(Total\ Premium\right)_{i,t}$ we use 10 years when possible, but also include firms with at least 5 consecutive years of data prior to year t in order to minimize loss of observations.

To obtain a measure of innate accruals, we calculate the fitted values from equation (2) as follows:

$$Innate\ AQ_{i,t} = \hat{\gamma}_0 + \hat{\gamma}_1 Size_{i,t} + \hat{\gamma}_2 \sigma\left(CFO\right)_{i,t} + \hat{\gamma}_3 \sigma\left(Total\ Premium\right)_{i,t} + \hat{\gamma}_4 NegEarn_{i,t} \tag{4}$$

where all variables are defined above. The residuals from equation (2) are used as our measure of discretionary accruals quality:

$$DiscAQ_{i,t} = \epsilon_{i,t} \tag{5}$$

$Innate\ AQ_{i,t}$ provides a measure of the quality of accruals that are "innate" to the firm, meaning they exist simply by the nature of a firm's operations. As an example, firms operating in long-tailed lines of business are likely to have lower innate accruals quality as these lines are generally more difficult to write business for. This will result in larger reserve errors (in absolute value) simply due to the difficulty of accurately reserving. $DiscAQ_{i,t}$ provides a measure of discretionary accruals quality. This measures the quality of accruals subject to managerial discretion. If managers of insurance firms are manipulating reserves in response to various incentives—such as maximizing their own compensation (e.g., Eckles and Halek, 2010)—this number will be higher, reflecting lower accruals quality.

Descriptive Statistics

Table 2 provides a summary of the A.M. Best financial strength ratings in our sample. To create our *Rating* variable we categorize ratings into 5 groups.[9] *Rating* takes a value of 4 for ratings of A++ and A+, 3 for a rating of A, 2 for a rating of A-, 1 for a rating of B++ and B+, and 0 for ratings that are B or lower. The majority of firm-years in our sample have a rating of A. Fewer than 6 percent of ratings in our sample are B or less, which A.M. Best classifies as "Vulnerable."

Table 3 provides descriptive statistics for our sample. The average *Rating* for firms in our sample is 2.5436, which translates to a rating between A- and A. The median firm has a rating of A. The average firm's loss reserve errors have a 5-year standard deviation of 0.0371 (AQ_5). The mean and median of *Innate* AQ_5 are 0.0371 and 0.0363, respectively. On average, the values of *Innate* AQ are larger than the values of $DiscAQ$. The average value of RE is 0.0130, which indicates that the average firm in the sample over-reserved.

Table 4 provides unconditional correlations between our *Rating* variable and our various measures of accruals quality. The bottom triangle provides Pearson correlations while the upper triangle provides Spearman correlations. Bolded values are statistically significant at

[9] Our rating classification is consistent with Doherty and Phillips (2002), and our results are robust to alternative ratings classifications.

the 1 percent level. For both Pearson and Spearman correlations, as accruals quality improves (i.e., lower values for AQ_3, AQ_4, AQ_5, *Innate* AQ_3, *Innate* AQ_4, *Innate* AQ_5, $DiscAQ_3$, $DiscAQ_4$, and $DiscAQ_5$) financial strength ratings tend to increase. This is consistent with our hypothesis that lower accruals quality will be associated with lower financial strength ratings.

Table 5 provides univariate descriptive statistics of our accruals quality variables sorted by *Rating*. The accruals quality variables all tend to improve (decrease) as *Rating* increases, in many cases monotonically. This again suggests that accruals quality is associated with a higher financial strength rating. In the last column of table 5 we test the difference in the accruals quality variables between the highest-rated firms (*Rating*=4) and the lowest-rated firms (*Rating*=0). For all six of the accruals quality variables, the highest-rated firms have better accruals quality compared to the lowest-rated firms at the 1 percent level. This provides preliminary evidence for our hypothesis that poor accounting quality is associated with lower financial strength ratings. In the next section we perform multivariate tests of our hypothesis.

Determinants of Ratings

To test our hypothesis of whether accrual quality impacts an insurer's financial strength rating, we employ the following model:

$$\begin{aligned} Rating_{i,t} = {} & \beta_1 AQ_{j,i,t} + \beta_2 Surplus\text{-}to\text{-}Assets_{i,t} + \beta_3 Mutual_{i,t} \\ & + \beta_4 Kenny\ Ratio_{i,t} + \beta_5 ROI_{i,t} + \beta_6 Group_{i,t} + \beta_7 Size_{i,t} \\ & + \beta_8 ROA_{i,t} + \beta_9 Growth_{i,t} + \beta_{10} Reinsurance_{i,t} + \beta_{11} Earthquake_{i,t} \\ & + \beta_{12} Product\ Diverse_{i,t} + \beta_{13} Geo\ Herf_{i,t} + \beta_{14} Longtail_{i,t} + \epsilon_{i,t} \end{aligned} \tag{6}$$

where:

$i,t =$	Firm i in year t;
$Rating_{i,t} =$	Firm i's A.M. Best financial strength rating in year t, where 4 corresponds to ratings A++ and A+, 3 corresponds to rating A, 2 corresponds to rating A-, 1 corresponds to ratings B++ and B+, and 0 corresponds to all lower ratings;
$AQ_{j,i,t} =$	The standard deviation of firm i's five-year loss reserve error over the past $(j = 3, 4, 5)$ years relative to year t;
$Surplus\text{-}to\text{-}Assets_{i,t} =$	The ratio of firm i's policyholder surplus to total assets in year t;
$Mutual_{i,t} =$	A binary variable equal to 1 if firm i is organized as a mutual in year t and 0 otherwise;
$Kenny\ Ratio_{i,t} =$	Firm i's net premiums written divided by policyholder surplus in year t;
$ROI_{i,t} =$	Firm i's net investment income divided by total assets in year t;
$Group_{i,t} =$	A binary variable equal to 1 if firm i is a member of a group and 0 otherwise;
$Size_{i,t} =$	The natural log of firm i's total assets in year t;
$ROA_{i,t} =$	Firm i's net income divided by total assets in year t;
$Growth_{i,t} =$	The percent change in firm i's net premiums written from $t-1$ to t;
$Reinsurance_{i,t} =$	Firm i's reinsurance premiums ceded divided by the sum of direct premiums written and reinsurance assumed in year t;
$Product\ Diverse_{i,t} =$	1 minus a Herfindahl index based on firm i's net premiums written across 24 lines of business in year t;[10]

[10] Using net premiums written data from the Underwriting and Investment Exhibit (Part 1B-Premiums Written) in the annual statutory filings, we make the following adjustments as described in Berry-Stölzle et al. (2012). Fire and Allied Lines is defined as the sum of "Fire" and "Allied Lines." Accident and Health is defined as the sum of "Group Accident and Health," "Credit Accident and Health," and "Other Accident and Health." Medical Malpractice is defined as the sum of "Medical Malpractice—Occurrence" and "Medical Malpractice—Claims Made." Products Liability is defined as the sum of "Products Liability—Occurrence" and "Products Liability—Claims Made." Auto is defined as the sum of "Private Passenger

$Earthquake_{i,t}$ = The percentage of firm i's net premiums written in earthquake insurance in year t;

$Geo\ Herf_{i,t}$ = A geographic Herfindahl index based on direct premiums written in the fifty U.S. states and Washington D.C. in year t;

$Longtail_{i,t}$ = The percentage of firm i's net premiums written in long-tailed lines of business.[11]

Our primary variable of interest, AQ_j, is our empirical proxy for accounting quality. A negative estimated coefficient for AQ_j is consistent with our hypothesis that ratings are an increasing function of accounting quality ($\beta_1 < 0$). We first test whether overall accruals quality is related to financial strength ratings by running separate models for AQ_3, AQ_4, and AQ_5. We then run regressions with accruals quality decomposed into innate and discretionary components by including $Innate\ AQ_3$, $Innate\ AQ_4$, $Innate\ AQ_5$, $DiscAQ_3$, $DiscAQ_4$, and $DiscAQ_5$.

The remaining variables are consistent with prior studies to examine the determinants of insurer financial strength ratings (e.g., Pottier and Sommer, 1999; Doherty and Phillips, 2002). These variables are intended to measure factors that could increase or decrease the probability of insurer insolvency. These include measures of capital structure (*Surplus-to-Assets* and *Kenny Ratio*), profitability (*ROA* and *ROI*), the use of reinsurance (*Reinsurance*), and exposure to catastrophic risk (*Earthquake*).

Auto Liability," "Commercial Auto Liability," and "Auto Physical Damage." Reinsurance is defined as the sum of "Nonproportional Assumed Property," "Nonproportional Assumed Liability," and "Nonproportional Assumed Financial Lines." After these combinations we are left with 24 lines of business from which we construct the Herfindahl Index: Accident and Health, Aircraft, Auto, Boiler and Machinery, Burglary and Theft, Commercial Multi Peril, Credit, Earthquake, Farmowners', Financial Guaranty, Fidelity, Fire and Allied lines, Homeowners, Inland Marine, International, Medical Malpractice, Mortgage Guaranty, Ocean Marine, Other, Other Liability, Products Liability, Reinsurance, Surety, and Workers' Compensation.

[11] We define the following lines as long-tailed lines of business: Farmowners', Homeowners, Commercial Multi Peril, Medical Malpractice, Workers' Compensation, Products Liability, Auto Liability, and Other Liability.

Empirical Results

Table 6 provides the results from our ordered probit model on the determinants of financial strength ratings. The three columns provide results when using the past 3, 4, and 5 years to construct standard deviations of loss reserve errors. Each coefficient is presented with cluster-robust standard errors in parentheses below. Positive coefficient estimates indicate a higher probability of achieving a higher financial strength rating, while negative values indicate a higher chance of having a lower financial strength rating.

Overall, the results in table 6 are consistent with our hypotheses. The estimated coefficients on AQ_3, AQ_4, and AQ_5 are negative and statistically significant at the 1 percent level. This provides evidence that higher reserve error volatility—lower accruals quality—is associated with lower financial strength ratings.

The control variables included in the regressions are generally consistent with expectations. Higher surplus, higher *ROI*, group membership, larger *Size*, higher *ROA*, higher *Growth*, and higher *Product Diverse* are associated with higher financial strength ratings. Higher net premiums written relative to surplus is associated with lower financial strength ratings, consistent with a growth penalty.

Table 7 provides results from our ordered probit model on the determinants of financial strength ratings where we decompose accruals quality into innate (*Innate AQ*) and discretionary (*DiscAQ*) components.[12] To account for the inclusion of predicted values in these models, we estimate bootstrap standard errors with 1,000 replications (Pagan, 1984). These standard errors are included in parentheses beneath each coefficient estimate.

Again, consistent with our hypotheses, we find that lower accruals quality, whether it be innate or discretionary, is associated with lower financial strength ratings. Notably, we find

[12] Recall that we require at least 5 and up to 10 lags to calculate the decomposition into innate and discretionary accruals quality. This restriction is why all three models including the decomposed AQ variables have the same number of observations.

that the coefficient estimate and the statistical power of the coefficient estimate for *Innate AQ* are larger compared to the coefficient estimate for *DiscAQ*. This provides evidence consistent with A.M. Best weighing the quality of innate accruals quality relatively more compared to discretionary accruals quality. We suggest that this is due to innate accruals being more permanent compared to transitory discretionary accruals.

Conclusions

We find strong empirical evidence that overall accruals quality is significantly related to ratings. In particular, the results here indicate that higher accruals quality (lower reserve error volatility) is associated with higher financial strength ratings for property-casualty insurers. Moreover, decomposing accruals quality into innate and discretionary components indicates that both measures are significantly related to insurer ratings with the innate component appearing relatively more important. This latter result suggests that more permanent, innate, accounting quality issues are penalizes more severely than transitory, discretionary, accounting quality issues.

Thus, while prior research (Eckles, Halek, and Zhang, 2014) has linked accruals quality with the cost of debt, we provide evidence of a link between accruals quality and insurer ratings. Because ratings are an important component in effective market discipline (e.g., Epermanis and Harrington, 2006; Eling and Schmit, 2012), our findings provide insight into how ratings firms such as A.M. Best appears to incorporate accruals quality into their rating process. In essence, we find that the ratings process appears to impose a penalty on insurers who transmit less credible earnings information (accruals quality) to the market. Future research may benefit from an examination of whether a similar relation holds for a broader sample of firms beyond the sample of property-casualty insurers here.

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Table 1: Excerpt from Schedule P—Part 2

	Excerpt from the 2011 Annual Statement of ACE American Ins Co.									
	NAIC Property-Liability Annual Statement: Schedule P—Part 2—Summary									
	Incurred Net Losses and Defense and Cost Containment Expenses Reported at Year End ($000 omitted)									
1	2	3	4	5	6	7	8	9	10	11
Accident Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Prior	5,078,038	5,071,351	5,797,589	6,254,020	6,226,103	6,196,693	6,272,376	6,319,513	6,380,162	6,556,014
2002	1,500,643	1,577,357	1,781,499	1,694,376	1,764,741	1,730,440	1,693,571	1,701,902	1,710,655	1,698,728
2003		2,287,425	2,070,036	2,193,082	2,128,955	2,009,994	2,005,987	1,950,893	1,965,579	1,922,897
2004			2,888,365	2,592,836	2,603,694	2,278,069	2,235,793	2,246,927	2,187,825	2,172,853
2005				3,435,994	3,284,263	2,962,984	2,845,413	2,812,629	2,784,845	2,774,656
2006					3,062,746	2,886,813	2,880,132	2,813,843	2,753,745	2,601,211
2007						3,285,381	3,003,720	2,927,313	2,893,535	2,896,689
2008							3,516,789	3,555,336	3,548,912	3,519,332
2009								2,782,336	2,690,015	2,637,746
2010									2,942,142	2,952,660
2011										3,452,200

Note: This table is an excerpt from the National Association of Insurance Commissioner's annual statutory filing. Schedule P—Part 2 data are used to construct loss reserve errors. Loss reserve errors are defined as $Error_{i,t} = Incurred\ Losses_{i,t} - Incurred\ Losses_{i,t+n}$. We use 5-year errors, so $n = 5$. For the firm-year represented in the above table, we sum the top 6 values in column 6, (which equal 19,070,502) and subtract from that the sum of values in column 11 (17,726,359). The loss reserve error equals 1,344,143. Here, the firm over-reserved by approximately $1.3 billion. In general, a negative number indicates under-reserving, while a positive value indicates over-reserving. We use the standard deviation of the loss reserve error over various time horizons as our measure of accounting quality.

Table 2: Ratings Summary

A.M. Best Rating	Descriptor	*Rating*	Firm-Years	Percent
A++ and A+	Superior	4	2,587	25.32%
A	Excellent	3	3,014	29.50%
A-	Excellent	2	2,553	24.99%
B++ and B+	Good	1	1,492	14.60%
B and lower	Vulnerable	0	571	5.59%

Note: This table reports a summary of A.M. Best financial strength ratings for our sample. This includes our classification for our *Rating* variable, the number of firm-years representing each category, and the percentage of each category. The sample period is 1993 to 2006.

Table 3: Descriptive Statistics

				Percentiles					
Variable	Mean	Std.	Min	10^{th}	25^{th}	50^{th}	75^{th}	90^{th}	Max
Rating	2.5436	1.1756	0.0000	1.0000	2.0000	3.0000	4.0000	4.0000	4.0000
RE	0.0130	0.0879	-0.4314	-0.0692	-0.0135	0.0144	0.0510	0.0990	0.3237
AQ_3	0.0284	0.0341	0.0000	0.0041	0.0092	0.0185	0.0345	0.0606	0.3923
AQ_4	0.0332	0.0355	0.0000	0.0061	0.0119	0.0229	0.0414	0.0695	0.3912
AQ_5	0.0371	0.0368	0.0000	0.0075	0.0141	0.0263	0.0462	0.0775	0.3517
Innate AQ_3	0.0269	0.0030	0.0122	0.0239	0.0250	0.0264	0.0284	0.0306	0.0525
$DiscAQ_3$	0.0000	0.0327	-0.0427	-0.0232	-0.0179	-0.0091	0.0061	0.0305	0.3645
Innate AQ_4	0.0325	0.0036	0.0145	0.0291	0.0300	0.0315	0.0343	0.0372	0.0603
$DiscAQ_4$	0.0000	0.0350	-0.0532	-0.0265	-0.0205	-0.0101	0.0079	0.0348	0.3582
Innate AQ_5	0.0371	0.0041	0.0131	0.0336	0.0342	0.0363	0.0394	0.0424	0.0709
$DiscAQ_5$	-0.0000	0.0366	-0.0621	-0.0291	-0.0227	-0.0104	0.0092	0.0393	0.3144
Surplus-to-Assets	0.4235	0.1767	0.0568	0.2382	0.2943	0.3807	0.5151	0.6887	0.9993
Mutual	0.2742	0.4462	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000
Group	0.7260	0.4460	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Kenny Ratio	1.1391	0.7182	0.0000	0.2694	0.5938	1.0553	1.5824	2.0976	4.4207
ROI	0.0452	0.0191	-0.0110	0.0235	0.0329	0.0442	0.0560	0.0666	0.1202
Size	18.3668	1.7711	13.6361	16.1919	17.0585	18.2335	19.5299	20.7534	23.3916
ROA	0.0277	0.0432	-0.2105	-0.0161	0.0098	0.0285	0.0481	0.0716	0.2014
Growth	0.1283	0.5735	-0.9994	-0.1358	-0.0198	0.0567	0.1597	0.3487	8.4948
Reinsurance	0.3608	0.2678	0.0000	0.0479	0.1329	0.3006	0.5566	0.7679	1.0000
Earthquake	0.0016	0.0051	0.0000	0.0000	0.0000	0.0000	0.0005	0.0037	0.0368
Product Diverse	0.4986	0.2933	0.0000	0.0000	0.2584	0.5975	0.7173	0.8005	1.0000
Geo Herf	0.5111	0.3661	0.0422	0.0712	0.1451	0.4501	0.9795	1.0000	1.0000
Longtail	0.6840	0.2681	0.0000	0.1873	0.6263	0.7376	0.8478	0.9855	1.0000

Note: This table reports descriptive statistics for the years 1993 to 2006. The full sample is 10,217 firm-years, consisting of 1,682 unique firms. *Rating* equals 4 for insurers rated A++ or A+, 3 for insurers rated A, 2 for insurers rated A-, 1 for insurers rated B++ or B+, and 0 for all lower ratings. *RE* is the five-year loss reserve error scaled by total assets. AQ_3, AQ_4, and AQ_5 are the standard deviations of an insurer's loss reserve error over the past 3, 4, and 5 years, respectively. *Innate* AQ_3, *Innate* AQ_4, and *Innate* AQ_5 are a firm's innate accruals quality as defined in equation (4) over the past 3, 4, and 5 years respectively. $DiscAQ_3$, $DiscAQ_4$, and $DiscAQ_5$ are a firm's discretionary accruals quality as defined in equation (5) over the past 3, 4, and 5 years respectively. *Reinsurance* is reinsurance ceded divided by direct premiums plus reinsurance assumed. *Geo Herf* is the geographic Herfindahl index. *Product Diverse* is 1 minus the line of business Herfindahl index. *ROA* is a firm's net income scaled by total assets. *Longtail* is the proportion of premiums written in longtailed lines. *Mutual* is a binary variable equal to 1 if a firm is a mutual and 0 otherwise. *Group* is a binary variable equal to 1 for a group and 0 otherwise. *Growth* is the one year change in net premiums written. *ROI* is a firm's net investment income divided by total assets in year t. *Kenny Ratio* is net premiums written divided by policyholder surplus. *Earthquake* is the percentage of net premiums written in earthquake insurance. *Surplus-to-Assets* is policyholder surplus divided by total assets.

Table 4: Correlation Matrix

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) *Rating*		**-0.1689**	**-0.1882**	**-0.2038**	**-0.5385**	**-0.0699**	**-0.5026**	**-0.0909**	**-0.4785**	**-0.1133**
(2) AQ_3	**-0.1608**		**0.8599**	**0.7522**	**0.0763**	**0.9775**	**0.0903**	**0.8370**	**0.0938**	**0.7307**
(3) AQ_4	**-0.1847**	**0.8725**		**0.9084**	**0.0898**	**0.8363**	**0.1088**	**0.9754**	**0.1141**	**0.8843**
(4) AQ_5	**-0.2048**	**0.7656**	**0.9192**		**0.0978**	**0.7291**	**0.1182**	**0.8834**	**0.1239**	**0.9754**
(5) *Innate* AQ_3	**-0.4991**	**0.0900**	**0.1007**	**0.1074**		**-0.0969**	**0.9752**	**-0.0861**	**0.9524**	**-0.0725**
(6) $DiscAQ_3$	**-0.1164**	**0.9959**	**0.8669**	**0.7590**	-0.0000		**-0.0800**	**0.8573**	**-0.0737**	**0.7493**
(7) *Innate* AQ_4	**-0.4641**	**0.0885**	**0.1024**	**0.1111**	**0.9829**	-0.0000		**-0.0705**	**0.9946**	**-0.0588**
(8) $DiscAQ_4$	**-0.1379**	**0.8680**	**0.9947**	**0.9126**	-0.0000	**0.8715**	-0.0000		**-0.0647**	**0.9064**
(9) *Innate* AQ_5	**-0.4274**	**0.0865**	**0.1019**	**0.1117**	**0.9614**	-0.0000	**0.9945**	0.0000		**-0.0539**
(10) $DiscAQ_5$	**-0.1580**	**0.7607**	**0.9135**	**0.9937**	0.0000	**0.7638**	-0.0000	**0.9183**	-0.0000	

Note: This table reports correlations for the years 1993 to 2006. Pearson correlations are in the bottom triangle and Spearman correlations are in the top triangle. The full sample is 10,217 firm-years, consisting of 1,682 unique firms. *Rating* equals 4 for insurers rated A++ or A+, 3 for insurers rated A, 2 for insurers rated A-, 1 for insurers rated B++ or B+, and 0 for all lower ratings. AQ_3, AQ_4, and AQ_5 are the standard deviations of an insurer's loss reserve error over the past 3, 4, and 5 years, respectively. *Innate* AQ_3, *Innate* AQ_4, and *Innate* AQ_5 are a firm's innate accruals quality as defined in equation (4) over the past 3, 4, and 5 years respectively. $DiscAQ_3$, $DiscAQ_4$, and $DiscAQ_5$ are a firm's discretionary accruals quality as defined in equation (5) over the past 3, 4, and 5 years respectively. Bolded values are significant at the 1 percent level.

Table 5: Accruals Quality by Financial Strength Rating

Rating Across Top Row

	0	1	2	3	4	0-4
AQ_3	0.0439	0.0362	0.0307	0.0249	0.0222	0.0217***
AQ_4	0.0523	0.0418	0.0361	0.0290	0.0261	0.0262***
AQ_5	0.0583	0.0466	0.0406	0.0317	0.0298	0.0286***
Innate AQ_3	0.0306	0.0289	0.0273	0.0264	0.0251	0.0055***
Innate AQ_4	0.0368	0.0347	0.0329	0.0319	0.0304	0.0064***
Innate AQ_5	0.0418	0.0394	0.0376	0.0365	0.0350	0.0068***
$DiscAQ_3$	0.0109	0.0053	0.0017	-0.0034	-0.0031	0.0140***
$DiscAQ_4$	0.0140	0.0063	0.0022	-0.0039	-0.0043	0.0183***
$DiscAQ_5$	0.0166	0.0072	0.0030	-0.0047	-0.0052	0.0217***

Note: This table reports our accruals quality measures summarized by firm financial strength rating. The last column is a difference in means test for the lowest rating category (*Rating*=0) minus the highest rating category (*Rating*=4). *Rating* equals 4 for insurers rated A++ or A+, 3 for insurers rated A, 2 for insurers rated A-, 1 for insurers rated B++ or B+, and 0 for all lower ratings. AQ_3, AQ_4, and AQ_5 are the standard deviations of an insurer's loss reserve error over the past 3, 4, and 5 years, respectively. *Innate* AQ_3, *Innate* AQ_4, and *Innate* AQ_5 are a firm's innate accruals quality as defined in equation (4) over the past 3, 4, and 5 years respectively. $DiscAQ_3$, $DiscAQ_4$, and $DiscAQ_5$ are a firm's discretionary accruals quality as defined in equation (5) over the past 3, 4, and 5 years respectively. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 6: Ordered Probit Regression Results

Dependent Variable: *Rating*

	Pred. Sign	(1)	(2)	(3)
AQ_3	-	-3.6291***		
		(0.5139)		
AQ_4	-		-4.4026***	
			(0.6328)	
AQ_5	-			-4.8261***
				(0.7413)
Surplus-to-Assets	+	1.9740***	2.0705***	2.0257***
		(0.2234)	(0.2647)	(0.3143)
Mutual	?	-0.0564	-0.1108	-0.1397*
		(0.0657)	(0.0734)	(0.0826)
Kenny Ratio	-	-0.0859*	-0.1120**	-0.1604**
		(0.0494)	(0.0564)	(0.0656)
ROI	+	3.7822***	3.5166***	3.3132***
		(0.9088)	(1.0331)	(1.1535)
Group	+	0.3262***	0.2896***	0.2610***
		(0.0647)	(0.0725)	(0.0824)
Size	+	0.3807***	0.4098***	0.4390***
		(0.0204)	(0.0234)	(0.0271)
ROA	+	2.0249***	2.0548***	2.0124***
		(0.4173)	(0.4609)	(0.5120)
Growth	+/-	0.1295***	0.1371***	0.1733***
		(0.0272)	(0.0360)	(0.0498)
Reinsurance	+	0.6166***	0.6009***	0.5657***
		(0.1043)	(0.1191)	(0.1395)
Earthquake	-	-3.3741	-2.8909	-3.3574
		(3.3841)	(3.7990)	(4.3296)
Product Diverse	+	0.1756**	0.1954**	0.1789
		(0.0874)	(0.0993)	(0.1134)
Geo Herf	-	-0.1289	-0.1206	-0.1010
		(0.0810)	(0.0929)	(0.1086)
Longtail	-	0.0105	0.0005	-0.0111
		(0.0949)	(0.1100)	(0.1285)
Pseudo-R^2		0.1476	0.1645	0.1791
Wald χ^2		1,214.09	1,039.28	843.68
Observations		10,217	7,703	5,698

Note: This table reports results from ordered probit regressions. The dependent variable is each firm's A.M. Best financial strength rating. *Rating* equals 4 for insurers rated A++ or A+, 3 for insurers rated A, 2 for insurers rated A-, 1 for insurers rated B++ or B+, and 0 for all lower ratings. AQ_3, AQ_4, and AQ_5 are the standard deviations of an insurer's loss reserve error over the past 3, 4, and 5 years, respectively. All control variables are defined in Table 2. Standard errors are presented beneath each coefficient estimate and clustered at the firm-level. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 7: Ordered Probit Regression Results

Dependent Variable: *Rating*

	Pred. Sign	(1)	(2)	(3)
Innate AQ_3	-	-135.3655***		
		(8.8655)		
$DiscAQ_3$	-	-3.4050***		
		(0.4763)		
Innate AQ_4	-		-109.6018***	
			(5.8843)	
$DiscAQ_4$	-		-3.9526***	
			(0.4641)	
Innate AQ_5	-			-94.5985***
				(4.9759)
$DiscAQ_5$	-			-4.5094***
				(0.4411)
Surplus-to-Assets	+	2.1521***	2.0702***	1.9636***
		(0.1646)	(0.1649)	(0.1677)
Mutual	?	-0.0501	-0.0461	-0.0561
		(0.0359)	(0.0379)	(0.0369)
Kenny Ratio	-	-0.0860**	-0.0830**	-0.0987***
		(0.0381)	(0.0375)	(0.0381)
ROI	+	2.9754***	2.6554***	2.6930***
		(0.8436)	(0.8309)	(0.8628)
Group	+	0.2836***	0.2894***	0.2863***
		(0.0375)	(0.0382)	(0.0391)
Size	+	0.3456***	0.3752***	0.3953***
		(0.0157)	(0.0144)	(0.0137)
ROA	+	0.3956	0.1873	0.1269
		(0.4310)	(0.4097)	(0.4051)
Growth	+/-	0.1644***	0.1593***	0.1641***
		(0.0495)	(0.0484)	(0.0489)
Reinsurance	+	0.6494***	0.6541***	0.6558***
		(0.0674)	(0.0710)	(0.0703)
Earthquake	-	-2.6303	-2.4674	-2.0880
		(2.3913)	(2.4432)	(2.2541)
Product Diverse	+	0.2913***	0.2975***	0.2839***
		(0.0620)	(0.0590)	(0.0581)
Geo Herf	-	-0.1126**	-0.1199**	-0.1204**
		(0.0516)	(0.0512)	(0.0524)
Longtail	-	-0.0471	-0.0389	-0.0338
		(0.0601)	(0.0605)	(0.0593)
Pseudo-R^2		0.2006	0.2046	0.2068
Wald χ^2		3,278.80	3,272.57	3,093.88
Observations		5,698	5,698	5,698

Note: This table reports results from ordered probit regressions. The dependent variable is each firm's A.M. Best financial strength rating. *Rating* equals 4 for insurers rated A++ or A+, 3 for insurers rated A, 2 for insurers rated A-, 1 for insurers rated B++ or B+, and 0 for all lower ratings. *Innate* AQ_3, *Innate* AQ_4, and *Innate* AQ_5 are a firm's innate accruals quality as defined in equation (4) over the past 3, 4, and 5 years respectively. $DiscAQ_3$, $DiscAQ_4$, and $DiscAQ_5$ are a firm's discretionary accruals quality as defined in equation (5) over the past 3, 4, and 5 years respectively. All control variables are defined in Table 2. Standard errors are calculated from 1,000 bootstrap replications to account for the presence of estimated regressors. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.