

Creditor rights and corporate risk-taking

Viral V. Acharya
London Business School, NYU-Stern and CEPR
vacharya@stern.nyu.edu

Yakov Amihud*
New York University-Stern school of Business
yamihud@stern.nyu.edu

Lubomir Litov
Washington University in St. Louis-Olin School of Business
litov@wustl.edu

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Abstract

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Keywords: bankruptcy code, corporate reorganization, investment, diversification

JEL Classifications: G31, G32, G33, G34

* Ira Leon Rennert professor of finance.

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Abstract

We analyze the link between creditor rights and firms' investment policy, proposing that stronger creditor rights in bankruptcy reduce corporate risk-taking. Employing country-level data, we find that stronger 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, operating risk of firms 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 a managerial agency effect. Our results question the value of strong creditor rights, which may have adverse effect on firms by inhibiting them from undertaking risky investments.

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1. Introduction

Through history, default on debt has incurred harsh punishment. In biblical times and in ancient Greece, defaulted debtors were enslaved for a number of years or until the debt was fully discharged and during some periods in Rome, default met with maiming.¹ The United Kingdom had debtors' prisons until their abolishment in the 1869 Debtors Act. Now, the norm is limited liability, which limits creditor rights in pursuing debtors when they default on promised payments. Smith and Warner (1979) document that creditors impose restrictions on financial policies of firms through covenants, even prior to default, in order to control shareholder action that could reduce firm value. However, bankruptcy laws which uniformly apply to all firms usually have precedence over private firm-specific contracts and therefore lead to inefficient outcomes for some firms. The importance attached to creditor rights in bankruptcy laws begs the question: What effect does the strength of creditor rights have on firms' investments? While harsh penalty in default reduces fraud and opportunistic behavior by debtors, might it also inhibit entrepreneurial, *bona-fide* risky investments? These are the questions we address in this paper.

Research on creditor rights has mainly focused on the link between creditor rights and financing policies. Djankov, McLeish, and Shleifer (2007a, 2007b), for example, document that creditor rights are associated with higher aggregate lending, in the cross-section of countries as well as in time-series around creditor rights changes.² This evidence is considered supportive of the view that strong creditor rights help expand the financing capacity of the firm by limiting the ability of owners to opportunistically expropriate firm's value, and thereby reduce the costs that result from the conflict of interests between owners and providers of debt capital (Jensen and Meckling (1976)).

In contrast, this paper studies the link between creditor rights and *investment* policy. We propose that strong creditor rights induce firms to engage in risk-reducing investments such as diversifying acquisitions that are potentially inefficient and reduce value. The reason is as follows. Strong creditor rights in default lead to inefficient

¹ In 450 BC: The Twelve Tablets, Section III, Debt. The penalty ranged from imprisonment to extracting part of the body.

² Haselmann, Pistor and Vig (2006) find that the improvement in enforcement of creditor rights in Central and East European countries through the creation of a collateral registry boosted lending. Vig (2007) shows that firms' propensity to borrow was, however, reduced in India when creditor rights were strengthened.

liquidations that extinguish the continuation option of firm's enterprise and hurt stockholders. And, when creditor rights mandate the dismissal of management they impose a private, or in other words, a personal cost on managers. To avoid these costs, shareholders and managers lower the likelihood of distress by diversifying or reducing operating risk. If such risk reduction results in value loss or bypassing profitable investments, then strong creditor rights result in dead-weight costs to firms and the economy at large.

Our empirical analysis studies this hypothesized effect of creditor rights on the risk-reducing activities of firms. We exploit as an 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 exogenous to the nature of the country's overall corporate investments. Even the few creditor right changes within a country, whose effects we also analyze, are often motivated by exogenous forces (which we later discuss).

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 prefer 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 of diversification through M&A increases following the strengthening of creditor rights and declines if they are weakened. Corporate diversification has been shown in some studies to destroy value, which suggests a negative consequence of strong creditor rights. (We discuss below the evidence on the value effect of diversifying mergers.)

- (2) In countries with stronger creditor rights, firms appear to choose a mode of operation that reduces operating or cash flow risk, measured by the standard deviation of firms' ROA.

We obtain these results both in tests at the level of individual acquisitions or firms 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 and (ii) whether management is dismissed in bankruptcy. For example, dismissal in bankruptcy reduces 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%, and it lowers the operating risk measured at the country level by around 3% (based on Table 7), where the cross-country standard deviation of operating risk is 2%. Thus, the effect of creditor rights on corporate investment policy seems large. We also examine the effect of creditor rights at the *industry* level because countries differ in the composition of their industries, and industries may differ in the propensity to diversify or reduce risk. Employing the empirical methodology of Rajan and Zingales (1998), we obtain that the findings in (1) and (2) above still hold. In addition, we find that

- (3) In countries with strong creditor rights, target firms whose assets have high recovery value in default³ (or distress) are more likely to be acquired by firms whose assets have low recovery value. This is because a high recovery value of assets enables firms in distress to defer default by liquidating some of these assets and using the proceeds to service 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 because they provide a unique opportunity to observe a major corporate investment and its effect on corporate risk – whether the acquisition is diversifying (across industries) or focusing (within-industry). In M&As,

³ Assets with high recovery value have lower costs of liquidation. These assets lose less of their value in distresses sales and, following the definition of Shleifer and Vishny (1992), have lower *specificity* in that they are fungible across industries and hence fetch prices that are close to their value in best use. Our exact measure of high-recovery industries is based on the realized recovery rates on debt of defaulted firms in different industries documented by Acharya, Bharath and Srinivasan (2007).

we can also identify whether the assets in which the company invests are of high or low recovery value. Also important for our setting, corporate investment in the form of M&A decisions is not tainted by cross-country differences in reporting 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 and confirm that our results from analyzing M&A's hold also for this direct proxy of a firm's risk.

Related literature: The effect of corporate diversification on company value is a subject debate, with studies presenting conflicting evidence. Morck, Shleifer and Vishny (1990) and Comment and Jarrell (1995) show that diversifying mergers result in reduction in value. Berger and Ofek (1995) show that diversified conglomerates have significant value discount compared to the conglomerate's imputed value if its division were valued according to their standalone counterparts in the industry. However, Campa and Kedia (2002) and Villalonga (2002) find that the diversification discount disappears after addressing endogeneity econometrically. This is because business segments acquired by conglomerates are inferior to their industry's standalone counterparts. These results are recently overturned by Ammann, Hoechle and Schmid (2008), who replicate these methods in an out-of-sample analysis for 1998-2005 and find that after accounting for endogeneity, the conglomerate discount remains economically and statistically significant. Recently, Laeven and Levine (2007) and Schmid and Walter (2008) find significant conglomerate discount in financial firms after accounting for endogeneity.

Conglomerates enable internal capital markets, which facilitate capital allocation and overcome the problem of asymmetric information and moral hazard attendant with external finance. However, conglomerates may also reduce value because of what Schafstein and Stein (2002) call the "dark side" in the allocation of resources through their internal capital markets. Lamont (1997) and Shin and Stulz (1998) find that investments in some conglomerate segments are related to cash flows in other conglomerate segments rather than to the investment opportunities of that segment, suggesting inefficient investment. This result is consistent with Berger and Ofek's

(1995) finding that conglomerates overinvest in segments whose industry has poor investment opportunity, and with Lamont and Polk's (2002) findings that diversity in investment opportunity is positively related to conglomerate discount. Indeed, Scharfstein (1998) points out the existence of "socialism" in conglomerates' internal capital markets, by which strong divisions subsidize investment in weaker ones, and divisions in high-(low-) Q manufacturing industries tend to invest less (more, respectively) than their stand-alone industry peers, indicating inefficient resource allocation. Rajan, Servaes and Zingales (2000) find that inefficient divisions receive inappropriately high flow of resources. Comment and Jarrell (1995, p. 68) question the link between conglomerates and internal capital markets, showing that "diversified firms do not rely any less on external capital market transactions" than do undiversified firms.⁴

Internal capital markets may be valuable in emerging markets where external capital markets malfunction. Khanna and Palepu (2000) point out that in a country with poorly functioning institutions, such as India, group affiliation may be beneficial. They conclude that in India, the most diversified business groups add value, measured by Tobin's q , which contrasts the results obtained in the U.S.⁵ Different results are obtained by Lins and Servaes (2002), who analyze over 1000 firms from seven emerging markets in 1995. They find that diversification leads to discount, particularly in firms with high ownership concentration, firms with great disparity between cash flow rights and control rights (indicating agency problems), and firms that are part of industrial groups. Lins and Servaes reject the theory on the benefits of internal capital markets, even in an emerging markets setting. A possible reconciliation of these conflicting results may be found in a more recent study of the value effect of affiliation with business groups (chaebols) in Korea, over the period 1984-1996. Lee, Peng and Lee (2008) find that the effect of diversification on value changed over time. In the early period, group affiliation or the extent of diversification in the business group was value increasing, whereas in the more recent period, the value premium turned into a significant value discount. Lee et al.

⁴ However, there is some ongoing debate here too. Analyzing plant-level data, Maksimovic and Phillips (2002) suggest that the conglomerate discount results from lower productivity of some peripheral segments, whereas its main segments are as efficient as their stand-alone industry counterparts. This, in their view, implies that the conglomerate discount is endogenous and not a result of agency problems.

⁵ Analyzing 1309 Indian firms in 1993 which are about equally divided between diversified and focused firms, Khanna and Palepu (2000, p. 887): "Firms affiliated with a large majority of diversified Indian business groups have lower Tobin's q measures than unaffiliated focused firms, but those firms affiliated with the most highly diversified Indian business groups have higher Tobin's q measures than all the other firms in the economy."

explain this change by improvements in the institutional setting: liberalization of capital markets and transition in the product and labor markets have made internal capital markets less important for capital raising. Notably, the recent period in the study of Lee et al., where diversification discount exists, corresponds to the beginning of our study's sample period.

Our results are consistent with those proposed in other studies on the effects of creditor rights. Manso (2005) proposes that penalizing failing entrepreneurs inhibits innovation. In our analysis, strong creditor rights enable such penalties. Consistent with this hypothesis, Acharya and Subramanian (2007) show that strong creditor rights bear negatively on corporate innovation and R&D activity, measured by the intensity of patent creation and citation by firms. Chava and Roberts (2008) and Nini, Smith and Sufi (2008) find that restrictive debt covenants and enforcement of covenant violations, which provide firm-specific creditor rights, inhibit capital investment.⁶ 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) further propose that the recent strengthening of creditor rights in the U.S. has induced firms to delay default which could destroy value.

Our finding that diversification is driven by managerial agency problems is consistent with several empirical papers. Amihud and Lev (1981) suggested early in the literature that diversification is associated with managerial motivation to reduce risk and thus may not necessarily reflect value-maximizing decisions. Tufano (1996) studies hedging by 50 publicly traded gold-mining firms in the U.S. and Canada and finds that firms with greater managerial stock ownership hedge more, suggesting that managerial risk-aversion drives hedging. Tufano (1998) suggests an alternative channel whereby hedging benefits management by reducing the discipline imposed by accessing external capital markets for finance. In a recent paper, Gormley and Matsa (2008) study firms that face exogenous increases in legal liability from worker exposures to occupational carcinogens and find that these firms undertake acquisitions targeted at diversifying the firms' assets by acquiring healthier businesses outside of the primary line of business, especially when the affected firms have high risk of bankruptcy and weak external

⁶ Schwartz (2001) proposes that allowing parties flexibility in contracting for preferred bankruptcy procedures alleviates underinvestment arising due to strong creditor rights.

governance. This evidence also suggests a managerial agency effect at play in inducing diversifying acquisitions.

The outline of the paper is as follows. Section 2 presents a model that motivates our studying 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. Theoretical motivation

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

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 1.⁷ 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.

⁷ We do not model the choice of leverage. 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.

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.

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 manager nor the firm's board of directors which hires her 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 dismissed 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. If the firm continues with the current manager, the cash flows are H or 0 with probability of 0.5. If 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 is unknown. Therefore, creditors agree to a reorganization proceeding with the

current manager. Notably, if the manager turns out to be of bad type, assets that are used for one more period have depreciated and become worthless. Thus, continuing for another period makes the firm forego the ability to liquidate the assets to outsiders for L .

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, the rehiring probability of dismissed managers increases in managerial quality.⁸

If manager is found to be of low quality and is dismissed (probability of $0.5q$) or the firm fails to reorganize and is liquidated (probability of r), managers are assumed to suffer a private or personal cost of $m > 0$ due to loss of reputation or private benefits of control.⁹ 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.¹⁰ Eckbo and Thornburn (2003) also find that in Sweden, managers of bankrupt companies suffer a median (abnormal) income loss of 47%. If the firm continues without knowing the manager's quality (with probability $0.5(1 - q - r)$) and the manager turns out to be of low quality, we assume for simplicity that the manager has received private benefits of control for one additional period which offset the private cost suffered when the type is revealed at the end.

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 $F_1 <$

⁸ In particular, Eckbo and Thornburn (2003) find that managerial quality (based on trustee assessment that the bankruptcy was *not* due to managerial incompetence or economic crime) 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.

⁹ 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.

¹⁰ Gilson (1989) documents the likelihood of dismissal of managers in leveraged firms following adverse stock performance is almost thrice higher than in 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.

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, because 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-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 that the probabilities q and r reflect the law on *creditor rights* in which the firm operates. 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 dismissed 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.¹¹ In our model, while creditor right to dismiss management 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 (even though they are endowed with a risk-neutral preference in our model). We derive this result next.

¹¹ 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."

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 $(0.5 q + 0.5(1 - q - r))$ because 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.

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

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

and, the second-order derivative is

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

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

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

so that the second-order derivative above is negative and the first-order condition indeed gives the optimum that maximizes the objective of manager.¹²

The three terms after y inside $[\cdot]$ 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 not however 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 dismissed.¹³ This effect is increasing in r , the failure of creditors to agree on reorganization, and also increasing in q , the likelihood that management is dismissed 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

¹² To see this, note that because $p(y) > 0$ and $p'(y) < 0$, the expression $p(y) + p'(y) [y - x]$ is greater than zero for all $y \leq x$. Hence, the solution to the equation $p(y) + p'(y) [y - x] = 0$ must satisfy $y > x$.

¹³ The manager is risk neutral, but the personal cost that he endures because of dismissal in bankruptcy makes his reward function concave, making him averse to risk.

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 efficiently reorganize in bankruptcy.

To summarize, creditor rights that enable dismissal of management in bankruptcy and that are less likely to lead to a reorganization outcome discourage ex-ante risk-taking by firm’s management.

We 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 $\delta f / \delta y < 0$. In turn, taking the derivative of f with respect to q or r , and applying the implicit-function theorem gives

$$(i) \text{ sign } (dy^* / dq) = \text{ sign } (\delta f / \delta q), \text{ which is negative because} \quad (5)$$

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

and, similarly,

$$(ii) \text{ sign } (dy^* / dr) = \text{ sign } (\delta f / \delta r), \text{ which is also negative because} \quad (6)$$

$$\delta f / \delta r = p'(y) [m + 0.5 (H - F)] < 0.$$

Thus, the risk that a levered firm undertakes declines in the likelihood that management is dismissed in bankruptcy and that reorganizations promoting continuations of the firm do not materialize. These two implications constitute the foundation of our empirical investigation.

3. Hypotheses, Data and Empirical Design

Motivated by the model’s results, we study the effects of creditor rights on corporate propensity to take risk by testing three hypotheses:

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

Hypothesis II: The firm's operating risk, measured as the volatility of its cash-flow-to-assets ratio, is decreasing in the strength of the country's creditor rights.

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.

We test these hypotheses by examining data on corporate behavior and on creditor rights from 38 countries. The first two hypotheses test two aspects of risk taking by firms. In studying mergers, we directly observe the action that firms take in order to affect their risk. We test the relationship between creditor rights and diversifying mergers both in the cross-section of countries and in time-series, around changes in creditor rights of a country. Because most companies can reduce their risk 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 or a firm, and in the other, we look at country averages.

The third hypothesis examines the effect of creditor rights on the choice of assets by acquirers. A firm with high-recovery assets can liquidate some of them in time of distress and use the proceeds to defer default. High-recovery assets lose less of their value in distressed sale and fetch prices that are closer to their value in best use (using the notion of "asset specificity" from Shleifer and Vishny (1992)). 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) has particularly high value for firms in financial distress. Also, Eckbo and Thornburn's (2003) study suggests that it is in managerial interest to increase the recovery rate of debt in default (which is related to assets' characteristics), because the probability of rehiring managers who are automatically dismissed in bankruptcy is an increasing function of the recovery rate of the firm's debt.

The data in our analysis include country variables – legal and economic – and data on individual companies and acquisition transactions. Table 1 describes how the variables are constructed and the data sources.

INSERT TABLE 1 HERE

3.1. Creditor Rights

The data on creditor rights comes from LaPorta, Lopez-de-Silanes, Shleifer, and Vishny (1998), whose sample 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. In our 38-country sample (see Table 2), the mean of *CRIGHTS* is 2.08 with standard deviation of 1.28. We also use the creditor rights data of Djankov et al. (2007a), which details the components of creditor rights, 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 diversifying acquisitions. The data on acquisitions is obtained from the Securities Data Corporation (SDC)'s Platinum Mergers & Acquisitions database for the period 1994-2004. Our sample consists of 38 countries with data on creditor rights as of 1994 and that satisfy the requirements on transactions specified below. We include mergers where both the acquirer and the target are in the same country, being under the same jurisdiction as it applies to creditor rights. (Separately, we present evidence on the effect of creditor rights

on the likelihood of cross-industry acquisitions in cross-border transactions.) We exclude acquisitions where the acquirer is in the financial industry (SIC header 6) or a regulated industry (SIC headers 48 and 49), because many of these acquisitions are likely to be motivated by regulatory requirements and thus differ from those presented in our model. Also, acquirers in LBOs are often classified as being in the financial industry. 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.¹⁴ Finally, we begin by including only countries with at least 50 transactions that satisfy the above criteria, but additional data requirement on transaction value reduces the sample size for some countries.

INSERT TABLE 2 HERE.

We test Hypothesis I by estimating the likelihood of same-industry acquisition in a country as a function of the creditor rights in that country, controlling for other variables. By our hypothesis, this likelihood should be negatively related to creditor rights. We define a diversifying acquisition as one where the acquirer and target are not in the same industry (using 2-digit SIC code).¹⁵ 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 reducing revenue concentration. We do the analysis at both the individual acquisitions level (Table 3) and at the aggregate country level, examining the proportion of the same-industry domestic mergers among all domestic mergers in the sample period (Tables 4 and 5).

The main explanatory variable in our analysis is *CRIGHTS*, the aggregate measure of creditor rights from La Porta et al. (1998), and its components, *AUTOSTAY*,

¹⁴ Our results are robust to setting the cutoff at 10% acquired or to adopting more conservative criteria, following 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.

¹⁵ The results are qualitatively similar when we employ industry classification at the 3-digit SIC level.

REORG, *SECURED* and *MANAGES*. We predict that the coefficient of *CRIGHTS* is negative, that is, lower likelihood of same-industry mergers in countries with stronger creditor rights.

The control variables include shareholder rights index, *SHRIGHTS* (obtained from LaPorta et al. (1998)). If diversifying (focusing) mergers are in shareholder interest, after controlling for creditor rights, this variable should have a negative (positive) coefficient. We also include variables that proxy for the development and efficiency of the capital market (see La Porta et al., 1997): *Log(Market Cap)*, the value of securities on the national stock markets in 1994 in U.S. dollars, in logarithm,¹⁶ *Accounting Disclosure*, measured by the extent to which the firm's financial statement includes 90 items (as of 1994), and *Rule of Law*, an index that captures better enforcement of legal rights in a country. The effect of these variables should be positive if the internal capital market in conglomerates is a valuable substitute for outside capital markets which is less efficient. Similarly, *Emerging Market* dummy variable (= 1 if the country has GDP-per-capita below the sample median) should have a negative coefficient if the conglomerate internal capital market is a valuable substitute for the less developed outside capital market. *Flexibility to Fire* (an index of rules and regulations reflecting the ease of firing workers) proxies for the efficiency of the labor market, which may affect the type of mergers. *Legal Origin*, following La Porta et al., (1998), which influences creditor- and shareholder rights and, as Claessens and Klapper (2005) find, interact with the likelihood of bankruptcies in a country. The sources for these three legal control variables are Levine and Demirguc-Kunt (2001) and LaPorta et al. (1998).

Additional controls are the country's macroeconomic volatility, *MacroRisk*, measured by the standard deviation of quarterly changes in the country's index of industrial production. It has negative coefficient if managers in riskier countries do more diversifying mergers. We also include the country's average real *GDP per-capita* over 1994-2000 (in logarithm) from the Penn World Table Version 6.1 as a proxy for the degree of economic development, because developed and developing countries may have different investment opportunity sets. In the individual transaction regression (Table 3),

¹⁶ Our results are robust to an alternative definition of capital market development, using the ratio of the market capitalization to the GDP as of 1994. However, this definition of capital market development ranks Malaysia, Hong Kong and South Africa at the top while the U.S. ranks in eighth place, after Chile; and, equally strangely, Japan is ranked thirteenth, after Thailand and the Philippines.

we also include *Transaction Value* (the amount paid in U.S. dollars, in logarithm) and a measure of the leverage of both acquirer and target, thus accounting for financial risk.

We include the leverage of the acquirer and of the target firms because the acquirer automatically assumes the target's liabilities after the merger and therefore its acquisition decision should take that into account. Leverage represents financial distress risk which should also induce diversifying mergers. Therefore, we expect the coefficients of leverage to be negative. In estimation, we face a data limitation. Over 45% of the acquirers in our sample and 88% of the target firms do not have accounting information. Consequently, leverage data on *both* acquirer and target are available for only 2,586 transactions, about 8% of the sample (without the U.S. and the U.K, we have only 746 transactions with leverage data.) In addition, a firm's leverage in any country is partly endogenous to the country's creditor rights. We therefore use *estimated* leverage variables, derived from an instrumental variables regression. For all transactions with data on leverage (defined as total liabilities net of equity and deferred taxes, divided by total assets) for both acquirer and target, we estimate a regression of acquiring firm's leverage on all country-level control variables and on two exogenous variables, the ranks (in quartiles) of the U.S. median leverage and the U.S. median tangibility (the ratio of fixed assets to total assets) for the industry of acquiring firm over the years 1992-2004. The U.S. has low level of creditor rights ($CRIGHTS=1$) which implies a less-constrained choice of leverage, and it has the most data on all industries, making the estimation more reliable. Thus, the leverage of an acquirer firm in any industry in any country is imputed based on the estimated leverage in that country and industry, obtained from a model of the acquirer's leverage as a function of two exogenous industry variables, using U.S. data, and of the acquirer's own country's exogenous control variables. Target firms' leverage is imputed in a similar way. We estimate a leverage model for targets for which we have data, and then use this model to impute the leverage of any target in a country and industry.

We estimate a probit model where the dependent variable pertains to transaction j in country c ,

$$Pr(\text{same industry merger})_{j,c} = \alpha * CRIGHTS_c + \text{control variables}. \quad (7)$$

The dependent variable equals 1 if acquirer and target are in the same 2-digit industry. Our hypothesis implies that $\alpha < 0$. The model includes year dummy variables and the estimation clusters standard errors by country.

INSERT TABLE 3 HERE.

The results in Table 3 support our hypothesis. The coefficient of *CRIGHTS* is negative and statistically significant (column 1), meaning that stronger creditor rights are associated with greater propensity to diversify (lower probability of same-industry merger). The results remain the same when we exclude the U.S. (column 6) or both the U.S. and the U.K. (column 7), that have by far the largest number of acquisitions. The creditor rights component with the most negative effect is *MANAGES*, underscoring the importance of managerial dismissal in bankruptcy as an inducement to diversify. Based on Columns (1), (6) and (7) of Table 3, the marginal effect of *CRIGHTS* on the propensity to acquire same-industry target, evaluated at mean *CRIGHTS* (“local elasticity”), is – 9.49% when all countries are included, – 16.14% when the U.S. is excluded, and – 16.48% when both the U.S. and the U.K. are excluded.

Shareholder rights have a positive effect which is significant when the U.S. is excluded, suggesting that shareholders’ interests induce focusing acquisitions, after controlling for the effect of creditor rights. The coefficient of *Log(Market Cap)* is positive, which is consistent with the proposition that in countries with strong capital markets, there is a greater likelihood of focused firms and the conglomerate mergers are less needed. However, when excluding the U.S. and the UK, the coefficient of *Log(Market Cap)* becomes negative and insignificant, suggesting no relationship between capital market development and conglomeration. The positive coefficient of *Emerging Market* (the poorer countries) and the negative coefficient of *GDP per capita* both mean that diversification is more likely in richer countries. If capital markets are more developed in richer countries, this is evidence against the importance of internal capital markets in conglomerates. (However, see results in the country-level regressions.) *Accounting Disclosure*, which is another aspect of developed capital market, has negative

effect on same-industry mergers, suggesting again that in more developed capital markets there are more conglomerate mergers. However, the positive coefficient of *Rule of Law*, which might be associated with capital market development, is consistent with the importance of internal corporate capital markets in countries with weak markets. The variable *Flexibility to Fire* has insignificant effect when excluding the U.S. and the U.K. The effect of the country's *MacroRisk* is inconclusive, switching signs and changing significance depending on whether the U.S. and the U.K. are included or not. *Target's Leverage* has a significant negative effect on the propensity to do same-industry mergers, suggesting that high financial distress risk induces diversification. Reinforcing this effect, *Acquirer's leverage* too has negative and marginally significant coefficient when excluding the U.S. and the U.K.

We do four robustness checks, for which we report the main findings. In the first, we control for whether the propensity to do same-industry mergers is affected by antitrust laws. We add to the model a variable that is a score of the antitrust law as it pertains to mergers from Hylton and Deng (2007).¹⁷ We find that this variable is not statistically significant. Still, the coefficient of *CRIGHTS* is negative and significant ($t = 6.36$ for all countries, $t = 3.66$ when excluding the U.S. and the UK). The second robustness check examines the effect of cultural differences, following Stulz and Williamson (2003), by controlling for the religious composition of the country's population. Our results on the effect of creditor rights and its components are qualitatively unchanged. In the third robustness check, we admit to the sample only acquisitions of at least 90% of the target. Then, the coefficient of *CRIGHTS* is -0.141 with $t = 5.11$ (29,002 observations), and when excluding the U.S. and the UK the coefficient of *CRIGHTS* is -0.251 with $t = 3.73$ (12,415 observations). Finally, we test the effect of the means of financing the acquisition by adding a dummy variable that equals 1 for cash-only transactions. This variable is naturally endogenous. Its effect is insignificant in all regressions. Still, the coefficient of *CRIGHTS* remains negative and highly significant.

¹⁷ This variable, which is available for the end of our sample period (for 2004), is used for lack of another index, assuming that the anti-trust law hardly changes over our sample period. Hylton and Deng's list includes 35 countries that overlap with ours, to which we add data on Hong Kong and Singapore (the latter has data for 2006). We miss data for Malaysia.

Cross-border acquisitions: So far we analyzed domestic acquisitions, where both bidder and target firms are under the same legal regime. We now present results for *cross-border* acquisitions – i.e., where bidder and target are in different country – assuming that the applicable legal regime and country variables pertain to the country of the acquirer, which is the entity that usually decides on the acquisition. In particular, we use the creditor rights in the acquirer’s country. The analysis includes acquirers from the 38 countries in our sample. Some of the target firms are in these 38 countries, while other target firms come from countries for which we do not have data on creditor rights.

The estimation methodology for cross-border acquisitions replicates that of Table 3, with the same variables. The dependent variable equals 1 if both bidder and target are in the same 2-digit SIC code industry and 0 otherwise. The explanatory country variables use data from the acquirer’s country. We have 19,754 acquisitions which satisfy the other criteria we set for including an acquisition in our analysis and 10,532 acquisitions when excluding acquirers from the U.S. and the UK.

The estimation results support our hypothesis on the negative effect of creditor rights on same-industry acquisitions. For sake of parsimony, we present only the coefficients of the creditor rights variables and components.¹⁸ The following are the estimated coefficients and their *t* statistics:

<i>CRIGHTS</i>	–0.104 (<i>t</i> = 5.77). [Excluding the U.S. and the UK: –0.300 (<i>t</i> = 5.79).]
<i>AUTOSTAY</i>	–0.284 (<i>t</i> = 5.50).
<i>REORG</i>	–0.259 (<i>t</i> = 5.37).
<i>SECURED</i>	–0.200 (<i>t</i> = 3.51).
<i>MANAGES</i>	–0.238 (<i>t</i> = 5.49).

Reverting to analysis that focuses on within-country mergers, the next test of our hypothesis is 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 $SAME_c = [(mergers\ in\ the\ same\ 2\text{-digit}\ SIC\ code\ industry) / (all\ domestic\ mergers)]$. We then estimate the following model by the tobit method, with 38 observations (countries):

¹⁸ A detailed table is available from the authors upon request.

$$SAME_c = \beta_0 + \beta_1 * CRIGHTS_c + \text{control variables.} \quad (8)$$

INSERT TABLE 4 HERE

Table 4 presents the estimation results of model (8), which again support our hypothesis that $\beta_1 < 0$. The coefficient of *CRIGHTS* is negative and significant (column 1) and, as in Table 3, the most important component is *MANAGES*, the indicator of managerial dismissal in bankruptcy. Figure 2 plots the variable *SAME* for different countries as a function of their *CRIGHTS* and also shows the best fit implied by column (1) of Table 4, showing the negative relationship between strength of creditor rights and the extent of same-industry mergers.

INSERT FIGURE 2 HERE.

The negative effect of creditor rights is also robust in Column (6) of Table 4 when we account for changes in *CRIGHTS* that occurred in 5 countries during the sample period by using a weighted average of the *CRIGHTS* index, the weight being the number of transactions in the years following the year of change in one of the components (because the effect of a change is reflected in transactions in subsequent years).¹⁹ The positive and significant coefficient of *SHRIGHTS* suggests that focusing mergers are in shareholder interest, after controlling for creditor rights.

As to the importance of internal capital markets in conglomerates, again results are mixed. The coefficient of *Log(Market Cap)* is negative and quite insignificant. If internal capital markets were valuable in countries with weak capital markets, the coefficient should have been positive. The negative coefficient of *Log(GDP per Capita)* suggests that in richer countries whose capital markets are usually more developed, conglomerate mergers are more rather than less likely. Also, the coefficient of *Accounting Disclosure*, which is usually related to capital market development, has a negative and insignificant coefficient. The above evidence is not consistent with the importance of internal capital markets. However, the coefficient of *Emerging Market* is

¹⁹ The calculation of this variable employs the time series data of the *CRIGHTS* components in Djankov et al. (2007a).

now negative and significant, implying that in the group of poorer countries (with less developed capital markets), conglomerate mergers are more likely. This suggests a non-monotonic effect of *GDP per capita* on the likelihood of same-industry mergers. And, the coefficient of *Rule of Law* is positive, as in Table 3, suggesting that in countries with better enforcement, which improves the functioning of capital markets, there is greater likelihood of focused acquisitions which do not broaden internal capital markets. Altogether, there is mixed evidence on the effect of the country's capital market development on the propensity to form conglomerates which enable internal capital markets.

As a robustness check we add as explanatory variable the merger-related antitrust index of Hylton and Deng (2007). Its coefficient is statistically insignificant, while the coefficient of *CRIGHTS* remains negative and significant. In another test, we split the sample period into two, 1994-1999 and 2000-2004, calculate $SAME_c$ for each subperiod and estimate the relationship between $SAME_c$ and $CRIGHTS_c$ across countries for both subperiods. We exclude one sub-period for a given country if it has less than 30 transactions in that sub-period. The results again support our hypothesis: *CRIGHTS* have a significant negative effect on the proportion of same-industry mergers, with a coefficient of -0.025 ($t = 2.05$). These results are available upon request.

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

Our analysis so far shows 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 changed their creditor rights. This enables us to examine the effect of *changes* in creditor rights: does weakening of creditor rights reduce the propensity of firms to diversify?

The countries with changes in creditor rights are Indonesia, Israel, Japan, Sweden, Thailand and Russia.²⁰ All these changes imply a decrease in *CRIGHTS* by one unit, except for the 2002 change in Russia that increased *CRIGHTS* by one unit. The changes were motivated by financial crises (Indonesia, Russia, and Thailand), the need to collect

²⁰ Russia is included only in this table's regressions, not in any other estimation, because 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.

state tax (Russia, 1998) or emulation of the U.S. in transforming from a centrally-controlled economy.

We estimate the following regression, a variant of model (7):

$$Pr(\text{same industry merger})_c = \alpha * \Delta CRIGHTS_c + \text{control variables}. \quad (9)$$

In case of $CRIGHTS_c$ becoming weaker, $\Delta CRIGHTS_c = 0$ during 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, if $CRIGHTS_c$ were strengthened, $\Delta CRIGHTS_c = 1$ 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 change). Our hypothesis that stronger creditor rights induce diversification implies that $\alpha < 0$.

The control variables are *Transaction Value* (in logarithm), both year and industry fixed effects and, importantly, country fixed effects in line with the difference-in-differences methodology. We estimate the regression by a probit method with 29,548 observations,²¹ with standard errors clustered at the country level to account for potential within-country correlation in the residuals.

INSERT TABLE 5 HERE.

The regression results in Table 5 show that, as hypothesized, the coefficient of $\Delta CRIGHTS_c$ is negative and statistically significant: $\alpha = -0.19$ ($t = 3.16$). The results thus support our hypothesis that *changes* in $CRIGHTS$ which weaken them reduce the propensity of firms to diversify through mergers and acquisitions.

²¹ 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.

3.4. Creditor rights and firms' cash flow risk

We now test hypothesis II on the relationship between corporate cash flow risk and creditor rights. In addition to doing diversifying acquisitions, firms can reduce their risk by other means which are not directly observed. We therefore measure directly the level of corporate risk and relate it to the creditor rights in the country.

The risk of operating cash flows of firm j in country c , $RISK_{j,c}$, is the *industry-adjusted* standard deviation of $ROA_{j,c,t} = (EBITDA_{j,c,t} / ASSETS_{j,c,t})$, where $EBITDA_{j,c,t}$ is earnings before interest, taxes and depreciation and amortization (the sum of data items #14 and #11),²² and $ASSETS_{j,c,t}$ is the contemporaneous total assets (data item #89). The source is Compustat Global Vantage and all data are annual. The sample period is 1992-2005, and $ROA_{j,c,t}$ is winsorized at 0.5% in both tails of the distribution to account for possible data errors and large outliers. In computing the standard deviation we use industry-adjusted $ROA_{j,c,t}$, obtained by subtracting from $ROA_{j,c,t}$ its industry median (2-digit SIC code) for that year. 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 with data for at least eight years.²³

The model that estimates the effect of creditor rights on firms' risk is as follows:

$$RISK_{j,c} = \gamma * CRIGHTS_{j,c} + \text{control variables.} \quad (10)$$

Our hypothesis implies $\gamma < 0$. We again estimate this model at both the firm level (Table 6) and the country level (Table 7), the latter using the median risk of the firms in the country. The control variables are those used in Table 3, but also adding firm size (the logarithm of firm's initial total assets, as of the beginning of its data in our sample) which negatively correlates with risk.

We estimate the model of single-firm risk level as a panel regression, with country-clustered standard errors. This regression includes 35 countries due to insufficient data in three countries (we require at least 6 firms with the required series of accounting data in a country), giving us a total of 5,394 firms for the firm-level analysis.

²² We use *EBITDA* rather than *EBIT* because countries differ in the way they recognize accounting depreciation, which affect the smoothing of earnings over time.

²³ We exclude utilities and financial firms which are regulated in many countries, and this could affect their risk.

INSERT TABLE 6 HERE.

The results in Table 6 support our hypothesis: the coefficient γ of $RISK_{j,c}$ on $CRIGHTS_c$ is negative and statistically significant. As in the earlier results on same-industry mergers (Tables 3-5), the most significant component of $CRIGHTS$ that negatively affect $RISK$ is managerial dismissal ($MANAGES$). The results on the effect of $CRIGHTS$ are qualitatively unchanged when excluding the U.S. and the U.K. (columns (6) and (7)). Among the control variables, firms with high financial risk, measured by higher leverage choose to have lower cash flow risk. Leverage is instrumented because of its endogeneity; the instruments are, as in Table 3, the country control variables and two exogenous variables, the U.S. industry rank of leverage and tangibility, for the industry to which firm j belongs. Large firms have lower risk, as expected. As to country variables, higher *Macro Risk* has positive effect on $RISK_{j,c}$, as expected, although its significant is marginal when excluding the U.S. and the U.K. The effect of capital market development, as measured by $Log(\text{Market Cap})$, is positive although it is insignificant when excluding the U.S. and the U.K. the coefficient of *Flexibility to fire* is positive, which is puzzling because flexible employment should enable firms to reduce their operating leverage and thus reduce risk. However, the coefficient of this variable becomes negative and insignificant in the next estimation of the model in a country-level regression.

INSERT TABLE 7 HERE.

Table 7 presents test results on the $RISK$ - $CRIGHTS$ relationship at the *country* level, where each country is a single observation and they are all treated alike. The dependent variable, $RISK^*_c$, is the country average of the individual firms' industry-adjusted risk, $RISK_{j,c}$. The results again support our hypothesis. The coefficient γ of $CRIGHTS$ (in equation (10), estimated at the country level) is negative and significant at better than 5%, even though we have only 22 degrees of freedom. As before, the strongest effect is due to the component $MANAGES$, with $AUTOSTAY$ being also

significantly negative. Of the country control variables, notably $\text{Log}(\text{Market Cap})$ retains its negative effect, though its statistical significance is marginal.

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

3.5. Industry-adjusted propensity to reduce risk

It should be noted that countries differ in the composition of their industries. To check robustness of our result to this cross-country difference, 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. We examine the effect of CRIGHTS on the *realized* firm characteristic – the propensity to do same-industry acquisitions and to select some level of risk – given the *inherent* level of this characteristic in the industry. As in Rajan and Zingales (1998), the proxy for the inherent industry characteristic is the respective characteristic in the U.S. 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

We measure the inherent propensity to do same-industry acquisitions by $\text{SAME}_{k,US}$, the proportion in the U.S. of firms in industry k acquiring firms in the same industry (using 2-digit SIC code), calculated for the period 1994-1997. $\text{SAME}_{k,c}$ is similarly the proportion of same-industry acquisitions of acquirers in industry k 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 period 1998-2004. Following Rajan and Zingales (1998), we estimate the model (by the tobit method)

$$\text{SAME}_{k,c} = \beta_0 + \beta_1 * \text{SAME}_{k,US} + \beta_2 * \text{CRIGHTS}_c * \text{SAME}_{k,US} + \text{Country fixed effects} \quad (11)$$

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

Our hypothesis is that $\beta_2 < 0$: stronger creditor rights in a country reduce the propensity to do same-industry mergers, after accounting for the industry's inherent level of such mergers. Naturally, we expect $\beta_1 > 0$ if the likelihood of same-industry mergers in industry k in country c is positively related to that in the U.S.

The results support our hypothesis (to save space, we report only the coefficients relevant to our hypothesis):

$$(a) \beta_1 = 1.310 \ (t = 9.83).$$

$$(b) \beta_2 = -0.263 \ (t = 7.56). \quad R^2 = 25.0\%.$$

These results imply that stronger creditor rights in a country increase the likelihood of cross-industry, diversifying acquisitions compared to the inherent likelihood of such acquisitions in the same industry, measured by data from the U.S.

3.5.2. The average level operating risk in an industry

We now apply the Rajan-Zingales (1998) methodology to study the relationship between creditor rights and $RISK_{k,c}$, the median standard deviation of annual ROA of firms in industry k in country c (using 2-digit SIC code). The inherent risk level in industry k is measured by $RISK_{k,US}$, the median risk level in the same industry in the U.S. $RISK_{k,US}$ is calculated for the period 1992-1998 and $RISK_{k,c}$ for all other countries is calculated over the subsequent period 1999-2005.²⁴ (In this industry-based test we use ROA which is not industry adjusted.) We include industries with at least three firms with available $RISK_{j,k,c}$ measure, which requires at least five years of data. We then estimate the following regression:

$$RISK_{k,c} = \delta_0 + \delta_1 * RISK_{k,US} + \delta_2 * CRIGHTS_c * RISK_{k,US} + \text{Country fixed effects} \quad (12)$$

²⁴ 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.

The country fixed effects control for country's characteristics. There are 802 industry-country observations excluding the U.S. The estimation is a panel regression with standard errors clustered at the country level.

We hypothesize that $\delta_2 < 0$: the industry's corporate cash flow risk is lower in countries with stronger creditor rights, after accounting for the industry's inherent risk level, measured by the U.S. risk level in that industry. We also expect $\delta_1 > 0$, implying similarity between the industry risk in the U.S. and that in other countries.

The results are again consistent with our hypothesis:

(a) $\delta_1 = 0.862$ ($t = 4.49$).

(b) $\delta_2 = -0.158$ ($t = 2.16$). $R^2 = 30.2\%$.

The results thus show that stronger creditor rights significantly reduce the industry cash flow risk compared to the same-industry risk in the U.S.

3.6. Risk reduction and industry recovery rates

Our final test of the effect of creditor rights on corporate behavior, which is different from the two tests done so far, examines the choice of target in a merger or acquisition by the recovery rate of its assets in default (henceforth recovery). The recovery rate here is the extent that the price of the assets sold in distress is close to the value of the asset in its best use, following the definition of (inverse of) *asset-specificity* in Shleifer and Vishny (1992). A firm with high-recovery assets can better deal with financial distress by partially liquidating such assets and using the proceeds to defer default. This increases the value of the call option embedded in the firm's equity. An acquirer in low-recovery industry, being more vulnerable to default, would seek high-recovery assets that can be more easily liquidated in time of financial distress.

We thus test whether creditor rights influence the type of target firm that a low-recover bidder seeks. The dependent variable in this test is $Pr(TH \cap AL | TH)$: the probability of the event $TH \cap AL$, defined as a low-recovery acquirer (AL) buying a high-recovery target (TH), within the set of all TH transactions, i.e., acquisitions of high-recovery targets. We thus estimate the following model:

$$Pr(TH \cap AL | TH)_{j,c} = b * CRIGHTS_c + \text{control variables}. \quad (13)$$

We hypothesize that $b > 0$. 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.)²⁵ 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). The control variables used are those used in Tables 3 and 6.

INSERT TABLE 8 HERE

The results in Table 8 support our hypothesis. The coefficient of *CRIGHTS* is positive and significant for the entire sample as well as when excluding the U.S. and the U.K., which constitute more than half the sample (columns (6-10)). All components of creditor rights have positive coefficients, and except for *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) cited in Section 3 while presenting our hypotheses. 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.

We also estimate the model 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,

²⁵ 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.

we do not present the table. The results are consistent with those of single-acquisition regressions. In this estimation, the coefficient of *CRIGHTS* is 0.288 with $t = 3.37$, highly significant.²⁶

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.

4. Conclusion and Discussion

Employing three different tests and several estimation methods, we find that stronger creditor rights in a country induce firms to prefer diversifying acquisitions and undertake lower cash flow risk. 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, then 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.

²⁶ 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.

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 effect on risk-taking, as evidenced by the lower supply of entrepreneurs when personal bankruptcy laws are stronger. To the extent that entrepreneurship is conducive to economic growth, this finding suggests that strong creditor rights can be value-destroying.

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 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. Similarly, Acharya and Subramanian (2007) show that in countries with stronger creditor rights, technologically innovative industries innovate less, employ lower financial leverage, and importantly for welfare conclusions, also grow slower.

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.

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Table 1. Variable Definitions

Main Variables		Source
Risk-reduction measures		
<i>PROP</i>	Logistic transformation of the share of same industry mergers, per country. We define it as follows: $PROP = \ln [SAME/(1-SAME)]$. <i>SAME</i> is the proportion of same 2-digit SIC code industry mergers and acquisitions.	SDC Platinum Mergers & Acquisitions.
Firm risk (<i>RISK</i>)	$RISK_{j,c}$ is the standard deviation of firm <i>j</i> in country <i>c</i> of $ROA_{j,c,t}$, where $ROA_{j,c,t} = EBITDA_{j,c,t} / ASSETS_{j,c,t}$. <i>t</i> 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 <i>c</i> .	
Creditor- Rights Variables		
Creditor rights (<i>CRIGHTS</i>)	An index aggregating creditor rights, following La Porta et al. (1998). It is the sum of the four indexes that follow. <i>CRIGHTS</i> then ranges between 0 and 4.	La Porta et al. (1998), Djankov, McLeish, and Shleifer (2007a)
No automatic stay (<i>AUTOSTAY</i>)	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 (<i>REORG</i>)	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 (<i>SECURED</i>)	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 (<i>MANAGES</i>)	Equals one if an official is 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		
Log(<i>GDP-per-capita</i>)	Natural logarithm of the average real GDP per capita in US dollars, 1994-2000.	Penn World Tables, Version 6.1
Macroeconomic Risk (<i>MacroRisk</i>)	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 (<i>LAW</i>)	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 (<i>SHRIGHTS</i>)	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).
<i>Leverage</i>	Total debt to total assets in book value. Debt is total liabilities minus equity and minus deferred taxes. Leverage data are winsorize in the entire population at 1% in each tail.	SDC Platinum Mergers & Acquisitions (for Table 3) and Bureau Van Dijk's Osiris database (for Table 6)

<i>Accounting Disclosure</i>	An index created by the examination of the annual report in 1994 of companies across countries on their inclusion or omission of 90 line items.	International Accounting and Auditing Trends, Center for International Financial Analysis and Research Penn World Tables, Version 6.1 Doing Business Report, 2004, The World Bank World Market Indicators database, The World Bank SDC Platinum Mergers & Acquisitions.
<i>Emerging Markets</i>	Dummy variable equal to one if the country's GDP-per-capita (in US\$, average over 1994-2000) is less than the median for the sample of countries.	
<i>Flexibility to Fire</i>	An index of the ease to fire workers based on a study of the employment laws. (divided by 100.)	
<i>Log(Market Cap)</i>	The logarithm of the stock market capitalization in U.S. dollars in 1994.	
<i>Transaction Value</i>	The amount paid in U.S. dollars.	

Table 2. Overall descriptive statistics

Table 2 describes the total number of domestic mergers in the sample countries for 1994-2004 that enter Table 3 regressions. 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
<i>LAW</i>								
	<i>CHANGE</i>	<i>COUNT</i>	<i>SAME</i>	<i>RISK</i>	<i>SHRIGHTS</i>	<i>CRIGHTS</i>	<i>MacroRisk</i>	<i>GDP</i>
Argentina	-	66	55.33%	0.058	4	1	0.07	\$7,801
Australia	-	1,618	61.72%	0.121	4	1	0.04	\$20,948
Austria	-	14	64.52%	0.036	2	3	0.09	\$26,220
Belgium	-	49	57.54%	0.043	0	2	0.08	\$24,649
Brazil	-	143	70.26%	0.07	3	1	0.03	\$4,143
Canada	-	2,071	61.37%	0.094	5	1	0.01	\$20,647
Chile	-	41	61.84%	0.033	5	2	0.04	\$4,604
Denmark	-	80	56.47%	0.049	2	3	0.07	\$32,434
Finland	-	154	54.60%	0.054	3	1	0.08	\$23,856
France	-	434	59.79%	0.045	3	0	0.1	\$24,033
Germany	-	201	55.31%	0.057	1	3	0.04	\$26,443
Greece	-	70	47.22%	0.043	2	1	0.06	\$11,219
Hong Kong	-	190	34.11%	0.064	5	4	0.13	\$23,850
India	-	236	57.87%	0.051	5	4	0.07	\$423
Indonesia	1998	39	60.53%	.	2	4	0.07	\$868
Ireland	-	92	63.59%	.	4	1	0.08	\$21,376
Israel	1996	73	45.45%	0.075	3	4	0.02	\$16,391
Italy	-	333	53.31%	0.038	1	2	0.12	\$19,814
Japan	2000	1,771	46.80%	0.022	4	2	0.03	\$36,616
Malaysia	-	369	25.27%	0.066	4	4	0.05	\$3,982
Mexico	-	82	62.59%	0.049	1	0	0.03	\$4,421
Netherlands	-	101	57.80%	0.059	2	2	0.11	\$24,802
	-							
New Zealand	-	98	57.73%	0.073	4	3	0.06	\$15,528
Norway	-	130	58.94%	0.079	4	2	0.07	\$33,844
Peru	-	26	68.63%	0.058	3	0	0.07	\$2,296
Philippines	-	42	56.00%	0.08	3	0	0.18	\$1,041
Portugal	-	56	65.31%	0.036	3	1	0.06	\$10,782
Singapore	-	243	32.19%	0.064	4	4	0.06	\$22,916
	-							
South Africa	-	372	49.84%	0.061	5	3	0.02	\$3,413
South Korea	-	198	32.48%	0.051	2	3	0.06	\$9,545
Spain	-	338	64.08%	0.04	4	2	0.08	\$14,535
Sweden	1996	186	58.53%	0.067	3	2	0.16	\$26,812
Switzerland	-	38	57.67%	0.046	2	1	0.07	\$37,908
Taiwan	-	52	44.90%	0.039	3	2	0.06	\$12,580
Thailand	1999	83	43.95%	0.065	2	3	0.05	\$2,396
Turkey	-	17	50.00%	0.097	2	2	0.07	\$2,810
	-							
United Kingdom	-	5,624	58.61%	0.071	5	4	0.05	\$21,767
	-							
United States	-	17,491	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 the stock market capitalization, the index of flexibility to fire, the quality of accounting disclosure, an emerging market indicator, the logarithm of average real GDP-per-capita (1994-2000) in US\$, the logarithm of transaction value, and the imputed leverage for the acquirer and the target (the predictors are the U.S. industry quartile rank of the median leverage and median tangibility, and all exogenous control variables). 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. Model (7) excludes both the U.S. and the U.K. 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.	Exclude U.S. and U.K.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>CRIGHTS</i>	-0.245*** (6.33)					-0.411*** (3.66)	-0.420*** (3.56)
<i>AUTOSTAY</i>		-0.415*** (5.74)					
<i>REORG</i>			-0.524*** (5.18)				
<i>SECURED</i>				-0.318*** (3.78)			
<i>MANAGES</i>					-0.848*** (6.89)		
<i>SHRIGHTS</i>	0.022 (0.91)	-0.002 (0.08)	0.012 (0.46)	0.029 (1.16)	0.143*** (5.38)	0.218*** (4.00)	0.112*** (2.88)
<i>Log (Market cap)</i>	0.293*** (6.48)	0.247*** (5.94)	0.266*** (6.01)	0.207*** (5.56)	0.225*** (6.20)	0.134*** (3.09)	-0.035 (0.87)
<i>Flexibility to fire</i>	0.836** (2.15)	1.077*** (2.68)	1.37*** (3.32)	0.993** (2.41)	-0.262 (0.67)	0.503 (1.17)	-0.449 (0.94)
<i>Accounting disclosure</i>	-0.026*** (4.46)	-0.033*** (5.23)	-0.030*** (4.82)	-0.047*** (6.26)	-0.011** (2.21)	-0.024*** (3.09)	-0.035*** (4.31)
<i>Emerging Market</i>	0.661*** (5.99)	0.421*** (4.75)	0.505*** (5.27)	0.303*** (4.25)	0.653*** (6.08)	1.932*** (3.42)	0.956** (2.58)
<i>Rule of Law</i>	0.375*** (5.79)	0.544*** (7.85)	0.362*** (5.66)	0.445*** (6.87)	0.026 (0.34)	0.952*** (4.13)	0.600*** (4.33)
<i>French Legal Origin</i>	-0.388*** (2.87)	-0.189* (1.71)	-0.305** (2.52)	-0.224** (2.10)	0.0004 (0.01)	0.213 (1.61)	0.009 (0.07)
<i>German Legal Origin</i>	-0.613*** (9.32)	-0.86*** (9.96)	-0.950*** (10.58)	-0.968*** (10.49)	0.101 (1.00)	1.087** (2.35)	0.673* (1.69)
<i>Nordic Legal Origin</i>	1.167*** (5.3)	0.903*** (4.49)	1.245*** (5.33)	1.097*** (5.10)	1.212*** (5.70)	2.458*** (3.33)	1.393** (2.58)
<i>MacroRisk</i>	-0.207 (0.22)	-2.945*** (3.18)	-1.841** (1.96)	-6.312*** (6.76)	-0.803 (0.97)	4.755** (2.15)	1.765 (1.13)
<i>Log(GDP perCapita)</i>	-0.178*** (3.37)	-0.199*** (3.71)	-0.097** (2.04)	-0.055 (1.20)	-0.152*** (3.09)	-0.423*** (3.13)	-0.354*** (3.35)
<i>Log(Transaction Value)</i>	0.086*** (5.41)	0.090*** (5.47)	0.091*** (5.47)	0.096*** (5.52)	0.083*** (5.30)	0.083** (2.29)	0.064*** (2.85)
<i>Acquirer's Leverage (imputed)</i>	1.746* (1.746)	1.755 (1.755)	1.734 (1.734)	1.737 (1.737)	1.754* (1.754)	-0.486 (-0.486)	-1.376* (-1.376)

<i>Target's Leverage (imputed)</i>	(1.69)	(1.68)	(1.64)	(1.64)	(1.70)	(0.35)	(1.75)
	-7.647***	-7.861***	-8.062***	-8.251***	-7.584***	-13.957***	-7.7**
	(6.13)	(6.14)	(6.17)	(6.17)	(6.09)	(3.51)	(2.57)
Number of countries	38	38	38	38	38	37	36
Observations	33,221	33,221	33,221	33,221	33,221	15,730	10,106
Chi-squared	4,449.7	4,279.3	1,696.8	1,375.8	5,870.4	1,838.4	2,079.4

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

The dependent variable is 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. The *t*-statistics (in parentheses) are based on robust standard errors. All models are based on tobit estimates where we allow for truncation of the dependent variable at 0 and 1. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
<i>CRIGHTS</i>	-0.030*** (3.28)					
<i>Average CRIGHTS</i>						-0.02** (2.18)
<i>AUTOSTAY</i>		-0.056** (2.48)				
<i>REORG</i>			-0.017 (0.74)			
<i>SECURED</i>				-0.022 (1.25)		
<i>MANAGES</i>					-0.100*** (4.41)	
<i>SHRIGHTS</i>	0.015** (2.48)	0.013* (1.80)	0.021*** (2.86)	0.021*** (2.73)	0.018*** (3.01)	0.018** (2.57)
<i>Log (Market cap)</i>	-0.007 (0.72)	-0.006 (0.63)	-0.005 (0.46)	-0.004 (0.37)	-0.007 (0.89)	-0.006 (0.64)
<i>Flexibility to fire</i>	0.197*** (2.88)	0.255*** (3.51)	0.28*** (3.88)	0.285*** (3.40)	0.224*** (3.23)	0.241*** (3.11)
<i>Accounting disclosure</i>	-0.002 (1.29)	-0.002 (1.58)	-0.002 (1.21)	-0.002 (1.17)	-0.001 (0.73)	-0.001 (1.20)
<i>Emerging Market</i>	-0.21** (5.10)	-0.212*** (4.90)	-0.206*** (4.25)	-0.199*** (4.29)	-0.185*** (4.35)	-0.201*** (4.61)
<i>Rule of Law</i>	0.055*** (2.83)	0.056** (2.54)	0.052** (2.31)	0.054** (2.19)	0.028 (1.56)	0.057** (2.56)
<i>French Legal Origin</i>	0.105*** (3.93)	0.107*** (4.00)	0.136*** (4.29)	0.133*** (4.23)	0.078*** (2.78)	0.120*** (4.18)
<i>German Legal Origin</i>	0.058 (1.36)	0.059 (1.28)	0.060 (1.24)	0.062 (1.31)	0.040 (1.16)	0.058 (1.31)
<i>Nordic Legal Origin</i>	0.071 (1.67)	0.057 (1.24)	0.083 (1.66)	0.08* (1.70)	0.028 (0.80)	0.061 (1.39)
<i>MacroRisk</i>	-1.045*** (3.90)	-0.988*** (3.69)	-1.015*** (3.21)	-1.013*** (3.25)	-0.985*** (4.12)	-0.982*** (3.81)
<i>Log(GDP per Capita)</i>	-0.086*** (5.70)	-0.079*** (4.97)	-0.071*** (3.86)	-0.068*** (3.99)	-0.068*** (5.23)	-0.073*** (4.62)
Model F-statistic (p-value)	12.0 (0.0)	15.0 (0.0)	7.7 (0.0)	8.2 (0.0)	14.4 (0.0)	9.8 (0.0)

Table 5. 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, $\Delta CRIGHTS$, 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. Multivariate Analysis

Variable	Pr(SAME)
$\Delta CRIGHTS_{c,t}$	-0.19*** (3.16)
$\text{Log}(\text{Transaction Value})$	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 6. Operating risk and creditor rights: RISK at firm level

The dependent variable, industry-adjusted *RISK*, is the standard deviation of the firm's annual *ROA* defined as *EBITDA/ASSETS* (see definition in Table 1) minus that year's median industry *ROA* (2-digit SIC code). The sample period is 1992-2005. Included are companies from the manufacturing industry only (SIC 2000 – 3999). We present the second stage estimation from the 2SLS system where we treat firm leverage as endogenous. We instrument leverage with the quartile ranks of the U.S. industry median leverage and tangibility. The *t*-statistics (in parentheses) are based on robust standard errors cluster-adjusted at the country level. The ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	All countries					Exclude U.S.	Exclude U.S. and U.K.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>CRIGHTS</i>	-0.006*** (2.75)					-0.006*** (2.67)	-0.006*** (2.69)
<i>AUTOSTAY</i>		-0.011 (1.52)					
<i>REORG</i>			-0.005 (0.84)				
<i>SECURED</i>				-0.006 (1.15)			
<i>MANAGES</i>					-0.022*** (3.74)		
<i>SHRIGHTS</i>	-0.005 (1.61)	-0.005* (1.80)	-0.003 (1.16)	-0.003 (1.29)	-0.003 (1.22)	-0.004 (1.62)	-0.005* (1.89)
<i>Log (Market cap)</i>	0.006*** (3.10)	0.007*** (3.04)	0.006*** (2.64)	0.006*** (2.76)	0.006*** (3.59)	0.003 (1.21)	0.003 (0.74)
<i>Flexibility to fire</i>	0.066*** (3.22)	0.075*** (3.73)	0.081*** (3.69)	0.077*** (3.75)	0.041* (1.93)	0.06*** (3.03)	0.055*** (2.69)
<i>Accounting disclosure</i>	-0.001 (1.17)	-0.001 (1.17)	-0.0005 (0.96)	-0.001 (1.08)	-0.0003 (0.64)	-0.0003 (0.66)	-0.0004 (0.74)
<i>Emerging Market</i>	0.011 (1.30)	0.007 (0.71)	0.001 (0.10)	-0.001 (0.15)	0.014* (1.83)	0.012 (1.52)	0.009 (1.00)
<i>Rule of Law</i>	0.010 (0.98)	0.012 (0.91)	0.005 (0.47)	0.005 (0.43)	-0.001 (0.13)	0.012 (1.35)	0.013 (1.26)
<i>French Legal Origin</i>	-0.036*** (4.00)	-0.034*** (3.73)	-0.032*** (3.49)	-0.033*** (3.67)	-0.03*** (2.88)	-0.037*** (4.45)	-0.037*** (4.38)
<i>German Legal Origin</i>	-0.024*** (3.41)	-0.029*** (3.95)	-0.029*** (4.08)	-0.029*** (4.31)	-0.010 (1.14)	-0.025*** (2.67)	-0.022** (2.14)
<i>Nordic Legal Origin</i>	-0.016 (1.45)	-0.021* (1.84)	-0.02* (1.70)	-0.02* (1.73)	-0.012 (0.98)	-0.021** (2.04)	-0.021* (1.91)
<i>MacroRisk</i>	0.101 (1.67)	0.086 (1.30)	0.096 (1.45)	0.081 (1.27)	0.116 (1.56)	0.100* (1.73)	0.109* (1.74)
<i>Log GDP per capita</i>	0.004 (0.68)	0.004 (0.61)	0.008 (1.26)	0.008 (1.26)	0.006 (0.87)	0.002 (0.53)	0.0004 (0.09)
<i>Leverage (Instrumented)</i>	-0.145*** (4.17)	-0.151*** (4.01)	-0.153*** (3.85)	-0.157*** (3.64)	-0.150*** (4.15)	-0.125*** (3.28)	-0.149*** (3.06)
<i>Log(Initial total assets)</i>	-0.010** (2.55)	-0.01** (2.46)	-0.01** (2.45)	-0.010** (2.39)	-0.01** (2.45)	-0.006*** (3.32)	-0.004** (2.53)
Observations	5,394	5,394	5,394	5,394	5,394	3,812	3,385
Model F-statistic (p-value)	52.8 (0.0)	42.1 (0.0)	44.9 (0.0)	58.6 (0.0)	178.4 (0.0)	36.8 (0.0)	40.6 (0.0)
Number of countries	35	35	35	35	35	34	33

Table 7. Country-level operating risk, $RISK^*$, and creditor rights

$RISK^*$ is the median for each country of the variable $RISK$ of the firms in the country, where $RISK$ is the standard deviation of the industry-adjusted firm profitability (as in Table 6). 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.

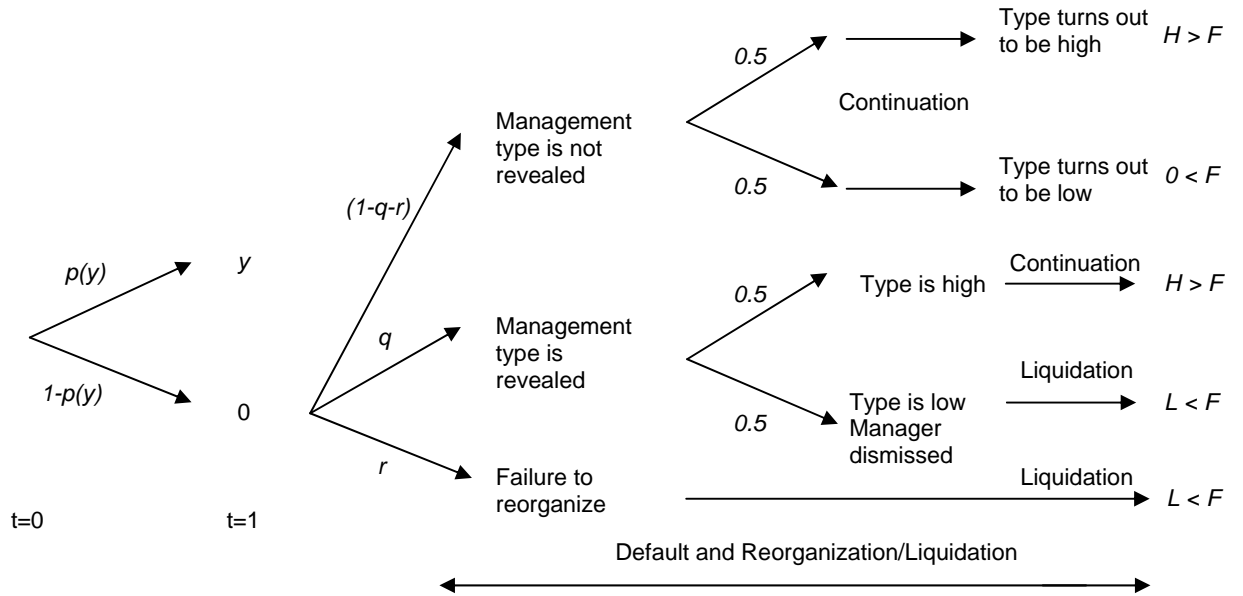
Variable	(1)	(2)	(3)	(4)	(5)
<i>CRIGHTS</i>	-0.007*** (3.35)				
<i>AUTOSTAY</i>		-0.015** (2.12)			
<i>REORG</i>			-0.001 (0.15)		
<i>SECURED</i>				-0.010 (1.49)	
<i>MANAGES</i>					-0.023*** (3.50)
<i>SHRIGHTS</i>	-0.003 (1.32)	-0.004 (1.52)	-0.001 (0.46)	-0.001 (0.46)	-0.002 (1.14)
<i>Log (Market cap)</i>	0.0003 (0.12)	0.001 (0.18)	-0.0005 (0.17)	-0.0001 (0.04)	0.0001 (0.02)
<i>Flexibility to fire</i>	-0.035 (1.19)	-0.023 (0.9)	-0.016 (0.52)	-0.022 (0.75)	-0.026 (1.14)
<i>Accounting disclosure</i>	-0.0002 (0.54)	-0.0003 (0.62)	-0.0001 (0.10)	-0.0001 (0.20)	-0.0001 (0.03)
<i>Emerging Market</i>	0.012* (1.72)	0.012 (1.15)	0.002 (0.24)	0.002 (0.25)	0.014* (1.89)
<i>Rule of Law</i>	-0.002 (0.33)	0.0001 (0.01)	-0.007 (0.88)	-0.005 (0.74)	-0.010 (1.49)
<i>French Legal Origin</i>	-0.021** (2.21)	-0.019** (1.98)	-0.012 (1.08)	-0.012 (1.11)	-0.026*** (2.78)
<i>German Legal Origin</i>	-0.018** (2.47)	-0.019** (2.18)	-0.017* (1.95)	-0.016* (1.86)	-0.019*** (2.76)
<i>Nordic Legal Origin</i>	-0.004 (0.28)	-0.006 (0.47)	-0.005 (0.34)	-0.002 (0.17)	-0.012 (0.88)
<i>MacroRisk</i>	-0.001 (0.02)	0.004 (0.05)	-0.011 (0.12)	-0.023 (0.28)	0.009 (0.12)
<i>Log GDP per capita</i>	-0.002 (0.54)	-0.002 (0.43)	0.0004 (0.06)	-0.001 (0.12)	0.002 (0.33)
R-squared	52.1%	45.9%	33.9%	39.8%	57.3%

Table 8. Recovery rates and mergers and acquisitions

The table presents coefficient estimates of probit models. The dependent variable equals 1 if $\text{Prob}(\text{TH} \cap \text{AL} | \text{TH}) = 1$, 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 leverage of acquirer and target are calculated as in Table 3. 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. & U.K.				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>CRIGHTS</i>	0.128** (2.45)					0.354*** (4.56)				
<i>AUTOSTAY</i>		0.915*** (6.30)					0.425** (2.38)			
<i>REORG</i>			0.277* (1.93)					0.492*** (2.64)		
<i>SECURED</i>				0.124 (0.60)					0.51** (2.33)	
<i>MANAGES</i>					0.619*** (3.50)					1.466*** (5.25)
<i>SHRIGHTS</i>	-0.107* (1.65)	0.016 (0.22)	-0.114* (1.71)	-0.118 (1.54)	-0.22*** (2.71)	-0.18*** (3.32)	-0.191*** (2.81)	-0.165** (2.33)	-0.211*** (3.35)	-0.357*** (5.81)
<i>Log (Market cap)</i>	0.083 (1.17)	-0.615*** (6.49)	0.12* (1.86)	0.165** (2.27)	0.116* (1.90)	0.283*** (2.94)	0.25** (2.13)	0.205** (2.05)	0.081 (0.66)	0.416*** (3.47)
<i>Flexibility to fire</i>	-1.250 (1.34)	-2.379** (2.32)	-1.716 (1.52)	-1.305 (0.99)	-0.274 (0.33)	-0.497 (0.67)	-1.108 (1.12)	-1.496 (1.67)	-1.456 (1.21)	1.86** (2.16)
<i>Accounting disclosure</i>	-0.05*** (3.73)	0.018 (1.15)	-0.045*** (3.38)	-0.034*** (3.05)	-0.056*** (4.51)	-0.035*** (3.23)	-0.039*** (3.12)	-0.039*** (3.6)	-0.036*** (3.45)	-0.048*** (5.23)
<i>Emerging Markets</i>	-0.162 (1.02)	-1.138*** (5.69)	-0.059 (0.49)	0.027 (0.21)	-0.259 (1.68)	-0.453 (1.47)	-0.492 (1.44)	-0.345 (0.99)	-0.84** (2.31)	-0.157 (0.49)
<i>Rule of Law</i>	0.190 (1.01)	-0.56** (2.33)	0.225 (1.18)	0.161 (0.76)	0.424** (2.05)	0.186 (0.81)	-0.209 (0.8)	0.107 (0.44)	-0.145 (0.55)	0.909*** (3.15)
<i>French Legal Origin</i>	-0.405 (1.44)	0.317 (1.04)	-0.418 (1.52)	-0.538 (1.59)	-0.72*** (2.69)	-0.330 (1.09)	-0.849** (2.49)	-0.579 (1.63)	-0.707** (2.14)	-0.774** (2.57)
<i>German Legal Origin</i>	-0.257** (2.08)	1.483*** (9.38)	-0.099 (0.94)	-0.084 (0.62)	-0.871*** (3.57)	-1.118*** (3.65)	-1.017*** (2.70)	-0.578 (1.32)	-0.868* (1.90)	-2.025*** (6.15)
<i>Nordic Legal Origin</i>	0.733** (2.00)	-2.317*** (4.46)	0.817** (2.26)	0.982** (2.08)	0.670* (1.79)	0.156 (0.35)	0.289 (0.58)	0.112 (0.25)	-0.218 (0.48)	0.279 (0.57)
<i>MacroRisk</i>	5.734* (1.94)	9.374*** (3.01)	6.488** (2.42)	9.048*** (3.92)	4.761 (1.68)	3.149 (1.15)	5.129* (1.7)	5.223** (1.99)	5.228* (1.79)	4.462 (1.6)
<i>Log GDP per capita</i>	0.249* (1.75)	0.600*** (3.47)	0.173 (1.29)	0.156 (0.99)	0.272** (1.98)	0.3** (2.32)	0.363** (2.09)	0.211 (1.57)	0.222 (1.25)	0.249** (2.05)
<i>Log (Transaction Value)</i>	0.015 (1.49)	-0.136*** (6.45)	0.017* (1.70)	0.019* (1.95)	0.017* (1.7)	0.073*** (3.11)	0.076*** (3.23)	0.077*** (3.22)	0.074*** (3.14)	0.085*** (3.65)
<i>Acquirer's Leverage (imputed)</i>	-12.99*** (9.47)	-26.83*** (7.03)	-12.88*** (9.25)	-12.71*** (9.08)	-12.96*** (9.4)	-15.25*** (12.8)	-14.80*** (12.65)	-14.84*** (12.04)	-14.72*** (11.71)	-15.17*** (12.37)
<i>Target's Leverage (imputed)</i>	5.838*** (9.03)	32.688*** (14.58)	5.658*** (8.66)	5.342*** (7.66)	5.762*** (8.83)	10.807*** (7.75)	10.217*** (7.22)	10.046*** (6.62)	9.833*** (6.93)	10.133*** (7.45)
# of countries	38	38	38	38	38	36	36	36	36	36
Observations	6,495	6,495	6,495	6,495	6,495	3,356	3,356	3,356	3,356	3,356
Chi-squared	28,376.0	6,360.2	43,325.1	13,403.8	12,529.0	27,974.7	6,449.9	15,708.8	9,494.0	13,115.9

Figure 1. Timeline of the model.



Manager chooses the riskiness of the leveraged firm, y .

The firm has debt of face value F payable next period.

The firm's cashflow is realised to be high or low.

There is default on firm's debt in low state.

With probability r , creditors of the firm fail to reach any agreement to reorganize and firm is liquidated. Management suffers a private cost of m .

Otherwise, managerial type is investigated.

With probability q , managerial type is revealed during investigation.

If type is low (probability 0.5), the firm is efficiently liquidated and management suffers a private cost of m . Otherwise, it is continued.

With remaining probability $(1-q-r)$, management type remains uncertain and firm is continued.

If type turns out to be high, the output is H . Otherwise, it is 0.

Figure 2. The share of same-industry mergers in a country, *SAME*, and creditor rights, *CRIGHTS*. The fitted line represents the slope from a Tobit regression of the fraction of same industry mergers in a country on a constant and the creditor rights index.

