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Bankruptcy Law in Latin America: Past and Future

Modern economic theory increasingly recognizes the relevance of legal and institutional structures for the functioning and development of the economy. Bankruptcy laws are a crucial element of such institutions. This paper examines the laws that govern corporate bankruptcy procedures, their effects on the economic environment, and the recent bankruptcy reforms in Latin America, with a focus on Brazil.

Firms take on debts for several reasons. They generally intend to repay these debts with their future gains, but there is always the possibility that the borrowing firms will not fulfill the repayment promise. Bankruptcy law determines what happens in such circumstances.

In the absence of a bankruptcy law, creditors have two legal procedures at their disposal. In the case of secured loans, creditors can seize the firm's assets that serve as collateral for their loans. In the case of unsecured loans, creditors can go to court asking to sell some of the firm's assets. This method of debt collection runs into difficulties when there are many creditors and the debtor's assets do not cover its liabilities (that is, when the firm is insolvent). Under these conditions, each creditor will try to be the first to recover its debts. This uncoordinated race of creditors may lead to the dismantling of the firm's assets and a loss of value for all creditors.

It is in the collective interest of creditors, and of society at large, that the disposition of the debtor's assets be carried out in an orderly way, via a

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centralized bankruptcy procedure. In a perfect world, there would be no need for a bankruptcy law because individuals could solve this problem through private contracts in which the debtor specified ex ante what would happen in case of default (for example, how to divide up assets and use them for debt repayment). Writing such contracts is very difficult, however. Debtors may acquire new creditors and assets after the contract is signed, and it is hard to specify how the division process should change as a function of such adjustments. Besides, contracts like this simply are not written in practice. Bankruptcy law provides a default option for this problem of contract incompleteness.

Most countries have two bankruptcy procedures: one for liquidating the assets of failing firms and another for reorganizing failing firms. Ideally, bankruptcy law should provide a good balance between liquidation and reorganization procedures.

When a firm files for bankruptcy liquidation, the bankruptcy court appoints a trustee who shuts down the firm and sells its assets. This can involve either the sale of the whole business or its productive units or the piecemeal sale of its assets, depending on demand and on which option maximizes the value of the company's assets. The absolute priority rule determines how the proceeds of sale are divided among the claimants. It specifies what claims are paid in full according to an order defined by bankruptcy law of each country.

Reorganization is the other alternative. When capital markets are imperfect, which is very common in developing countries, the best managers may not be able to raise the necessary cash to buy the firm. The firm may therefore be inefficiently dismantled and its assets sold cheaply. Reorganization provides a good alternative for countries with weak capital markets. Another explanation for the loss of value in liquidation is that when a firm in financial distress needs to sell its assets, its industry peers are likely to be experiencing problems themselves, forcing the trustee to sell the assets below their potential value.[1] Hence, if assets are very firm-specific and the correlation of returns across firms is high, reorganization is likely to be preferable to liquidation as a way to maximize firm value after insolvency.

Reorganization is particularly appropriate for firms that are financially distressed but not economically inefficient.[2] There are different approaches to choosing between reorganization and liquidation. Some countries (like

1. See Shleifer and Vishny (1992).

2. A firm is financially distressed or insolvent when it can no longer meet its debt obligations with another firm or institution. It is economically efficient if the best use of its capital is the current use, and it is economically inefficient if the value of its assets is greater in some other use.

Germany, France, and England) give the exclusive control of the proceeding to an outside official, who makes the initial decision of whether to liquidate the firm or to keep it operating. Other countries (like Argentina and Chile) assign an impartial and independent administrator to supervise the manager; the administrator assumes complete power if management proves incompetent or negligent or has engaged in fraud or misbehavior. Finally, a number of countries (including the United States) give managers the right to choose between filing for bankruptcy liquidation or reorganization. Managers have the exclusive right to propose a reorganization plan.

Choosing reorganization over liquidation produces a conflict between the secured creditors' right to claim their collateral and the goal of reorganizing the firm. To be successful, the firm must retain assets, which are crucial to its operations. At the same time, secured creditors often wish to claim these assets. Some countries, such as the United States, resolve this conflict in the firm's favor by applying an automatic stay to secured creditors, thereby making the reorganization process more appealing. Not all countries have this degree of protection, and some (including Germany and the United Kingdom) do not have it at all. This weakens or even eliminates the possibility of reorganization.

Well-designed bankruptcy procedures can influence the establishment of a healthy business environment in a number of ways. From an ex post efficiency perspective, a bankruptcy law should maximize the total value of the company and, consequently, the payoff that creditors receive from insolvent firms. This reduces the cost of capital, since creditors have a high expectation of recovery in case of bankruptcy. Ex ante efficiency is also important. From this perspective, what matters is not the total value of the failed firm, but the division of its value among the participants. An ex ante efficient bankruptcy law is capable of producing the right incentives for managers' decisions, both in the initial period of a firm's life and after the firm goes into financial distress. Bankruptcy procedures should penalize managers adequately: without any potential adverse consequences, they have very little incentive to work hard in the early stages to pay the firm's debts. If well designed, these incentives should reduce the chances of any firm going bankrupt. In the post-insolvency period, management tends to make two inefficient bankruptcy decisions: undertaking excessively risky investments as a means of avoiding bankruptcy and delaying filing for bankruptcy to extract the maximum pecuniary gains possible. A good insolvency system reserves some portion of value in bankruptcy for managers and shareholders, which motivates actions in favor of efficient investment and timely decisions.

All the mechanisms cited above contribute to increasing the expected return for creditors, whether by raising the return in bankruptcy states or diminishing the probability of bankruptcy. Both effects work to reduce the cost of capital in the economy. Low capital costs are fundamental for reaching an ex ante objective of bankruptcy law—namely, to maximize the set of projects creditors want to finance.

Another relevant function of bankruptcy law is to prevent fraud. Fraudulent actions have an important role in bankruptcy processes, especially in Latin America. Mechanisms that expand the role of creditors (such as active participation in reorganization) and increase the expected return in bankruptcy serve at the same time to raise creditors' incentives to monitor the bankruptcy procedure, making fraudulent actions more difficult.

This paper analyzes bankruptcy law in Latin America, focusing on the 2005 Brazilian bankruptcy reform. One central conclusion is that in Latin America and the Caribbean, most countries have very inefficient bankruptcy procedures (the efficiency of these procedures is represented by the variable *Goals-of-insolvency,* which will be carefully explained later in the paper). Bankruptcy law typically provides little creditor protection. This in turn results in weak credit markets, a high cost of capital, and low creditors' recovery rate.

Brazil, in particular, has a history of inefficient bankruptcy institutions. As shown in table 1, Brazilian bankruptcy law compares poorly with that of the average Latin American country on both crucial variables. The good news is that an extensive reform was passed in June 2005. It is expected to have an important impact on the business environment.

The paper is structured as follows. The next section describes the evolution of the literature on bankruptcy theory and examines the direct and indirect economic consequences of a successful bankruptcy reform. The following section opens with a simple model that captures economic effects and tradeoffs involved in bankruptcy law, showing how changes in the system could affect a firm's investment, effort, and other choices.

TABLE 1. Bankruptcy Law Indicators

Country or region	*Creditors' protection [0, 1]*	*Goals of insolvency [0, 100]*
Brazil	0.06	24.0
Latin America and the Caribbean	0.19	46.3
OECD	0.46	79.6

Source: World Bank, *Doing Business* (2003).

We then use this framework to analyze bankruptcy law in Latin America and the Caribbean. Using data from the World Bank and the International Monetary Fund (IMF), we compare bankruptcy procedures across groups of countries, and test empirically the effects of the quality of bankruptcy law.[3] The next-to-last section discusses the recent Brazilian bankruptcy reform, emphasizing the main changes and potential effects on the economy. The final section presents concluding remarks, exploring policy lessons that other Latin American countries should consider when they reform their bankruptcy laws.

Review of the Literature

Modern bankruptcy theory begins with the recognition of the collective action problem among creditors of an insolvent firm. Jackson, for example, stresses this common pool problem.[4] He argues that despite the objective of maximizing the value of the failing firm's assets, creditors tend to act in their own self-interest, which opens the door to an uncoordinated debt collection that can prove very costly in terms of the value of the firm. If unsecured creditors perceive that a firm is insolvent, they anticipate that it will not be able to repay all its creditors in full, setting off a race to be first to collect from the firm. When the liquidation is not coordinated, the assets are sold piecemeal and the firm's operations are disrupted. The firm then will probably be forced to shut down even when the best use of its assets is continued operation.[5] This causes social welfare losses, and the firm's value is not maximized. Moreover, such conflict delays the liquidation resolution, which leads to additional losses in the firm's value. A bankruptcy system can prevent this inefficient equilibrium by staying the creditors' collection effort until a state official can decide whether the firm is worth saving.

The ensuing debate attempted to specify how a bankruptcy law should work. The early economists focused on avoiding deviations from the absolute priority rule (APR), as well as cutting the costs associated with bargaining in the reorganization procedure called Chapter 11 of the U.S. bankruptcy code. The role of the APR is to determine how a failing firm's value is divided. It specifies that claims are paid in full in the following order: first, administrative expenses of the bankruptcy process; second, claims taking

3. World Bank, *Doing Business* (2003, 2004) and *World Development Indicators* (2004); IMF, *International Financial Statistics* (2004).

4. Jackson (1986).

5. Webb (1991) shows that this is a classic case of prisoner's dilemma.

statutory priority, such as tax claims, rent claims, and unpaid wages and benefits; and third, unsecured creditors' claims, including those of trade creditors. Equity holders receive the remainder, if any. Secured creditors are usually outside the priority ordering because they have bargained with the firm for the right to claim a particular asset or its value if the firm files for bankruptcy.[6] They may thus receive a payoff in bankruptcy even when all other creditors receive nothing. This rule is easily followed in a liquidation procedure because the cash received is simply distributed among claimants according to the priority of their claims as defined by bankruptcy law. In reorganization, however, the sale of the company's assets is fictional, so no verifiable objective figure is available for the total value to be distributed (like the cash in liquidation). In this situation, a conflict of interest among participants emerges. Senior creditors have an incentive to advance a low valuation of the firm's assets, because a low valuation would entitle them to a larger share of the reorganized company. Managers and equity holders have a similar incentive to advance a high valuation. Reorganization procedures that choose a firm's restructuring plan using a bargaining process between interested parties—such as Chapter 11—allow deviations from the order specified by bankruptcy law. APR violations mean that equity holders, who always have bottom priority, get some amount of the firm's value even when secured creditors' claims are not paid in full.

Bankruptcy laws that do not offer insolvent firms a reorganization procedure like Chapter 11 rule out the possibility of APR deviations. This is valuable because the priority of creditors is maintained, guaranteeing greater returns once the firm files for bankruptcy. Moreover, the nonviolation of APR offers the correct incentive to managers' effort, minimizing problems of moral hazard and thus raising the possibility of firms' success. On the other hand, APR violations are possible under bankruptcy laws that provide the possibility of reorganization like Chapter 11. Despite its negative effect in the level of effort chosen by managers, such violation inhibits investments in inefficient risky projects when the firm is in financial distress, encourages desirable investment in a firm's specific input, and facilitates the transference of information to creditors, thereby improving the timing of filing for bankruptcy. Such benefits tend to increase the firms' return in both bankruptcy and nonbankruptcy states. This higher return in bankruptcy states may sometimes offset creditors' direct losses of such violation (that is, the part of the value that is given to managers and shareholders in bankruptcy), and thus lower the cost of capital.

6. Bankruptcy law in some countries does not maintain this top priority, putting labor or tax or another claim above the claims of secured creditors (see table A-1 in the appendix).

Some early economic theorists favored a market auction approach to cutting the costs implicit in reorganization.[7] Specifically, a state official would auction insolvent firms to the market, free of current claims, and then distribute the proceeds to creditors according to absolute priority rules. If economic value would be maximized by a piecemeal liquidation, the highest bids would be for individual assets; if continuing the firm as an economic entity would maximize value, then the highest bids would be for the firm as a unit.

Bebchuk argues that reorganization can capture a greater value than liquidation, especially when the company's assets are worth much more as a going concern than if sold piecemeal and if there are few or no buyers with both accurate information about the company and sufficient resources to acquire it.[8] He therefore proposes an options approach that homogenizes the interests of the holders and follows the absolute priority rule, creating a reorganization procedure without the burden of APR violations or bargaining costs. Under this approach, all participants in the reorganization receive certain options with respect to the new equities of the reorganized company. The division of value results from the participants' own decisions concerning the exercise of the options given to them. The options should be designed so that, whatever the reorganized value of the firm, no participants can complain that they would end up with less than the value to which they are entitled. This approach would improve the efficiency of asset allocation.

Bebchuk's idea receives significant support in subsequent literature. For example, Aghion, Hart, and Moore use it as the basis for a bankruptcy reform proposal that includes an auction mechanism, and Hart and others adapt it to develop a new procedure using multiple auctions.[9] These procedures also generated their share of critical or skeptical reactions. The criticism emphasizes that the lack of liquidity (since the firms are in financial distress) makes it impossible for shareholders to exercise their options; and the skepticism centers on the complexity of the mechanisms, which makes it difficult to implement the proposals of Aghion, Hart, and Moore and Hart and others.

Early theorists thus held that bankruptcy systems should follow absolute priority strictly. This requires creditors to be repaid in the order that the firms' contracts determine. The rule implies that equity holders should receive nothing, because the residual claim on an insolvent firm is worth nothing.

7. For example, Baird (1986); Jensen (1991).
8. Bebchuk (1988).
9. Aghion, Hart, and Moore (1992); Hart and others (1997).

Modern theory relates the results of a bankruptcy procedure to the early stages in the life of the borrowing firm. An ex post efficient bankruptcy system maximizes the payoff that creditors receive from insolvent firms. In the borrowing stage, a competitive credit market would reduce the amounts that lenders can require solvent firms to repay when the lenders' expected insolvency payoffs increase. Thus, interest rates fall as the efficiency of the applicable bankruptcy system increases. In contrast, the ex ante efficiency of the bankruptcy system is related to the optimal division of the firm's total value. This point of research is the main target of the current discussion.

Substantial research addresses the issue of violations of the absolute priority rule (APR), arguing that the ex ante effect of deviations from the rule are actually beneficial. In particular, this line of research shows that APR deviations encourage desirable ex ante investments in firm-specific human capital; that they facilitate the transfer of information to creditors and improve the timing of decisions to file for bankruptcy, to liquidate, or to recapitalize; and that they discourage excessive risk taking by financially distressed firms.[10] Bebchuk shows that ex post APR deviations also have negative effects on ex ante decisions made by shareholders.[11] He argues that such deviations have an adverse effect on ex ante management decisions made prior to the onset of financial distress. The presence of APR deviations aggravates the moral hazard problem, but the final effect of such deviations is inconclusive.

The direct and indirect consequences of improving bankruptcy laws are also being investigated in the macroeconomic field. The first direct macroeconomic implication is that reducing the cost of debt capital will reduce the cost of capital generally. The equity holders retain a call option on a leveraged firm because shareholders can buy the firm by repaying the debt. The strike price for exercising the equity option is therefore the firm's cost of credit. Reducing this cost—that is, lowering the strike price—makes stock more valuable to own. It thus becomes easier for firms to raise equity capital as their country's bankruptcy system becomes more efficient.

The second direct implication of reducing the cost of capital by improving the bankruptcy system is the expansion of the credit market (or a reduction on the credit constraint). La Porta and others present an important empirical study on legal systems and their influence on finance, in which they show that a bankruptcy law and an enforcement mechanism that protect the rights of

10. Berkovitch, Israel, and Zender (1997); Povel (1999); Berkovitch and Israel (1999); Eberhart and Senbet (1993).

11. Bebchuk (2002).

creditors tend to boost financial development.[12] We examine this relation in a previous paper, arguing that when the protection of creditors implies the penalization of debtors, an extremely high level of protection reduces debtors' interest in demanding credit, as they fear the possible consequences.[13] The supply of credit is increasing in creditors' protection because of the moral hazard problem, whereas the demand for credit is decreasing in creditors' protection because of the fear of punishment. An intermediary level of creditor protection that is neither too strong nor too weak provides the highest level of credit market development in the economy.

This relationship is a first-order consequence of bankruptcy law. The most important effects of improving the law are second-order and stem from financial development. They are two-fold: namely, the impact of financial development on growth and the impact on income distribution and poverty. King and Levine study the impact on growth empirically in a sample of seventy-seven countries over the period 1960–89, using different measures of financial development and growth indicators.[14] Their results indicate a strong, positive relationship between each financial development measure and growth indicator.

King and Levine do not formally address the issue of causality, however. It may be the case that financial markets develop in anticipation of future economic activity. To solve the problem of possible simultaneity bias, Levine, Loayza, and Beck analyze seventy-one countries using two different econometric techniques: generalized method of moments (GMM) dynamic panel estimators and a cross-sectional instrumental variables estimator.[15] Their results indicate a very strong connection between the exogenous component of financial development and economic growth. These results indicate that the strong link between financial development and growth is not due to simultaneity bias.

With regard to the relationship between financial development and both income distribution and poverty alleviation, the theory provides conflicting predictions. Some theorists claim that developing the system of financial intermediaries makes financial services available to a lager portion of the population, rather than restricting capital to selective groups. By ameliorating

12. La Porta and others (1997, 1998).

13. Araujo and Funchal (2004). This is valid only if markets are incomplete. When markets are complete, debtors can promise to repay only in cases of success.

14. King and Levine (1993).

15. Levine, Loayza, and Beck (2000); they use legal origin measures from La Porta and others (1998) as instrumental variables.

credit constraints, financial development may foster entrepreneurship, the formation of new firms, and economic growth. Others argue, however, that the rich and politically connected primarily benefit from improvements to the financial system. At early stages of economic development, access to financial services, especially credit, is limited to wealthy, well-connected individuals. The issue of whether financial development will narrow or widen income disparities even while it boosts economic growth thus remains open to debate.

Another group of theorists analyzes the relationship between financial development and income distribution as a nonlinear form. Greenwood and Jovanovic show that the interaction of financial intermediary development and income inequalities can give rise to an inverted-U-shaped curve.[16] At early stages of financial development, only a few relatively wealthy individuals have access to the financial market and, hence, to the projects yielding the highest returns. As aggregate economic growth is generated, more people can afford to join the financial system, with positive effects on economic growth. The distributed effect of financial deepening is thus adverse to the poor in the early stages, but positive after the turning point.

Using cross-country regressions, Beck, Demirgüç-Kunt, and Levine examine whether the level of financial intermediary development influences the growth rate of Gini coefficients of income inequality, the growth rate of the income of the poorest quintile of society, and the fraction of the population living in poverty.[17] Their results indicate that finance exerts a disproportionately large and positive impact on the poor and thus reduces income inequality.

Bankruptcy Law: Economic Issues and Trade-offs

This section uses a simple model to examine the effects of bankruptcy law characteristics in three different stages of a firm's life: before financial distress, after financial distress but before bankruptcy, and finally after bankruptcy.

The Ex Ante Financial Distress Effects

A good bankruptcy law is not only relevant when a firm goes bankrupt, but also has strong ex ante effects on the cost of capital and the incentive to pur-

16. Greenwood and Jovanovic (1990).
17. Beck, Demirgüç-Kunt, and Levine (2004).

sue projects, which are as important as the ex post bankruptcy effects. The relationship between the performance of the bankruptcy system, a firm's cost of capital, and its incentive and ability to pursue projects can be illustrated with a simple model. We make five important assumptions: the borrowing firm is run by an owner/manager; creditors are imperfect monitors of actions related to payoffs that the firm takes after it borrows; capital markets are competitive; creditors can predict their mean payoffs in the default state; and creditors and the firm are risk-neutral. We make the first assumption because this essay is not concerned with the corporative-governance problem. The second assumption captures the asymmetric information between the firm and its creditors. The third is realistic. The fourth rests on the view that professional creditors have considerable experience with default, and the fifth is more accurate when applied to firms than to individual persons.

The borrowing firm has a project that requires capital, I, which the firm must raise externally. The firm promises to repay creditors the sum, F. The project can return a value, v, where the firm is solvent if $v \geq F$ and insolvent if $v < F$. Two states are possible in the future, one if the firm is solvent and the other if it is not.

The solvency and insolvency states return to the firm v_{solv} and v_{ins}, respectively, where $v_{solv} \geq F > v_{ins}$. The probability of solvency is p_{solv}; the probability of insolvency is $(1 - p_{solv})$. This implies that the expected value of the project is $E(v) = p_{solv}v_{solv} + (1 - p_{solv})v_{ins}$, the expected return conditional on the solvency state is $E_{solv}(v) = v_{solv}$, and the expected return conditional on the insolvency state is $E_{ins}(v) = v_{ins}$. The bankruptcy procedure costs c to run, including both direct and indirect costs. A bankruptcy system can thus distribute to the creditors of an insolvent firm at most $v_{ins} - c$, so the repayment to creditors is F if the firm is solvent and $v_{ins} - c$ if it goes bankrupt.

Because the credit market is competitive, F is the largest sum that creditors can demand to fund the project. The risk-free interest rate is assumed to be zero, so that a borrowing firm's interest rate is a function only of the riskiness of its project and the properties of the bankruptcy system in place.

INVESTMENT PROBLEM. Creditors who lend I should expect to receive I in return. This expectation can be written as follows:

$$I = p_{solv}F + \left(1 - p_{solv}\right)\left(v_{ins} - c\right);$$

$$F = \frac{I - \left(1 - p_{solv}\right)\left(v_{ins} - c\right)}{p_{solv}}. \tag{1}$$

If the expected value that creditors receive conditional on insolvency increases (that is, $v_{ins} - c$ rises), then F declines, diminishing the interest rate charged by creditors. The more that creditors expect to receive in the insolvency state, the less they will require the firm to repay in the solvency state. The firm's interest rate is $r = (F/I) - 1$, which is increasing in F; this is the value that the firm is required to repay in the solvency state. Denoting by v^u_{ins} and c^u the per-unit-of-investment ($I = 1$) counterparts of v_{ins} and c we also have

$$r = \frac{1 - p_{solv}}{p_{solv}}\left[1 - \left(v^u_{ins} - c^u\right)\right],$$

which is decreasing in the probability of success and in the return of insolvency states.

—*Proposition 1:* A higher (lower) expectation of return in the insolvency state reduces (raises) the interest rates charged by the creditors.

The bankruptcy system affects both elements that make up the return in cases of insolvency (v and c). Speeding up the bankruptcy procedure decreases the cost of the procedure (c) and brings ex ante gains. Moreover, the return is affected by the procedure choice. If the return in reorganization (liquidation) is greater than in liquidation (reorganization)—that is, $v_R > v_L$ ($v_R < v_L$)—then the firm should be reorganized (liquidated). Thus, the firm's insolvency-state value is higher in a system that liquidates economically inefficient firms and saves economically efficient (but financially distressed) firms than it would be in a system that attempted to save or liquidate all firms.

F and thus r will also increase if creditors receive only a fraction of the insolvency return ($v_{ins} - c$). Two characteristics of bankruptcy law may affect the insolvency return in this way. First, if reorganization is allowed, violations of the absolute priority rule may occur, with some portion of value in bankruptcy going to shareholders even when creditors are not paid in full. Second, some bankruptcy laws decree the priority of tax or labor claims over secured creditors' claims.

Suppose that l is the value of claims that came before creditors' claims or the expected amount that shareholders extract in insolvency states. Then,

$$I = p_{solv}F^l + \left(1 - p_{solv}\right)\max\left(v_{ins} - c - l, 0\right).$$

Defining $(v_{ins} - c - l)^+ = \max(v_{ins} - c - l, 0)$, we have

$$F^l = \frac{I - \left(1 - p_{solv}\right)\left(v_{ins} - c - l\right)^+}{p_{solv}}.$$

The creditors' insolvency return may fall to zero in this situation, which would strongly increase the cost of capital.

—*Proposition 2:* APR violations and the priority of labor or tax claims over creditors' claims increase the cost of capital.

An ex ante objective of bankruptcy law should be to maximize the project option set that creditors want to finance. Low capital costs are fundamental to this objective.

Society prefers firms that pursue projects with positive expected returns. A firm should therefore undertake a project that creates value. We denote social welfare as W, such that

$$W = p_{solv} v_{solv} + \left(1 - p_{solv}\right)\left(v_{ins} - c\right) - I \geq 0 \text{ and}$$

$$W = p_{solv} E_{solv}\left(v\right) + \left(1 - p_{solv}\right) E_{ins}\left(v - c\right) - I \geq 0.$$

As social efficiency always requires a minimum conditional expectation value of return, $E_{solv}(\underline{v})$, we let $W = 0$. Then,

$$E_{solv}\left(\underline{v}\right) = \frac{I - \left(1 - p_{solv}\right) E_{ins}\left(v - c\right)}{p_{solv}}, \tag{2}$$

where $F = [I - (1 - p_{solv})E_{ins}(v - c)] / p_{solv}$ is identical to the right-hand side of $E_{solv}(\underline{v})$.

Since equation 1 solves for the minimum repayment promise the firm must make to obtain financing and equation 2 solves for the minimum conditional expected return that is socially accepted, the equations show that it is socially efficient for firms to take all projects that creditors will finance. More precisely, since $E_{solv}(\underline{v})$ is the minimum return conditional on solvency states accepted by the society, it is socially optimal that firms take every project that makes $E_{solv}(v) \geq E_{solv}(\underline{v})$. Debtors will thus be able to fulfill their promises in solvency states, since equation 1 equals equation 2. This equality does not hold in the presence of APR deviations or claims with priority above creditors' claims, as F would increase, and certain socially efficient projects would not be financed. If a socially acceptable project (with $W > 0$) returns $E_{solv}(v) \geq E_{solv}(\underline{v})$, and if $E_{solv}(v) < F$, then creditors would never be fully repaid (that is, there are no solvency states) and they would therefore have no interest in financing such projects. Therefore, creditors would not finance projects with a solvency return in the range of $[\underline{v}_{solv}, v^F_{solv})$, where $v^F_{solv} = F$, even though they are socially efficient.

—*Proposition 3:* If creditors' claims have top priority and if there are no APR violations, then all socially efficient projects are financed.

—*Proposition 4:* If APR violations are allowed or if other claims come before creditors' claims, then a subset of socially efficient projects would not be financed.

Thus far, we have studied the set of projects that are socially efficient. We now examine the borrowers' incentives to invest. The interest rate imposes the expected costs of failure on firms, so that under APR a firm's expected return, when it borrows, becomes

$$E\left(R^B\right) = p_{solv}\left(v_{solv} - F\right) + \left(1 - p_{solv}\right)\left(0\right) \geq 0; \tag{3}$$

$$E\left(R^B\right) = p_{solv}\left[E_{solv}\left(v\right) - F\right] \geq 0.$$

Substituting for F from equation 1 yields

$$E\left(R^B\right) = p_{solv}E_{solv}\left(v\right) + \left(1 - p_{solv}\right)E_{ins}\left(v - c\right) - I \geq 0,$$

which is the expression indicating that the project is socially efficient. This equation holds with equality for the minimum conditional expected return, $E_{solv}(\underline{v})$. Therefore, the borrower invests in all projects that creditors will finance and that are socially efficient.

—*Proposition 5:* If creditors' claims have top priority and if there are no APR violations, a profit-maximizing firm will pursue projects that creditors will finance and that are socially efficient.

MORAL HAZARD PROBLEM. We now introduce an asymmetric-information problem with regard to the level of effort that firms financing with debt choose when pursuing projects. Since creditors do not observe the variable effort, they are not able to know whether a borrowing firm chose the optimal effort level. Thus far, we have implicitly assumed that the probability that the firm's project would succeed, p_{solv}, was exogenous, and therefore p_{solv} did not depend on what the firm did. When we take effort into account, we assume that the probability of success increases with the firm's effort level. In precise terms, we assume that $p_{solv}(e)$ is differentiable, strictly increasing, and strictly concave in the effort variable, e, that $\lim_{e\to 0} p'_{solv}(e) = \infty$, and that $p_{solv}(\infty) < 1$. The last two conditions mean, respectively, that it is efficient for the firm to choose a positive effort level and that the insolvency state is possible even when $e = \infty$.

The effort level is costly to the manager (borrower), although it increases the probability of the firm's success. The first problem emerges because the socially optimal effort is different from the optimal private effort. From the social perspective,

$$\max_{e} \; W = p_{solv}\left(e\right)v_{solv} + \left[1 - p_{solv}\left(e\right)\right]\left(v_{ins} - c\right) - e - I \text{ and}$$

$$p'_{solv}\left(e_{sac}\right) = \frac{1}{v_{solv} - \left(v_{ins} - c\right)}.$$

The socially optimal effort is the level of effort that makes the marginal gains from the higher probability of success equal to the marginal cost of exerting such an effort.

From the manager's perspective,

$$\max_{e} \; W = p_{solv}\left(e\right)\left(v_{solv} - F\right) + \left[1 - p_{solv}\left(e\right)\right]\left(0\right) - e \text{ and}$$

$$p'_{solv}\left(e_{priv}\right) = \frac{1}{v_{solv} - F}.$$

The manager exerts effort until the marginal private gain from the higher probability of success is equal to the marginal cost to exert such an effort. The difference between the social and private problems arises because the firm divides its gain with creditors in the success state, while the marginal cost is the same for both. Therefore, since $F > v_{ins} - c$ (otherwise the firm would be solvent), $p'_{solv}(e_{priv}) > p'_{solv}(e_{soc})$, which implies that $e_{priv} < e_{soc}$.

—*Proposition 6:* Any bankruptcy system produces a weaker effort than is socially optimal.

Some characteristics of bankruptcy law may reduce the private level of effort exerted by managers. For example, when the law puts tax or labor claims before creditors' claims, creditors' gains are diminished in insolvency states, making the payment in solvency states higher ($F^l > F$). This implies that $p'_{solv}(e^*_{priv}) = 1 / (v_{solv} - F^l) > 1 / (v_{solv} - F) = p'_{solv}(e_{priv})$ and $e^*_{priv} < e_{priv}$, reducing the private level of effort. Closer payoffs lower the incentive to avoid insolvency states. Another example is a bankruptcy system that allows violations of APR. Suppose that managers extract l in insolvency states, such that

$$\max_{e} \; W = p_{solv}\left(e\right)\left(v_{solv} - F^{l}\right) + \left[1 - p_{solv}\left(e\right)\right]\left(l\right) - e;$$

$$p'_{solv}\left(e^{**}_{priv}\right) = \frac{1}{v_{solv} - F^{l} - l}.$$

This implies that $p'_{solv}(e^{**}_{priv}) = 1 / (v_{solv} - F^{l} - 1) > 1 / (v_{solv} - F) = p'_{solv}(e_{priv})$ and $e^{**}_{priv} < e_{priv}$, which again reduces the private level of effort. When managers receive a payoff in insolvency states, they have less incentive to work to prevent insolvency, creating a moral hazard problem.

—*Proposition 7:* The private level of effort is reduced when the bankruptcy system gives priority to tax or labor claims over creditors' claims and when managers are paid in insolvency states.

Underinvestment in effort exacerbates the financing problem shown before. The probability of success declines as the firm exerts less effort, thereby increasing the minimum conditional expectation value of return and shrinking the set of fundable projects.

The Ex Post Financial Distress and Ex Ante Bankruptcy Effects

In this section, we look at firms that are financially distressed, but have not yet filed for bankruptcy. Managers of failing firms can cause two effects: the gambling effect, which occurs when managers attempt to avoid bankruptcy, and the delay effect, when managers attempt to delay filing for bankruptcy.

THE GAMBLING EFFECT. Managers of firms in financial distress have an incentive to undertake excessively risky investments as a means of avoiding bankruptcy. If risky investment succeeds, its high returns enable the firm to avoid bankruptcy, at least temporarily; if it fails, the firm goes bankrupt. In the latter case, managers are no worse off since the firm would have gone bankrupt anyway without the investment, and managers cannot get less than zero, which is what they receive in case of bankruptcy. Equity holders are also in favor of risky investments in this situation of financial distress, since equity is likely to be worth zero if bankruptcy occurs. Losses on risky investment are passed on to creditors in the form of a lower expected return.

We now consider a multiperiod model following the model used earlier.[18] At time $t = 0$, the firm borrows $I > 0$ and agrees to pay F, where $F = I(1 + r)$, in solvency states. At time $t = 1$, the firm enters financial distress, but it still owns an amount, $Z > 0$ ($Z < F$), in cash that the manager will use to make a choice between two projects, one risky and another risk free. At $t = 2$, the

18. The model follows Bebchuk (2002).

firm's final output, v, is realized, and this is divided among equity holders and creditors. All the hypotheses outlined earlier still hold.

If managers choose the risk-free project, then the final output, v, will be Z, where $Z < F = I(1 + r)$. If they choose the risky project, then the final output, v, will be γR, where R is the expected return, which is positive, and γ is a random variable with an expected value equal to 1. Let γ be distributed discretely in the interval $[0, \overline{\gamma}]$, where $\overline{\gamma} > 1$. At $t = 1$, the equity holders observe R and the range, but the value of γ is realized in $t = 2$.

Given the information available in $t = 1$, the parties know Z but only the distribution of γR in $[0, \overline{\gamma}R]$. The risky project may offer a higher or lower expected return than the risk-free project. The moral hazard problem is that equity holders may choose the risky project even if $R < Z$. At $t = 2$, the final output is realized and divided among equity holders and creditors. Under APR and zero bankruptcy costs ($c = 0$), a solvent firm pays equity holders $v - F$ and creditors F.[19] If the firm is insolvent, equity holders receive nothing (because $v < F$) and creditors receive v. Therefore, the return for equity holders is $\max(v - F, 0)$ and for creditors is $\min(F, v)$.

We now examine how managers decide between projects at $t = 1$. Once managers observe the value of R and its distribution, they will choose the risky project if and only if

$$E_\gamma \max\left[\gamma R - I\left(1 + r\right), 0\right] \geq \max\left[Z - I\left(1 + r\right), 0\right]. \tag{4}$$

Let $R_{AP}(r)$ be the smallest nonnegative value of R that makes the left- and right-hand sides of equation 4 equal. Equity holders will choose the risky project if and only if $R \geq R_{AP}$.

If there exists any risky project with expected value equal to $R \leq Z$ that does not always lead to insolvency—that is, $\gamma R > I(1 + r)$ in some state of nature—it makes the left-hand side strictly greater than the right-hand side, and managers prefer it over the risk-free project. Since this exercise deals with choices after the firm enters financial distress, we have $Z < I(1 + r)$ and $\max[Z - I(1 + r), 0] = 0$ as the return to equity holders for the risk-free project; then, by construction, $R_{AP}(r) = 0$. It follows that for any given r, $R_{AP}(r) < Z$, since $R_{AP} = 0$ and $Z > 0$. This inequality implies that managers may choose the risky project even if $R < Z$, as long as $R > 0$ and in some state of nature $\gamma R > I(1 + r)$. Equity holders may choose the risky project inefficiently because

19. We discuss the effect of APR violations below.

they have more to gain from a favorable outcome of this project than they have to lose from an unfavorable outcome.

—*Proposition 8:* If a firm is in financial distress and the bankruptcy system follows an APR, then managers will undertake risky projects even if this produces economic costs ($Z - R > 0$).

Now suppose that the reorganization procedure is available, allowing deviations from the APR. In this case, equity holders will be able to obtain some value regardless of how small v turns out to be. If the firm is in financial distress, $Z < I(1 + r)$, equity holders will be able to obtain αv, where $\alpha > 0$. Moreover, by using or threatening to use the reorganization procedure, equity holders will be able to get more than their contractual right if the firm is sufficiently close to insolvency—that is, if v exceeds $I(1 + r)$ by a sufficiently small amount.[20] For simplicity, we assume that the equity holders will always be able to get at least αv even if their contractual right, $v - I(1 + r)$, is less than that. Debt holders will not get full payment, but only $(1 - \alpha)v < I(1 + r)$. Thus, if APR violations are allowed, equity holders will receive $\max[v - I(1 + r), \alpha v]$ and creditors will receive $\min[I(1 + r), (1 - \alpha)v]$.

When managers must decide among projects at $t = 1$, they will choose the risky project if, and only if,

$$E_\gamma \max\left[\gamma R - I\left(1 + r\right), \alpha\gamma R\right] \geq \max\left[Z - I\left(1 + r\right), \alpha Z\right]. \tag{5}$$

Let $R_{VAP}(r)$ denote the value of R that makes the left- and right-hand sides of equation 5 equal. Equity holders will choose the risky project if, and only if, $R \geq R_{VAP}(r)$. We now compare the project choices at $t = 1$ under two regimes. Once the firm is in financial distress, we have $Z < I(1 + r)$, and thus $E_\gamma \max[\gamma R - I(1 + r), \alpha\gamma R] \geq \alpha Z$. The right-hand side of equation 5 is strictly greater than the right-hand side of equation 4, since $\alpha Z > 0$. Furthermore, with $R_{AP} = 0$, the left- and right-hand sides of equation 4 are equal. Therefore

$$E_\gamma \max\left[\gamma R_{VAP} - I\left(1 + r\right), \alpha\gamma R_{VAP}\right] = \alpha Z > E_\gamma \max\left[\gamma R_{AP} - I\left(1 + r\right), 0\right] = 0,$$

where the first equality holds with $R_{VAP} > 0$ because $\alpha Z > 0$, and the second holds with $R_{AP}(r) = 0$. Since $R_{VAP} > R_{AP}$, the set of risky projects available to the equity holders decreases, diminishing the investment in risky projects rel-

20. The reorganization procedure provides the possibility of APR violations. If the gains of bankruptcy reorganization are greater than solvency, equity holders will go bankrupt or threaten to go bankrupt to raise their gains.

ative to the bankruptcy system that does not provide reorganization and always follows APR. Under both regimes, the equity holders capture the benefits of a favorable outcome of the risky project. When APR violations are allowed, however, safe investments also provide gains for equity holders. This reduces the set of risky projects in which they could invest with higher expected gains, decreasing the amount of risky investment relative to the regime that follows APR. Thus, the availability of a reorganization procedure like Chapter 11 diminishes managers' incentives to invest in inefficient and risky projects.

—*Proposition 9:* When firms are financially distressed, the amount of inefficient investments in risky projects ($R < Z$) is higher in regimes that always follow APR than in regimes that allow APR deviations.

To illustrate the aggregated gambling effect in the economy, we denote as $G = Z - R$ the economic cost per failing firm. Suppose that $1 - p_{solv}$ is the probability that a firm is financially distressed and N the total number of firms. The aggregated gambling effect is then $(1 - p_{solv})NG$. However, $[1 - p_{solv}(e)]$ is negatively related to the managers' effort, e, since higher effort is less likely to result in financial distress. Bankruptcy thus entails a trade-off between the punishment effect and the gambling effect. As described earlier, managers have an incentive to work hard when there are no payoffs in bankruptcy states (APR). This results in fewer financially distressed firms because once $p_{solv}(e)$ increases, the proportion of firms in financial distress falls, $\downarrow(1 - p_{solv})N$. Once firms are in financial distress, however, this system gives the manager the incentive to gamble to avoid bankruptcy, giving G a high value. A lenient bankruptcy system that violates APR leads to a weaker effort than the former, thus increasing the proportion of firms in financial distress, but this system gives the manager fewer incentives to gamble than the hard system. The final effect is ambiguous, with a trade-off between effort and the incentive to gamble. If we consider the system that gives other claims priority over creditors' claims, the final result is no longer ambiguous because it provides the negative effect in effort (proposition 7) and does not diminish the equity holders' gamble, since they still gain nothing in insolvency. The proportion of financially distressed firms increases and the gamble remains constant, thereby increasing the aggregate gamble effect.

THE DELAY EFFECT. Managers of financially distressed firms have an incentive to delay filing for bankruptcy, especially if they are automatically replaced in bankruptcy. To analyze the effects of APR violations, we need to introduce one more source of asymmetric information in addition to the manager's effort choice: at an intermediate stage, the manager alone receives a

signal about the project's prospects. The idea is to analyze the trade-offs between these two conflicting goals.[21] On the one hand, creditors want a bankruptcy procedure to follow the APR and be harsh on the borrower, since a severe punishment may increase the borrower's incentive to generate sufficient earnings to repay. On the other hand, creditors want to prevent the waste of resources that takes place if a rescue is necessary but not undertaken in time, and the way to obtain this information is to reward poor outcomes. This reward should be bigger than (or at least equal to) the pecuniary gains that managers would receive during the delay period, so as to give them an incentive to declare the financial problems at the right time. However, this works against effort incentives and aggravates the moral hazard problem, because it diminishes the punishment in bad states of nature. It is not clear a priori whether one of the incentive problems is more relevant than the other.

The optimal resolution depends on the parameters of the economy. A bankruptcy system that allows APR violations rewards entrepreneurs if they cooperate in a rescue by starting early. This reward violates APR because it must be paid even if some of the firm's debt is not paid in full. This procedure allows an efficient rescue or an efficient early liquidation, mitigating the delay effect. At the same time, it does not motivate the firm to exert the right effort, because the firm receives a nonzero payoff in bad states. The optimal procedure thus depends on which incentive the parties want to encourage: optimal effort, at the cost of forgoing the opportunity of an efficient early intervention, or optimal disclosure, at a cost of reducing the incentive to effort.

To see the aggregate effect, let A equal delay-related losses per insolvent firm. The number of firms in financial distress is $[1 - p_{solv}(e)]N$, so the total cost of delay is $[1 - p_{solv}(e)]NA$. As in gambling, a bankruptcy law with strong punishment to debtors raises their incentive to work hard, $\downarrow [1 - p_{solv}(e)]N$, but with a negative effect on delay in declaring bankruptcy $\uparrow A$. A lenient bankruptcy system leads to the opposite result. The final effect is ambiguous, with a trade-off between effort and the incentive to delay. If we consider the system that gives other claims priority over creditors' claims, the final result is no longer ambiguous because it provides a negative effect on effort (proposition 7) and does not reward debtors to motivate optimal disclosure. This increases the proportion of financially distressed firms while the delay remains constant, increasing the aggregate delay-related losses.

21. See the theoretical approach in the working paper version (Araujo and Funchal, 2005).

The Ex Post Bankruptcy Effects

From an ex post efficiency perspective, a bankruptcy law should maximize the total value of the company. This objective entails three main elements. First, as little value as possible should be dissipated during the process (minimizing the cost, c), so it is desirable to minimize the length of the process—essentially time spent by equity holders on delay tactics, not the time spent on the complexity of claims—and the direct and indirect costs incurred during the process. Second, when the reorganizing process ends, the company's assets should be located at their highest use value. Finally, when a firm enters bankruptcy, the procedure should be chosen correctly; otherwise, the company's assets will not produce their highest value.

The ex post bankruptcy division of firms' value among the participants has important ex ante consequences, as discussed earlier. However, whether the beneficial effects of APR deviations exceed the negative effects is quite indeterminate. Here we analyze how the characteristics of bankruptcy affect both the maximization and division of companies' value.

FILTERING FAILURE. Financially distressed firms can be divided into two classes: firms that are economically efficient (that is, the best use of their capital is the current use) and firms that are economically inefficient (that is, the value of their assets would be greater in some other use). When an economically inefficient firm enters bankruptcy, the best outcome is for its assets to be liquidated, thereby releasing its capital to higher-value uses. In contrast, when an economically efficient firm enters bankruptcy, the best outcome is for it to continue operating, since its capital has no higher-value use. There is thus an economic justification for having two separate bankruptcy procedures.

Nevertheless, while financial distress is observable, economic efficiency depends on some unobservable variables, such as the earnings of the firm's assets in the best alternative use. Classing firms as efficient or inefficient is thus quite difficult. This situation produces the so-called filtering failure in bankruptcy. The two basic failures that can occur are type I errors, when economically efficient firms in financial distress are liquidated instead of reorganized, and type II errors, when economically inefficient and financially distressed firms are saved through reorganization instead of being liquidated.

Each country has its own means of assigning financially distressed firms to a liquidation or reorganization procedure, so the extent of type I and type II errors varies from country to country. Countries where reorganization is rare, like England, probably have high levels of type I error. Conversely, countries where liquidation is rare probably experience high levels of type II error.

One important factor in filtering failure is who decides whether to save failing firms. In countries where the court appoints officials to take this responsibility, the system should not favor the occurrence of either type of error, provided the officials' decisions are unbiased. In contrast, high levels of type II error are likely to occur in countries like the United States, where managers have the right to choose between liquidation and reorganization.[22]

As a general rule, ex post efficiency requires the availability of both bankruptcy procedures. Suppose that a financially distressed and economically efficient firm goes bankrupt. The optimal solution in this case is reorganization that returns v_R. If type I error occurs, it returns $v_L < v_R$. This eliminates ex post efficiency and, by proposition 1, increases the cost of capital. The same logic is valid for a type II error.

In addition to the positive effect on the credit market, the minimization of filtering failure improves the efficiency of the economy's production factors. Improved efficiency is achieved when the most efficient firms continue to operate, once economically efficient but financially distressed firms are rehabilitated, and the assets of economically inefficient firms are transferred to a more efficient use through liquidation.

BARGAINING IN REORGANIZATION. We start our discussion of bargaining by considering how the features of a reorganization process—like Chapter 11—affect the division of the firm's value. Bebchuk and Chang's model identifies three reasons why equity holders might be able to extract value even when creditors are not paid in full.[23] First, if equity holders delay agreement over a plan, a favorable resolution of uncertainty may cause the value of the firm to exceed the value of its debt. These equity holders have an option value, and they must be compensated if they are to forgo it. Second, if equity holders delay agreement, the company will incur financial distress costs during the bargaining process, which will dissipate some of the value that debt holders can expect to receive at the end of the process. Creditors may therefore agree with a plan to save these costs, obtaining a share of these savings in return for their consent. Third, in countries that give management the power to propose reorganization plans (like the United States), the bargaining power of equity holders is enhanced, which strengthens their bargaining position and helps them gain a larger share of the extra value.[24] This bankruptcy design allows

22. See White (1994), who uses an asymmetric information game to model whether U.S. bankruptcy procedure leads to filtering failure.

23. Bebchuk and Chang (1992).

24. For empirical studies, see Franks and Torous (1989); LoPucki and Whitford (1990); Eberhart, Moore, and Roenfeldt (1990).

APR violations and thus sets up the trade-off exposed in earlier sections, with benefits in gambling and delay effects, but with negative results in terms of the effort incentive and perhaps the cost of capital.

The reorganization process under the existing bargain-based rules takes a long time.[25] The delay tactics of equity holders and the complexity of the firm's claims dictate the length of the process. During this period, substantial value might be dissipated. Potential buyers may be reluctant to deal with the company, or they may demand especially favorable terms while the company is insolvent. Moreover, the reorganization process involves substantial administrative costs, and the company under reorganization might incur substantial indirect costs from functioning throughout the reorganization process. All these costs grow as time passes.

All these factors increase the cost in insolvency states. If the return in reorganization is v, creditors get $v - c$, where c is the cost of the procedure. A bankruptcy law that minimizes such costs ($c^m < c$) by reducing either the delay tactics of equity holders or the administrative and indirect costs of the procedure diminishes the bargaining power of managers ($l^m < l$). This increases creditors' returns in insolvency state ($v - c^m - l^m > v - c - l$) and lowers the cost of capital (see proposition 1). A reorganization procedure that minimizes managers' bargaining power produces the same benefits of APR violations, but at lower costs. These lower costs mean a lower payment to managers (l) and alleviation of the moral hazard problem related to the manager's effort.

Evaluating Bankruptcy Law in Latin America

Many Latin American countries, particularly in South America, have reformed their bankruptcy procedures since the 1980s, aiming to provide a more attractive environment for business. The majority of these reforms centered on creating or improving the reorganization procedure to support the survival of viable businesses in financial distress. Reducing the costs of the bankruptcy procedure was also an important goal. Brazil and Ecuador, for example, simplified their legislation to make the procedure easier and faster, while Bolivia and Colombia (and again Brazil) created an out-of-court reorganization procedure. Reducing the costs of bankruptcy tends to increase the amount to be divided among creditors, thereby reducing the cost of capital.

25. See LoPucki and Whitford (1990).

Chile was the first to reform its system in the early 1980s. The new law clearly defined the rights of each creditor and replaced public officials with private ones. The first change operates to improve the forecast of creditors' return in insolvency states; the second change reduces the bureaucracy, cost, and length of the process. The reform lowered the cost of capital, raised investments and efficiency, fostered a large ratio of private credit to GDP, and promoted growth.[26] Moreover, a good guarantee system, like mortgages for housing, and an efficient enforcement procedure support the smooth functioning of Chile's bankruptcy law. The Chilean insolvency system still has many negative aspects, however. For instance, the current law does not aim to keep viable businesses in operation (high possibility of type I errors); it does not provide incentives for creditors to monitor debtors (high possibility of fraud); the average time of the procedure is (still) too long; and it lacks specialized bankruptcy courts. These problems have given rise to new recommendations to reform the Chilean bankruptcy system.[27]

In Mexico, the bankruptcy law of 1943 proved insufficient to respond effectively to the problems generated by the 1994 economic crisis, and policymakers began to consider a new commercial bankruptcy law. The new law, which was passed in May 2000, was designed to provide restructuring for commercial debtors as an alternative for viable distressed firms, together with an orderly liquidation of the estate, if necessary.[28] Both measures work to increase the return of the insolvent firm. The first provides the opportunity for efficient firms to stay in business, improving the balance between liquidation and reorganization and reducing filtering failure—and thereby enhancing the efficiency of the production factors. The second measure prevents the inefficient dismantling of the firms' assets caused by uncoordinated debt collection. While the new law may seem to favor restructuring, a careful reading reveals that the reform may actually favor liquidation, with the primary aims of strengthening creditors' rights and enhancing resource allocation (whereas both liquidation and restructuring were secondary).[29] Some of the most important features of the reform are as follows: the federal district court was given original and exclusive jurisdiction over bankruptcy cases; the Federal Insti-

26. Bergoeing and others (2002) argue that the Chilean bankruptcy reform was an important factor for its faster recovery (compared with Mexico, which had many similarities in initial conditions) from the economic crises in the early 1980s.

27. See Bonilla and others (2004).

28. See Johnson and Alonso (2004).

29. We thank Sara Castellanos for her comments, which were very useful in clarifying this issue.

tute of Bankruptcy Specialists (IFECOM) was created to supervise insolvency administrators and establish procedural rules for insolvency cases; guidelines were established for the administration and disposition of the bankruptcy estate; and international cooperation was facilitated by the adoption of the United Nations Commission on International Trade Law (UNCITRAL) Model Law on Cross-Border Insolvencies, with the reciprocity clause. The negative aspect is that the whole process is too bureaucratic and very dependent on the IFECOM.

The Argentine bankruptcy law underwent three reforms in seven years. The current legal framework for corporate insolvency centers on the bankruptcy law of 1995, which replaced the previous system that held from 1972 to 1995.[30] The most recent law provides both reorganization and liquidation, allowing the possibility to rescue viable businesses and closing the inefficient ones. This change has had a positive impact on aggregate economic efficiency and filtering failure. After several modifications, the new law now establishes a modern liquidation procedure and a reasonably modern reorganization procedure that is largely consistent with best practices. These modifications reduced the length of the procedure and its cost, increasing the expected return of creditors and the credit market. In February 2002, an emergency law was enacted to help stabilize the corporate sector, since the country's severe crisis forced many dollar-indebted firms into bankruptcy and, consequently, placed them under the control of creditors (usually banks). The main change was to impose moratoria on the different enforcement actions and precautionary measures of almost all kinds of creditors. Despite the goal of preserving corporate interests in a period of serious crises, this reform could have seriously damaged the credibility of the bankruptcy law and ultimately increased the cost of capital, since creditors perceived the changes as reducing their chances of being repaid in bankruptcy states. In May 2002, a new reform was introduced that abrogated most of the emergency measures.

The remainder of this section evaluates the current state of bankruptcy law in Latin American countries. While the design of an optimal bankruptcy law is still an open question, analysts generally agree on two points in this debate. One has to do with the protection that bankruptcy law must provide to creditors, and the other involves the goals-of-insolvency procedure. The measure of the quality of a bankruptcy procedure is based on these two sources. The creditors' protection variable indicates whether the bankruptcy law is good

30. See Johnson and Alonso (2004).

enough to make loans attractive to creditors, providing firms with easier access to external finance. The goals-of-insolvency procedure represents the consensus on the characteristics of an efficient bankruptcy procedure. For a comparative analysis, we use seven groups of countries: the Organization for Economic Cooperation and Development (OECD), Latin America and the Caribbean, the Middle East and North Africa, Europe and Central Asia, East Asia and the Pacific, South Asia, and sub-Saharan Africa.[31] The data used are from the World Bank and the IMF.[32]

Creditors' Protection

The law and finance literature highlights the fact that a good bankruptcy law has to provide legal protection to creditors. Earlier we described how better legal protection enables financiers to offer entrepreneurs money at better terms, which broadens the credit market. Several forms of bankruptcy law are used around the world. Some, like the English law, are too favorable to creditors, giving them strong protection and almost always resorting to liquidation of insolvent firms. Such systems are costly in that they eliminate good firms that are still healthy. Other countries, like Brazil, provide weak protection to creditors, giving labor and tax claims priority over the claims of secured creditors.

This section compares the creditor protection provided by bankruptcy law in different groups of countries and ranks the current situation of Latin America. As a measure of creditors' protection, we use the index constructed by La Porta and others, which summarizes creditors' rights in bankruptcy law interacted with a measure of enforcement.[33] This interaction between law and enforcement is critical because if rules and regulations are not enforced, creditor rights will be inadequate regardless of what is written in the bankruptcy procedure codes.

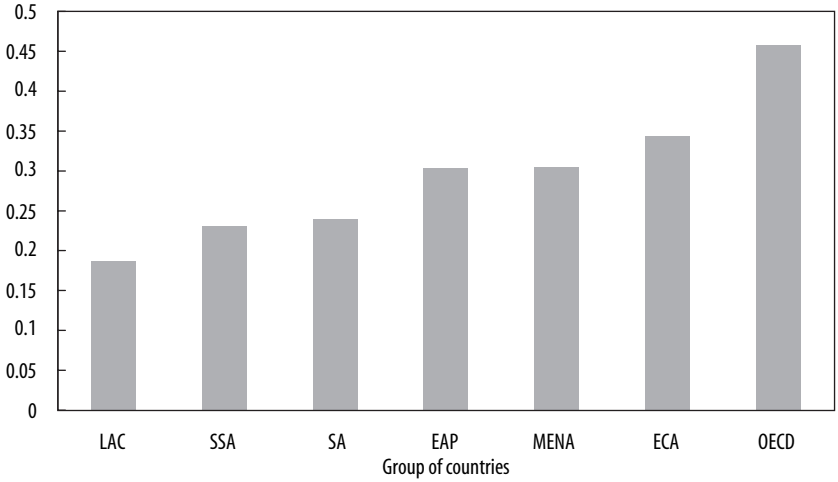
The creditors' rights index is formed by adding 1 for each of the following conditions: secured creditors are paid first; the manager does not stay in reorganization; the court does not impose an automatic stay; and creditors

31. The Latin American and Caribbean bloc is composed of Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela.

32. World Bank, *Doing Business* (2003, 2004) and *World Development Indicators* (2004); IMF, *International Financial Statistics* (2004).

33. La Porta and others (1997). Their creditors' rights measure is calculated from a sample of forty-nine countries and refers to 1996.

FIGURE 1. Creditor Protection, by Group of Countries[a]



a. The groups of countries are as follows: East Asia and the Pacific (EAP); Europe and Central Asia (ECA); Latin America and the Caribbean (LAC); the Middle East and North Africa (MENA); the Organization for Economic Cooperation and Development (OECD); South Asia (SA); and sub-Saharan Africa (SSA).

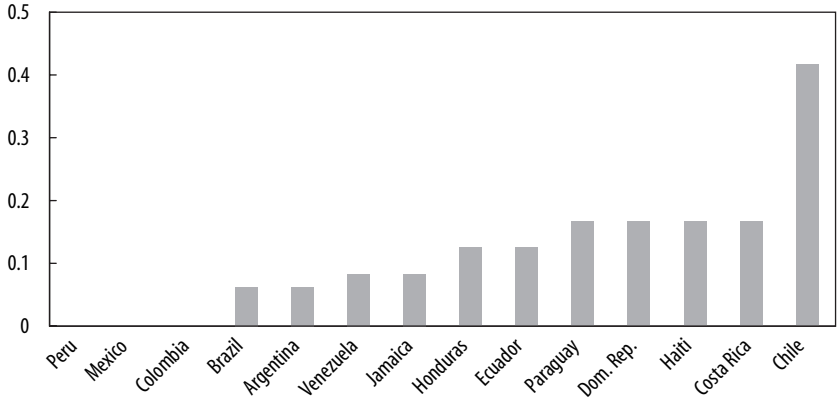
need to consent to file the reorganization petition. The measure of legal enforcement is the rule of law variable, which assesses the country's legal tradition of law and order.[34] Therefore the creditor protection measure is defined as creditors' rights times the enforcement measure. We normalize this measure to vary between [0, 1], where a score of 1 means that the country provides the strongest level of protection to creditors and zero means that the country does not protect creditors at all.

Figure 1 shows creditor protection in different sets of countries. The OECD has the highest level of creditor protection, while the Latin American and Caribbean region has the lowest. The poor creditor protection in Latin America and the Caribbean reduces creditors' interest in the credit market and increases the cost of capital, making it difficult for firms to finance their investments with debt.

Within Latin America and the Caribbean, the Chilean legal system provides the highest level of creditor protection, on par with the average OECD

34. The rule of law index is computed in the PRS Group's *International Country Risk Guide* (2004).

FIGURE 2. Creditor Protection, by Latin American Country



country (see figure 2). Most countries, however, vary between 0.05 and 0.17, which is a very low level in a measure ranging between 0 and 1.

A common notion in the law and finance literature is that a good bankruptcy law has to provide strong protection to creditors. La Porta and others were pioneers in studying empirically the relevance of this relationship.[35] Using a sample of forty-nine observations, they show that countries with a high level of creditor protection have high levels of financial development.

We explore the relation between credit market development (measured by the log of private credit over GDP) and creditors' protection in a sample of 120 countries, controlling for GDP (in logs), population (in logs), information sharing, and the quality of enforcement. We control for total GDP on the theory that larger economies may have bigger credit markets because of economies of scale in organizing the supporting institutions. We control for population on the theory that countries with large population tend to be poorer in per capita terms (log GDP – log population = GDP per capita), with negative effects on the credit market. We use the number of days that the court takes to enforce a simple debt contract as a proxy for the efficiency (or quality) of the legal system. Finally, we control for information sharing (specifically, the existence of public or private credit registries) to capture the

35. La Porta and others (1997, 1998).

TABLE 2. OLS Regression of Private Credit/GDP on Creditors' Protection[a]

Independent variable	*Coefficients*	t *statistic*
Constant	1.06	1.19
Creditors' protection	0.66**	2.28
GDP (in logs)	0.40***	9.30
Population (in logs)	–0.25***	–4.40
Quality of enforcement	–0.0005*	–1.93
Information sharing	0.55***	3.35
Summary statistic		
No. observations	120	
R squared	0.66	
Adjusted *R* squared	0.64	

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
*** Statistically significant at the 1 percent level.
a. The dependent variable is the log of private credit over GDP. The sample comprises 120 observations (average for 2000–03). Standard errors and covariance are robust to heteroskedasticity.

adverse-selection problem in the credit market.[36] Table 2 reports that the coefficient of creditor protection is statistically significant at the 5 percent level, and greater legal protection for creditors corresponds to a larger credit market. The results imply that if, for example, the Brazilian bankruptcy reform shifts creditor protection from the current 0.06 to the mean for Latin America (0.19) or the OECD (0.46), the Brazilian credit market would grow by approximately 9 percent or 30 percent, respectively.

Our controls for GDP, per capita GDP, information sharing, population, and quality of enforcement are all significant, with the first three being positive and the last two negative, as we expected. The effect of information sharing on the credit market is considerable, but it is not important to Latin America and the Caribbean since all the countries except Jamaica have credit registries. If Jamaica were to implement such a mechanism, it would increase its credit market by more than 70 percent. An increase in the quality of enforcement also produces a relevant effect on credit markets. The average time that Latin America and the Caribbean takes to enforce contracts is the highest among the regions, at 462 days. Reducing this period to the average OECD level (230 days) would increase the region's credit markets by 11 percent. Guatemala, which has the lowest quality of enforcement (1,459 days),

36. It is equal to one if either a public registry or a private credit bureau operates in the country, and zero otherwise.

could expand its credit market by 60 percent if it improved this mechanism to the Latin American average.

To examine which components of the creditors' rights index are responsible for its effect on the credit market, we regress the measure of credit market development on each subindex of creditors' rights. We find that creditors' consent to reorganize and claims priority have a positive effect on the credit market, while an automatic stay and the exclusion of managers in the reorganization process have no significance at all.

These results are aligned with the theoretical claims in earlier sections that highlight the negative effect when claims such as labor or tax claims have priority over creditors' claims and the relevance of the role of creditors in reorganization, mainly through the provision of protection and incentives against fraud. According to results shown in table 3, any country that reforms its bankruptcy law to give top priority to secured creditors tends to expand its credit market by 27 percent in relative terms. Also, creditors' consent in reorganization may increase credit markets by 26 percent in relative terms. The null effect of an automatic stay and the exclusion of managers from the reorganization process illustrates the ambiguity of both variables. The existence of an automatic stay facilitates the reorganization procedure and reduces type I errors, which increases the firm's value in bankruptcy, while its absence guarantees the fast recovery of secured creditors. The exclusion of managers

TABLE 3. OLS Regression of Private Credit/GDP on Each Subindex of Creditors' Rights[a]

Independent variable	*Coefficients*	t *statistic*
Constant	1.32	1.51
Consent of creditors	0.23*	1.74
Priority	0.24*	1.83
No automatic stay	–0.05	–0.37
Manager out	0.17	1.27
GDP (in logs)	0.42***	11.23
Population (in logs)	–0.27***	–5.11
Quality of enforcement	–0.0006**	–2.40
Information sharing	0.60***	3.58
Summary statistic		
No. observations	120	
R squared	0.67	
Adjusted *R* squared	0.64	

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
*** Statistically significant at the 1 percent level.
a. The dependent variable is the log of private credit over GDP. The sample comprises 120 observations (average for 2000–03). Standard errors and covariance are robust to heteroskedasticity.

from reorganization weakens their bargaining power in reorganization, which increases creditors' returns in bankruptcy and raises their incentives to supply credit. It may, however, lead managers to delay filing for bankruptcy and to gamble with the firm's investments as a means of avoiding bankruptcy, both of which reduce creditors' return. We use the same controls as in the last regression, and the results are practically the same.

Goals of Insolvency

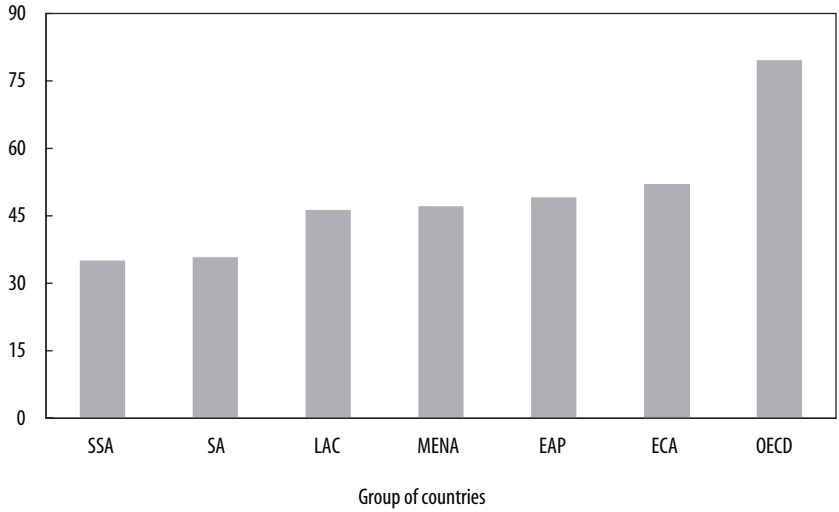
Despite all the research on bankruptcy, analysts still do not agree on the best procedure to adopt. It is hard to design an optimal bankruptcy procedure from first principles, given that economists have not yet developed a satisfactory theory of why parties cannot design their own bankruptcy procedures (that is, why contracts are incomplete). However, it is possible to identify a consensus on certain issues, such as some characteristics of an efficient bankruptcy procedure.

Hart outlines three characteristics of a good procedure.[37] First, a good bankruptcy procedure should deliver an ex post efficient outcome, which maximizes the firm's total value available to be divided among the debtor, creditors, and possibly other interested parties. Second, a good bankruptcy procedure should preserve the bonding role of debt by penalizing managers and shareholders adequately in bankruptcy states. Without any adverse consequence at all, they have very little incentive to pay their debts. Finally, a good bankruptcy procedure should preserve the order of claims defined when the contract was created, except that some portion of value should possibly be reserved for shareholders. This has two advantages: it helps to ensure that creditors receive a reasonable return in bankruptcy, which encourages them to lend; and bankruptcy and nonbankruptcy states are not treated differently. However, the absolute priority rule gives management, acting on behalf of shareholders, an incentive to avoid bankruptcy even if this gives rise to inefficient bankruptcy decisions, such as gambling and delay tactics. There may thus be a case for reserving some portion of value in bankruptcy for shareholders.

The World Bank's *Doing Business* database computes a measure that documents the success in reaching the three goals of insolvency, as outlined by Hart.[38] It is calculated as the simple average of the cost of insolvency (from 0

37. Hart (2000).
38. Hart (2000).

FIGURE 3. Goals-of-Insolvency Index, by Group of Countries[a]



a. The groups of countries are as follows: East Asia and the Pacific (EAP); Europe and Central Asia (ECA); Latin America and the Caribbean (LAC); the Middle East and North Africa (MENA); the Organization for Economic Cooperation and Development (OECD); South Asia (SA); and sub-Saharan Africa (SSA).

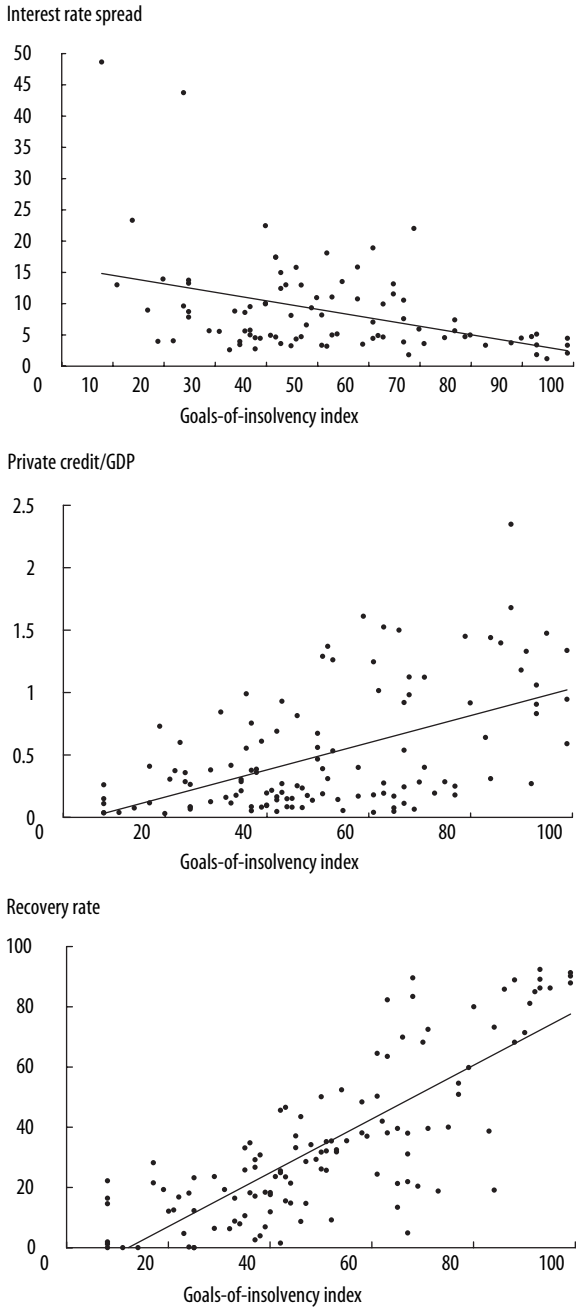
to 100, where higher scores indicate lower costs), time of insolvency (from 0 to 100, where higher scores indicate less time), the observance of absolute priority of claims, and the efficient outcome achieved.[39] The total goals-of-insolvency index ranges from 0 to 100: a score of 100 on the index indicates perfect efficiency, while 0 means that the insolvency system does not function at all.

Figure 3 shows that Latin American and Caribbean countries do not have an efficient bankruptcy procedure. They only perform better than sub-Saharan Africa and South Asia, while the OECD countries have the best insolvency systems.

Figure 4 illustrates that an efficient bankruptcy system has a positive effect on the credit market, making access to credit cheaper and easier; these results are aligned with propositions 1, 2, and 3. This happens because creditors are more confident in having their loans repaid when a firm fails (see the third panel of figure 4). We performed regressions between the goals-of-

39. The efficient outcome is defined as any bankruptcy procedure that results in either a going-concern sale without an interruption in operations or a successful rehabilitation.

FIGURE 4. Effect of Goals-of-Insolvency Index on the Interest Rate Spread, Credit Market Development, and Creditors' Recovery Rate



insolvency index and the interest rate spread, credit market development (log private credit/GDP), and creditors' recovery rate.[40] The regression between the interest rate spread and the goals-of-insolvency index is statistically significant at the 1 percent level, after we control for the log of GDP per capita.[41] For every one point rise in insolvency efficiency, the interest rate spread decreases by 0.13 percent (with a *t* statistic of 2.58). Credit market development and the recovery rate are positively related to the goals-of-insolvency index and both are statistically significant at the 1 percent level, also controlling by the log of per capita GDP. In this case, for every one point increase in the insolvency efficiency, the log of private credit/GDP and the recovery rate increase by 0.02 and U.S.$0.0083 on the dollar, respectively (with *t* statistics of 5.70 and 12.95).

To exemplify the impact of an improvement in bankruptcy efficiency, we use a case in which Brazil increases its insolvency efficiency from 24 to the Latin American average of 46. The interest rate spread would fall by approximately 3 percent (7 percent in relative terms), its private credit rate rises by 19.79 percent (the credit market expands in 55 percent), and it creditors' recovery improves by U.S.$0.18 on the dollar. If the Latin American average were to increase to the OECD level (80), its interest rate spread would fall 4 percent (33 percent in relative terms), and its private credit and recovery rate would increase by 32.77 percent and U.S.$0.25 on the dollar, respectively (approximately 97 percent and 96 percent, respectively, in relative terms).

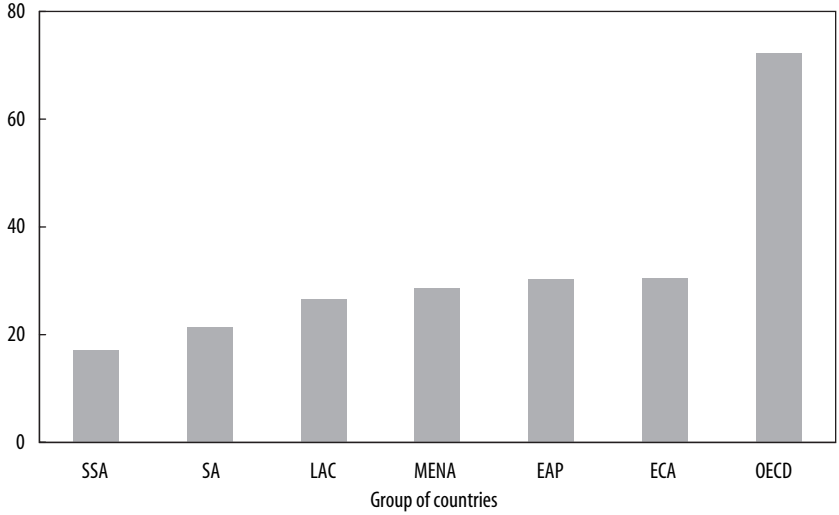
Recovery rates vary widely among countries. The most desirable situation is to have as large a recovery rate as possible, because this increases creditors' return in bankruptcy states and thus reduces the cost of capital. Figure 5 shows that the OECD has the highest recovery rate, with creditors recovering more than U.S.$0.70 on the dollar when a firm fails. The average in Latin America is U.S.$0.26 on the dollar, which is only above South Asia and sub-Saharan Africa. The worst result among Latin American countries is from Brazil, with a recovery rate of U.S.$0.002 on the dollar, while the best result is from Mexico, where creditors recover U.S.$0.65 on the dollar (see figure 6). The highest recovery rate in the world is in Japan, with U.S.$0.92 on the dollar.

This analysis illustrates that Latin American countries would benefit from concentrating their efforts on reforming their bankruptcy systems to

40. Standard errors and covariance are robust to heteroskedasticity, and *R* squared varies between 0.16 and 0.67.

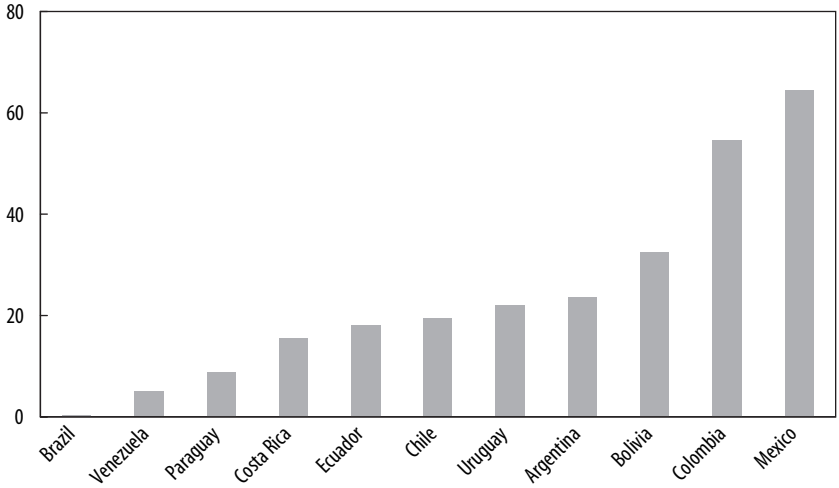
41. To verify whether outliers are driving the result, we use a quantile regression in the median; the coefficient remains negative and significant. We also regress against GDP per capita to control effects of richness or poorness on the credit market.

FIGURE 5. Recovery Rate, by Group of Countries[a]



a. The groups of countries are as follows: East Asia and the Pacific (EAP); Europe and Central Asia (ECA); Latin America and the Caribbean (LAC); the Middle East and North Africa (MENA); the Organization for Economic Cooperation and Development (OECD); South Asia (SA); and sub-Saharan Africa (SSA).

FIGURE 6. Recovery Rates of Latin American Countries



incorporate the characteristics listed by Hart. The focus should be on improving the efficiency of bankruptcy procedures to ensure better credit market conditions.[42]

Brazilian Bankruptcy Reform

Legislative reform has occurred in several Latin American countries over the last decades. In particular, Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, and Peru focused on their insolvency system, reforming their legal framework for bankruptcy. The most recent reform occurred in Brazil, where lawmakers initiated efforts to update the country's corporate insolvency legislation in 1993. The original project underwent several amendments before the House of Representatives approved it in October 2003. The project was then sent to the Senate, which introduced further improvements to the new law, before approving it in July 2004. The House of Representatives approved the Senate's version in December 2004, and the final law went into effect in June 2005. This section outlines the characteristics of Brazil's former law, the main changes introduced in the reform, and the potential future effects on the Brazilian economy.[43]

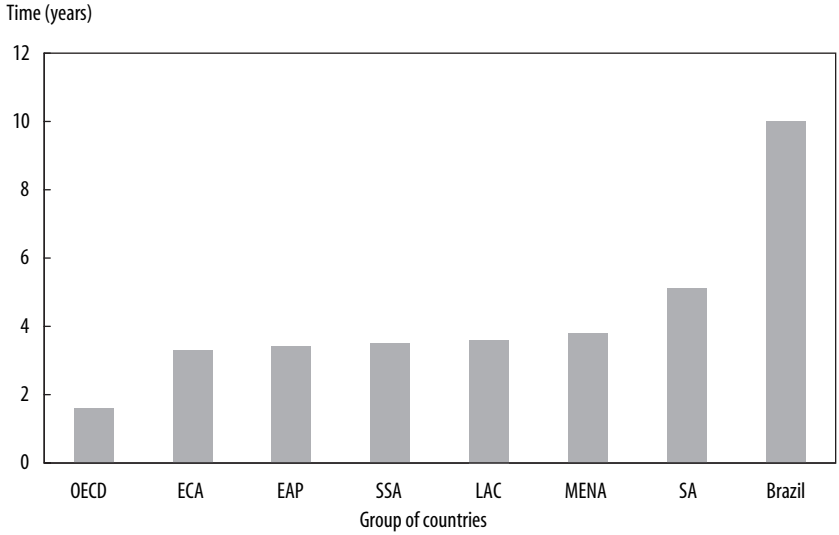
The Former Brazilian Bankruptcy Law

The former legal framework for corporate insolvency in Brazil was very fragmented, with the core of legislation for bankruptcy proceedings enacted in 1945. Bankruptcy law regulates both liquidation and reorganization proceedings for merchants (that is, legal entities that engage in commerce in their usual course of conduct). State-owned corporations and public-private joint-stock companies were excluded from bankruptcy proceedings until 31 October 2001, when a modification allowed the bankruptcy of public-private joint-stock companies.

Despite providing both proceedings and aiming to prevent or avoid the liquidation of enterprises, in practice the insolvency process was ineffective at maximizing asset values and protecting creditor rights in liquidation (which raised the cost of capital)—and at salvaging viable distressed businesses (which led to type I errors). The insolvency proceeding was very slow, taking

42. Hart (2000).
43. The appendix describes the reform process in Brazil.

FIGURE 7. Average Length of Insolvency Proceeding, by Group of Countries and Brazil[a]



a. The groups of countries are as follows: East Asia and the Pacific (EAP); Europe and Central Asia (ECA); Latin America and the Caribbean (LAC); the Middle East and North Africa (MENA); the Organization for Economic Cooperation and Development (OECD); South Asia (SA); and sub-Saharan Africa (SSA).

ten years, on average, to complete the whole process. The average insolvency proceeding in Brazil was the slowest in the world and much higher than the mean of Latin America countries (see figure 7). Liquidation was marked by severe inefficiencies, and the reorganization process was obsolete and too rigid to provide meaningful rehabilitation options for modern business.

The process of disposing of assets was also slow and highly ineffective, owing to court and procedural inefficiency, lack of transparency, and the so-called *problema da sucessão,* whereby tax, labor, and other liabilities were transferred to the buyer of a liquidated property, which deteriorated the market value of an insolvent company's assets. In addition, the priority given to labor and tax claims had the practical effect of eliminating any protection to other creditors. The process led to an informal use of the system to promote consensual workouts, although an insufficient legislative framework also hampered workouts.[44]

44. A workout is an informal renegotiation of loans that takes place outside the courts.

The shortcomings of the former Brazilian legal and institutional system concerning insolvency had several consequences. Creditors' rights were only weakly protected, and financial markets were characterized by a relatively low credit volume and high interest rates. (The ratio of private credit to GDP was only 35 percent and the spread of interest rates was 49 percent, on average, from 1997 to 2002.) Distorted incentives and the lack of effective mechanisms to support corporate restructuring resulted in disproportionately high default rates of potentially viable companies. Exit costs were increased for nonviable companies. Finally, productivity and employment were reduced. The reform aimed to correct these problems.

The Credit Market and Changes in Brazilian Bankruptcy Law

The Brazilian bankruptcy law has had a strong effect on the credit market, resulting in an underdeveloped market in which credit is scarce and expensive. Our analysis in this section compares several indicators of the Brazilian credit market and bankruptcy law with the mean of Latin American and OECD countries.

Table 4 reports credit characteristics for the 1997–2002 period. We chose this period because all the countries in our sample have observations for private credit and interest rate spreads for these years. The Brazilian ratio of private credit to GDP is very low compared with the OECD countries, but it is not strongly inferior to the mean for Latin America and the Caribbean. This situation is worse than it seems, however, since a significant share of credit came from the National Bank for Economic and Social Development (BNDES), a development bank that is controlled by the government. BNDES finances a large share of nonhousing investments at a subsidized interest rate. The results for the interest rate spread confirms this chaotic situation: the Brazilian spread is more than four times larger than the average spread in Latin American countries and more than twelve times larger than the average for OECD countries.

TABLE 4. Credit Indicators
Percent

Country or region	*Private credit/GDP (1997–2002)*	*Interest rate spread (1997–2002)*
Brazil	35.00	49.00
Latin America and the Caribbean	44.23	11.00
OECD	102.75	3.87

Source: World Bank, *World Development Indicators* (2004).

An important reason for this situation in the credit market is the design of the former Brazilian bankruptcy law.[45] Table 1 (on page 152) shows that creditors have a very low level of protection in Brazil, even when compared with the Latin American average. This characteristic reduces creditors' expected returns in insolvency states, which raises the interest rate spread and inhibits the supply of credit. The goals-of-insolvency index suggests that the bankruptcy procedure is very inefficient. It is long and costly; it rarely achieves an efficient outcome; it reduces the return in bankruptcy states; and it raises the cost of capital. Creditors' recovery rate in the case of bankruptcy is a mere U.S.$0.002 on the dollar in Brazil, while the average of Latin American and OECD countries is U.S.$0.26 and U.S.$0.72, respectively.

The recent reform aims to improve both creditors' protection and the efficiency of the insolvency procedure, with potential positive effects on the credit market and on the economic efficiency of production factors. The new law improves on existing legislation by integrating the insolvency system into the country's broader legal and commercial systems, providing an option to reorganize in or out of court, and striking a reasonable balance between liquidation and reorganization. It should also significantly improve the flexibility of the insolvency legal system by allowing the conversion of a reorganization proceeding into liquidation, establishing a period in which debtors can apply for rehabilitation in response to a liquidation proceeding filed against them, and introducing a new out-of-court reorganization system for prepackaged restructuring plans.

The new liquidation procedure introduced six key changes. First, labor credit is limited to an amount equaling 150 minimum wages. Second, secured credit is given priority over tax credit. Third, unsecured credit is given priority above some of the tax credit. Fourth, the firm is sold (preferably as a whole) before the creditors' list is constituted; this speeds up the process and increases the value of the bankruptcy state. Fifth, tax, labor, and other liabilities are no longer transferred to the buyer of a property sold in liquidation. Finally, any new credit extended during the reorganization process is given first priority in the event of liquidation.

The first three changes have several expected effects on the life of firms. In the period preceding financial distress, these changes should cause a reduction of the cost of capital (proposition 2), an expansion of both the credit market

45. Other factors not treated in this paper also contributed to the state of the credit market, including poor competition in the banking sector, high yield of treasury bills, and high banking costs.

and the set of socially efficient projects that will be financed (proposition 4), and a reduction of the underinvestment in effort, which is exacerbated when the bankruptcy system gives priority to tax or labor claims over creditors' claims (proposition 7). In the period following financial distress, the portion of insolvent firms will probably be reduced because the investment in effort increases and the aggregate gambling and delay effects are diminished (although the individual effects remain constant). The fourth and fifth changes, in turn, can be expected to increase the value of firms in bankruptcy states. The more creditors expect to receive in the insolvency state, the less they will require firms to pay in the solvency state, thus reducing the cost of capital (proposition 1). The fifth change will also speed up the process of putting the capital of liquidated firms to more efficient use. Finally, the sixth change reduces the indirect costs of the reorganization procedure. This should make potential buyers more willing to deal with the company and less likely to demand especially favorable terms than was the case under the former bankruptcy law. This factor tends to increase creditors' returns in the insolvency state, as well as the chance of success in reorganization.

All these changes work to raise both measures of bankruptcy efficiency. The first and second improve secured creditors' protection, while the fourth, fifth, and sixth lower costs and improve the goals of insolvency.

Brazil's new reorganization procedure was inspired by Chapter 11 of the U.S. bankruptcy code. Whereas the previous law did not permit any renegotiation between the interested parties and only a few of the parties were entitled to recovery of their assets, now managers make a sweeping proposal for reorganization that must be accepted by workers, secured creditors, and unsecured creditors (including trade creditors). Creditors play a more significant role in the procedure than previously, including negotiating and voting for the reorganization plan. The new law introduced two changes to increase the chance of a successful reorganization. First, firms are given an automatic stay of 180 days, during which creditors cannot seize any of the firm's goods, even those given as collateral. The goal of this clause is to not disturb the firms' activities while management develops a proposal. Second, credit that is given to a reorganizing firm in the post-bankruptcy period has priority over older credits in the event of liquidation (the sixth point, above). This change seeks to motivate creditors to make new loans at better terms and to reduce the indirect cost of insolvency. These changes should help economically efficient firms recover, thereby improving the balance between liquidation and reorganization and reducing filtering failure (type I errors). Attaining a balance between the two types of bankruptcy procedure promotes a more effi-

cient allocation of the production factors by saving economically efficient firms that are suffering from financial distress and transferring the assets of economically inefficient firms to more efficient use.

The new reorganization procedure also introduces the possibility of APR violations. As discussed earlier, such violations give managers the incentive to make more efficient decisions when the firm is in financial distress, which reduces the perverse gambling and delay effects. On the other hand, this violation reduces managers' incentives to put in effort during the earlier stages of a firm's life. The aggregated result would therefore be ambiguous if this were the only change in the law. However, several modifications in liquidation and reorganization procedures should reduce the cost of capital for firms in the economy. This widens the gap between the returns in solvency and insolvency states, producing a positive final effect on managers' effort.[46] The aggregate cost of gambling and delay effects should thus be reduced.

The new law also created an extrajudicial procedure that is very important in Brazil because it saves high court costs. The out-of-court reorganization is a prepackaged mechanism, in which the majority imposes its decision on the minority. The private renegotiation between groups of creditors and debtors avoids several losses during the firm's rehabilitation that are incurred in cases of an open renegotiation procedure. Fraud in bankruptcy is another key issue addressed in the new law. The first, second, and third changes to liquidation cited above (that is, limiting labor credit and prioritizing secured credit above tax credit and unsecured credit above some tax credit), as well as the heightened role of creditors in reorganization, provide incentives against fraud in the bankruptcy procedure. The limitation on labor credit (up to 150 minimum wages) reduces the possibility that a manager will try to cheat the law by creating jobs for friends so as to receive payments from the failing firm. Giving secured credit a higher priority than tax and labor claims is a way to increase creditors' recovery in case of bankruptcy together with assigning creditors an important role in reorganization raises their incentive to monitor the bankruptcy process, mitigating fraudulent actions. The old law contained several grounds for indictment for fraud, but they were not cumulative and each one carried a maximum two-year penalty. Since the judicial process was very slow,

46. Let v_{solv} and F be the prereform values of the firm's return and creditors' payment in solvency states, v_{solv} and F^R be the postreform values, and l the amount that managers gain with APR violations. If changes in bankruptcy law are such that $v_{solv} - F^R - l > v_{solv} - F$ (where $F^R + l < F$), then $p'(e) = 1 / (v - F) > 1 / (v - F^R - l) = p'(e^R)$, and therefore $e^R > e$. In other words, given these changes the manager's effort is stronger than in the prereform stage.

TABLE 5. Judiciary Quality Indicators

Country or region	*Quality of enforcement (days)*	*Rule of law (0, 6)*
Brazil	566	1.50
Latin American and the Caribbean	440	2.35
OECD	230	5.33

Source: World Bank, *Doing Business* (2004); PRS Group, *International Country Risky Guide* (2004).

most penalties were prescribed, and there was always the possibility of no punishment at all. Under the new law, the two years of penalty are cumulative and the judicial process is accelerated, so the cost of fraud is expected to increase considerably. Another important change in the new law is that all fraud cases are remitted directly to the procedures of general criminal law, which is much more punitive than the special bankruptcy crime law. Moreover, since private creditors expect to receive more under the new law, they will be watching the judicial procedures of bankruptcy closely, and they will most likely be important allies in enforcing fraud penalties.

The Relevance of the Judiciary

The judiciary plays a fundamental role in the fulfillment of the law. If rules and regulations are not properly enforced, the law will not attain its full objectives even if it is well designed. We use two measures to quantify the quality of the courts. The first is the quality of enforcement, captured by the number of days the court takes to solve a payment dispute. The second is the rule of law, which rates the country's tradition of law and order. Table 5 indicates that under both measures, the quality of the Brazilian judiciary is inferior to the mean in Latin America and the Caribbean. Contracts take longer to be enforced, and the country has a weak tradition of fulfilling the law.

Castelar's careful study of the Brazilian judiciary offers possible explanations for the low quality of the institution.[47] Castelar interviewed entrepreneurs and magistrates to ask their opinion of the process. Entrepreneurs evaluate judicial agility as bad or worse in 91 percent of the cases, while even magistrates themselves evaluate it as normal or worse in 86.4 percent of the cases. The inability to forecast judiciary decisions was also identified as an important feature of the Brazilian judiciary. Asked when magistrates' decisions reflect their political views, only 22 percent answered rarely or never.

47. Castelar (2003).

Finally, magistrates were asked how they would rule in the case of a conflict between compliance with contracts and the interests of less privileged social segments: only 19.7 percent answered that they would follow contracts. Castelar's study thus reveals a judicial environment that is unfavorable to credit, and it helps explain why expectations of recovery are low when a firm goes bankrupt and courts become involved in the process.

Lawmakers are in the process of improving the Brazilian judiciary. The congress recently approved a law that establishes the higher court's decision as binding. That is, if a superior magistrate's court makes a certain decision, a lower court cannot decide differently in similar cases. This change reduces the burden of the judiciary and shortens the processing of cases. The congress is also currently reviewing a law that would change the procedural code to eliminate several procedures that contribute to court delays. Both changes should contribute to raising the efficiency of the judiciary and developing the credit market.

Conclusion

A bankruptcy system should seek ex post and ex ante efficiency. Ex post efficiency means that the procedure maximizes the total value of the firm's assets, increasing creditors' returns in states of insolvency and consequently lowering the cost of capital. Ex ante efficiency guarantees the optimal division of value in case of bankruptcy. Violations of the absolute priority rule have desirable effects in situations of financial distress by providing incentives to reduce delays and investments in inefficient risky projects. But they also have negative effects in the period preceding financial distress by reducing managers' incentives to invest in effort. The effect on the cost of capital is ambiguous. Whether APR violations are optimal thus depends on the country's particular characteristics, which will determine which effect is most relevant. Giving creditors' claims priority over tax or labor claims proves to be highly efficient because of the significant positive impact on both the cost of capital and managers' effort, with no negative impact. Moreover, it gives creditors the incentive to monitor the actions of managers during bankruptcy, which helps prevent fraud.

Our empirical analysis reveals that Latin American and Caribbean countries have a poor bankruptcy system, with problems on both measures of procedural quality. Inefficient procedures do not maximize the firms' value, which significantly reduces the creditors' recovery rate and increases the

cost of capital. In addition, creditor protection is the lowest in the world. This shrinks the supply of credit and exacerbates the negative impact on the credit market.

In response to the severe inefficiency of bankruptcy laws in Latin America and the Caribbean, many governments have initiated efforts to reform the bankruptcy system. In this paper we focus on the Brazilian case as the most recent and arguably most ambitious reform in the region. The new law aims to reduce the inefficiency of the bankruptcy procedure, making it less costly and shorter, and to provide a good balance between liquidation and reorganization. It also seeks to increase both creditor protection and the role of creditors in the insolvency procedure. We conclude that improvements in liquidation and reorganization procedures, as well as the creation of an extrajudicial procedure, should have a strong positive impact on the Brazilian credit market. Additional efforts are under way to improve the performance of the Brazilian courts, which have contributed to creating an environment that is unfavorable to credit.

These changes in Brazil and elsewhere tend to provide a more attractive business environment to entrepreneurs. Based on our theoretical and empirical findings, we expect the reform to have several consequences. The theoretical model suggests that gains in procedural efficiency (which increase a firm's value in insolvency) and the high priority given to creditors will be reflected in a lower cost of capital to firms and a larger set of financed projects. This, in turn, will help promote entrepreneurship through the creation of new firms and investments, thus fostering economic growth.

The changes should also reduce moral hazard effects related to managers' effort, which will help keep companies out of financial difficulties. Efficiency in the allocation of resources should also improve: if the new reorganization procedure provides a good balance with liquidation, then economically efficient firms will be able to continue their operations, while economically inefficient firms will be shut down and their assets moved to more efficient businesses. In short, the Brazilian bankruptcy law reform should thus have significant positive consequences for both the credit market and general economic efficiency.

Appendix: Brazilian Bankruptcy Reform

This appendix represents the comments of Aloisio Araujo on his personal participation in Brazilian bankruptcy reform. Araujo worked as a member of a

group of lawyers, economists, and international consultants, who were brought together by the Central Bank to study the new bankruptcy law.

History

The last Brazilian bankruptcy law dated from the 1940s and as a result was highly fragmented and inefficient. In 1993 the Executive Office drafted a new law to modernize the country's insolvency procedures. Most specialists reacted with skepticism, however, because the initial draft tried to save firms at all costs. This set off a long process of revision and negotiation, which ultimately led to the passing of new bankruptcy legislation in June 2005.

In 2001 the president of the Central Bank, Arminio Fraga Neto, and the director of economic studies, Sergio Werlang, invited me to participate in a group to study the new law from both the economic and juridical viewpoints. The group's first decision was whether to create a new law, which would require an enormous effort in terms of both designing a procedure with the correct economic incentives and convincing legislators to accept it, or simply to amend the existing law by eliminating its main distortions. Those in favor of amending the old law argued, first, that it contained terminology and concepts that were already in the domain of courts all over Brazil, which was particularly relevant since business bankruptcy falls under state rather than federal domain, and, second, that the draft of the new law was very badly designed in terms of its economic impact. This position had the support of important lawyers like Luis Bulhões Pedreira, who has a strong reputation for having written a corporate law in the 1960s, which at the time was quite advanced in terms of economic reasoning. It was clear, however, that congress would only pass a law that preserved firms, so the decision was made (correctly, in my view) that the group would pursue a new law. This would be a difficult task, considering that the country's political and juridical institutions upheld a strong anticreditor bias, reflecting the high real interest of the last few years, the much higher returns on capital, and a bad income distribution.

Having reached this decision, the group in charge of the project initiated a long process of working and bargaining with the Brazilian congress, in particular with the staff of Congressman Osvaldo Biolchi, who was the author of the original draft and who played an important role in the process until the end. However, the administration did not put the project to a vote because it was focused on other priorities, such as the independence of the Central Bank.

In the new government, the project was given high priority owing to the positive influence of Marcos Lisboa, the Secretary of Political Economy in the

Finance Ministry. The lower house approved the law in late 2003. It contained some very sound principles, such as strengthening creditors' opinions on reorganization and eliminating some of the fiscal priorities in the sale of assets, but some very important elements were missing.

At that point many economists, executives, and lawyers thought it would be better not to have a new law, since it would create even more uncertainty for creditors than the old one. Fortunately, the senate presented a much more positive prospect for the new law. I happen to be a childhood friend of an influential Senator of the political opposition, Tasso Jereissati, who helped me gain access to key Senators in the matter, including Lucia Vania, Ramis Tebet (the head of the senate's economic commission), and Aloisio Mercadante (the government's leader in the senate). I found a very positive environment for discussing this important law, which led to many improvements. For example, the senate withdrew the fiscal priority and limited the labor priority in liquidation. Also, at considerably high cost, the senate allowed for a prepackaged extrajudicial procedure along the lines of the U.S. procedure. The final law was approved in June 2005. The challenge now is how the Judiciary is going to interpret the new law.

The Previous Situation and the Main Changes

The crucial result of the old bankruptcy law was complete disorder in the Brazilian credit market. Total credit was scarce, at just 26 percent of GDP.[48] Banks were given low priority in cases of liquidation, so they would reduce credit further if a firm showed any signs of bad economic health, given that their recovery rate was so low.[49] Firms would then finance themselves by delaying their tax payments. Tax authorities had priority in cases of liquidation, which would scare banks even further, and so on. Credit to many types of firms simply collapsed.

Under the old system, banks did not have incentives to liquidate firms, even if there were no prospects for recovery. On the other hand, few firms were able to recover successfully. This situation results directly from the high priority of taxes in liquidation, combined with the Brazilian tax structure, which relies too much on indirect taxes. If corporate taxes were more important in the tax structure, firms would not accumulate such a large tax debt: firms in financial distress do not have profits. Hence, banks would not fear liquidation so much,

48. Data are from a 2004 Central Bank of Brazil database.
49. See the data in the previous section.

increasing the banks' incentive and improving the recovery rate in cases of bankruptcy.

Certain changes seemed impossible at the beginning of the process five years ago, but today there are several reasons for optimism. The modifications obtained in the final law will introduce incentive mechanisms that will enable the development of credit markets in Brazil. The key changes obtained in the area of liquidation included limits on labor credits, prioritizing secured credit above tax credit, and prioritizing unsecured credit above some tax credit. In addition, firms will be sold (preferably as a whole) before the creditors' list is constituted; this will speed up the liquidation process and increase the value of the bankruptcy state. Finally, any new credit given in the reorganization step will be given first priority in liquidation.

The most important changes in the area of reorganization were inspired by Chapter 11 of the U.S. bankruptcy code. Despite some well-known problems with this procedure, it is far better than the alternatives that were proposed initially, in which the goal was to try to save all firms at all costs. Under the approved law, creditors will have to vote for the reorganization plan, but the alternative of a court-appointed new manager was rejected. Brazil's simplified version of Chapter 11 thus has some advantages in terms of simplifying the court procedure, but it weakens the credit aspects by making heterogeneous creditors vote together.

The adoption of an extrajudicial procedure is very important in Brazil since it saves high court costs. Finally, the former provision on the inheritance of labor and tax debt essentially eliminated any possibility for distressed firms to sell their assets, since the new owner would inherit all the labor and tax liabilities, even the hidden ones. Eliminating this provision will speed up the process of putting firms' capital to new uses, creating new incentives for mergers and acquisitions.

What Ideas Failed in the Brazilian Experience?

When I first started working on the new law, I thought it would be a good idea to have a very simple procedure that would strengthen creditors' rights, save on court costs, and at the same time avoid a possible bias on the part of the judges.[50] One possibility was to follow the suggestions of Bebchuck and Hart and others, who argue for simply giving the financially distressed firm to the senior creditor and allowing the more junior creditors to buy from the senior

50. This last point is very well documented in Castelar and Cabral (2001).

for the price of their credit.[51] Although ingenious, this idea received much opposition from lawyers and politicians in Brazil. Lawyers alleged that the rights of the parties involved would not be fully preserved because the court does not have a prominent role. In general, the justice culture is against any summary resolution. On the political front, the congress had a bias toward the firms' owners. So I had to give it up. Another idea was to follow the English model, in which the creditor has considerable power and no effort is made to save firms as a whole. This could be important in countries that are reluctant to close firms, even those without sound economic prospects. However, the Brazilian congress was determined to pass a law that emphasizes saving firms, and Chapter 11 fulfills this role. At least it gives creditors a strong role in the process, although it may be too complex for a developing country.

One problem with the Brazilian law is that the judge, rather than the creditors, appoints the clerk in charge of liquidation. Another problem is the treatment of tax liabilities under reorganization. As mentioned, distressed firms in Brazil tend to have many tax liabilities. The solution that I proposed was for the government to auction the tax liabilities of firms that asked for reorganization. The auction would attract many new specialists interested in reorganizing the firm, and the owners would avoid losing control of the firm as a result of their excessive tax liabilities. This solution was scrapped for fear that it might be unconstitutional. The solution adopted was to grant an automatic reorganization of the tax debt over eight years. This could give firms the incentive to keep accumulating tax debt and to ask for reorganization within five years. It could also be very bad for credit.

Policy Lessons

All the main distortions that I found are probably very specific to Brazil, as I have never seen them mentioned in the international literature. The first distortion is the priority given to taxes over secured credit. Araujo and Lundberg show that only four countries out of a sample of thirty-five share this unfortunate property.[52] This was an important argument in convincing the senators to change the law. The fact that the tax authorities were only able to collect less than four million dollars in a recent year makes one wonder why there was so much fighting over this, although corruption could be an explanation. An equally distortional aspect of the old law was the labor and tax inheritance

51. Bebchuck (1988); Hart and others (1997).
52. Araujo and Lundberg (2003, table A).

provision. Again, when the distortion was carefully explained by a neutral party, congressmen understood the economic argument and voted to create the right incentive, but this took time. Compared with this type of distortion, the usual debate about bankruptcy seems far less important. Poor countries, in particular, tend to create very distortional institutions, sometimes in an attempt to solve other distortions. In this case, however, I think the distortions were created simply to avoid tax evasion, rather than to benefit any special group.

Another lesson is that it is sensible to separate the law itself from the judiciary, although the two issues are related. For example, it is good to have a simpler—albeit imperfect—law in a less developed country. It is a big mistake to think the entire credit problem is due to the prodebtor bias of the judiciary. The very low recovery rates and the very long liquidation period, as shown in World Bank data for Brazil, are largely due to creditors' lack of interest in a liquidation procedure from which they are not going to benefit. The change in the priority in liquidation is bound to change the whole governance of liquidation. The judiciary still plays a very important role, however. For example, many judges are considering not calling for liquidation even if creditors vote not to accept the plan to reorganize the firm, although the new Brazilian legislation does not provide for the so-called cram down in Chapter 11 of the U.S. code.[53]

Although countries do learn from one another, each country has its own distortions to resolve. Brazil, for example, is in the top 40 percent with regard to low corruption but in the bottom 5 percent with respect to credit, according to the World Bank. The reforms have to take into consideration what the country has already achieved. They should be designed, as in Brazil, by a multidisciplinary group of lawyers, judges, and economists, mainly microeconomists who have an intuition of the incentives of the several parties involved. The main goal should be a better system, since there is no agreement among economists about what constitutes an optimal bankruptcy law.

53. The cram down is a procedure whereby reorganization can be adopted by the bankruptcy judge despite being voted down by one or more classes of creditors.

TABLE A. Priorities in Bankruptcy Laws, Selected Countries

	Priority			
Country	*First*	*Second*	*Third*	*Fourth*
Australia	Secured credit	Postbankruptcy credit	Wages	. . .
Austria	Secured credit	Postbankruptcy credit	. . .	. . .
Belgium	Secured credit	Postbankruptcy credit	Tax and social welfare claims	. . .
Bermuda	Secured credit	Wages and assignments	Postbankruptcy credit	Tax claims
Brazil	Labor claims	Tax claims	Postbankruptcy credit	Secured credit
Bulgaria	Secured credit	Postbankruptcy credit	. . .	. . .
Canada	Secured credit	Postbankruptcy credit	Wages (bounded)	Tax claims
China	Secured credit	Postbankruptcy credit	Labor claims	Tax claims
Czech Republic	Secured credit	Postbankruptcy credit	Labor claims	. . .
Estonia	Postbankruptcy credit	Secured credit	Labor claims	Tax claims
Finland	Secured credit	Postbankruptcy credit	. . .	. . .
France	Wages	Postbankruptcy credit	Secured credit	. . .
Germany	Secured credit	Postbankruptcy credit	. . .	. . .
Hong Kong	Postbankruptcy credit	Secured credit	Labor claims	Tax claims
Hungary	Postbankruptcy credit	Secured credit	Wages	Tax claims
Ireland	Secured credit	Tax claims (bounded)	Labor claims	. . .
Israel	Secured credit	Postbankruptcy credit	Labor claims (bounded)	Tax claims
Italy	Postbankruptcy credit	Tax and labor claims	Secured credit	. . .
Japan	Secured credit	Postbankruptcy credit	Labor claims	. . .
Korea	Secured credit	Postbankruptcy credit	. . .	. . .
Malaysia	Secured credit	Postbankruptcy credit	Labor claims	Tax claims
Netherlands	Secured credit	Postbankruptcy credit	Tax claims	Labor claims
Poland	Tax claims	Postbankruptcy credit	Secured credit	. . .
Portugal	Secured credit	Labor claims	Postbankruptcy credit	Tax claims
Russia	Postbankruptcy credit	Labor claims	Secured credit	Tax claims
Scotland	Secured credit	Postbankruptcy credit	Tax claims	Labor claims
Singapore	Secured credit	Postbankruptcy credit	Labor claims (bounded)	. . .
Slovak Republic	Secured credit	Postbankruptcy credit	. . .	. . .
Spain	Wages[a]	Tax claims	Secured credit	. . .
Sweden	Postbankruptcy credit	Secured credit	Tax claims	Labor claims
Switzerland	Secured credit	Postbankruptcy credit	Labor claims (bounded)	. . .
Thailand	Postbankruptcy credit	Secured credit	Labor claims	. . .
United Kingdom	Secured credit	Postbankruptcy credit	Tax and social welfare credit	Labor claims
United States	Secured credit	Postbankruptcy credit	Labor claims (bounded)	Tax claims
Vietnam	Postbankruptcy credit	Secured credit	Labor claims	Tax claims

a. Last thirty days and maximum of two minimum wages.
. . . Not applicable.