Creditor rights and corporate risk-taking

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Abstract

We propose that stronger creditor rights in bankruptcy reduce corporate risk-taking. Employing country-level data, we find that strong creditor rights are associated with a greater propensity of firms to engage in diversifying mergers, and this propensity changes in response to changes in the country creditor rights. Also, in countries with stronger creditor rights companies' operating risk is lower, and acquirers with low-recovery assets prefer targets with high-recovery assets. These relationships are strongest in countries where management is dismissed in reorganization, suggesting an agency-cost effect. Our results suggest that there might be a "dark" side to strong creditor rights in that they can induce costly risk avoidance in corporate policies. Thus, stronger creditor rights may not necessarily be optimal.

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Abstract

We propose that stronger creditor rights in bankruptcy reduce corporate risk-taking. Employing country-level data, we find that strong creditor rights are associated with a greater propensity of firms to engage in diversifying mergers, and this propensity changes in response to changes in the country creditor rights. Also, in countries with stronger creditor rights companies' operating risk is lower, and acquirers with low-recovery assets prefer targets with high-recovery assets. These relationships are strongest in countries where management is dismissed in reorganization, suggesting an agency-cost effect. Our results suggest that there might be a "dark" side to strong creditor rights in that they can induce costly risk avoidance in corporate policies. Thus, stronger creditor rights may not necessarily be optimal.

1. Introduction

Through history, default on debt incurred harsh punishment. By the biblical law, defaulted debtors were enslaved for a limited number of years while in ancient Greece, defaulted debtors and their families were enslaved until the debt was fully discharged. In some period, default met with death (Athens, 621 BC) or maiming (Rome, 450 BC).[1] In the U.K., there were debtors' prisons until they were abolished in 1869 by the Debtors Act. The harsh bankruptcy laws, which were intended to minimize fraud and opportunistic behavior, did not eliminate borrowing. In the modern era, limited liability is the norm, but this seriously limits creditor rights to pursue the debtors. The question is, what effects do creditor rights have on the choice between risky investment projects.[2] To take an extreme case, while maiming in default reduces fraud, it also inhibits entrepreneurial, *bona-fide* risky investments.

Stronger creditor rights are generally considered an unmitigated good thing. They help expand the financing capacity of the firm by limiting the ability of owners to opportunistically expropriate firm's value, and thus they reduce the costs that result from the conflict of interests between owners and providers of debt capital.[3] This paper proposes that strong creditor rights may also have a "dark side" in that they affect the corporate investment policy: stronger creditor rights induce firms to engage in risk-reducing, potentially inefficient, investments, such as diversifying acquisitions, which are known to be value decreasing (Morck, Shleifer and Vishny (1990)). Strong creditor rights in default may also cause inefficient liquidations that extinguish the continuation option of firm's enterprise and impose private costs on managers if these rights mandate the replacement of management. To avoid these costs, shareholders and management lower the likelihood of distress by reducing risk-taking activities, e.g., by diversifying or reducing operating risk, actions that otherwise would not be undertaken and therefore may be considered costly. We provide evidence in support of this thesis.

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[1] The Twelve Tablets, Section III, Debt. The penalty ranged from imprisonment to extracting part of the body.
[2] We review in the conclusion section studies on the effects of personal bankruptcy laws across states in the U.S.
[3] Stockholders who act opportunistically can expropriate value by diversion of cash flow or by risk shifting (Jensen and Meckling (1976)). The latter means that when the firm approaches default, stockholders are induced to take on excessive risk which results in shifting value from creditors to stockholders.

Our empirical evidence employs three different measures of corporate risk-taking whose variation across countries we seek to explain. We find the following:

(1) Stronger creditor rights induce firms to do risk-reducing investments. Using acquisitions of other firms as a publicly-observed corporate investment, we find that stronger creditor rights in a country are associated with a greater propensity to do diversifying acquisitions. Furthermore, changes in a country's creditor rights affect the merger and acquisitions (M&A) activity in a similar direction: the extent diversification increases following the strengthening of creditor rights and declines if they are weakened. Morck, Shleifer and Vishny (1990) find that bidders that engage in diversifying mergers incur significant decline in value whereas bidders who do same-industry acquisitions enjoy significant value increase. And, Amihud and Lev (1980) find that diversifying mergers are associated with managerial – rather than stockholders' – motivation to reduce risk.

(2) In countries with stronger creditor rights, firms choose a mode of operation that reduces operating risk, measured by the standard deviation of firms' ROA. While choosing low-risk investment by themselves does not necessarily have negative value effect, foregoing high risk investments limits the firm's investment opportunities and is thus value reducing. For example, Acharya and Subramanian (2007) show that strong creditor rights bear significantly negatively on corporate innovation, measured by the intensity of patent creation and citation by firms.

These results are obtained both at single-acquisitions or single-firm tests and at an aggregate country level. Overall, these results are strongest (statistically as well as economically) for the creditor rights corresponding to *(i)* whether there is no automatic stay on the debtor's assets in bankruptcy (*AUTOSTAY*) and *(ii)* whether management is replaced in bankruptcy (*MANAGES*). For example, *MANAGES* affects the likelihood of a merger being in the same industry by 6.6% (based on Table 3) where the standard

deviation of this likelihood across countries is 10.3%. Similarly, *MANAGES* lowers the operating risk measured at the country level by around 3% (based on Table 8) where the cross-country standard deviation of operating risk is 2%. Thus, the effect of creditor rights on corporate investment policy seems reasonably large.

The effect of creditor rights is also examined at the industry level since countries differ in the composition of their industries, and industries may differ in the propensity to diversify or reduce risk. Employing the testing methodology of Rajan and Zingales (1998), the findings in (1) and (2) above still hold.

(3)   In countries with strong creditor rights, target firms whose assets have high recovery value in default (or distress) are more likely to be acquired by firms whose assets have low recovery value. This is because high recovery value of assets may enable firms in distress to defer default by liquidating some of these assets and using the proceeds to service the debt. Thus, by acquiring a high-recovery target, a low-recovery firm reduces the likelihood of default in case of distress.

Our analysis focuses on M&As since they provide a unique opportunity to observe the type of a major corporate investment and its potential effect on corporate risk – whether the acquisition is diversifying (across industries) or focusing (within-industry). Diversifying M&As create firms whose revenue is not concentrated in a few business segments (pertaining to different industries), and as a result have significantly lower idiosyncratic risk (Comment and Jarrell (1995)). In M&As, we can also identify clearly the nature of the assets in which the company is investing – whether they have high or low recovery value. Also important for our setting, corporate investment in the form of M&A is not tainted by cross-country differences in accounting and disclosure practices that affect other measures of investment such as capital expenditures and R&D. However, recognizing that firms employ other means to reduce risk which are difficult to observe, we also analyze the overall operating risk of firms under different regimes of creditor rights.

Our paper is related to both the literature on diversification by firms and on the effect of claimholder rights in a country on firm's investment and financial choices. Managerial interests are shown to affect both investment and financing choices by firms. Amihud and Lev (1981) and Aggarwal and Samwick (2003) suggest that managerial agency problem – aversion to risk or private benefits due to empire building – leads to conglomeration. Our paper suggests that managers may be averse to risk – and consequently diversify and reduce operating risk – because of the private cost in case of default. Gilson (1989) documents that following severe decline in stock performance firms with leverage are almost thrice as likely to fire top-level management compared to firms that are not distressed. Importantly, the laid-off managers are not employed in publicly listed companies for another three years, implying that managers of distressed firms suffer significant private cost. Gilson suggests that this cost may induce managers to employ risk-reducing policies such as diversifying mergers and favoring less risky investments. Gilson also finds that a substantial portion of managerial layoff upon distress is due to direct intervention by bank lenders, a finding that is more recently supported by Ozelge (2007). Baird and Rassmussen (2006) too highlight the role of lenders in affecting changes the firm's management, including board members. Eckbo and Thornburn (2003) find that in Sweden, where bankruptcy filing automatically terminates the manager's employment, managers incur large loss of private benefits of control, which induces them to invest conservatively.

Throughout the paper, we exploit as explanatory variable the variation of creditor rights across countries in their bankruptcy codes. Djankov et al. (2007a) show evidence that creditor rights have changed little between late 1970s and early 1990s, the beginning of our dataset. Therefore, we can consider creditor rights in a country to be a function of its legal origin and largely exogenous to the nature of the country's overall corporate investments. Even the few creditor right changes within a country, whose effects we analyze, are often motivated by exogenous forces such as promoting employment, recovering from crises, transitioning from socialist to capitalist regimes, among others.

The impact of creditor rights on investment policy is examined in a number of recent studies. Manso (2005) and Landier (2006) focus theoretically on the de-motivating effect on innovation and entrepreneurship of tough outcomes for

entrepreneurs upon failure (strong creditor rights, being an example). Chava and Roberts (2008) and Nini, Smith and Sufi (2006) consider the effect on firm-level investments of creditor rights, exploiting the within-US variation in the form of covenants and capital expenditure restrictions explicitly contained in debt contracts. Schwartz (2001) proposes that allowing parties to contract for preferred bankruptcy procedures (rather than having them mandated by law) will alleviate underinvestment.

Creditor rights and their enforcement are shown to affect the extent of debt financing. Djankov, McLeish, and Shleifer (2007a, 2007b) document that creditor rights such as *MANAGES* and *AUTOSTAY* are associated with higher aggregate lending, in the cross-section of countries as well as in time-series around creditor rights changes. Haselmann, Pistor and Vig (2006) study lending in Central and East European countries and find that it is the improvement in enforcement of creditor rights, for example, due to the creation of a collateral registry, that boosts lending rather than an increase in creditor rights such as *MANAGES* and *AUTOSTAY*. Vig (2007) shows, both theoretically and empirically, that strengthening creditor rights in bankruptcy may inhibit firms from borrowing. This literature mostly focuses on financing choices, taking as given the investment choices of firms. Our paper argues that investment choices of firms also respond to creditor rights. Adler (1992) suggests that while strong creditor rights induce the manager to increase the firm's risk as the firm approaches default, their ex-ante effect is to reduce risk and avoid insolvency. Adler, Capcun and Weiss (2007) suggest that the recent strengthening of creditor rights in the U.S. induces firms to delay default which could potentially destroy value. Our model directly analyzes the propensity of stockholders to take risks and shows the tradeoffs, given creditor rights.

Finally, another set of complementary papers examines legal institutions other than creditor rights in bankruptcy. Rossi and Volpin (2004) document that strong shareholder rights play an important role in determining the volume and number of mergers and acquisitions across countries. John, Litov and Yeung (2007) show evidence that investor protection and quality of accounting disclosure are important determinants of the risk-taking incentives of corporate insiders.

The outline of the paper is as follows. Section 2 presents a model of the causal effect of creditor rights on corporate investment choice. Section 3 discusses the data and empirical design and presents the results. Section 4 offers concluding remarks.

2. Model

We present a stylized model to analyze the effect of creditor rights on firm's risk-taking incentives. In particular, the model examines the effect of reorganization outcomes for management and shareholders of a distressed firm on the ex-ante investments of the firm. The time-line of the model is presented in Figure 1.

INSERT FIGURE 1 HERE.

Consider a firm at date 0 that is run by an owner/entrepreneur (the "manager" of the firm). The firm has made some past investment (say I units) and has some existing debt in place of face value F which is maturing at date 1.[4] The manager can choose at date 0 the risk of the firm's future cash flows to be realized from this investment at date 1. We adopt the technology for choice of risk from a part of the banking literature, starting with the models of Blum (1999, 2002) and Allen and Gale (2000). The risk choices at date 0 are indexed by $y \geq 0$, which represents the firm's cash flow in case the investment succeeds at date 1. Success is likely with probability $p(y)$, where $0 < p(y) < 1$, $p'(y) < 0$, and $p''(y) < 0$. With remaining likelihood, $[1 - p(y)]$, the investment fails at date 1 and produces cash flow of zero. Thus, y is also an index for the risk of default of the firm: Greater y reduces the likelihood of success $p(y)$ (in a concave fashion). Agents are risk-neutral and the risk-free rate of interest is zero.

At date 0, the owner/manager makes the choice of risk, maximizing equity value net of creditor payments, and anticipating the outcomes from resolution of distress (if any) at date 1.

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[4] We do not model the choice of leverage and its benefits and costs. Our empirical tests will, however, control for potential endogeneity of leverage to creditor rights. Acharya, Sundaram and John (2004) provide a theoretical and empirical analysis of how leverage responds to creditor rights in a cross-country setting.

In case of default at date 1, the continuation prospects of the firm depend upon managerial quality. Managerial ability at date 1 may be either high or low with equal probabilities. We assume that neither the firm nor the manager know this ability unless it is investigated at date 1, as we explain below. Also, for simplicity, we assume that managerial ability does not affect the date-0 investment. In other words, managers are assumed to be randomly endowed at date 1 to be high or low type with equal likelihood.

In case of default at date 1, a firm operating under a high-ability manager yields cash flow of H while a low-ability manager yields zero cash flow. If the firm is liquidated to outsiders and ceases to exist, it will fetch cash flow of L. We assume that $2L < F < H$. The following are the possible outcomes upon default, which occurs if the realization from the investment is zero.

(1) With probability r $(r > 0)$, the firm is liquidated to outsiders by creditors, which yields L. This may occur due to failure amongst the different creditors of the firm to agree on a reorganization outcome (we discuss below possible explanations for such a failure).

(2) With probability q $(q > 0)$, creditors investigate the type of management and find it out. Then, if the manager's ability is found to be low, the manager is fired and the firm is liquidated, realizing cash flow of L. If the manager's ability is found to be high, the firm continues with the current manager and realizes cash flow H. The likelihood of each such event occurring is 0.5.

(3) With the remaining probability of $(1 - q - r)$ (assumed positive), creditors are unable to learn managerial type and proceed with the current manager. This will yield H or 0 with probability of 0.5. If the high outcome H is sufficiently high compared to proceeds from liquidation (we assumed that $0.5H > L$), creditors are better off if the firm continues compared to liquidation even if the manager type in unknown.

Assumption (2) is consistent with empirical evidence. For example, Eckbo and Thornburn (2003) find that in Sweden, where creditor rights include the automatic firing

of the manager in default, some firms rehire the dismissed manager with the rehiring probability increasing in managerial quality.[5]

If manager is found to be of low quality and is fired (probability of $0.5q$) or the firm fails to reorganize and is liquidated (probability of r), managers are assumed to suffer a private cost of $m > 0$ due to loss of reputation or private benefits of control.[6] This assumption is consistent with empirical evidence. Gilson (1989), Baird and Rasmussen (2006) and Ozelge (2007) find that upon distress, there is a significantly higher probability of top-management dismissal, especially due to direct intervention by lending banks, compared to firms not in distress. Gilson also documents that managers dismissed in distress suffer a significant private cost in the form of future employment opportunities. Eckbo and Thornburn (2003) find that in Sweden, managers of bankrupt companies suffer a median (abnormal) income loss of 47%.

The assumed inefficiency in reorganization, which leads to liquidation rather than continuation, reflects creditors' failure to reach an agreement amongst themselves regarding bankruptcy proceedings. For example, suppose that firm's debt of face value F consists of secured debt of amount F_1 and unsecured debt of amount $(F - F_1)$, where $F_1 < L$. Suppose also that secured creditors have claim to all assets of the firm and there is no automatic stay on secured creditors' rights. Then, since secured creditors are fully covered under liquidation but face some default risk in case firm is continued (and managerial type turns out to be low), they have incentives to liquidate the firm. In contrast, unsecured creditors value the continuation outcome. Thus, there is a conflict of interest amongst creditors whether to expend any time and effort in learning about managerial type at all: secured creditors may just prefer to seize and liquidate the assets. Such reorganization failure is also more likely if reorganization petition requires majority consent of creditors and secured (or more generally, senior) creditors can block continuation in favor of liquidation. Another possibility (outside of our model) is that firm's continuation requires additional financing, but due to debt overhang problem, this can be raised only if the firm can arrange supra-priority financing, such as the debtor-in-

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[5] In particular, Eckbo and Thornburn (2003) find that managerial quality is increasing in the firm industry-adjusted pre-bankruptcy operating performance and the recovery rate of its debt, and decreasing in the trustee's evaluation of the manager and in the delay from insolvency to filing.

[6] We assume that business failure which might occur if a low-quality manager continues does not incur the cost m that is incurred as a result of forced dismissal by creditors.

possession financing in the United States. However, if creditor rights do not allow secured creditors' claims to be subordinated in this way, then no continuation may be feasible, resulting in liquidation of the firm.

We assume the probabilities q and r to be a property of the legal environment in which the firm operates, namely of the country's *creditor rights*. These parameters map directly into their empirical counterparts of creditor right scores (as measured, for example, in LaPorta, Lopez-de-Silanes, Shleifer, and Vishny (1998)). The empirical counterpart for q is the score *MANAGES,* which equals 1 if management is not retained in bankruptcy. The counterpart for r is the set of other creditor right scores, namely *AUTOSTAY, SECURED* and *REORG*. These correspond to there being no automatic stay on assets of the debtor in bankruptcy (so that creditors can seize assets right away if they wish to), secured creditors being paid first, and reorganization requiring creditors' consent, which as explained above could lead to failure to reorganize due to disagreement amongst creditors.[7] In our model, while *MANAGES* leads to more information about managerial type and therefore better continuation and liquidation decisions, the other three creditor rights result in inefficient liquidations of the firm. However, all these creditor rights impose a private cost on management and induce in them aversion to risk. We derive this result next.

In the presence of leverage and risk of default, the owner/manager chooses the risk y to maximize the expected value of equity net of the private costs from distress, given as:

$$p(y) \, [y - F] + [1 - p(y)] \, [\; - (r + 0.5 \, q) \, m + (0.5 \, q + 0.5(1 - q - r)) \, (H - F) \,]. \quad (1)$$

This expression reflects the fact that management suffers a private cost m when the firm is liquidated – either due to failure to reorganize or due to revelation of his type being low - and has residual value in distress in other cases provided there is excess cash flow after creditors are paid off. This latter scenario has a probability of *(0.5 q + 0.5(1 − q −r))* since there is excess cash flow after paying creditors only if managerial type is discovered by creditors to be high and firm is continued (probability of *0.5 q)* or if managerial type is not discovered but it turns out ex post to be high.

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[7] Schwartz (2001, p. 128) points out that "without a bankruptcy procedure, creditors acting individually may force liquidations, thereby preventing the reorganization of viable but temporarily insolvent firms."

The optimal choice of risk for the levered firm y^* is thus given by the first-order condition:

$$p(y) + p'(y) [y - F + (r + 0.5\ q)\ m - 0.5\ (1 - r)\ (H - F)] = 0 , \qquad (2)$$

and, the second-order derivative is

$$2\ p'(y) + p''(y) [y - F + (r + 0.5\ q)\ m - 0.5\ (1 - r)\ (H - F)] . \qquad (3)$$

Note that since $p'(y) < 0$ at the optimal risk choice y^*, we must have

$$[y - F + (r + 0.5\ q)\ m - 0.5\ (1 - r)\ (H - F)] > 0 , \qquad (4)$$

so that the second-order derivative above is negative and the first-order condition indeed gives the optimum that maximizes the objective of manager.[8]

The three terms after y inside [.] in the condition (4) for y^* illustrate the additional effects on risk-taking for a levered firm. The first term, $-F$, reflects the fact that a levered firm has incentives to shift risk given equity's "option" like payoff at date 1. This effect is however not sensitive to creditor right parameters q and r. The second term $(r + 0.5\ q)m$ reflects the risk-aversion induced in managerial objective by the fact that management suffers a private cost upon being fired. This effect is increasing in r, the failure of creditors to agree on reorganization, and also increasing in q, the likelihood that management is fired in bankruptcy, both assumed to be a property of the creditor rights of the country. The third term $- 0.5\ (1 - r)\ (H - F)$ also corresponds to a risk-shifting incentive. This is the "option" effect from date 2 when the firm is continued. Crucially, the magnitude of this effect diminishes in r, the likelihood that creditors fail to allow the firm to be efficiently reorganized in bankruptcy.

To summarize, creditor rights that replace management in distress and that are less likely to lead to a reorganization outcome discourage ex-ante risk-taking by firm's management. We can prove these two results formally as follows. Denoting the first-order condition for management's optimization as $f (y^*(q,r),\ q,\ r) = 0$, the second-order condition implies $\delta f / \delta q < 0$. In turn, taking the derivative of f with respect to q or r, and applying the implicit-function theorem gives

$\qquad$ (i) *sign $(dy^* / dq) = sign (\delta f / \delta q)$, which is negative since* $\qquad\qquad$ (5)

$\qquad$ $\delta f / \delta q = p'(y)\ m < 0,$

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[8] To see this, note that since $p(y) > 0$ and $p'(y) < 0$, the expression $p(y) + p'(y) [y - x]$ is greater than zero for all $y \le x$. Hence, the solution to the equation $p(y) + p'(y) [y - x] = 0$ must satisfy $y > x$.

and, similarly,

(ii) *sign (dy* / dr) = sign (δf / δr),* which is also negative since　　　　　(6)

δf / δr = p'(y) [m + 0.5 (H − F)] < 0.

Thus, the risk undertaken by a levered firm declines in the likelihood that management is fired in distress and that reorganizations promoting continuations of the firm do not materialize. These two implications constitute the center stage of our empirical investigation.

Before we proceed to our empirical tests, it is useful to stress what exactly constitutes the dark side of creditor rights in the model. The failure to reorganize, which occurs with likelihood *r*, is inefficient from an ex-post standpoint, and since it induces risk-aversion, potentially inefficient from an ex-ante firm-value maximization standpoint. In contrast, the likelihood of investigating the manager's quality by creditors, *q*, is followed by a decision on efficient continuation or liquidation taken ex post. However, in the event of firing the manager and liquidation, the manager suffers a private cost *m*. This cost induces the manager to engage in risk reduction ex ante, which again is potentially inefficient. And, in a setting where managers have to be paid a reservation wage, the salary paid to managers must compensate for the private cost, resulting in lower expected cash flow for the firm. In other words, even when strong creditor rights are beneficial in the model ex post, they may be inefficient from an ex-ante standpoint.

3. Data and Empirical Design

In studying the effects of creditor rights on corporate propensity to take risk, we conduct a number of tests. First, we examine whether the propensity of firms to diversify through mergers and acquisitions and test if this propensity increases as a function of the country's creditor rights, both in the cross-section of countries and in time-series, around changes in creditor rights of a country. Here, we directly observe the action that companies take in order to affect their risk. Since most companies can reduce their risk

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by applying other means that may be difficult to observe directly, we also conduct a second test of whether companies' operating risk is decreasing in creditor rights. Both of these tests are conducted in two ways. In one, the unit of observation is a transaction, and in the other, we look at country averages.

The results of these tests are overall consistent with our model. In countries with strong creditor rights, there is greater propensity of companies to do diversifying acquisitions. In general, operating risk is lower in countries with strong creditor rights. Below, we describe our data, tests and results in greater detail. Details of how our various variables are constructed are provided in Table 1.

INSERT TABLE 1 HERE

3.1. Creditor Rights

The data on creditor rights is taken from LaPorta, Lopez-de-Silanes, Shleifer, and Vishny (1998), whose sample contains data for 49 countries, and records creditor rights provisions in the cross-country sample as of 1994. The variable *CRIGHTS* is the sum of four provisions: *AUTOSTAY*, the absence of automatic stay on the assets of the debtor in reorganization; *REORG*, the requirement of creditors' consent or minimum dividend for a debtor to file for reorganization; *SECURED*, ranking secured creditors first in the disposition of assets of the bankrupt firm upon filing for reorganization; and *MANAGES*, the removal of management from managing the activities of the firm upon filing for reorganization. Each of these provisions takes a value of 1, if it is present in the country's bankruptcy code or zero if it is absent. Consequently, the range of values for *CRIGHTS* is 0 through 4. The mean of *CRIGHTS* is 2.08 with standard deviation of 1.28. We also use the extended sample and detailed creditor rights data of Djankov et al. (2007a) to examine the impact of changes in creditor rights on the subsequent corporate risk-taking.

3.2. Creditor rights and diversification in M&A activity

Our first set of tests is based on measuring corporate risk reduction through diversification, using the mergers and acquisitions activity in countries. The data on

acquisitions is obtained from the Securities Data Corporation (SDC)'s Platinum Mergers & Acquisitions database for the period 1994-2004. We consider only mergers where both the acquirer and the target are in the same country, thus being under the same jurisdiction as it applies to creditor rights. We exclude acquisitions where acquirer comes from the financial industry (SIC header 6) or a regulated industry (SIC headers 48 and 49) since for such acquirers, the motives for diversification may be linked to regulatory requirements to reduce risk and therefore may differ from those presented in our model. We further exclude transactions where the acquirer and the target are the same company (repurchases recorded as acquisitions), transactions where the acquirer is a mutual company, investment company, subsidiary, or state-owned enterprise, and transactions in which the percentage acquired from the target is less than 20 percent.[9] Finally, we include only countries with more than 50 transactions that satisfy the above criteria in our sample period. Additional data requirements related to the control variables, in particular the value of creditor rights as of 1994, reduce our sample to 38 countries, for which we present descriptive statistics in Table 2.

INSERT TABLE 2 HERE.

We first test the following hypothesis:

Hypothesis I: The propensity to do diversifying acquisitions increases in the strength of the country's creditor rights.

This hypothesis is tested first by estimating the likelihood of same-industry acquisition in a country as a function of the creditor rights in that country, and a set of control variables. An acquisition of a firm that is not in the same industry (defined by the 2-digit SIC code) is considered diversifying.[10] Comment and Jarrell (1995) show that focused firms (firms whose revenue is concentrated in a fewer business segments) have significantly higher idiosyncratic risk. Hence, diversifying acquisitions reduce risk by

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[9] Our results are robust to a less conservative selection approach, e.g. if we consider all transactions with at least 10% acquired or if we adopt more conservative criteria (see Moeller, Schlingemann, and Stulz (2004)) of the acquisition being at least 51% of the target company, the transaction value is at least 1 million US$, the transaction represents at least 1% of the total assets of the acquirer, and the transaction is completed within three years of the announcement of the deal.

[10] The results are qualitatively similar when we employ industry classification at the 3-digit SIC level.

reducing revenue concentration. By our hypothesis, the likelihood of same-industry mergers and acquisitions in a country should be a decreasing function of the strength of creditor rights. This is studied both at the level of individual acquisitions and at the aggregate country level. For individual transactions, we examine the likelihood of a target firm being in the same industry as the acquirer (Table 3). For the aggregate country level, we analyze the proportion of the same-industry domestic mergers from all domestic mergers in the sample period (Tables 4 and 5).

The explanatory variables that we employ in our analysis are as follows. First and foremost is the measure of creditor rights, the *CRIGHTS* score from La Porta et al. (1998), and its components, *AUTOSTAY, REORG, SECURED* and *MANAGES*. The prediction is that the likelihood of same-industry mergers is lower in countries with stronger creditor rights.

As control variables, we include shareholder rights index,[11] *SHRIGHTS*, which may positively affect the likelihood of same-industry mergers if they benefit shareholders (Rossi and Volpin, 2004). We include *Rule of Law* as a proxy for the character of legal rules and the quality of law enforcement, which could influence the development of financial markets (La Porta et al., 1997), and through that channel influence economic growth and the nature of mergers.[12] We also control for *Legal Origin*, as creditor- and shareholder rights are both influenced by the legal origins (La Porta et al., 1998). These three legal control variables are obtained from Levine and Demirguc-Kunt (2001) and LaPorta et al. (1998). Their use is also supported by the finding of Claessens and Klapper (2005) that they interact with the likelihood of bankruptcies in a country and with creditor rights.

As additional controls, we employ macroeconomic volatility, as it may impact the risk-taking of corporate insiders. We include a direct measure of the country's macroeconomic risk, *MacroRisk*, the standard deviation of quarterly changes in the country's index of industrial production.[13] It will have negative coefficient if managers in riskier countries do more diversifying mergers. We also include the logarithm of the

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[11] This index is obtained from La Porta et al. (1998)
[12] LaPorta et al. (1997) suggest that stock market capitalization or the total assets of financial institutions are endogenous to economic development, shareholder rights, creditor rights, rule of law, and legal origins. Therefore, we do not control for these variables. Instead of including these (outcome) proxies for equity and debt market development, we include only the (primitive) institutional variables as controls.
[13] See Table 1 for details.

country's average real *GDP per-capita* over 1994-2000 from the Penn World Table Version 6.1 as a proxy for the degree of economic development. This variable controls for the possibility that developed and developing countries may have different investment opportunity sets (Acemoglu and Zilibotti (1997)). Furthermore, this variable is used in other studies of cross-country comparisons and is perceived to reflect hard-to-quantify country-level characteristics. In the individual merger regression (Table 3), we also control for transaction size and leverage. We include the *Transaction Value* (the amount paid in U.S. dollars, in logarithm), which shows significant heterogeneity across firms in our sample. And, since leverage may affect the firm's investment policy, we include two leverage control variables: the acquirer's leverage and the target's leverage. To get around the endogeneity of leverage, both at the firm level and at the country level (since leverage in a country is affected by the country's creditor's rights, as well as by other country characteristics), we assign as leverage of each firm – both bidder and target – the rank of the industry's leverage in the U.S., which has a low level of creditor rights (*CRIGHTS*= 1). For that end, we calculate the median firm leverage, defined as [(total liabilities – deferred taxes) / total assets] of firms in each U.S. 2-digit SIC code industry over the years 1992-2005. We then rank the industries by their median leverage and divide them into quartiles. The leverage assigned to an acquirer firm in any country is then the number of the leverage quartile to which its industry belongs. Leverage quartile numbers go from 1 to 4, 4 being the highest leverage quartile.

The estimated model is

Pr(same industry merger) = α*CRIGHTS + control variables. (7)

The dependent variable equals 1 if the merger or acquisition is in the same 2-digit industry. Our hypothesis implies that $\alpha < 0$. The estimation is done by probit, with year dummy variables (which control for merger waves over time) and errors clustered by country to address concerns of correlation across same-country residuals.

INSERT TABLE 3 HERE.

The results, presented in Table 3, strongly support our hypothesis. The coefficient of *CRIGHTS* is negative and statistically significant (column 1), meaning that stronger creditor rights are associated with lower probability of same-industry merger in the country. The results on the negative and significant effect of *CRIGHTS* remain the same when excluding from the sample the U.S., which has by far the largest number of mergers (column 6). The creditor rights components that have significant negative effect are *AUTOSTAY* and *MANAGES* (see (columns 2 through 5). The latter, representing the requirement that management does not retain administration of the firm pending the resolution of the reorganization, is the most important determinant (both statistically and economically) of the decision of whether to acquire a same-industry firm. The strong effect of *MANAGES* underscores the strong incentive in this case to reduce risk. Eckbo and Thornburn (2003) show that under a bankruptcy law that mandates firing the managers in default, managers suffer substantial monetary loss, and only about half of them are rehired to work in their former firm.

Regarding the other variables, *SHRIGHTS* has positive – although not statistically significant – coefficient. *MacroRisk* has negative and significant coefficient, meaning that in countries with greater macroeconomic risk, firms have greater tendency to diversify. Target firm leverage has a significant negative effect on the propensity to do same-industry mergers, while acquirer's leverage has a positive effect that is insignificant when excluding the U.S.

As robustness check, we re-estimate the model in Table 3 with a variable that captures the strength of antitrust law in a country, following Hylton and Deng (2007). They provide a score of the antitrust law as it pertains to mergers for 2004. This data is at the end of our sample period but we use it for lack of another index, assuming that the law has hardly changed over the years. Hylton and Deng's list includes 35 countries that overlap with ours, to which we add data on Hong Kong and Singapore.[14] We find that this variable, when and its components *AUTOSTAY* and *MANAGES* remain unchanged.

We also examine the effect of cultural differences, following Stulz and Williamson (2003). In particular, we control for the religious composition of the population. Our results on the effect of creditor rights and its components are unchanged.

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[14] Singapore data is for 2006.

Another robustness check is admitting acquisition of at least 90% of the target. Then, the coefficient of *CRIGHTS* is –0.020 with $t = 3.73$ (29,002 observations), and excluding the U.S., the coefficient is the same with $t = 3.12$ (12,415 observations). The coefficients of *AUTOSTAY*, *REORG*, *SECURED* and *MANAGES* are all negative with respective t-statistics of 3.51, 2.35, 1.36 and 4.04.

Finally, we test the effect of the means of financing of the acquisitions by adding a dummy variable that equals 1 for cash-only transactions. This variable is naturally endogenous. Its effect is insignificant in the regression of all countries, while in the regression that excludes the U.S., its coefficient is positive and significant: 0.035 with $t = 2.42$. Still, the coefficient of *CRIGHTS* remains negative and significant. In the regression that excludes the U.S., the coefficient of *CRIGHTS* is –0.13 with $t = 2.54$.

Next, we test our hypothesis at the aggregate *country level*, where each country is one observation. Here, large and small countries are treated alike. We calculate for each country c the measure $SAME_c$, the proportion of acquisitions in the same 2-digit SIC code industry out of all domestic mergers in the sample period. $SAME_c$ being a ratio bounded between 0 and 1, we do a logistic transformation of $SAME_c$:

$$PROP_c = \ln [SAME_c / (1 - SAME_c)]. \tag{8}$$

Figure 2 plots the variable *PROP* for different countries as a function of their *CRIGHTS* and also shows the best fit implied by column (1) of Table 4, illustrating well the negative relationship between strength of creditor rights and the extent of same-industry mergers.

INSERT FIGURE 2 HERE.

We then estimate the following model:

$$PROP_c = \beta_0 + \beta_1 {*}CRIGHTS_c + controls. \tag{9}$$

INSTER TABLE 4 HERE

The estimation results of model (9) are presented in Table 4. Our hypothesis that $\beta_1 < 0$ is again supported by the data. The coefficient of *CRIGHTS* is negative and significant (column 1). Among the components of *CRIGHTS* (columns 2 through 5), *AUTOSTAY* and *MANAGES* have again negative coefficients, although only *MANAGES* is highly statistically significant. The effect of *MANAGES* is the largest, and it is four times as large as the effect of *CRIGHTS*. The coefficient of *SECURED* is also negative and marginally significant, suggesting that stronger adherence to absolute priority induces firms to diversify. The result on the effect of *CRIGHTS* is similarly negative and significant when we account for the fact that in 5 countries out of the 38, one component of CRIGHTS has changed over the sample period. In that case, *CRIGHTS* is the weighted average of the years' *CRIGHTS*, the weight being the number of transactions in the years following the year of change in one of the *CRIGHTS* components, since a change in the law is reflected in transactions in subsequent years.[15] As robustness check we include again in the model the merger-related antitrust index of Hylton and Deng (2007). Its coefficient is insignificant, while the coefficient of *CRIGHTS* remains negative and significant.

To check the robustness of the main results to sample period selection, we estimate the relationship between *PROP* and *CRIGHTS* across countries, splitting the sample period into two, 1994-1999 and 2000-2004, and calculating *PROP* for each subperiod. In this regression, we exclude one sub-period for a given country if it does not have at least 30 transactions in that sub-period. The results, presented in Table 5, again support our hypothesis: *CRIGHTS* have a significant negative effect on the proportion of same-industry mergers, and among its components, *AUTOSTAY* and *MANAGES* have large and significant effect.

INSERT TABLE 5 HERE.

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[15] The calculation of this variable employs the time series data of the *CRIGHTS* components in Djankov et al. (2007a).

3.3. The effects of *changes* in creditor rights on diversification in M&A activity

Our analysis so far has shown a negative cross-country association between a country's creditor rights and the propensity of firms to do same-industry acquisitions. During our sample period, six countries underwent changes in their creditor rights. This enables us to examine whether *changes* in creditor rights bring about changes in the propensity of firms to diversify in the direction that we propose, i.e., whether making creditor rights less onerous reduces the propensity of firms to diversify.

The countries that had their creditor rights changed are Indonesia, Israel, Japan, Sweden, Thailand and Russia.[16] All these changes imply a decrease by one unit in creditor rights, except for the 2002 change in Russia that increased *CRIGHTS* by one unit. The changes in the bankruptcy code in these countries are assumed to be exogenous. They were driven mainly by financial crises (Indonesia, Russia, and Thailand), the need to collect state tax (Russia, 1998) or emulation of the U.S. in transforming from a centrally-controlled economy.

We use these changes in creditor rights to examine whether the propensity of firms to engage in same-industry mergers responded to changes in *CRIGHTS*. We estimate the following regression which is a variant of model (7) and the estimation in Table 3:

$$Pr(same\ industry\ merger) = \alpha * \Delta CRIGHTS_c + control\ variables. \qquad (10)$$

The change in *CRIGHTS* of country c, denoted $\Delta CRIGHTS_c$, equals 0 during the period following the weakening of *CRIGHTS* (the year of the change and the years that follow), and $\Delta CRIGHTS_c = 1$ during the period that precedes it, when *CRIGHTS* are stronger. Similarly, $\Delta CRIGHTS_c = 1$ during the period when *CRIGHTS* are stronger compared to the previous period of weaker *CRIGHTS*, during which $\Delta CRIGHTS_c = 0$. As discussed, all changes in *CRIGHTS* during the sample period but one made them weaker. For most countries in our sample, $\Delta CRIGHTS = 0$ for the entire sample period (i.e., no

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[16] Russia is included only in this table's regressions, not in any other estimation, since it has a unique legal origin. Its inclusion with a unique dummy variable for its legal origin will not change any of the results reported.

change). By our hypotheses, we expect that $\alpha < 0$. That is, the propensity to engage in same-industry mergers rises if *CRIGHTS* declines from 1 to 0.

The control variables are the acquisition size (in logarithm). We further include year fixed effects and industry fixed effects and, importantly, country fixed effects in line with the difference-in-differences methodology. We estimate the regression by a probit model with 29,548 observations.[17] We cluster the standard errors at the country level to account for potential within-country correlation in the residuals.

INSERT TABLE 6 HERE.

The regression results in Table 6 show that the coefficient on changes in creditor rights is negative and statistically significant, as hypothesized.   In particular, the coefficient of $\Delta CRIGHTS_c$ is -0.19 ($t = 3.16$). The results thus strongly support our hypothesis that *changes* in *CRIGHTS* which weaken them reduce the propensity of firms to diversify through mergers and acquisitions.

3.4. Creditor rights and firms' operating risk

We now present a new and independent test of the relationship between creditor rights and corporate risk. So far we have shown that the propensity to engage in diversifying mergers is greater in countries in which creditor rights are strong. However, in addition to diversifying acquisitions, firms can reduce their risk by other means which are not directly observed. Therefore, we now measure directly the level of corporate risk and relate it to the creditor rights in the country.

Hypothesis II: The volatility of return on firms' assets is decreasing in the strength of the country's creditor rights.

The risk of corporate operations of firm j in country c, $RISK_{j,c}$, is computed as the standard deviation of return on assets, using data from Compustat Global Vantage. The return on assets is defined as $ROA_{j,c,t} = EBITDA_{j,c,t} / ASSETS_{j,c,t}$ where $EBITDA_{j,c,t}$ is the

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[17] Our observation count in the creditor-rights-changes regression is lower than in Table 3 because of data requirement: having creditor rights data from Djankov et al. (2007a) on an *annual* basis for the sample period 1994-2004. This study's data however ends in 2002.

sum of operating income after depreciation (data item #14) and depreciation and amortization expenses (data item #11),[18] and $ASSETS_{i,c,t}$ is the contemporaneous total assets (data item #89). Data are annual. $ROA_{j,c,t}$ is calculated for the years 1992-2005, and the entire sample of $ROA_{j,c,t}$ is winsorized at 0.5% in both tails of the distribution to account for possible data errors and large outliers. $RISK_{j,c}$ is calculated as the standard deviation of the $ROA_{j,c,t}$ series. The entire sample of $RISK_{j,c}$ is again winsorized at 1% in both tails of its distribution to eliminate outliers. We include only firms in the manufacturing industries[19] with data for at least eight years in 1992-2005.

The estimation model regresses $RISK_{j,c}$ on $CRIGHTS_{j,c}$ and a set of control variables:

$$RISK_{j,c} = \gamma * CRIGHTS_{j,c} + \text{control variables}. \tag{11}$$

As in the case of diversifying M&As, we estimate this model at two levels of aggregation: at the firm level (Table 7) and at the country level (Table 8), using the average risk of the firms in the country. By our hypothesis, the coefficient γ of $CRIGHTS$ is negative. The model also includes firm size (its initial total assets, as of the beginning its sample data, in logarithm). Larger firms are commonly assumed to be less risky. The model also includes the assigned firm leverage, calculated as the rank its industry leverage quartile (1 to 4), using median industry leverage as measured for industries in the U.S. It is assumed that this assigned leverage represents the inherent leverage rank of the industry and serves as an instrument for the firm's leverage. This is because the firm's own leverage in endogenous to the firm and country characteristics.

The estimation of the model of single-firm risk level is done as a panel regression, and the residual standard errors are country-clustered. This regression includes only 35 countries because three countries have insufficient data (we require at least 6 firms in a country), giving us a total of 5,376 firms for the firm-level analysis.

INSERT TABLE 7 HERE.

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[18] We use *EBITDA* rather than *EBIT* since countries differ in the way they recognize accounting depreciation, which affect the smoothing of earnings over time.
[19] We exclude utilities and financial firms since they are regulated to various extent in different countries.

The firm-level results in Table 7, columns (1) through (5), support our hypothesis. The coefficient of *RISK* on *CRIGHTS* is negative and significant. As in the earlier results on same-industry mergers (Tables 3-5), the most significant components of *CRIGHTS* that negatively affect *RISK* are *AUTOSTAY* and *MANAGES*. The effect of *MANAGES,* in particular, remains far larger than the overall effect of *CRIGHTS,* as in Tables 3-5 and larger than the effect of *AUTOSTAY* or any other component of *CRIGHTS.* The results on the effect of *CRIGHTS* are qualitatively unchanged when the U.S. is excluded from the regression (column (6)). Among the control variables, both assigned firm leverage and firm size have negative and significant effect on the choice of the company risk level.

INSERT TABLE 8 HERE.

In Table 8, we test the *RISK-CRIGHTS* relationship at the *country* level, instead of at the firm level as in Table 7. Here, all countries are treated alike, each being a single observation. The dependent variable, $RISK^*$, is the average of the individual firms' risk measure *RISK*. The results again support our hypothesis. The coefficient of *CRIGHTS* is negative and significant at better than 5%, even though we have only 25 degrees of freedom in this regression. As before, the significant components of *CRIGHTS* are *AUTOSTAY* and *MANAGES*, with the latter being the most effective component of *CRIGHTS*.

In a robustness test, we use an alternative definition of *RISK*, such as the definition of operating risk variability from John, Litov and Yeung (2007).[20] Our results are qualitatively unchanged.

We have thus established through an independent test that in countries with stronger creditor rights, firms have lower operating risk.

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[20] In John, Litov, Yeung (2007), the annual firm's return-on-asset ratio is calculated as the deviation of the firm's *EBITDA/ASSET* from the country's corresponding average ratio for that year. The standard deviation is calculated from these deviations.

3.5. Industry-adjusted propensity to reduce risk

We now replicate the two previous tests – the effect of creditor rights on same-industry acquisitions and on firms' risk – in a context of *industries*, following Rajan and Zingales's (1998) methodology. This is because countries differ in the composition of their industries, and this may affect same-industry acquisitions and risk, for example, due to the industry's production function and complementarity in production. We examine the effect of *CRIGHTS* on the relationship between the *realized* propensity of firms to do same-industry acquisitions and of firms to choose some level of operating risk and the *inherent* such characteristic of the industry. The proxy for the inherent industry characteristic is the respective characteristic in the U.S., as do Rajan and Zingales (1998). Notably, *CRIGHTS* in the U.S. is low (it equals 1), and hence the industry characteristics in it are relatively less likely to manifest aversion to risk-taking induced by strong creditors' rights. In addition, the U.S. has the most developed capital market, the most active takeover market and relatively few constraints on corporate behavior.

3.5.1. The propensity to do same-industry acquisitions

The inherent propensity of a firm to do same-industry acquisition is measured by $PROP_{j,US}$, the proportion from among all acquisitions in the U.S. done by acquirers in industry j where both acquirer and target are in the same 2-digit SIC code industry. This is calculated for the period 1994-1997. $PROP_{j,c}$ is calculated similarly industry j in country c for the subsequent period, 1998-2004. We include an industry from a given country if it has at least six qualified transactions during the respective period 1998-2004, and the proportion *PROP* undergoes logistic transformation (as in (8)). Following Rajan and Zingales (1998), we estimate the model

$$PROP_{j,c} = \beta_0 + \beta_1 * PROP_{j,US} + \beta_2 * CRIGHTS_c * PROP_{j,US} + Country\ fixed\ effects \quad (12)$$

The country fixed effects control for all country-specific characteristics. There are 623 industry-country observations, and $PROP_{j,c}$ excludes the U.S. The estimation is a panel regression with standard errors clustered at the country level.

We naturally expect $\beta_1 > 0$ and close to unity: the propensity to do same-industry mergers in industry j in any country c is positively related to the propensity of doing that in the U.S. Importantly, we expect $\beta_2 < 0$, since stronger creditor rights in the country mitigates the propensity to do same-industry mergers.

The results strongly support our hypothesis:

(a) $\beta_1 = 1.158$ with $t = 7.82$. A test of the hypothesis $\beta_1 = 1$ yields $t = 1.07$, insignificant.

(b) $\beta_2 = -0.199$ with $t = 4.56$.

$R^2 = 27.1\%$. These results suggest that stronger creditor rights in a country increase the likelihood of cross-industry, diversifying acquisitions compared to the inherent likelihood of such acquisitions as measured in the U.S. One standard deviation increase in the interacted term is associated with 7.2% drop from the mean value of $PROP$. We re-estimate the model replacing the country fixed effects by all country-related variables that are included in Table 4. Then, R^2 declines to 15.5%. Still, $\beta_2 = -0.201$ with $t = 4.42$. In this regression, the coefficient of $CRIGHTS_c$ is -0.172 with $t = 1.07$, insignificant. The negative effect of $CRIGHTS$ on the propensity to do same-industry acquisitions is thus reflected in β_2 which measures the effect of $CRIGHTS$ relative to the U.S. benchmark of such acquisitions.

3.5.2. The average level operating risk in an industry

We now relate $RISK_{j,c}$, the average operating risk of industry j (using 2-digit SIC code) in country c, to the industry risk level in the same U.S. industry, $RISK_{j,US}$, which measures the inherent level of risk in industry j, and to $CRIGHTS_c$. $RISK_{j,c}$ is the median standard deviation of annual ROA of firms in country c. $RISK_{j,US}$ is calculated for the period 1992-1998 and for the other countries it is over the following period 1999-2005.[21] An industry is included in the analysis if it has at least three firms with available $RISK$

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[21] The results are qualitatively unchanged when the variables for both the U.S. and all other countries are calculated over the entire sample period, 1992-2005.

measure, which requires at least five years of data. We then perform the following regression:

$$RISK_{j,c} = \delta_0 + \delta_1*RISK_{j,US} + \delta_2*CRIGHTS_c*RISK_{j,US} + \text{Country fixed effects} \qquad (13)$$

The country control variables, *Controls*, are country fixed effects or all the country-related variables in Tables 7 and 8. In this regression, there are 802 industry-country observations excluding the U.S. The estimation is a panel regression with standard errors clustered at the country level.

Again, we expect δ_1 being close to unity, since higher risk in an industry in the U.S. implies that the same industry in another country also has higher risk. Central to our hypothesis, we expect $\delta_2 < 0$: relative to the risk in the same industry in the U.S., the industry risk decline as a function of the strength of that country's creditor rights.
The results are again consistent with our hypothesis:

(a) $\delta_1 = 0.862$ with $t = 4.49$. A test of the hypothesis $\delta_1 = 1$ yields $t = 0.72$, insignificant.

(b) $\delta_2 = -0.158$ with $t = 2.16$.

$R^2 = 30.2\%$. Again, in a model which replaces the country fixed effects by all country-related variables in Table 8, R^2 declines to 20.9%. In this regression, $\delta_2 = -0.170$ with $t = 2.38$ and the coefficient of *CRIGHTS* is 0.008 with $t = 1.84$, insignificant at 5%. The results thus show that stronger creditor rights significantly reduce the industry risk compared to the same-industry risk in the U.S.

3.6. Risk reduction and industry recovery rates

A final test of the effect of creditor rights on corporate behavior, which is different from the two tests done so far, is the examination of the choice of target in a merger or acquisition by the recovery rate of its assets in default (henceforth recovery). In time of financial distress, a firm with high-recovery assets can liquidate some assets and use the proceeds to avoid default, i.e., to extend the life of the implicit call option that is embedded in the firm's equity. Bidder firms with low-recovery assets are therefore

more vulnerable to default risk because they are less able to defer default by asset liquidation. Indeed, Berger, Ofek and Swary (1996) find that a high recovery value of assets (imputed from book value items) have particularly high value for firms in financial distress. In addition, Eckbo and Thornburn's (2003) study suggests that it is a managerial interest to increase the recovery rate of debt in default. They find that the recovery rate of the firm's debt in default plays an important role in the decision of rehiring the manager after he or she has been automatically terminated in Sweden, following the bankruptcy law there: the rehiring probability for the manager is an increasing function of the recovery rate of the firm's debt.

We therefore propose the following hypothesis.

Hypothesis III: In economies with strong creditor rights, target firms in high-recovery industries are more likely to be acquired by firms in low-recovery industry.

An acquirer in low-recovery industry, being more vulnerable to default, seeks high-recovery assets that can be more easily liquidated in time of financial distress. The dependent variable in the test of this hypothesis is $\Pr(TH \cap AL|TH)$, the probability of acquisition by low-recovery acquirer (AL) of a high-recovery target (TH) within the set of all TH transactions. By our hypothesis, this probability is positively associated with *CRIGHTS*.

We assign to firms the recovery level of the industry in which they operate, using the data in Acharya, Bharath and Srinivasan (2007, Table 2) which employs historical experience on defaults in the U.S. over the period 1982-1999. Low recovery industries (in terms of 2-SIC code headers) are: transportation (37, 40, 41, 42, 44, 45, 46, 47), high technology and office equipment (35, 36, 38), consumer/service sector (52, 53, 54, 55, 56, 57, 58, 59, 72, 73, 75, 76, 78, 79), and leisure time/media (27, 48, 70). High recovery industries are: energy and natural resources (10, 12, 13, 14, 24), building products/ homebuilders (8, 15, 17, 24, 28, 29, 32, 34), and healthcare/chemicals (28, 80.)[22] In the estimation model, the universe is all targets with high recovery, and the bidders are either low-recovery (dependent variable = 1), or high recovery (dependent variable = 0).

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[22] We have alternatively followed Dyck and Zingales (2004) and characterized as low recovery rate industries the following ones: mining, manufacturing, and transportation. Our results are similar.

INSERT TABLE 9 HERE

The results in Table 9 support our hypothesis. The coefficient of *CRIGHTS* is positive and significant for the entire sample and when excluding the U.S., which constitutes half the sample (columns (6-10)). All components of creditor rights have positive coefficients, and with the exclusion of *SECURED* they are statistically significant. That is, stronger creditor rights induce greater likelihood of an acquisition of high-asset-recovery firms by low-recovery firms. The relatively large coefficient of *MANAGES* underscores the evidence in Eckbo and Thornburn (2003) that in a regime where managers are laid off in default, the rehiring probability increases in the recovery rate of debt, which in turn is enhanced if the firm owns high-recovery assets. The *MacroRisk* has a positive effect on the likelihood of low-recovery firms acquiring high-recovery firms, which is consistent with the view that such acquisitions are desired as means to reduce risk.

The model is also estimated as a country-level regression, where the dependent variable is the proportion of all high-recovery targets in the country acquired by low-recovery bidders (we use logistic transformation). In this regression, each country is a single observation, regardless of the number of transactions in it. For sake of parsimony, we do not present the table. The results are consistent with those of single-acquisition regressions. In this estimation, the coefficient of *CRIGHTS* is 0.325 with $t = 4.49$, highly significant.[23]

This test provides additional evidence that creditor rights affect the choice of investment – here, an acquisition target – particularly by low-recovery acquirers, which seek to acquire high-recovery targets. As we argue throughout, if investment choices are constrained by creditor rights, they may be suboptimal from an overall economic viewpoint.

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[23] We further conduct a test in the spirit of this hypothesis, examining the proportion among all low-recovery bidders that seek high-recovery targets. In this regression, the effect of *CRIGHTS* is not statistically significant.

4. Conclusion and Discussion

Employing three different tests and several estimation methods, we find that stronger creditor rights in a country induce firms to take less risk and prefer diversifying acquisitions. If these actions would not have otherwise been taken by the firms, it follows that creditor rights have real effect on corporate decisions whose value effects may be questionable.

Stronger creditor rights are justified as means to mitigate stockholders' opportunistic risk shifting policies that benefit themselves at the expense of bondholders (and that may be costly to the firm), and thus facilitate raising external capital. Our findings could thus be construed as confirming that creditor rights do what they are expected to do: inhibit excessive risk taking by companies. However, if stronger creditor rights stifle *non-opportunistic* risk taking that is beneficial to all claimholders, stronger creditor rights have a "dark side" to them. They may destroy firms' incentives to undertake value-enhancing but risky projects, and may induce firms to do value-reducing diversifying acquisitions. The question is how to strike a balance between these two effects of creditor rights. In this paper, we highlight the second aspect, that is, the inhibiting effect of creditor rights on risk taking by companies.

Personal bankruptcy laws in the U.S., which affect unincorporated firms, suggest that more severe bankruptcy laws are negatively correlated with entrepreneurship. It could be argued, though, that lenient bankruptcy laws make it harder to raise capital. Berkowitz and White (2004) find that more lenient state bankruptcy laws, measured by higher personal bankruptcy exemptions, increases the likelihood of credit rationing and higher interest rates. This effect is particularly strong for firms with low net assets. This means that stronger creditor rights increase the supply of funds.

On the other hand, Fan and White (2003) find that states with more lenient bankruptcy laws enjoy higher level of entrepreneurship, measured by the extent of self employment. For example, "the probability of households owning businesses is 35% higher if they live in states with unlimited rather than low exemptions" (p. 543). Taking these two papers together, the positive credit supply effect of stronger creditors' rights is more than offset by the negative supply of entrepreneurs. To the extent that

entrepreneurship is conducive to economic growth, this finding suggests that strong creditor rights have also a "dark side" to them.

International evidence also shows that stronger creditor rights inhibit entrepreneurship. Armour and Cumming (2005) create an index of the severity of personal bankruptcy laws in 15 countries, measured by the number of years a bankrupt must wait until he may be discharged from his indebtedness (in some cases, there is no limit). They study the effects of bankruptcy laws on the extent of self employment relative to the population – a measure of entrepreneurship – both the inter-country and intra-country over the years 1990-2002. Armour and Cummins find that more severe bankruptcy laws reduce the extent of self employment, after controlling for economic variables. They also find that the recent reforms in some European countries' personal bankruptcy laws, which made them more lenient (shorter time to discharge from debt), can be credited with the increase in entrepreneurship in these countries.

Given this tradeoff, stronger creditor rights are not always optimal. The optimal level of creditor rights may thus have to balance the positive effect on debt capacity of firms and the negative effect on their investment choices. In future work, it would be interesting to assess directly this important tradeoff.

References

Acharya, V., S. Bharath, A. Srinivasan, 2007, Does industry-wide distress affect defaulted firms? Evidence from creditor recoveries, *Journal of Financial Economics,* Vol. 85(3), 787-821.

Acharya, V., R. Sundaram, K. John, 2004, Cross-country variations in capital structures: The role of bankruptcy codes, Working paper, New York University.

Acharya, V., K. Subramanian, 2007, Bankruptcy codes and innovation, Working Paper, London Business School.

Adler, B. E., 1992, Bankruptcy and risk allocation, *Cornell Law Review*, Vol. 77, 439-489.

Adler, B., V. Capkun and L.A. Weiss, 2007, Value destruction in the new era of Chapter 11. Working paper, NYU Law School.

Aggarwal, R., A. Samwick, 2003, Why do managers diversify their firms? Agency reconsidered, *Journal of Finance*, Vol. 58: 71-117.

Allen, F., D. Gale, 2000, *Comparing Financial Systems,* MIT Press, Cambridge, MA.

Amihud, Y., B. Lev, 1981, Risk reduction as a managerial motive for conglomerate mergers, *Bell Journal of Economics*, Vol. 12: 605-618.

Armour, J., D.J. Cumming, 2005, Bankruptcy law and entrepreneurship. Working Paper, University of Cambridge Faculty of Law.

Baird, D.G., R. K. Rasmussen, 2006, The prime directive. Working Paper, University of Chicago.

Berger, P., E. Ofek, D. Yermack, 1997, Managerial entrenchment and capital structure decisions, *Journal of Finance*, Vol. 52: 1411-1438.

Berger, P. G., E. Ofek, I Swary, 1996, Investor valuation of the abandonment option, *Journal of Financial Economics*, Vol. 42: 257-287.

Berkowitz, J., M. J. White, 2004, Bankruptch and small firms' access to credit. *The RAND Journal of Economics*, Vol 35: 69-84.

Bertrand, M., E. Duflo, S. Mullainathan, 2004, How much should we trust differences-in-differences estimates? *Quarterly Journal of Economics*, Vol. 119: 249-75.

Billett, M. T., T-H. D. King, D. C. Mauer, 2004, Bondholder wealth effects in mergers and acquisitions: New evidence from the 1980s and 1990s, *Journal of Finance*, Vol. 59: 107-135.

Blum, J., 1999, Do capital adequacy requirements reduce risks in banking? *Journal of Banking and Finance*, Vol. 23: 755–71.

Blum, J., 2002, Subordinated debt, market discipline, and banks' risk taking, *Journal of Banking and Finance*, Vol. 26: 1427-1441.

Chava, S., M. Roberts, 2008, How does financing affect investment? The role of debt covenants, *Journal of Finance*, forthcoming.

Claessens, S., L. F. Klapper, 2005, Bankruptcy around the world: Explanations of its relative use, *American Law and Economic Review*, Vol. 7: 253-283.

Comment, R., G.A. Jarrell, 1995, Corporate focus and stock returns. *Journal of Financial Economics,* Vol. 37: 67-87.

Cragg, J.G., S.G. Donald, 1993, Testing identfiability and specification in instrumental variables models, *Econometric Theory,* Vol. 9: 222-240.

Djankov, S., C. McLeish, A. Shleifer, 2007a, Private credit in 129 countries, *Journal of Financial Economics*, forthcoming.

Djankov, S., O. Hart, C. McLeish, A. Shleifer, 2007b, Debt enforcement around the world, Working paper, Harvard University.

Eckbo, B. E., K. S. Thornburn, 2003, Control benefits and CEO discipline in automatic bankruptcy auctions, *Journal of Financial Economics*, Vol. 69: 227-258.

Gilson, S., 1989, Management turnover and financial distress, *Journal of Financial Economics*, Vol. 25: 241-262.

Guilkey, D., J. Murphy, 1993, Estimation and testing in the random effects probit model, *Journal of Econometrics*, 59, 301-317.

Fan, W., M. J. White, 2003, Personal bankruptcy and the level of entrepreneurial activity. *Journal of Law and Economics*, Vol 46: 543-567.

Haselmann, R., K. Pistor, V. Vig, 2006, How law affects lending, Working Paper, Columbia Law School.

Hylton, K., F. Deng, 2007, Antitrust around the world: An empirical analysis of the scope of competition laws and their effects, *Antitrust Law Journal*, forthcoming

John, K., L. Litov, B. Yeung, 2007, Corporate governance and managerial risk-taking: theory and evidence, *Journal of Finance*, forthcoming.

Landier, A., 2006, Entrepreneurship and the stigma of failure, Working Paper, Stern School of Business, New York University.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer, R. Vishny, 1997, Legal determinants of external finance, *Journal of Finance,* Vol. 52: 1131-1150.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer, R. Vishny, 1998, Law and finance, *Journal of Political Economy,* Vol. 106: 1113-1155.

Levine, R., A. Demirguc-Kunt, 2001, *Financial Structure and Economic Growth: A Cross-Country Comparison of Banks, Markets and Development,* MIT Press, Cambridge, MA.

Manso, G., 2005, Motivating Innovation, Working Paper, MIT.

Morck, R., A. Shleifer, R. Vishny, 1990, Do Managerial Objectives Drive Bad Acquisitions? *Journal of Finance,* 45(1), 31-48.

Moeller, S., F. Schlingemann, R. Stulz, 2004, Firm size and the gains from acquisitions, *Journal of Financial Economics*, Vol. 73: 201–228

Nini, G., D. Smith, A. Sufi, 2006, Creditor control rights and firm investment policy, Working paper, University of Chicago.

Ozelge, S. 2007, The role of banks and private lenders in forced CEO turnover, Working Paper, New York University.

Qian, J., P. Strahan, 2007. How law & institutions shape financial contracts: the case of bank loans, *Journal of Finance*, forthcoming.

Persad, S., 2004, Bankruptcy exemptions and small business credit re-examined: Using loan guarantees to isolate moral hazard behavior. Working paper, Columbia University.

Rajan, R., L. Zingales, 1998, Financial dependence and growth, *American Economic Review*, 88, 559-586.

Rossi, S., P. Volpin, 2004, Cross-country determinants of mergers and acquisitions, *Journal of Financial Economics,* Vol. 74: 277-304.

Schwartz, A. 2001, Contracting on bankruptcy, *Journal of Law, Economics and Organization,* Vol 13: 127-146.

Stulz, R., R. Williamson, 2003, Culture, openness, and finance, *Journal of Financial Economics*, Vol. 70: 313-349.

Vig, V. 2007, Access to collateral and corporate debt structure: Evidence from natural experiment, Working paper, London Business School.

Table 1. Variable Definitions

Main Variables		Source
Risk-reduction measures		
PROP	Logistic transformation of the share of same industry mergers, per country. We define it as follows: $PROP = \ln [SAME/(1-SAME)]$. *SAME* is the proportion of same 2-digit SIC code industry mergers and acquisitions.	SDC Platinum Mergers & Acquisitions.
Firm risk (*RISK*)	$RISK_{i,c}$ is the standard deviation of firm j in country c, $ROA_{j,c,t}$, where $ROA_{j,c,t} = EBITDA_{j,c,t} / ASSETS_{j,c,t}$. *t* is the year, and we require at least 8 years of data. Data are for the period 1992-2005. The entire data of $ROA_{i,c,t}$ is winsorized at 0.5% in both tails to account for extreme observations. The entire firm sample of $RISK_{i,c}$ is then winsorized at 1% in both sides of the sample distribution.	Compustat Global Industrial/ Commercial Annual Database.
Country risk (*RISK**)	The average of $RISK_{j,c}$ across firms in country *c*.	
Creditor- Rights Variables		
Creditor rights (*CRIGHTS*)	An index aggregating creditor rights, following La Porta et al. (1998). It is the sum of the four indexes that follow. *CRIGHTS* then ranges between 0 and 4.	La Porta *et al.* (1998), Djankov, McLeish, and Shleifer (2007a)
No automatic stay (*AUTOSTAY*)	Equals one if the reorganization procedure does not impose an automatic stay on the assets of the firm upon filing the reorganization petition, creditors are able to seize their collateral after the reorganization petition is approved. It equals zero if such restriction does exist in the law.	La Porta *et al.* (1998)
Reorganization (*REORG*)	Equals one if the reorganization procedure imposes restrictions, such as creditors' consent or minimum dividend for a debtor to be able to file for reorganization. It equals zero for countries without such restriction.	La Porta *et al.* (1998)
Secured debt first (*SECURED*)	Equals one if secured creditors are ranked first in the distribution of the proceeds that result from the disposition of the assets of a bankrupt firm, as opposed to other creditors such as employees or government. Equals zero if non-secured creditors, such as the government and workers, are given absolute priority.	La Porta *et al.* (1998)
No management stay (*MANAGES*)	Equals one if an official appointed by the court, or by the creditors, is responsible for the operation of the business during reorganization, that is management does not retain administration of its property pending the resolution of the reorganization. Equivalently, this variable equals one if the debtor does not keep the administration of its property pending the resolution of the reorganization process, and zero otherwise.	La Porta *et al.* (1998)
Control Variables		
GDP-per-capita (in U.S. dollars) (*GDP*)	Natural logarithm of the average real GDP per capita in US$, 1994-2000.	Penn World Tables, Version 6.1
Macroeconomic Risk (*MacroRisk*)	The standard deviation of the quarterly growth in real industrial production for each country in the period 1990-2004. For some countries, we use instead the index of manufacturing production: Argentina, Chile, Greece, Hong Kong, Indonesia, New Zealand, Peru, Philippines, Singapore and South Africa. For Argentina, Canada, Taiwan and Thailand, data are from the international database of Global Insight. The variable is measured in decimal points.	International Financial Statistics of IMF.
Rule of Law (*LAW*)	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; La Porta *et al.* (1998).
Legal Origins	A dummy variable that identifies the legal origin of the Company law or Commercial Code of each country. The detailed origins are French, German, Nordic (default is Common)	La Porta et al. (1998) and the CIA Factbook 2003.
Shareholder rights (*SHRIGHTS*)	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) an oppressed minorities mechanism is in place, (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).
Leverage (industry rank)	The rank of median leverage, from 1 (low) to 4 (high) among 2-digits U.S. industries. Each firm in any country received the rank of its 2-digit leverage as calculated for the U.S.	Compustat Global
Transaction Value	The amount paid in U.S. dollars.	SDC Platinum Mergers & Acquisitions.

Table 2. Overall descriptive statistics
Table 2 describes the total number of domestic mergers in the sample countries for 1994-2004. The sample presented consists of the countries for which we have La Porta et al. (1998) data on creditor rights. We exclude countries that have less than 50 qualified transactions in the sample period. A transaction is qualified if the percentage of acquired shares is at least 20%. We exclude financial industry (SIC header 6) and regulated industry companies (SIC headers 48 and 49) from the country transaction count. The mergers and acquisition data is from SDC Platinum Mergers and Acquisitions database. The year of creditor rights change is the one from the Djankov et al. (2007a) study. We also present data on the average country operating risk proxy, $RISK^*$.

Acquirer's Country	Year of creditor rights change	# Mergers	# Same Industry Mergers	Operating Risk Proxy	Shareholder Rights	Creditor Rights	Macroeconomic Volatility	$ GDP per capita
	LAW CHANGE	COUNT	SAME	RISK	SHRIGHTS	CRIGHTS	MacroRisk	GDP
Argentina	-	150	55.33%	0.058	4	1	0.07	$7,801
Australia	-	2,939	61.72%	0.121	4	1	0.04	$20,948
Austria	-	217	64.52%	0.036	2	3	0.09	$26,220
Belgium	-	325	57.54%	0.043	0	2	0.08	$24,649
Brazil	-	343	70.26%	0.07	3	1	0.03	$4,143
Canada	-	3,798	61.37%	0.094	5	1	0.01	$20,647
Chile	-	76	61.84%	0.033	5	2	0.04	$4,604
Denmark	-	402	56.47%	0.049	2	3	0.07	$32,434
Finland	-	881	54.60%	0.054	3	1	0.08	$23,856
France	-	2,666	59.79%	0.045	3	0	0.1	$24,033
Germany	-	3,524	55.31%	0.057	1	3	0.04	$26,443
Greece	-	324	47.22%	0.043	2	1	0.06	$11,219
Hong Kong	-	343	34.11%	0.064	5	4	0.13	$23,850
India	-	470	57.87%	0.051	5	4	0.07	$423
Indonesia	1998	76	60.53%	.	2	4	0.07	$868
Ireland	-	206	63.59%	.	4	1	0.08	$21,376
Israel	1996	110	45.45%	0.075	3	4	0.02	$16,391
Italy	-	876	53.31%	0.038	1	2	0.12	$19,814
Japan	2000	3,301	46.80%	0.022	4	2	0.03	$36,616
Malaysia	-	1,207	25.27%	0.066	4	4	0.05	$3,982
Mexico	-	147	62.59%	0.049	1	0	0.03	$4,421
Netherlands	-	846	57.80%	0.059	2	2	0.11	$24,802
New Zealand	-	343	57.73%	0.073	4	3	0.06	$15,528
Norway	-	341	58.94%	0.079	4	2	0.07	$33,844
Peru	-	51	68.63%	0.058	3	0	0.07	$2,296
Philippines	-	75	56.00%	0.08	3	0	0.18	$1,041
Portugal	-	147	65.31%	0.036	3	1	0.06	$10,782
Singapore	-	407	32.19%	0.064	4	4	0.06	$22,916
South Africa	-	612	49.84%	0.061	5	3	0.02	$3,413
South Korea	-	314	32.48%	0.051	2	3	0.06	$9,545
Spain	-	1,122	64.08%	0.04	4	2	0.08	$14,535
Sweden	1996	680	58.53%	0.067	3	2	0.16	$26,812
Switzerland	-	463	57.67%	0.046	2	1	0.07	$37,908
Taiwan	-	98	44.90%	0.039	3	2	0.06	$12,580
Thailand	1999	157	43.95%	0.065	2	3	0.05	$2,396
Turkey	-	52	50.00%	0.097	2	2	0.07	$2,810
United Kingdom	-	9,446	58.61%	0.071	5	4	0.05	$21,767
United States	-	40,656	59.07%	0.088	5	1	0.01	$30,899

Table 3. Merger-level analysis: proportion of same-industry mergers

The table presents the coefficient estimates from probit regressions. The dependent variable equals 1 if both acquirer and target are in the same industry, using 2-digit SIC code. A country is included in our sample if it has at least 50 qualified transactions over the sample period. A transaction is included if the percentage of acquired shares is at least 20%. Excluded are transactions where the acquirer is from the financial industry (SIC header 6) or regulated industry (SIC headers 48 and 49). *CRIGHTS* are as of 1994. The control variables include shareholder rights, rule of law, macroeconomic risk, legal origins, the logarithm of average real GDP-per-capita (1994-2000) in US$, the logarithm of transaction value, and the ranked median leverage for the industry of the acquirer and for the industry of the target. All variables are defined in Table 1. The regressions include year fixed effects (not reported). Models (1) through (5) include all countries. Model (6) excludes the U.S. The *t*-statistics in parentheses are based on robust estimation of standard errors with errors cluster-adjusted at the country level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Sample period is 1994-2004.

Variable	All countries					Exclude U.S.
	(1)	(2)	(3)	(4)	(5)	(6)
CRIGHTS	-0.040**					-0.044**
	(2.24)					(2.24)
AUTOSTAY		-0.109**				
		(2.50)				
REORG			-0.054			
			(1.15)			
SECURED				0.004		
				(0.04)		
MANAGES					-0.147***	
					(3.13)	
SHRIGHTS	0.026	0.018	0.015	0.011	0.046*	0.032
	(0.94)	(0.65)	(0.51)	(0.36)	(1.78)	(1.03)
Rule of Law	0.317***	0.344***	0.297***	0.288***	0.295***	0.244***
	(4.34)	(4.49)	(3.62)	(3.25)	(4.30)	(3.16)
French Legal Origin	0.369***	0.404***	0.42***	0.454***	0.363***	0.335***
	(3.52)	(3.80)	(3.66)	(4.51)	(3.45)	(3.78)
German Legal Origin	-0.128**	-0.15***	-0.171***	-0.167***	-0.035	-0.187***
	(2.30)	(2.85)	(3.28)	(2.99)	(0.48)	(3.05)
Nordic Legal Origin	0.078	0.065	0.147	0.172	0.044	0.079
	(0.54)	(0.45)	(0.93)	(1.10)	(0.33)	(0.57)
MacroRisk	-2.654***	-2.915***	-3.471***	-4.17***	-2.224***	-2.757***
	(2.73)	(3.32)	(3.35)	(5.12)	(2.81)	(2.80)
Log GDP per capita	-0.181***	-0.191***	-0.16***	-0.145***	-0.182***	-0.129***
	(4.33)	(4.56)	(3.45)	(3.03)	(4.42)	(3.23)
Log(Transaction Value)	0.022***	0.023***	0.023***	0.023***	0.021**	0.014
	(2.66)	(2.73)	(2.79)	(2.87)	(2.45)	(1.14)
Acquirer's Leverage (industry rank)	0.034*	0.034*	0.033	0.033	0.034*	-0.005
	(1.68)	(1.66)	(1.60)	(1.56)	(1.73)	(0.38)
Target's Leverage (industry rank)	-0.106***	-0.106***	-0.106***	-0.107***	-0.105***	-0.085***
	(6.17)	(6.20)	(6.23)	(6.27)	(6.07)	(3.55)
Number of countries	38	38	38	38	38	37
Observations	33,221	33,221	33,221	33,221	33,221	15,730
Chi-squared	2,325.6	1,713.4	1,798.5	1,647.8	4,154.5	1,139.3

Table 4. Country-level analysis: proportion of same-industry mergers

The dependent variable is the logistic transformation of the fraction of same-industry mergers (2-digit SIC code) out of all mergers in the country. A country is included in our sample if it has at least 50 qualified transactions over the sample period. A qualified transaction is where at least 20% of the target is acquired. Excluded are acquirers from the financial industry (SIC header 6) and regulated industry companies (SIC headers 48 and 49). The sample period is 1994-2004. Number of observations is 38 (countries). Variables are defined in Table 1. Model (6) uses a value-weighted average of the country creditor rights time series (from Djankov et al. (2007a)), where the weights are the number of M&A transactions within a given country in the subsequent year. *t*-statistics (in parentheses) are based on robust standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
CRIGHTS	-0.141**					
	(2.43)					
Average CRIGHTS						-0.127**
						(2.16)
AUTOSTAY		-0.226				
		(1.55)				
REORG			-0.087			
			(0.67)			
SECURED				-0.236*		
				(1.89)		
MANAGES					-0.539***	
					(3.37)	
SHRIGHTS	0.034	0.027	0.057	0.062*	0.043	0.044
	(0.91)	(0.57)	(1.51)	(1.84)	(1.35)	(1.21)
Rule of Law	0.167*	0.173*	0.168*	0.182**	0.079	0.176**
	(1.91)	(1.89)	(1.83)	(2.06)	(0.95)	(2.09)
French Legal Origin	0.325*	0.44**	0.579***	0.542***	0.226	0.406**
	(1.92)	(2.23)	(3.02)	(3.02)	(1.51)	(2.22)
German Legal Origin	0.053	0.112	0.123	0.166	-0.034	0.071
	(0.23)	(0.47)	(0.48)	(0.68)	(0.18)	(0.30)
Nordic Legal Origin	0.243	0.252	0.384*	0.38*	0.090	0.209
	(1.38)	(1.28)	(1.77)	(1.83)	(0.59)	(1.05)
MacroRisk	-1.856	-1.871	-2.149	-2.260	-2.272**	-1.703
	(1.45)	(1.30)	(1.30)	(1.43)	(2.13)	(1.25)
Log GDP per capita	-0.165	-0.155	-0.137	-0.136	-0.116	-0.133
	(1.43)	(1.37)	(1.23)	(1.16)	(1.11)	(1.25)
R-squared	42.9%	35.9%	32.2%	34.7%	51.0%	38.5%

Table 5. Country-level analysis across two sub-periods: proportion of same-industry mergers
The dependent variable is the proportion of same-industry mergers (2-digit SIC code) out of all mergers in the country, employing logistic transformation. This table is identical to Table 4, except that the proportion of same-industry mergers is calculated separately for each of the two subperiods, 1994-1999 and 2000-2004. Number of observations is 74. A country in included in the sample if it has at least 30 qualified transactions for each sub-period. Standard errors are based on cluster-adjust errors at the country level. The rest is as in Table 4.

Variable	(1)	(2)	(3)	(4)	(5)
CRIGHTS	-0.138**				
	(2.53)				
AUTOSTAY		-0.253*			
		(1.85)			
REORG			-0.067		
			(0.56)		
SECURED				-0.198*	
				(1.88)	
MANAGES					-0.55***
					(3.7)
SHRIGHTS	0.022	0.008	0.043	0.048	0.028
	(0.65)	(0.20)	(1.34)	(1.63)	(1.03)
Rule of Law	0.161**	0.175**	0.168**	0.178**	0.068
	(2.01)	(2.19)	(2.06)	(2.24)	(0.88)
French Legal Origin	0.305**	0.392**	0.553***	0.522***	0.198
	(2.07)	(2.18)	(3.23)	(3.20)	(1.55)
German Legal Origin	0.048	0.099	0.119	0.155	-0.044
	(0.23)	(0.46)	(0.52)	(0.69)	(0.26)
Nordic Legal Origin	0.247	0.234	0.376*	0.376*	0.091
	(1.56)	(1.34)	(1.86)	(1.93)	(0.66)
Macro Risk	-1.996	-1.951	-2.284	-2.373	-2.433**
	(1.67)	(1.51)	(1.47)	(1.58)	(2.48)
Log GDP per capita	-0.181*	-0.181*	-0.156	-0.153	-0.133
	(1.78)	(1.80)	(1.56)	(1.45)	(1.44)
R-squared	37.3%	32.7%	27.8%	29.5%	45.6%

Table 6. Causality Regressions: merger-level analysis of changes in bankruptcy law
Probit estimation of the probability of same-industry acquisition (the dependent variable equals 1, using 2-digit SIC code). The creditor rights change dummy, *ΔCRIGHTS*, represents a dummy variable with value zero for the control sample (no change in creditor rights) and for the treatment sample (countries in which there was change in *CRIGHTS*) prior to an increase in creditor rights strength or after a decrease in the creditor rights strength if the change reduced the strength of *CRIGHTS*. This dummy variable equals one following an increase in the creditor rights strength, and preceding a decrease in the creditor rights strength. Included are all merger and acquisitions where the acquired percentage shares is at least 20%, the transaction has a disclosed value, and the time changes in creditor rights are available in Djankov et al. (2007a). We exclude transactions where the acquirer is in the financial industry (SIC header 6) or regulated industry (SIC headers 48 and 49). The sample period is 1994-2004. The *t*-statistics are in parentheses. The standard errors are cluster-adjusted at the country level. Included (but not reported for brevity) are fixed effects for country, year and the acquirer's industry (2-digit SIC code), following the difference-in-differences methodology of Bertrand, Duflo, and Mullainathan (2004). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Part I. Mutivariate Analysis

Variable	Pr(*SAME*)
ΔCRIGHTS $_{c,t}$	-0.19***
	(3.16)
Log (Transaction Value)	0.027***
	(1.86)
Fixed Effects	Country, year, and industry
Observations	29,548

Part II: Details of changes

Country	Year of law change	Detail of change
Indonesia	1998	Change to *SECURED* = 0
Israel	1996	Introduction of automatic stay, i.e. *AUTOSTAY* = 0
Japan	2000	Change to *SECURED* = 0
Russia	1998 and 2002	1998: Change to *MANAGES* = 0. 2002: Re-instating *MANAGES* = 1.
Sweden	1996	Change to *REORG* = 0.
Thailand	1999	Change to *REORG* = 0.

Table 7. Operating risk and creditor rights: RISK at firm level

The dependent variable, *RISK*, is the standard deviation of the firm's annual *ROA* defined as *EBITDA/ASSETS* (see definition in Table 1). The sample period is 1992-2005. Included are companies from the manufacturing industry only (SIC 2000 – 3999). The *t*-statistics (in parentheses) are based on robust standard errors cluster-adjusted at the country level. We also include one-digit SIC code industry effects (not reported). The ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	All countries					Exclude U.S.
	(1)	(2)	(3)	(4)	(5)	(6)
CRIGHTS	-0.007***					-0.008**
	(3.33)					(2.62)
AUTOSTAY		-0.016**				
		(2.61)				
REORG			-0.003			
			(0.47)			
SECURED				-0.010		
				(0.97)		
MANAGES					-0.028***	
					(7.17)	
SHRIGHTS	-0.004	-0.006*	-0.003	-0.003	-0.001	-0.005
	(1.50)	(1.95)	(1.11)	(1.23)	(0.51)	(1.59)
Rule of Law	-0.002	-0.001	0.003	0.005	-0.011**	-0.002
	(0.37)	(0.01)	(0.76)	(1.04)	(2.20)	(0.20)
French Legal Origin	-0.031**	-0.028**	-0.013	-0.017*	-0.03***	-0.038***
	(2.33)	(2.31)	(1.05)	(1.70)	(3.31)	(2.87)
German Legal Origin	-0.036***	-0.04***	-0.033***	-0.032***	-0.025***	-0.044***
	(3.94)	(3.94)	(3.50)	(3.76)	(4.36)	(4.64)
Nordic Legal Origin	-0.019	-0.023*	-0.011	-0.012	-0.021**	-0.024*
	(1.58)	(1.88)	(0.89)	(0.98)	(1.99)	(1.94)
MacroRisk	-0.038	-0.069	-0.122	-0.142	-0.027	0.015
	(0.44)	(0.81)	(1.09)	(1.54)	(0.40)	(0.20)
Log GDP per capita	-0.035	-0.059	-0.118	-0.131	-0.026	-0.026
	(0.38)	(0.66)	(1.03)	(1.46)	(0.38)	(0.30)
Leverage (industry rank)	-0.005***	-0.005***	-0.006***	-0.006***	-0.005***	-0.003***
	(3.62)	(3.78)	(3.96)	(3.95)	(3.42)	(3.54)
Log of initial total assets	-0.013***	-0.013***	-0.013***	-0.013***	-0.013***	-0.01***
	(5.25)	(5.33)	(5.27)	(5.25)	(5.13)	(5.51)
Observations	5,394	5,394	5,394	5,394	5,394	3,812
R-squared	29.3%	29.1%	28.5%	28.6%	30.2%	23.2%
Number of countries	35	35	35	35	35	34

Table 8. Country-level operating risk, $RISK^*$, and creditor rights

$RISK^*$ is the average for each country of the variable $RISK$ of the firms in the country, where $RISK$ is the standard deviation of the firm profitability. Included are companies from the manufacturing industry only (SIC 2000 – 3999). All variables are defined in Table 1. Sample period for the calculation of $RISK^*$ is 1992-2005. The number of observations is 35 (countries). The t-statistics (in parentheses) are based on robust standard errors. The ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	(1)	(2)	(3)	(4)	(5)
CRIGHTS	-0.008**				
	(2.47)				
AUTOSTAY		-0.018**			
		(2.32)			
REORG			-0.0030		
			(0.38)		
SECURED				-0.0050	
				(0.58)	
MANAGES					-0.031***
					(3.72)
SHRIGHTS	-0.0020	-0.0030	-0.0010	-0.0010	-0.0010
	(0.87)	(1.22)	(0.37)	(0.33)	(0.67)
Rule of Law	-0.0020	-0.0010	-0.0010	0.0000	-0.007**
	(0.60)	(0.33)	(0.20)	(0.12)	(2.14)
MacroRisk	0.0460	0.0480	0.0100	0.0050	0.0310
	(0.66)	(0.56)	(0.10)	(0.05)	(0.44)
Log GDP per capita	0.0010	0.0000	0.0000	0.0000	0.0040
	(0.20)	(0.07)	(0.05)	(0.09)	(0.94)
French Legal Origin	-0.041***	-0.038***	-0.024**	-0.024***	-0.048***
	(3.44)	(3.51)	(2.32)	(2.72)	(4.66)
German Legal Origin	-0.041***	-0.04***	-0.035***	-0.034***	-0.045***
	(3.91)	(3.33)	(3.07)	(3.23)	(4.92)
Nordic Legal Origin	-0.023*	-0.025**	-0.0130	-0.0130	-0.033***
	(1.86)	(1.97)	(1.11)	(1.12)	(2.64)
R-squared	47.0%	45.1%	34.0%	34.3%	56.2%

Table 9. Recovery rates and mergers and acquisitions

The table presents coefficient estimates of probit models. The dependent variable equals 1 if Prob(TH ∩ AL|TH) = 1, i.e., if the target is in a high-recovery industry and the acquirer is in a low-recovery industry. The universe is all target firms in high recovery industry. Included are all transactions where the percentage of acquired shares is at least 20%. Excluded are transactions involving acquirers that are financial industry (SIC header 6) or regulated industry companies (SIC headers 48 and 49). The following industries are classified as low recovery (2-SIC code headers): transportation (37, 40, 41, 42, 44, 45, 46, 47), high technology and office equipment (35, 36, 38), consumer/ service sector (52, 53, 54, 55, 56, 57, 58, 59, 72, 73, 75, 76, 78, 79), or leisure time/ media (27, 48, 70). The following industries are classified as high recovery (2-SIC code headers): energy and natural resources (10, 12, 13, 14, 24), building products/ homebuilders (8, 15, 17, 24, 28, 29, 32, 34), or healthcare/ chemicals (28, 80). This classification follows Acharya, Bharath and Srinivasan (2007). All variables are defined in Table 1. The sample period is 1994-2004. The absolute values of the t-statistics are shown in parentheses below the coefficients and are based on robust standard errors that are cluster-adjusted at the country level. We include a year fixed effect (not reported). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, correspondingly.

Variables	All countries					Excluding the U.S.				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CRIGHTS	0.125**					0.181***				
	(2.57)					(6.45)				
AUTOSTAY		0.375***					0.416***			
		(3.37)					(5.98)			
REORG			0.307***					0.444***		
			(2.66)					(6.41)		
SECURED				0.094					0.209	
				(0.48)					(1.19)	
MANAGES					0.273*					0.543***
					(1.72)					(5.19)
SHRIGHTS	0.004	0.032	0.033	0.074	-0.012	-0.016	0.030	0.026	0.062	-0.094
	(0.05)	(0.46)	(0.46)	(0.79)	(0.11)	(0.32)	(0.56)	(0.48)	(0.82)	(1.47)
Rule of Law	-1.10***	-1.19***	-1.07***	-1.07***	-1.06***	-0.231	-0.481**	-0.245	-0.397*	-0.008
	(3.81)	(4.27)	(3.58)	(3.16)	(3.49)	(1.38)	(2.24)	(1.34)	(1.91)	(0.04)
French Legal Origin	-0.91***	-0.98***	-1.02***	-1.16**	-1.04***	-0.298	-0.556**	-0.467**	-0.761**	-0.343
	(2.84)	(3.34)	(2.90)	(2.54)	(2.97)	(1.50)	(2.55)	(2.17)	(2.55)	(1.49)
German Legal Origin	-0.256	-0.179	-0.114	-0.114	-0.396	0.381***	0.376**	0.554***	0.395**	0.140
	(1.19)	(0.98)	(0.61)	(0.55)	(1.28)	(2.75)	(2.14)	(4.00)	(2.38)	(0.87)
Nordic Legal Origin	0.507	0.596	0.334	0.231	0.448	0.657*	0.658*	0.421	0.245	0.688*
	(1.35)	(1.56)	(0.81)	(0.46)	(1.11)	(1.79)	(1.66)	(1.05)	(0.49)	(1.81)
MacroRisk	5.681*	6.16**	6.691**	11.125***	7.149**	6.74***	8.253***	7.898***	12.975***	6.938***
	(1.85)	(2.25)	(2.23)	(3.18)	(2.16)	(2.92)	(3.39)	(3.45)	(3.86)	(2.80)
Log GDP per capita	0.956***	0.988***	0.932***	0.866***	0.935***	0.344***	0.477***	0.34***	0.391***	0.237*
	(3.64)	(3.90)	(3.60)	(3.41)	(3.38)	(2.98)	(3.04)	(2.90)	(2.85)	(1.83)
Log (Transaction Value)	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***	-0.045**	-0.045**	-0.047**	-0.042**	-0.044**
	(2.88)	(3.08)	(2.96)	(2.91)	(2.72)	(2.27)	(2.24)	(2.33)	(2.16)	(2.16)
Acquirer's Leverage (industry rank)	-0.51***	-0.51***	-0.51***	-0.51***	-0.51***	-0.58***	-0.58***	-0.58***	-0.58***	-0.58***
	(7.05)	(7.07)	(7.04)	(7.01)	(7.05)	(4.33)	(4.33)	(4.29)	(4.25)	(4.34)
Target's Leverage (industry rank)	0.445***	0.445***	0.447***	0.457***	0.448***	0.453***	0.463***	0.462***	0.491***	0.452***
	(15.14)	(15.21)	(15.16)	(13.61)	(15.01)	(7.73)	(8.28)	(8.09)	(8.37)	(7.62)
Number of countries	38	38	38	38	38	37	37	37	37	37
Observations	6,495	6,495	6,495	6,495	6,495	3,356	3,356	3,356	3,356	3,356
Chi-squared	7,671.7	8,626.4	7,073.5	3,419.4	4,736.1	4,964.8	3,201.2	2,934.9	1,843.1	2,663.6

Figure 1. Timeline of the model.

Figure 1: Timeline of the model

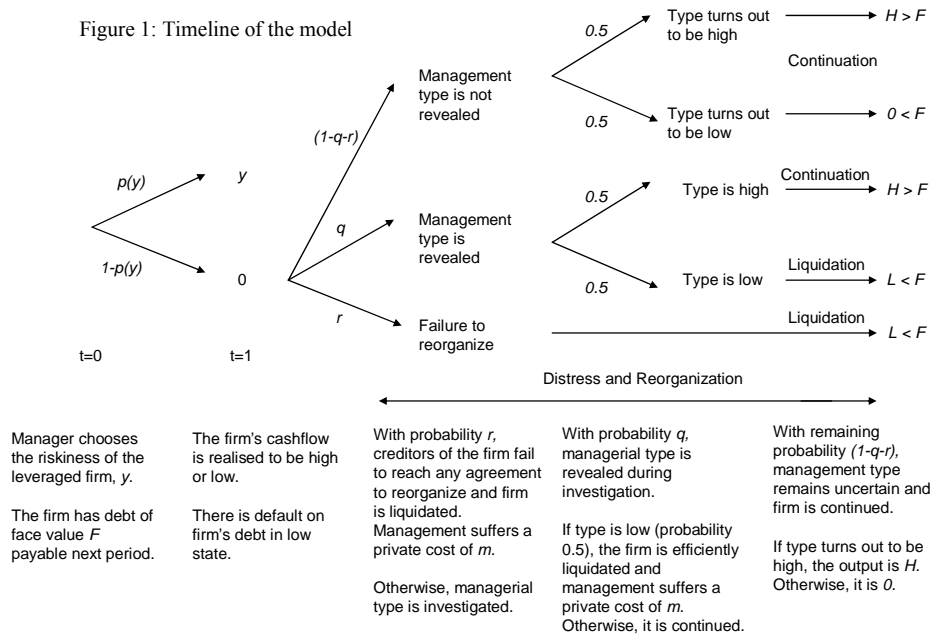|				
Manager chooses the riskiness of the leveraged firm, *y.*	The firm's cashflow is realised to be high or low.	With probability *r,* creditors of the firm fail to reach any agreement to reorganize and firm is liquidated.	With probability *q,* managerial type is revealed during investigation.	With remaining probability *(1-q-r),* management type remains uncertain and firm is continued.
The firm has debt of face value *F* payable next period.	There is default on firm's debt in low state.	Management suffers a private cost of *m.*	If type is low (probability 0.5), the firm is efficiently liquidated and management suffers a private cost of *m.* Otherwise, it is continued.	If type turns out to be high, the output is *H.* Otherwise, it is *0.*
		Otherwise, managerial type is investigated.		

Figure 2. The share of same industry mergers, *PROP*, and creditor rights, *CRIGHTS*.
The fitted line represents the slope from an OLS regression of the logistic transformation of *PROP*, the share of same-industry mergers in a country, on a constant and the creditor rights index. (Note that the transformed *PROP* may be negative.)