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Does corporate governance influence corporate risk-taking? Evidence from the Institutional Shareholders Services (ISS)

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Abstract

We provide evidence on the effect of corporate governance on the extent of corporate risk-taking. Provided by the Institutional Shareholder Services (ISS), our governance metrics are among the most comprehensive in the literature. Our results show that firms with more effective governance exhibit corporate strategies that are significantly less risky. Left to their own devices, managers tend to take excessive risk. Effective governance, however, reduces the degree of risk-taking significantly. Exploiting the passage of the Sarbanes-Oxley Act of 2002 as an exogenous shock that improves governance quality, we show that the effect of corporate governance on risk-taking is likely causal

JEL Classification: G32, G34

Keywords: corporate governance, risk-taking, ISS, institutional shareholder services, agency theory

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Abstract

We provide evidence on the effect of corporate governance on the extent of corporate risk-taking. Provided by the Institutional Shareholder Services (ISS), our governance metrics are among the most comprehensive in the literature. Our results show that firms with more effective governance exhibit corporate strategies that are significantly less risky. Induced by executive compensation contracts, managers tend to take more risk, Effective governance, however, reduces the degree of risk-taking significantly. Exploiting the passage of the Sarbanes-Oxley Act of 2002 as an exogenous shock that improves governance quality, we show that the effect of corporate governance on risk-taking is likely causal

I. Introduction

The most recent financial crisis was a consequence of corporate executives taking excessive amount of risk. To prevent further crises, it is imperative that we understand factors the influence corporate risk-taking. The literature is replete with studies that examine the effects of corporate governance on critical corporate outcomes, such as firm value, capital structure, dividend policy etc. Using governance metrics provided by the Institutional Shareholder Services (ISS), we investigate how corporate governance influences the extent of corporate risk-taking. We contribute to a crucial area of the literature that seeks to assess how various aspects of corporate governance influence risk-taking For instance, a number of studies examine how executive compensation, a primary element of a firm's governance structure, affects risk-taking (Guay, 1999; Coles, Daniel, and Naveen, 2006; Low, 2009; Dong, Wang, and Xie, 2010; Armstrong and Vashishtha, 2012; Hayes, Lemmon, and Qiu, 2012; Gormley, Matsa, and Milbourn, 2013). Beyond executive compensation, Kim and Lu (2011) investigate the moderating effects of external governance on CEO ownership and corporate risk-taking. Bergeron, Lehn, and Zutter (2010) and Cohen, Dey, and Lys (2013) assess the effects of the Sarbanes-Oxley (SOX) Act on corporate risk-taking.

Our study adds to the vast literature in this area by using one of the most comprehensive governance metrics ever constructed to investigate the impact of corporate governance on risk-taking. Prior studies look at specific governance mechanisms, such as executive compensation or CEO ownership, whereas our study attempts to shed light on the overall effects of governance. It is imperative to use comprehensive governance measures because governance mechanisms tend to interact with one another (Agrawal and Knoeber, 1996).

We advance two opposing hypotheses. First, unlike typical shareholders who hold diversified portfolios, managers have their human capital as well as a significant portion of

their wealth tied up in the firm and are therefore exposed to more non-systematic (firm-specific) risk (Fama, 1980; Amihud and Lev, 1981). This under-diversification leads the manager to develop a higher degree of risk aversion, resulting in corporate strategies that are less risky. Weaker corporate governance imposes fewer restrictions on managers, allowing managers more latitude in formulating corporate policies that reflect their own risk-aversion. As a result, this hypothesis argues that weaker corporate governance is associated with lower risk-taking. We refer to this hypothesis as the risk-avoidance view.

By contrast, the opposing hypothesis predicts that weaker governance is associated with more risk-taking. There are at least two reasons why this may be the case. First, most executive compensation contracts make managerial compensation contingent on firm performance. The nature of these compensation contracts likely induce managers to take more risk, expecting to obtain more lucrative compensation. The latest financial crisis is an example of a situation where executives were induced to take significantly more risk. Strong effective governance is expected to protect shareholders from unnecessary risk-taking. Conversely, weaker governance is less likely to keep managers from taking too much risk. This is the first reason why stronger governance is associated with less risk-taking. Second, managers enjoy more freedom in formulating corporate policies when governance is less restrictive (weaker governance). With more freedom, managers are less likely to have to compromise with shareholders, resulting in "less balanced decisions", i.e. decisions that are either really good or really bad. Such extreme decisions result in more variability in firm performance, which reflects higher risk (Adams, Almeida, and Ferreira, 2005). We refer to this hypothesis as the risk-seeking hypothesis, which predicts that stronger governance leads to less risk-taking.[1]

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[1] There is a debate in the literature over whether more risk-taking is beneficial or detrimental to shareholders and what the optimal level of risk-taking is (Bartram, Brown, and Stulz, 2012). It is important to note that we do not take a position on this debate. We simply investigate the effect of corporate governance on risk-taking.

Provided by the Institutional Shareholder Services, our governance metrics cover eight dimensions of corporate governance, consisting of a total of sixty-two governance factors. Our empirical evidence reveals that firms with stronger governance exhibit significantly less risk-taking, therefore supporting the risk-seeking hypothesis. This is true whether we measure risk-taking by using total risk or idiosyncratic risk. There is an inverse association between governance quality and the extent of risk-taking. Firms with more stringent governance exhibit corporate strategies that are significantly less risky. Further analysis based on a two-stage least squares (2SLS) analysis confirms our conclusion. Our 2SLS analysis exploits the passage of the Sarbanes-Oxley Act of 2002 as an exogenous shock. Because this law was imposed from outside the firm, its impact on firms is likely exogenous, therefore making endogeneity less likely. Given the 2SLS results, more effective governance is not only associated with, but appears to bring about lower risk-taking. We also execute a propensity score matching analysis, where we create a treatment and a control group, and find that stronger governance leads to lower risk-taking.

Additional results also show that different governance mechanisms do not have the same effects on risk-taking. For instance, governance mechanisms related to the board of directors, to ownership, and to compensation, tend to have large effects on risk-taking than other governance categories. Shareholders and shareholder activists should exercise caution when supporting or opposing certain governance mechanisms for they have heterogeneous effects on firm outcomes, such as the extent of risk-taking.

II. Sample formation and data description

The original sample includes all firms reported by the Institutional Shareholder Services (ISS) from 2001 to 2004. Then, the sample is narrowed down by eliminating firms whose financial and accounting data do not exist on the Center for Research in Security

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The debate on optimal risk-taking requires a much more careful separate analysis and is thus beyond the scope of this study.

Prices (CRSP) or Standard & Poor's COMPUSTAT databases. The final sample consists of 7,015 firm-year observations from 2001 to 2004.

To gauge corporate governance quality, we employ year-end data on governance standards provided by the Institutional Shareholder Services (ISS). The scope of the governance data is very broad, encompassing 62 governance standards in eight categories as defined by ISS. The eight categories are audit issues, board structure and composition, other charter and bylaw provisions, director education, executive and director compensation, director and officer ownership, progressive practices, and laws of the state of incorporation related to takeover defenses.[2]

We employ two metrics to gauge the aggregate quality of corporate governance. First, similar to Brown and Caylor (2006) and Chung, Elder, and Kim (2010), we construct an index for each firm by assigning one point for each governance standard that is satisfied. We label this index "Gov-score." We ascertain whether a specific governance standard is met using the minimum standard provided in the *ISS Corporate Governance: Best Practices User Guide and Glossary* (2003). Second, we employ the metric computed by ISS to measure governance quality. We refer to this metric as "ISS-score." Although constructed based on the same governance standards, ISS-score is different from Gov-score because ISS-score allows interaction terms that occur in combination with others. For instance, ISS assigns more weight to a firm whose board consists of a majority of independent directors and whose key board panels (audit, nominating, and composition) are all composed of independent directors, than it assigns to each of those standards individually. Following the literature, in order to reduce skewness, we take the natural log of Gov-sore and ISS-score.

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[2] A full description of all governance factors provided by the Institutional Shareholder Services is available for download at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1805399

We measure the extent of corporate risk-taking in two ways. First, we calculate the standard deviation of daily stock returns in each year and use this variable as a proxy for total risk. Second, we regress daily stock returns on daily market returns. Then, we compute the standard deviation of the residuals from the regression. This variable represents the idiosyncratic risk as the effect of the broad market risk has been removed.

The summary statistics for the sample are shown in Table 1. We show the descriptive statistics for total risk as well as for idiosyncratic risk. Gov-score averages 22.94, suggesting that the sample firms satisfy on average 23 of a total of 62 governance factors. Our alternative measure of governance, ISS-score, averages 55.95. Table 1 also shows the summary statistics for a number of firm characteristics.

Based on prior literature, we include in the regression analysis the following control variables that may influence the extent of risk-taking; firm size (ln of total assets), profitability (EBIT/total assets), leverage (total debt/total assets), growth opportunities (capital expenditures/total assets), R&D spending (R&D/total assets), advertising spending (advertising/total assets), and asset tangibility (fixed assets/total assets). Finally, to capture variation over time and across industries, we include year as well as industry dummies (based on the first two digits of SIC).

III. Results

Table 2 shows the results of the regression analysis, where standard errors are adjusted for clustering at the firm level. Model 1 has total risk as the dependent variable. The coefficient of Gov-score is negative and significant. Likewise, in Model 2, we replace Gov-score with ISS-score. Again, ISS-score carries a negative and significant coefficient. The results demonstrate that firms with stronger governance tend to employ strategies that are less

risky. Effective corporate governance appears to help control risk-taking.[3] Managers are induced by compensation incentives to adopt more risky strategies. Strong corporate governance alleviates risky managerial behavior.[4]

So far, we measure the extent of risk-taking using total risk. Total risk may include market volatility that is beyond the control of management. Therefore, to be more precise, we employ a more refined measure of risk-taking, i.e. idiosyncratic risk. This is the portion of risk-taking that can be attributed directly to the firm. Model 3 has idiosyncratic risk as the dependent variable. The coefficient of Gov-score is negative and significant. In Model 4, we replace Gov-score with ISS-score and obtain a similar result, the coefficient of ISS-score being negative and significant. Our results appear to be robust as we use two alternative measures of risk-taking (total risk and idiosyncratic risk) and two alternative measures of corporate governance (Gov-score and ISS-score) and still obtain consistent results.[5]

To provide further insights, we execute additional tests that explicitly take into account the issue of endogeneity. In particular, we employ an instrumental variable analysis. This approach is less vulnerable to a number of empirical problems, such as measurement errors (do the governance measures capture the true quality of corporate governance?), reverse causality (does stronger governance lead to lower risk-taking or the other way

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[3] One additional analysis that could be performed to further corroborate the risk-seeking hypothesis is to divide the sample into two groups based on the sensitivity of the CEO compensation to the firm stock return volatility (vega). If the risk-seeking hypothesis is correct, it should be found that the effect of governance on risk reduction is more pronounced in one subsample than the other. This approach is actually adopted in Low (2009), who reports that the reduction in risk-taking in the face of increased takeover protection is concentrated among firms with low vega. Although we do not have sufficient data to explore this issue, we acknowledge it as an interesting notion worthy of investigation in future research (our thanks go to an anonymous referee for suggesting this test).

[4] We estimate that an improvement in governance quality by one standard deviation results in a decline in idiosyncratic risk by approximately 4.01%. A standard deviation in Ln (Gov-score) is 0.281. We multiply this number by the coefficient of Ln (Gov-score) in Table 2, which is -0.005. The result is -0.0014. The average idiosyncratic risk is 0.035. Therefore, a decline of 0.0014 represents a reduction of 0.0014/0.035 = 4.01%.

[5] Armstrong and Vashishtha (2012) do not include R&D and capital expenditures as control variables in their risk models. Since these are both channels through which managers implement their risk preferences, controlling for them weakens the association between the variable of interest and firm risk. As robustness tests, we exclude R&D and capital expenditures and re-estimate the regressions. The effect of corporate governance remains significant even after excluding these variables.

around?), and the omitted-variable bias (some unobservable characteristics may not be included in the model). This method calls for an instrumental variable that is exogenous. We select the passage of the Sarbanes-Oxley Act of 2002 as our instrumental variable. This law was imposed on all firms from outside and is likely exogenous. We create a dummy variable equal to one for the period after the enactment of SOX (after 2002) and zero otherwise. SOX mandates a number of governance standards that firms are required to adopt, resulting in more effective governance.

The results of the two-stage least square (2SLS) regression analysis are shown in Table 3. Model 1 is the first-stage regression, where the dependent variable is Gov-score. The coefficient of post-SOX is positive and significant, indicating that corporate governance is considerably stronger after the enactment of SOX, consistent with our expectations. Model 2 is the second-stage regression, where we regress the instrumented value of Gov-score from the first stage on idiosyncratic risk, while controlling for other firm characteristics. The coefficient of instrumented Gov-score is negative and significant. More effective governance indeed leads to lower risk-taking. Because the 2SLS analysis helps alleviate the endogeneity bias, our results do not seem to be driven by endogeneity and therefore appear to be robust.

It could be argued that the passage of SOX was motivated by excessive corporate risk-taking by certain firms such as Enron. Thus, the passage of SOX might not be truly exogenous. We alleviate this concern by concentrating on firms that did not take excessive risk before the passage of SOX. These firms were subject to the new law, although they did not take excessive risk. Therefore, for these firms, the passage of SOX was far more likely to be exogenous. We divide the sample firms into two subsamples based on the median value of the idiosyncratic risk before the passage of SOX. Then, we run a 2SLS analysis on the low-risk subsample. The result remains similar. Thus, even for these firms for whom the passage

of SOX was probably exogenous, we find that stronger governance leads to significantly less risk-taking.[6]

To further corroborate the results, we execute additional analysis based on propensity score matching. We regard those firms whose Gov-score is in the top quartile as our treatment group. We then use propensity score matching to identify a control group based on all the control variables in the regression analysis, seven variables altogether. Hence, our treatment and control groups are nearly identical along all seven dimensions, except one, i.e. Gov-score, which is our measure of corporate governance quality. The outcome variable is idiosyncratic risk. The results show that firms with more stringent governance exhibit significantly lower risk-taking (results not shown but available upon request). Therefore, the propensity score matching analysis confirms our conclusion.

The governance metrics provided by ISS consists of different categories of corporate governance. We hypothesize that not all governance categories influence the degree of risk-taking the same way. For instance, board governance may have a different impact than audit governance. As a result, we execute an additional analysis, where we regress idiosyncratic risk on each category of corporate governance. The results are shown in Table 4. Three categories of governance, i.e. Board, Ownership, and Compensation are negatively related to risk-taking. More stringent governance standards in these categories help rein in risk-taking. On the contrary, the Charter category is positively related to idiosyncratic risk,

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[6] To further minimize endogeneity, we execute additional tests as follows. The passage of SOX can be viewed as exogenous as it is imposed from outside the firm. However, some prior studies find that SOX influences the risk-taking incentives for executives (notably; Bargeron, Lehn, and Zutter, 2009; Cohen, Dey, and Lys, 2013). If this is the case, the passage of SOX may not meet the exclusion requirement. As robustness checks, we employ two alternative instrumental variables. In particular, following a number of prior studies, we use industry-average Gov-score as an instrument. Changes in governance at the industry level are beyond one firm's control and are more likely exogenous. Using this alternative instrument, we obtain consistent results. Second, we identify the earliest year in which each firm appears in the sample. Then, we employ Gov-score in the earliest year as the instrument. The idea is that governance quality in the earliest year could not have resulted from risk-taking in any of the subsequent years, thereby mitigating reverse causality. Again, the results are consistent. Finally, to address any possible endogeneity bias attributable to omitted variables, we employ the insight from Altonji, Elder, and Taber (2005) and find that selection from unobservables would have to be over 2.61 times stronger than selection on observables in order to explain away our conclusion. Although not impossible, it is unlikely that our conclusion is principally driven by unobservables.

whereas the rest of the governance categories are not significantly related to risk-taking. All in all, the results corroborate our hypothesis that different governance categories have differential effects on the extent of risk-taking. Shareholders should view various governance mechanisms with caution as they can have heterogeneous effects on corporate risk-taking.

IV. Conclusion

Motivated by agency theory, we seek to understand the effect of corporate governance on the extent of corporate risk-taking. Using the most comprehensive measures of corporate governance provided by the Institutional Shareholder Services (ISS), we find that firms with more effective governance exhibit a substantially lower degree of risk-taking. The results are consistent with the notion that managers, motivated by performance-based compensation contracts, tend to take more risk that would maximize their compensation. Effective governance, however, forces managers to cut back on the extent of risk-taking. The results are robust. We employ two alternative measures of corporate governance and two alternative measure of risk-taking and always obtain consistent results.

To minimize endogeneity, we take advantage of the passage of the Sarbanes-Oxley Act of 2002 (SOX). This event is imposed from outside the firm and can be considered an exogenous shock that affects the quality of corporate governance of all firms at the same time. Using the passage of SOX as the instrumental variable, our 2SLS analysis confirms that stronger governance does indeed lead to lower risk-taking. Overall, our results demonstrate that effective governance is not only associated with, but rather, brings about significantly less risk-taking. An analysis based on propensity score matching also confirms this conclusion. Further analysis also shows that not all governance categories have the same effects on risk-taking. Some categories such as Board, Ownership, and Compensation have larger effects than others.

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Table 1: Descriptive statistics

Total risk is calculated as the annualized standard deviation of daily stock returns. Idiosyncratic risk is estimated as the standard deviation of the error term from a regression of daily stock returns on daily market returns. Gov-score and ISS score are based on the governance data provided by the Institutional Shareholder Services (ISS). Total assets are in thousands of dollars.

	Mean	Median	S.D.	25th	75th
Total risk (S.D. of daily returns)	0.034	0.030	0.018	0.022	0.042
Idiosyncratic risk	0.035	0.031	0.017	0.024	0.044
Gov-score	22.94	22.00	6.35	18.00	28.00
ISS-score	55.95	56.30	12.97	46.10	65.60
Total assets	3120	445	17491	126	1587
EBIT/Total assets	0.047	0.069	0.194	0.016	0.127
Total debt/Total assets	0.200	0.172	0.197	0.015	0.317
Capital expenditures/Total assets	0.075	0.033	0.209	0.017	0.064
R&D/Total assets	0.053	0.003	0.127	0.000	0.061
Advertising/Total assets	0.010	0.000	0.028	0.000	0.009
Fixed assets/Total assets	0.051	0.034	0.053	0.019	0.064

Table 2: Regression analysis of the effect of corporate governance on the extent of risk-taking

Total risk is calculated as the annualized standard deviation of daily stock returns. Idiosyncratic risk is estimated as the standard deviation of the error term from a regression of daily stock returns on daily market returns. Gov-score and ISS score are based on the governance data provided by the Institutional Shareholder Services (ISS). Total assets are in thousands of dollars. Industry dummies are based on the first two digits of the SIC.

*, **, *** denote statistical significance at the 10%, 5%, and 1% respectively

Dependent Variable	(1) Total Risk	(2) Total Risk	(3) Idiosyncratic Risk	(4) Idiosyncratic Risk
Constant	0.065*** (15.36)	0.076*** (16.60)	0.065*** (15.35)	0.075*** (16.51)
Ln(Gov-Score)	-0.003*** (-3.35)		-0.003*** (-3.12)	
Ln(ISS-Score)		-0.005*** (-6.34)		-0.005*** (-6.00)
Ln(Total Assets)	-0.004*** (-23.72)	-0.004*** (-24.24)	-0.004*** (-22.36)	0.004*** (-22.83)
EBIT/Total Assets	-0.026*** (-13.67)	-0.026*** (-13.57)	-0.026*** (-13.61)	-0.026*** (-13.51)
Total Debt/Total Assets	0.012*** (5.13)	0.011*** (4.99)	0.011*** (4.99)	0.011*** (4.86)
Cap. Expenditures/Total Assets	0.000 (0.04)	0.000 (0.03)	0.000 (0.00)	-0.000 (-0.02)
R&D/Total Assets	0.012** (2.18)	0.013** (2.21)	0.013** (2.22)	0.013** (2.25)
Advertising/Total Assets	0.004 (0.49)	0.003 (0.42)	0.003 (0.44)	0.003 (0.38)
Fixed Assets/Total Assets	-0.009 (-1.59)	-0.009 (-1.62)	-0.008 (-1.51)	-0.008 (-1.54)
Year Dummies	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes
R^2	48.95%	49.27%	48.71%	49.01%

Table 3: Two-stage least squares (2SLS) analysis of the effect of corporate governance on risk-taking

Total risk is calculated as the annualized standard deviation of daily stock returns. Idiosyncratic risk is estimated as the standard deviation of the error term from a regression of daily stock returns on daily market returns. Gov-score and ISS score are based on the governance data provided by the Institutional Shareholder Services (ISS). Total assets are in thousands of dollars.

*, **, *** denote statistical significance at the 10%, 5%, and 1% respectively

Dependent Variable	First Stage Ln(Gov-Score)	Second Stage Idiosyncratic Risk
Constant	2.488***	0.117***
	(51.16)	(27.94)
Post-SOX	0.461***	
	(97.34)	
Ln(Gov-Score), instrumented		-0.024***
		(-32.11)
Ln(Total Assets)	0.053***	-0.003***
	(39.52)	(-26.74)
EBIT/Total Assets	-0.013	-0.026***
	(-0.96)	(-26.96)
Total Debt/Total Assets	-0.078***	0.010***
	(-6.34)	(10.55)
Cap. Expenditures/Total Assets	-0.003	-0.000
	(-0.23)	(-0.13)
R&D/Total Assets	0.016	0.013***
	(0.78)	(8.81)
Advertising/Total Assets	0.117	0.005
	(1.47)	(0.90)
Fixed Assets/Total Assets	-0.073	-0.010**
	(-1.26)	(-2.46)
Industry Dummies	Yes	Yes
R^2	59.52%	44.75%

Table 4: The effect of governance categories on idiosyncratic risk

The governance categories are classified by ISS. A full description of all governance factors provided by the Institutional Shareholder Services is available for download at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1805399. All the regressions include the same control variables as those in Table 2 and Table 3.

*, **, *** denote statistical significance at the 10%, 5%, and 1% respectively

	1	2	3	4	5	6	7
Constant	0.058***	0.057***	0.056***	0.057***	0.061***	0.056***	
	(16.92)	(16.53)	(16.60)	(16.68)	(17.52)	(16.47)	
Board	-0.000***						
	(-2.80)						
Audit		0.000					
		(1.67)					
Charter			0.000***				
			(2.68)				
Ownership				-0.001***			
				(-4.81)			
Compensation					-0.001***		
					(-7.49)		
Progressive						-0.000	
						(-1.50)	
Director Education							-0.001
							(-1.07)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	48.70%	48.65%	48.70%	48.85%	49.09%	48.64%	48.63%

Highlights

- We assess the effect of corporate governance on the extent of risk-taking.

- More effective governance leads to significantly less risk-taking.

- We use comprehensive governance metrics provided by ISS.

- The 2SLS analysis and propensity-score matching confirm the results.