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Political Institutions and Corporate Risk-Taking: International Evidence

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Abstract

Tapping into firm-level accounting data across 90 countries over a 26-year period, we find that sound political institutions are positively associated with corporate risk-taking. This result is economically significant, robust to alternative proxies for corporate risk-taking and political institutions, and continues to hold after mitigating endogeneity concerns of political institutions. We also collect evidence that sound political institutions may compensate for weak legal institutions in inducing corporate risk-taking. We argue that sound political institutions improve the investment environment for firms and can induce higher levels of corporate risk-taking, which is ultimately associated with economic growth.

Keywords: Bowman's risk-return paradox, prospect theory, behavioural theory of the firm, managerial risk-taking
JEL Classification: G31, G32, G34

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Abstract

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1. Introduction

Corporate risk-taking is critical to the study of management (Wright et al., 1996). It has implications for firms' performance, growth, and their ability to compete and hence firms' survival (Bromiley, 1991). Moreover, at the national level, John, Litov, and Yeung (2008) show that corporate risk-taking is positively associated with both economic growth and total factor productivity growth; and Acemoglu and Zilibotti (1997) show that corporate risk-aversion slows down the capital accumulation process, thus impeding economic development. The study of corporate risk-taking is therefore both of interest at the firm-level and country-level.

Whereas an extensive theoretical literature exists on how factors internal to the firm impact corporate risk-taking (Bromiley et al., 2005), there is also a growing literature on the impact of environmental factors, which are external to the firm and outside the control of managers (Boubakri et al., 2013; Tran, 2019; Vural-Yavas, 2021). Among these environmental factors are political institutions, which define the political environment and constrain managerial decision-making. In an international setting, where managers face starkly different political environments, it is of both academic interest and practical significance to understand how corporate investment behaviour may be shaped by the quality of a country's political institutions. Within the context of a growing consensus that formal institutions matter in shaping incentives and hence economic outcomes (Glaeser et al., 2004), this study asks whether the quality of political institutions (i.e., the effectiveness of checks and balances on political action) influences corporate risk-taking. In doing so, we add to the growing literature on the determinants of corporate risk-taking.

This paper draws upon a panel dataset for 47,613 firms in 90 countries over 26 years by match-merging multiple databases. We conduct a panel regression to determine the extent to which variation in corporate risk-taking may be explained by the quality of prevailing political institutions. We make several contributions to the existing literature. First, our study is the largest investigation of corporate risk-taking to date, with a sample period spanning from 1993 to 2019. This long sample period enables us to analyse a period of significant political change across the world. Second, whereas most of the empirical work in the corporate risk-taking literature uses data from a single country, our study is one of only a few to expand the scope

of empirical analysis internationally. Finally, we extend the literature by finding that sound political institutions may compensate for weak legal institutions in inducing corporate risk-taking; and smaller firms' risk-taking is more sensitive to changes in political constraints than larger (possibly politically connected) firms.

The remainder of this paper is organised as follows. Section 2 provides a review of the theoretical and empirical risk-taking literature. Section 3 discusses the theoretical mechanisms which underpin our hypothesis. Section 4 presents the data used and justifies our measures of corporate risk-taking and political institutions. We then present the empirical estimation framework and comment on the obtained results in Section 5. Finally, we draw concluding remarks in Section 6.

2. Related Literature

Our research sits at the intersection of various interesting bodies of research within management and corporate finance. This section provides background context on the different strands of research we have drawn from.

2.1 Definition and measurements of corporate risk-taking

Scholars refer to 'risk-taking' by conceptualizing strategic decision-making as choosing between different risky choices (March and Shapira, 1987). Managerial risk-taking, defined as management's strategic choices between uncertain outcomes, is distinguished from organizational risk, which refers to the subsequent uncertainty of a firm's future earnings stream. Put simply, however, managerial risk-taking ultimately determines organizational risk (Hoskisson et al., 2017). Baird and Thomas (1985) and March and Shapira (1987) find that managers' understanding of risk generally conflicts with Knight's (1921) definition. Knight distinguishes risk from uncertainty. Whereas risk exists when the probability distribution of outcomes is known, uncertainty exists when the probability distribution of outcomes is unknown. Most strategic decisions involve uncertainty since few strategic business decisions have clear alternatives with known payoff probabilities.

Bowman's (1980) seminal study finding the existence of a 'risk-return paradox' is considered as the starting point in the corporate risk-taking literature. He studies the risk-return relationship by measuring the mean return on equity (ROE) and (ex-post) variance in ROE. He finds that "business risk and (accounting) return are negatively correlated" across firms within industries. This has motivated a rich stream of research and several theoretical explanations (See the discussions in Baird and Thomas, 1985; Bromiley, 1991; Miller and Bromiley, 1990; Miller and Chen, 2004). Subsequent risk research within the management literature reveals some degree of disagreement regarding the definition and measurement of risk; and different theoretical perspectives on risk have been formulated based on the economics, finance, and psychology literature. Fiegenbaum (1990) and Miller and Bromiley (1990) compare different risk measures and argue these reflect different stakeholders' perspectives on firm risk. For example, the variability in stock returns reflects risk to shareholders, whereas variability in sales more accurately reflects risk to input suppliers.

In general, empirical risk research within the management literature attempts to measure ex-ante risk by using a variety of ex-post proxies for risk. Most commonly, the variability of accounting returns (ROA or ROE) is used, based on the notion that riskier corporate operations lead to higher volatility in returns to capital (John et al., 2008). For example, Ashraf (2017) calculated a ROA-based Z-score to measure bank risk-taking; and Boubakri et al. (2013)

developed four corporate risk-taking measurements based on the country-adjusted standard deviation of ROA.

There are other measurements using a direct measure of ex-ante risk, such as the standard deviation of analysts' earnings per share forecasts ((Bromiley, 1991; Deephouse and Wiseman, 2000; Palmer and Wiseman, 1999; Wiseman and Bromiley, 1996) or R&D investment (Fang et al., 2021; Sun et al., 2021; Xu et al., 2019). There are still debates on the reliability of these direct measurements. For example, Bromiley et al. (2017) found that R&D is not a good measurement of risk-taking. As we need the most general measurement that can be applied to companies from across the world, and many different industries. Therefore, the ROA/ROE measurement is the most appropriate.

2.2 Drivers of corporate risk-taking

The corporate risk-taking literature assumes that risk preferences influence risk choices and thus investigates the relationship between antecedents associated with risk preferences and organizational risk (Bromiley, Miller, and Rau, 2017). Two main theories dominate the risk-taking literature: prospect theory and the behavioural theory of the firm (Hoskisson et al., 2017).

Prospect theory shows individuals measure payoffs relative to a reference point, which is generally informed by their current level of wealth and expectations (Kahneman and Tversky, 1979). Individuals evaluate between probabilistic choices using a value function that is convex below the reference point (risk-seeking) and concave above it (risk-averse). Based on insights from prospect theory, many studies (see, for example, Bowman (1982), Fiegenbaum (1990), Fiegenbaum and Thomas (1988), Fiegenbaum (1990), Jegers (1991) all find evidence that firms performing poorly relative to their reference point will be risk-seeking, while firms performing above their reference point will be risk-averse, where the reference point is informed by the average firm performance within the industry.

On the other hand, (Holmes et al., 2011) argue prospect theory is an inappropriate theoretical framework to explain corporate risk-taking behaviour for three reasons. First, prospect theory is based on experimental research of individual attitudes to risk in a controlled setting in which 'extraneous' organizational factors do not exist, whereas corporate risk-taking may be dominated by organizational factors such as anchoring and adjustment. Second, they argue that the application of prospect theory to corporate settings "must assume that because a firm has below industry returns, all its options have negative expected values", since Kahneman and Tversky's experiment questions consisted of choices (of generally constant expected value) either in the domain of gains or in the domain of losses. Third, prospect theory explains behaviour in a certain environment between risky choices of known probability, as opposed to an uncertain environment between risky choices of unknown probability. Other evidence against PT: (Bromiley, 2009, 2010)

Cyert and March's (1963) behavioural theory of the firm (BTOF) draws from Simon's (1955) seminal work on decision-making within organizations. Unlike prospect theory, the BTOF is a group-level theory that explains corporate decision-making in terms of a political bargaining process between the different groups which constitute an organization (Hoskisson et al., 2017). In the BTOF model, firms' strategies are a function of the attainment discrepancy between firms' aspired performance level and firms' realized performance level. If performance is above the aspiration level, the firm continues to operate according to its established routines; on the other hand, if the performance falls below the aspiration level, the firm searches for ways to improve, thereby increasing corporate risk-taking. The theory fits reality well. For

example, Bromiley (1991) finds low performance drives risk-taking; Singh (1986) finds that greater levels of risk-taking are associated with performance falling below the aspiration level determined by the firm's past performance and the performance of the median firm in the industry.

Consistent with the BTOF model, Greve (1998) more recently argues managers can "pay sequential attention to goals and apply aspiration levels to each goal". Greve extends the literature, which thus far focused on performance (as measured by profitability), by proposing that managers have both performance and size aspirations through social comparison. Exploiting Norwegian insurance firms' accounting data, Greve also finds that managers are more likely to increase corporate risk-taking when firm size is below its aspired level.

We draw from the existing corporate risk-taking literature, which predicts a negative relationship between corporate risk-taking and both firms' profitability and size. This study contributes to this existing research on the determinants of corporate risk-taking by looking beyond the impact of firm-specific characteristics - focusing on how the political environment (at the country level) influences corporate risk-taking.

2.3 Institutions and corporate risk-taking

Institutional factors differ significantly across countries and can significantly alter firms' operating environment and hence managers' risk choices. Consequently, efforts have been made to investigate the impact of institutional environmental factors on corporate risk-taking. Acharya et al. (2011) document how firms' investment choices are impacted by creditor rights. They estimate a probit model, using acquisition data in 38 countries between 1994 and 2008. They find that stronger creditor rights reduce corporate risk-taking. On the other hand, John et al. (2008) examine the relationship between shareholder protection and corporate risk-taking using panel data covering manufacturing firms in 39 countries between 1992 and 2002. They find better shareholder protection leads firms to undertake riskier value-enhancing investments.

Whereas Acharya et al. (2011) and John et al. (2008) study how countries' different legal protections (creditor protection and shareholder protection) impact corporate risk-taking, this study goes further by investigating how countries' political institutions impact corporate risk-taking. Studying the impact of political institutions is important for two reasons. First, political institutions underlie the constancy of the legal system by influencing political stability (Qi et al., 2010). Second, the political environment can be subject to rapid change and can drastically alter managers' decision-situations.

Some research has emerged focussing on how political uncertainty may impact corporate risk-taking. Boubakri et al. (2013) study a large sample of non-financial firms' accounting data across 77 countries between 1988 and 2008. They model the determinants of corporate risk-taking with a focus on the quality of political institutions, as measured by the level of political constraints on the executive branch. They find robust evidence that sound political institutions with strong political constraints are positively associated with corporate risk-taking; and this relationship is stronger when government extraction is higher.

In a similar vein, Tran (2019) and Vural-Yavas (2021) examine how economic policy uncertainty, arising from the political decision-making process, impacts corporate risk-taking. Both Tran (2019) and Vural-Yavas (2021) use Baker, Bloom, and Davis' (2016) news-based index to measure economic policy uncertainty. Whereas Tran studies a sample of firms across 18 countries during the short 2005-2006 sample period, Vural-Yavas studies a sample of firms

across 15 developed European countries over the longer 1999-2017 sample period. Both Tran and Vural-Yavas find economic policy uncertainty is negatively associated with corporate risk-taking; and this effect is conditioned by how favourable the macroeconomic conditions are and industry competition.

This study builds upon Boubakri et al. (2013), Tran (2019) and Vural-Yavas (2021) by investigating the relationship between the quality of political institutions and corporate risk-taking using a much larger dataset in terms of the number of observations, countries covered, and sample period. Our hypothesis is, on balance, sound political institutions (ceteris paribus) induce greater levels of corporate risk-taking through the aforementioned channels of causation.

3. Data and variables

4.1. Data source

To test our conjecture, we search for a database that tracks individual firms' accounting information over a sufficiently long time period. For this purpose, we use data from S&P Global Market Intelligence, which aggregates SNL Financial and S&P Capital IQ data. We extract data from the most recent period for which data is available (end of 2019) to 1993, which is as far back as the service allows, given the data download quota. For all the public firms tracked by S&P globally, we collect firms' accounting data on a calendar year basis and general business information (country in which the firm is headquartered[2], industry group etc.).

We follow the empirical finance literature by excluding firms within the financial industry with standard industrial classification (SIC) codes between 6000 and 6999 because their accounting ratios, such as profitability and leverage, are interpreted differently and hence difficult to compare to firms in other industries. For example, high leverage is common for financial firms but likely indicates distress for non-financial firms. Moreover, financial firms' risk-taking behaviour is influenced significantly by regulation (Faccio et al., 2016; Laeven and Levine, 2009). We also exclude firms for which the data to calculate risk-taking measures (described in later section) is not available and firms with negative total assets (Yung and Chen, 2018). To mitigate survivorship bias of firms taking less risk, we include all active and non-active firms.

In addition to the firm-level data, we also collect country-level data from the Wharton Management department, the International Country Risk Guide (ICRG), the World Bank's World Development Indicators, Hofstede Insights, and Freedom House. These datasets provide the data for the country-level control variables and our primary variable of interest- the political constraints index, which measures the quality of political institutions. Our final sample yields 47,613 firms, spread across 90 countries, representing 250,182 firm-year observations. To the best of our knowledge, this is the largest sample in the corporate risk-taking literature in terms of the number of firms, countries, and sample period length.

[2] S&P Market Intelligence does not track multinational firms explicitly, hence certain firms may technically be assigned a single country even though it operates in multiple countries through its subsidiaries and affiliates. However, the risk of bias is small because many multinational firms such as Unilever also have publicly listed subsidiaries (Unilever Nigeria plc, Unilever Ghana plc, Unilever Indonesia Tbk etc.)

4.2. Corporate risk-taking variables

The volatility of returns is a standard measure for risk in the finance literature. Riskier investment decisions by managers lead to corporate operations with more volatile returns. Therefore, we use the volatility of a firms' cashflows relative to total assets as a proxy to capture the overall risk taken by firms (Beaver et al., 1970). We measure this by calculating the standard deviation of return on assets (ROA), computed as the ratio of earnings before interest, tax, and depreciation (EBITDA) to total assets.

Following Faccio et al. (2016), our primary risk-taking measure, *RISK1*, is computed as the standard deviation of ROA over 5-year overlapping intervals during the period 1993-2019. Macroeconomic economic volatility likely influences this measure of firm-level risk-taking. Indeed, firms may find themselves in situations of more or less risk than the managers anticipated when making earlier ex-ante strategic decisions (Harrison and March, 1984). Hence, to mitigate concerns that stable strategies are misidentified as risky due to a changing macro-environment, we country-adjust this measure by computing the volatility of deviations of the firm's earnings from the country average in that year.

We include alternative proxy measures for corporate risk-taking to ensure results are robust. As in Boubakri et al. (2013), we compute *RISK2* as the range of ROA over a 5-year interval. Also, as in John et al. (2008), the risk-taking measure for the cross-sectional regressions is computed as the standard deviation of country-adjusted ROA over the entire sample period, requiring at least 5 firm-year observations.

4.3. Political institutions variables

We use Henisz' political constraint index[3] as our primary measure of political institutions. This index is widely used in the literature (Jensen, 2008). The political constraints index is evaluated yearly for almost all countries in the world and is available over our entire sample period (1993-2019). The political constraints index directly measures how effectively a government can credibly commit not to interfere with private property rights ex-ante, as opposed to measuring government performance ex-post. It compares well relative to other indices with more limited geographic coverage, while not exhibiting their respective drawbacks (see Henisz, 2000 for an extensive critical review of political institutions indices). The Henisz' political constraint index ranges from 0 to 1, where a higher score reflects stronger political institutions in which policy discretion is lower because political actors are more constrained in setting their preferred policy. The degree of political constraints is derived from quantifying the strength of institutional checks and balances in the political system.

To verify the robustness of our results, we also use an alternative proxy of our measure of the quality of political institutions. Similar to Boubakri et al. (2013), our alternative measure of the strength of political institutions comes from the PRS Group's International Country Risk Guide (ICRG) measure of how responsive a government is to its people. In more democratic countries, governments tend to be more constrained in setting policies as they need to take into account the preferences of heterogeneous voters. Thus, democratic institutions tend to be more politically stable and carry less political risk, as unpredictable erratic policy changes carry large reputation costs for politicians (Jensen, 2008; Tsebelis, 2002). The ICRG's democratic accountability score takes a value between 0 and 6, where a higher score is assigned to sound

[3] Henisz constructs several indices, we use his most comprehensive index POLCON V, which was updated in 2016.

political institutions with low political risk and a low score is assigned to unsound political institutions with higher political risk.

4.4. Control variables

The existing corporate risk-taking research suggests firms' risk-taking behaviour is influenced by both external country-level factors and internal firm-level factors. To mitigate the risk of omitted variable bias, we include these factors in our regression models.

At the country level, we control for the quality of the legal environment and economic growth (Acharya et al., 2011; Favara et al., 2017; Gupta and Krishnamurti, 2018). For economic conditions, we use real GDP growth rate, as measured by the World Bank. We adopt the ICRG law and order index to control for influence of legal environment on corporate risk-taking. This index ranges between 0 and 6 and reflects both the impartiality of the legal system and the effectiveness of enforcement. Higher scores reflect the strength of the legal system across both of these dimensions.

The firm-level control variables are firm profitability, size, growth, and leverage. We control for the expected negative relationship between risk-taking and profitability, which we measure as a firm's return on assets (EBITDA/Total assets). The corporate risk-taking literature shows a negative relationship between firm size and corporate risk-taking because managers are more likely to have reached their aspired firm size (Greve, 2008) and larger firms also benefit from lower earnings volatility due to diversification across product lines (Ding et al., 2015; Koirala et al., 2020). We thus control for firm size, as measured by the natural logarithm of total assets expressed in millions of USD. Evidence shows that a firm's financial risk constrains its risk-taking capacity, hence leverage is negatively associated with corporate risk-taking (Gupta and Krishnamurti, 2018). We control for firms' capital structure, as measured by the leverage ratio (Total debt/total assets). Gupta and Krishnamurti (2018) and Boubakri et al. (2013) find a negative relationship between asset growth and corporate risk-taking. We follow the literature by controlling for firm-specific growth opportunities, as proxied by the annual compound growth rate in total assets in USD over the period over which the earnings volatility is calculated.

Finally, to mitigate the effect of extreme outliers, we winsorize our firm-level variables on both tails of the distribution at the 1% level.

4. Empirical Estimation

5.1. Empirical strategy

By employing a model with year and firm fixed effects, we control for unobservable risk factors which vary but are common to firms operating within a certain country, industry, or time period. We employ a fixed-effects model over a random-effects model after running the Hausman test. At the 1% significance level, we reject the Hausman test's null hypothesis that the random-effects model is preferred because its estimates are both consistent and efficient.

The baseline model we estimate is the following:

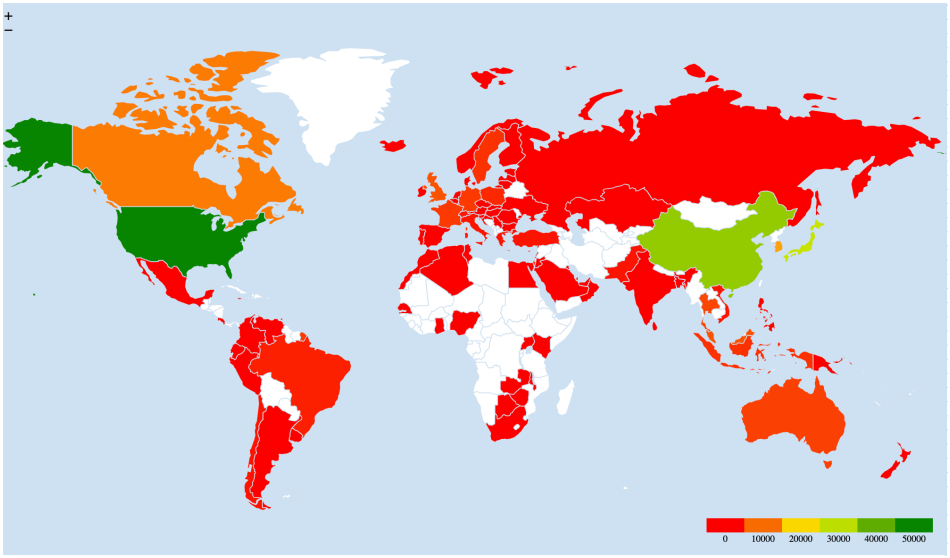
$$Risk1_{it} = \alpha_0 + \beta_1 POLCON_{it} + \beta_2 RGDPG_{it} + \beta_3 LAW\_ORDER_{it} + \beta_4 ROA_{it} + \beta_5 DTA_{it} + \beta_6 GROWTH_{it} + \beta_7 SIZE_{it} + \mu_{i,t}\ , \quad (1)$$

where $Risk1_{it}$ represents the risk-taking proxy for firm i at time t. $POLCON_{it}$ is the Henisz's political constraints index score. $RGDPG_{it}$ is the national real GDP growth rate. LAW_ORDER_{it} is the ICRG law and order index. ROA_{it} is firm's return on assets at time t. DTA_{it} is the debt to asset ratio. $GROWTH_{it}$ is the annual compound growth rate in total assets. $SIZE_{it}$ is the natural logarithm of total assets expressed in millions of USD. As in John et al. (2008), to mitigate concerns that firm-level variables and corporate risk-taking are jointly determined, all our independent variables enter at the end of our first year of the period over which the earnings volatility is calculated. β_1 is the focus of this study and shows how sensitive corporate risk-taking is to changes in political constraints. A positive coefficient would show that sound political institutions are associated with higher levels of corporate risk-taking. The descriptive statistics of all variables included in Equation (1) can be found in Table 1.

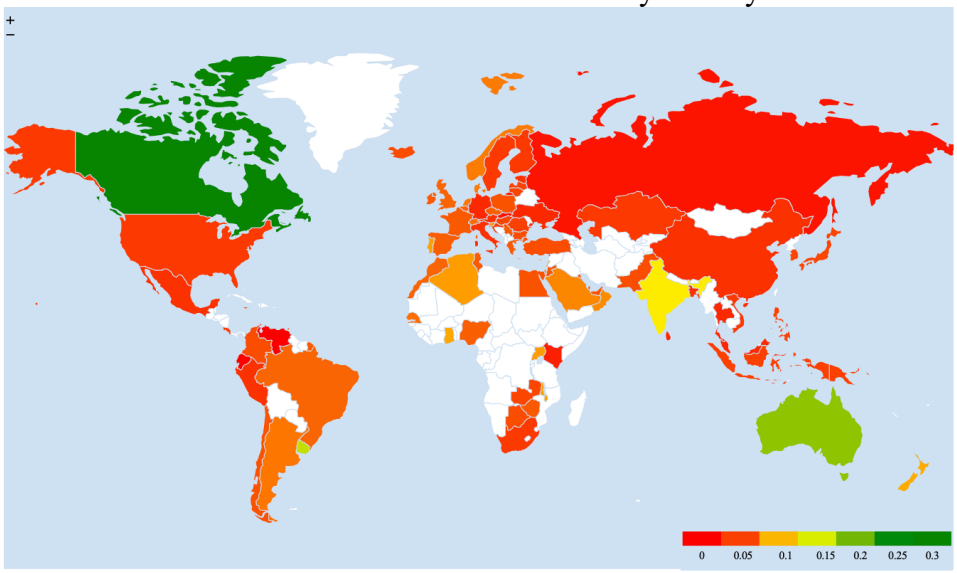
The number of observations and the value of the primary risk-taking proxy (*RISK1*) and the political institutions measure (*POLCON*) by country are shown in Figure 1. We observe large variation in all graphs. Upon visual inspection, there seem to be a positive relationship between *POLCON* and *RISK1*. This is confirmed in the preliminary bi-variate correlation analysis in Table 2, where firms in countries with sound political institutions are associated with higher levels of risk-taking. The remaining coefficients also show that corporate risk-taking is positively correlated with the strength of the legal environment, firm leverage, and average 5-year total assets growth. Corporate risk-taking is also negatively correlated with size, profitability and *RGDPG*. To control for potential confounding effects, we use a multivariate framework to investigate how political institutions affect corporate risk-taking.

Table 1: Descriptive statistics of regression variables

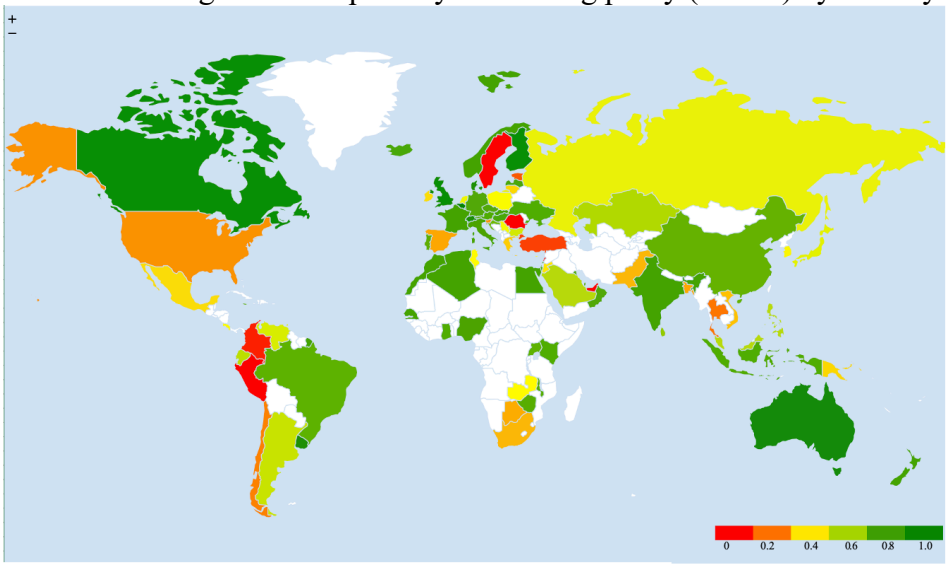
Variable	Mean	Median	Standard Deviation	Minimum	Maximum
RISK1	0.083	0.037	0.151	0	1.387
RISK2	0.193	0.082	0.353	0	2.529
RISK3	0.148	0.067	0.208	0	1.283
POLCON	0.632	0.754	0.299	0	0.894
DEMOCRACY	4.687	5.500	1.711	0	6
RGDPG	3.549	3.013	3.462	-17.669	26.170
LAW_ORDER	4.698	5.000	1.011	0.5	6
SOCIO_ECO	7.995	8.333	1.594	0.5	11
CORRUPTION	3.486	3.500	1.167	0	6
FOTP	1.383	2.000	0.853	0	2
ROA	0.018	0.086	0.351	-2.192	0.337
DTA	0.248	0.182	0.361	0	3.579
GROWTH	0.101	0.060	0.233	-0.455	1.301
SIZE	4.945	4.991	2.341	-3.912	10.277



Panel A: Number of observations by country



Panel B: Average value of primary risk-taking proxy (*RISK1*) by country



Panel C: Political institutions measure (*POLCON*) by country

Figure 1: Sample size and average value of key variables by country

Table 2: Correlation coefficients

	RISK1	POLCON	LAW_ORDER	RGDP	ROA	DTA	GROWTH
POLCON	0.182						
LAW_ORDER	0.202	0.526					
RGDP	-0.059	-0.626	-0.284				
ROA	-0.638	-0.158	-0.161	0.085			
DTA	0.210	0.053	0.025	-0.040	-0.383		
GROWTH	0.073	-0.123	0.000	0.161	-0.138	0.070	
SIZE	-0.490	-0.047	-0.071	-0.029	0.470	-0.121	-0.208

5.2. Main findings and discussions

Table 3 presents the estimation results of regressing corporate risk-taking measures on political institutions measures, while controlling for time and firm fixed effects. Model 1 illustrates the results of our baseline model specification, using the *POLCON* index as the proxy for the quality of political institutions. Model 2 uses the democracy index (*DEMOCRACY*) as an alternative proxy for political institutions. Models 3 and 4 show the results for alternative risk-taking measures *RISK2* and *RISK3*. Model 5 shows the results for the model containing additional controls suggested by Qi et al. (2010) and Boubakri et al. (2013) for certain measurable channels of causation through which political institutions may influence corporate risk-taking.

We correct standard error estimates by reporting robust standard errors clustered at the firm level. The models explain between 41.8% and 56.16% of overall variation. This is slightly higher than the previous empirical risk-taking literature (Faccio et al., 2016; Faccio et al., 2011; John et al., 2008). The control variables are also significantly associated with corporate risk-taking; their signs are consistent across model specifications and are in line with the risk-taking literature. Specifically, *RGDPG* is positively associated with corporate risk-taking. Similar to Boubakri et al. (2013) and certain specifications in John et al. (2008), the *LAW_ORDER* coefficient loads negative. At the firm level, initial profitability is negatively associated with corporate risk-taking. This relation is in line with Faccio et al. (2011), Boubakri et al. (2013), Faccio et al. (2016). Initial leverage is not significantly associated with corporate risk-taking. This result is unsurprising given the contradictory results in the previous risk-taking literature (Bernile et al., 2018; Faccio et al., 2016; Gupta and Krishnamurti, 2018; Koirala et al., 2020). Consistent with Gupta and Krishnamurti (2018) and Boubakri et al. (2013), firm growth is negatively associated with corporate risk-taking. Consistent with Ding et al. (2015), Favara et al. (2017), and Koirala et al. (2020), firms of larger (initial) size are associated with less corporate risk-taking.

We now turn our attention to the key variables in this study, *POLCON*. In Model 1, the political constraints coefficient is positive and statistically significant at the 1% level. The coefficient is also economically significant, as an increase in political constraints by one standard deviation is associated with a 4.78% increase in corporate risk-taking from 0.083 to 0.0873, whereas a one standard deviation increase in *RGDPG* is associated with an approximately 1.66% increase in corporate risk-taking from 0.083 to 0.0847. However, this estimate is lower in magnitude than Boubakri et al. (2013) who find an equivalent increase in political constraints leads to a 9% increase in corporate risk-taking, based on a smaller dataset spanning a sample period between 1980 and 2008. However, Boubakri et al. (2013) did not control firm fixed effect in their multivariate regression models. Therefore, their political constraints coefficients might be overestimated.

In Model 2, the coefficient of *DEMOCRACY* is also positive and statistically significant at the 1% level but is lower in economic significance. The difference between Models 1 and 2 should be interpreted alongside the correlation coefficient of 0.88 between *DEMOCRACY* and *POLCON*. The correlation suggests that while democracies are strongly associated with sound political institutions that constrain political actors, some democracies may nevertheless be unstable, thus generating policy risk. As Henisz (2000) lucidly observes, although it may seem reasonable to expect a democracy to create a political environment that is more conducive to investment than autocratic governments, specific cases cast doubt over this assumption. For example, do democracies such as "Lesotho, Russia, Mongolia or Benin (as of 1994), truly provide better investment climates than do Singapore or Taiwan?".

Model 3 shows that our finding that sound political institutions induce more corporate risk-taking is robust to the alternative risk-taking measure *RISK2*. Model 4 also shows this finding to be robust, at the 1% significance level, in a cross-sectional regression using *RISK3* as a measure of corporate risk-taking, where every firm is only included once in our regression and hence the number of observations drops from 250,104 to 23,741. The model is estimated using multivariate linear regression with industry dummies. Both models give a positive and significant coefficient estimate for *POLCON*. The effect of political institutions is robust to alternative measurements of corporate risk-taking.

To shed light on the channels of causation through which political institutions may impact corporate risk-taking, Model 5 includes variables for socioeconomic conditions (*SOCIO_ECON*), corruption (*CORRUPTION*), and press freedom (*FOTP*). The socioeconomic conditions score is computed yearly by ICRG and ranges from 0 to 12, where a higher score reflects good socioeconomic conditions. It is assessed based on consumer confidence, the level of unemployment, and poverty. The corruption score is also computed yearly by ICRG and ranges from 0 to 6, where a higher score reflects higher corruption risk within the political system. It is assessed based on both financial corruption, such as bribes in exchange for special licencing and police protection; and insidious non-financial corruption, such as excessive patronage, nepotism, and exchange of favours. The press freedom score from Freedom House measures the quality of the information environment. It ranges from 0 (not free) to 2 (free); and is assessed based on the freedom of both print and broadcast media. According to Qi et al. (2010), this is the main channel of causation through which political risk affects firms' cost of debt. As predicted, Model 5 shows that corruption is negatively associated with corporate risk-taking and press freedom is positively associated with corporate risk-taking, but the coefficients are statistically insignificant. On the other hand, socioeconomic conditions are positively related to corporate risk-taking and statistically significant. Its addition does not, however, weaken the impact of *POLCON* on corporate risk-taking. Hence, the impact of sound political institutions on corporate risk-taking is not subsumed by the inclusion of variables that proxy for some channels of causation.

Table 3: Regression outputs

Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5
	Baseline Specification	Democratic	RISK2	RISK3	Additional Controls
POLCON	0.0133***		0.0288***	0.0445***	0.0153***
	(0.0023)		(0.0056)	(0.0032)	(0.0024)
DEMOCRACY		0.0018***			
		(0.0007)			
RGDP	0.0004***	0.0003***	0.0005**	0.0023***	0.0002**
	(0.0001)	(0.0001)	(0.0002)	(0.0003)	(0.0001)
LAW_ORDER	-0.0014	-0.0007	-0.0027	0.0245***	-0.0036***
	(0.0008)	(0.0008)	(0.0019)	(0.0009)	(0.0009)
SOCIO_ECO					0.0026***
					(0.0003)
CORRUPTION					0.0009
					(0.0007)
FOTP					-0.0004
					(0.0009)
ROA	-0.1249***	-0.1263***	-0.2616***	-0.1793***	-0.1260***
	(0.0048)	(0.0048)	(0.0112)	(0.0048)	(0.0048)
DTA	-0.0033	-0.0021	-0.0092	-0.0046	-0.0019
	(0.0030)	(0.0029)	(0.0067)	(0.0044)	(0.0029)
GROWTH	-0.0539***	-0.0544***	-0.1323***	-0.0684***	-0.0551***
	(0.0042)	(0.0043)	(0.0099)	(0.0049)	(0.0043)
SIZE	-0.0219***	-0.0220***	-0.0518***	-0.0295***	-0.0224***
	(0.0012)	(0.0012)	(0.0028)	(0.0007)	(0.0012)
Constant	0.2141***	0.2101***	0.4158***	0.0692***	0.2093***
	(0.0073)	(0.0077)	(0.0173)	(0.0136)	(0.0077)
F	63.18***	69.69***	43.18***	67.05***	60.00***
Hausman χ^2	3796.90***	3455.80***	4155.97***	--	3339.29***
R-squared	0.4307	0.4309	0.4108	0.5616	0.4338
Sample size	250,104	246,128	250,104	23,741	246,687

*Note: Robust standard errors in parentheses. *** p< 0.01, ** p<0.05, * p< 0.10.*

5.3. Robustness checks

Since our measure of political institutions captures managers' ex-ante views, Boubakri et al. (2013) argue that such results could be driven by managers in strategic industries (mining, oil and gas extraction, transportation, transportation, public utilities, and defence-related production) being less able to, a priori, flexibly adapt their strategies compared to non-strategic industries. Therefore, we exclude firms with SIC industry codes in the corresponding strategic industries (10 to 14, 41 to 49, 3761, 3795). Our results continue to hold as the *POLCON* coefficient continues to load positive at the 1% significance level (see Model 2 in Table 4).

Furthermore, we also split the sample according to firm size into a sample of large (above median size) firms and small (below median size) firms. The results are labelled as Models 3 and 4 in Table 4. We find that the *POLCON* coefficient is positive and statistically significant at the 1% level for both small and large firms sub-samples but the coefficient is lightly larger for small firms[4]. This suggests smaller firms' corporate risk-taking is marginally more sensitive to the quality of political institutions, compared to large firms corporate risk-taking behaviour. Given that Faccio (2006) finds that a sizeable 8% of public firms are politically connected, this interesting result may be due to large firms being politically connected. Indeed, politically connected firms would predictably be less sensitive to ex-ante political risk if they had insider information about policy change. Political connectedness is also associated with overall higher levels of corporate risk-taking due to easier access to credit, government rescue in times of distress, and lower cost of debt (Boubakri et al., 2013; Faccio, 2006).

Finally, we also split the sample according to the strength of the prevailing legal system, separating the sample with strong legal systems ($LAW\_ORDER > 4$, i.e., the mean index value) and weak legal systems ($LAW\_ORDER \leq 4$). The results are labelled as Models 5 and 6 in Table 4. Interestingly, the *POLCON* coefficient is positive in regressions for both samples but is only statistically significant in the sample where legal institutions are relatively weak. This suggests that the quality of political institutions matter more to managerial decisions when the countries' legal system is weak. Within the context of formal institutions' impact on corporate risk-taking, this may indicate some level of substitutability between the strength of the legal system (courts' impartiality and authority) and the quality political institutions (degree of checks and balances constraining the scope of policy change). This complements Boubakri et al. (2015), who find that the positive relationship between tighter political constraints and firms' sales growth is more pronounced in countries with weak legal systems.

Our empirical framework treats political institutions as a random variable, even though the treatment effect (sound political institutions) is not randomly distributed around the world and firms are not randomly assigned to countries with sound or unsound political institutions. Hence our results may be driven by endogeneity. Therefore, we follow an instrumental variable approach, using the individualism-collectivism dimension of national culture, to mitigate the risk of bias in our estimates. Therefore, we follow Boubakri et al. (2013) and Boubakri et al. (2015) by Hofstede's cultural index for individualism (Hofstede, 2001) as an instrumental variable for *POLCON*. More individualistic societies, which emphasize individual freedom over group cohesion, develop more democratic institutions, which distribute power more evenly, thus constraining political actors. The results are reported in Table 5. In our first-stage

[4] Although the explanatory power of the models for samples differs significantly, this does not preclude interpretation of the POLCON coefficient, which is statistically significant at the 1% level in both samples

regression, we find that individualism is positively correlated with sound political institutions. The second-stage regression shows the predicted values of political constraints are still positively related with corporate risk-taking at the 1% significance level.

Table 4: Robustness Checks

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Independent variable	**Full Sample**	**Strategic industries excluded**	**Small firms**	**Large firms**	**Weak legal institutions**	**Strong legal institutions**
POLCON	0.0133***	0.0141***	0.0100***	0.0093***	0.0059***	0.0033
	(0.0023)	(0.0025)	(0.0038)	(0.0023)	(0.0019)	(0.0072)
RGDPG	0.0004***	0.0005***	0.0004***	0.0002**	0.0001	0.0006***
	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)
LAW_ORDER	-0.0014*	-0.0007	0.0006	-0.0011*	-0.0023*	0.001
	(0.0008)	(0.0008)	(0.0016)	(0.0006)	(0.0013)	(0.0023)
ROA	-0.1249***	-0.1267***	-0.1185***	-0.0670***	-0.1109***	-0.1241***
	(0.0048)	(0.0053)	(0.0052)	(0.0093)	(0.0110)	(0.0051)
DTA	-0.0033	-0.0034	-0.0067*	-0.0004	0.0084	-0.0058*
	(0.0030)	(0.0032)	(0.0035)	(0.0031)	(0.0054)	(0.0033)
GROWTH	-0.0539***	-0.0365***	-0.0749***	-0.0356***	-0.0453***	-0.0613***
	(0.0042)	(0.0045)	(0.0061)	(0.0035)	(0.0068)	(0.0052)
SIZE	-0.0219***	-0.0181***	-0.0333***	-0.0082***	-0.0137***	-0.0252***
	(0.0012)	(0.0013)	(0.0021)	(0.0008)	(0.0019)	(0.0015)
Constant	0.2141***	0.1911***	0.2212***	0.1382***	0.1280***	0.2309***
	(0.0073)	(0.0077)	(0.0127)	(0.0062)	(0.0115)	(0.0159)
F	63.18***	57.3***	35.87***	65.41***	9.58***	57.27***
R-squared	0.4307	0.4560	0.4497	0.0577	0.1182	0.4450
Sample size	250,104	212,898	125,063	125,041	63,854	186,250

*Note: Robust standard errors in parentheses. *** p< 0.01, ** p<0.05, * p< 0.10.*

Table 5: 2SLS Regression

	First Stage	Second Stage
POLCON		0.0138***
		(0.0024)
RGDPG	-0.0434***	0.0005***
	(0.0003)	(0.0001)
LAW_ORDER	0.0512***	-0.0014
	(0.0014)	(0.0008)
ROA	0.0089***	-0.1248***
	(0.0016)	(0.0048)
DTA	0.0081***	-0.0033
	(0.0014)	(0.0030)
GROWTH	-0.0626***	-0.0543***
	(0.0023)	(0.0043)
SIZE	-0.0048***	-0.0221***
	(0.0004)	(0.0012)
INDIVIDUALISM	0.0035***	
	(0.0001)	
Constant	0.3588***	0.2148***
	(0.0071)	(0.0074)
R-squared	0.6718	0.4314
Observations	247,800	247,800

5. Concluding remarks

Political institutions may impact managers' corporate investment decisions not only directly on firms' operating environment, but also impact corporate investment indirectly by influencing the constancy of the legal system or by influencing the level of corporate governance. In an increasingly globalized environment, it is important we understand how managers' risk choices change according to the political environment they face, as these diverge significantly around the world.

Whether the quality of political institutions has a positive or negative impact on corporate risk-taking is a priori ambiguous; however, the existing literature on the impact of politics on the determinants of corporate risk-taking generally supports a positive relationship. This study is one of only a few empirical studies examining, from a microeconomic perspective, how sound political institutions (i.e., with effective checks and balances) impact corporate risk-taking. It uses the largest sample of observations in the corporate risk-taking literature, based on accounting data for 47,613 firms in 90 countries between 1993 and 2019. We find that sound political institutions, which constrain political actors, are positively associated with corporate risk-taking. This relationship holds across all model specifications using alternative proxies for corporate risk-taking and political institutions. This relationship is also robust when we exclude strategic industries, split sample by firm size and country legal institutions, and conduct a two-

stage least squares regression to address endogeneity concerns. Interestingly, we also find that sound political institutions may compensate for weak legal institutions in inducing corporate risk-taking. we argue that sound political institutions improve the investment environment for firms and can induce higher levels of corporate risk-taking, which is ultimately associated with economic growth.

This paper presents compelling evidence that political institutions influence corporate risk-taking and outlines a number of channels of causation through which this relationship may take effect. However, by gleaning insights from firms' accounting data, our empirical approach does not allow us to differentiate between these specific channels. Thus, we argue that future research could further build on our findings by using granular qualitative survey evidence from managers to understand the relative importance of the specific channels we outline in this paper.

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