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Corporate Governance and Risk Taking

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Abstract

Better investor protection could lead corporations to undertake riskier but value enhancing investments. Insiders may avoid risky investments to protect private benefits extracted from the corporation. Better investor protection mitigates the taking of private benefits and consequently the degree of risk-avoidance. Also, in better investor protection environments, stakeholders like creditors, labor groups, and the government are less effective in reducing corporate risk taking for their self-interest. Interestingly, arguments can also be made for a negative relationship between investor protection and risk-taking. Using a cross-country panel and a US-only sample, we find that corporate risk-taking and firm growth rates are positively related to the quality of investor protection.

JEL Classification: G15, G31, G34.

Keywords: Risk Taking, Corporate Governance, Investor Protection, Managerial Incentives.

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A central theme of corporate governance studies is how constraints on corporate decision makers' pursuit of self interest leads to firm value maximizing behavior. In this paper we focus on how these mechanisms affect managerial risk choices in corporate investment decisions and the consequent implication for growth.

Recent finance research, building on the seminal work of La Porta *et al.* (1997, 1998), examines various fundamentally important roles of investor protection. One strand of the literature is focused on the effect of investor protection on the cost of capital (e.g., Shleifer and Wolfenzon (2002), Lombardo and Pagano (2002), and Castro, Clementi, and MacDonald (2004)). Poor investor protection creates the need for dominant owners (Burkart, Panunzi, and Shleifer (2003)); but they can not be trusted to protect minority shareholders' rights. The equilibrium outcome is high cost of capital. This leads to under-utilization of external capital and generally sub-optimal investment. For example, Wurgler (2000) shows that in locations with poorer investor protection investment is less responsive to change in value added.[1] In another strand of related literature, Morck, Yeung, and Yu (2000b) show that poor investor protection is associated with low level of informed risk arbitrage. Durnev, Li, Morck, and Yeung (2004) suggest further that a low level of informed risk arbitrage could lead to poor corporate governance, poor resource allocation, and ultimately low productivity growth.

This literature, in our view, focuses on the implications of investor protection on financing. Few examine the relationship between investor protection and corporate investment behavior. Durnev, Morck, and Yeung (2004) show that more informed risk arbitrage, which is associated with better investor protection, would be associated with more firm value enhancing capital budgeting decision. However, their work does not readily reveal investment projects that managers have sub-optimally chosen to forego.[2]

We examine the relationship between investor protection and the risk choices in corporate investment. Our perspective is that the risk choices are affected not just by the insiders' or the managers' explicit ownership and compensation structures, but also by the private benefits that they would capture, including the corporate cash flows that they plan to divert to themselves. To protect their private benefits, insiders may opt to be conservative in directing corporate investment, even to the extent of passing up value enhancing risky projects. The more important the private benefits are, the more risk averse the insiders would be in directing corporate investments. Investor protection dampens the magnitude and the importance of private benefits to the insiders, resulting in less foregoing of positive net present value risky projects.

There are at least two other arguments in the literature that could justify a positive association between investor protection and corporate risk-taking. First, in poor investor-protection countries, corporations may have dominant insiders with non-trivial cash flow rights and large private benefits in the firms that they control (e.g., Morck, Wolfenzon, and Yeung (2005), Stulz (2005)). Their high exposure may lead them to be conservative in directing corporate investment. Second, non-equity stakeholders like banks, governments, and organized labor, which often prefer conservative corporate investment, may influence investment policy for their own benefits. Their influence is expectedly higher in low investor-protection countries (e.g., Tirole (2001), Roe (2003), Morck and Nakamura (1999)).

The literature offers justification for a negative association between investor protection and risk-taking too. First, when investor protection improves there is less fear of expropriation by managers and consequently lesser need for concentrated ownership by dominant shareholders (Burkart *et al.* (2003)). Dominant shareholders might have authority and incentives to reduce the discretion enjoyed by managers (Shleifer and Vishny (1986)). The reduction in dominant

shareholders' presence may result in greater managerial discretion to implement conservative investment policies. This can give rise to a negative relation between investor protection and risk-taking. Second, in poorer investor protection locations firms have dominant owners, who may control a pyramid of firms (Morck *et al.* (2005), Stulz (2005).) The dominant owner may instruct lower layer units to take excess risks and tunnel gains to upper layer units leaving lower level units to absorb any potential losses.

The contradictory theoretical possibilities motivate our empirical investigation. Using firm level and country level data from 1992 to 2002 for thirty-nine countries, we examine the relationship between shareholders' rights and a company's risk taking in investment. The shareholder rights are measured using proxies from La Porta *et al.* (1997, 1998). To proxy for the "riskiness" of chosen investment projects we use the variation in firm level cash flow over total assets. We then run firm level regressions pooling all countries' data. The magnitude of the firm level risk-taking variable is directly mitigated by earnings management (e.g, Ball *et al.* (2000) and Leuz *et al.* (2003)) and also by managerial expropriation (Shleifer and Wolfenzon (2002)); the impact is greater the worse the investor protection. We therefore also construct a country-wide risk taking measure – a country's industry size (asset) weighted average of imputed industry level risk-taking measures based on U.S. data, which is believed to be less affected by earnings management (Leuz *et al.* (2003) and Bhattacharya *et al.* (2003)). We then regress the variable on country averages of the independent variables. In all cases, we find a positive relationship – stronger protection of shareholder interest is associated with higher firm-level riskiness which is in turn positively associated with firm-level growth. On the other hand, our proxies for non-equity stakeholders' influence only at best weakly support the view that these stakeholders succeed in reducing corporate risk-taking. We also find that the riskiness measure is

positively associated with economic growth, including total factor productivity growth. These results are robust to including various controls suggested in the literature.

To complement the above analysis, we undertake an analysis of U.S. firms for which we are able to obtain detailed firm-level data on corporate governance, including measures of investor protection. This complementary study allows us to gauge the effect of firm-level variation in investor protection and transparency on firm-level risk-taking. We again find a positive relationship between firm level shareholder protection, corporate risk taking, and growth. Interestingly, we also find a significantly negative relationship between industry level unionization and corporate risk-taking.

The organization of the paper is as follows. Section I presents a discussion of the different arguments that link shareholder rights to corporate risk-taking in investment. Data, methodology, and the empirical design are presented in Section II. The empirical results are presented Section III. Section IV concludes.

I. Do shareholder rights affect corporate risk-taking?

In this section we present arguments that suggest a positive relationship between the degree of investor protection and the riskiness of the corporate investment. We also argue that the riskier investment policy implemented leads to higher firm value and overall growth rate. We then examine other arguments in the literature that suggest a negative relationship between investor protection and risk-taking in corporate investment.

A. Positive relationship

Our perspective is built on the recognition that corporate insider's private benefits affect their choices on investment risks. Corporate insiders would use corporate resources to pursue their self-interest, including diverting corporate resources for personal benefits, at the expense of

shareholders. The corporate resources that insiders are able to divert, prior to settling the cash flow claims of the firm, make insiders behave like senior debt holders. This happens because insiders expect that they have to lessen their cash flow diversion when a company's cash flow is low. In low cash flow states, there are less corporate resources to siphon and the action is more readily detectable. To play safe, insiders may even avoid some firm value enhancing risky projects to preserve their private benefits. They will undertake a risky project only if its outcomes in high-cash flow states are high enough to compensate for the lower level of diversion in less profitable states.

The amount of corporate resources diverted for private benefits depend on the degree of investor protection – the expected diversion is smaller, the better the investor protection (Shleifer and Wolfenzon (2002).) Thus, with better investor protection the insider's investment choices are less conservative and closer to the optimal one.

The link between investor protection and corporate risk taking can also be obtained from some agency-theoretic models. For example, Amihud and Lev (1981), Hirshleifer and Thakor (1992), and Holmstrom and Ricart i Costa (1986) argue that managers avoid taking risks for career concerns, including those that enhance firm value. They may even spend corporate resources to diversify their companies' operations' risks to protect their career. Better investor protection and thus more effective monitoring mitigate such conservative behavior resulting in higher corporate risk-taking in value enhancing projects.

There are alternative channels that generate a linkage between investor protection and corporate risk-taking. A recent literature shows that around the world corporations have dominant owners. This was first pointed out in studies of corporate governance in Germany and Japan, such as Prowse (1992), Berglof and Perotti (1994) and Edwards and Fischer (1994). La Porta *et al.* (1999) offer the first in-depth systematic cross country study, followed by a few

studies that expanded the sample of firms and sometimes also countries, e.g., in Claessens *et al.* (2000) on Asian countries, and Faccio and Lang (2002) and Barca and Becht (2001) on European countries. These papers and the follow up studies show that these dominant owners are able to use pyramidal ownership structure, dual class shares, cross holdings, and appointment of trusted allies in key executive positions to secure control of a large number of corporations (e.g., Morck, Stangeland, and Yeung (2000a), Rajan and Zingales (2003), Morck *et al.* (2005), and Stulz (2005)) with only limited actual equity investment. Given the divergence in control and cash flow rights, the dominant owners derive private benefits from the corporations they control; indeed, the resources in the corporations they control become an integral part of the economic resources they command. This phenomenon is particularly prevalent in locations with poorly developed capital markets.[3]

The resources available to dominant insiders, including both their equity ownership and the private benefits of control, are inevitably concentrated within the firms they control. Because of their large exposure to these firms, these dominant insiders would be directing corporations they control to invest more conservatively than they would have if they held a diversified portfolio of firms. A direct implication would be that the investment policy implemented in firms with lower investor protection, and hence larger ownership positions by insiders, would lead to more conservative investment policies.[4] In addition, economies with lower investor protection also often have poorer stock markets, making it even more difficult for the dominant insiders to diversify their concentrated exposure in their firms. This accentuates the conservative nature of the investment undertaken by the insiders. Essentially, this hypothesis is an implication of the "insider dominance" problem articulated in Stulz (2005).[5]

A third set of explanations for a positive relationship between investor protection and corporate risk taking builds on the higher influence of non-equity stakeholders such as banks,

labor unions, and the government on the investment policy of corporations in countries with poorer investor protection.[6]

For example, in a society with poor investor protection, firms often rely on banks exclusively for external financing. Banks may enjoy considerable market power as the sole source of financing. Given the concave payoff structure of the debt claims held by the banks, they may have the incentives and ability to influence a company to pursue a conservative investment policy.[7] This effect on investment policy will be higher in countries in which the investor protection is poorer and banks enjoy higher degree of market power as financiers.

Another argument links investor protection and investment risk through the role of powerful labor unions. Starting with the increased presence of dominant business groups in countries with poorer investor protection, Roe (2003) has suggested that these are also environments with strong labor groups that arise as a balancing response to the bargaining power of the dominant business groups. Faleye, Mehrotra, and Morck (2005) show further that strong labor representation presses companies to undertake less risky investment and other steps to advance hired labor's interest (e.g., job security and pay). Therefore conservative investment behavior would be more prevalent in countries with poorer investor protection.

Likewise, societies with poorer investor protection are probably those with more intervention-prone governments. A powerful government may influence firms to be conservative in their investments for several reasons. First, government values social stability and continued employment (see Fogel *et al.* (2005)). Second, a rent-seeking government would discourage corporate risk-taking to preserve extractible rents. Furthermore, if the rent extraction acts like a progressive tax on high earnings, it will discourage both insiders and shareholders from supporting corporate risk taking. This argument also leads to more conservative investment behavior in countries with poorer investor protection.

B. Negative relationship

There are arguments that would suggest a negative relationship between the degree of investor protection and the riskiness of corporate investment.

One argument is that as investor protection improves, there is less fear of expropriation by managers. Hence, the benefits of having dominant shareholders serving as monitors of managerial behavior decrease (Burkart *et al.* (2003).) As a result, dominant shareholders become less prevalent across firms and their cash flow rights in firms also decline. This reduction in dominant shareholding allows managers greater discretion to reduce risk taking, giving rise to a possible negative relationship between investor protection and corporate risk-taking.[8]

A second argument is one which we label "tunneling distortion." In locations with poor investor protection a dominant insider often controls a multitude of corporations in complex ownership structures with varying degrees of cash flow and control rights. An example would be a pyramid ownership structure in which the dominant insider would have limited cash flow rights and yet high degree of control in many firms inside the pyramid. The dominant insider would benefit by tunneling cash flow from low-cash-flow-rights units to high-cash-flow-rights units (Johnson, LaPorta, Lopez-de-Silanes, and Shleifer (2000).) Tunneling might then encourage risk taking – a dominant insider may take risks in units where her cash flow rights are low and then siphon out proceeds to units where her cash flow rights are high.

Here are the details in the above argument. Consider a scenario in which the dominant shareholder is able to maintain strong control rights with a very low level of cash flow rights (say, only an ownership of α of the cash flows). Now assume that tunneling imposes a cost of τ per dollar tunneled. Then, to the dominant insider the value of a dollar in any unit is the

maximum of (1-τ) and her cash flow rights, α, that is: $\max((1-\tau),\alpha)$. Also, further assume that in many relevant corporate units the dominant insider's cash flow rights are less than (1-τ), i.e., (1-τ) > α. This assumption is likely to be satisfied in countries with poor investor protection, and more so the poorer the investor protection is. Suppose further that the tunneling cost varies with the amount of cash flow a unit has, i.e., τ is lower when the unit has higher cash flow. Since the tunneling cost behaves like a regressive corporate income tax, the net-of-tax amount to insiders is convex in the cash flows. If the convexity is sharp enough, it could encourage risk-taking. This could be the case when τ drops fast enough with a unit's cash flow.[9] Our conjecture is that this is more likely to happen when investor protection is poorer – in such countries, the cash flow rights are generally low and the tunneling costs are more regressive. Note, however, that it is unclear whether the higher risk-taking investment leads to higher or lower growth at the economy level.

In summary, we have provided three channels that imply a positive relationship between the degree of investor protection and corporate risk-taking. First, lower investor protection allows insiders with relative low level of cash flow rights to siphon out more corporate resources for private benefits. The greater the corporate resources they expect to divert, the more the insiders will avoid taking risky investments to protect their private benefits. An alternative channel arises from the undiversified ownership in their own firm held by entrenched owners in poor investor protection countries. They direct companies they control to undertake less risky investments to reduce their exposure. A third channel arises from the conservative investment considerations of important non-equity stakeholder groups such as banks, labor unions, and the government. Such stakeholders are more influential in poor investor protection countries and induce low risk investments.

We have also presented arguments in favor of a possible negative relationship between investor protection and corporate risk-taking. For example, in weak investor protection locations companies often have controlling owners who has the incentives to monitor and mitigate managers' excessive risk avoidance. Second, in poor investor locations dominant owners often control not just a stand alone firm but a pyramid of firms. Given the pyramidal ownership structures, dominant insiders might be tempted to shift risks to low cash flow rights units and siphon high earnings to high cash flow rights units. The above arguments lead to the following empirical questions:

1. Does better investor protection result in higher risk-taking in corporate investment? Likewise, does the presence of powerful interest groups, such as dominant banks, labor unions, and the government constrain risk-taking in corporate investment?
2. Is higher risk-taking value enhancing and thus associated with greater country-wide productivity and GDP growth?

II. Empirical Examinations

We examine these questions using Compustat Global Vantage data for thirty-nine countries in the period 1992-2002. A cross-country study is appropriate because variation in investor protection across countries is more likely to be greater and more exogenous than variations within countries. We further conduct a single country study, based on companies in the United States. Doing so allows us to utilize firm level variations in critical independent variables, which are not available in many other countries, and also allow us to more adequately control for relevant but unobservable country-level factors.

In the cross-country firm-level study we regress firm level and country-level observations of "risk-taking" in corporate operations on variables that capture investor protection, stakeholder

influence, and controlling for other relevant factors. We also relate firm- and country-level growth measures (including country-level total factor productivity growth) to "risk-taking" in corporate operations, controlling for corporate accountability and market factors to examine whether corporate risk taking is associated with growth. The regression specifications are as follows:

$$RISK_C = \alpha_1 + \alpha_2 \text{ Investor Protection}_c + \alpha_3 \text{ Stakeholder Influence}_c + \alpha_4 X_c + \omega_c \quad (1)$$

$$RGDP_c = \beta_1 + \beta_2 RISK_c + \beta_3 Y_c + \vartheta_c, \quad (2)$$

$$TFP_c = \gamma_1 + \gamma_2 RISK_c + \gamma_3 Z_c + \varsigma_c, \quad (3)$$

where the subscripts c indicates country. $RISK_c$ is a proxy for risk-taking in corporate operations. *Investor protection* is a collection of variables that capture corporate accountability, outsider shareholder rights, and the rule of law. *Stakeholder influence* is a collection of proxies that capture the power of non-equity stakeholders such as banks, the government, and labor unions to influence corporate investment decisions. RGDP is the per-capita real GDP growth, TFP is the total factor productivity growth, and X_c, Y_c, and Z_c are vectors of control variables. As operating risk and growth could jointly be impacted by investor protection, we perform models (2) and (3) taking into account this endogeneity. In particular we instrument $RISK_c$ in these models.

Our first empirical hypothesis is that α_2 is positive, α_3 is negative, and β_2 and γ_2 are positive. The alternative hypothesis is that α_2 could be negative, as we discussed in the previous section. If poor investor protection and the presence of influential interest groups distort corporate risk taking in investments, we would expect that a country-level regression like (2) generates a coefficient β_2 statistically different from zero. In regressions (2) and (3) we will include as controls the interest group influence proxies.

A. Description of Variables

Below is a brief description of our key variables. See Table I for further details and reference.

[Table I about here]

A.1. Measuring risk taking

Since riskier corporate operations have more volatile returns to capital, we develop three proxies for the degree of risk-taking in firm's operations based on the volatility of corporate earnings: (i) the market-adjusted volatility of firm-level earnings over the sample period from 1992 to 2002; (ii) a country average of the volatility of firm earnings; and (iii) an imputed country risk score, based on industry risk characteristics. We describe them in turn.

RISK1

For each firm with available earnings and total assets for at least five years across 1992-2002, we compute the deviation of the firm's EBITDA/Assets from the country average for the corresponding year. We then calculate the standard deviation of this measure, for each firm.

RISK2

The pooled firm level cross country regression gives more weight to countries with more firms. To address this issue, we also use a second measure, the average of RISK1 within a given country so that each country has only one observation. We denote this RISK2. Note that firm level income smoothing reduces both RISK1 and RISK2 (Ball *et al.* (2000) and Leuz *et al.* (2003)). If income smoothing is more aggressive and more prevalent in countries with low corporate accountability, observing lower risk-taking in countries with low corporate accountability may not imply that firms in the latter undertake less risky operations.

Another reason for not fully relying on RISK1 and RISK2 is that it might be mechanically linked to investor protection. Insiders' diversion of corporate resources reduces the observed earnings volatile. If diversion is less when investor protection is stronger, there could be a positive relationship between investor protection and earnings volatility, which is unrelated to managerial investment risk choices. To address this issue we impute a riskiness measure that does not depend on observed corporate cash flow.

RISK3

To address the above problems, we develop an imputed measure of risk-taking. First, we use US earnings data to compute an industry-by-industry risk score, $\sigma^{USA}{}_{1994-1997,j}$, based on the observation that US cash flow data, while certainly not perfect, is subject to less earnings smoothing than data from other countries (Leuz *et al.* (2003) and Bhattacharya *et al.* (2003)). $\sigma^{USA}{}_{1994-1997,j}$ is the variation of company *i* demeaned earnings, $E^{USA}{}_{i,j,t}$, for single business segment firms within each 3-digit SIC code industry *j*, in the US in the period 1994-1997. The single business segment firms are identified through the Compustat segments file. We start in 1994 in order to exclude the recession years within our sample of 1992-2002 preceding 1994. The sample ends in 1997 because business unit reporting changed in that year. We include only firms with sales of at least $10 million.

We use $\sigma^{USA}{}_{1994-1997,j}$ to impute the score of country "risk-taking." The score is calculated for each country over 1998-2002 (in Table V panels A and B) or 1998-2000[10] (in Table V Panel C.) The imputed risk scores is $RISK3 = \frac{1}{5}\sum_{t=1998}^{t=2002}\left(\sum_{j\in\{200,\ldots,399\}} MV_{t,j,c} \times \sigma^{USA}{}_{1994-1997,j} \Big/ \sum_{j\in\{200,\ldots,399\}} MV_{t,j,c}\right)$, where *j* is an industry subscript based on 3-digit SIC codes, *c* is a country subscript, *t* is a year subscript, $MV_{t,j,c}$ is the total market capitalization of companies in industry *j* in year *t* in country

c. The idea is that countries that have allocated more investments into "riskier" industries will have a higher RISK3 score. In computing RISK3 we include only firms with sales above $10 million. Market capitalizations (MV) are computed as of the end of the fiscal year. Prices and shares outstanding for the sample firms are compiled from Compustat Global Issue database. Thus, RISK3 is the simple average over 1998 - 2002 of a country's annual value-weighted average of risk scores, $\sigma^{USA}_{1994-1997,j}$.

A.2. Measuring investor protection

To characterize investor protection in each country, we use three measures: the quality of accounting disclosure standards (ASR), the rule of law (RL), and an index of anti-director rights (ADR). High accounting disclosure standards lead to better investor protection – they make the diversion of corporate resources more difficult. Higher accounting disclosure requirements could also lessen the propensity to tunnel, which as we argued above could encourage risk-shifting by dominant insiders in firms where their cash flow rights are low. The variable is retrieved from La Porta *et al.* (1998) who tabulate the original data from the Center for International Financial Analysis and Research. We supplement *accounting disclosure standards* with *rule of law* as an indicator of the effectiveness of enforcement of the regulations. Third, we include *anti-director rights* to gauge the level of protection of shareholders from insider stealing. The source of the data is again La Porta *et al.* (1998).

The institutional measures are dated in 1990 or mid nineties and our data sample is from 1992 to 2002. In spite of these time differences, the data are likely to represent the institutional environment in our sample period fairly well to the extent that institutional regimes tend not to change rapidly.

A.3. Measuring non-equity stakeholder influence

One of our arguments is that dominant bank creditors, labor unions, and interventionist governments may press corporations to avoid risky investments to protect their vested interest in the company. We use private domestic credit as share of the GDP, to capture bank dominance. The variable, *PRIVO*, is from Demirguç-Kunt and Levine (2001). As a robustness check, we also use bank credit/stock market capitalization.[11] To capture interventionist government, we use government spending as share of GDP; the variable is the average from 1980 to 1995. The data source is IFS Statistics. As a robustness check, we also use the percent of top 10 largest firms controlled by the state as a proxy for interventionist government. To capture the power of organized labor, we use the percentage of labor that participates in trade unions from the World Labor Report, 1997-1998. As a robustness check, we also use the "flexibility of firing" index from the 2003 Doing Business Report of the World Bank. This will capture the effect of inflexible labor laws on corporations avoiding risky value-enhancing investments.

A.4. Measuring growth

Firm level growth is measured as the average of the growth in total assets (item #89) and in sales (item #1) over the sample period, 1992-2002. Prior to computing the growth measures we convert all accounting data items into US$ at the average monthly exchange rate as of the fiscal year end month.

For country growth we use two measures: real per-capita GDP growth and Total Factor Productivity (TFP) growth. Real GDP is measured in 1995 constant US$. The nominal GDP, the GDP deflator and population data are obtained from the International Financial Statistics of the IMF. To measure TFP we follow the algorithm in King and Levine (1993a, 1993b). The details of the algorithm are given in Table I.

A.5. Control Variables

The set of control variables in regression (1) includes factors known to explain the cross-section of earnings volatility, such as competition, earnings smoothing, debt and equity market development, and firm level characteristics such as firm size, recent corporate growth, corporate earnings, firm leverage and ownership.

A.5.1. Country level control variables

Philippon (2002) suggests that product market competition contributes to volatile firm markups and thus to higher volatility in firm profits. To distinguish the effect of competition from the impact of governance mechanisms, we control for competition as proxied by a Herfindahl index, defined as the sum of the squared shares of firm sales to total sales within a given country, averaged for the period 1992-2002.

We also control for equity and debt market development in the growth regressions (2) and (3). Acemoglu and Zilibotti (1997) argue that at early stages of development the degree of risk-sharing the economy can achieve is limited; hence undertaking risky investments is less desirable for risk-averse managers whose human capital is under-diversified. As well, the lack of means to diversify may prompt controlling insiders, whose wealth is concentrated in the corporations they control, to be even more risk averse in directing these corporations' investment. To control for equity market development we use the 1991 stock market capitalization. Another control for financial development is the banking market development. However, as we have discussed earlier, we have already included private domestic credit as share of the GDP as an independent variable aiming to capture the influence of bank dominance in corporate risk-taking decisions. Therefore, the performance of the variable may be weak because it may be capturing two opposite forces.

In the growth regressions (2) and (3) we further incorporate standard controls, including real per-capita GDP, financial market development and human capital accumulation proxy (the average number of years of schooling as of 1990 from Barro and Lee (1993)). Since our growth regressions time window is from 1992 to 2002, these variables are measured at pre-1992 values.

Finally, while our various risk-taking measures aim to capture inherent risks in firm-level operations, they are undoubtedly affected by macro-volatility. To address this, our volatility measures are based on the deviation of accounting returns *from* market averages.

A.5.2. Firm level control variables

Our risk-taking measures may be influenced not only by the fundamental volatility of the investment projects but also by earnings smoothing incentives. Leuz *et al.* (2003) suggest that earnings management is used to conceal firm performance from outsiders, and argue that strong investor protection limits private benefits of control and thus reduces managerial incentives to mask firm performance. To control for earnings smoothing we use a measure in Leuz *et al.* (2003), the ratio (ES_1) of the standard deviation of operating income and the standard deviation of operating cash flow, where both variables are scaled with lagged total assets. Leuz *et al.* (2003) interprets lower values of this measure as evidence of higher level of earnings smoothing. In other words, earnings smoothing is high when the standard deviation of reported earnings relative to the standard deviation of earnings free of accruals is low. To facilitate interpretation we transform the variable to $ES_2 = 1 - ES_1$ so that higher values indicate higher propensity for earnings smoothing. In regression (1) with dependent variable RISK1, ES_2 is a firm level variable. When we conduct the regression using country-level dependent variables (RISK2 and RISK3), ES_2 is the median of the firm level observations in each country.

Our *large shareholder ownership* variable is derived from Bureau Van Dijk's Osiris shareholder ownership database. We rank the shareholders in each company by their total (direct

and indirect) ownership. We then retrieve the ownership of the largest cash flow rights holder on the shareholder list. If the largest shareholder has less than 20% we code the ownership value as 0, following Faccio and Lang (2002) and Claessens, Djankov and Lang (2000). As a robustness check we further consider a different threshold of 10% and find that our results are robust to this assumption. The advantage of the data is that they represent a comprehensive set of total cash flow rights by shareholders in a large cross-country panel. The caveat is that the data are as of the end of our sample period.

We control for initial sales growth and initial corporate earnings (EBITDA/Assets). We Winsorize these variables at 0.5% in each tail of the sample distribution. We further control for initial leverage, defined as the ratio of total liabilities plus preferred stock minus balance sheet deferred taxes to total assets. These firm traits are retrieved as of the year of entry of the company in our sample.

B. Data summary and univariate results

Table II reports descriptive statistics for the main variables at the country level. The sample is chosen based on the requirement that data are available to compute the risk scores above. That leaves us with a sample of thirty-nine countries. The sample of firms included per countries varies from 13 firms (Colombia) to 1,818 (United States).[12] The firms' sales together represent a significant portion of the economy they reside in. Their average total sales over GDP in 1999 is 25.2% (the median is 21.84%, the lowest is 2.5%, and the highest is 70.4%).

[Table II about here]

We also analyze the pair-wise correlations among the main country level variables. The table containing these correlations is not included here to conserve space. The correlation between the two country risk-taking variables, RISK2 and RISK3 is 15%, and is not statistically

significant. As discussed above, we deliberately create RISK3 that is different from RISK2 because we are concerned about the representativeness of RISK2 as fundamental "risk-taking." We further note that the country index of earnings smoothing is negatively associated with RISK2 (significant correlation of -42%), while it has an insignificant correlation with RISK3 (-7%). Thus, the skepticism that high volatility of firm level accounting returns may partly be due to low earnings smoothing is substantiated.[13]

Both country-level measures of risk-taking are positively correlated with the three corporate accountability variables: the quality of accounting disclosure standards (ASR), the rule of law (RL), and anti-director rights (ADR). Of these, the correlations of RISK2 with ASR (50%) and with ADR (27%) are statistically significant while the correlation of RISK2 with RL is not. At the same time, the correlations of RISK3 with ASR (49%) and RL (40%) are significant but its correlation with ADR is not.

We further find that simple correlations do not support the idea that non-equity stakeholder influences mitigate corporate risk taking. The proxy for bank influence (PRIVO) is not significantly correlated with RISK2 but is with RISK3, 52%. However the sign is positive rather than negative. Government spending is positively but not significantly correlated with both RISK2 (24%) and RISK3 (19%) while the unionized labor proxy is positively correlated with both RISK2 (17%) and RISK3 (28%).

Economies with less competitive intensity, as judged by a higher Herfindahl index, tend to score lower on our risk-taking measures (the correlation are -9% for RISK2 and -49% for RISK3). This appears consistent with the conjecture that intense competition increases the volatility of earnings (Philippon (2002)). Finally, both country-level risk-taking measures are positively correlated with growth in real per-capita GDP (10% with RISK2 and 26% with RISK3) and growth in total factor productivity (9% in RISK2 and 22% in RISK3).

III. Multivariate results

A. Firm level tests

A.1. Cross-country study

We present our firm level regressions in Tables III, IV and country level results in Table V. In the pooled cross country firm level analysis in Table III, all t-statistics are based on country-cluster-adjusted standard error estimates. Because the number of firms varies across country, we weigh the individual observations with the inverse of the number of firms from the corresponding country.

Risk-taking

In Table III Panel A equations 1 to 5 we present the determinants of the firm-level risk-taking proxy (RISK1) in an ordinary least squares estimation framework. We include as country-level explanatory variables anti-director rights, the rule of law, accounting disclosure standards, country level competition intensity ("country Herfindahl index"), private credit as share of GDP, stock market capitalization as a share of GDP, government spending as share of GDP, and the percent of unionized labor. We also include firm level determinants such as the ownership of the largest shareholder on record, earnings smoothing, firm size, corporate earnings, sales growth, and book leverage. While earnings smoothing is computed utilizing the data over 1992-2002, and shareholder ownership is as of 2002, the other controls are dated as of the first year of company entry into our panel. We also include one-digit SIC code industry fixed effects.

[Table III panel A about here]

The regression results indicate that the corporate accountability measure has a positive and statistically significant relation with firm-level risk-taking. Accounting disclosure standards is significant whether entered individually or jointly with rule of law and anti-director rights. The economic impact of disclosure on risk taking is noteworthy. Using model 5 in Table III Panel A,

one standard deviation increase of disclosure increases the risk-taking proxy by 7.9% of its mean. The anti-director rights index is positive but not always significant. Based again on model 5, a one standard deviation increase in anti-director rights increases the risk-taking proxy by 4.4% of its mean. The rule of law proxy has a positive sign but is insignificant in all specifications. The three investor protection variables are jointly significant in models 4 and 5; the F-statistics for their joint significance are, respectively, 3.54 for model 4 and 4.13 for model 5. Both are significant at the 1% level.

The coefficient on the proxy for the bargaining power of the labor unions is positive and occasionally marginally significant. Country private credit variable has a negative coefficient as expected, however it is insignificant. The coefficient on government spending is insignificant and changes signs across specifications. These results do not support the hypothesis that these stakeholders constrain corporate risk-taking.

The Herfindahl index, a proxy for competitive intensity, does not have a stable relationship with volatility in earnings. The coefficient on market capitalization is negative in most specifications. It is insignificant in all. One possibility is collinearity; the capital market development measure is highly correlated with accounting disclosure standards, the rule of law, and anti-director rights.

Certain other variables behave generally as expected. The earnings smoothing proxy has a negative coefficient, indicating that higher earnings-smoothing is associated with lower volatility of accounting returns. Firm size is also negative and significant, indicating that large size is associated with lower operating risks.

The potential joint determination of company operating risk and ownership structure raises concerns. It could be that high risk companies develop over time concentrated ownership structures if diffuse owners are less able to monitor operating risk choices. To address the

endogeneity problem, we run a two-stage least squares (2SLS) regression, reported in model 6, where we instrument for the large shareholder ownership with the value of the average large shareholder ownership of other companies from the same two-digit SIC code industry and with the logarithm of firm age. These proxies have been used in Laeven and Levine (2006a, 2006b).

The 2SLS results are consistent with the OLS ones in models 1 to 5 except that the role of the rule of law indicator is further weakened. The accounting disclosure variable has stronger association with the risk-taking proxy. Our set of instruments appears valid as indicated by the over-identification test. We cannot reject the hypothesis of no correlation of the excluded instruments with the error term as the over-identification test p-value is 0.86. The instrument set is further jointly significant. Our concern of endogeneity is not substantiated as the Hausman test reveals that we cannot reject the null hypothesis of no difference between the 2SLS and OLS estimates. We conclude that while our instrumentation results may have low explanatory power (partial R-squared of 2.83%), they yield support for a positive association between risk-taking and accounting disclosure.

Corporate Growth

In Table III panel B we relate firm growth in total book value of assets and in sales to the company level risk-taking proxy, RISK1. The regression controls for the three measures of investor protection, the influence of other non-equity holders such as banks, the government, and labor unions, and stock market development. We also control for past corporate earnings and one-digit industry fixed effects.

[Table III panel B about here]

OLS specification could be problematic because risk-taking can be endogenous.[14] We adopt a two-stage least squares estimation, instrumenting for risk-taking. We incorporate three different sets of instruments. First, we instrument our risk-taking proxy with firm size. Larger

firms are more likely to have stable operations whose returns are less volatile. We recognize that this variable may directly influence growth, the degree of which we can judge by over-identification tests. Second, we instrument risk-taking by country level investor protection variables. Third, we instrument risk-taking with the average risk-taking of other companies in the same two-digit SIC code industry in the same country, $RISK1^{*}$.[15] The investment risk choices of the industry peer group are likely to influence the risk choice of an individual firm through competitive pressure in the underlying product market. Note that for regressions using the average corporate risk-taking of other firms in the same industry as instrument we exclude all firms from industries with only one company. This selection is necessary in order to be able to compute the instrument.

We report the estimates from the first and second stage regressions in Table III Panel B. Consistent with the hypothesized relationship between our instruments and risk-taking, the first-stage results show that RISK1 is negatively affected by firm size and positively affected by the risk-taking of competitors' in the same country-industry pair, $RISK1^{*}$. All of the investor protection instrumental variables in models 2, 4, 6 and 8 have positive sign as expected, however, only accounting disclosure standards is statistically significant. Our instruments have strong predictive power: the partial R-squared of the first-stage regression indicates that the instruments explain between 11.1% and 17.3% of the variation in RISK1, net of any effect they may have through the other explanatory variables. In addition, the F-test rejects the null hypothesis that the coefficients on both instruments are jointly zero. Finally, the test of over-identifying restrictions fails to reject the joint null hypothesis that our instruments are uncorrelated with the error term and are therefore correctly excluded from the second-stage regression for all models except 4.

The second-stage results provide evidence of a statistically significant and positive relation between the instrumented RISK1 and both company asset and sales growth. These results hold when we use different instrumental variable sets and control for initial firm earnings and the influence of other non-equity stakeholders.[16] Our endogeneity concern is substantiated as the Hausman test rejects the null hypothesis that the 2SLS and OLS coefficients on RISK1 are the same, for most specifications except 3 and 4.

Based upon the two-stage least squares coefficients the economic significance of the estimates is substantial. For example, using model 2 a one standard deviation increase in the instrumented risk-taking proxy is associated with an increase in the asset growth of 32% of its mean. Similarly, based on model 7 a one standard deviation in the instrumented RISK1 above its mean would increase the sales growth with 38.8% of its mean.

Our firm level cross-country analysis has two limitations. First, differences in the same industry across countries are not easy to control for. Second, our investor protection and non-equity stakeholder proxies do not vary at the firm level and thus by construction do not fully capture variations in the dependent variables, which are at the firm level. To address these concerns we examine the within-country validity of our hypothesis, to which our theoretical analysis also applies. A single country sample offers greater similarity in investment opportunities and other country-level latent factors for the companies within. In addition, the measurement noise in our risk-taking proxy, e.g., due to income smoothing, is more limited within the same country as opposed to cross-country. Consequently, a single-country panel would highlight firm level variation in risk-taking. Finally, we can obtain more precise measures of investor protection, managerial ownership, and non-equity stakeholder influence in a data-rich country such as the United States.

A.2. Single country study

We choose the US in our within-country study because it has the most detailed corporate data and the highest number of firms in our panel. We discuss our proxies for the equity and non-equity stakeholder influence in turn. We use two alternative measures of investor protection: the corporate governance (G) index of Gompers, Ishii, and Metrick (2003) and the entrenchment (E) index of Bebchuk, Cohen, and Farrell (2005).[17] We retrieve the value of these indices as of the first year of appearance of the company in our sample. We use the union membership at the three-digit SIC code level as proxy for the labor union influence on corporate risk taking. The source of that data is the union membership and coverage database by Barry Hirsh and David Macpherson and available at *www.unionstats.com*. The data are compiled from the Current Population Survey based on the methodology used by the Bureau of Labor Statistics. Hirsch and Macpherson (2003) provide details on the dataset construction. To capture bank dominance we use the ratio of total bank debt to total assets.[18] The data is from the Bureau van Dijk's Osiris dataset. We use the level of bank-debt financing as of the first year the company appears in our sample. Our results are unchanged when instead of that we consider the value of this proxy as of 1992, the first year of our sample (which results in a smaller sample.) Consistent with our cross-country firm level study we control for the ownership of the largest shareholder on record with the company derived from the Bureau Van Dijk's Osiris shareholder dataset.

Table IV Panel A reports the regression of risk-taking on equity and non-equity stakeholders. Models 1 and 2 provide support for our hypothesis. Both the entrenchment index of Bebchuk *et al.* (2005) and the governance index of Gompers *et al.* (2003) are significantly negatively associated with risk-taking, implying that stronger investor protection is associated with higher risk-taking for companies in the United States. Our bank power proxy has a negative sign as expected. However it is only marginally significant in model 2. The proxy for labor union power is negative and highly statistically significant, in support of our hypothesis that powerful

labor unions may use their bargaining power to constrain risk-taking. Finally, higher concentration of ownership is not significantly associated with risk-taking, which is consistent with our cross country analysis.

[Table IV Panel A about here]

The potential joint determination of ownership and company risk raises concerns of endogeneity. To address it, we instrument the ownership of the largest shareholder. The 2SLS results are reported in columns 3 and 4. We use the sets of instruments that we have applied in the cross-country analysis, namely the average dominant shareholder ownership of other firms in the same industry and country, and the logarithm of the firm age. Our results are robust to these controls in terms of economic and statistical significance. For example, based upon model 4 a one standard deviation increase in the governance index (which corresponds to the addition of about three new charter provisions that limit minority shareholder rights) is associated with 9.7% drop in RISK1 below its mean net of any effect it may have through the other explanatory variables. The over-identification test reveals that our instruments are uncorrelated with the error term and are correctly excluded from the second-stage. The Hausman test indicates that our OLS coefficients are not statistically different from the 2SLS estimates, and thus our OLS estimates in models 1 and 2 are not biased.

In line with our cross-country examination, in Panel B we relate firm-level sales- and asset- growth to the risk-taking proxy for companies in the United States. We use a two-stage least squares regression to address the endogeneity of investment risk choices with respect to corporate growth. We use the same instrumental variables as in our cross-country analysis, namely firm size, the average risk-taking of other companies in the same two-digit SIC code industry ($RISK1^{*}$), and the investor protection variables.

[Table IV Panel B about here]

The results provide further support that risk-taking is associated with higher corporate growth. Consistent with the hypothesized relationship between our instruments and risk-taking, the first-stage results show that both governance and entrenchment indices have negative sign as expected, and are statistically significant. Our instruments have predictive power with a partial R-squared of the first-stage regression between 4% and 14.1% of the variation in RISK1, net of any effect they may have through other explanatory variables. In addition, the F-test rejects the null hypothesis that the coefficients on both instruments are jointly zero. Finally, the test of over-identifying restrictions fails to reject the joint null hypothesis that our instruments are uncorrelated with the error term and are correctly excluded from the second-stage regression, except for models 1 and 5.

The second-stage results provide further evidence of a statistically and economically significant and positive relation between the instrumented RISK1 and both company asset and sales growth. These results hold when we use different instrumental variable sets and control for the influence of other non-equity stakeholders. The Hausman test rejects the null hypothesis that the 2SLS and OLS coefficients on RISK1 are the same for all specifications, thus indicating the presence of the attenuation bias in the OLS estimates.

B. Country-level tests using RISK2 measure

In the cross-country firm-level regressions more weight is given to countries with more firm-level observations, which are usually more advanced economies with better corporate governance and developed financial markets. A conservative approach is to give each country an equal weight by using only country level average of the firm level observations; that is, use RISK2 instead of RISK1. Such an approach sacrifices information (and thus inefficient) but avoids over-weighting large economies. Results for the approach are presented in Table V.[19]

Panel A reports in models 1 to 4 regressions of our country level risk-taking proxy (RISK2) on accounting disclosure, the rule of law, and anti-director rights and proxies for the influence of banks, labor unions and the government on corporate investment. Model 1 reveals that accounting disclosure standard is significantly positive. The rule of law coefficient is positive but only weakly significant, as shown in model 2. The anti-director rights variable is not significant in model 3. When all three institutional variables are included, only accounting disclosure standard has a significant regression coefficient in model 4, although the three variables are jointly significant. Overall, the conservative approach generates results that broadly support the prediction that better investor protection increases risk-taking propensity. Note however that the proxies for labor union power, bank dominance, and interventionist government are all insignificant and have inconsistent signs.

[Table V Panel A about here]

In terms of economic significance a one standard deviation increase in disclosure increases the risk-taking proxy RISK2 by 16.1% of its mean, based on model 4. A one standard deviation increase in the rule of law increases the risk-taking proxy RISK2 by 19.4% of its mean. A one standard deviation increase in anti-director rights increases the risk-taking proxy RISK2 by 4.2% of its mean.

Panels B and C report regressions of country level growth on our country level risk-taking proxies. Model 2 in Panel B includes the risk-taking proxy and the investor protection variables as explanatory variables, in which case the explanatory power of the risk-taking proxy diminishes. This could indicate either that our hypothesis is not supported, or that our risk-taking proxy is (i) closely correlated with the institutional variables, (ii) too noisy to compete with them, and (iii) risk-taking choices and growth could be driven by a latent variable leading to endogeneity. In model 3 we address the ensuing endogeneity problem with two-stage least

squares estimation. We instrument risk-taking with similar sets of instrumental variables as the ones in the cross-country firm-level study. We use anti-director rights, the quality of accounting disclosure, and the average logarithm of corporate total assets as instruments. Our results are also robust to the inclusion of the rule of law as part of the set of instruments for RISK2.

[Table V Panel B about here]

The instrumented risk-taking has a positive and significant coefficient in model 3. The set of selected instruments accounts for significant part of the variation of RISK2, 30.7%. The F-test indicates that the excluded instruments are jointly significant. The over-identification test indicates that the set of selected instruments are not correlated with the error terms and thus are valid instruments. The Hausman test indicates the presence of attenuation bias in the coefficient estimates. The test rejects the equality of the OLS and 2SLS estimates for RISK2 at 1% level.

The economic significance of RISK2 is non-trivial: for example one standard deviation increase in RISK2 is associated with 33.2% increase of real GDP per capita growth of its mean. We conclude that these results provide support to the proposition that high risk-taking as an outcome of better investor protection contributes to per-capita real GDP growth net of the impact of non-equity stakeholders on country economic growth.

Panel C of Table V reports regressions using total factor productivity as the dependent variable. The regression specifications are otherwise identical to those in Table V panel B. We again note that our choice of instruments is valid and significant as evidenced by the over-identification test and the excluded instruments F-test results. The Hausman test rejects the null hypothesis that the 2SLS and OLS coefficients on RISK2 are the same, thus indicating the presence of the attenuation bias. The second-stage results provide further evidence of a statistically significant and economically meaningful positive relation between the instrumented RISK2 and average TFP growth. Based on model 3, one standard deviation increase in the

instrumented RISK2 will increase TFP growth by 39.4% of its mean. We again interpret these as support for the hypothesis that our risk-taking measures are associated with higher productivity growth.

[Table V Panel C about here]

C. Multivariate results using RISK3 measure

The interpretation of our results crucially depends on the risk-taking proxies used. The risk-taking proxies are affected by earnings management and insider appropriation of corporate earnings. Both of these could in turn be affected by investor protection. This concern motivates the third risk-taking measure, RISK3, an industry value-weighted average of risk-taking measures, where the industry weights are country-specific and the risk-taking measures are based on US data. By construction, RISK3 is not affected by a country's degree of earnings smoothing or stealing by corporate insiders.

The right side of Table V, Panel A reports regressions using RISK3 as a dependent variable. The anti-director rights index is positive and marginally significant. Based on model 7 in Table V Panel A, a one standard deviation increase in anti-director rights increases the risk-taking proxy RISK2 by 6.5% of its mean. However, both the accounting disclosure and the rule of law indicators are statistically insignificant, where the latter even has the opposite sign.

Using RISK3 as the dependent variable, we do not find non-equity stakeholders' negative influence on risk-taking. The government spending has the expected sign (negative) but is at best marginally significant. The bank dominance and unionization variables attract positive and significant coefficients, contrary to our non-equity stakeholder influence hypothesis.

In Table V, Panel B, model 4 is the regression of real per-capita GDP growth on RISK3 and the institutional environment variables, controlling for various initial conditions. The coefficient on RISK3 is positive and marginally statistically significant. Similar to our analysis

of RISK2, we also show in model 5 the results for the two-stage least squares estimation where we treat RISK3 as endogenous. Model 5 demonstrates that RISK3 has a positive, statistically and economically significant coefficient. Based on model 5, one standard deviation increase of RISK3 is associated with a 77% increase in real GDP-per-capita growth above its mean. We interpret this result with caution as the validity of our instruments is marginal (the over-identification test has a p-value of 0.10). The low explanatory power of our instrumental set for RISK3 is further corroborated by the low F-statistic for the excluded instruments.

We also consider the impact of risk-taking on productivity. In model 4 in Table V Panel C we regress country productivity growth on RISK3 and on the investor protection variables. RISK3 has a positive but insignificant coefficient. In model 5 we treat RISK3 as endogenous, and regress productivity growth on the instrumented RISK3. This results in a positive and statistically and economically significant coefficient in model 5. A one standard deviation increase of the instrumented RISK3 is associated with a 70.9% increase of the TFP growth above its mean (compare this with the economic significance of one standard deviation in RISK2 in model 3, which is 39.4% increase in the TFP growth above its mean). We note though that similar to our analysis of the linkage between real GDP-per-capita and RISK3, our choice of instruments is not significant (the p-value of the F-test for the joint significance of the excluded instruments in 0.12), albeit still valid as evidenced by the over-identification test.

Overall, the reported regressions using country averages still support a positive association between investor protection and corporate risk-taking and between risk-taking and growth, in particular, productivity growth. However, such results need be interpreted with caution for two reasons. First, they are based on a small sample and are therefore subject to the small sample bias concern. Second, our proxy for risk-taking in the country level analysis is based upon a sub-set of the economy, namely the manufacturing industries represented by public

firms present in Compustat Global Vintage dataset. At the same time our proxies for economic growth and factor productivity are derived from all industries in each country. Consequently, we would expect by design limited explanatory power of our risk-taking proxies on country-wide economic growth and productivity. We now offer more robustness checks on these results.

D. Robustness

D.1. Statistical robustness and sample selection

We checked the statistical robustness of the regressions, in particular, the risk-taking and growth regressions reported in Table V. We first delete countries in our sample with only a limited number of listed firms captured in Compustat Global Vantage (e.g., Colombia and Argentina). Excluding these countries from our tests does not change our results. Second, we conduct residual diagnostics analyses and exclude outliers. In the risk-taking regressions where we use RISK3, Taiwan is an outlier. In the total growth regressions, South Korea is an outlier. In the productivity growth regressions, Singapore is an outlier. Excluding the outliers, improves the significance of our key results.

A drawback of the Compustat Global Vantage is its limited firm coverage (Rajan and Zingales (1995)). Included firms are likely the ones that are attractive to global investors and are able to overcome their home countries' poor investor protection problems. This selection bias reduces the dependence of firm-level governance on country-level institutions and would tend to work against our hypotheses. Yet, home-country institutions seem to remain the dominant factor in corporate governance (Doidge, Karolyi, Stulz (2006)) and we do find affirmative evidence for our hypotheses. Still, including firms that have cross-listed their stock may weaken our results since their governance is likely less affected by the host country institutional environment. We

repeat our regressions from Table III and Table V excluding cross-listed firms. We indeed obtained statistically stronger results.

D.2. Dependent variables measuring risk-taking

We measure risks by the deviations of operating results from economy-wide average. We also consider a measure of total firm risk, that is, we do not subtract from firm level earnings a country-specific component prior to computing our risk-taking measures. While it is debatable whether such a measure would reflect managerial risk choices, managers could nevertheless seek to avoid both economy wide and firm-specific investment risks. Acemoglu, Johnson, Robinson, and Thaicharoen (2003) document that poor institutional environment is associated with high macroeconomic risks. Thus, considering a measure of total risks, which include economy wide risks, would bias our results against finding that strong investor protection is associated with more risk-taking. Our empirical results still hold indicating that firm-specific as opposed to macroeconomic volatility drives them.

Another way to measure corporate risk taking is corporate survival. The simple premise is that when corporations take less risky investments they are more likely to survive.[20] We note that the firms we have are from Global Vantage. For many economies, especially for smaller economies with less developed capital markets, they are more likely to be dominant firms that attract international investors' attention. Fogel *et al.* (2005) show that dominant firms are more likely to survive in the long term when the banking sector is more dominant, shareholder rights are less well protected, the government is more pro-active, and the economy is more open. The observation fits our expectations – poorer investor rights and more influence from non-equity stakeholders like banks which press for risk avoidance would lead firms to invest conservatively and firm survival in the economy is greater.

D.3. Independent variables

Consistent with our firm-level analysis we examine the impact of insider dominance on corporate risk-taking in the cross country studies. Insider dominance is the extent to which listed firms are controlled by dominant insiders (Stulz (2005).) Morck *et al.* (2005) and Stulz (2005) provide various measures of insider dominance that we can use alongside our measure of large shareholder ownership. We follow Stulz (2005) in measuring insider dominance by "close_ew," which is the average fraction of firms' stock market capitalization held by insiders according to Worldscope in 2002.[21] We input insider dominance as an explanatory variable for our risk taking measures. The variable is not significant, albeit negative in sign. As in our firm-level analysis we recognize that this variable is endogenous with respect to risk-taking. Since insider ownership is affected by the riskiness of the underlying assets we have instrumented it with the assessment of the risk of outright confiscation and with the total value traded on the country stock market as share of GDP, both from Demirguç-Kunt and Levine (2001). We have chosen these instruments since Stulz (2005) found them to be significant in explaining insider ownership (Stulz (2005), Table 2, Panel C.)[22] Controlling for the instrumented insider ownership, the investor protection proxies remain significant and positive in explaining risk taking. However, the instrumented insider ownership variable is not significant. Still, we recognize that the excluded instruments do not enter significantly the 2SLS specification as indicated by the F-test of excluded instruments. Therefore, that examination is only an attempt to check the robustness of our results.

We also examine the robustness of our results to different proxies for key variables. First, to proxy for bank dominance, we use the ratio of deposit money bank assets divided by stock market capitalization instead of the claims on private sector by deposit money banks and other financial institutions as share of GDP. Regressing our risk taking measures RISK2 and RISK3 on that proxy as in Table V Panel A, we find the coefficients for the proxy to be negative but insignificant except when the dependent variable is RISK3. Second, to proxy for labor

groups' dominance, we use the "flexibility of firing" index from the 2003 Doing Business Report of the World Bank instead of the percent of labor force unionized. Lower flexibility of firing raises labor power and exit costs and that may prompt firms to be more risk averse in their investments. In the regression analysis in Table V, Panel A, this index has negative coefficient that is insignificant. These additional variables do not qualitatively change our results. Third, to proxy for interventionist government, we use the percent of top 10 largest firms controlled by the state instead of government spending/GDP. The variable is obtained from La Porta *et al.* (1999). Our results are not qualitatively different.

IV. Conclusions

In this paper we consider the relationship between investor protection and corporate risk-taking. Poor investor protection can affect corporate risk taking in several ways. Managers in countries with poor investor protection are often dominant insiders having much of their wealth invested in the firms they control. They may invest more conservatively than outside shareholders desire and thus forego positive net present value investments. Insiders may also skip risky but value-enhancing projects to protect their expected private benefits. Better investor protection lowers the expected level of private benefits causing insiders to be less risk-averse. Another view is that non-equity stakeholders, such as banks, labor unions and the government may constrain value-enhancing corporate risk-taking to protect their interests. At the same time, one can construct plausible cases for stronger investor protection being associated with less corporate risk-taking.

We empirically examine these hypotheses using a large panel of manufacturing companies from thirty-nine countries from the Compustat Global Vantage dataset covering 1992-2002. We document significant positive relationships between various firm- and country-

level risk-taking measures and measures of investor protection, and between risk-taking and growth. We also find strong support for similar relationships in a sample of US firms for which firm-level data on corporate governance is available. However, the cross country data do not show consistent support for high bargaining power of labor unions, interventionist government, and bank dominance being associated with less corporate risk taking. On the other hand, our firm-level examination of companies in the United States reveals that reliance on bank financing and unionization are both associated with less risk taking in corporate investments. Our results are generally robust to controls for firm earnings management, competition in the local economy, stock market development, and general economic development.

We believe that this study contributes to the broader literatures on corporate governance and growth in two important ways. First, we provide a novel explanation for why better investor protection leads to faster growth. Second, our study is one of the first to empirically document the impact of risk-taking on growth. We hope that future research on investor protection, stakeholder governance, and growth will shed further light on this relationship.

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Table I. Variable Definitions.

Main Variables	Definition	Source
Risk-taking variables		
Company risk-taking proxy (RISK1)	We compute company earnings volatility, $RISK1 = \sqrt{\frac{1}{T-1}\sum_{t=1}^{T}\left(E_{i,c,t} - \frac{1}{T}\sum_{t=1}^{T}E_{i,c,t}\right)^2} \mid T \geq 5$, where $E_{i,c,t} = \frac{EBITDA_{i,c,t}}{A_{i,c,t}} - \frac{1}{N_{c,t}}\sum_{k=1}^{N_{c,t}}\frac{EBITDA_{k,c,t}}{A_{k,c,t}}$. $N_{c,t}$ indexes the firms within country c and year t, and $EBITDA_{i,c,t}$ is defined as depreciation (item #11) plus operating income after depreciation (item #14), $A_{i,c,t}$ is the contemporaneous total assets (item #89) from Compustat Global Industral (Vantage) database. That is, for each firm with available earnings and total assets for at least five years in 1992-2002 we compute the deviation of the firm's EBITDA/Assets from the country average (for the corresponding year) and then calculate the standard deviation of this measure for each firm. $E_{i,c,t}$ is Winsorized at 0.5% on both sides of the sample distribution to account for data entry omissions.	Compustat Global Industrial Database.
Country risk-taking proxy (RISK2)	The average of the company risk-taking proxy RISK1, i.e. $RISK2 = \frac{1}{N_c}\sum_{i=1}^{N_c}\sigma_{i,c} \mid N_c \geq 2$.	Compustat Global Industrial Database.
Imputed risk score (RISK3)	Calculated for each country over the period 1992-2002 (for Table V, Panels A and B) or 1992-2000 (for Table V, Panel C). The imputed risk scores are obtained using the following formula $RISK3 = \frac{1}{11}\sum_{t=1992}^{t=2002}\left(\sum_{j\in\{200,\ldots,399\}} MV_{t,j,c} \times \sigma^{USA}{}_{1994-1997,j} \Big/ \sum_{j\in\{200,\ldots,399\}} MV_{t,j,c}\right)$, where j is an industry subscript based on 3-digit SIC codes, c is a country subscript, t is a year subscript, $MV_{t,j,c}$ is the market capitalization in industry j in year t for country c, and $\sigma^{USA}{}_{1994-1997,j}$ is the industry j risk score computed using only US single business segment firms for the period 1994-1997. In the computation of $\sigma^{USA}{}_{1994-1997,j}$ we include firm-years where sales are above 10 million US$. Market values (MV) are computed as of the end of the fiscal year. Prices and shares outstanding data is compiled from Global Vantage Issue database (Compustat Global Issue). The $\sigma^{USA}{}_{1994-1997,j}$ is computed as $\sigma_{1994-1997,j,USA} = \left[\frac{1}{\sum_{t=1998}^{t=1997} N^{USA}_{j,t} - 1}\sum_{t=1994}^{1997}\sum_{i=1}^{N_j}\left(E^{USA}{}_{i,j,t} - \frac{1}{\sum_{t=1994}^{t=1997} N^{USA}_{j,t}}\sum_{t=1994}^{1997}\sum_{i=1}^{N_j}E^{USA}{}_{i,j,t}\right)^2\right]^{0.5}$, where j indexes the manufacturing industries defined as 3-digit SIC codes, i indexes the companies within a given industry, $N^{USA}_{j,t}$ represents the number of firms in the US in industry j in year t, and $E^{USA}{}_{i,j,t} = \left(EBITDA^{USA}{}_{i,j,t}/A^{USA}{}_{i,j,t}\right) - \frac{1}{N^{USA}_{j,t}}\sum_{j}\sum_{i=1}^{N_j}\left(EBITDA^{USA}{}_{i,j,t}/A^{USA}{}_{i,j,t}\right)$. Prior to computing $\sigma^{USA}{}_{1994-1997,j}$ we Winsorize $E^{USA}{}_{i,j,t}$ at 0.5% in both sides of its distribution to account for data entry omissions. $EBITDA^{USA}{}_{i,j,t}$ corresponds to data item #13 (operating income before depreciation) and $A^{USA}{}_{i,j,t}$ refers to data item #6 (total assets), both from Compustat North America, for the period 1994-1997. The single business segment firms are identified from the Compustat Segment file. We start in 1994 to avoid the recession years preceding it. The sample ends in 1997 to account for the changed US practices of reporting business units as of 1997 (FAS 131 changed the rules of reporting segments, rendering comparisons of US segments pre- and post-1997 imprecise).	Compustat Global Industrial Database and Compustat North Americal Industrial Database.
Growth Variables		
Real-GDP-per capita growth (RGDP)	Growth rate of real per-capita GDP. The latter is measured in 1995 constant US$. The nominal GDP, GDP deflator and population data, used to compute it are obtained from the International Financial Statistics of the IMF. We use the line data item 99bvp and 99bvr that are presented as of reference year 1995 (GDP volume index assumed 100 in 1995) in the IFC Yearbook.	International Financial Statistics of the International Monetary Fund.
Total Factor Productivity growth (TFP)	To measure TFP we follow algorithm similar to King and Levine (1993a, 1993b). We use the recursion $K_{c,t+1} = K_{c,t} + I_{c,t} - \delta K_{c,t}$, where c indexes countries, t is the time period, K is the real capital stock in year t and country c, I is the real capital investment in year t and country c, and δ is the rate of depreciation, which in accord with previous studies we assume to be the same across all countries, 7%. We start the recursion by assuming that in 1950 (the beginning of the data by Penn World Tables, version 6.1) the capital stock is 0. Iterating forward we obtain the capital stock for each year in 1992-2000 (the last date with available data in PWT). We then define capital stock per capita, k, as the ratio of the real capital stock to the population. The productivity growth is finally defined as: $\Delta\ln(y) - 0.3\Delta\ln(k)$, where the capital stock intensity is assumed 30% across all countries.	Penn World Tables, version 6.1.
Average assets (sales) growth	Average assets, i.e. item #89 (sales, item #1) growth over the sample period, 1992-2002. Prior to computing the growth we convert all accounting data in US$. We have further Winsorized the assets (sales) growth at the 0.5% level on both sides of the sample distribution.	Compustat Global Industrial Database.

Investor Protection Variables		
Rule of Law (RL)	Rule of law is the assessment of the law and order tradition of the country. Calculated as "average of the months of April and October of the monthly index between 1982 and 1995. Scale from zero to 10, with lower scores for less tradition for law and order."	International Country Risk Guide; Quotation is from La Porta *et al.* (1998).
Rating of Accounting disclosure Standards (ASR)	Index that is created by "examining and rating companies' 1990 annual report on their inclusion or omission of 90 items. These items fall into seven categories (general information, income statements, balance sheets, fund flow statement, accounting disclosure standards, stock data, and special items). A minimum of three companies in each country were studied." Approximately 70% of the companies screened are industrials, while the remaining 30% represent financials.	Center for International Financial Analysis and Research. Quotation is from La Porta *et al.* (1998)
Anti-director rights (ADR)	An index that aggregates shareholder rights. "The index is formed by adding one when: (1) the country allows shareholders to mail their proxy vote to the firm, (2) shareholders are not required to deposit their shares prior to the general shareholders' meeting, (3) cumulative voting or proportional representation of minorities in the board of directors is allowed, (4) minorities shareholders have legal mechanisms against perceived oppression by directors, (5) the minimum percentage of share capital that entitles a shareholder to call for an extraordinary shareholders' meeting is less than or equal to 10 percent (the sample median), or (6) shareholders have preemptive rights that can be waived only by a shareholders' vote. The index ranges from zero to six."	Quotation is from La Porta *et al.* (1998)
Firm-Level Control Variables		
Firm size	We define it as the natural logarithm of total assets (data item #89) measured in million of US$. We retrieve that variable as of the first year of entry of the company in our sample.	Compustat Global Industrial Database.
Book Leverage	Defined as the ratio of the book debt to total assets. We define book debt as the sum of total liabilities (item #118) and preferred stock (item #119) net of deferred taxes (item #105). All line items are in million of US$. We retrieve that variable as of the first year of entry of the company in our sample.	Compustat Global Industrial Database.
Corporate earnings	Defined as the ratio of EBITDA to total assets. Both line items are in million US$. We retrieve that variable as of the first year of entry of the company in our sample.	Compustat Global Industrial Database.
Large Shareholder Ownership	The total cash flow rights of the largest shareholder on record with the company. The data span is 2002-2005. If the largest owner has less then 20%, we code the value as 0.	Bureau van Dijk Osiris dataset; shareholders file.
Earnings Smoothing (ES_2)	A measure of earnings smoothing due to managerial incentives in Ball *et al.* (2000) and used also in Bhattacharya *et al.* (2003), and in Leuz *et al.* (2003). We compute it as the ratio (ES_1) of firm-level standard deviations of operating income and operating cash flow where both variables are scaled with lagged total assets. The higher the value of this measure, the lower earnings smoothing is. To facilitate interpretation, we consider the modified measure ES_2=1-ES_1. Higher values of ES_2 indicate higher level of earnings smoothing. Operating cash flow is equal to operating income (item #14) minus accruals, where accruals are calculated as $ACCRUALS_{i,t} = (\Delta CA_{i,t} - \Delta CASH_{i,t}) - (\Delta CL_{i,t} - \Delta STD_{i,t} - \Delta TP_{i,t}) - DEP_{i,t}$, where $CA_{i,t}$ is total current assets (item #75), $CASH_{i,t}$ is cash or cash equivalents (#60), $CLS_{i,t}$ is total current liabilities (#104), $STD_{i,t}$ is short-term debt (item #94), $TP_{i,t}$ is income taxes payable (#100), and $DEP_{i,t}$ is depreciation expense (#11); i indexes the company in point. We compute the country measure analogous to the above as the median firm ratio for each country.	Compustat Global Industrial Database.
Country-Level Control Variables		
Country Insider Ownership	Equally- (CLOSE_EW) or value- weighted (CLOSE_VW) average fraction of firms' stock market capitalization held by insiders based on data from Worldscope database in 2002.	Quotation is from Stulz (2005)
Index of political constraints (POLCONV)	An index of political constraints of the state government for 1960. The value ranges from 0 to 1, with 0 being dictatorship and 1 democracy.	Henisz (2000)
Herfindahl Index (HERF)	To control for competition we use a Herfindahl index, defined as the sum of the squared shares of firm sales to total sales within a given country for the period 1992-2002, $H_c = \frac{1}{T}\sum_t \sum_i \left(\frac{s_{i,c,t}}{\sum_j s_{j,c,t}} \right)^2$, where $s_{i,c,t}$ is the sales of company *i* from country *c* in fiscal year *t*.	Compustat Global Industrial Database.
Private Credit (PRIVO)	Claims on private sector by deposit money banks and other financial institutions as share of GDP.	Beck, Demirguç-Kunt and Levine (2003)
Market Capita-lization (MCAP)	Stock market capitalization as share of GDP.	Beck, Demirguç-Kunt and Levine (2003)
Union membership (UNION)	Union membership as a percentage of the non-agricultural labor force in the International Labor Organization's World Labor Report, 1997-1998.	World Labor Report, 1997-1998, Statistical Annex, Table 1.2
Government spending (GOV)	Country average of the government expenditures as share of GDP over 1980-1995.	Demirguç-Kunt and Levine (2001)
Average Schooling (SCHOOL)	Average schooling years in the total population over 25 in 1990.	Barro and Lee (1993)
1991 $ GDP-per-capita ($ GDP)	1991 GDP-per-capita in 1996 constant US dollar terms (adjusted back to 1995 constant US $).	Penn World Tables Version 6.1

Table II. Descriptive Statistics

Descriptive statistics for country variables in our sample. The columns contents is: (1) average number of manufacturing companies per country in the sample (N), (2) country average of the standard deviation of firm EBITDA-to-asset ratio (RISK2), (3) imputed country riskiness score (RISK3), (4) earnings smoothing parameter, computed as ES_2=1-ES_1 where ES_1 is the earnings smoothing measure in Ball *et al.* (2000) (ES2), (5) average annual real GDP-per-capita growth for 1992-2002 (RGDP), (6) country average total factor productivity growth for 1992-2000 (TFP), (7) claims on private sector by deposit money banks and other financial institutions as share of GDP (PRIVO), (8) stock market capitalization as share of GDP (MCAP), (9) rule of law (RL), (10), disclosure – rating of quality of the accounting disclosure standards (ASR), (11) anti-director rights index (ADR), (12) country Herfindahl index (HERF), (13) 1991 GDP-per-capita in 1995 constant US dollar terms ($ GDP), (14) Union membership as a percentage of the non-agricultural labor in 1997-1998 (UNION), and (15) Average annual government expenditure as share from GDP, 1980-1995 (GOV). Items seven, eight, 14, and 15 are from Demirguç-Kunt and Levine (2001). Items nine through 11 are from La Porta *et al.* (1998). The source of the data for computing N, RISK2 and RISK3 is Compustat Global Vantage database for the period 1992-2002. When computing RISK2 and RISK2 we have included manufacturing firms (SIC codes 2000-3999) only.

	Variables														
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Country	**N**	**RISK2**	**RISK3**	**ES2**	**RGDP**	**TFP**	**PRIVO**	**MCAP**	**RL**	**ASR**	**ADR**	**HERF**	**$ GDP**	**UNION**	**GOV**
Argentina	15	0.062	0.084	0.35	0.00%	3.10%	0.15	0.05	5.35	45	4	0.25	$5,771	25.4	11.7
Australia	101	0.077	0.088	0.21	2.60%	2.10%	0.81	0.43	10	75	4	0.07	$18,302	28.6	17.7
Austria	53	0.04	0.084	0.58	1.60%	1.00%	0.87	0.07	10	54	2	0.14	$21,652	36.6	18.3
Belgium	54	0.041	0.105	0.5	2.30%	1.10%	0.37	0.26	10	61	0	0.14	$20,320	38.1	15.4
Brazil	84	0.052	0.081	0.42	1.50%	1.60%	0.25	0.12	6.32	54	3	0.18	$2,712	32.1	11.0
Canada	224	0.09	0.127	0.21	3.20%	1.60%	0.77	0.46	10	74	5	0.03	$21,057	31	20.3
Chile	41	0.03	0.107	0.45	3.90%	2.60%	0.5	0.43	7.02	52	5	0.23	$2,601	15.9	11.1
Colombia	13	0.022	0.09	0.39	0.70%	-0.10%	0.27	0.06	2.08	50	3	0.34	$1,347	7	10.6
Denmark	73	0.05	0.162	0.33	2.00%	1.60%	0.42	0.22	10	62	2	0.07	$26,035	68.2	25.3
Finland	64	0.047	0.151	0.3	2.40%	2.70%	0.67	0.18	10	77	3	0.09	$24,627	59.7	20.6
France	264	0.044	0.121	0.4	1.40%	0.90%	0.91	0.2	8.98	69	3	0.05	$20,923	6.1	18.7
Germany	313	0.06	0.121	0.5	1.10%	0.30%	0.92	0.19	9.23	62	1	0.05	$22,135	29.6	19.1
Greece	25	0.033	0.062	0.41	2.40%	2.50%	0.4	0.08	6.18	55	2	0.24	$8,813	15.4	13.7
Hong Kong	45	0.067	0.183	0.41	2.10%	0.70%	1.36	1.28	8.22	69	5	0.09	$14,947	18.5	7.2
India	184	0.048	0.109	0.38	4.00%	2.70%	0.27	0.13	4.17	57	5	0.1	$339	5.4	11.0
Indonesia	62	0.06	0.094	0.32	2.00%	0.20%	0.26	0.05	3.98	-	2	0.16	$708	2.6	9.5
Ireland	22	0.047	0.13	0.21	6.40%	5.30%	0.63	0.27	7.8	-	4	0.14	$13,546	36	16.2
Israel	25	0.062	0.101	0.32	1.10%	0.90%	0.51	0.29	4.82	64	3	0.18	$11,956	23.1	29.8
Italy	98	0.034	0.107	0.49	1.40%	1.00%	0.51	0.12	8.33	62	1	0.14	$20,462	30.6	16.5
Japan	768	0.021	0.16	0.41	0.80%	0.00%	1.69	0.73	8.98	65	4	0.01	$28,110	18.6	9.2
Korea	58	0.053	0.155	0.45	4.60%	2.30%	0.81	0.25	5.35	62	2	0.14	$6,819	9	10.9
Malaysia	222	0.069	0.108	0.46	2.90%	1.70%	0.8	1.07	6.78	76	4	0.03	$2,521	11.7	15.5
Mexico	32	0.038	0.085	0.07	1.10%	1.10%	0.18	0.15	5.35	60	1	0.08	$3,714	31	8.1
Netherlands	89	0.055	0.094	0.36	2.30%	1.70%	1.28	0.41	10	64	2	0.2	$20,058	21.8	15.3
New Zealand	18	0.073	0.105	0.4	2.20%	1.90%	0.54	0.4	10	70	4	0.26	$12,098	23.2	16.7
Norway	46	0.079	0.143	0.28	2.70%	2.30%	0.89	0.15	10	74	4	0.13	$27,630	51.7	20.7
Pakistan	25	0.052	0.126	0.65	0.90%	0.90%	0.23	0.09	3.03	-	5	0.23	$396	5.5	12.2
Philippines	22	0.082	0.096	0.4	1.10%	1.30%	0.29	0.21	2.73	65	3	0.47	$708	22.8	8.7
Portugal	21	0.033	0.089	0.51	2.50%	1.00%	0.63	0.08	8.68	36	3	0.15	$8,207	18.8	14.3
Singapore	107	0.058	0.154	0.35	3.30%	4.70%	0.95	1.23	8.57	78	4	0.07	$13,665	13.5	10.9
South Africa	30	0.039	0.081	0.24	0.60%	0.80%	0.79	1.31	4.42	70	5	0.1	$3,343	21.8	18.0
Spain	59	0.038	0.078	0.33	2.20%	1.50%	0.72	0.18	7.8	64	4	0.23	$14,178	11.4	15.1
Sweden	103	0.08	0.157	0.14	2.10%	1.50%	1.09	0.38	10	83	3	0.08	$28,724	77.2	27.4
Switzerland	96	0.043	0.119	0.35	0.60%	0.20%	1.78	0.71	10	68	2	0.15	$34,217	20	13.0
Taiwan	101	0.036	0.196	0.32	-	2.90%	0.91	0.49	8.52	65	3	0.1	$8,781	27.9	15.5
Thailand	140	0.066	0.104	0.35	2.70%	1.00%	0.68	0.26	6.25	64	2	0.06	$1,735	3.1	10.7
Turkey	24	0.073	0.076	0.08	1.40%	0.60%	0.14	0.06	5.18	51	2	0.28	$2,636	22	7.4
United Kingdom	485	0.069	0.116	0.21	2.20%	1.60%	0.74	0.76	8.57	78	5	0.05	$17,883	26.2	21.4
United States	1,818	0.09	0.161	0.1	2.10%	1.60%	1.31	0.58	10	71	5	0.01	$23,471	12.7	17.5

Table III Panel A. Firm Level Risk-taking Regressions

In this table we present firm-level OLS regressions of corporate risk-taking proxy RISK1, investor protection indicators, and controls for firm characteristics (large shareholder ownership, earnings smoothing, size, corporate earnings, sales growth, and book leverage) and country characteristics such as Herfindahl index, government spending, labor union bargaining power, country bank- and stock-market development. All firm-level controls except for earnings smoothing are as of the first year of firm appearance in our database. The risk-taking proxy is the time series standard deviation of the EBITDA/Assets company ratio, computed for 1992-2002. We include only firms for which there are at least five annual observations on EBITDA/Assets. Earnings smoothing is one minus the firm's ratio of firm-level standard deviations of operating income and operating cash flow, both scaled by lagged total assets. The higher the measure, the higher the propensity to smooth earnings. Regressions include also as control the number of observations used to estimate the risk taking proxy (not reported). For the definition of the control variables refer to Table I. We consider only firms in the manufacturing industry (SIC 2000-3999). Results are obtained from regressions with one-digit SIC code dummies (not reported). Regression (6) is a two-stage least squares (2SLS) estimation where we instrument shareholder ownership with the logarithm of firm age and with the average large shareholder ownership value of other companies from the same country in the same two-digit SIC code industry. The partial R-squared is the fraction of the variation of RISK1 explained by the instruments, net of their effect through the exogenous variables. The test of over-identifying restrictions tests the joint null hypothesis that the excluded instruments are uncorrelated with the error term and are correctly excluded from the second-stage equation. The Hausman test examines whether the OLS and 2SLS coefficients on RISK1 are statistically different. The absolute value of the t-statistics (in parentheses below the coefficient estimates) is based on robust standard errors clustered at the country level. We weight each firm observation with the inverse of the number of firms from its domicile country. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, correspondingly.

	Dependent Variable: Company Risk-taking, RISK1					
	(1)	(2)	(3)	(4)	(5)	(6)
Anti-Director Index (ADR)	0.0034**			0.0025	0.002	0.003
	(2.23)			(1.64)	(1.16)	(1.30)
Rule of Law (RL)		0.002		0.002	0.001	-0.003
		(0.55)		(0.63)	(0.42)	(1.07)
Disclosure (ASR)			0.0007***	0.0007**	0.0008***	0.0018***
			(2.94)	(2.56)	(3.28)	(4.31)
Large Shareholder Ownership					-0.009	0.048
					(1.13)	(1.58)
Corporate Earnings Smoothing	-0.004	-0.004	-0.004	-0.004	-0.01**	-0.0109***
	(1.45)	(1.23)	(1.38)	(1.44)	(2.24)	(2.79)
Log (Initial Corporate Assets)	-0.0084***	-0.0084***	-0.0082***	-0.008***	-0.0079***	-0.0096***
	(6.28)	(6.40)	(6.27)	(6.30)	(5.60)	(5.04)
Initial Corporate Earnings	-0.051	-0.054	-0.052	-0.050	-0.080	-0.091
	(1.30)	(1.38)	(1.35)	(1.30)	(1.42)	(1.57)
Initial Sales Growth	0.002	0.003	0.001	0.001	0.0166**	0.012
	(0.43)	(0.52)	(0.17)	(0.18)	(2.21)	(1.16)
Initial Book Leverage	0.006	0.005	0.004	0.005	0.001	0.003
	(0.89)	(0.65)	(0.57)	(0.67)	(0.06)	(0.15)
Country Herfindahl Index	0.0002	-0.0004	-0.0013	-0.0012	-0.001	-0.002
	(0.20)	(0.26)	(0.96)	(0.91)	(0.83)	(1.32)
Country Private Credit	-0.002	-0.007	-0.007	-0.010	-0.0189**	-0.003
	(0.29)	(0.71)	(1.02)	(1.03)	(2.23)	(0.40)
Country Market Capitalization	-0.001	0.008	-0.005	-0.008	-0.006	-0.0287**
	(0.14)	(1.34)	(0.80)	(1.13)	(0.63)	(2.54)
Government Spending	0.0002	0.0003	-0.0001	-0.0002	-0.001	-0.001
	(0.39)	(0.74)	(0.11)	(0.38)	(1.13)	(1.40)
Unionized Labor	0.0003*	0.0002	0.0002	0.0002	0.0003**	0.0003*
	(1.85)	(1.04)	(1.21)	(1.20)	(2.04)	(1.78)
Number of observations	5,007	5,007	5,007	5,007	2,173	1,537
R-squared (%)	14.3%	13.7%	15.3%	15.7%	26.1%	23.8%
F-statistic (p-value)	5.61 (0.00)	6.16 (0.00)	4.97 (0.00)	5.40 (0.00)	15.11 (0.00)	18.65 (0.00)
Number of countries	38	38	38	38	37	28
Excluded instruments robust F-statistic (p-value)	-	-	-	-	-	2.53 (0.098)
Partial R-squared	-	-	-	-	-	2.83%
Hansen J-test (p-value)	-	-	-	-	-	0.03 (0.86)
Hausman test (p-value)	-	-	-	-	-	1.25 (0.27)

Table III Panel B. Firm Level Growth 2SLS Regressions

Part I of Panel C presents the first-stage regressions of firm-level risk-taking on the instrumental variables, logarithm of initial total assets, RISK1* (average risk-taking of peer firms in the same industry and country), ADR, ASR, and RL, and the exogenous control variables included in the second stage firm-level regressions of assets and sales growth versus the risk-taking proxy, RISK1. Controls include initial firm earnings, Herfindahl index, bank- and stock-market development, percentage of labor participating in unions from the World Labor Report 1997-1998, and the average government spending in 1980-1995. Assets and sales growth are Winsorized at the 0.5% level on both sides of the distribution. Assets (sales) growth is computed as the growth in dollar-denominated assets (sales) of the firm. We include only firms for which there are at least five annual observations on EBITDA/Assets. We consider only manufacturing industry constituents (SIC 2000-3999). The partial R-squared is the fraction of the variation of RISK1 explained by the instruments, net of their effect through the exogenous variables. The test of over-identifying restrictions tests the joint null hypothesis that the excluded instruments are uncorrelated with the error term and are correctly excluded from the second-stage equation. **Part II** reports the results from the second-stage regressions of firm growth measures on instrumented RISK1 and control variables. The Hausman test examines whether the OLS and 2SLS coefficients on RISK1 are statistically different. The absolute value of the t-statistics (in parentheses below the coefficient estimates) is based on robust standard errors clustered at the country level. We weight each firm observation with the inverse of the number of firms from its domicile country. Results are obtained from regressions with one-digit SIC code dummies (not reported). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, correspondingly.

	Part I: First-Stage Regressions and Validity of Instruments							
	Company Asset Growth				*Company Sales Growth*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Instruments								
Log(Initial firm asset size)	-0.0082***	-0.0078***			-0.0082***	-0.0078***		
	(6.07)	(6.15)			(6.06)	(6.14)		
RISK1*			0.3833***	0.3444***			0.3833***	0.3444***
			(5.30)	(4.96)			(5.30)	(4.96)
Disclosure (ASR)		0.0007***		0.0004***		0.0007***		0.0004***
		(2.73)		(3.10)		(2.73)		(3.10)
Rule of Law (RL)		0.002		0.002		0.002		0.002
		(0.86)		(1.42)		(0.86)		(1.42)
Anti-Director Index (ADR)		0.002		0.002*		0.002		0.002*
		(1.48)		(1.67)		(1.48)		(1.67)
Predetermined Variables								
Initial Corporate Earnings	-0.055	-0.051	-0.051	-0.046	-0.055	-0.051	-0.051	-0.046
	(1.41)	(1.32)	(1.22)	(1.10)	(1.41)	(1.32)	(1.22)	(1.10)
Country Herfindahl Index	-0.000004	-0.001	0.001	-0.0004	-0.000004	-0.001	0.001	-0.0004
	(0.00)	(1.06)	(0.69)	(0.44)	(0.00)	(1.06)	(0.69)	(0.44)
Country Private Credit	-0.002	-0.010	-0.005	-0.0101*	-0.002	-0.010	-0.005	-0.0101*
	(0.27)	(1.07)	(0.92)	(1.77)	(0.27)	(1.07)	(0.92)	(1.77)
Country Market Capitalization	0.006	-0.009	0.005	-0.004	0.006	-0.009	0.005	-0.004
	(1.13)	(1.12)	(1.61)	(0.88)	(1.13)	(1.12)	(1.61)	(0.88)
Unionized Labor	0.0002	0.0002	0.000	0.000	0.0002	0.0002	0.0001	0.0001
	(1.56)	(1.16)	(1.04)	(0.67)	(1.56)	(1.16)	(1.04)	(0.67)
Government Spending	0.0004	-0.0002	0.0003	-0.0001	0.0004	-0.0002	0.0003	-0.0001
	(0.96)	(0.35)	(0.94)	(0.19)	(0.96)	(0.35)	(0.94)	(0.19)
Number of observations	5,007	5,007	4,372	4,372	5,005	5,005	4,932	4,932
Number of countries	38	38	38	38	38	38	38	38
R-squared (%)	12.7%	15.0%	15.9%	17.3%	12.7%	15.0%	11.1%	12.1%
F-statistic	6.7	6.8	9.2	10.2	6.7	6.8	6.9	12.1
F-statistic p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Predictive Power of Excluded Instruments							
Partial R-squared	9.4%	11.8%	7.4%	8.5%	9.4%	11.8%	7.4%	8.5%
Robust F-statistic(instruments)	36.79	12.22	28.11	16.18	36.76	12.21	28.11	16.17
F-statistic p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Test of Over-identifying Restrictions							
Hansen J-Statistic	0.00	4.69	0.00	2.20	0.00	1.31	0.00	4.28
p-value	-	0.20	-	0.03	-	0.73	-	0.23

	Part II: Second-Stage Regressions of company growth measures on RISK1							
	Company Asset Growth				*Company Sales Growth*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Instrumented RISK1	1.387***	1.136***	0.6241***	0.6841**	1.1208***	1.1642***	0.9278***	1.2688***
	(5.26)	(5.60)	(2.84)	(2.36)	(3.54)	(3.69)	(4.16)	(3.84)
Predetermined Variables								
Initial Corporate Earnings	0.100	0.088	0.059	0.062	-0.007	-0.005	-0.024	-0.007
	(1.62)	(1.67)	(1.41)	(1.54)	(-0.14)	(0.10)	(0.59)	(0.14)
Country Herfindahl Index	-0.002	-0.002	-0.0003	-0.0003	0.0044*	0.0044*	0.0074**	0.0072**
	(1.16)	(1.25)	(0.10)	(0.11)	(1.95)	(1.94)	(2.15)	(2.28)
Country Private Credit	-0.008	-0.009	-0.013	-0.013	0.020	0.020	0.015	0.017
	(0.59)	(0.77)	(1.25)	(1.19)	(1.42)	(1.45)	(1.05)	(1.21)
Country Market Capitalization	0.001	0.003	0.008	0.008	-0.0379***	-0.0384***	-0.036***	-0.0395***
	(0.04)	(0.26)	(0.78)	(0.71)	(-3.17)	(3.29)	(2.69)	(3.11)
Unionized Labor	-0.0002	-0.0002	-0.0003	-0.0003	-0.0001	-0.0001	-0.0003	-0.0003
	(0.69)	(0.65)	(1.06)	(1.04)	(-0.30)	(0.32)	(0.66)	(0.73)
Government Spending	-0.001	-0.001	-0.0002	-0.0002	0.000	0.000	0.0002	-0.0001
	(1.25)	(1.18)	(0.16)	(0.19)	(-0.14)	(0.17)	(0.18)	(0.06)
Number of observations	5,007	5,007	4,933	4,933	5,005	5,005	4,932	4,932
F-statistic (p-value)	4.66 (0.00)	5.06 (0.00)	2.12 (0.06)	2.05 (0.07)	5.46 (0.00)	6.48 (0.00)	5.96 (0.00)	5.29 (0.00)
	Hausman test for the Effect of RISK1							
Cluster-Robust F-statistic	10.87	7.08	1.82	2.46	6.02	7.71	6.59	8.12
p-value	0.00	0.01	0.19	0.13	0.02	0.01	0.01	0.00

Table IV Panel A. Firm Level Risk-taking for Firms in the United States

In this table we present firm-level regressions of corporate risk-taking proxy RISK1 on corporate governance indicators (entrenchment- and governance- indices), and controls for firm characteristics (earning smoothing, size, corporate earnings, sales growth, book leverage, and large shareholder ownership) for US-companies with available data in our sample. All firm-level controls except for earnings smoothing are as of the first year of firm appearance in our database. Earnings smoothing is one minus the firm's ratio of firm-level standard deviations of operating income and operating cash flow, both scaled by lagged total assets. The higher the measure, the higher the propensity to smooth earnings. The risk-taking proxy is the time series standard deviation of the EBITDA/Assets company ratio, computed for 1992-2002. We include only firms for which there are at least five annual observations on EBITDA/Assets. We consider only firms in the manufacturing industry (SIC 2000-3999). All variables are defined in Table I. In models (5) and (6) we instrument the ownership with the average large shareholder ownership for other companies in the same two-digit industry and the logarithm of firm age. The partial R-squared is the fraction of the variation of RISK1 explained by the instruments, net of their effect through the exogenous variables. The test of over-identifying restrictions tests the joint null hypothesis that the excluded instruments are uncorrelated with the error term and are correctly excluded from the second-stage equation. The Hausman test examines whether the OLS and 2SLS coefficients on RISK1 are statistically different. Reported results are obtained from regressions with one-digit SIC industry code fixed effects (not shown); in addition the regression includes as control the number of observations used to estimate the risk taking proxy (not shown). The absolute value of the t-statistics (in parentheses below the coefficient estimates) is based on robust standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, correspondingly. The table also presents the number of observations and the R-squared statistics for the regressions.

	Dependent Variable: Company Risk-taking RISK1			
	(1)	(2)	(3)	(4)
Entrenchment index (E-index)	-0.0025**		-0.002	
	(2.48)		(1.11)	
Governance index (G-index)		-0.0019***		-0.0018**
		(3.67)		(2.28)
Earnings Smoothing	-0.0166***	-0.0161***	-0.0177***	-0.0163***
	(4.79)	(4.74)	(4.34)	(4.14)
Log (Initial Firm Size)	-0.0062***	-0.0056***	-0.0064***	-0.0057***
	(4.95)	(4.72)	(4.96)	(4.68)
Initial Corporate Earnings	-0.1481***	-0.1501***	-0.1449***	-0.1489***
	(4.11)	(4.20)	(4.09)	(4.23)
Initial Sales Growth	0.008	0.006	0.011	0.008
	(0.63)	(0.51)	(0.85)	(0.57)
Initial Book Leverage	0.013	0.013	0.0157*	0.014
	(1.61)	(1.66)	(1.80)	(1.59)
Large Shareholder Ownership	-0.006	-0.009	0.034	-0.001
	(0.59)	(0.80)	(0.52)	(0.02)
Initial Bank Power Proxy	-0.019	-0.0206*	-0.0228*	-0.0227*
	(1.56)	(1.73)	(1.76)	(1.8)
Initial Industry Unionized Level	-0.0005***	-0.0005***	-0.0005***	-0.0005***
	(4.97)	(5.04)	(4.89)	(5.07)
Number of observations	443	443	436	436
R-squared (%)	35.2%	36.2%	33.8%	36.6%
	2SLS regressions statistics			
F-statistic (excluded instruments)	-	-	3.32 (0.04)	2.8 (0.06)
Partial R-squared	-	-	2.3%	2.2%
Hansen J-test (p-value)	-	-	2.52 (0.11)	1.19 (0.28)
Hausman test (p-value)	-	-	0.09 (0.77)	0.05 (0.83)

Table IV Panel B. Firm Level Growth Regressions for Firms in the United States

Part I of Panel B presents the first-stage regressions of firm-level risk-taking on the instrumental variables (logarithm of initial firm size, average risk-taking by other firms in the same two-digit SIC code industry - RISK1*, entrenchment- and corporate governance- indices) and the pre-determined control variables included in the second stage firm-level regressions of assets and sales growth versus the risk-taking proxy, RISK1, for companies from the United States in our sample. These controls include initial corporate earnings, bank power, and union power proxy. Assets and sales growth are Winsorized at the 0.5% level on both sides of the distribution. Assets (sales) growth is computed as the growth in $ assets (sales) of the firm. We include only firms for which there are at least five annual observations on EBITDA/Assets. We consider only manufacturing industry constituents (SIC 2000-3999). The partial R-squared is the fraction of the variation of RISK1 explained by the instruments, net of their effect through the exogenous variables. The test of over-identifying restrictions tests the joint null hypothesis that the excluded instruments are uncorrelated with the error term and are correctly excluded from the second-stage equation. **Part II** reports the results from the second-stage regressions of firm growth measures on RISK1 and control variables, in which risk-taking is treated as endogenous variable. The Hausman test examines whether the OLS and 2SLS coefficients on RISK1 are statistically different. The absolute value of the t-statistics (in parentheses below the coefficient estimates) is based on robust standard errors clustered at the country level. We weight each firm observation with the inverse of the number of firms from its domicile country. Results are obtained from regressions with one-digit SIC code dummies (not reported). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, correspondingly.

	Part I: First-Stage Regressions and Validity of Instruments							
	Company Asset Growth				*Company Sales Growth*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Instruments								
Log(Initial firm total assets)	-0.006***		-0.007***		-0.006***		-0.007***	
	(5.40)		(5.90)		(5.40)		(5.90)	
RISK1*		0.121**		0.123**		0.121**		0.123**
		(2.21)		(2.20)		(2.21)		(2.20)
Entrenchment index (E)			-0.003***	-0.005***			-0.0033***	-0.005***
			(3.22)	(4.68)			(3.22)	(4.68)
Governance index (G)	-0.002***	-0.003***			-0.002***	-0.003***		
	(4.52)	(6.23)			(4.52)	(6.23)		
Predetermined Variables								
Initial Corporate Earnings	-0.142***	-0.15***	-0.141***	-0.15***	-0.142***	-0.15***	-0.141***	-0.15***
	(3.94)	(3.81)	(3.85)	(3.66)	(3.94)	(3.81)	(3.85)	(3.66)
Bank Power	-0.013	-0.015	-0.012	-0.013	-0.013	-0.015	-0.012	-0.013
	(1.39)	(1.45)	(1.22)	(1.24)	(1.39)	(1.45)	(1.22)	(1.24)
Unionized Labor	-0.0005***	-0.0004***	-0.0005***	-0.0005***	-0.0005***	-0.0004***	-0.0005***	-0.0005***
	(5.00)	(3.53)	(4.92)	(3.59)	(5.00)	(3.53)	(4.92)	(3.59)
Number of observations	463	463	463	463	463	463	463	463
R-squared (%)	31.4%	26.4%	30.2%	23.4%	31.4%	26.4%	30.2%	23.4%
Regression F-statistic (p-value)	13.8 (0.00)	12.1 (0.00)	13.9 (0.00)	11.4 (0.00)	13.8 (0.00)	12.1 (0.00)	13.9 (0.00)	11.4 (0.00)
	Predictive Power of Excluded Instruments							
Partial R-squared	14.0%	7.83%	12.5%	4.0%	14.1%	7.83%	12.5%	4.0%
Robust F-statistic for Excluded instruments (p-value)	27.47 (0.00)	20.44 (0.00)	25.05 (0.00)	12.72 (0.00)	27.47 (0.00)	20.44 (0.00)	25.05 (0.00)	12.72 (0.00)
	Test of Overidentifying Restrictions							
Hansen J-Statistic	3.13	0.75	0.11	0.12	4.18	0.13	0.55	0.00
p-value	0.08	0.39	0.74	0.73	0.04	0.72	0.46	0.99

	Part II: Second-Stage Regressions of company growth measures on RISK1							
	Company Asset Growth				*Company Sales Growth*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Instrumented RISK1	2.695***	2.129***	3.007***	2.894***	2.511***	1.777***	2.808***	2.291***
	(5.42)	(4.18)	(5.34)	(3.8)	(5.2)	(3.61)	(5.14)	(3.28)
Predetermined Variables								
Initial Corporate Earnings	0.486***	0.40***	0.533***	0.516***	0.336***	0.225**	0.381***	0.303**
	(4.05)	(3.70)	(3.94)	(3.23)	(2.88)	(2.23)	(2.87)	(2.07)
Bank Power	0.014	0.006	0.018	0.017	0.002	-0.009	0.006	-0.001
	(0.38)	(0.17)	(0.47)	(0.42)	(0.05)	(0.27)	(0.16)	(0.03)
Unionized Labor	0.001*	0.0004	0.001**	0.001	0.001**	0.0004	0.001**	0.001
	(1.69)	(0.86)	(1.97)	(1.44)	(2.21)	(1.06)	(2.43)	(1.41)
Number of observations	463	463	463	463	463	463	463	463
Second-stage Regression F-statistic (p-value)	7.8 (0.00)	6.1 (0.00)	7.4 (0.00)	4.8 (0.00)	6.0 (0.00)	3.8 (0.00)	5.8 (0.00)	3.3 (0.00)
	Hausman test for the Effect of RISK1							
Robust F-statistic	68.2	23.38	74.87	21.1	67.33	17.26	75.25	13.95
p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table V Panel A. Risk-taking and Corporate Governance

We analyze the relationship between the risk-taking proxies, RISK2 and RISK3, and investor protection, disclosure, and rule of law indices from La Porta *et al.* (1998). We define RISK2 and RISK3 in Table I. As controls we also include the percentage labor participating in labor unions from the 1997-1998 World Labor Report, the average annual government spending as a share of GDP over 1980-1995, a proxy for earnings smoothing, a country-level Herfindahl index, the claims on private sector by deposit money banks and other financial institutions as share of GDP, the stock market capitalization as share of GDP (the latter two measures from Demirguç-Kunt and Levine (2001)), and the logarithm of 1991 GDP-per-capita (in US$). We consider companies in the manufacturing industry only (SIC codes 2000 through 3999). The absolute value of the t-statistics (in parentheses below the coefficient estimates) is based on robust standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, correspondingly.

	Dependent Variable:							
	RISK2				RISK3			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Disclosure (ASR)	0.0010***			0.0009***	0.0007			0.0009
	(2.16)			(2.00)	(1.19)			(1.39)
Rule of Law (RL)		0.0059***		0.0043		-0.0019		-0.0042
		(2.12)		(1.60)		(0.45)		(0.98)
Anti-Director Index (ADR)			0.0022	0.0017			0.0051*	0.0055*
			(0.84)	(0.56)			(1.88)	(1.84)
Unionized labor	0.0000	-0.0001	0.0001	-0.0001	0.0008***	0.0009***	0.0009***	0.0009***
	(0.22)	(0.65)	(0.30)	(0.54)	(2.28)	(2.85)	(3.10)	(2.77)
Government Spending	0.0004	0.0013***	0.0009	0.0005	-0.0012	-0.0006	-0.0010	-0.0019
	(0.52)	(2.16)	(1.24)	(0.61)	(1.00)	(0.64)	(0.99)	(1.49)
Earnings Smoothing	-0.0451	-0.0680***	-0.0529***	-0.0519*	0.0253	0.0267	0.0317	0.0508
	(1.54)	(3.48)	(2.47)	(1.79)	(0.65)	(0.72)	(0.97)	(1.16)
Herfindahl Index	0.0306	0.0536	0.0182	0.0523	-0.0923***	-0.1112***	-0.1068***	-0.1198***
	(0.81)	(1.25)	(0.38)	(1.38)	(2.19)	(2.34)	(2.78)	(2.89)
Private Credit	-0.0006	0.0020	0.0056	-0.0041	0.0326	0.0407***	0.0366***	0.0325***
	(0.06)	(0.21)	(0.54)	(0.46)	(2.00)	(2.59)	(2.54)	(2.17)
Market Capitalization	-0.0051	0.0088	0.0018	-0.0041	0.0018	0.0071	-0.0010	-0.0122
	(0.38)	(0.78)	(0.12)	(0.31)	(0.08)	(0.33)	(0.05)	(0.50)
Log (1991 GDP-per-capita)	-0.0015	-0.0114***	-0.0029	-0.0065	-0.0034	-0.0043	-0.0044	0.0041
	(0.43)	(2.30)	(0.74)	(1.08)	(0.71)	(0.63)	(0.93)	(0.51)
Number of observations	36	39	39	36	36	39	39	36
R-squared (%)	38.4%	35.7%	26.6%	46.2%	48.2%	44.6%	47.2%	51.7%
Regression F-statistic(p-value)	2.8 (0.02)	2.3 (0.05)	2.1 (0.12)	2.9 (0.01)	7.9 (0.00)	6.0 (0.00)	7.2 (0.00)	12.0 (0.00)

Table V Panel B. Economic Growth and Risk-taking

We analyze the relationship between annual real GDP-per-capita growth and risk-taking measures, RISK2 and RISK3. A detailed description of both risk-taking measures and the real GDP-per-capita is presented in Table I. As control variables we include anti-director rights, the quality of the accounting disclosure standard, and the rule of law (from La Porta *et al.* (1998)). Further controls include claims on private sector by deposit money banks and other financial institutions as share of GDP, stock market capitalization as share of GDP (both measures from Demirguç-Kunt and Levine (2001)), percentage of labor participating in unions from the World Labor Report 1997-1998, average country government spending in 1980-1995, average schooling years in the total population over 25 in 1990 (from Barro and Lee (1993)), and the logarithm of 1991 GDP-per-capita in US dollars. We consider companies in the manufacturing industry only (SIC codes 2000 through 3999). Models (1), (2), and (4) present OLS regressions for RISK2 and RISK3. Models (3) and (5) present the second-stage regressions results from two-stage least squares estimation of country growth measures on RISK2, RISK3, and control variables in which risk-taking is treated as endogenous variable. We instrument the risk-taking proxies in models (3) and (5) with anti-director rights, accounting disclosure quality and the average of the logarithm of total corporate assets. The partial R-squared is the fraction of the variation of the risk-taking proxy explained by the instruments, net of their effect through the exogenous variables. The test of overidentifying restrictions tests the joint null hypothesis that the excluded instruments are uncorrelated with the error term and are correctly excluded from the second-stage equation. The Hausman test examines whether the OLS and 2SLS coefficients on the risk-taking proxy are statistically different. The absolute value of the t-statistics (in parentheses below the coefficient estimates) is based on robust standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, correspondingly.

	Dependent Variable: Average Real GDP-per-capita growth, 1992-2002				
	(1)	(2)	(3)	(4)	(5)
	OLS	*OLS*	*2SLS*	*OLS*	*2SLS*
RISK2		-0.0592	0.5216**		
		(0.65)	(2.49)		
RISK3				0.178*	0.6998***
				(1.79)	(2.61)
Anti-Director Index (ADR)	0.0007	0.0009		0.0002	
	(0.51)	(0.62)		(0.14)	
Disclosure (ASR)	0.0003	0.0003		0.0002	
	(1.14)	(1.31)		(0.91)	
Rule of Law (RL)	0.0042**	0.0043**		0.0044***	
	(2.31)	(2.29)		(2.94)	
Private Credit	-0.0054	-0.0058	-0.00004	-0.0107**	-0.0220
	(0.84)	(0.87)	(0.01)	(2.20)	(1.56)
Market Capitalization	-0.0002	-0.0002	-0.0001	-0.0003*	-0.0005*
	(1.51)	(1.44)	(1.15)	(1.80)	(1.93)
Unionized Labor	0.0001	0.0001	-0.0002	0.0003	0.0007
	(0.17)	(0.16)	(0.35)	(1.03)	(1.26)
Government Spending	-0.0024	-0.0029	-0.0034	-0.0035	-0.0109
	(0.40)	(0.45)	(0.70)	(0.65)	(1.30)
Schooling, 1990	0.0003	0.0005	-0.0015	-0.0004	-0.0026
	(0.23)	(0.35)	(0.78)	(0.33)	(1.63)
Log(1991 GDP-per-capita ($))	-0.0072**	-0.0077**	0.0020	-0.007**	0.0014
	(2.44)	(2.48)	(0.51)	(2.49)	(0.42)
Number of observations	35	35	35	35	35
R-squared (%)	34.1%	34.8%	-	47.1%	-
Regression F-statistic (p-value)	2.1 (0.08)	2.0 (0.08)	1.6 (0.19)	4.2 (0.00)	1.2 (0.33)
Partial R-squared	-	-	30.7 %	-	10.5%
Excluded Instruments F-stat (p-value)	-	-	8.09 (0.00)	-	0.93 (0.44)
Hansen J-Statistic (p-value)	-	-	0.59 (0.74)	-	0.95 (0.10)
Hausman Test (p-value)	-	-	6.73 (0.02)	-	2.74 (0.11)

Table V Panel C. Total Factor Productivity Growth and Risk-taking

We analyze the relationship between annual total factor productivity growth and risk-taking measures: RISK2 and RISK3. A detailed description of both risk-taking measures and the total factor productivity growth is presented in Table I. As control variables we include anti-director rights, the quality of the accounting disclosure standard, and the rule of law (from La Porta *et al.* (1998)). Further controls include claims on private sector by deposit money banks and other financial institutions as share of GDP, stock market capitalization as share of GDP (both measures from Demirguç-Kunt and Levine (2001)), percentage of labor participating in unions from the World Labor Report 1997-1998, average country government spending in 1980-1995, average schooling years in the total population over 25 in 1990 (from Barro and Lee (1993)), and the 1991 TFP growth. We consider companies in the manufacturing industry only (SIC codes 2000 through 3999). Models (1), (2), and (4) present OLS regressions for RISK2 and RISK3. Models (3) and (5) present the second-stage regressions results from two-stage least squares (2SLS) estimation of country growth measures on RISK2, RISK3, and control variables, in which risk-taking is treated as endogenous variable. We instrument the risk-taking proxies in models (3) and (5) with anti-director rights, quality of accounting disclosure and the average of the logarithm of total corporate assets for each country. The partial R-squared is the fraction of the variation of the risk-taking proxy explained by the instruments, net of their effect through the exogenous variables. The test of overidentifying restrictions tests the joint null hypothesis that the excluded instruments are uncorrelated with the error term and are correctly excluded from the second-stage equation. The Hausman test examines whether the OLS and 2SLS coefficients on the risk-taking proxy are statistically different. The absolute value of the t-statistics (in parentheses below the coefficient estimates) is based on robust standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, correspondingly.

	Dependent Variable**:** Average TFP growth, 1992-2000				
	(1)	(2)	(3)	(4)	(5)
	OLS	*OLS*	*2SLS*	*OLS*	*2SLS*
RISK2		0.0373	0.7361***		
		(0.41)	(2.92)		
RISK3				0.0192	0.485***
				(0.22)	(2.81)
Anti-Director Index (ADR)	0.0029***	0.0028**		0.0028**	
	(2.73)	(2.39)		(2.53)	
Disclosure (ASR)	0.0006***	0.0005**		0.0005***	
	(2.65)	(2.47)		(2.87)	
Rule of Law (RL)	0.0021**	0.002**		0.0021*	
	(2.02)	(2.03)		(1.88)	
Private Credit	-0.017***	-0.0165***	-0.0027	-0.0176**	-0.023***
	(2.97)	(2.94)	(0.56)	(2.45)	(2.62)
Market Capitalization	-0.0034	-0.0030	0.0040	-0.0035	-0.0011
	(0.47)	(0.40)	(0.59)	(0.50)	(0.16)
Unionized Labor	0.0000	0.0000	0.0002	0.0000	-0.0002
	(0.07)	(0.01)	(1.30)	(0.18)	(1.50)
Government Spending	-0.0005**	-0.0005**	-0.0004	-0.0005**	0.0004
	(1.98)	(1.97)	(0.88)	(2.11)	(0.83)
Schooling, 1990	-0.0001	-0.0001	-0.0010	-0.0001	-0.0010
	(0.06)	(0.14)	(0.82)	(0.13)	(0.90)
1991 TFP Growth	0.1136***	0.1109**	0.0543	0.1107**	0.0311
	(2.60)	(2.54)	(0.76)	(2.53)	(0.55)
Number of observations	35	35	35	35	35
R-squared (%)	46.5%	46.8%	-	46.7%	-
Regression F-statistic (p-value)	6.4 (0.00)	5.7 (0.00)	3.1 (0.02)	5.7 (0.00)	1.1 (0.37)
Partial R-squared	-	-	17.1%	-	13.9%
Excluded Instruments F-stat (p-value)	-	-	5.00 (0.01)	-	2.18 (0.12)
Hansen J-Statistic (p-value)	-	-	0.25 (0.88)	-	1.17 (0.56)
Hausman Test (p-value)	-	-	9.34 (0.00)	-	8.82 (0.01)

[1] See also Fisman and Love (2003) and Minton and Schrand (1999).

[2] There is a related literature which examines the role of institutions on risk-taking in investments. The work by Allen and Gale (1997) and Acemoglu and Zilibotti (1997) argue that economies that provide better risk-sharing tend to promote more risk taking in investment and consequently lead to growth.

[3] Burkart et al. (2003) argue that it is because the protection for investor rights is low that dominant owners emerge to control managerial agency behavior. When the protection is so low that even a dominant owner cannot adequately control outside managers the dominant owner will run the firm herself. For empirical work on the prevalence of dominant owners and the impact on corporate governance, see, e.g., La Porta *et al.* (1999), Dyck and Zingales (2003), Nenova (2003), Claessens, Djankov, Fan, and Lang (2002), and Lins (2003).

[4] We thank Rene Stulz for suggesting the argument.

[5] Morck et al. (2000a) show that insiders controlling a vast amount of corporations would be conservative in investing in innovations and that is a reason why countries in which they are incorporated would experience slower growth.

[6] We thank Randall Morck for these arguments.

[7] See Morck and Nakamura (1999) who show evidence from Japan that powerful banks, as a monitor, serve to advance creditors' interest even at the expenses of firm value.

[8] We thank our referee for suggesting the argument. In the current argument, we recognize that dominant shareholders and public protection may be substitutes in protecting investor interest. Improvement in public protection may reduce the presence of dominant shareholders with the consequence that managers may in the net have more discretionary power, which results in less corporate risk taking. The gist of the arguments in the previous sub-section is that in locations with poorer investor protection a firm is more likely to have controlling owners who make firm investment excessively risk averse to protect their private gains and investment exposures in the firm. The key in all these arguments is that dominant shareholders in poor investor protection will direct managers to behave according to their preference. Their presence may make managers more or less risk averse: both cases are theoretically plausible. The contradictions in these predictions point to the importance of empirical investigation.

[9] Assume an investment I leads to payoff H with a probability q and L with probability 1-q, H > L (this model setup is similar to the one in John and John (1993).) Let the tunneling cost be τ_m at the point of investment, and τ_h and τ_L, respectively, for the high and low pay-off state. Assume that $\alpha < (1-\tau_L)$. The expected value of the investment to the insider is $qH(1-\tau_h) + (1-q)L(1-\tau_L) - I(1-\tau_m)$. Note that if the three τ's are identical, the sign of the insider's expected value for the project is the same as $[qH + (1-q)L - I]$. Now, assume that tunneling cost is decreasing and concave in cash flow so that $\tau_h < \tau_m < \tau_L$. If τ decreases sufficiently fast with a unit's cash flow, that is if τ_h is sufficiently smaller and τ_L is not too much larger than τ_m, an investment project's expected returns could be positive even if $[qH + (1-q)L - I]$ is non-positive. The project may even become attractive to a risk-averse dominant insider. In this sense, the tunneling cost behaves like a regressive corporate income tax that encourages risk-taking. The general argument is as follows. If the cost of consuming private benefits is a concave function of the available cash flow such that the private benefits captured by corporate insiders optimally is a convex function of the available cash flows (and in addition the cash flow claims held by the insiders are small) it can be argued that the insiders overall objective function has a convex structure that gives them incentives to pursue risky investment strategies. In addition, if the cash flow rights held by the corporate insiders are smaller in countries with poorer investor protection, it is possible that there could be negative relationship between the degree of investor protection and the riskiness of corporate investment.

[10] Total factor productivity is available until 2000 since Penn World Tables Version 6.1 data is available till 2000.

[11] The bank credit/GDP and stock market capitalization variables are the average of 1980 to 1995 (Demirguç-Kunt and Levine (2001)). The time window overlaps slightly with our dependent variables' time windows which begin in 1992. We also used 1980 to 1991 data, collected from the World Bank and IFS. The results are all very similar.

[12] Rajan and Zingales (1995) discuss at length the reporting bias in the Compustat Global Vantage. See robustness checks section for further discussion.

[13] One may argue that RISK2 is equally weighted average while RISK3 is a value-weighted average so that their behavior is different. When we used a value-weighted RISK2 index, we obtained similar results. We do not report these results to conserve space.

[14] The endogeneity concern arises because greater risk-taking may be likely in firms operating in industries with higher growth rates, i.e. risk-taking and growth could be driven by a latent variable.

[15] Our results are robust to using the average risk taking of other companies in the same three-digit SIC code level as opposed to two-digit SIC code level.

[16] The controls reveal that firms from countries with more developed equity markets have significantly slower sales growth. Even though we can not explain the latter result, we note that they mimic those in Beck and Levine (2002) and Demirguç-Kunt and Maksimovic (1998). Note further that assets growth does not depend on equity market development.

Our results hold if we include as control variables in our growth regressions other firm traits such as initial book leverage, initial sales growth, and the ownership of the largest shareholder.

[17] Both indices are based on a count of charter provisions that reduce minority shareholder rights. The G-index includes 24 firm-level charter provisions geared at reducing the propensity of takeover. The E-index reduces the set of such provisions to the following six: staggered boards, limits to shareholder bylaw amendments, supermajority requirements for mergers, supermajority requirements for charter amendments, poison pills and golden parachutes. In this paper we interpret higher values of these indices as weaker investor protection.

[18] Our results are qualitatively unchanged when we use book leverage as an alternative proxy for bank dominance. The correlation between book leverage and bank debt to total assets is 18.1%. To conserve space we present the results based on the latter.

[19] To address multicolinearity concerns and to preserve degrees of freedom we do not include in our country-level regression analysis the country averages of firm traits such as leverage, sales growth and profitability.

[20] The premise may be too simplistic. For example, corporations that are excessively avoiding investment risks may become less competitive and not survive due to, for example, foreign competition.

[21] Our results are similar when we use the country average large-shareholder-ownership instead of the insider dominance measure. The correlation between the former and the latter is 71% and is statistically significant. To conserve space, we discuss the results based upon Stulz's measure of insider dominance because the data is readily available to the reader from Stulz (2005).

[22] Stulz (2005) documents that anti-director rights are a significant determinant of insider ownership. Since we include anti-director rights directly as a determinant of risk-taking, we do not include it in the set of instruments for insider ownership. We have further considered as instrument *polcovV*, an index of political constraints on state rulers (Henisz (2000)) instead of the assessment of the risk of outright confiscation. Our results are robust to the inclusion of that measure.