Managerial Discretion and Variable Risk Preferences

Abstract

We analyze the risk taking of insurance groups in the U.S. property and casualty insurance market. We base our predictions on the behavioral theory of the firm. Specifically, we rely on the model by March and Shapira (1992) and amend it by the moderating role of managerial discretion. We operationalize this concept by differentiating between the two predominant organizational forms in insurance markets: mutuals and stock insurers. Our analysis on the performance and risk taking of insurers between 2001 and 2014 shows strong support for the hypotheses derived from our model. While we can find a strong moderating effect of managerial discretion for risk taking above the reference point constructed from social aspirations, we find no such effects for the reference point constructed from the possibility of insurer insolvency. We draw several implications both for insurance markets and further studies of the behavioral theory of the firm.

Keywords: Organizational risk taking, insurer organization, behavioral theory of the firm, managerial discretion

1 Introduction

A firm navigates through the uncertain environment in which it operates. One of the most important question in this regard is when and why firms choose a specific strategy for their operations. The behavioral theory of the firm (Cyert and March, 1963) emphasizes the role of performance feedback in this organizational decision process. When firms are performing below a certain target performance, they are assumed to engage in a search process for new strategies that will result in risky returns. This hypothesis has been tested in the extant literature and evidence has been found both for increased search processes and organizational change (Greve, 1998, 2003b,a), as well as more risky organizational returns (Miller and Chen, 2004) across different industries (Fiegenbaum, 1990). March and Shapira (1987, 1992) also hypothesize organizational risk taking to increase again above aspirations. They accredit this to an effect akin to the house money effect in individual decision-making (Thaler and Johnson, 1990). Firms above aspirations are theorized to have slack resources available to them, which they proceed to spend on risky endeavors. However, empirical evidence for this phenomenon is mixed. Some studies report increased risky activities, such as corporate illegality (Mishina et al., 2010), and increased risk of returns above the target performance level (Fiegenbaum, 1990). However, other studies find neither evidence for an increase in risky activities (Greve, 1998, 2003a) nor evidence for increased risk of returns (Miller and Chen, 2004).

In this paper, we attempt to explain the mixed evidence on behavior above aspirations by introducing managerial discretion (Williamson, 1963; Hambrick and Finkelstein, 1987), as a mediating variable in organizational risk-taking. We expect managers with less managerial discretion (in the sense of organizational factors as described in Hambrick and Finkelstein, 1987) to increase risk less strongly when operating above aspirations. This is because strong ownership control will pressure managers to distribute surplus funds back to owners, inhibiting the generation of slack resources. To test our hypothesis, we use statutory data from the U.S. insurance industry. We exploit the external variation in the two predominant organizational forms, stock insurer and mutual insurer, to identify managerial discretion. Since stock insurers have a more concentrated ownership base and are subject to the disciplining effects of the capital market, we assume them to have less managerial discretion. Mutual insurance companies typically lack strict control measures for managers, granting them more managerial discretion (Spiller, 1972).[1] While we only measure one aspect of managerial discretion this way (organizational

[1]This perspective is different from the argument taken by Mayers and Smith Jr (1988) or Cummins et al. (1999). They argue that mutuals will operate in markets (i.e. insurance lines) in which the manager has less

factors), we have a strong indicator for an organizational characteristic which is otherwise difficult to measure (Hambrick and Abrahamson, 1995).

Managerial discretion, as part of the upper-echelon strategy, has often been used to explain why a manager's influence on the firm varies between different situations (Hambrick and Finkelstein, 1987; Hambrick, 2007). Increased managerial discretion emphasizes the impact managers can have on a firm's decisions and outcomes (Finkelstein and Boyd, 1998; Crossland and Hambrick, 2007). While there is seldom a direct link to organizational risk taking, managerial discretion has been shown to have a strong moderating effect on the influence of managers' characteristics on risk taking (Li and Tang, 2010). Our results also show this mediating effect of managerial discretion on social aspirations-based managerial risk-taking. Similar to the prior literature, we find a positive effect of the size of the aspiration gap on managerial risk taking below the aspiration point. Above the aspiration point, stock insurers only increase risk slightly, while mutual insurance companies show an increase in their risk-taking with rising performance.

We can thus explain the somewhat ambiguous findings of the prior literature on risk-taking above the aspiration point. For this, we are the first to consider managerial discretion as an influence factor. We are also one of the first studies in the empirical literature on the behavioral theory of the firm to consider a large data set of both publicly traded and non listed companies. The results highlight the importance of managerial discretion in organizational studies as a whole and with respect to managerial aspirations in particular. If managerial discretion can influence an effect such as the house money effect, which is often seen as irrational behavior, it might also influence other types of irrational behavior by managers. Furthermore, organizational performance compared to the aspiration point has been shown to influence behavior other than risk taking (Iyer and Miller, 2008; Mishina et al., 2010). The connection between managerial discretion and behavior above aspirations might thus exist in these fields as well. Lastly, our empirical strategy for identifying managerial discretion could serve for future studies of this topic.

The remainder of the paper is structured as follows. We give a detailed introduction to the March and Shapira (1992) model (MSM) and give an overview over its prior applications and the literature on managerial discretion in the following section. Using the model and the literature, we will also derive our hypotheses in this section. Section 3 will introduce the data and the

strategic discretion since mutuals are bad at controlling their managers. Thus, their argument is about the outcome of the market equilibrium. However, the assumption is the same as in our argument: managers of stock insurers have less discretion due to better organizational control mechanisms and the stock market. We acknowledge their discussion and results by controlling for the product mix of the insurance company in our estimations. This way, we get to take advantage of the exogenous variation without suffering from possible endogeneity.

employed econometric specification of our study. The fourth section shows the results. The last section discusses and concludes.

2 Theory and Review of Prior Literature

In this section, we will start by introducing our theoretical framework, the MSM. This model also motivates our first three hypotheses. We will then review prior empirical evidence regarding the MSM. Our major extension to the model is the introduction of managerial discretion as a moderator. We will review the concept and some evidence regarding its application. From this, we motivate two additional hypotheses.

2.1 Theoretical Considerations: March-Shapira Model

In their paper, March and Shapira (1992) combine a variety of research ideas to present a model of organizational risk-taking based on behavioral assumptions. Though their study uses agent-based simulation to determine the outcome of the model set-up, it is not the outcome but rather the assumptions of the model which have received the most attention in the following literature. The model is based on the assumption that risk-taking is dependent on an organization's relative position towards one of two possible reference points: the performance aspiration level and the survival point.

An aspiration level, target, or reference point is central to many modern decision theories for individuals (Kahneman and Tversky, 1979; Köszegi and Rabin, 2007).[2] Correspondingly, such concepts have also appeared in models of organizational decision-processes (Cyert and March, 1963; Fiegenbaum and Thomas, 1988; Bromiley, 1991). As Cyert and March (1963) explain, aspiration levels can appear for multiple reasons but are often formed because organizations either want to beat their own historical performance or the performance of their peers.

In the MSM, as in other models of individual or organizational decisions, organizational risk-taking differs below and above the aspiration level. Below the aspiration level, the organization is assumed to aim at achieving a safe distance above the aspiration level. For any position below the aspiration level, higher risk-taking is associated with a higher probability of achieving this point. However, the more the organization is operating below the aspiration level, the higher the risk has to be in order to achieve the aspired goal with a given probability. Thus, as long

[2] A common assumption in research on individual behavior is for the reference point to be the initial wealth of the individual. However, this does not have to be the case. Heath et al. (1999) and others have shown that targets or goals can equally serve as reference points for decision-makers.

as the organization is operating below the reference point, the risk taken by the organization will increase with decreasing performance. This assumption is not only in line with results on organizational risk taking (see Shinkle, 2012, for a comprehensive review), but also with individual risk-taking which has been shown to be risk seeking below a reference point (Tversky and Kahneman, 1992; Myagkov and Plott, 1997). It thus forms our first hypothesis:

Hypothesis 1. ***Risk below aspiration level:*** *Organizations which focus on the aspiration level as their reference point and have a performance below the aspiration level will increase their risk-taking with decreasing performance.*

Consider now behavior above the aspiration level. In individual decision-making, loss averse behavior is observed. This implies that organizations want operate in such a way that falling below the aspiration level is very unlikely. However, it is unclear how behavior develops as the performance and thus the distance to the reference point increases. In the MSM, two effects are assumed. Firstly, as the performance increases above the aspiration level, the probability to fall below the aspiration level decreases and thus the organization is free to take on more risk. Secondly, as organizations increase their performance above the aspiration level, they accumulate additional resources which are often in excess of what is needed for operations. Such excess resources, or "house money", can lead to increased risk-taking (Thaler and Johnson, 1990; Arkes et al., 1994).

Hypothesis 2. ***Risk above aspiration level:*** *Organizations which focus on the aspiration level as their reference point and have a performance above the aspiration level will increase their risk-taking with increasing performance.*

The second possible reference point in the MSM is the survival point. If the organization falls below this point, it is bankrupt and ceases to operate. Risk-taking close to the survival point is heavily debated in the literature. Specifically, two arguments can be made. In the corporate finance literature, the common argument is based on the default-put option of limited liability owners of organizations (Stiglitz and Weiss, 1981; Doherty, 2000). Such owners fully participate in the organizational performance if operations continue, but are not responsible for any liabilities after insolvency of the company. Increasing organizational risk close to the survival point is thus also increasing their expected return. In consequence, they will want the organization to increase risk-taking close to the insolvency point (Gollier et al., 1997).

In the MSM, however, a different argument is followed. The model focuses on the managers of the firm. In contrast to owners, the managers are not residual claim-holders and thus will not

fully participate in the performance of a surviving firm. In addition, managers will lose their jobs and probably significant value of their human capital if an organization they are responsible for goes bankrupt. They are thus much more interested in the survival of the firm and will decrease the organizational risk-taking close to the survival point (Stone, 1973; Laughhunn et al., 1980; Staw et al., 1981). This effect is called threat-rigidity. In our initial hypothesis, we follow the MS-model, but we will revisit the discussion when considering managerial discretion.

Hypothesis 3. ***Risk close to survival point:*** *Organizations which focus on the survival point as their reference point will decrease their risk-taking the closer the organization is to insolvency.*

2.2 Prior Applications of the March-Shapira Model

The three hypotheses derived from the MSM have been tested using two different approaches. The first approach builds more on the behavioral theory of the firm (Cyert and March, 1963) and does not consider organizational risk-taking directly. Rather, the approach looks at corporate behavior which can lead to risk. This can be a change of the strategy, the timing of acquisitions or other managerial decisions. The second approach considers organizational risk-taking and thus the predictions of the MSM directly.

In a study of the US-broadcasting industry, Greve (1998) considers the change of broadcasting strategy by different radio stations. He considers both historical aspirations (from own performance) and social aspirations (from the performance of peers). Both models lead him to the same conclusion. The propensity of undergoing corporate change increases with the distance from aspirations below the aspiration point. Since the consequences of changing strategy are less well known than the consequences of continuing the past strategy, such change involves risk. We thus see Greve's result support our hypothesis H1 (risk below aspiration level). However, he also shows the propensity of corporate change to decline with the distance from aspirations above the aspiration level. This does not support the hypothesis H2 (risk above aspiration level). Greve finds similar results in two further studies on R&D expenses and the investment in production assets in the shipbuilding industry (Greve, 2003b,a). In both studies, risky corporate activity increases with the distance from aspirations below the aspiration level, but not above the aspiration level. His findings are also supported by Chen and Miller's (2007) analysis of R&D spending of publicly traded manufacturing firms. They find the same pattern of support for H1 and no support for H2.

The study by Mishina et al. (2010) examines occurences of corporate illegality committed by S&P 500 firms in the time between 1990 and 1999. Illegality is a risky activity by definition because any potential benefit of committing it runs at the risk of being detected and punished. Thus, their analysis can be seen as a good test of the MSM. They find evidence for increased illegal behavior for firms below the aspiration level only for firms which are not particularly prominent in the public eye. However, they see a strong increase in the likelihood of corporate illegality when performance increases above the aspiration level. Thus, they see partial support for hypothesis H1 (risk below aspiration level) and full support for hypothesis H2 (risk above aspiration level).

Using a large dataset on the acquisitions of US manufacturing firms between 1980 and 2000, Iyer and Miller (2008) find no support for the aspiration level hypotheses of the MSM at all. If acquisitions are considered as risky organizational behavior, their study much rather comes to opposite conclusions. They find the likelihood of acquisitions to decrease with distance from aspirations both below and above the aspiration level. Such behavior would be antithetic to both hyposthesis H1 and H2. However, the authors do find support for the MSM's prediction on organizational behavior close to the survival point. In accordance with hypothesis H3 (risk close to survival point), they find firms threatened by bankruptcy to perform fewer acquisitions. This support of hypothesis H3 is also found by Chen and Miller (2007) in their study of R&D intensity.

Fiegenbaum and Thomas (1988) and Fiegenbaum (1990) directly analyze organizational risk-taking below and above the reference point. They do not base their hypotheses on the behavioral theory of the firm, but rather in the individual decision-making theory of prospect theory (Kahneman and Tversky, 1979). Nevertheless, their hypotheses are equal to H1 and H2 as derived from the MSM. They find a positive association of risk (measured as the variance of return on equity) and distance to the aspiration level both below and above the aspiration level.

In a test of the MSM, Miller and Chen (2004) measure organizational risk-taking amongst publicly traded manufacturing firms as the standard deviation of the return on assets. They find no consistent support for either H2 (risk above aspiration level) and H3 (risk close to survival point). They do, however, find a positive and significant relation between distance from aspirations and risk-taking below the reference point, thus supporting H1 (risk below aspiration level).

The prior literature of direct and indirect tests of the MSM thus comes to mixed conclusions. While there seems to be strong evidence for our hypothesis H1 (with Iyer and Miller (2008) as the

only conflicting result), there is no such clear picture for the other two hypotheses. This is why we introduce managerial discretion in the following section as a possible moderating variable.

2.3 Managerial Discretion

Of the three hypotheses formulated based on the MSM, only one has received substantial support in the literature. There is only mixed evidence regarding the other two. One possibility for such a result could be that a strong moderating variable exists which makes hypotheses H2 and H3 appropriate for some firms and not for others. We propose managerial discretion as one option to be this moderator. Williamson (1963) was the first to include managerial discretion into the theory of the firm. He saw it as a concept which allowed the managers to pursue their own goals instead of those of the shareholders. We opt for using the terminology of Hambrick and Finkelstein (1987), by defining managerial discretion as the *latitude of action*. That is, the higher the managerial discretion in a firm, the more actions are available to the managers. Managerial discretion thus moderates to which extent managers can actually choose those actions which they desire to choose according to the MSM.

Hambrick and Finkelstein (1987) define three major influence factors of managerial discretion: task environment, firm organization and managerial characteristics. If these factors are aligned such that the managers of a firm can act according to their own preferences, we assume the MSM to hold. If, however, the managerial discretion is limited, we assume the managers to be unable to pursue their own desires. This forces them to act in the interest of the firm owners. Thus, if both preferences are not aligned, including managerial discretion in the model leads to different predictions than the original hypotheses.

Consider first the hypothesis H1 (risk below aspiration level). Here, we see no difference in preferences between managers and owners. Given the arguments in March and Shapira (1992) as they are summarized above, we assume both groups to desire the same thing: reaching the aspiration level. This changes, however, if the firm performs above the aspiration level. The positive relation between distance from aspirations and risk-taking in the MSM is based on two effects. Being above the reference point creates "house money", which increases risk-taking of managers. At the same time, the further a company is above the aspiration level, the less likely it will fall below the aspiration level and thus the more risk its managers can tolerate. Owners, however, will not have a "house money" effect since they are not the agents actually making the decisions. They will consider the excess resources better spend as money distributed back to them. This (or the expectation of it) would remove the funds from the company. A "house

money" effect cannot appear and similarly there would be no excess resources making it less likely to fall below the aspiration level. Thus, we argue that if managerial discretion is low, there should be less of a positive relation between distance to aspirations and risk-taking.

Hypothesis 4. ***Managerial discretion above aspiration level:*** *Organizations which focus on the aspiration level as their reference point and have a performance above the aspiration level will increase their risk-taking less with increasing performance if managerial discretion is low than if it is high.*

A similar divergence of preferences between managers and owners can be observed when the survival point is taken as a reference point. As argued above, it is in the interest of managers to decrease risk and prevent the firm from failing since they are not residual claim holders and are likely to lose considerable human capital. Due to the default-put option, however, it is in the interest of limited liability owners to increase risk close to the survival point. Since managers with less managerial discretion are more prone to making decisions in the interest of the owners, it can thus be assumed that they increase risk-taking when being close to the survival point rather than decreasing it.

Hypothesis 5. ***Managerial discretion close to survival point:*** *Organizations which focus on the survival point as their reference point will increase their risk-taking the closer the organization is to insolvency if managerial discretion in a firm is low and owners have limited liability.*

There is no prior evidence on these two hypotheses in the literature. There is, however, evidence that managerial discretion can act as a moderator in a different field of organizational risk taking. Using survey data on 2,790 CEOs of Chinese manufacturing firms, Li and Tang (2010) show managerial discretion to be a moderating factor in the positive relationship between CEO hubris and organizational risk-taking.

3 Data

For our empirical analysis, we consider the quarterly and annual filings of all U.S. property-casualty insurers with the National Association of Insurance Commissioners (NAIC) between 2001 and 2014. We extend the annually reported financial and underwriting data with quarterly reported data on returns. Our initial sample of insurers for this is obtained from the SNL database which accumulates all reports filed to the NAIC. We also augment the SNL data with

additional data on the corporate ownership structure. While the common SNL database only statically reports the ownership structure, we also included all changes in ownership structure within our observation period. Our ownership data is thus in a dynamic panel structure.

Our analysis is concerned about active management decisions that alter insurers' risk-taking behavior. To clean our data of inactive insurers and wrongfully reported data, we exclude insurers with missing, negative, or zero premium income and missing, negative, or zero assets. In addition, we drop insurers which are operating below minimum solvency standards.[3] This is because managers of such insurance companies basically lose the possibility to act fully within their own discretion or in the interests of the owners. Such companies are partially operated by the regulating agency.

We argue that company's overall risk is determined by top-level management decisions. Hence, we aggregate all affiliated insurers' financial and underwriting data at the group level. Our initial sample contains in total around 1,300 insurance groups and unaffiliated insurers which results in approximately 13,000 year-insurer / year-insurance-group observations. Descriptions of the variables used in our analysis are given in Table 1 and in the following chapter.

3.1 Measures

3.1.1 Organizational Risk-Taking

The MSM is silent about the nature of the risk it is modeling and only considers its outcome. The risk is both called *risk* and *unreliability* such that the associated action action can be voluntary or involuntary. We thus use both approaches utilized in the prior literature: the direct interpretation of the model by looking at an outcome and the indirect interpretation in the spirit of the behavioral theory of the firm. Throughout the paper, we will denote the each risk measure of firm i in time t as $r_{i,t}$ and superscript it with the specific measurement approach.

[3] This comprises all insurer / year observations in which the insurer has a ratio of risk-based capital to minimum required risk-based capital lower than 150%.

Table 1: Description of Variables

Variable	Description
Capasset	Measured as policyholder surplus as a share of net total assets
Change in line mix in $t+1$	1 if a change (exit/entrance) in at least one of the 14 lines occurs from year t to year $t+1$
Concentration index	Index that measures the insurer's exposure to market concentration in the lines that the insurer operates in
Direct premiums written	Direct premiums written in 14 different lines of business
Historical aspiration ($Asp_{i,t}$)	Historical aspiration level measured as first lag of own return on equity
Kenney ratio	Measured as net premiums written as a share of policyholder surplus
LR	Loss ratio measured as quarterly net losses incurred as a share of net premiums earned
Publicly traded	1 if the insurer is publicly traded, 0 otherwise
RBC ratio	The proportion of total adjusted capital per total risk-based capital in 100 %
ROE	Return on average equity defined as net income as a share of average policyholder surplus
ROI	Return on investment measured as quarterly net investment income as a share of net admitted cash and invested assets
Size	Measured as the natural logarithm of net total assets
Social aspiration ($Asp_{i,t}$)	Social aspiration level measured as the median of return on equity within the decile of net total assets the insurer is focusing on
Std. dev. LR in $t+1$	Standard deviation of quarterly loss ratio over 8 quarters from quarter I of year t to quarter IV of year $t+1$
Std. dev. ROE in $t+1$	Standard deviation of quarterly return on equity over 8 quarters from quarter I of year t to quarter IV of year $t+1$
Std. dev. ROI in $t+1$	Standard deviation of quarterly return on investment over 8 quarters from quarter I of year t to quarter IV of year $t+1$
Stock	1 if the group is a stock, 0 otherwise

When measuring risk directly, using the variability of a balance sheet measure is a common approach in the insurance literature (Lamm-Tennant and Starks, 1993; Zou et al., 2012; Ho et al., 2013) and has been employed in the management literature, as well (Miller and Chen, 2004)[4]. Using ROE as the underlying capacity, the risk is measured as:

$$r_{i,t}^{\sigma ROE} = \sqrt{\frac{1}{8} \sum_{j=QI_{t-1} \rightarrow QIV_t} \left(ROE_{i,j} - \frac{1}{8} \sum_{k=QI_{t-1} \rightarrow QIV_t} ROE_{i,k} \right)^2}$$

[4]It needs to be mentioned though that the analysis by Miller and Chen (2004) is cross-sectional. The econometric problems mentioned below thus do not apply to it.

ROE captures returns both on the asset side (as long as the returns are born by the insurer) and on the liabilities side. The measure $r_{i,t}^{\sigma ROE}$ thus measures risk on both sides of the balance sheet as well. Since the data reported to the NAIC is detailed on both sides of the balance sheet, we are also able to disentangle the two. We do this by replacing the ROE as the underlying capacity with measures indicating risk on the asset side or the liability side. For the asset side, we use investment risk, i.e. the standard deviation of the investment returns. For the liabilities side, we use the standard deviation of the loss ratio. Both measures are denoted $r_{i,t}^{\sigma Inv}$ and $r_{i,t}^{\sigma LR}$, respectively and are calculated in the same way as indicated above.

Lastly, we also consider a test equal to those of the behavioral theory of the firm recounted above. Specifically, we consider the strategic decision of changing the product mix. For this, we follow the approach by Greve (1998), who uses changes in product mix as a proxy for changes in strategy. Similar to Greve, we can observe the product mix in our data by considering the different lines that the insurance companies are operating in. We define a change in the line mix to happen if an insurance company begins to operate in a new line or ceases to operate in a line in which it had written business in before. A line is entered if the insurer reports written premiums in a line in which it had not reported any premiums in the past period. A line is exited if an insurance company does not write any premiums in a line in which it had written premiums in before. The risk measures is denoted as $r_{i,t}^{Line}$

In total, we thus consider four different risk measure shortly denoted by σROE, σInv, σLR, and $Line$.

3.1.2 Performance and Aspirations

The framework by March and Shapira (1992) uses a single abstract organizational resource to measure aspirations, performance and survival. Unfortunately, no such abstract measure exists in the insurance market. Market share could be used as such a measure since it is both a crude measure of success and a market share of zero implies no operation (and thus no survival). However, we refrain from using it in our model for two reasons. Firstly, theoretical research on niche firms (Porter, 1980) and case studies both imply that firms can be successful while operating at a low market share. The recent case study of Allianz' operations in the United States makes this clear. The German holding company was unsatisfied with low performance of its subsidiaries in the U.S. market. They opted for a strategy in which unprofitable lines and geographic locations were sold off and were left with a core business operating at high profitability. It is thus unclear whether insurance companies define their operative goals in terms

of market share. Secondly, market share is a very poor proxy for the distance to bankruptcy. Insurance companies can have a large market share and be factually bankrupt as the recent case of American Insurance Group (AIG) in the financial crisis shows.

We thus use two variables, one for performance and aspirations and one for survival, instead of the one abstract resource in March and Shapira (1992). This is also in line with prior research on the matter (Miller and Chen, 2004). For modeling performance and aspirations, we use the return on equity and for survival we use the risk-based capital (RBC) ratio. Both variables are described in detail below.

Performance as well as aspirations are measured as the return on equity (ROE) in our model. Prior literature has often used return on assets (ROA) instead. However, insurance contracts give substantial liabilities to a company which can differ largely between lines. This makes the necessary assets to achieve a certain return differ between lines, as well. Thus, the ROA is not only a measure of profitability, but also one of product mix. Since we want to measure only profitability, the ROE is used, instead.

In our model, we follow two approaches to define the aspiration level. In the first approach aspirations are considered to be social. This implies firms to aspire a performance which puts them at a certain rank among the insurance companies. Several approaches can be taken to define the peer group in which an insurance company considers itself. Companies could be grouped by line, by strategic orientation, by geographic location, or by size. We use size since it is an easily measured concept and should correlate well with other possible grouping variables. We split the insurance companies into ten deciles according to their total assets.

Within each decile, we make the simplifying assumption that firms aspire the median performance. Specifically, if D denotes the asset decile of insurance companies which i is a member of, aspirations for firm i in period t are determined as follows.

$$Asp_{i,t}^{Soc} = (\tilde{ROE}_{D,t}^{0.5} | i \in D)$$

The second aspiration formation approach assumes that firms compare their recent performance with their own past performance (historical aspiration). Thus, the historical aspiration level is solely based on firms own past performance. It is constructed as follows:

$$Asp_{i,t}^{His} = ROE_{i,t-1}$$

The motive for firms operating below the aspiration model in the MSM is not only to achieve the aspiration level, but some safe distance above it. This should lead to a sharp decline in the risk-taking of firms once the aspiration level is reached. Fortunately, we do not need to make any assumption on the magnitude of the "safe distance" or the implied decline. Rather, we are able to let the data determine the change in risk taking below and above the aspiration level endogenously.

3.1.3 Threat Rigidity

Threat rigidity is described by the RBC ratio. This is the ratio of the risk-based capital of an insurer to the minimum RBC which an insurer is required to have to be allowed continued operations. The minimum is set by the NAIC. It also states that if an insurance company operates at a RBC ratio below 200%, it must submit a plan to improve capital to the local state regulator. If the RBC ratio further drops below 150%, the state regulator specifies corrective action, effectively taking certain aspects of management into its own hands. This is why we exclude all insurer-year observations for which the RBC ratio is below 150% as was already noted above.

Using the RBC ratio leads to a better identifier of insolvency risk than is commonly seen in the literature on threat rigidity. This is because it has a rigid underlying determination process which is adjusted to fit current economic circumstances.

3.1.4 Managerial Discretion

As stated above, Hambrick and Finkelstein (1987) define three major influence factors of managerial discretion: task environment, firm organization and managerial characteristics. We use a variation in the organizational design of the firms in our sample to identify the firm organization factor. Specifically, we distinguish the firms in our data according to their ownership structure.

The majority of the firms in our data are either mutual insurance companies or stock ownership insurance companies. Mutual insurers are owned by the customers of the company. Every policyholder gets a stake in the company and if the company generates a surplus, it is redistributed to the policyholders. This organizational form leads to a very large and diverse group of owners. In contrast, stock insurers are regular companies owned by shareholders. Since the shareholders are not limited to a small stake in the company, they can accumulate large portions of stock and have a vested influence in the operations of a company. Owners of large

shares of a company have more interest and more possibility to influence a firm's operations and can thus limit the managerial discretion. The difference in the possible dispersion of ownerships between stocks and mutuals is the core of our identification strategy. An additional point in favor of our identification is the access to the capital market. Mutuals have little or no access to the capital markets (Viswanathan and Cummins, 2003). Stock companies, in contrast, can use both stock and debt to access the capital market directly. Since the capital market reacts to how a company is lead, it forces some discipline on the managers. This further limits the managerial discretion in stock insurers.

In summary, due to the highly dispersed ownership base, managers of mutual insurance companies have high managerial discretion (Spiller, 1972). The more concentrated ownership and the discipline exercised by the capital market lead managers of stock companies to have lower managerial discretion. However, as was already noted, our sample features a subgroup of observations about insurance groups rather than single companies. Determining the ownership structure of an insurance group is not trivial, since one insurance group might contain single insurers with different organizational types. Commonly, insurance groups with more than one organizational type need to be mutuals since only mutual insurers can own stock insurers but not vice versa. If the head of a group's organizational chart is a mutual, they can own stock insurers but are still not subject to capital market discipline or a concentrated ownership base. Thus, we characterized insurance groups with multiple organizational types as mutuals. There is, however, one exception to this rule. If a mutual insurer has undergone demutualization, the parent company can still be a mutual but have subsidiaries that are stock insurers with publicly traded shares. Such mutual holding companies are subject to capital market discipline and can have a concentrated ownership base. We thus classified these groups as stock insurers. We also characterized all single insurers which were Lloyds conglomerates and all U.S. branches of alien insurers as stock insurers.

3.2 Model and Control Variables

When constructing an empirical test of the MSM, a central aspect of the theoretical model has to be reflected in the empirical model: the focus of attention. In their model, March and Shapira (1992) analyze three different mechanisms for determining which reference point the manager is focusing on: (1) the reference point is chosen at random according to a binomial distribution with parameter μ, (2) the reference point is determined by the position of the firm relative to the two reference points, and (3) the reference point is chosen by a trial and error learning rule.

We use the second approach in our econometric specification. Specifically, we assume that all firms below a threshold of 400% RBC ratio (depending on the year about 15-20% of firms in the sample) focus on the survival reference point, while the rest of the firms focus on the aspiration level. We thus estimate the following model:

$$
\begin{aligned}
r_{i,t+1} = I_{RBC \geq 400\%} \Big(& \beta_1 |ROE_{i,t} - Asp_{i,t}| I_{ROE_{i,t} \geq Asp_{i,t}} + \beta_2 |ROE_{i,t} - Asp_{i,t}| I_{ROE_{i,t} < Asp_{i,t}} \\
& + \beta_3 I_{ROE_{i,t} < Asp_{i,t}} + \beta_4 |ROE_{i,t} - Asp_{i,t}| I_{ROE_{i,t} \geq Asp_{i,t}} S_{i,t} \\
& + \beta_5 |ROE_{i,t} - Asp_{i,t}| I_{ROE_{i,t} < Asp_{i,t}} S_{i,t} + \beta_6 I_{ROE_{i,t} < Asp_{i,t}} S_{i,t} \Big) \\
& + I_{RBC < 400\%} \Big(\beta_7 RBC_{i,t} + \beta_8 RBC_{i,t} S_{i,t} \Big) \\
& + \beta_9 S_{i,t} + \vec{\gamma} \vec{C}_{i,t} + \delta_i + \tau_t + \epsilon_{i,t}
\end{aligned}
\tag{1}
$$

The first three lines are multiplied by an indicator variable which includes only those firms which focus on the aspiration level as their reference point. According to hypotheses H1 and H2, organizational risk-taking is expected to change with the positive absolute distance from the aspiration level. To test each hypothesis separately, the econometric model allows the slope of the change in risk-taking above and below the aspiration level to differ. These two slopes are estimated by the coefficients β_1 and β_2. Note that we use an absolute measure for the distance between performance and aspiration level. Thus, both β_1 and β_2 are interpreted the same way. An increase in risk-taking with distance (as predicted by the MSM) would manifest in positive coefficients. March and Shapira (1992) additionally assume firms below the aspiration level not to target the aspiration level itself, a safe distance above it. This leads to a downward shift in risk taking once the aspiration level is reached. We model this by including a dummy variable for all firms operating below the aspiration level (β_3). If the firms actually target some safe distance above the aspiration level, β_3 will be positive.

The fourth line includes those coefficients exclusively estimated for firms operating close to the survival point. As described above, the RBC ratio is an indicator of the distance from the survival point. Following March and Shapira (1992), its coefficient (β_7) should thus be positive (H3).

To include the moderating effect of managerial discretion, we interact all aforementioned independent variables with the dummy variable $S_{i,t}$ which indicates whether an insurer is a stock company. This way, we can use the coefficients β_4, β_5, β_6, and β_8 to differentiate the influence of

reference points on risk-taking behavior for firms with low managerial discretion (stock insurers) from the influence on risk-taking behavior for firms with high managerial discretion (mutual insurers). Hypothesis H4 (managerial discretion above aspiration level) argues for a lesser effect of the distance to aspirations above the aspiration level for firms with low managerial discretion. This would lead to a negative sign for coefficient β_4. Hypothesis H5 (managerial discretion close to survival point) argues that firms with low managerial discretion increase risk when closer to the survival point rather than decreasing it. We should thus see a negative coefficient β_8 that should be large enough such that $|\beta_8| > \beta_7$. All hypotheses and their predictions are summarized in Table 2.

Table 2: Summary of Hypotheses and Predicted Signs for Coefficients

Hypothesis	Description	Prediction
H1	Risk increases with distance from aspiration level while performing below aspirations if the aspiration level is the reference point.	$\beta_2 > 0$
H2	Risk increases with distance from aspiration level while performing above aspirations if the aspiration level is the reference point.	$\beta_1 > 0$
H3	Risk increases with distance from bankruptcy if the survival point is the reference point.	$\beta_7 > 0$
H4	In firms with low managerial discretion, the effect of distance from aspiration level is weaker while performing above aspirations.	$\beta_4 < 0$
H5	In firms with low managerial discretion, the the distance from bankruptcy is negatively related to risk.	$\beta_8 < 0 \wedge \lvert\beta_8\rvert > \beta_7$

Note: The table displays the five hypotheses derived from the MSM and its interaction with managerial discretion and their predictions for the econometric model specified in equation (1).

The vector $\vec{C}$ comprises multiple control variables. We control for the size of the firm by including the natural logarithm of the net assets reported by the insurer. We also include a dummy which indicates if a company is not only a stock company, but is also listed on a stock exchange and thus publicly traded. We further include the ratio of policyholder surplus to total assets and the ratio of net premiums written to policyholder surplus. The former is an indicator of available capital in the firm and thus a good measure of slack. The latter is also called the Kenney ratio or "insurer leverage" and will influence the variability of the return on equity. To control for the influence of the market environment, we include an index which measures the insurer's exposure to market concentration in the markets it operates in. Lastly, we include the direct premiums written in each line of business to control for the product mix offered by the insurer.

The estimation according to equation (1) is carried out using all four different risk measured explained in Section 3.1.1. As the model in equation (1) implies, all models are fixed effects panel estimations with effects for both years and firms. Additionally, we cluster the standard errors on the firm level for the linear panel regressions. The risk measure r^{Line} is bivariate. We thus implement a logit fixed effects estimation for it.

4 Results

Table 3 shows descriptive statistics for the variables used in our models. Since the dependent variables of the linear panel models display unrealistically extreme outliers, we use winsorized variables at 1 % on both tails. This approach addresses potential outlier and influential points that might otherwise bias the estimates. It is in line with other studies that use large samples of U.S. property-casualty insurers (e.g., Zou et al., 2012). Furthermore, correlation matrices for the models based on social and historical aspirations can be found in Table 6 and 7 in the appendix. The tables show that almost all regressors are not severely correlated. However, some regressors that use additional interactions (i.e. the stock dummy) are correlated by construction with the corresponding regressor that does not use the additional interaction. This is, for example, the case for "Threat Rigidity" and "Stock Threat Rigidity".

Table 4 and 5 present the empirical results of the regression models corresponding to equation (1). We use two separate regressions for social and historical aspirations because the MSM makes no clear assumption how firms weight historical and social aspiration. This approach has been applied in many studies in the past (e.g., Iyer and Miller, 2008; Miller and Chen, 2004). Column (1) to (3) represent our direct and outcome-based measures of performance variability in terms of overall risk (std. dev. ROE), investment risk (std. dev. ROI) and underwriting risk (std. dev. LR). Column (4) shows the results where we use an indirect risk indicator measuring whether a change in at least one insurance line arises from year t to year $t+1$. In this regression, the dependent variable is bivariate and we use a logit estimator with fixed effects for groups and years. The coefficient estimates shown in the rows from "Above Aspiration" to "Stock Aspiration Shift" are displaying the results for insurance groups focused on the aspiration level as their reference point. We expect the risk taken by an insurance group to be increasing in the distance from the aspiration level. This relationship is hypothesized both for firms performing below and and for firms performing above the aspiration level. Our model, however, allows the relationship to

differ for firms performing above and below the aspiration level and by the extent of managerial discretion present in the firm.

The coefficient estimates of "Threat Rigidity" and "Stock Threat Rigidity" in the last two rows are displaying the results for insurance groups focused on the survival point. For these forms, we expect that the risk taking is dependent on the RBC ratio that captures how close an insurer operates to insolvency. This effect is further assumed to be moderated by managerial discretion. We present the empirical results for each of the four different risk variables separately.

First, we consider column (1) of Table 4 and 5. In Table 4 this column shows the empirical results when using the overall risk measure (std. dev. ROE) as dependent variable and assuming social aspirations. The hypotheses implied by the MSM H1 (risk below aspiration level) and H2 (risk above aspiration level) predict that an insurer focusing on aspiration will take more risk if the absolute difference of performance and aspiration increases. Furthermore, the MSM predicts that an insurer focusing on the survival will take less risk as performance approaches the bankruptcy point (H3). All hypotheses from the MSM H1-H3 are confirmed in terms of sign and significance at the 1% level. The empirical results when using historical aspirations also support hypotheses H1-H3 in terms of sign and significance. However, hypothesis H2 is only supported at the 10% significance level. Thus, the empirical evidence presented in this paper regarding overall risk is in line with the theoretical predictions of the MSM.

The additional hypothesis that managerial discretion can act as a moderating variable above the aspiration level is supported in terms of sign and significance by the evidence that is based on social aspirations when considering column (1) of Table 4. The sign of the coefficient is negative as predicted by hypothesis H4 (managerial discretion above aspiration level). Thus, firms that focus on the aspiration level and perform above the aspiration level show a positive but smaller slope in the attainment discrepancy when managerial discretion is small. We expect this finding because we argue that managers with low managerial discretion are more susceptible to following the interests of the owners that have no "house money" incentive. Additionally, the empirical results cannot support hypothesis H5 that managerial discretion might be moderating factor close to the survival point. The sign is negative as predicted, however, the coefficient is not significantly different from zero.

Second, we present the results when investment risk (std. dev. ROI) serves as the dependent variable. Column (2) of Table 4 again shows substantiating evidence in favor of the hypotheses H1 and H2 in terms of sign and significance at the 1 % and 10 % level. Thus, attainment discrepancy below and above the aspiration level is a driver of the investment risk that an insurer

takes. However, H3 is not confirmed because the coefficient is statistically insignificant. When an insurer focuses on survival, insolvency threat does not seem to show explanatory power with respect to investment risk that an insurer takes. The results of Table 5 based on historical aspirations show the same sign as predicted by hypotheses H1 and H2 and are significant the 5 % and 1 % level. Similarly, there is no support for hypothesis H3.

The results of social aspirations confirm hypothesis H4 in terms of sign and significance at the 10 % level. In contrast, there is no support in favor of hypothesis H5 as the coefficient is insignificant. Furthermore, there is no support for hypotheses H4 and H5 in terms of significance according to Table 5. However, all coefficients show the expected direction.

Third, the results of the estimations in which we use the underwriting risk and the change in line mix as dependent variables in columns (3) and (4) mostly support hypotheses H1-H5 in terms of sign but not in terms of significance. Almost all the coefficients related to hypotheses H1-H5 are insignificant. Only the coefficient for hypothesis H4 (managerial discretion above aspiration level) is significant at the 10% level in the estimation using the strategic decision of a change in line mix as the dependent variable.

In summary, the results with respect to overall risk measured by the standard deviation of ROE support hypotheses H1-H4 in the estimation with social aspirations and hypotheses H1-H3 in the estimation with historical aspirations. The coefficients in the regressions explaining investment risk support hypotheses H1, H2 and H4 in for social aspirations and H1 and H2 for historical aspirations. Lacking evidence for a moderating role of managerial discretion in the effect of performance above aspirations on firm risk (H4) in estimations with historical aspirations can be explained by the mechanics of the capital market. Since the capital market can be interpreted as a competition for funds, it is, by nature, focusing on the comparison between different firms and not on the comparison of a firm with its own historical performance.[5] Thus, the limiting effect of capital market discipline on managerial discretion only applies for social aspirations and we only see evidence for it in estimations with social aspirations. The mixed support for the threat rigidity hypothesis can be explained by one of two factors. Firstly, though the RBC ratio is published by the NAIC and thus probably superior to prior measures of bankruptcy used in the literature, there are still more precise measures available for insurance companies (Grace et al., 1998). Thus, we can probably decrease the standard error of our results in further analyses by using such alternative measures which decrease measurement error. Secondly, we have chosen an

[5]This argument is not without its obvious exceptions. Very unique firms like Google compete more with themselves than with peers, since they do not really have any peers. However, the insurance market trades relatively homogeneous goods which is why the argument applies here.

arbitrary threshold for focus of attention on the survival point. A more sophisticated estimation as outlined in the next section could render more precise results on the threat rigidity hypotheses by endogenizing the determination of the threshold.

Results in estimations with underwriting risk ($r^{\sigma LR}$) as the dependent variable render no significant results for any coefficients relevant for our hypotheses be the determination of aspirations social or historical. A possible reason for this is the rather slow process of changing the underwriting risk. Since many contracts of an insurance company get renewed every year and thus the underwriting portfolio composition is strongly correlated over time, managerial decisions to change the underwriting portfolio might not take effect immediately in the next year. This could be the reason why we do not find significant results in our estimations which assume an immediate effect of last year's performance on next year's risk. A different problem arises in our estimation of the strategic decision to change the line mix. Since we are using fixed effects logit panel estimations, all firms which display no line change at all get dropped in the analysis. This reduces our sample by almost half and reduces the significance of our coefficients.

Table 3: Descriptive Statistics

	(1) Mean	(2) Median	(3) Std. Dev.	(4) Min	(5) Max	(6) N
Dependent Variables						
Std. Dev. ROE	0.0675	0.0253	0.884	0	81.91	11,682
Std. Dev. ROI	0.00354	0.00200	0.00817	0	0.275	11,657
Std. Dev. LR	22.42	0.132	1,615	0	165,916	11,107
Change in line mix	0.168	0	0.374	0	1	11,454
Social Aspirations						
beta1: Above Aspiration	0.0381	0	0.318	0	32.43	12,254
beta2: Below Aspiration	0.0280	0	0.0721	0	1.682	12,254
beta3: Aspiration Shift	0.398	0	0.489	0	1	12,254
beta4: Stock Above Aspiration	0.0281	0	0.316	0	32.43	12,254
beta5: Stock Below Aspiration	0.0177	0	0.0632	0	1.682	12,254
beta6: Stock Aspiration Shift	0.231	0	0.422	0	1	12,254
beta7: Threat Rigidity	0.449	0	1.091	0	4.000	12,258
beta8: Stock Threat Rigidity	0.356	0	0.986	0	4.000	12,258
Historical Aspirations						
beta1: Above Aspiration	0.0342	0	0.109	0	6.779	10,820
beta2: Below Aspiration	0.0344	0	0.319	0	31.85	10,820
beta3: Aspiration Shift	0.438	0	0.496	0	1	10,820
beta4: Stock Above Aspiration	0.0222	0	0.101	0	6.779	10,820
beta5: Stock Below Aspiration	0.0230	0	0.316	0	31.85	10,820
beta6: Stock Aspiration Shift	0.265	0	0.441	0	1	10,820
beta7: Threat Rigidity	0.449	0	1.091	0	4.000	12,258
beta8: Stock Threat Rigidity	0.356	0	0.986	0	4.000	12,258
Control Variables						
Stock	0.627	1	0.484	0	1	12,916
Capasset	0.516	0.453	0.617	-22.96	19.83	12,916
Publicly traded	0.176	0	0.381	0	1	12,916
Kenney ratio	0.938	0.757	1.123	-4.497	46.36	12,909
Size	11.24	10.95	2.292	3.674	19.41	12,916
Concentration index	0.0543	0.0523	0.0360	0	2.815	12,916
DPW anh	8,621	0	100,294	-991.5	3.566e+06	12,916
DPW airc	2,561	0	32,043	-14,731	1.331e+06	12,916
DPW comauto	27,513	0	141,205	-10,669	2.734e+06	12,916
DPW commp	36,589	0	197,884	-7,797	3.225e+06	12,916
DPW fid	6,511	0	52,186	-31,016	1.193e+06	12,916
DPW fin	7,786	0	79,747	-164.7	1.650e+06	12,916
DPW fire	34,342	79.56	187,856	-4,184	3.915e+06	12,916
DPW who	71,246	0	586,469	-5,055	1.789e+07	12,916
DPW marine	18,761	0	120,578	-17,763	2.868e+06	12,916
DPW medmal	9,138	0	62,277	-1,412	1.221e+06	12,916
DPW othercom	7,950	0	49,792	-12,543	1.450e+06	12,916
DPW prodliab	56,694	98.91	388,884	-22,830	1.146e+07	12,916
DPW auto	179,309	0	1.434e+06	-13,158	3.572e+07	12,916
DPW wc	44,918	0	273,256	-41,072	6.550e+06	12,916

Table 4: Main Results for Social Aspirations

	(1) Std. Dev. ROE	(2) Std. Dev. ROI	(3) Std. Dev. LR	(4) Change in Line Mix
Above Aspiration	0.0527***	0.00272*	0.246	2.137
$I_{RBC \geq 400\%} \lvert ROE_{i,t} - Asp_{i,t} \rvert I_{ROE_{i,t} \geq Asp_{i,t}}$	(0.0167)	(0.00143)	(0.183)	(1.619)
Below Aspiration	0.118***	0.00313***	0.389	-1.774
$I_{RBC \geq 400\%} \lvert ROE_{i,t} - Asp_{i,t} \rvert I_{ROE_{i,t} < Asp_{i,t}}$	(0.0195)	(0.00114)	(0.259)	(1.460)
Aspiration Shift	-0.000560	-0.000159	-0.0167	0.207
$I_{RBC \geq 400\%} I_{ROE_{i,t} < Asp_{i,t}}$	(0.00156)	(0.000112)	(0.0236)	(0.181)
Stock Above Aspiration	-0.0421**	-0.00257*	-0.114	-2.947*
$I_{RBC \geq 400\%} \lvert ROE_{i,t} - Asp_{i,t} \rvert I_{ROE_{i,t} \geq Asp_{i,t}} S_{i,t}$	(0.0167)	(0.00144)	(0.183)	(1.739)
Stock Below Aspiration	0.0293	-0.00114	0.220	2.281
$I_{RBC \geq 400\%} \lvert ROE_{i,t} - Asp_{i,t} \rvert I_{ROE_{i,t} < Asp_{i,t}} S_{i,t}$	(0.0242)	(0.00131)	(0.389)	(1.592)
Stock Aspiration Shift	-0.00630***	-0.000153	-0.0137	-0.137
$I_{RBC \geq 400\%} I_{ROE_{i,t} < Asp_{i,t}} S_{i,t}$	(0.00218)	(0.000168)	(0.0529)	(0.211)
Threat Rigidity	0.00916***	9.03e-05	0.0242	0.145
$I_{RBC < 400\%} RBC_{i,t}$	(0.00200)	(7.11e-05)	(0.0302)	(0.0984)
Stock Threat Rigidity	-0.00284	-9.82e-05	-0.0133	-0.0731
$I_{RBC < 400\%} RBC_{i,t} S_{i,t}$	(0.00208)	(9.38e-05)	(0.0354)	(0.106)
Observations	11,103	11,073	10,553	6,644
Number of Clusters	1,265	1,263	1,176	626
R^2 / *Pseudo* R^2	0.121	0.043	0.038	0.034

Note: The dep. variables with respect to column (1) to (3) are winsorized at 1 % on both tails. Column (4) shows the results of a logit estimation with a bivariate dependent variable. All specifications include group fixed effects, year dummies and control variables. Controls comprise: a stock insurance dummy, the size as natural log of net total assets, a dummy whether a stock is publicly traded, the ratio of policyholder surplus to net total assets, the ratio of net premiums written to policyholder surplus, the Kenney ratio, an index which measures the insurer's exposure to market concentration, and the direct premiums written in fourteen lines. Standard errors are clustered by insurance group in the linear panel regressions. *** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

Table 5: Main Results for Historical Aspirations

	(1) Std. Dev. ROE	(2) Std. Dev. ROI	(3) Std. Dev. LR	(4) Change in Line Mix
Above Aspiration	0.0600*	0.00281***	0.205	1.643
$I_{RBC\geq 400\%}\lvert ROE_{i,t} - Asp_{i,t}\rvert I_{ROE_{i,t}\geq Asp_{i,t}}$	(0.0325)	(0.00108)	(0.198)	(1.110)
Below Aspiration	0.0664***	0.00206**	0.337	0.536
$I_{RBC\geq 400\%}\lvert ROE_{i,t} - Asp_{i,t}\rvert I_{ROE_{i,t}< Asp_{i,t}}$	(0.0229)	(0.000826)	(0.218)	(1.086)
Aspiration Shift	0.000653	-0.000260**	0.00331	0.0547
$I_{RBC\geq 400\%} I_{ROE_{i,t}< Asp_{i,t}}$	(0.00248)	(0.000114)	(0.0266)	(0.175)
Stock Above Aspiration	-0.0400	-0.000948	-0.417	-1.392
$I_{RBC\geq 400\%}\lvert ROE_{i,t} - Asp_{i,t}\rvert I_{ROE_{i,t}\geq Asp_{i,t}} S_{i,t}$	(0.0345)	(0.00134)	(0.326)	(1.220)
Stock Below Aspiration	-0.0664***	-0.00188**	-0.483**	1.127
$I_{RBC\geq 400\%}\lvert ROE_{i,t} - Asp_{i,t}\rvert I_{ROE_{i,t}< Asp_{i,t}} S_{i,t}$	(0.0230)	(0.000829)	(0.219)	(1.243)
Stock Aspiration Shift	0.000241	0.000253*	0.0498	-0.163
$I_{RBC\geq 400\%} I_{ROE_{i,t}< Asp_{i,t}} S_{i,t}$	(0.00270)	(0.000150)	(0.0434)	(0.202)
Threat Rigidity	0.00871***	8.44e-05	0.0413	0.142
$I_{RBC<400\%} RBC_{i,t}$	(0.00236)	(7.80e-05)	(0.0266)	(0.112)
Stock Threat Rigidity	-0.00357	-1.88e-05	-0.0357	-0.0413
$I_{RBC<400\%} RBC_{i,t} S_{i,t}$	(0.00242)	(0.000102)	(0.0325)	(0.120)
Observations	9,761	9,736	9,376	5,707
Number of Clusters	1,183	1,180	1,107	571
R^2 / *Pseudo* R^2	0.094	0.037	0.022	0.036

Note: The dep. variables with respect to column (1) to (3) are winsorized at 1 % on both tails. Column (4) shows the results of a logit estimation with a bivariate dependent variable. All specifications include group fixed effects, year dummies and control variables. Controls comprise: a stock insurance dummy, the size as natural log of net total assets, a dummy whether a stock is publicly traded, the ratio of policyholder surplus to net total assets, the ratio of net premiums written to policyholder surplus, the Kenney ratio, an index which measures the insurer's exposure to market concentration, and the direct premiums written in fourteen lines. Standard errors are clustered by insurance group in the linear panel regressions. *** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

5 Discussion and Conclusion

The main motivation of our study was to provide and verify an explanation for the mixed findings that have been shown in the empirical literature on the MSM above the aspiration level and close to the survival point. We investigated the theoretical predictions of the MSM empirically by analyzing panel data on the U.S. property-casualty insurance industry. Furthermore, we extended the theory developed in March and Shapira (1992) by describing the possible moderating role of managerial discretion. We argue that it is not only the focus of attention and the relative distance to reference points that determine companies' risk taking but also that the organizational structure gives a manager higher or smaller degrees of freedom to act in his own interest. We contribute to the existing literature by demonstrating that managerial discretion can act as a moderator. We are able to explain the mixed empirical findings related to performance above the aspiration level. Contrary to other studies, we use a panel data model where the focus of attention is allowed to vary over time and decisions are not only made in one period as is the case in the analysis of Miller and Chen (2004). In addition, our model uses controls for unobserved time-invariant and firm-specific heterogeneity and common unobserved time shocks.

The evidence presented in our paper confirms the prediction of the MSM regarding the overall risk taken by insurance groups. Specifically, our empirical analysis substantiates that insurers base their overall risk taking and investment risk on the distance to social and historical aspirations. We also show that managerial discretion is an important moderator for firms above the aspiration level when social aspirations are considered. Indeed, the effect for firms with low managerial discretion disappears almost completely as can be seen by the fact that the absolute size of β_1 and β_4 is almost equal in columns (1) and (2) of Table 4. This has several important implications. Firstly, applications of the behavioral theory of the firm have to take into account whether managers have enough discretion such that thy can really act in their own interest. This highlights the link between managerial research focused on the preferences of managers and finance research often focused on the preferences of owners. Secondly, insurer risk taking seems to be a more convoluted issue than has been assumed in the literature before. Since we find evidence for the MSM which does not model rational behavior of the manager, owner-manager conflicts which have often been the basis for hypotheses on insurer risk taking might have to be amended by the additional dimension of irrational behavior of the manager. A third implication can be drawn regarding the debate of organizational forms in insurance markets. It has often been argued that mutuals are more efficient in markets with simple products (Cummins et al.,

1999). It should also be analyzed whether stock insurers are more efficient in markets where irrational behavior by managers is particularly bad for the insurer's performance. However, because our results presented above are still preliminary and further analysis is needed, our implications should be seen as preliminary, as well.

In contrast to the mixed findings of other studies, our results confirm the threat rigidity hypothesis regarding overall risk for both constructions of aspirations. This finding could be due to our superior measure of distance to insolvency. Existing literature on variable organizational risk preferences often models firms' distance to their survival points by Altman's Z (Altman, 1983), a function constructed from balance sheet items to identify firms threatened by bankruptcy. In contrast, we base the measure of insurers' distance to the survival points on a relevant decision variable for insurers that are close to insolvency. Risk-based capital requirements are important because there are thresholds that are determined by regulatory authorities and therefore it is in the interest of insurers to regard the RBC ratio in their decision making. A possible implication for our strong and significant findings could be that the mixed evidence in prior studies is due to high measurement error in Altman's Z. That we do not find any evidence for a moderating role of managerial discretion supports this claim. However, as mentioned above, our implications still have to be seen as preliminary.

There are still some potential issues that need to be addressed in further research. While measures using deviations over multiple periods are standard in the literature, they can also cause econometric problems. Specifically, using a measure calculated over multiple periods can lead to serial autocorrelation and endogeneity bias. The results related to performance variability in our study are based on an estimation that uses the standard deviation of the performance measure ROE over an overlapping time period of decision-making and outcome. In further research, we plan to investigate more risk indicators which are not measured over several periods. We will examine further strategic decision-making variables and not the outcome. For instance, instead of considering the investment risk outcome (and its standard deviation), we will consider the asset mix directly.

Moreover, one might criticize that the threshold that determines whether an insurer focuses on survival or on the aspiration level is chosen rather arbitrarily. In further research, we will consider an endogenous determination of the attention of focus by using a maximum likelihood estimation. The maximum likelihood estimation will help to assess which reference point has the largest explanatory power in explaining companies' risk taking. This way, the focus of attention is not determined arbitrarily but based on the data. In addition, we measure managerial discretion

with one single variable. Further research should use different indicators of managerial discretion to complement the findings of this existing study.

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Appendix

Table 6: Correlation Matrix with Social Aspirations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
beta1: Above Aspiration	1													
beta2: Below Aspiration	-0.05	1												
beta3: Aspiration Shift	-0.10	0.5	1											
beta4: Stock Above Aspiration	1.0	-0.03	-0.07	1										
beta5: Stock Below Aspiration	-0.03	0.8	0.3	-0.02	1									
beta6: Stock Aspiration Shift	-0.07	0.4	0.7	-0.05	0.5	1								
beta7: Threat Rigidity	-0.05	-0.2	-0.3	-0.04	-0.1	-0.2	1							
beta8: Stock Threat Rigidity	-0.04	-0.1	-0.3	-0.03	-0.1	-0.2	0.9	1						
Stock	0.02	-0.005	-0.10	0.07	0.2	0.4	0.1	0.3	1					
Capasset	-0.01	0.01	0.1	-0.007	0.03	0.2	-0.2	-0.1	0.07	1				
Publicly traded	0.01	-0.009	-0.02	0.03	0.06	0.2	0.01	0.06	0.3	0.06	1			
Kenney ratio	0.08	-0.04	-0.2	0.08	-0.05	-0.2	0.3	0.3	-0.001	-0.3	-0.07	1		
Size	-0.008	-0.06	0.02	-0.004	-0.06	-0.06	-0.05	-0.02	-0.08	-0.1	0.3	0.007	1	
Concentration index	0.010	0.04	0.002	0.01	0.05	0.01	0.02	0.04	0.04	0.008	0.006	0.02	0.01	1

Table 7: Correlation Matrix with Historical Aspirations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
beta1: Above Aspiration	1													
beta2: Below Aspiration	-0.03	1												
beta3: Aspiration Shift	-0.3	0.1	1											
beta4: Stock Above Aspiration	0.9	-0.02	-0.2	1										
beta5: Stock Below Aspiration	-0.02	1.0	0.08	-0.02	1									
beta6: Stock Aspiration Shift	-0.2	0.10	0.7	-0.1	0.1	1								
beta7: Threat Rigidity	-0.1	-0.04	-0.4	-0.09	-0.03	-0.2	1							
beta8: Stock Threat Rigidity	-0.1	-0.04	-0.3	-0.08	-0.03	-0.2	0.9	1						
Stock	0.01	0.008	-0.05	0.2	0.06	0.5	0.1	0.3	1					
Capasset	-0.04	-0.004	0.07	-0.02	-0.0001	0.10	-0.1	-0.1	0.07	1				
Publicly traded	0.01	-0.004	-0.01	0.07	0.01	0.2	0.02	0.06	0.4	0.06	1			
Kenney ratio	0.1	0.01	-0.2	0.1	0.01	-0.1	0.3	0.3	0.007	-0.2	-0.07	1		
Size	-0.04	-0.008	0.003	-0.03	-0.003	-0.05	-0.06	-0.03	-0.08	-0.1	0.4	-0.004	1	
Concentration index	0.003	0.03	-0.0006	0.01	0.03	0.02	0.02	0.03	0.05	0.02	0.01	0.04	0.006	1