

# The Market-wide Consequences of Government Intervention

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# The Market-wide Consequences of Government Intervention

## Abstract

The US Government's intervention in Chrysler LLC's bankruptcy resulted in secured creditors receiving substantially less than the face value of their claims. In contrast, an unsecured creditor, the UAW, received substantial cash, notes, and equity in exchange for their claims. In this study, we examine the capital market consequences of this action on firms that face potential government intervention and find that firms most likely to experience similar future intervention experience negative abnormal bond and stock returns around the Chrysler bankruptcy, which we attribute to higher expected future debt costs. Our findings underscore the potential costs market participants face as a result of government intervention.

## Introduction

The worldwide financial crisis of 2008-2009 and accompanying recession led to an increased amount of direct government participation in many developed financial markets. Governments and central banks across the world worked to stabilize their financial systems. For example, the US Government provided funding to banks through the Troubled Asset Relief Program (TARP). The Federal Reserve was also involved in coordinating the sale of some high profile financial firms such as Wachovia Bank and Bear Stearns. This intervention had the goal of stabilizing the financial system and loosening up credit markets.

In addition to providing liquidity and capital to shore up the banking system, the Government became involved in the reorganization process of some distressed firms such as Chrysler LLC (Chrysler) and General Motors.<sup>1</sup> As part of the Chrysler bankruptcy process, the Government orchestrated a sale of Chrysler's assets to "New Chrysler" (Rutenberg and Vlasic (2009)). Chrysler received a \$2 billion payment from New Chrysler in exchange for Chrysler's assets and used these funds to pay secured creditors' claims of \$6.9 billion (payment of \$0.29 per dollar of secured liability). The United Auto Workers Trust, an unsecured creditor that had a \$10 billion claim for post employment health care costs, received \$1.5 billion of cash, \$4.6 billion of unsecured debt, and a 55% equity stake in New Chrysler. Other unsecured creditors of Chrysler received nothing. This payment structure was agreed to in principal by the Government and the United Auto Workers on April 26, 2009 without the approval of Chrysler's secured creditors. Secured creditors of Chrysler and several unrelated parties expressed concern that this payment structure might violate the absolute priority rights of Chrysler's secured creditors (we provide

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<sup>1</sup> The Government played a similar role in the General Motors bankruptcy as in the Chrysler bankruptcy. We focus on the Chrysler bankruptcy in our discussion and tests because it happened first chronologically. Consequently, we expect that the market reaction to the Government's intervention will be observed primarily around the key events in the Chrysler bankruptcy.

several examples in Section I). To the extent that lenders generally viewed the structure of the Chrysler bankruptcy as violating the absolute priority rights of secured creditors or thought that the Government's intervention made their claims more uncertain in the event of bankruptcy, we expect lenders to increase the interest rate at which they are willing to lend to firms at higher risk of similar future government intervention.

Using this setting, we provide evidence on the indirect costs of government intervention in financial markets that increases uncertainty for other market participants. During the recent financial crisis, the role of the Government in financial markets greatly expanded. This increased governmental involvement in the capital markets underscores the importance of understanding the potential indirect costs of government intervention in the private sector. The Chrysler bankruptcy provides us with a unique setting to test for the effects of government intervention in financial markets because the Government's intervention in the bankruptcy happened in a country with generally strong creditor rights. Prior research on the interaction between governments and financial markets such as La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997, 1998) focuses on the effects of legal institutions on financial markets. These studies take an international perspective and view the US as a country with relatively strong legal institutions and creditor rights. Our findings underscore the potential costs that government intervention in the private sector can create for firms that are seen to have higher political risk, even in a country with generally strong legal institutions.

We test for the indirect costs of the Government's intervention in the Chrysler bankruptcy on financial markets by examining the debt market response for other firms more likely to face future government intervention on key dates surrounding the Chrysler bankruptcy. To proxy for the perceived likelihood of future government intervention in other firms, we

identify firm characteristics of Chrysler that we hypothesize contributed to the Government's intervention: namely, union membership and unfunded post employment benefits.<sup>2</sup> We find that firms in more unionized industries experienced significant abnormal debt price declines in 3 day event windows around key dates related to the Government intervention during the Chrysler bankruptcy. We attribute these losses to increased future financing costs (due to higher perceived political risk).

We also examine the impact of the Government intervention during the Chrysler bankruptcy on a broader sample of firms using equity prices to proxy for increased borrowing costs. We hypothesize the increased borrowing costs will flow through to equity holders as the residual claimants of the firm (Jensen and Meckling (1976) and Stulz and Johnson (1985)). We also hypothesize that the increased borrowing costs will be greater than any benefits accrued to equity from reduced labor contracting costs. Consistent with our hypotheses, we find that firms in more unionized industries and firms with larger unfunded post-employment obligations experienced significant abnormal equity price declines around key event dates related to the Chrysler bankruptcy. We also hypothesize that the indirect cost associated with the Chrysler bankruptcy will be greatest for firms in financial distress as these firms are closer to default and therefore more likely to find themselves in a similar scenario to that of Chrysler. Consistent with this prediction we observe the negative association between both unionization and unfunded pensions and abnormal returns is more pronounced in distressed firms.

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<sup>2</sup> Our tests examine whether the cost of debt increased for other firms as a result of the Government's intervention specifically in the Chrysler bankruptcy, independent of the Government's stated reasons for bailing out Chrysler or whether bailing out Chrysler was desirable from a policy perspective for other reasons. Consequently, our proxies for the likelihood of future government intervention are designed to capture the characteristics of Chrysler that capital market participants hypothesized were the Government's reasons for intervening in the Chrysler bankruptcy rather than proxies that capture the Government's stated reasons for bailing out Chrysler. We acknowledge that there may have been economic benefits from the Government's bailout of Chrysler that are not captured in our tests. However, we note that the Government could have bailed out Chrysler without creating uncertainty about secured creditors' rights in bankruptcy.

The average effect of unionization is an approximately 3% decline in market capitalization per firm (over \$99 million per firm) over key event days. The average effect of an unfunded pension, controlling for firm unionization, is a 0.9% decline in market capitalization per firm (over \$28 million per firm) over key event days. These losses equate to nearly a \$202 billion decline in equity value due to unionization and an approximately \$57 billion loss due to unfunded pensions for the entire sample of firms respectively holding unfunded pensions and unionization constant.<sup>3</sup> In further support of our interpretation that this loss of equity value is due to secured lenders requiring higher returns for firms at risk of government intervention in bankruptcy, we find that firms in financial distress with high unionization or large unfunded post employment obligations experience more negative equity returns around our event dates than other sample firms. This evidence is consistent with politically sensitive firms near bankruptcy being most affected by the higher cost of secured financing. We also find evidence of negative abnormal bond returns on several key event dates for firms with relatively high union membership or large unfunded post employment obligations. Overall, our findings are consistent with government intervention in the private sector creating significant indirect costs for firms seen to have a higher risk of future government intervention.

Our findings contribute to the literature on the interaction between political and legal institutions and financial markets. La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997) find that institutional protections from strong legal rules and enforcement improve the size and extent of capital markets in a country. Levine, Loayza, and Beck (2000) and Wurgler (2000) find that legal creditor protection and enforcement improve capital allocation efficiency, financial development, and economic growth. Qi, Roth, and Wald (2010) find that increases in the degree

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<sup>3</sup> These numbers were calculated by multiplying the union and pension underfunding regression coefficients in Table IV by the mean union coverage or unfunded post employment obligations (respectively) for the sample, the mean firm market value in the sample, and finally the number of firms in the sample.

of creditor protection within a country significantly reduce the cost of debt. A primary conclusion of these studies is that specific creditor rights and their enforcement, as well as minimal government interference with these rights, improves capital market efficiency and allocation as well as general economic growth within a country. The negative abnormal equity returns we observe are consistent with these findings where a portion of the increased costs of capital is due to a decline in future economic growth. These studies have an international focus, comparing the quality and types of institutions with gross domestic product (GDP), capital market development, firm value, governance, and the cost of debt. We provide evidence on the indirect costs of weakened creditor rights due to government intervention in financial markets in a US capital market setting.

We also contribute to the academic literature examining absolute priority deviations (APDs) in bankruptcy. Prior studies have focused on APDs involving deviations away from debt holders and in favor of equity investors. Weiss (1990) finds that priority deviations typically occur among unsecured creditors or between unsecured debt and equity. In contrast, during the investor-perceived APD in the Chrysler bankruptcy the deviation occurred between secured and unsecured debt holders as a result of an intervention by the Government. The Government's close involvement in the Chrysler bankruptcy and the related investor-perceived APD provide a unique setting in which to examine the potential costs of unexpected government intervention in financial markets.

Finally, we contribute to the literature examining the interaction between organized labor and financial stakeholders (both debt and equity). We contribute to this literature by documenting an association between labor unions and increased borrowing costs as a result of the Government's intervention in the Chrysler bankruptcy. We also provide evidence on the

magnitude of these higher borrowing costs. Overall, our evidence is consistent with the Government playing an important role in the financial contracting relationship between organized labor and shareholders.

The remainder of the paper proceeds as follows. Section I discusses the institutional background, Section II the hypothesis development, Section III the empirical modeling, and Section IV the results. Section V concludes.

## **I. Historical Background**

During the financial crisis of 2008-2009 automotive firms, particularly the Big 3 American firms, experienced significant financial difficulty. This slowdown in the automotive industry was the result of many factors. Among other things, car manufacturers were hurt by a shift in consumer preferences towards smaller vehicles as a result of increasing oil prices, and a reduction in the availability of financing for new vehicles as a result of tighter consumer lending standards. In late 2008 the financial strain on Chrysler was significant enough that Chrysler CEO Robert Nardelli stated that the Chrysler could only remain viable by forming an alliance with another automaker as well as receiving government assistance in the form of an equity stake. Concurrent research by Anginer and Warburton (2010) examines the debt-market effects of announcements regarding the bailout of Chrysler. They find evidence that debt markets reacted positively to the availability of TARP for Chrysler.<sup>4</sup> Despite receiving substantial government assistance throughout late 2008 and early 2009 on April 30, 2009 Chrysler filed for bankruptcy.

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<sup>4</sup> Anginer and Warburton (2010) also examine the debt market reactions to other events, such as the Chrysler bankruptcy but do not observe significant abnormal price changes. Our study differs from Anginer and Warburton in several ways. First, we motivate and analyze capital market reactions to event dates specifically related to perceived absolute priority deviations and abstract from reactions to bailouts or the GM bankruptcy, which occurred subsequent to the Chrysler bankruptcy. Second, we analyze both equity and debt market reactions to these events. Finally, our methodology allows us to examine a much larger sample of firms.

In this study we examine the capital market reaction on key event dates around the bankruptcy filing (Table I provides a timeline of the key events we identify). A month prior to the Chrysler bankruptcy, a task force of the Department of the Treasury determined that Chrysler was not viable as a stand-alone company (Isidore and Valdez-Dapena (2009)).<sup>5</sup> The payout structure of the bankruptcy plan was primarily the result of negotiations between the Government and the United Auto Workers' (UAW).<sup>6</sup> On Friday, April 17, 2009, the New York Times reported that the Government was near a deal with the UAW that would give the union retiree healthcare trust more than 20% of Chrysler and make it “the single-largest stakeholder in the automaker” (Vlasic (2009)). An official agreement between the Government and the UAW was announced on Sunday, April 26, 2009 (Isidore (2009)). The Wall Street Journal reported that in return for relinquishing an unsecured \$10 billion health benefits claim, the union trust received \$1.5 billion of cash, a \$4.6 billion unsecured note from New Chrysler and a 55% equity stake in New Chrysler (Kellog and Maher (2009)). Despite this agreement, there had not been a deal between the Government and Chrysler's secured lenders.

[Insert Table I around Here]

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<sup>5</sup> On March 29<sup>th</sup>, the Treasury released a statement that Chrysler's restructuring “at a minimum will require extinguishing the vast majority of Chrysler's outstanding secured debt and all of its unsecured debt and equity” (King and Stoll, 2009). Though a potentially important date for Chrysler itself, this statement does not indicate a preference for unsecured creditors over secured creditors by the Government. We therefore predict that this will not influence the cost of debt of unrelated firms. Also, we do not include dates where announcements were made regarding the availability of TARP funds to Chrysler, but with no information regarding potential priority deviations between secured and unsecured creditors.

<sup>6</sup> Some of the news media refers to negotiations between Chrysler and its various stakeholders rather than to negotiations between the Government and Chrysler's stakeholders. However, Chrysler management could not make deals with its various stakeholders without the Government's approval since the funding for the Chrysler reorganization was all coming from the Government. The New York Times reported on April 30 that “President Obama forced Chrysler into federal bankruptcy protection... The arrangement came after an intensive round of White House-sponsored negotiations among the Treasury Department, the union and Chrysler's executives and creditors” (Rutenberg and Vlasic 2009). Consequently, we refer to all negotiations as being between the Government and Chrysler's stakeholders but acknowledge that Chrysler management was also involved in these negotiations.

Following the deal between the UAW and the Government, the four principal bank creditors (JPMorgan, Morgan Stanley, Goldman Sachs, and Citigroup), which held nearly 70% of the value of Chrysler's secured debt, agreed to an offer that paid secured creditors \$2 billion for their \$6.9 billion claim with no debt or equity stake in New Chrysler (Bennett (2009)). The Financial Times reported that the banks "accepted the offer under strong political pressure. Their ability to resist was weakened by the fact that all four were recipients of billions of dollars of taxpayers' money under [TARP]" (Simon (2009)). Each of Chrysler's 46 secured creditors would need to agree to this deal to avoid bankruptcy; however, a group of 20 of the secured creditors, calling itself "the Committee of non-TARP Lenders," rejected the offer. This group held \$1 billion in secured claims and included several hedge and pension funds (Blumer (2009)). Reuters reported that this group of creditors were "concerned that Government officials were acting to favor the union with a larger payout" despite the junior status of the union's unsecured claim (Krolicki and Crawley (2009)).

After these creditors rejected the offer, President Obama went as far as to label them "a small group of speculators...[who] endanger Chrysler by refusing to sacrifice like everyone else" and laying most of the blame for the Chrysler bankruptcy on their "unwilling" shoulders (Kouwe 2009). The dissident creditors responded by releasing a statement calling the offer "a blatant disregard of fairness for the bondholders who have funded this company" (Carey (2009)). One of the dissident creditors, Oppenheimer Funds, stated that the Government's offer "unfairly asked our fund shareholders to make financial sacrifices greater than those being made by unsecured creditors" (Molinski (2009)).

Due to the lack of approval from all creditors Chrysler was unable to complete an out-of-court restructuring and the Government instructed Chrysler to file for bankruptcy on April 30,

2009. In bankruptcy court, only a majority of lenders is needed to approve the terms of the asset sale under the provisions of Section 363 of the bankruptcy code. This permitted the Government to maintain its preferred payout terms to the UAW without persuading all secured creditors to go along with the plan. Over the next week, the dissident lenders group shrunk from lenders holding \$1 billion to lenders holding \$295 million. Several commentators argued that the decline was due to political pressure which included allegations that the White House had “threatened” Perella Weinberg and several other creditors. This led Clifford S. Asness, the managing partner of a \$20 billion hedge fund that had not invested in Chrysler, to claim “one by one the managers and banks are said to be caving to the President’s wishes out of justifiable fear” (Blumer (2009)). The Financial Times reported that the four banks, led by JPMorgan, were attempting to advance the Government’s agenda by pressuring the dissident creditors; many of whom had financial relationships with the large banks. One Chrysler creditor said that “there was a lot of we will never do business with you again kind of talk” (Braithwaite and Sender (2009)).

On May 8, 2009, the majority of the dissident creditor group ceased their objections. Tom Lauria, a lawyer representing the group said the “lenders concluded they just don't have the critical mass to withstand the enormous pressure and machinery of the US government” (Simon (2009)). Stairway Capital gave a press release explaining their decision to withdraw from the bankruptcy process, a portion of which is included below:

“We withdraw with the knowledge that we acted in good faith. We have fought for what we believe should be fair and equitable treatment under contract and bankruptcy law - in accordance with what traditionally occurs in a restructuring process. We remain steadfast in our view that there should be significantly more value attained, given a normal course bankruptcy negotiation. The fact simply is, however, our group has become too small to have a voice within the bankruptcy.

As American taxpayers, we appreciate the unprecedented efforts taken by the current Administration to stabilize the economy and the auto sector; but as fiduciaries to our investors we take exception to being compelled, as Chrysler senior secured lenders, to unfairly shoulder the burden relative to various junior creditors” (2009).

Following the decision of the “non-TARP lenders” to withdraw, only three secured creditors remained: Indiana State Teachers Retirement Fund, Indiana State Police Pension Trust, and the Indiana Major Moves Construction Fund who collectively held \$42.5 million of Chrysler secured debt (Ng and McLaughlin (2009)). Over the next month, these funds argued in the US Bankruptcy, District, Circuit, and ultimately Supreme Court that the structure of the Chrysler bankruptcy did not follow bankruptcy law and was even unconstitutional. Meanwhile, the Obama Administration urged the courts not to block the sale of Chrysler (ANSA (2009)). In the end the courts sided with Chrysler and the Government. On Sunday, May 31, Reuters reported that the US Bankruptcy Court approved the sale of Chrysler’s assets to New Chrysler. Judge Arthur Gonzalez rejected the arguments of the Indiana Funds, writing that the Chrysler deal was a legitimate sale and not a “sub rosa” (or disguised) reorganization (Chasan and Bailey (2009)). On Friday, June 5, the US Second Circuit Court of Appeals upheld Judge Gonzalez’s ruling and on Tuesday, June 9, the US Supreme Court rejected a request to halt the Chrysler bankruptcy. In rejecting the request, the Supreme Court stated “those seeking to put the deal on hold have not carried that burden to justify such an action. The court's action was not a decision on the merits of the underlying legal issues” (Vicini (2009)).

Some capital market participants expressed concern that the negotiated deal in the Chrysler restructuring was the result of political favoritism. For example, Mr. Asness of AQR capital made the following statement (Asness (2009)):

The President’s attempted diktat takes money from bondholders and gives it to a labor union that delivers money and votes for him. Why is he not calling on his party to “sacrifice” some campaign contributions, and votes, for the greater good? Shaking down lenders for the benefit of political donors is recycled corruption and abuse of power.

Further, Declan McCullagh, a CBS News correspondent stated, “it must be a coincidence that the United Auto Workers has handed \$25.4 million to federal politicians over the last two decades, with 99 percent of that cash going to Democrats. And that Mr. Obama's final campaign stop on Election Day was a UAW phone bank” (McCullagh (2009)).

We use this unique setting to test whether the Government’s involvement in the Chrysler bankruptcy increased capital market participants’ perceptions of political risk for highly unionized firms and firms with large unfunded post employment benefit plans. Additionally, we are able to provide evidence on the magnitude of the cost of government intervention in financial markets in this setting. Traditionally the US has been viewed as a country with very low political risk in relation to financial markets and creditor rights (La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998)), creating a powerful setting to study the effects of unexpected government intervention on financial markets. We note that all of our events focus on whether or not the Chrysler reorganization would involve a significant payment by Chrysler to an unsecured creditor when secured creditors’ claims would not be fully paid and whether the courts would accept the payout structure agreed to by the Government and the UAW. None of our events provided information to the capital markets about the need for the Government to bail out Chrysler since the Government began providing funding to Chrysler in December 2008. Consequently, the negative returns we document below around these dates reflect capital market participants’ reaction specifically to the payment structure of the Chrysler bankruptcy and to the courts’ acceptance of this payment structure, and are unlikely to reflect changes in investor beliefs about the need for a Chrysler bailout.

## II. Hypothesis Development

Supporters of the Chrysler bankruptcy plan, such as Lubben (2009), argue that the Chrysler bankruptcy involved a sale of assets under Section 363 of the bankruptcy code and was a non-event from a legal perspective. Other legal scholars, such as Roe and Skeel (2009), argue that the asset sale was really a “sub rosa” reorganization that circumvented the creditor voting requirements of Section 1129 of the bankruptcy code. They argue that the asset sale favored politically powerful unsecured creditors and was enabled through the Government’s pressure on secured, first-lien creditors to comply with the plan. Roe and Skeel (2009) also argue that the Government’s ability to impose other costs on creditors who refused to support the plan through costly regulation or legislation targeting dissenting creditors makes the Government’s intervention in the bankruptcy unlike prior US bankruptcies.

Several critics of the bankruptcy plan argued that the Government’s involvement in the Chrysler bankruptcy would have sweeping effects on capital markets.<sup>7</sup> For example, the Financial Times reported “already, the verdict on Wall Street and in the conference rooms of investment firms round the country is that, at the very least, the situation raises questions about the solidity of time-honoured lending principles and parts of the bankruptcy code” (Bullock 2009). Further, George Schultze, managing member of Schultze Asset Management LLC, argued that the structure of the Chrysler bankruptcy “increase[d] the cost of credit in the capital

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<sup>7</sup> There is an open debate in the law literature about whether the Government’s intervention in the Chrysler bankruptcy technically distorted bankruptcy law and specifically whether an absolute priority deviation (APD) occurred. A discussion on the legal issues surrounding the Chrysler bankruptcy can be found in Warburton (2010) and is beyond the scope of our paper. The legal debate is essentially a debate over the substance versus the form of the transaction. Secured creditors’ claims were not fully paid even though unsecured creditors received a cash payment and a debt and equity stake in the new company. Had Old Chrysler made this payment to the union trust, the bankruptcy plan would involve a clear absolute priority deviation. However, the cash payment to the unsecured creditors and their stake in New Chrysler were given to them by New Chrysler. The legal form of the transactions (i.e., whether or not the Chrysler bankruptcy involved a true absolute priority deviation), is not relevant to our study examining whether lenders required higher returns on their investment in politically sensitive firms as a consequence of the Chrysler bankruptcy.

markets for lots of companies by tinkering with the well-settled priority system . . . lenders will think twice about lending to companies who have junior creditors that might get an unfair sweetheart deal” (Bullock (2009)).

If lenders thought that the Government’s involvement in the Chrysler bankruptcy and the bankruptcy plan’s success in courts involved a change in legal precedent that could potentially be repeated in the future, they will demand higher returns to compensate for the increased risk of a reduction in payment in the event of bankruptcy. This view is supported by Roe and Skeel (2009) who argue that “The opacity of the deal gave credit markets a scare, with major investors fearing that priorities were being violated. If that sense persists, creditors would adjust interest rates seen to be at risk of priority warps, or decide not to invest in some marginal companies.” This decrease (increase) in bond prices (yields) will lead equity investors to anticipate higher future financing costs as a result of the Government’s intervention in Chrysler’s bankruptcy and reorganization process. The increase in anticipated future financing costs will result in a loss of value for current equity holders. Alternatively stated, to the extent that the key announcements and events surrounding the Chrysler bankruptcy decreased debt holders’ beliefs about their expected payouts in the event of bankruptcy, we expect them to pass the costs of higher perceived government intervention risk to equity holders (as the residual claimant of the firm) by increasing the interest rate at which they are willing to lend to the firm. Therefore, these costs will be reflected in lower bond prices and equity prices and returns around our key event days. In contrast, if capital market participants viewed the Chrysler bankruptcy and reorganization process as being consistent with prior bankruptcy law, we should observe no debt or equity price reaction for other firms around the events we identify.

Given the argument by the Schultze (2009), Roe and Skeel (2009), McCullagh (2009), and others that the Government intervened in the Chrysler bankruptcy and reorganization to benefit the UAW for political reasons, we hypothesize that highly unionized firms are most likely to face higher future financing costs due to the Chrysler bankruptcy. Formally, this leads to the following hypothesis:

*H1A: The level of firm unionization will be associated with negative abnormal debt and equity returns around priority reversing event days.*

This hypothesis is consistent with the notion that historically, organized labor has given support and generous financial contributions to the Democratic Party (Rudolph (1999)). In the case of the Chrysler bankruptcy in particular, the Democrat-controlled Government's involvement could be viewed as a way to benefit their political supporters by favoring the UAW over secured debt holders, in spite of secured debt holders' priority in receiving payment in the event of bankruptcy. In support of this notion, David Littman, a senior economist for the nonpartisan think tank The Mackinac Center for Public Policy argued that the Government's involvement in the bankruptcy reflected "the politics of re-election...where those with invested capital see it expropriated in favor of vested [union] interests" (Carey (2009)).

Given that the intervention occurred during the bankruptcy and reorganization process, it is likely that capital market participants will be most concerned about future Government intervention and the legal precedent created by the Government intervention in the Chrysler bankruptcy favoring unsecured union creditors when a firm is close to bankruptcy. Firms that are close to bankruptcy are most likely to have an immediate need for secured financing to avoid bankruptcy since they are unlikely to be able to obtain unsecured financing except on very costly terms. Consequently, an inability to obtain secured financing or the need to pay higher rates to

obtain secured financing will lead to more acute negative abnormal returns for distressed firms with high unionization. Formally, this leads to the following hypothesis:

*H1B: The association between unionization and negative abnormal debt and equity returns is greatest for firms in financial distress.*

The specific debt obligations held by the UAW related to large unfunded post employment benefit plans, the health care trust, for health care costs of current and past UAW members. The previously cited argument given by the Schultze (2009), Roe and Skeel (2009), and McCullagh (2009) that the Government intervened in the Chrysler bankruptcy and reorganization to benefit the UAW for political reasons, may also be due to the nature of the obligations owed by Chrysler to the UAW membership. As a result, we hypothesize that firms with large unfunded post employment benefit plans are most likely to face higher future financing costs due to the Chrysler bankruptcy. Formally, this leads to the following hypothesis:

*H2A: Firms' unfunded post employment benefits will be associated with negative abnormal debt and equity returns around priority reversing event days.*

The arguments discussed in detail above regarding the proximity to bankruptcy also apply to these firms. Following H1B, we hypothesize that the firms with large unfunded post employment benefit plans in financial distress will experience a larger price reaction to the key event dates in the Chrysler bankruptcy and reorganization that we identify. Formally, this leads to the following hypothesis:

*H2B: The association between unfunded post employment benefits and negative abnormal debt and equity returns is greatest for firms in financial distress.*

Finally, it should be noted that as residual claimants of the firm, equity holders in highly unionized firms or in firms with unfunded post employment benefits could gain from the

Government's intervention in the Chrysler bankruptcy as well. The Government's intervention in the Chrysler bankruptcy provided value to unionized labor by increasing the expected value of post employment plans. Because the value of these benefits increased, labor contracting costs such as workers' required wage and pension or health benefits, likely declined for these firms. Ippolito (1985) argues that lower contracting costs would increase the value of the firm and therefore would increase the value of the firm's equity. Our hypothesized negative stock returns will be net of any contracting benefits. The total amount of lower contracting costs passed on to equity holders depends on the nature of competition in the labor market. Due to the lack of perfect competition in the unionized labor market, the benefits accrued to equity holders will not be the entire benefit accrued to labor. Therefore, even if the benefits to labor exactly equal the costs to debt holders (i.e., a pure transfer from debt to labor with no dead-weight economic loss), the increased cost of debt will exceed the increased benefits to equity holders from lower labor contracting costs. In addition, the findings of Cohen, Coval, and Malloy (2011), Levine, Loayza, and Beck (2000), and Wurgler (2000) suggest an increase in union power or a decrease in creditor rights is associated with an economic deadweight loss faced by the residual claimants of the firm.

One could argue that the events of the Chrysler bankruptcy were extremely unique and unlikely to be replicated. If this is true, we may find no debt or equity reaction to the Chrysler bankruptcy events we examine because the likelihood of these events being replicated in the future is low. However, as discussed by Roe and Skeel (2009), the legal precedence set by the Chrysler bankruptcy was used only months later during the General Motors bankruptcy. In addition, the special set of circumstances that led to the Government's intervention in the Chrysler bankruptcy (politically powerful unsecured creditors, a deep economic recession,

secured creditors beholden to the Government, etc...) were only necessary to define this legal precedent. If investors expect the secured debt of firms with politically powerful unsecured claims to be riskier due to this change in legal precedence, our hypothesized negative debt and equity market reaction should exist regardless of expectations of direct Government intervention in the future. We also note that the Government always has the legal authority to impose costs on firms or individuals via costly regulation or directed taxes. The Government showed a willingness to become involved in the Chrysler bankruptcy to assist a politically powerful unsecured creditor to a much greater extent than in past bankruptcies. The Government was also accused of warning Chrysler debt holders that it would impose significant costs on these investors if they failed to support the Government's reorganization plan. The Government does not need the exact circumstances that existed in the Chrysler bankruptcy to exist to make a similar threat in the future. For these reasons, the exact circumstances of the Chrysler bankruptcy do not need to be repeated for us to observe the hypothesized negative debt and equity reactions for other firms due to the events of the Chrysler bankruptcy.

### **III. Data and Research Design**

#### *A. Data*

We begin by identifying events surrounding the Chrysler bankruptcy that could impact financial markets' perceived likelihood of future governmental intervention in bankruptcy. To identify all possible event dates impacting the likelihood that the Chrysler bankruptcy would involve payments to unsecured creditors without full payment being made to secured creditors, we conducted a search of the Chrysler bankruptcy filing, the New York Times, the Wall Street Journal, LexisNexis, and Factiva. Section I discusses our choice of dates and Table I provides a

listing of the event dates we identify and examine in our study. We predict that all of our identified events increased investors' perceived likelihood of absolute priority deviation.

Our debt sample consists of all unique firms with the required Compustat data and bond trading data from the TRACE database, compiled using the methodology of Bessembinder, Kahle, Maxwell, and Xu (2009).<sup>8</sup> We eliminate firms in the auto industry to avoid potential supply chain effects of the Chrysler bankruptcy.<sup>9</sup> This yields a sample of 426 unique firms, although no more than 266 firms and 612 issues are traded on any individual event day. This leads to 5,074 unique firm return-day and 12,006 unique issue return-day observations. Our equity sample consists of all unique firms on CRSP with non-missing returns and identifying information for the eight 3-day event windows (23 days total, as two event windows overlap) of our sample. This leaves a sample of 2,028 firms for all event days.

[Insert Table II around Here]

Descriptive statistics are reported in Table II for the debt sample and Table III for the equity sample. All independent variables are winsorized at the 1% and 99% levels. Firms in the bond sample have mean assets of \$11.7 billion and mean market capitalization of \$9.9 billion. Union coverage in the debt sample ranges from 1.9% to 46.4% with a mean of 10.3%. The level of unfunded pensions range from -0.233 (i.e., the pension is overfunded) to 1 with a mean of 18.6%. Firms in the equity sample are smaller than the debt sample firms on average with mean total assets of \$5.7 billion and mean market capitalization is \$3.3 billion. Union coverage ranges from 0.9% to 66.1% with a mean of 9.2%. A smaller proportion of firms in the equity sample, as compared to the debt sample, have defined benefit plans. The level of unfunded pensions range from -0.806 (i.e., the pension is overfunded) to 1 with a mean of 12.0%. Since a majority of

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<sup>8</sup> We thank William Maxwell for the use of SAS code provided on his website.

<sup>9</sup>Inferences remain unchanged if we include firms in the auto industry (NAICS codes 3361-3363) for both the debt and equity samples.

firms in the sample do not have defined benefit pension plans, the median level of unfunded pensions is zero.

[Insert Table II and III around here]

### B. Debt Returns

We test for the effect of the Government’s intervention in the Chrysler bankruptcy on equity prices around several key events using the following model:

$$\begin{aligned} \text{CAR}_i &= \beta_0 + \beta_1 * \text{UnionCoverage} + \beta_2 * \text{Pension\_UnFund} \\ &+ \beta_3 * \text{Leverage} + \beta_4 * \text{MB} + \beta_5 * \text{Gray\_Area} + \beta_6 * \text{Distressed} + \varepsilon \end{aligned} \quad [1]$$

Following hypotheses H1B, the predicted negative abnormal debt and equity returns should be strongest in financially distressed firms (i.e. similar future government intervention is most likely for firms closest to bankruptcy). As a result we perform an additional test to examine if the effect of union coverage and pension underfunding is stronger in distressed firms. To examine this conjecture we use the following model:

$$\begin{aligned} \text{CAR}_i &= \beta_0 + \beta_1 * \text{UnionCoverage} + \beta_2 * \text{Pension\_UnFund} \\ &+ \beta_3 * \text{UnionCoverage} * \text{Distressed} \\ &+ \beta_4 * \text{Pension\_UnFund} * \text{Distressed} + \beta_5 * \text{Leverage} \\ &+ \beta_6 * \text{MB} + \beta_7 * \text{Gray\_Area} + \beta_8 * \text{Distressed} + \varepsilon \end{aligned} \quad [2]$$

Regression variables are defined as the following<sup>10</sup>:  $\text{CAR}_i$  is defined as the daily abnormal return ( $\text{Ret}_{i,t} - \text{Ret}_{m,t}$ ) on each of the 23 trading days surrounding the 8 event dates in Table V.

Due to data restrictions, we follow the methodology of calculating abnormal bond returns recommended by Bessembinder, Kahle, Maxwell, and Xu (2009).  $\text{Ret}_{i,t}$  is defined as the “clean” daily return, using price but not interest payments, on an individual firm’s debt. Because the vast

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<sup>10</sup> The corresponding Compustat data items are as follows: Pension UnFund = (PBPRO – PPLAO)/PBPRO; Leverage = DLTT/TA; MB = MKVALT/SEQ. Altman Z-Score is calculated as 3.3\*EBIT/Assets + 1.2\*Working Capital/Assets + Sales/Assets + 1.4\*Retained Earnings/Assets + 0.6\*MVE/Liabilities. Missing observations for pension variables were assumed to be zero. Missing MKVALT values were calculated as PRC\*SHARES. All financial statement variables are taken from fiscal year end 2008, prior to the event dates we examine.

majority of debt does not trade daily, we define  $Ret_{i,t}$  as  $(P_{i,t} - P_{i,t-1 \rightarrow t-5}) / P_{i,t-1 \rightarrow t-5}$ . Where  $P_{i,t-1 \rightarrow t-5}$  is defined as the last traded price prior to day  $t$  that occurred between day  $t-1$  and day  $t-5$ . If there was no trade in the 5 days prior to the trade(s) on day  $t$ ,  $Ret_{i,t}$  is coded as missing. This methodology allows for an increased sample size. Inferences remain unchanged, although statistical significance is reduced, by requiring two contiguous trading day trades.  $Ret_{m,t}$  is defined as the daily return for the Dow Jones Corporate Bond Price Index.

Many firms have several debt issues. To ensure t-statistics are not inflated due to the likely correlation of bond returns of multiple issues from the same firm, we analyze debt returns on the firm level by using the mean firm daily bond return. In addition, we analyze debt returns on the issue level and calculate clustered standard errors by firm.

Following Klasa, Maxwell, and Ortiz-Molina (2009), and Hirsch and Macpherson (2002), we define union coverage on the industry level. *UnionCoverage* is the percentage of workers covered by union contracts in a firm's 3-digit NAICS industry in a union.<sup>11</sup> Union coverage data follow Hirsch and Macpherson (2002) and are available on a yearly basis through the authors' website. As discussed by Klasa, Maxwell, and Ortiz-Molina (2009), "It is difficult to reliably collect firm-level unionization data from the filings of publicly traded firms because such firms are not required to provide union membership information about their workers." The use of industry level data allows for our analysis to avoid the selection issues associated with a firm choosing to disclose union membership and allows for larger availability of data. Furthermore, Bronars and Deere (1991) and Matsa (2010) examine unionization and corporate policy decisions at the firm and industry level and find qualitatively similar results using industry level

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<sup>11</sup> Since an employee can be covered by a union contract without being a member of the union, we also perform our tests replacing union coverage with union membership and obtain similar results.

unionization as using firm level unionization.<sup>12</sup> Finally, the use of firm level unfunded pension data alleviates some concerns that we may be simply capturing industry level effects. Our results are robust to defining union coverage using indicator variables for industries with higher than 5, 10, or 15% union coverage.

*Pension\_UnFund* is the Projected Benefit Obligation less Pension Plan Assets scaled by the Projected Benefit Obligation. We use the level of unfunded pension obligations rather than health care benefit obligations as our test variable for the following reasons. Health care obligations and assets are not very well populated on Compustat, leaving little cross-sectional variation in any measure of health benefits underfunding in addition to understating some firms actual obligations that are missing in Compustat. The Pearson correlation between health obligations and pension obligations among firms with positive health obligations is 79%, so the pension variable we use captures much of the same information. Finally, our broad research question is about the effects of government intervention on financial markets. The government is not directly liable for unfunded health benefits. Since the government is liable for unfunded pensions via the Pension Benefit Guaranty Corp. (Shepardson (2009)), future government interventions may be more likely for firms with large unfunded pensions than for firms with large unfunded health benefits.

Other variables are defined as follows: following Altman (1968), *Gray\_Area* is an indicator variable equal to one for firms with an Altman Z-score between 1.8 and 3 and *Distressed* is an indicator variable equal to one for firms with an Altman Z-score of less than 1.8.

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<sup>12</sup> A potential concern with our methodology is the Chrysler bankruptcy potentially provided negative news about the severity of the economic recession and that this news was especially relevant in certain industries, which may be correlated with our unionization proxy. As a result, in untabulated robustness tests we included industry fixed effects using two digit NAICS codes in our regression models. Inferences drawn from the regression results remain unchanged. Additionally, we run a specification of our models removing the industry level unionization variable and include three digit NAICS code fixed effects, the observed coefficient on the unfunded pension variable is of similar significance and magnitude to the reported results.

*Leverage* is the firm's long-term debt divided by total assets and *MB* is the firm's market value of equity divided by total stockholder's equity. Consistent with prior research (Perotti and Spier (1993) and Myers and Saretto (2010)), we control for leverage, market-to-book, and level of distress to control for the possibility that our unionization and unfunded pension measures are capturing other risk effects.

Hypothesis 1 predicts a negative coefficient for  $\beta_1$  in model 1 and a negative coefficient for  $\beta_1$  and  $\beta_3$  in model 2. A negative coefficient for  $\beta_1$  would be consistent with higher future debt costs for firms in more unionized industries due to the Government's intervention in the Chrysler case. A negative coefficient for  $\beta_3$  would be consistent with the above effect being most pronounced for firms near bankruptcy. Hypothesis 2 predicts a negative coefficient for  $\beta_2$  in model 1 and a negative coefficient for  $\beta_2$  and  $\beta_4$  in model 2. A negative coefficient for  $\beta_2$  would be consistent with equity market participants anticipating higher future debt costs for firms with higher unfunded pensions due to the Government's intervention in the Chrysler bankruptcy. As with  $\beta_3$ , a negative coefficient for  $\beta_4$  would be consistent with the above effect being most pronounced for firms near bankruptcy.

We also test for a relation between debt prices and union coverage and pension underfunding on each individual event day using the following model:

$$CAR_{i,t} = \beta_0 + \beta_1 * UnionCoverage + \beta_2 * Pension\_UnFund + \beta_3 * Leverage + \beta_4 * MB + \beta_5 * Gray\_Area + \beta_6 * Distressed + \varepsilon \quad [3]$$

All of the independent variables are previously defined, while  $CAR_{i,t}$  is calculated as the sum of  $(Ret_{i,t} - Ret_{m,t})$  over the three-day window surrounding the event date. We define  $CAR_i$  as the sum of  $(Ret_{i,t} - Ret_{m,t})$  over the three-day window surrounding each event date in Table VI and Table VII with  $Ret_{i,t}$  and  $Ret_{m,t}$  defined as previously discussed. We predict negative

coefficients on  $\beta_1$  and  $\beta_2$  in this specification for all event days. All specifications are estimated with standard errors robust to industry-level clustering.

### *C. Equity Returns*

We perform similar analysis on abnormal equity returns as an additional test. Although debt returns provide a more direct analysis of changes in the cost of debt (reflected through announcement returns), data are available only for a select number of firms that have issued public debt. In addition, debt is more thinly traded than equity which reduces the availability of data.  $CAR_i$  is defined as the summation of return on firm  $i$ 's abnormal returns for the 23 days centered on the 8 event dates for Columns 1-2 of Table VIII. Following Brown and Warner (1980), we calculate abnormal returns as firm  $i$ 's stock return less the value weighted CRSP return due to the short event windows used in our analysis. In order to cluster by dates as well by industry,  $CAR_i$  is also defined as daily abnormal stock returns in columns 3-4 of Table VIII. We perform this analysis using equity returns for several reasons. First, and as discussed earlier, equity is the residual claimant on the firm's assets. Any change in the riskiness of secured debt will be passed along to the equity holders in the form of higher future borrowing costs. As a result, equity returns will contain information regarding changes to the cost of public as well as private debt, which enables us to estimate the effects of our event days for a much larger portion of the total debt market. Second, equity returns will reflect changes in the expected cost of future unissued debt. Finally, as discussed earlier, using equity returns allows a much larger sample size, thus providing us with a higher power test.

We also calculate cumulative abnormal returns as the summation of return on firm  $i$ 's stock less the value weighted CRSP return for the 3 days centered on each individual event day in Table VIII. Similar to our debt analysis, the standard errors of our equity results are robust to

industry-level clustering.

## **IV. Results**

### *A. Debt Results*

We test the relationship between unionization, unfunded pension obligations, and abnormal debt returns in Tables IV-VI. These tests provide evidence that firms' cost of debt increased due to the Government intervening in the Chrysler bankruptcy on behalf of unions. Generally, debt trades much less frequently than equity. This leads to severely reduced sample sizes with the 5,074 firm return-days and 12,006 issue return-days. More specifically, the lowest activity event day in our sample (May 8, 2009) yields 221 unique firms and 512 unique debt issues. The highest activity day in our sample (May 31, 2009) yields 265 unique firms and 575 unique debt issues.

Despite these data limitations, we find evidence consistent with Hypothesis 1. Table IV, specifications 1 and 2 present the results from our regression models [1] and [2], analyzing daily abnormal firm-level returns across all 23 days surrounding the 8 event dates (23 total days since the three-day windows surrounding events 7 and 8 overlap). Specifications 3 and 4 present similar results for issue-level returns. Standard errors for specifications 1-4 are robust to industry and event-day clustering, and in unreported results, firm-level clustering. The observed coefficients of -0.0080 (p-value 0.0124) in specification 1 and -0.0041 (p-value 0.097) in specification 3 are consistent with our hypothesis that firm unionization is negatively associated with abnormal debt returns during the 8 event day windows. However, we find no support for our hypothesis that unfunded pension obligations are negatively associated with abnormal debt returns. A possible explanation for this lack of evidence is the limited power of our tests due to

the small size of the bond sample. The results of specifications 2 and 4 are consistent with our hypothesis that the effects of unionization are strongest for firms near bankruptcy.

[Insert Table IV around Here]

As seen in Table V, we find that unionization is negatively associated with abnormal debt returns on April 17 (with an estimated coefficient of -0.0313 and a p-value of 0.0400), the date of the initial report that the union would receive better terms than secured debt holders.

Unionization is also negatively associated with abnormal debt returns on April 26, the day the UAW and the Government reached agreement on the payments and ownership stake that would be given to the UAW and on April 30, the date of the Chrysler bankruptcy both with similar magnitude, but relatively less significance. At the debt issue level (Table VI), we find that unionization is negatively associated with abnormal debt returns on April 17 and April 30 as well, but with a somewhat reduced magnitude and significance. As with Table IV, we find no support for Hypothesis 2.

[Insert Table V and VI around Here]

These results provide evidence that the Government's involvement in the Chrysler bankruptcy increased the costs of borrowing, due to the increased risk of the Government intervening on behalf of unions at the expense of secured creditors.

### *B. Equity Tests*

As discussed earlier, due to the nature of the debt sample, the analysis of the effects of the Chrysler bankruptcy on borrowing costs using debt returns is limited. We perform similar analysis on the equity market reaction to the Chrysler bankruptcy using a much larger sample of firms. Table VII, specifications 1 and 2 present the results from our regression models [1] and [2], aggregating abnormal returns across all events (23 total event days total since events 7 and 8

overlap). We aggregate returns to estimate the net costs faced by firms due to Government intervention in the Chrysler bankruptcy. The observed coefficient of -0.3298 (p-value 0.030) for  $\beta_1$  is consistent with our hypothesis that firm unionization is negatively associated with abnormal equity returns around key event dates. Under this specification (and unlike the debt sample), we also find evidence of a negative association between firms' unfunded post employment benefits and abnormal returns around event dates, consistent with our second hypothesis. The observed coefficient for  $\beta_5$  is -0.0719 (p-value 0.019). The second column presents results from our regression model [2]. Results are consistent with our conjecture that the effects of pension underfunding and union coverage are strongest in distressed firms. The observed coefficients on  $\beta_3$  and  $\beta_4$  are -0.6103 (p-value < 0.001) and -0.1123 (p-value 0.049) respectively. Due to possible cross-sectional and within-industry error correlation, we also analyze daily abnormal returns (return on firm i's stock – value weighted CRSP return) for the 23 event days separately in specifications 3 and 4 and cluster standard errors by both industry and date<sup>13</sup>. Results are consistent with those discussed above.

[Insert VII around Here]

Table VIII presents the results from our regression model [3] examining the event period returns for each individual event identified in Table I. Results are generally consistent with hypothesis 1. We document significant negative coefficients on union coverage in 2 out of 8 event periods. Specifically, we observe a significant negative coefficient on union coverage on April 17, when it was first reported that the UAW would get a substantial stake (greater than priority dictated) in the new firm and on April 26, when the UAW and the Government reached agreement on the terms of the payouts to the UAW trust. We note that these are the same days as we observe negative debt returns for high unionization, consistent with these negative equity

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<sup>13</sup> Results are robust to clustering by firm rather than by industry.

returns being driven primarily by higher debt costs for firms with high unionization and not by some unexplained risk factor that is omitted from our model. The abnormal return for the mean firm across all eight event days we identify is economically significant with a cumulative abnormal return of -3.03%. As discussed in the introduction, this equates to a \$202 billion market-wide loss in value for the firms in our sample. Consistent with prior research on creditor rights cited above, this loss may represent both the transfer from equity and debt holders to labor as well as the loss due to decreased future economic growth attributable to a reduction in creditor rights and an increase in union power. The abnormal return during the two significant event windows for a firm with mean unionization was -0.76% and -0.93% respectively.<sup>14</sup>

[Insert Table VIII around Here]

Results in Table VIII are also generally consistent with hypothesis 2. We document significant negative coefficients for unfunded pensions in 3 out of 8 of our event periods. A negative coefficient is observed on the level of unfunded pensions during the event windows on April 26, when it was reported that the Government and the UAW had reached an agreement on the terms of the UAW's payouts, on May 8, when the group of dissident lenders disbanded, and on June 5, when the appeal of the bankruptcy plan was dismissed by the Court of Appeals. The abnormal return for the mean firm for the eight event days we identify is economically significant with a cumulative abnormal return of -0.86%. As discussed earlier, this equates to a loss of over \$57 billion in market value for firms in our sample. The abnormal return during the three significantly negative event windows was -0.16%, -0.37%, and -0.19%, respectively.

Contrary to our predictions, we also document significant positive coefficients during 1 of the 8 event periods for each of the variables. The unfunded pension variable is positive and

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<sup>14</sup> Abnormal returns are calculated by multiplying the coefficient of interest by the mean value for the sample. For example, for the April 17<sup>th</sup> event date, the  $\beta_1$  coefficient (-0.0830) x the mean union coverage (0.092) = the abnormal return for the event window related to union coverage (-0.76%)

significant on April 17, when it was first reported that the UAW would get a substantial stake in the new firm. Industry union coverage is positive and significant on May 31, when the bankruptcy plan received court approval. However, the magnitudes are small when compared to the overall observed relation between union coverage, pension underfunding, and abnormal returns. The overall effects found in Table VII are negative and significant.

Overall, our results are consistent with increased costs for highly unionized firms and firms with larger unfunded post employment obligations as a result of the Government's intervention in the Chrysler bankruptcy. Inferences remain unchanged when we include all automotive firms. We also obtain similar results excluding all firms in the 3-digit NAICS industry of the auto firms rather than just excluding firms in NAICS industries 3361, 3362 and 3363, since the returns of these firms could contain other information from the Chrysler bankruptcy that was pertinent to the automotive industry. The results are also robust to including firm size (measured by market capitalization or total assets). In addition, the results are robust to excluding the top supplier and purchaser industries from input output matrices from the Bureau of Labor Statistics, to excluding the solvency control variables (*Gray\_Area and Distressed*).<sup>15</sup>

### *C. Alternative Explanations*

One alternative explanation for our results is that the events of the Chrysler bankruptcy signaled bad news about the economy that was particularly relevant to firms in more unionized industries. If the Chrysler bankruptcy signaled bad news for industries with similarly high unionization or firms with large unfunded pensions, our results could reflect bad economic news rather than increased borrowing costs for more highly unionized firms. We find this alternative explanation unlikely. First, we note that the event dates we examine do not reflect changes in the

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<sup>15</sup> Results and significance levels for individual event days vary depending on the exact specification of the test but overall inferences remain unchanged when using the various specifications listed above.

likelihood that the government would “bail out” Chrysler. The government had already decided that Chrysler was not viable as a standalone company more than 2 weeks before our first event date. Our events reflect agreements between the Government and UAW on the terms of the UAW’s stake in the new company and decisions by judges about the legality of the proposed bankruptcy plan, not decisions by politicians about whether bailing out Chrysler was desirable from an economic perspective. Judges are unlikely to have inside information about the state of the economy. We also note that we include leverage, market-to-book, and bankruptcy risk to control for negative macroeconomic events that might affect more unionized industries in a disproportionate way.

Another alternative interpretation for our results could be that the lack of a competing bid to the Government’s offer suggests that Chrysler’s assets were less valuable than previously thought by capital market participants. If other relatively highly unionized firms have similar types of assets, we could find relatively negative debt and equity returns for the firms around our key bankruptcy dates because the lack of a competing bid for Chrysler’s assets caused market participants to lower their estimates of the value of other highly unionized firms assets. There are two primary problems with this alternate interpretation for our results. First, looking at individual events, we find negative returns for highly unionized firms when the deal between the UAW and Government was first announced (i.e., before it was clear that Chrysler would even file for bankruptcy) and when the Government and UAW came to a final agreement regarding what the union trust would receive. Chrysler had not filed for bankruptcy when these events took place, so it is unlikely that the negative returns we observe on these days are due to the lack of a competing bidder for Chrysler’s assets. Second, the bankruptcy court required that any competing bids take on several of Chrysler’s pre-bankruptcy liabilities including the retiree

benefits of union workers. Roe and Skeel (2009) argue that “The courts’ deference to the sale proponents’ weak market test was the single most disturbing feature of the Chrysler bankruptcy.” There was no true market test for Chrysler’s assets because other bidders did not have the option to bid on Chrysler’s assets alone. The lack of a competing bidder for Chrysler's assets was a reflection on the value of Chrysler's assets with very large existing liabilities attached, not just on the value of Chrysler's assets. Given the fact that these liabilities were sufficiently large to cause Chrysler to file for bankruptcy, it is not surprising that no competing bidders emerged under the Bankruptcy Court’s stipulations. For these reasons, we find this alternative interpretation of our results unlikely.

## **V. Conclusion**

During the recent financial crisis, the role of the Government in financial markets greatly expanded. This increased governmental involvement in the private sector underscores the importance of understanding the potential indirect costs of government intervention in the private sector. The Chrysler bankruptcy provides a unique setting in which to examine the effect of unexpected government intervention on financial markets. To preserve the unsecured claims of the UAW in preference to secured first-tier creditors, the Government organized an asset sale to New Chrysler, enabling priorities to be reorganized within the new firm. We use this setting to examine the effects of governmental intervention on financial markets and to quantify an additional cost now faced by shareholders due to the Government’s intervention in the Chrysler bankruptcy.

We are the first to document evidence that equity holders and debt holders in unionized industries with large unfunded post employment benefit plans experienced statistically and

economically significant negative abnormal returns around key Chrysler bankruptcy event days. This finding is consistent with our hypothesis that financial stakeholders anticipate higher borrowing costs because of the political risk of investing in firms with high unionization and unfunded post employment benefit plans.

Our findings underscore the potential costs that government intervention in the private sector can create for firms that are seen to have higher political risk, even in a country with generally strong legal institutions. Policy makers discussing potential interventions in the financial market should consider potential indirect costs, such as changes in incentives and lending costs, in addition to the direct costs of the intervention to the taxpayer. In the case of the Chrysler intervention, these indirect costs are substantial (even net of benefits from reduced labor contracting costs). We find that our sample of firms lost nearly \$202 billion from firm unionization and nearly \$57 billion from unfunded pension obligations. These costs dwarf the \$28 billion (\$15 billion specific to Chrysler) quoted by Treasury Secretary Timothy Geithner as the direct cost of the automotive bailout to taxpayers (CBSNews (2009)). Incorporating these costs can help inform future government interaction with financial markets and emphasize the importance of expectations and financial contracts within the economy.

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**Table I**  
**Chrysler Bankruptcy Event Dates**

To identify all possible event dates impacting the superseding of Chrysler’s secured creditor rights we conducted a search of the Chrysler Bankruptcy filing, the New York Times, the Wall Street Journal, LexisNexis, and Factiva. The table below provides a listing and brief description of the event dates we identify and examine in our study.

<b>Date</b>	<b>Event</b>
Friday, April 17, 2009	The UAW and the Government were near a deal that would make the UAW the single largest shareholder of “New Chrysler”. The deal is made prior to any deal being made with secured lenders.
Sunday, April 26, 2009	Official agreement announced between UAW and the Government: UAW receives \$1.5 billion in cash, a \$4.6 billion secured note, and a 55% stake in “New Chrysler”. The deal is made prior to any deal being made with secured lenders.
Thursday, April 30, 2009	Chrysler files for Chapter 11 bankruptcy protection.
Tuesday, May 5, 2009	The US Bankruptcy Court rules that dissident lenders must publicly disclose identities, causing several lenders to drop their opposition to Chrysler bankruptcy plan.
Friday, May 8, 2009	The majority of the dissident lenders’ group disbands.
Sunday, May 31, 2009	The US Bankruptcy Court approves the sale of Chrysler’s assets to New Chrysler for \$2 billion.
Friday, June 5, 2009	The US Second Circuit Court of Appeals upholds the Bankruptcy Court’s ruling.
Tuesday, June 9, 2009	The US Supreme Court declines the case and rejects the request to halt the Chrysler asset sale.

**Table II**  
**Descriptive Statistics and Variable Correlations – Bond Sample**

Firm-level variables are reported below. Union Coverage, Pension\_UnFund, Gray\_Area, Distressed, Leverage, and MB are calculated as defined in Table III. CAR is calculated as  $\Sigma(\text{value weighted mean return on firm } i\text{'s debt} - \text{Return on Dow Jones Bond Price Index})$  for the 3-day window centered on the event date.

*Panel A: Descriptive Statistics for Regression Variables*

<i>Variable</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>1<sup>st</sup> Percentile</i>	<i>25<sup>th</sup> Percentile</i>	<i>Median</i>	<i>75<sup>th</sup> Percentile</i>	<i>99<sup>th</sup> Percentile</i>
Assets	11,706	19,515	240	1,815	4,556	13,006	143,992
Net Income	572.6	2,224.3	-2,855	-41.9	129.4	572.0	12,075
Market Cap.	9,922	24,608	19.80	690.6	2,258	8,210	119,472
UnionCoverage	0.103	0.096	0.019	0.034	0.073	0.136	0.464
Pension_UnFund	0.186	0.239	-0.233	0	0.132	0.335	1.000
Leverage	0.298	0.147	0.002	0.196	0.282	0.385	0.723
MB	2.338	2.978	0.136	0.902	1.476	2.536	15.206
CAR	0.004	0.025	-0.044	-0.006	0.001	0.010	0.088
Gray_Area	0.335	0.472	0	0	0	1	1
Distressed	0.380	0.486	0	0	0	1	1

*N* = 426

*Panel B: Pearson Correlations*

<i>Variable</i>	<i>UnionCov</i>	<i>Pension_UnFund</i>	<i>Leverage</i>	<i>MB</i>	<i>CAR</i>
Pension_UnFund	0.1428				
Leverage	0.1105	0.0892			
MB	0.0104	-0.0356	-0.0457		
CAR	-0.0122	-0.0132	0.0263	-0.0148	
Z-Score	-0.0009	-0.0092	-0.1746	0.0922	-0.0337

**Table II – cont.***Panel C: Descriptive Statistics for Regression Variables – Distressed Firms Only*

<i>Variable</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>1<sup>st</sup> Percentile</i>	<i>25<sup>th</sup> Percentile</i>	<i>Median</i>	<i>75<sup>th</sup> Percentile</i>	<i>99<sup>th</sup> Percentile</i>
Assets	32,007	175,562	163.7	1,330.3	3,511.8	12,617	937,466
Net Income	-112.9	2,192	-11,067	-260.5	-9.9	167.2	3,557
Market Cap.	4,323.8	14,401	17.3	410.2	1,073.6	3,887.8	36,095
UnionCoverage	0.127	0.119	0.009	0.034	0.090	0.193	0.661
Pension_UnFund	0.173	0.234	-0.147	0	0.063	0.332	1
Leverage	1.846	1.708	0.027	0.799	1.237	2.224	7.477
MB	1.701	2.617	0.270	0.745	1.056	1.576	18.2
CAR	0.012	0.040	-0.062	-0.004	0.006	0.021	0.153

**Table III**  
**Descriptive Statistics and Variable Correlations – Equity Sample**

Assets, Net Income, and Market Capitalization are reported in millions. Union Coverage is the percentage of workers in a firm’s 3-digit NAICS industry that are members of a union. Pension\_UnFund is calculated as (Projected benefit obligation – Pension assets)/Projected benefit obligation. Leverage is a firm’s long-term debt divided by total assets. MB is the market-to-book ratio for a firm, calculated as market value of equity divided by total stockholder’s equity. Ab\_Ret is the return on a firm’s stock minus the value-weighted CRSP return for the same day. Gray\_Area is an indicator variable equal to one for firms with an Altman Z-score between 1.8 and 3. Distressed is an indicator variable equal to one for firms with an Altman Z-score of less than 1.8.  $Z\_Score = 3.3*EBIT/Assets + 1.2*Working\ Capital/Assets + Sales/Assets + 1.4*Retained\ Earnings/Assets + 0.6*MVE/Liabilities$ .

*Panel A: Descriptive Statistics for Regression Variables*

<i>Variable</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>1<sup>st</sup> Percentile</i>	<i>25<sup>th</sup> Percentile</i>	<i>Median</i>	<i>75<sup>th</sup> Percentile</i>	<i>99<sup>th</sup> Percentile</i>
Assets	5,714.992	34,017.160	8.373	163.158	658.139	2,589.256	74,341
Net Income	254.732	1,692.842	-1,576.327	-14.191	12.821	114.205	5,875.5
Market Capitalization	3,277.903	13,455.330	5.528	92.389	397.623	1,662.818	52,751.83
UnionCoverage	0.092	0.087	0.019	0.034	0.072	0.110	0.423
Pension_UnFund	0.120	0.231	-0.180	0	0	0.214	1
Leverage	0.185	0.235	0	0	0.131	0.294	0.888
MB	2.198	5.916	-6.773	0.728	1.371	2.363	17.657
Ab_Ret	0.001	0.046	-0.127	-0.018	-0.002	0.016	0.130
Gray_Area	0.218	0.413	0	0	0	0	1
Distressed	0.353	0.478	0	0	0	1	1

$N = 2,028$

*Panel B: Pearson Correlations*

<i>Variable</i>	<i>UnionCov</i>	<i>Pension_UnFund</i>	<i>Leverage</i>	<i>MB</i>	<i>Ab_Ret</i>
Pension_UnFund	0.143				
Leverage	0.111	0.089			
MB	0.009	-0.035	-0.045		
Ab_Ret	0.074	0.025	0.020	-0.002	
Z-Score	-0.002	-0.009	-0.174	0.091	-0.024

**Table III – cont.***Panel C: Descriptive Statistics for Regression Variables – Distressed Firms Only*

<i>Variable</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>1<sup>st</sup> Percentile</i>	<i>25<sup>th</sup> Percentile</i>	<i>Median</i>	<i>75<sup>th</sup> Percentile</i>	<i>99<sup>th</sup> Percentile</i>
Assets	7,060.316	52,147.330	5.152	91.908	502.214	2,815.96	69,887.96
Net Income	-50.938	1,180.965	-3,098	-53.503	-8.355	33.184	1,807
Market Cap.	1,442.752	7,113.542	3.547	43.568	171.354	825.532	16,283.73
UnionCoverage	0.110	0.108	0.012	0.034	0.073	0.140	0.464
Pension_UnFund	0.103	0.220	-0.147	0	0	0.129	1
Leverage	0.279	0.311	0	0.029	0.261	0.414	1.385
MB	2.039	8.016	-11.448	0.480	0.964	1.803	21.202
Ab_Ret	0.006	0.060	-0.140	-0.018	0.000	0.026	0.165

**Table IV**  
**Event Day Abnormal Debt Returns**

Union Coverage, Pension\_UnFund, Gray\_Area, Distressed, Leverage, and MB are calculated as defined in Table III. The dependent variable in specifications (1) and (2) is daily abnormal returns calculated as the mean daily return on firm *i*'s debt – Return on Dow Jones Bond Price Index for the 23 days centered on the 8 event dates discussed in Table I. The dependent variable in specifications (3) and (4) is similar to the above but with the abnormal returns calculated at the issue level. Daily bond prices are calculated following Bessembinder, Kahle, Maxwell, and Xu (2009), and using SAS code obtained from William Maxwell's website. Due to sparse trading, daily returns are calculated using the price of a given day and the last traded price within the 5 previous days. Standard errors are reported in parentheses and are robust to heteroskedasticity and within-industry and within-date error correlation. \*\*\*, \*\*, and \* are reported for significance at the 1%, 5%, and 10% level respectively.

<i>Variables</i>	<i>Predicted Sign</i>	( 1 )	( 2 )	( 3 )	( 4 )
Intercept		0.0024 (0.0016)	0.0018 (0.0016)	0.0015 (0.0012)	0.0011 (0.0011)
UnionCoverage	-	-0.0080** (0.0032)	-0.0004 (0.0052)	-0.0041* (0.0025)	0.0010 (0.0023)
Pension_UnFund	-	0.0003 (0.0017)	0.0000 (0.0021)	-0.0004 (0.0012)	0.0000 (0.0015)
UnionCoverage *Distressed	-		-0.0138** (0.0057)		-0.00107*** (0.0039)
Pension_UnFund *Distressed	-		0.0005 (0.0039)		-0.0014 (0.0037)
Gray_Area		0.0017** (0.0007)	0.0016** (0.0007)	0.0009* (0.0005)	0.0007 (0.0005)
Distressed		0.0033*** (0.0009)	0.0047*** (0.0014)	0.0016* (0.0009)	0.0031** (0.0013)
Leverage		0.0020*** (0.0003)	0.0019*** (0.0003)	0.0031*** (0.0005)	0.0030*** (0.0005)
MB		-0.0005** (0.0002)	-0.0005** (0.0002)	-0.0008*** (0.0002)	-0.0008*** (0.0002)
<i>N</i>		5,274	5,274	12,006	12,006
<i>R</i> <sup>2</sup>		0.017	0.018	0.026	0.026

**Table V**  
**Individual Event Day Firm Level Abnormal Debt Returns**

Union Coverage, Pension\_UnFund, Gray\_Area, Distressed, Leverage, and MB are calculated as defined in Table III. The dependant variable in the models, CAR, is calculated as  $\Sigma(\text{return on firm } i\text{'s debt} - \text{Return on Dow Jones Bond Price Index})$  for the 3-day window centered on the event date. Daily bond prices are calculated following Bessembinder, Kahle, Maxwell, and Xu (2009), and using SAS code obtained from William Maxwell's website. Due to sparse trading, daily returns are calculated using the price of a given day and the last traded price within the 5 previous days. Standard errors are reported in parentheses and are robust to heteroskedasticity and within-industry error correlation. \*\*\*, \*\*, and \* are reported for significance at the 1%, 5%, and 10% level respectively.

<i>Variables</i>	<i>April 17</i>	<i>April 26</i>	<i>April 30</i>	<i>May 5</i>	<i>May 8</i>	<i>May 31</i>	<i>June 5</i>	<i>June 9</i>
Intercept	0.0093** (0.0036)	0.0066 (0.0042)	0.0146* (0.0079)	0.0072** (0.0035)	-0.0098** (0.0058)	0.0023 (0.0052)	0.0086*** (0.0028)	0.0003 (0.0026)
Union Coverage	-0.0313** (0.0149)	-0.0300* (0.0165)	-0.0331* (0.0171)	-0.0172 (0.0155)	-0.0154 (0.0216)	-0.0021 (0.0224)	-0.0150 (0.0123)	-0.0148 (0.0106)
Pension_UnFund	-0.0120 (0.0076)	-0.0067 (0.0071)	0.0096 (0.0093)	0.0034 (0.0070)	-0.0092 (0.0094)	-0.0038 (0.0091)	-0.0026 (0.0065)	-0.0005 (0.0041)
Gray_Area	-0.0031 (0.0033)	0.0056* (0.0033)	-0.0032 (0.0065)	0.0002 (0.0035)	0.0091** (0.0042)	0.0037 (0.0039)	0.0063** (0.0030)	0.0005 (0.0022)
Distressed	0.0107*** (0.0035)	0.0026 (0.0032)	0.0029 (0.0082)	0.0082 (0.0053)	0.0101 (0.0096)	0.0129* (0.0050)	0.0116*** (0.0041)	0.0062* (0.0032)
Leverage	0.0019* (0.0010)	-0.00010 (0.0019)	0.0029** (0.0013)	0.0057* (0.0032)	0.0014 (0.0022)	-0.0026 (0.0026)	-0.0006 (0.0012)	0.0013 (0.0015)
MB	-0.0002 (0.0005)	0.0010 (0.0007)	-0.0023* (0.0010)	-0.0019* (0.0011)	0.0011 (0.0014)	0.0008 (0.00010)	-0.0001 (0.0007)	-0.0007** (0.0003)
<i>N</i>	232	238	240	246	221	266	241	261
<i>R</i> <sup>2</sup>	0.099	0.017	0.035	0.067	0.028	0.000	0.033	0.025

**Table VI**  
**Individual Event Day Issue Level Abnormal Debt Returns**

Union Coverage, Pension\_UnFund, Gray\_Area, Distressed, Leverage, and MB are calculated as defined in Table III. The dependant variable in the models, CAR, is calculated as  $\Sigma(\text{return on issue } i - \text{Return on Dow Jones Bond Price Index})$  for the 3-day window centered on the event date. Daily bond prices are calculated following Bessembinder, Kahle, Maxwell, and Xu (2009), and using SAS code obtained from William Maxwell's website. Due to sparse trading, daily returns are calculated using the price of a given day and the last traded price within the 5 previous days. Standard errors are reported in parentheses and are robust to heteroskedasticity and within-firm and within-industry error correlation. \*\*\*, \*\*, and \* are reported for significance at the 1%, 5%, and 10% level respectively.

<i>Variables</i>	<i>April 17</i>	<i>April 26</i>	<i>April 30</i>	<i>May 5</i>	<i>May 8</i>	<i>May 31</i>	<i>June 5</i>	<i>June 9</i>
Intercept	0.0060** (0.0026)	0.0043 (0.0031)	0.0110* (0.0056)	0.0043 (0.0038)	-0.0046 (0.0038)	0.0003 (0.0032)	0.0077*** (0.0022)	-0.0023 (0.0020)
Union Coverage	-0.0217* (0.0129)	-0.0138 (0.0149)	-0.0393* (0.0232)	-0.0173 (0.0148)	-0.0040 (0.0146)	-0.0009 (0.0011)	-0.0080 (0.0094)	-0.0098 (0.0068)
Pension_UnFund	-0.0014* (0.0061)	-0.0049 (0.0060)	-0.0050 (0.0124)	-0.0034 (0.0109)	-0.0107 (0.0071)	-0.0060 (0.0064)	0.0038 (0.0060)	0.0044 (0.0035)
Gray_Area	-0.0033 (0.0024)	0.0033 (0.0023)	0.0002 (0.0036)	0.0010 (0.0023)	0.0018 (0.0028)	0.0048 (0.0029)	0.0023 (0.0021)	0.0020 (0.0016)
Distressed	0.0080** (0.0035)	0.0048 (0.0030)	0.0083 (0.0077)	0.0077 (0.0056)	0.0054 (0.0072)	0.0134*** (0.0039)	0.0080** (0.0033)	0.0063*** (0.0023)
Leverage	0.0040* (0.0022)	-0.0001 (0.0020)	0.0090 (0.0056)	0.0101* (0.00536)	0.0025 (0.0020)	-0.0015 (0.0021)	0.0002 (0.0009)	0.0004 (0.0017)
MB	-0.0009 (0.0006)	0.0007 (0.0005)	-0.0035** (0.0012)	-0.0029** (0.0012)	0.0001 (0.0001)	0.0001 (0.0007)	-0.0006 (0.0004)	-0.0005 (0.0004)
<i>N</i>	496	524	567	573	512	575	515	612
<i>R</i> <sup>2</sup>	0.099	0.003	0.104	0.130	0.016	0.016	0.036	0.025

**Table VII**  
**Event Day Abnormal Equity Returns**

Union Coverage, Pension\_UnFund, Gray\_Area, Distressed, Leverage, and MB are calculated as defined in Table III. The dependant variable in the models, CAR, is calculated as  $\Sigma(\text{return on firm } i\text{'s stock} - \text{value weighted CRSP return})$  for the 23 days centered on the 8 event dates for specifications 1 and 2. Specifications 3 and 4 regresses daily abnormal firm returns (calculated as the daily return on firm i's stock - value weighted CRSP return) on the independent variables of equation 1 and 2 respectively. Standard errors are reported in parentheses and are robust to heteroskedasticity and within-industry error correlation in specifications 1 and 2. Standard errors are robust to heteroskedasticity and within-industry and within-date error correlation in specifications 3 and 4. \*\*\*, \*\*, and \* are reported for significance at the 1%, 5%, and 10% level respectively.

<i>Variables</i>	<i>Predicted Sign</i>	( 1 )	( 2 )	( 3 )	( 4 )
Intercept		0.1090*** (0.0178)	0.0764*** (0.0147)	0.0047*** (0.0015)	0.0033** (0.0015)
UnionCoverage	-	-0.3298** (0.1497)	0.0314 (0.1128)	-0.0143** (0.0050)	0.0013 (0.0062)
Pension_UnFund	-	-0.0719** (0.0302)	-0.0278 (0.0253)	-0.0031* (0.0016)	-0.0012 (0.0014)
UnionCoverage *Distressed	-		-0.6103*** (0.1589)		-0.0264*** (0.0071)
Pension_UnFund *Distressed	-		-0.1123** (0.0563)		-0.0049*** (0.0015)
Gray_Area		0.0565*** (0.0157)	0.0477*** (0.0153)	0.0024*** (0.0009)	0.0020** (0.0009)
Distressed		0.1559*** (0.0308)	0.2227*** (0.0418)	0.0067*** (0.0017)	0.0096*** (0.0023)
Leverage		0.0741* (0.0409)	0.0791** (0.0394)	0.0033 (0.0031)	0.0035 (0.0030)
MB		-0.0100*** (0.0017)	-0.0102*** (0.0017)	-0.0004*** (0.0001)	-0.0004*** (0.0001)
<i>N</i>		2,028	2,028	46,644	46,644
<i>R</i> <sup>2</sup>		0.070	0.078	0.003	0.004

**Table VIII**  
**Individual Event Day Abnormal Equity Returns**

Union Coverage, Pension\_UnFund, Gray\_Area, Distressed, Leverage, and MB are calculated as defined in Table III. The dependant variable in the models, CAR, is calculated as  $\Sigma(\text{return on firm } i\text{'s stock} - \text{value weighted CRSP return})$  for the 3-day window centered on the event date. Standard errors are reported in parentheses and are robust to heteroskedasticity and within-industry error correlation. \*\*\*, \*\*, and \* are reported for significance at the 1%, 5%, and 10% level respectively.

<i>Variables</i>	<i>April 17</i>	<i>April 26</i>	<i>April 30</i>	<i>May 5</i>	<i>May 8</i>	<i>May 31</i>	<i>June 5</i>	<i>June 9</i>
Intercept	0.0211*** (0.0037)	0.0244*** (0.0055)	0.0101 (0.0064)	-0.0045 (0.0095)	0.0090 (0.0088)	0.0241*** (0.0056)	0.0162*** (0.0051)	0.0061* (0.0035)
Union Coverage	-0.0830* (0.0418)	-0.1014*** (0.0358)	-0.0058 (0.0400)	-0.0304 (0.0783)	-0.0624 (0.0439)	0.0179 (0.0363)	-0.0364 (0.0302)	-0.0394 (0.0240)
Pension_UnFund	0.0204** (0.0089)	-0.0136** (0.0064)	-0.071 (0.0107)	-0.0112 (0.0130)	-0.0311** (0.0118)	-0.0126 (0.0088)	-0.0161** (0.0070)	-0.0045 (0.0048)
Gray_Area	-0.0015 (0.0051)	0.0040 (0.0043)	0.0172*** (0.0058)	0.0124** (0.0048)	0.0118** (0.0054)	-0.0029 (0.0044)	0.0079* (0.0047)	0.0046 (0.0043)
Distressed	0.0027 (0.0062)	0.0150* (0.0079)	0.0179** (0.0084)	0.0380*** (0.0082)	0.0447** (0.0189)	-0.0076 (0.0061)	0.0295** (0.0122)	0.0197*** (0.0035)
Leverage	0.0532*** (0.0140)	-0.0088 (0.0151)	0.0510*** (0.0133)	0.0390* (0.0217)	0.0083 (0.0279)	0.0148 (0.0195)	-0.0470** (0.0202)	-0.0264** (0.0104)
MB	-0.0023*** (0.0006)	-0.0003 (0.0007)	-0.0024*** (0.0009)	-0.0027*** (0.0008)	0.0004 (0.0007)	-0.0004 (0.0007)	-0.0021*** (0.0007)	-0.0011* (0.0006)
<i>N</i>	2,028	2,028	2,028	2,028	2,028	2,028	2,028	2,028
<i>R</i> <sup>2</sup>	0.027	0.011	0.032	0.036	0.012	0.000	0.014	0.011