“Impact of bankruptcy law reform on capital markets in Brazil”

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Impact of bankruptcy law reform on capital markets in Brazil

Abstract

New bankruptcy laws, which give greater protection to creditors, were signed into law in Brazil on February 9, 2005. Data show that the money market responded positively with a drop in the benchmark SELIC interest rate of 600 basis points after the new law went into effect. The authors examine the impact of the new bankruptcy law on the stock market in Brazil. This paper finds that aggregate stock market indexes reacted positively when the new rules were signed into law. Four different aggregate stock indexes, the Bovespa, the IBX, the IGCX and ITAG, earn positive abnormal returns in the five years following the passage of the new law. These results are consistent with theories that predict that streamlining bankruptcy laws lead to an increase in equity values − La Porta, de-Silanes, Shleifer, and Vishny (2006) and Chan, Chen and Hsieh (1985).

Keywords: bankruptcy law, law and finance, emerging markets, asset prices.
JEL Classification: G15.

Introduction

Brazil sought to incorporate several provisions of U.S. bankruptcy laws when it embarked on a reform of its own bankruptcy laws in October 1993. These reform efforts culminated in the passage of Nova Lei de Falências e Recuperação de Empresas, Law #11101 on February 9, 2005. The new bankruptcy law encourages Chapter 11-style reorganization of claims in a bankrupt entity. In the event of liquidation, the new law rearranges the absolute priority rules in favor of secured creditors[1]. These reforms were intended to strengthen creditors' rights and to enable speedy resolution of bankruptcy filings. This paper studies the reaction of security markets in Brazil to these reforms.

I develop hypotheses derived from two distinct streams of research to predict how stock returns are impacted by bankruptcy law reform. The first stream of research argues that bankruptcy risk is a systematic risk factor that affects expected stock returns. Shumway (1997) finds support for systematic bankruptcy risk, based on his finding, that firms that are likely to delist because of bankruptcy earn higher returns. Chan, Chen and Hsieh (1985) show that the small firm effect of Banz (1981), where small firms earn higher average returns than large firms, can be attributed to the higher bankruptcy risk associated with small firms. This stream of research would predict that if bankruptcy reform in Brazil lowered the premium demanded by investors for bearing bankruptcy risk, stock returns should increase in the post-reform period. The second stream of research is based on the effect of laws on development of capital markets. La Porta, Lopez-de-Silanes, Shleifer, and Vishny (La Porta et al., 2006) show that laws that facilitate private enforcement through liability rules benefit stock markets. They also show that countries with greater investor protections benefit from larger and more developed capital markets (La Porta et al., 1997). By protecting creditor rights, bankruptcy reform in Brazil should have led to a growth in capital markets, including growth in the stock market.

The empirical analysis in the paper starts by ascertaining whether bankruptcy reform was, in fact, perceived by the market to be credible in its intent to protect creditors' rights. The analysis shows that the reaction of the money market was affirmative of the intent of the law; the SELIC, which is the benchmark overnight rate on loans guaranteed by federal government securities, dropped 600 basis points after the passage of the new law. The SELIC averaged 24% in the year prior to October 14, 2003, which was the day when the new rules were presented for the first time to the Lower House of Congress for approval. The Selic dropped to an average 18% in the one year after June 9, 2005, the day when the new rules went into effect.

The stock market's reaction is studied by analyzing the performance of four different stock indexes, the Bovespa, IBX, IGCX and ITAG. These indexes capture the most liquid segment, the largest 100 stocks, the best governed firms, and firms which give controlling rights to minority shareholders, respectively. The data show that each of these stock indexes earned positive abnormal returns both in the short run and in the long run. An event study shows that when the new bankruptcy rules were passed into law, daily returns to each of the indexes averaged 0.8% in the 20-day window surrounding the announcement. Long-run abnormal returns (alphas), calculated relative to a global market index, are also positive and averaged 2.0% per month in the five

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[1] A copy of the new law is available on the website, www.dji.com.br/leis_ordinarias/2005-011101/2005-011101.htm. Since the document is in Portugese, this paper relies on interpretations of the law, provided by various sources: 1) Standard & Poor's note (2005); 2) Mussacchio (2008); 3) Felsberg, et al. (2006); and 4) Araunjo and Funchal (2005).

years following the passage of the law. The positive stock market reaction shows that the aggregate stock market benefited from bankruptcy reform.

Other studies focus on the impact of bankruptcy reform in Brazil on credit markets. Funchal (2008) finds evidence of growth in credit markets following bankruptcy reform in his firm-level analysis of leverage ratios in the post-bankruptcy period that supports the La Porta (1997) hypothesis. He finds that the use of bank debt increased significantly in the post-bankruptcy reform Brazilian market. The stock market's response is not analyzed in Funchal (2008). Mussacchio (2008) uses a long-time period (which includes the 2005 reform) to analyze bond market development in Brazil. He finds weak evidence in favor of a relationship between creditor rights and bond market development.

This paper is organized as follows. Section 1 describes the changes to the bankruptcy code. Section 2 describes theories that relate stock returns to bankruptcy law reform. Section 3 describes the data and analyzes the reaction of the SELIC, the money market rate of interest. Section 4 analyzes the reaction of stock indexes. The last Section concludes.

1. The legal change to the bankruptcy code

The old bankruptcy code in Brazil was enacted in 1945 and had remained largely unchanged until the 2005 bankruptcy law was enacted. The necessity of the new law is underscored by data on world-wide bankruptcy outcomes gathered by Doing Business (2005), a co-publication of World Bank, International Finance Corporation (IFC), and Oxford University Press. Data from this publication are used to compare bankruptcy outcomes at the start of 2005 in Brazil (under the old bankruptcy law) to bankruptcy outcomes in the United States, and in the Latin American and Caribbean regions. Panel A of Figure 1 compares the average duration, in years, required to resolve a bankruptcy filing. Bankruptcies in Brazil take ten years to be resolved, which is roughly three times longer than the time taken in the U.S. (3 years) and in the Latin American and Caribbean region (3.6 years). The long bankruptcy resolution period in Brazil reduced the time value of assets and led to greater attrition through depreciation in the value of fixed assets. Panel B of Figure 1 compares amounts recovered by bondholders, reported as a fraction of the face value of debt. Bondholders in Brazil came up almost empty handed after the long bankruptcy resolution process. They recovered only 0.2% of their claims! Bondholders in the U.S. fare the best with a recovery rate of 68.2%, and those in the average Latin American and Caribbean countries recover 26.63%. The woeful recovery rate and the long time to process a filing in the old legal regime deterred bondholders in Brazil from seeking bankruptcy protection.

The inability of the old bankruptcy law to resolve bankruptcy filings efficiently increased the cost of debt and reduced its availability. Araujo and Funchal (2005) document that between 1997 and 2002, the ratio of private credit to GDP in Brazil was only 35% which was accompanied by soaring bank lending rates averaging 205% a year.

1.1. The old bankruptcy law. The outcomes in Figure 1 can be blamed on two main shortcomings in the old bankruptcy law in Brazil[1]. The first was that the old bankruptcy code precluded direct negotiations between secured creditors and debtors. Inclusion of secured creditors in a restructuring plan was onerous as it required the unanimous approval of all creditors. It was easier for unsecured creditors to reschedule their claims under an enterprise restructuring clause (concordata). These impediments to restructuring of even economically viable entities typically led to liquidation of a bankrupt firm.

Liquidation proceedings were associated with the second shortcoming of the old law, namely inefficient priority rules in assigning proceeds from liquidation. Payment of fees for the administration of the bankruptcy process took precedence over all listed claimholders. Labor and tax claimants came next. Secured creditors followed in the hierarchy with unsecured creditors ranking the lowest. Labor and tax claimants were the bottleneck in the process since verification of labor claims was a time-consuming process which prolonged bankruptcy proceedings for years. The poor prioritization had a direct effect on the absence of bankruptcy initiations, and even more so on bankruptcy filings. Unsecured creditors, and to a large extent even secured creditors, recovered a small percentage of the original firm estate after payments to administrators, and to labor and tax were made. As a result they had little incentive to force a firm in financial duress into bankruptcy court.

1.2. The new bankruptcy law. The new bankruptcy law, Law #11101 dated February 9, 2005, went into effect on June 9, 2005. The new law, which was modeled after U.S. bankruptcy code, encourages extra-judicial restructuring (recuperacao extrajudicial). This is a crucial feature of the new law since court costs can be very high in Brazil. The restructuring is a prepackaged mechanism developed by the bankrupt firm in consultation with select creditors, whose outcome is binding upon minority creditors. The new law allows a bankrupt company to

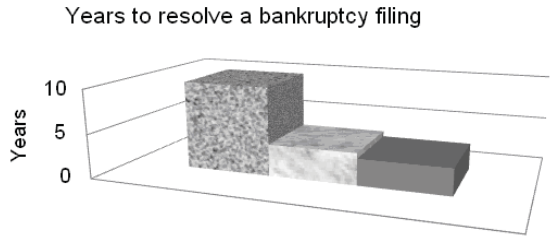
[1] For descriptions of the old and the new bankruptcy law, refer to Standard and Poor's note (2005), Mussacchio (2008), Felsberg et al. (2006), and Araunjo and Funchal (2005).

alternatively request a court restructuring (recuperação judicial). If the request is granted, the company has 180 days to present the court with a restructuring proposal. All lawsuits and collection procedures are suspended during the 180-day period. Feasibility of the restructuring proposal is influenced by whether it involves a substantial change in corporate governance, and/or changes to the asset structure of the firm.

The new law completely revamped the absolute priority rules. Any new credit that is extended during the restructuring process is given priority over all other claimants. The motivation of these changes is to encourage creditors to extend credit at attractive terms to any company under financial distress, thus, helping it to emerge out of bankruptcy in an expedited fashion, avoiding costly liquidation. The second critical change relates to labor credit. Labor's claims rank second in priority, but are severely restricted to not exceed 150% of the minimum wage. The cap on labors' claims is meant to discourage costly and protracted verification. The new priority rules also give precedence to secured creditors over tax credit and even unsecured creditors take precedence over some tax credits.

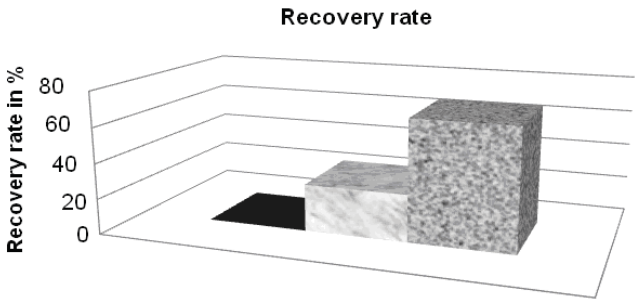
The principle that guided the change to the bankruptcy law was to encourage economically efficient firms to recover from insolvency while preserving the value of assets in these firms. The framework was also designed to simultaneously provide greater protection to creditors' claims by improving the efficiency of the bankruptcy process[1]. The next several sections are devoted to an empirical analysis of the market's reaction.

Panel A. Comparison of times to process a bankruptcy filing for Brazil, the United States, and Latin America



	Years
Brazil	10
Latin America and Caribbean	3.61
U.S.	3

Panel B. Comparison of recovery rates for Brazil, the United States and Latin America.



	Recovery rate
Brazil	0.2
Latin America and Caribbean	26.63
U.S.	68.2

Source: Doing Business (2005).

Fig. 1. Impact of old bankruptcy laws on recovery rate and time to dissolution

[1] See Felsberg, Acerbi and Kargman (2006).

2. Theories on bankruptcy reform and stock returns

Limited liability implies that shareholders should be unaffected by changes to bankruptcy law. The downside to a stockholder is limited to her initial investment; any attrition in value below the face value of debt should not affect stockholders. Nevertheless, there is a large literature in the U.S. which argues that bankruptcy costs are substantial[1]. Deadweight costs were especially high in Brazil before this bankruptcy reform. Figure 1 shows that creditors recover only 0.2% of their debt when firms end up in bankruptcy. The remaining 99% is lost through a variety of ways, including a substantial amount that is lost to deadweight bankruptcy costs. Bankruptcy reform promised more efficient outcomes and greater recovery for creditors in the event of bankruptcy. If the stock market recognized the reforms to be credible in reducing deadweight bankruptcy costs, stock indexes should have reacted positively. The impact of bankruptcy reform on firm value can be understood from the following equation in Brealey, Myers and Allen (2011):

$$\begin{aligned} &Value\ of\ \ firm = Value\ if\ \ all-equity\ financed + \\ &+ PV(tax\ shield) - PV(costs\ of\ \ financial\ distress). \end{aligned} \quad (1)$$

Thus, if costs of financial distress decreased in the post-bankruptcy reform period, we should observe an increase in firm value. Both risky debt and equity should benefit from the increase in firm value.

Bankruptcy may affect stock returns through a different channel. Bankruptcy risk should affect expected stock returns if it is a systematic risk factor. The factor model that generates stock returns, r_{it}, can be written as:

$$r_{it} = E(r_{it}) + \beta_i f_{m,t} + \theta_i f_{D,t} + \varepsilon_{it}, \quad (2)$$

where β_i is the loading of firm i on the systematic market factor, f_{Mt} is the return on the market factor at time t, θ_i is firm i's loading on the bankruptcy factor, and f_{Dt} is the return on the bankruptcy factor at time t. The expected return, $E(r_{it})$ implied by the factor model in equation (2) is:

$$E(r_{it}) = \text{risk-free rate}_t + \beta_i \lambda_M + \theta_i \lambda_D , \quad (3)$$

where λ_M and λ_D are the premia on the market factor and bankruptcy factor, respectively. If the premium on the bankruptcy factor is positive, firms that load on the bankruptcy factor earn a positive risk premium.

A third explanation for why reform of bankruptcy law should affect stock values comes from a series of papers by La Porta et al., in which they argue that securities laws, by reducing the costs of contracting, encourage growth and development of stock markets. They support their argument with evidence that countries with strong investor protections have large capital markets. In a follow-up paper, La Porta et al. (1998) identify countries with strong investor protections as those that protect both shareholder and creditor rights. These papers would predict that reform of bankruptcy law in Brazil should lead to an expansion of both debt and equity markets in Brazil. The specific testable hypothesis that emerges is that aggregate stock returns in Brazil should be higher in the post-reform period.

3. Data

Data for the empirical analysis are collected from Bloomberg for the period from October 1998 to June 2010. This period covers the five years prior to the initiation of legislation to five years following its signage into law. The change in bankruptcy law was a long drawn out process that was initiated by the submission of the original draft of reforms for approval of the Lower House of Parliament on October 14, 2003, and culminated with the law going into effect on June 9, 2005. The Appendix at the end of the paper lists the major milestones associated with the legislative process.

The first step in the empirical analysis is to ascertain the market's assessment of the credibility of the law in protecting creditor rights. This is done by studying the reaction of the money market. The money market rate used in the analysis, is the SELIC, which is reported at daily and monthly frequencies by Bloomberg. The SELIC is the basic rate used as reference for monetary policy in Brazil and is the overnight rate on loans guaranteed by federal government securities. The Central Bank in Brazil maintains a target SELIC rate, but the actual SELIC can deviate from the target.

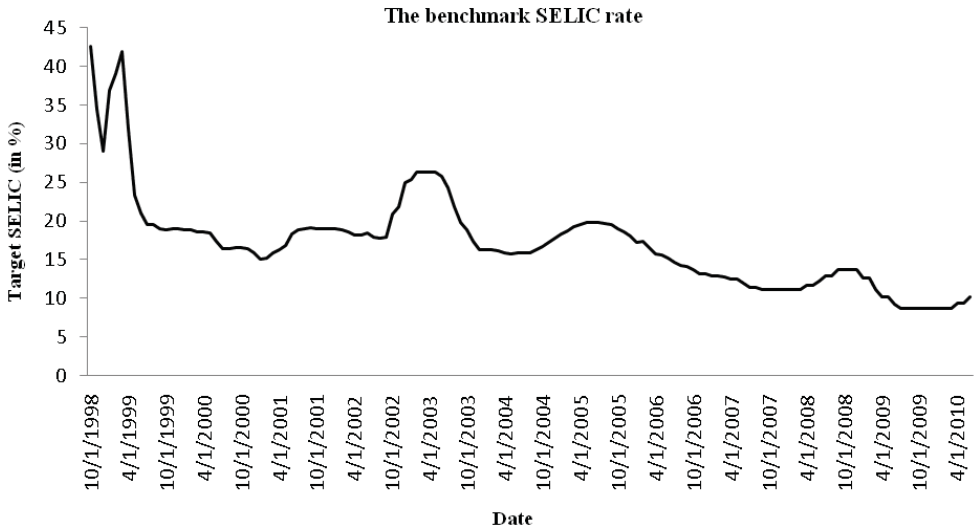
Four different stock indexes, which represent different groups of stocks traded in Brazil, are selected for analysis. Bloomberg reports volume, the open, high, low and closing values for each of these indexes at a daily frequency. The Bovespa is a total return index weighted by traded volume which consists of the most liquid stocks traded on the Sao Paulo Stock Exchange. The IBX is a capitalization-weighted index that measures the performance of the top 100

[1] Estimates of administrative costs that include payments to lawyers, accountants, and other professionals, as a percent of firm value prior to default, range between 4% (Warner, 1977) and 7.5% (Altman, 1984; Ang, Chua and McConnell, 1982; Tashjian, Lease and McConnell, 1996). Deadweight costs which include loss of patents, trademarks, brands, R&D, verification costs of liquidation value and loss of investment opportunities are reported to average 10.3% of market value (Chen and Merville, 1999). Opler and Titman (1994) find that costly financial distress reduces stock values. They find that stock values of highly leveraged firms are lower than less leveraged competitors in industry downturns. Wruck (1990) argues that financial distress can improve firm values by forcing managers to make choices that maximize shareholder value. Bris, Welch and Zhu (2006) use a large and comprehensive sample of bankruptcies to conclude that bankruptcy costs are heterogeneous and are measurement sensitive.

stocks listed on the Bovespa market. The third index, IGCX, is designed to measure the performance of a theoretical portfolio of companies that follow sound corporate governance practices. Companies that fit this index are usually traded on the Novo Mercado, which is a special listing designed for firms that give the same rights to all shareholders, that have an elected board of directors, and that follow other governance practices that promote transparency. The last index is the ITAG, which is an index composed of stocks issued by companies which offer minority shareholders 80% of the "tag along", or control premium obtained by controlling shareholders in the case of a sale of the company which involves transfer of control.

4. Response of the money market

Figure 2 plots the reported target SELIC rate from October 1998 (five years prior to the initiation of legislative reform) to June 2010 (five years after the new bankruptcy rules were signed into law). In the five years prior to the initiation of legislative reform, the Selic averaged 21.51%. In the five years after the law went into effect, the SELIC declined to an average 12.67%. There is a secular downward trend in Figure 2 interrupted by brief periods of a surge in the SELIC. The downward trend is predicted if the new bankruptcy law secured the rights of creditors to recover their debts, and thereby lowered the cost of debt. We isolate the impact of the change in bankruptcy law on the SELIC by conducting event studies around two key dates: October 14, 2003, when the new reforms were passed by the Lower House of the Brazilian legislature; and February 9, 2005, when the reforms were signed into law by the Brazilian president. The event studies should help to determine whether these two key events conveyed information to the money market.



Note: The Figure plots the average monthly target Selic rate (in %) during the period from October 1998 (five years prior to introduction of legislation) to June 2010 (five years following the passage of the law). Monthly SELIC rates are obtained from Bloomberg.

Fig. 2. Target SELIC rate in Brazil during the bankruptcy reform period

The event window for each milestone is identified as the 10-day period surrounding the announcement. The narrow event window is a deliberate choice to reflect the fact that each milestone required a congressional vote, the outcome of which could not have been anticipated well in advance. The pre-event period is defined as day -40 to day -10, the post-event period is day +10 to day +40, with day 0 being the announcement day. The pre- and post-event windows are also short to avoid contamination from other events, such as ratings' changes announced by ratings' agencies.

The average reported and target SELIC rates during these periods are in Table 1 for each announcement. The money market applauded when the Lower House approved the first draft of the new law on October 14, 2003. The reported, and actual SELIC rates dropped by about 104 basis points at the announcement, and continued to drop another 102 basis points in the post-event period. Chi-square tests for the statistical significance of the difference in rates between the pre-event and event periods, and between post-event and event periods, show that the decrease in the rate in each period is statistically significant. Thus, the announcement of the first legislative success for the new law credibly conveyed greater protections to creditors.

At the subsequent passage of the law on February 9, 2005, the money market did respond, but in this case, actual and target SELIC rates increased after the announcement. The magnitude of the increase is rather small; the target rate increased by only 41 basis points between the pre-event and event periods, and only by 47 basis points between the event and post-event periods.

Table 1. SELIC rates around announcements related to bankruptcy law reform

Panel A. SELIC rates around the first legislative success of the law on October 14, 2003						
	Actual – Target (%)		Actual rate (%)		Target rate (%)	
	Mean	Median	Mean	Median	Mean	Median
Pre-event period	-0.1582	-0.16	20.751	19.85	20.909	20.00
Event period	-0.1593	-0.16	19.707	19.84	19.867	20.00
Post-event period	-0.156	-0.15	18.694	18.85	18.85	19.00
χ^2 test for diff. of pre-event and event rates	0.485	{0.49}	15.61	{0.00}	10.78	{0.00}
χ^2 test for diff. of post-event and event rates	6.179	{0.01}	23.68	{0.00}	25.39	{0.00}
Panel B. SELIC rates when the regulation was signed into law on February 9, 2005						
	Actual – Target (%)		Actual rate (%)		Target rate(%)	
	Mean	Median	Mean	Median	Mean	Median
Pre-event period	-0.0090	-0.01	17.9076	17.74	17.9167	17.75
Event period	0.00154	0.00	18.329	18.25	18.327	18.25
Post-event period	-0.0035	0.00	18.797	18.75	18.800	18.75
χ^2 test for diff. of pre-event and event rates	19.12	{0.00}	22.57	{0.00}	15.42	{0.00}
χ^2 test for diff. of post-event and event rates	4.76	{0.03}	17.31	{0.00}	22.99	{0.00}

Note: The Table has the mean and median SELIC rates (in %) during the pre-announcement window (day -11 to -40), the announcement window (-10 to +10), and the post-announcement window (+11 to +40). Daily SELIC rates are from Bloomberg. Numbers in curly brackets are p-values.

It is necessary to check the robustness of the results in Table 1 since ratings agencies upgraded Brazil's sovereign debt on three separate occasions that overlap with the period of bankruptcy reform. The first upgrade occurred on April 29, 2003, when Standard & Poor's upgraded the country's long-term local and foreign currency sovereign credit ratings from negative to stable[1]. The second credit rating event occurred on September 9, 2004, when Moody's upgraded the rating on long-term Brazilian foreign currency debt from B2 to B1[2]. Finally, on January 4, 2005, Moody's upgraded its outlook on Brazil from stable to positive[3].

Since ratings upgrades could potentially explain the reduction in the cost of debt, I check the robustness of the event study results in Table 1 by estimating OLS regressions. OLS regressions are estimated with indicator variables set to one (zero) if the day is within day -10 and day +10 with day 0 being the announcement date. There are five such indicator variables, two for the events associated with the passage of the new law, and three associated with rating changes. The dependent variable is the deviation of the actual SELIC from its target calculated on a daily basis. The regression is estimated over the period from January 2003 to December 2005.

Results reported in Table 2, show that changes in the SELIC rate around the two events, associated with the passage of the new law, are robust to inclusion of other events. The deviation of the SELIC remains reliably negative on October 14, 2003 when the new bankruptcy law enjoyed its first legislative success, and also remains reliably positive when the new rules were signed into law on February 9, 2005. Of the three credit rating events, only the upgrade on April 29, 2003 is associated with a decrease in the SELIC relative to its target. The SELIC increased relative to its target at the announcement of the ratings upgrade on January 1, 2005. The rating event on September 9, 2004 had no significant impact on the deviation of the SELIC from its target.

Table 2. OLS regressions of the difference between the actual and target SELIC

Independent variables	Coefficient	T-statistic
Intercept	-0.08469	-26.44
October 14, 2003	-0.07474	-2.45
February 9, 2005	0.08623	2.64
April 29, 2003	-0.09541	-2.92
September 9, 2004	0.02316	0.74
January 4, 2005	0.07592	2.49
Adj. R^2	1.64%	
Obs.	1414	

Notes: The daily difference between the actual and target SELIC rates is regressed on binary dummy variables for critical dates in the legislative period. These variables take a value of 1(0) if the date lies within (outside) a -10 to +10 day window around the critical date. Critical dates associated with the bankruptcy law are October 14, 2003 and February 9, 2005. Critical dates associated with sovereign rating changes are April 29, 2003, September 9, 2004 and January 4, 2005.

[1] Raymond Colitt and Paivi Munter (April 30, 2003). "Enthusiastic reception for Brazil bond: S&P revises sovereign credit rating as issue puts paid to fears of debt default" :[EUROPE 1ST EDITION]. *Financial Times*, p. 1.

[2] Santiago Fittipaldi (October 2004) "At Last! An Upgrade", *Global Finance*, 18 (9), p. 18.

[3] "Brazil on verge of deal as Moody's nudges outlook upwards" (2005, January). *Euroweek*, 24.

Tables 1 and 2 confirm that the first legislative success of the new bankruptcy law was credibly expected to lower borrowing costs.

5. Response of the stock market

Figure 3 plots cumulative monthly returns to the Bovespa index, the index of the most actively traded stocks, during the period from October 1998 (five calendar years prior to the first announcement) to June 2010 (five years after the law went into effect). Cumulative returns to the S&P 500 index, calculated using Brazilian real denominated index values, are also plotted for comparison. The Brazilian market strongly outperformed the S&P 500 index; the cumulative return to the Bovespa was in excess of 450%, which is far higher than the cumulative return of only 15% earned by the S&P 500 index over the same time period.

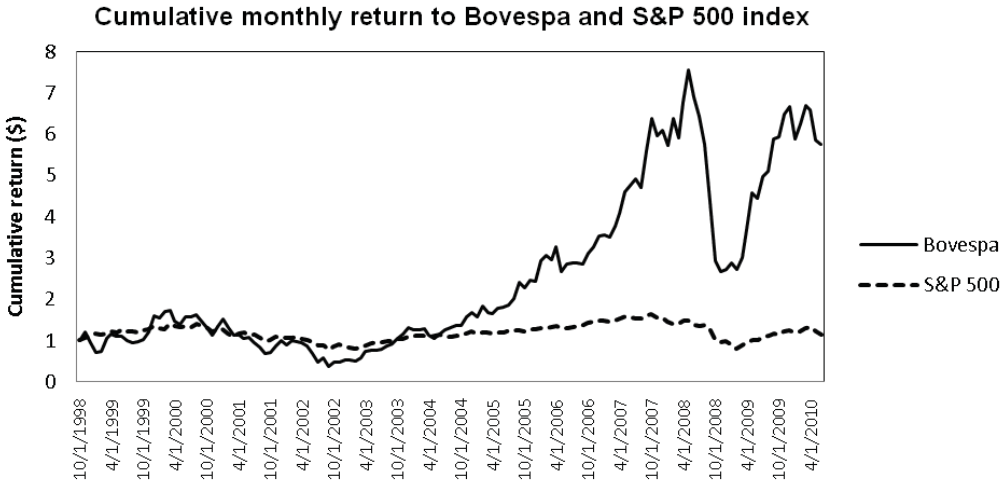


Fig. 3. Comparison of the Bovespa and the S&P 500 index

Note: Cumulative monthly returns to the Bovespa index and to the Brazilian real denominated S&P 500 index during the period from October 1998 to June 2010 are plotted in the Figure. Monthly returns to the indexes are obtained from Bloomberg.

How much of the superior performance of the Bovespa in Figure 3 can be attributed to bankruptcy reform is studied by examining short-term and long-term returns around announcements related to the new law. We chose to analyze four different aggregate stock indexes to determine whether the composition of the index affected its response to the change in bankruptcy law. Any impact of the law on the stock market should be captured efficiently by the Bovespa index since it consists of the most liquid stocks in the Brazilian stock market. The IBX index should capture the reaction of large Brazilian stocks to the new bankruptcy law. Large stocks have a relatively lower risk of bankruptcy (Chan and Chen, 1991) which may enable them to take advantage of improved credit market conditions in the post-reform period to finance future growth. Unfortunately, we cannot compare the response of the IBX to that of a small stock index since a Brazilian small stock index, ISOMA, was discontinued in July 2005.

The IGCX index should reflect the impact of the new law on firms which have adopted sound governance practices. Well governed firms have low bankruptcy risk (Fich and Slezak, 2008), and, by definition, offer strong protections to existing stockholders. These benefits should enable well governed firms to exploit improving credit market conditions. Finally, the ITAG index should reflect the laws' impact on firms which grant some control to minority shareholders. Protection of minority shareholders' rights reduces agency problems within the firm (Lemmon and Lins, 2003) which should put them in a position to finance future growth in a favorable credit market environment (La Porta et al., 2002). This index has been in existence only since February 2005.

5.1. Short-run returns. The short-run response of the indexes to announcements of the law's legislative success is analyzed with the help of event studies around the two key dates, October 14, 2003 and February 9, 2005. Panels A and B of Table 3 have the returns to the indexes at each of these announcements. The pre-event, event and post-event periods are exactly as described for the SELIC event study: day -40 to day -10 for the pre-event period, day -10 to day +10 for the event period, and day +10 to day +40 for the post-event period. Table 3 reports average daily returns during these periods.

Table 3. Stock index returns around announcements related to bankruptcy law reform

Panel A. Returns to stock indexes around the first legislative success of the law on October 14, 2003								
	Return to IGCX (%)		Return to IBX (%)		Return to ITAG (%)		Return to Bovespa (%)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Pre-event period	0.0075	-0.314	0.242	0.089	N/A		0.417	0.620
Event period	0.0033	-0.076	0.032	0.028	N/A		0.289	0.430
Post-event period	0.22	0.132	0.263	0.317	N/A		0.397	0.193
χ^2 test for diff.of pre-event and event returns	$\chi^2 = 0.19$	{0.66}	$\chi^2 = 0.49$	{0.48}			$\chi^2 = 0.00$	{0.95}
χ^2 test for diff.of post-event and event returns	$\chi^2 = 0.12$	{0.73}	$\chi^2 = 0.25$	{0.62}	N/A		$\chi^2 = 0.12$	{0.73}
Panel B. Returns to stock indexes when the regulation was signed into law on February 9, 2005								
	Return to IGCX (%)		Return to IBX (%)		Return to ITAG (%)		Return to Bovespa (%)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Pre-event period	-0.31	-0.41	-0.29	-0.35	-0.31	-0.51	-0.48	0.03
Event period	0.72**	0.55	0.75**	0.56	0.97**	0.72	0.86**	0.96
Post-event period	0.30	-0.23	0.24	-0.20	0.22*	0.04	0.18	0.09
χ^2 = test for diff.of								
χ^2 = test for diff.of pre-event and event returns	$\chi^2 = 4.33$	{0.04}	$\chi^2 = 4.50$	{0.03}	$\chi^2 = 4.81$	{0.03}	$\chi^2 = 3.85$	{0.05}
χ^2 = test for diff.of post-event and event returns	$\chi^2 = 1.20$	{0.27}	$\chi^2 = 1.37$	{0.24}	$\chi^2 = 1.75$	{0.19}	$\chi^2 = 2.30$	{0.13}

Notes: The Table has the mean and median daily return to the IGCX, IBX, ITAG and Bovespa indexes during the pre-announcement window (day -11 to -40), the announcement window (-10 to +10), and the post-announcement window (+11 to +40). Daily closing values of the indexes, denominated in Brazilian real, are obtained from Bloomberg. Returns are calculated as: (index value on day t – index value on day (t – 1))/index value on day (t – 1). Numbers in curly brackets are p-values. * and ** denote statistical significance at the 10% and 5% levels, respectively.

Panel A of Table 3 shows that none of the indexes responded to the initial announcement. Mean announcement returns to the three indexes are positive, but are statistically insignificant and are, in fact, lower in magnitude than mean returns in the pre-event period. Post-event period returns are higher than event-period returns, but the difference in returns is not statistically significant. Median returns show similar patterns. Results are missing for the ITAG index which was not created when the first announcement was made. Stock markets responded strongly only when it was announced on February 9, 2005 that the new bankruptcy rules had been signed into law. Panel B of the Table shows positive and statistically significant event-period returns to each of the four indexes, which are also significantly higher than pre-event returns. The response of the ITAG index was the largest; the mean daily return of 0.97% in the event period is economically and statistically higher than the mean return of -0.31% in the pre-event period. Mean returns in the post-event period continued to be positive, but are of a lower magnitude than event-period returns.

Thus, the stock market responded not to the initial legislative success of the law, but to its actual passage. We test whether the response at the passage of the new law differed across the four indexes. F-tests (not reported in the paper) show that the responses of the four indexes during the event period are statistically indistinguishable. These are post-event period returns. Thus, the short-term impact of the new bankruptcy law is unrelated to the composition of the stock index.

5.2. Long-run returns. This Section tests whether stock markets in Brazil benefited in the long run, as predicted by the theories described in Section 2 of this paper. If bankruptcy reform reduced the premium to the distress factor, equation (2) predicts a decrease in expected returns, or by corollary, an increase in realized returns.

Long run returns to the four indexes are reported in Table 4. Average monthly returns to each of the four indexes in the one year, two years and five years following the passage of the law in February 2005 are reported in Table 4. The Table also reports excess average monthly returns to each index calculated with respect to the return to the Brazilian real denominated S&P 500 index. Statistical significance of mean excess long-term returns is determined by a variation of a bootstrap approach described in Desai and Jain (1997). Monthly excess stock returns are sampled from a five-year period that is unrelated to the period under study, namely January 1997 to December 2003 are combined into a single time series. One-year long-run returns are tested by drawing random samples of 12 monthly returns from this series. This process of random sampling is repeated 10000 times. The mean return to each of these 10000 samples is recorded and the p-value for statistical significance associated with the series of mean returns is reported in the last column of Table 4. For the test of two-year returns, each random sample consists of 24 observations of monthly returns. Similarly, for the test of five-year returns, each random sample has 60 monthly observations.

Table 4. Long run returns

Panel A. One-year post-reform returns					
	Returns (%)		Excess returns (%)		
Index	Mean	Median	Mean	Median	Bootstrap p-value
IGCX	6.95**	5.77*	6.10**	3.22**	1.00
IBX	6.35**	5.48	5.50**	3.81	1.00
ITAG	4.85**	4.16*	4.11**	0.81	1.00
Bovespa	5.67**	4.71*	4.83**	2.42	1.00
Panel B. Two-year post-reform returns					
	Returns (%)		Excess returns (%)		
Index	Mean	Median	Mean	Median	Bootstrap p-value
IGCX	4.10**	3.83**	3.10*	2.90*	1.00
IBX	4.74**	4.47**	3.74**	3.22**	1.00
ITAG	3.42**	2.27**	2.47**	0.82**	1.00
Bovespa	3.80*	3.61**	2.80*	2.42*	1.00
Panel C. Five-year post-reform returns					
	Returns (%)		Excess returns (%)		
Index	Mean	Median	Mean	Median	Bootstrap p-value
IGCX	2.86**	3.40**	2.74**	2.72**	1.00
IBX	3.05**	3.12**	2.92**	2.48**	1.00
ITAG	2.01**	2.27**	1.92**	1.61**	1.00
Bovespa	2.82**	2.88**	2.69**	2.75**	1.00

Notes: Mean and median monthly returns in the one, two and five-year period following February 9, 2005, are reported for the four stock indexes. Excess returns calculated with respect to monthly Brazilian real denominated S&P 500 index are also reported. The p-value obtained from the bootstrapping procedure is calculated by combining monthly stock returns to each of the four indexes during the period from October 1998 to September 2003 into a single time series. One-year, two-year and five-year long-run excess returns are tested by drawing random samples of 12, 24 and 60 monthly excess returns from this series, respectively. This process of random sampling is repeated 10000 times. The mean excess return to each of these 10000 samples is recorded and the p-value associated with the series of mean returns is reported in the last column. * and ** denote statistical significance at the 10% and 5% levels, respectively.

Panel A of Table 4 shows that one-year post-event returns are positive and statistically significant for all indexes (at the 5% level). IGCX earns the highest mean monthly return of 6.95% and the ITAG the lowest mean monthly return of 4.85%. The statistically significant mean returns to the four indexes cannot be attributed to randomly generated returns as the p-value (1.00) for the mean obtained from the bootstrapping procedure is below 10%.

Panel B of Table 4 reports two-year post-event and excess returns. Two-year mean returns are uniformly lower than one-year returns, which is consistent with a dampening in the trend in long-run returns. Yet, returns and excess returns to all four indexes continue to be positive and statistically significant at the mean and at the median. At the two-year horizon, IBX earns the highest average monthly return of 4.74%.

Panel C of Table 4 reports five-year post-event and excess returns. The magnitude of mean and median returns continue to trend lower, but remain statistically significant. Once again, it is the IBX index that earns the highest return of 3.05% per month.

5.3. Test of a single-factor model. Long-run performance is evaluated in this Section by estimating abnormal returns, or alpha, generated by a single factor model. We compare abnormal returns earned by each of these indexes in the five years before the new law came up through the legislative process, to those earned in the five years after its passage into law. Specifically, the pre-law period covers October 14, 1998 to October 4, 2003. The pre-law period is chosen so as to end 10 days prior to October 14, 2003, when the new law had its first legislative success. The event period covers ten days prior to October 14, 2003 and ten days after February 9, 2005. The post-event period covers February 19, 2005 (ten days after the new rules were signed into law) to February 9, 2010.

Abnormal returns are calculated by estimating an OLS regression of daily excess index returns on the daily excess return to the S&P 500 index. Excess returns are calculated with respect to the daily SELIC rate of interest. The relevant S&P 500 index return is the Brazilian real denominated return reported by Bloomberg. The justification for using this model is that a single-factor international capital asset pricing model (ICAPM) has been shown by de Lint (2002) to have explanatory power for emerging market stock returns. The author shows that the explanatory power of global variables is time varying, being higher during stable periods. The period under study in this paper can be characterized as a stable period as attested to by an upgrade of sovereign debt ratings of Brazil by the rating agencies (described in the previous Section).

Table 5 reports the intercept, or alpha, the beta loading on the S&P 500 index and the adjusted R-squares from the estimation of the single factor ICAPM. Panel A shows that none of the indexes earned statistically significant abnormal returns during the pre-event period. Moreover, the single factor model has weak explanatory power, with the IBX index recording the lowest R-square among the three indexes. The model was not estimated for the ITAG index which did not have data over this time period. Abnormal returns continue to be statistically insignificant for the three indexes in the event period as evident in Panel B of Table 5.

Table 5. Abnormal returns from single-factor international CAPM

Panel A. Abnormal returns in the "pre-reform" period					
	Intercept	T-stat.	S&P index	T-stat.	Adj R^2
IGCX	0.0276	1.29	2.08	5.09	49.92%
IBX	-0.0023	-0.18	1.62	6.70	36.03%
Bovespa	-0.0046	-0.35	1.82	7.07	38.59%
Panel B. Abnormal returns in the "reform" period					
	Intercept	T-stat.	S&P index	T-stat.	Adj R^2
IGCX	0.0219	1.45	2.01	3.59	38.54%
IBX	0.0185	1.21	1.99	3.51	37.30%
Bovespa	0.0140	0.86	1.99	3.29	34.08%
Panel C. Abnormal returns in the "post-reform" period					
	Intercept	T-stat.	S&P index	T-stat.	Adj R^2
IGCX	0.0256	3.00	1.66	9.24	55.36%
IBX	0.0227	2.57	1.55	8.39	50.48%
ITAG	0.0168	2.76	1.19	9.43	56.77%
Bovespa	0.0223	2.56	1.59	8.70	52.37%

Notes: The single-factor international CAPM is estimated by regressing monthly returns to the Brazilian real denominated stock indexes in excess of the monthly SELIC rate, on the Brazilian real denominated return to the S&P 500 index. The regression is estimated during three periods; a "pre-reform" period which extends from October 14, 1998 to October 4, 2003, a "reform" period which covers ten days prior to October 14, 2003 and ten days after February 9, 2005, and finally, a "post-reform" period which covers February 19, 2005 to February 9, 2010.

Strong evidence of positive abnormal returns comes from Panel C which reports results for the post-event period. The intercept, or alpha, the abnormal return, is positive and statistically significant for all four indexes. A ranking of alphas shows that the highest alpha of 2.56% is earned by the IGCX index, followed by the IBX index. These rankings of alpha are identical to the rankings of one-year and two-year post-event returns reported in Table 4.

In summary, the evidence from the stock market shows a positive and statistically significant short-term and long-term response to bankruptcy reform. Long-term returns in the post-reform period are the highest for the IGCX index, which is an index of well-governed firms. These firms are predicted by La Porta et al. (2002) to benefit most from an increase in legal protections offered to investors.

Conclusions

This paper studies the response of capital markets to a change in a country's securities law. The stock market benefited, both in the short term and in the long term. The results here are consistent with several streams of research that predict stock values benefit from bankruptcy reform. Our evidence here that IGCX had the highest alpha in the five-year post-reform period supports the La Porta et al. argument that capital market development is dependent on strong legal protections offered to all groups of investors.

The results in this paper complement Funchal (2008) who studied the impact of the new bankruptcy law on leverage ratios of individual firms in Brazil. His finding that Brazilian firms increased their leverage ratios in the post-reform period confirms the event-study results in this paper. The money market was a beneficiary of bankruptcy reform in that the benchmark SELIC rate experienced a permanent drop of 600 basis points after bankruptcy reforms went into effect.

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Appendix

Table 1. Milestones in the passage of the 2005 bankruptcy law in Brazil

Event	Date
Original draft of proposed reforms to the 1945 Bankruptcy Law is approved by the House of Representatives. The bill is sent to the Senate	October 14, 2003
Senate passes amendments to the draft of the new law. Returns the amended bill to the House for its approval.	June 29, 2004
House of Representatives approves the New Bankruptcy Law	December 14, 2004
The 2005 Bankruptcy Law signed into law by President Luis Inacio Lula da Silva	February 9, 2005
The 2005 Bankruptcy Law goes into effect	June 9, 2005