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Asymmetric timely loss recognition, private debt markets, and underinvestment: evidence from the collapse of the junk bond market

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ASYMMETRIC TIMELY LOSS RECOGNITION, PRIVATE DEBT MARKETS, AND UNDERINVESTMENT: EVIDENCE FROM THE COLLAPSE OF THE JUNK BOND MARKET

by

Jaewoo Kim

An Abstract

Of a thesis submitted in partial fulfillment of the requirements
for the Doctor of Philosophy degree in Business Administration
in the Graduate College of
The University of Iowa

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Thesis Supervisors: Professor Daniel Collins
Professor Paul Hribar

ABSTRACT

This paper uses the collapse of the junk bond market in the early 1990s as a natural experiment to examine the effect of asymmetric timely loss recognition (ATLR) on speculative-grade (SPG) firms' access to private debt markets and underinvestment. For a sample of 450 firm-years over the period 1988–1991, I find that SPG firms that recognize economic losses in a timelier fashion experience a smaller reduction in debt financing and investment from the pre- to post-collapse period relative to SPG firms that recognize economic losses in a less timely fashion. I also document that the effect of ATLR on debt financing and investment is more pronounced for SPG firms that lack collateral and are not followed by sell-side equity analysts. These findings support the notion that ATLR improves a firm's ability to access private debt markets, thereby attenuating underinvestment. They also suggest that both collateral and sell-side equity analysts serve as substitutes for ATLR to facilitate SPG firms' access to private debt markets. Further analyses reveal that ATLR increases for SPG firms from the pre- to post-collapse period and this increase is more pronounced for SPG firms with net issuance of debt. This evidence suggests that firms adjust ATLR to obtain debt financing in response to private lenders' demand for it.

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PH.D. THESIS

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This is to certify that the Ph.D. thesis of

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FINTOT	FINDBT + FINEQY
FINDBT	[Long-term debt issuance (DLTIS) + current debt changes (DLCCH) – long-term debt reduction (DLTR)] / lagged total assets
FINEQY	[Sale of common and preferred stock (SSTK) – purchase of common and preferred stock (PRSTKC) – dividends common (DVC)] / lagged total assets
INVTOT	[Capital expenditures (CAPX) + research and development (XRD) + acquisitions (AQC) – sale of property, plant, and equipment (SPPE)] / lagged total assets
INVCPX	Capital expenditures (CAPX) / lagged total assets
INVRND	Research and development (XRD) / lagged total assets
INVACQ	Acquisitions (AQC) / lagged total assets
ATLR	Asymmetric timely loss recognition is measured as the coefficient estimate on δ_3 from estimating $E_{it} = \delta_0 + \delta_1 D_{it} + \delta_2 RET_{it} + \delta_3 RET_{it} * D_{it} + \varepsilon_{it}$ at the two-digit SIC level over the past ten years, where E is earnings for firm i and for fiscal year t divided by lagged market capitalization, D is an indicator variable that takes the value of one if RET is negative, and zero otherwise, and RET is buy-and-hold stock returns for firm i over the fiscal year t.
TOBINQ	[Common shares outstanding (CSHO) * fiscal-year-end stock price (PRCC_F) + total liabilities (LT)] / total assets
CFO	Cash flows from operation (OANCF) / lagged total assets
AT	The natural logarithm of total assets (AT)
FIRMAGE	The number of years a firm appears in Compustat
TANG	Net property, plant, and equipment (PPENT) / lagged total assets
STDROA	Standard deviation of the ratio of operating income before depreciation (OIBDP) to lagged total assets over the past five years

STDINV	Standard deviation of INVTOT over the past five years
LEV	Long-term debt (DLTT) / (Long-term debt (DLTT) + Common shares outstanding (CSHO) * fiscal-year-end stock price (PRCC_F))
LEV_BK	Long-term debt (DLTT) / total assets (AT)
ZSCORE	3.3*(OIADP /AT) + 1.0*(SALE/AT) + 1.4*(RE/AT) + 1.2*(WCAP/AT) + 0.6*((PRCC_F*CSHO/LT), where OIADP is operating income after depreciation, AT is total assets, SALE is sales, RE is retained earnings, WCAP is working capital, PRCC_F is fiscal-year-end stock price, CSHO is common shares outstanding, and LT is long-term debt
SLACK	Cash and cash equivalents (CHE) / total assets
BC	An indicator variable that takes the value of one if an observation belongs to a state in which antitakeover laws were passed and to the post-adoption period

CHAPTER 1 INTRODUCTION

This paper examines whether asymmetric timely loss recognition (ATLR) enhances firms' access to private debt markets, thereby mitigating underinvestment. Prior work investigates the association between ATLR and a variety of debt contract attributes: credit ratings, interest rates, the design of covenants, the presence of collateral, and performance pricing provisions (e.g., Ahmed et al. [2002]; Zhang [2008]; Wittenberg-Moerman [2008]; Ball et al. [2008]).[1] A common feature of these studies is that they select a sample of firms that has already entered into debt contracts. What is not clear, however, is whether ATLR influences firms' ability to enter into debt contracts in the first place. Recently, studies also explore whether accounting conservatism is associated with corporate investment decisions, such as acquisitions, capital expenditures, and corporate liquidity management (e.g., Francis and Martin [2010]; Bushman et al. [2011]; Ahmed and Duellman [2011]; Kim and Quinn [2011]). The findings of these papers suggest that firms that exhibit conservative accounting practices are less likely to exhibit symptoms of overinvestment, such as empire-building and wasting free cash flows. There, however, is little evidence as to whether ATLR attenuates underinvestment that arises when firms' access to debt financing is constrained.

To address this question, I use the collapse of the junk bond market in the early 1990s as a natural experimental setting. The collapse of the junk bond market provides an ideal setting to examine whether ATLR influences corporate financing and investment policies for several reasons. First, the collapse of the junk bond market is largely an exogenous shock to the supply of external capital to speculative-grade (SPG) firms. Three concurrent events contributed to the collapse of the junk bond market in the early 1990s: (1) the failure of Drexel Burnham Lambert, Inc. (Drexel), (2) the Financial

[1] In the literature, asymmetric timely loss recognition and conditional accounting conservatism are used interchangeably. To be more precise, asymmetric timely loss recognition is an attribute of earnings that derives from conditional accounting conservatism.

Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA), and (3) a change in the National Association of Insurance Companies (NAIC) credit rating guidelines. These events resulted in a sharp contraction in the supply of capital to SPG firms, but are unlikely to be correlated with the demand for debt capital (Lemmon and Roberts [2010]).[2] Second, the collapse of the junk bond market effectively forced SPG firms to switch to private debt markets, particularly the bank loan market, because bank loans are a close substitute for public junk bonds (Taggart [1988]; Loeys [1990]; Benveniste et al. [1993]).[3] The forced re-intermediation of SPG firms provides a setting that avoids an endogenous switching problem (i.e., a firm's choice between public bonds versus private debt).[4]

Prior work posits that in the presence of financing frictions, such as adverse selection and moral hazard, adverse shocks to external capital markets affect corporate investment (e.g., Stiglitz and Weiss [1981]; Holmstrom and Tirole [1997]). Consistent with this conjecture, SPG firms, on average, experienced a sharp decline in debt financing and investment following the collapse of the junk bond market (Lemmon and Roberts [2010]). These findings suggest that SPG firms that previously depended upon the junk bond market to finance their projects struggled with accessing to private debt markets following the collapse of the junk bond market. I argue that ATLR increases SPG firms' access to private debt markets by providing timely information about the firms' financial condition that is relevant to lending decisions made by private lenders. Because debt holders' payoff is asymmetric with respect to borrowers' net assets (Merton

[2] See Appendix C for a detailed description of these events.

[3] Insurance companies were also funding sources for SPG firms. However, a change in NAIC credit rating guidelines substantially reduced insurance companies' ability to purchase junk bonds (Carey et al. [1993]). Thus, banks loans were effectively a single substitute for junk bonds (Lemmon and Roberts [2010]).

[4] The endogenous switching problem occurs when firms decide which debt markets to enter in anticipation of the impact of financial reporting quality on a likelihood of obtaining debt financing. Given this self-selection problem, one would not be able to observe the effect of financial reporting quality on the amount of borrowings.

[1974]), lenders demand timely information that allows them to assess SPG firms' ability to generate cash flows to pay their loans and to evaluate the liquidation value of SPG firms' assets (Watts [2003a]; Kothari et al. [2010]). ATLR is an attribute of financial reporting that meets such a demand from lenders (Watts [1993]; Watts [2003a]). Prior work posits and finds that accounting conservatism benefits both lenders and borrowing firms by lowering the cost of debt (e.g., Watts and Zimmerman [1986]; Watts [1993]; Watts [2003a]; Ball [2001]; Ball and Shivakumar [2005]; Zhang [2008]; Wittenberg-Moerman [2008]; Kothari et al. [2010]). My paper provides evidence on whether the benefits of accounting conservatism are manifested in a greater amount of borrowings under circumstances in which credit is likely to be rationed.

In an attempt to assess the effect of ATLR on SPG firms' access to private debt markets and their ability to maintain pre-existing levels of investment, I perform differences-in-differences analyses for high versus low ATLR firms before and after the collapse of the junk bond market over the period 1988–1991. Specifically, I test for differences in the incremental shift in debt financing, investment, and investment through debt financing between more versus less conservative firms from the pre- to post-collapse period. I find that low ATLR firms experience substantial reductions in debt financing, investments, and investments through debt financing after the collapse of the junk bond market. However, I do not observe a similar pattern for high ATLR firms. These results suggest that accounting conservatism enhances SPG firms' ability to readily obtain private debt financing following the collapse of the junk bond market, and hence acts to curb a sharp decrease in investment that otherwise would follow.

Next, I examine the extent to which ATLR interacts with other mechanisms that are posited to reduce financing frictions in capital markets in facilitating SPG firms' ability to raise private debt capital. Specifically, I consider three mechanisms: (1) collateral, (2) the information environment, (3) relationship lending. If these mechanisms

mitigate financing frictions between lenders and SPG firms, then ATLR is more likely to improve SPG firms' ability to access private debt markets, and sustain pre-existing levels of investment, when they lack collateral, operate in a poor information environment, or have weak lending relationships. I find that this is indeed the case. The relation between ATLR and SPG firms' debt financing and investment is more pronounced for firms that have low asset-liquidation-value (a proxy for collateral) and for firms that are not followed by sell-side equity analysts (a proxy for the information environment). However, I do not find that the effects of ATLR on debt financing and investment vary according to the strength of lending relationships. These findings are consistent with the notion that collateral and sell-side equity analysts serve as substitutes for conditional conservatism to facilitate SPG firms' access to private debt markets following the collapse of the junk bond market, thereby preventing a decline in investment.

Finally, I investigate whether ATLR increases for SPG firms after the junk bond market collapsed. I posit that private lenders demand greater ATLR from SPG firms in the post-collapse period. Because the collapse aggravated agency conflicts between lenders and SPG firms, the lenders likely demand more verifiable accounting information. I also expect that SPG firms that attempt to raise private debt capital adjust ATLR in response to private lenders' greater demand for it. Furthermore, because conservative reporting is costly, I anticipate that firms with greater net debt financing needs are more likely to increase ATLR. Consistent with these predictions, I find that ATLR increases for SPG firms after the collapse of the junk bond market and this increase is stronger for firms with net issuance of debt.

My paper makes several contributions to the literature. First, this study contributes to the research that examines the effect of accounting conservatism on corporate financing and investment decisions. Prior evidence suggests that accounting conservatism is significantly associated with various attributes of debt contracts (Ahmed

et al. [2002]; Zhang [2008]; Wittenberg-Moerman [2008]; Ball et al. [2008]) and mitigates *overinvestment* (Francis and Martin [2010]; Bushman et al. [2011]; Ahmed and Duellman [2011]). In contrast, there is little evidence as to whether accounting conservatism affects firms' ability to obtain debt financing, thereby ameliorating *underinvestment*. The findings of this paper indicate that ATLR improves firms' ability to access private debt markets, and hence attenuates underinvestment that otherwise would arise.

Second, my findings expand the literature that examines the effect of accounting conservatism on the efficiency of debt contracts (Ball [2001]; Watts [2003a]; Ball et al. [2008]; Kothari et al. [2010]). Prior work finds that accounting conservatism is significantly associated with debt costs, such as interest rates charged on loans, credit ratings, and the bid-ask spreads when debt markets likely clear through prices (Ahmed et al. [2002]; Zhang [2008]; Wittenberg-Moerman [2008]). These studies claim that accounting conservatism increases the efficiency of debt contracts. The findings of this paper corroborate the notion that accounting conservatism improves the efficiency of debt contracts by showing that accounting conservatism increases the *amount* of borrowings when debt markets likely clear through *quantities*.

Finally, I contribute to the literature that investigates interdependencies amongst various mechanisms that comprise the corporate information environment. There is little evidence on whether public financial reporting, voluntary disclosure, and sell-side equity analysts are substitutes or complements (Beyer et al. [2010]). Prior research also investigates whether attributes of financial reports and contractual mechanisms, such as debt covenants, are substitutes or complements (Armstrong et al. [2010]). The findings of Beatty et al. [2008] and Nikolaev [2010] suggest that debt covenants and accounting conservatism are complements. This paper expands this line of research by showing that both collateral and sell-side equity analysts serve as substitutes for conditional

conservatism to reduce information asymmetry between private lenders and borrowing firms.

The findings of this paper are also of interest to policymakers and regulators. Non-financial firms experienced underinvestment during the financial crisis of 2008, primarily because they were unable to borrow from banks (Campello et al. [2010]). Underinvestment in the corporate sector can have a profound impact on the economy. In his 2010 address at Princeton University, Ben Bernanke, the Chairman of Board of Governors of the Federal Reserve System, stated: "although financial markets are for the most part functioning normally now, a concerted policy effort has so far not produced an economic recovery of sufficient vigor to significantly reduce the high level of unemployment." This paper sheds light on this issue by providing evidence as to whether ATLR ameliorates underinvestment that results from firms' inability to quickly obtain debt financing when a segment of financial markets does not operate normally.

This paper is related to prior work on the effect of financial reporting quality on financing and investment decisions. Watts and Zuo [2011] find that accounting conservatism is positively associated with stock returns during the financial crisis of 2008. They also document that more conservative firms exhibit greater debt financing and capital expenditures relative to less conservative firms. Balakrishnan et al. [2013] document that capital expenditures are more sensitive to changes in real estate values for firms with low reporting quality than for those with high reporting quality. They also find that firms with high reporting quality are more likely to obtain equity financing when debt capacity decreases. My paper complements both Watts and Zuo [2011] and Balakrishnan et al. [2013]. I use the collapse of the junk bond market in the early 1990s to study whether ATLR enabled SPG firms to rapidly access private debt markets when the public junk bond market collapsed. A unique feature of this setting is that only SPG firms were affected, which enables me to conduct falsification tests to clearly isolate the

supply shock from the demand shock. My study also examines several questions unaddressed by Watts and Zuo [2011] and Balakrishnan et al. [2013]. I provide evidence on whether collateral and sell-side equity analysts serve as substitutes for ATLR to reduce financing frictions between lenders and borrowing firms. I also present evidence as to whether firms adjust accounting conservatism in order to obtain private debt financing following the collapse of the junk bond market. Along with Watts and Zuo [2011] and Balakrishnan et al. [2013], this paper advances our understanding of the role of accounting conservatism in influencing corporate financing and investment policies.

The remainder of my paper is organized as follows. Section 2 reviews the related literature and develops the hypotheses. Section 3 describes sample selection procedures, variable measurements, and descriptive statistics. Section 4 describes my research design and presents the main results. Section 5 discusses the results of a set of falsification and robustness tests. Section 6 concludes.

CHAPTER 2 RELATED LITERATURE AND HYPOTHESES DEVELOPMENT

2.1 Financing Frictions and Investment

In a world without financing frictions, financing policy has no impact on investment policy (Modigliani and Miller [1958]). That is, corporate investment policy is determined solely by a firm's investment opportunity set (Yoshikawa [1980]; Hayashi [1982]; Abel [1983]). However, when capital markets are imperfect, financing and investment decisions are interconnected.[5] Information asymmetry between lenders and borrowing firms is one of the primary capital market imperfections. Prior work posits that both adverse selection and moral hazard that arise from asymmetric information between capital suppliers and firms can result in credit rationing (e.g., Jaffee and Russell [1976]; Stiglitz and Weiss [1981]; Mishkin [1992]; Holmstrom and Tirole [1997]). In the presence of adverse selection, lenders cannot discriminate between high and low quality risk firms. Thus, as interest rates increase, lenders are concerned that they may end up with low quality borrowers (high bankruptcy risk), which can decrease lenders' expected profits. Anticipating this possibility, lenders ration credit to borrowers with a high level of collateral or a low level of asymmetric information. Moral hazard can also lead to credit rationing. After loan contracts are in place, borrowers can take unexpected actions, such as asset substitution, that expropriate wealth from lenders to themselves. In response, lenders require contractual mechanisms, such as collateral and debt covenants, that mitigate the moral hazard problem. In the absence of these mechanisms, lenders would withdraw from debt markets, thereby leaving an excess in loan demand. In essence, credit rationing can arise from information asymmetry between lenders and borrowing firms, and in turn, borrowers can experience underinvestment.

[5] See Hubbard [1998] and Stein [2003] for a detailed review.

Empirical evidence in financial economics supports the notion that in the presence of information asymmetry between lenders and borrowers, adverse shocks to the supply of external capital or to collateral value affect corporate financing and investment decisions. Duchin et al. [2010] examine the financial crisis of 2008 and show that cash-rich firms did not experience a large reduction in capital expenditures, whereas firms lacking cash reserves did. Gan [2007] documents that Japanese firms whose debt capacity depended on the value of land substantially curtailed capital expenditures after the Japanese real estate market crashed in the early 1990s. Chaney et al. [2010] complement the findings of Gan [2007] by documenting that capital expenditures are positively related to changes in real estate values in the U.S. Lemmon and Roberts [2010] provide evidence that the collapse of the junk bond market in the early 1990s adversely influenced SPG firms' debt financing and investments. Specifically, they find that SPG firms, on average, experienced a sharp decline in debt financing and investments after the collapse of the junk bond market. They do not investigate, however, whether attributes of SPG firms' financial reports explain cross-sectional variation in debt financing or investment associated with the collapse of the junk bond market.

2.2 Asymmetric Timely Loss Recognition, Financing Frictions, and Investment

I predict that ATLR enables SPG firms to readily obtain private debt financing following the collapse of the junk bond market, thus preventing these firms from curtailing investment. Prior work posits and finds that ATLR improves the efficiency of debt contracts between lenders and borrowing firms (Watts and Zimmerman [1986]; Watts [1993]; Ball [2001]; Ahmed et al. [2002]; Watts [2003a]; Watts [2006]; Zhang [2008]; Wittenberg-Moerman [2008]; Kothari et al. [2010]). ATLR is posited to increase the efficiency of covenants in debt contracts by triggering covenant violations in a timely

fashion (Ball [2001]; Watts [2003a]; Nikolaev [2010]). Timely covenant violations transfer control rights from borrowers to lenders. The transfer of control rights enables debt holders to make decisions to constrain managers' actions that potentially expropriate wealth from debt holders to shareholders (Smith and Warner [1979]). Managers, acting on behalf of shareholders, can engage in negative NPV projects with high cash flow volatility in an attempt to increase shareholders' wealth at the expense of debt holders' wealth (Jensen and Meckling [1976]). If covenant violations transfer control rights in a timely fashion, debt holders can either accelerate the repayment of loans or place more binding constraints on borrowers' corporate decisions through renegotiation (Smith and Warner [1979]). Consistent with the prediction that ATLR increases the efficiency of covenants in debt contracts, Nikolaev [2010] shows that ATLR is positively associated with the number of covenants in public bond contracts. Because private lending contracts contain more covenants than public bond contracts (Dichev and Skinner [2002]), ATLR plays a greater role in enhancing the efficiency of covenants in private debt contracts (Wittenberg-Moerman [2008]).

ATLR also enhances debt contracting efficiency by providing verifiable lower bound measures of firms' net assets (Watts [1993]; Watts [2003a]; Kothari et al. [2010]). Lenders utilize firms' net asset measures to evaluate firms' ability to repay their loans at maturity and to monitor firms' creditworthiness throughout the life of loans (Watts [2003a]; Kothari et al. [2010]). Verifiable lower bound measures of firms' net assets inform lenders of whether the future value of firms' net assets is likely to be greater than the principal of loans at maturity (Watts [2003a]). Verifiable lower bound measures of firms' net assets also make net-worth-based covenants more binding, thereby enhancing the efficiency of covenants (Watts [2003a]). Further, ATLR provides verifiable liquidation value of firms' assets in the event of liquidation (Watts [1993]; Watts [2003a]). Because the likelihood of liquidation increases in default risk, I posit that

verifiable information about liquidation value is more relevant to private lenders when they assess loans to SPG firms after the collapse of the junk bond market. Thus, I predict that ATLR improves SPG firms' access to private debt markets after the collapse of the junk bond market and, hence, deters a reduction in investment that otherwise would occur.

Figure B1 provides a graphical representation of the posited relation between ATLR and debt financing for the pre- and post-collapse periods. To facilitate comparison with the empirical results presented later, two lines are drawn for the top and bottom ATLR quintiles, respectively. Because I predict that firms reporting less conservatively are less likely to obtain private debt financing after the collapse of the junk bond market, the dashed line representing the hypothesized relation between ATLR and debt financing for the bottom ATLR quintile is drawn to be downward sloping from the pre- to post-collapse period. In contrast, consistent with my hypothesis that firms reporting more conservatively are more likely to access private debt markets in the post-collapse period, the slope of the solid line representing the hypothesized relation between ATLR and debt financing for the top ATLR quintile is drawn to be flat from the pre- to post-collapse period (i.e., no decline in debt financing).

Consistent with the economic intuition and empirical evidence outlined above, recent theoretical work shows that conservative reporting improves the efficiency of debt contracts (e.g., Gao [2011]; Caskey and Hughes [2012]; Beyer [2012]). Gao [2011] shows that in the presence of earnings management accounting conservatism can improve the efficiency of debt contracts. Caskey and Hughes [2012] predict that accounting conservatism can be an efficient measurement system in debt contracts when the asset substitution problem is sufficiently severe. Beyer [2012] models the joint effect of accounting conservatism and aggregated earnings to show that the amount of borrowings that can be obtained by firms is higher under the conservative reporting system than

under the fair-value reporting system, and the difference in the amount of borrowings between two systems is increasing in the severity of moral hazard. In contrast to these theoretical models, Gigler et al. [2009] predict that absent moral hazard, accounting conservatism decreases the efficiency of debt contracting. They show that under a conservative accounting regime the costs of false alarms outweigh the costs of undue optimism. Overall, a key takeaway from these analytical papers is that the effect of accounting conservatism on the efficiency of debt contracts critically depends on the severity of moral hazard such as asset substitution and earnings management after loan contracts are in place. This paper sheds light on this issue by identifying a setting in which moral hazard is severe (i.e., SPG firms that experienced adverse shocks to external capital) and providing evidence on the relation between accounting conservatism and the amount of borrowings.

There is a debate over whether ATLR in publicly reported accounting information plays a critical role in private lending. Prior work in the relationship banking literature posits and shows that financial intermediaries, such as banks, obtain private information about borrowers, and use these private information channels to reduce information asymmetry between them and borrowing firms (Fama [1985]; Diamond [1991]; Boot [2001]). Thus, it is conceivable that private information about borrowers' financial condition serves as a substitute for public financial accounting information. A competing view, however, is that verifiable financial accounting information complements privately conveyed hard-to-verify information, such as budgets, management forecasts, and segment information (Ball [2001]; Watts [2006]). That is, public financial information can serve as a benchmark to evaluate difficult-to-verify private information (Ball [2001]; Watts [2006]). As a consequence, private information becomes more credible when verifiable public accounting information is available (Watts [2006]). Thus, it is ultimately an empirical question whether ATLR increases SPG firms' ability to obtain private debt

financing, thereby preventing these firms from curtailing investment after the collapse of the junk bond market. I formally state the first hypothesis as follows (in an alternative form):

H1: *Speculative-grade firms that recognize economic losses in a less timely manner experience a larger reduction in debt financing, investment, and investment through debt financing following the collapse of the junk bond market relative to speculative-grade firms that recognize economic losses in a timelier manner.*

2.3 Heterogeneity in the Effect of Asymmetric Timely Loss Recognition on Debt Financing and Investment

Despite the fact that asymmetric timely loss recognition is a crucial element of public financial reporting (Ball [2001]; Watts [2003a]; Kothari et al. [2010]), there exist alternative routes through which the adverse effects of information asymmetry between lenders and borrowing firms can be attenuated. I examine three mechanisms: (1) collateral, (2) the information environment, and (3) relationship lending.

First, prior work suggests that collateral alleviates information asymmetry between lenders and borrowers. Models based on adverse selection predict that high credit quality borrowers use collateral as a signaling tool in order to distinguish themselves from low credit quality borrowers (e.g., Bester [1985]; Chan and Kanatas [1985]). On the other hand, theoretical models based on moral hazard predict that low credit quality firms are more likely to pledge collateral (e.g., Berger and Udell [1990]; Boot et al. [1991]). These models posit that collateral reduces moral hazard such as asset substitution because collateral increases the value that creditors can capture in the event of default. Prior evidence is generally consistent with predictions based on moral hazard (Coco [2000]; Steijvers and Voordeckers [2009]). Recent evidence demonstrates that in

the presence of moral hazard, asset liquidation value is inversely associated with debt costs (Benmelech et al. [2005]; Jimenez et al. [2006]; Benmelech and Bergman [2009]). Further, extant work shows that collateral increases firms' debt capacity, and thus influences investment policy (Gan [2007]; Chaney et al. [2010]). Building on this line of research, the accounting literature posits and finds that financial reporting quality moderates the relation between collateral and corporate investment policies (Balakrishnan et al. [2013]). In essence, these findings imply that collateral can serve as a substitute for ATLR to mitigate moral hazard, thereby increasing firms' debt capacity. I formally state the first part of the second hypothesis as follows (in an alternative form):

H2a*: The effect of asymmetric timely loss recognition on debt financing, investment, and investment through debt financing following the collapse of the junk bond market is more pronounced for speculative-grade firms with a low level of pledgeable assets.*

Second, I study interdependencies between ATLR and alternative information sources. Because lenders can rely on other information sources to learn about borrowers' prospects, it is critical to consider alternative channels that potentially reduce information asymmetry between capital suppliers and firms (Beyer et al. [2010]). Among others, sell-side equity analysts are posited to play a crucial role in ameliorating asymmetric information in capital markets (Healy and Palepu [2001]; Beyer et al. [2010]). Furthermore, prior research suggests that sell-side equity analysts reduce information asymmetry between lenders and borrowing firms (Best and Zhang [1993]; Bhojraj and Sengupta [2003]; Cheng and Subramanyam [2008]). Cheng and Subramanyam [2008] find that analyst following is positively related to borrowing firms' long-term credit ratings and interpret this as evidence that greater analyst following reduces default risk. The findings of Best and Zhang [1993] suggest that banks rely on alternative information

sources, such as information generated by sell-side equity analysts, as an initial screening tool. Yu [2008] also shows that analyst following is negatively associated with earnings management. In summary, prior research suggests that sell-side equity analysts act as a substitute for ATLR in assisting lenders' screening and monitoring of SPG firms. I formally state the second part of the second hypothesis as follows (in an alternative form):

***H2b**: The effect of asymmetric timely loss recognition on debt financing, investment, and investment through debt financing following the collapse of the junk bond market is more pronounced for speculative-grade firms with low analyst following.*

Next, I examine how ATLR interacts with relationship lending. Prior work in the relationship banking literature posits that relationship lending can attenuate information asymmetry between lenders and borrowing firms. Financial intermediaries, such as banks, exist because they are a cost-effective mechanism in reducing information asymmetry in private debt contracts (Fama [1985]; Diamond [1991]; Bhattacharya and Thakor [1993]). Banks' information advantage stems from two sources. Unlike public bondholders, private lenders can obtain private financial information, such as budgets, forecasts, and tax returns (Boot [2001]; Armstrong et al. [2010]). However, as discussed previously, it is unclear whether privately obtained difficult-to-verify financial information and audited public financial information are complements or substitutes. In addition to private financial data, private lenders can also acquire "soft" information, such as CEOs' character and customer characteristics, through multiple transactions with the same borrower over time (Boot [2001]). At the outset, one might suspect that "soft" information can subsume public financial information. It is, however, uncertain whether and the extent to which "soft" information serves as a substitute for ATLR in published financial statements of large public firms, because prior evidence on the benefits of

relationship lending is limited to small- and medium-sized firms. Bharath et al. [2009] show that the benefits of relationship lending evaporate for firms with public long-term debt ratings and firms that make up the S&P 1500 index. Note that by construction, my sample consists entirely of firms with public bond ratings. Furthermore, most SPG firms are unlikely to have strong lending relationships with banks because they depended mainly upon the public junk bond market. Thus, it is an empirical question whether relationship lending moderates or negates the impact of ATLR on SPG firms' ability to acquire private debt financing after the collapse of the junk bond market. I formally state the final part of the second hypothesis as follows (in an alternative form):

***H2c**: The effect of asymmetric timely loss recognition on debt financing, investment, and investment through debt financing following the collapse of the junk bond market is more pronounced for speculative-grade firms with weak lending relationships.*

2.4 Do Firms Adjust Asymmetric Timely Loss Recognition?

As a final part of my analyses, I investigate whether SPG firms increase ATLR after the junk bond market collapsed. Prior work posits that ATLR reflected in firms' financial statements evolves in response to changes in supply of, and demand for, this characteristic of financial reporting (Basu [1997]; Ball [2001]; Ball [2008]; Kothari et al. [2010]; Beyer et al. [2010]). Empirical evidence is consistent with this argument (Ball et al. [2000]; Ball et al. [2003]; Gormley et al. [2011]; Jayaraman [2011]; Jayaraman and Shivakumar [2011]). For instance, Gormley et al. [2011] find that Indian firms increase ATLR in response to the entry of foreign banks into India. They interpret this as suggesting that foreign banks demand greater accounting conservatism from Indian firms, and Indian firms comply with such a demand.

I argue that private lenders demand greater ATLR from SPG firms after the collapse of the junk bond market. Default rates of SPG bonds increased noticeably from the pre- to post-collapse period. Historical default rates for SPG bonds jumped from 2.5 percent (1988) and 4.0 percent (1989) to 8.7 percent (1990) and 9.0 percent (1991) (Altman [1992]). Thus, agency conflicts between lenders and SPG firms' shareholders were likely aggravated after the collapse of the junk bond market (Smith and Warner [1979]). Consequently, I predict that lenders likely demand more verifiable accounting information from potential borrowers to evaluate their ability to repay loans at maturity. Consistent with this conjecture, anecdotal evidence suggests that banks were concerned with borrowing firms' net assets in the early 1990s.[6]

I posit that in order to access private debt markets SPG firms increase ATLR in response to private lenders' demand for it. Furthermore, I expect that because conservative reporting is costly to borrowing firms, SPG firms increase ATLR in their financial statements only if the benefits from doing so outweigh the costs. Conservative reporting can be costly for several reasons. First, as some CFOs reported in a recent survey (Dichev et al. [2012]), conservative reporting can result in equity undervaluation. Second, SPG firms may be reluctant to adopt more conservative accounting treatment if doing so puts them in jeopardy of violating debt covenants on existing junk bonds, because covenant violations often result in a reduction in debt financing or an increase in debt costs (Roberts and Sufi [2009]). Thus, I expect that SPG firms with greater net debt financing needs are more likely to increase ATLR following the collapse of the junk bond market. I formally state the third hypothesis as follows (in an alternative form):

[6] An anecdote about Hovnanian Enterprises Inc. indicates that banks were concerned with borrowing firms' net assets in the early 1990s: "'It's too expensive in today's market,' he said. Instead, Hovnanian is negotiating a bank loan, but the bank may require the company to sell a subsidiary to build up its equity – something it wouldn't need to do if the junk-bond market were healthy." *DOWJONES*, 20 May 1990.

H3*: Asymmetric timely loss recognition increases for SPG firms following the collapse of the junk bond market and this increase is more pronounced for SPG firms with net issuance of debt.*

CHAPTER 3 SAMPLE, VARIABLES, AND DESCRIPTIVE STATISTICS

3.1 Sample selection

I begin by defining the post-collapse period. Although somewhat arbitrary, I do so based on the number and dollar value of new U.S. junk bonds issued. As shown in Figures B3 and B4, the number and dollar value of U.S. junk bonds issued dropped dramatically in 1990 and 1991. The average number of U.S. junk bonds issued during 1990–1991 was less than half of the number issued during 1989. The average dollar value of U.S. junk bonds issued during the same period is approximately 20 percent of that of 1989. Figures B3 and B4, however, suggest that the junk bond market recovered in 1992. Therefore, I define the post-collapse period as 1990–1991 and then select 1988–1989 as the pre-collapse period in order to have a balanced panel in the pre- and post-period.[7]

Next, I identify a sample of firm-years for which firms have S&P long-term domestic issuer credit rating and then delete observations with above-investment-grade ratings (i.e., BBB- or higher) for the period over 1988–1991. Further, I exclude firm-years belonging to the financial industry. I also delete observations for which I do not have sufficient information to compute variables used in my analyses. In order to minimize classification errors, I exclude observations for which firms' fiscal-year-ends do not fall in December or January.[8] Finally, I require each firm to have at least one observation in the pre-collapse period and one in the post-collapse period in order to perform within-firm inter-temporal change analyses. This selection procedure results in a sample of 450 firm-years (132 firms) between 1988 and 1991. Table A1, Panel A summarizes my sample selection procedures.

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[7] To address concerns with potential within-subject-autocorrelations (Bertrand et al. [2004]), I average all pre-collapse observations and post-collapse observations for each firm, respectively. Main inferences remain unaffected.

[8] On February 13, 1990, Drexel unexpectedly filed bankruptcy. Thus, the inclusion of non-December and non-January fiscal-year-end firms potentially increases misclassification errors.

3.2 Variable Measurement

3.2.1 Asymmetric Timely Loss Recognition

To calculate asymmetric timely loss recognition, I estimate the Basu [1997] model as follows:

$$E_{it} = \delta_0 + \delta_1 D_{it} + \delta_2 RET_{it} + \delta_3 RET_{it} * D_{it} + \varepsilon_{it} \quad (1)$$

where E_{it} is earnings for firm i and for fiscal year t divided by lagged market capitalization, D_{it} is an indicator variable that takes the value of one if RET_{it} is negative, and zero otherwise, and RET_{it} is buy-and-hold stock returns for firm i over the fiscal year t. Similar to Ball et al. [2008], Wittenberg-Moerman [2008], and Beatty et al. [2008], I estimate eq. (1) for each two-digit SIC industry over the past ten years leading up to the year for which I compute ATLR. For this estimation, I include all Compustat firms within a given two-digit SIC.[9] I then assign the estimated industry-year Basu coefficients (δ_3) to all firms in the same two-digit SIC industry and fiscal year cohort.[10] Later in this paper, I conduct a set of robustness tests in order to ensure that my results are not driven by factors associated with a firm's industry membership.

3.2.2 Financing and Investment Variables

I calculate debt financing (FINDBT) as long-term debt issuance plus current debt changes minus long-term debt reduction, deflated by lagged total assets. I compute equity financing (FINEQY) as the sale of common and preferred stock minus the purchase of

[9] I require at least 20 observations for each two-digit SIC.

[10] I conceptualize that the ATLR of firm i in industry j is comprised of two components: an industry-specific component and a firm-specific component. Because the observed ATLR is affected by both accounting standards and managerial judgment involved in applying these standards, an industry-level ATLR derives from both differences in the ability of accounting standards, such as lower of cost or market accounting for inventory and impairment accounting for long-lived assets, to recognize economic losses in a timely fashion and differences in managerial judgment involved in applying accounting standards across industries. An industry-level ATLR does not capture the idiosyncratic component within an industry, whereas a firm-level ATLR captures this component.

common and preferred stock minus common dividends, deflated by lagged total assets. Total financing (FINTOT) is defined as the sum of FINDBT and FINEQY. I measure investment activities with capital expenditures (INVCPX), research and development (INVRND), and acquisitions (INVACQ), deflated by lagged total assets, respectively. Total investment (INVTOT) is defined as INVCPX plus INVRND plus INVACQ minus the sale of property, plant, and equipment.[11]

3.3 Descriptive Statistics

Table A1, Panel B presents descriptive statistics for variables used in my analyses. The definitions and measurement of variables are provided in LIST OF ABBREVIATIONS.All variables (except for FIRMAGE and BC) are winsorized at the 1st and 99th percentiles. Several statistics are noteworthy. First, consistent with selecting SPG firms, the median of S&P long-term domestic issuer credit rating is B+ for my sample. The 1st and 3rd quartiles of S&P long-term domestic issuer credit rating are B and BB, respectively. Next, the means of total financing (FINTOT) and debt financing (FINDBT) comprise 4.2% and 3.4% of lagged total assets, respectively. In contrast, the medians of FINTOT and FINDBT are approximately zero. This suggests that for approximately half of firm-years more debt was retired than was issued. The means of total investment (INVTOT), capital expenditures (INVCPX) and acquisitions (INVACQ) are 11.8%, 7.4%, and 3.0% of lagged total assets, respectively. Lastly, note that the mean (median) of Altman Z-score (ZSCORE) is 1.985 (1.931). This suggests that a little less than half of observations are regarded as financially distressed as measured by Altman Z-score (i.e., Altman Z-score < 1.81).

[11] For a robustness check, I also use alternative measures of investment: advertisement, changes in working capital, and operating leases.

CHAPTER 4 EMPIRICAL APPOACH AND MAIN RESULTS

4.1 Univariate Tests

Initially, I conduct profile analyses to test H1. To do so, I decompose the sample into the pre- and post-collapse periods and then divide each period into above- and below-median ATLR subsamples. For each period and each subsample, I calculate the means of three financing variables and four investment variables and then compute differences in these means between the pre- and post-collapse periods and corresponding *p*-values based on *t*-test. The results presented in Table A1, Panel C are consistent with H1. For financing variables, I find that the mean of total financing (FINTOT) is 6.6% of lagged total assets in the pre-collapse period, whereas it is only 1.8% of lagged total assets in the post-collapse period. The difference between the two means is statistically different from zero (*p*-value = 0.007). This decline in total financing is due primarily to a substantial decrease in debt financing in the post-collapse period relative to the pre-collapse period. The mean of debt financing (FINDBT) is only 0.4% of lagged total assets in the post-collapse period, while it is 6.4% of lagged total assets in the pre-collapse period. The difference between the two means is also statistically different from zero (*p*-value < 0.001). The considerable reduction in debt financing across SPG firms is most prominent for the below-median ATLR subsample. The below-median ATLR subsample experiences a 8.8% decrease in debt financing (*p*-value < 0.001), whereas the above-median ATLR subsample exhibits a 3.1% decline in debt financing (*p*-value = 0.187). Consistent with H1, these findings suggest that debt financing does not decline as sharply for SPG firms with high ATLR as it does for those with low ATLR.

The results of univariate tests for investment variables also support H1. The means of total investment (INVTOT) and acquisitions (INVACQ) decline substantially after the collapse of the junk bond market. The means of INVTOT and INVACQ

decrease by 3.5% and 2.5% of lagged total assets relative to the pre-collapse period, respectively, both of which are statistically significant (*p*-value = 0.015, *p*-value = 0.010). The declines in INVTOT and INVACQ are more pronounced for the below-median ATLR subsample. The below-median ATLR subsample exhibits 5.5% reduction in total investment (*p*-value = 0.006), whereas the above-median ATLR subsample only experiences a 1.6% decrease (*p*-value = 0.461). The below-median ATLR subsample also shows significant declines in both capital expenditure (-2.3%, *p*-value = 0.004) and acquisitions (-2.7%, *p*-value = 0.026), while the above-median ATLR subsample does not exhibit significant decreases in these types of investments.

Collectively, the results support my prediction that asymmetric timely loss recognition improves SPG firms' ability to obtain debt financing, and hence prevents a decrease in investment following the collapse of the junk bond market. I observe a substantial decrease in debt financing and investment for the below-median ATLR subsample. But I do not observe a decline of similar magnitude for the above-median ATLR subsample.

4.2 Multivariate Tests

The results presented in the previous section support H1. However, these tests do not control for other factors that prior research has shown to be associated with corporate financing and investment decisions. Moreover, the tests presented above do not consider whether ATLR affects investment through debt financing. In this section, I perform multivariate analyses to test H1. I first describe the empirical approach and then discuss estimation results.

4.2.1 Methodology

In order to test whether the collapse of the junk bond market has a differential effect on high versus low ATLR firms, I perform differences-in-differences analyses by estimating the following regressions:

$$FIN_{it} \text{ or } INV_{it} = \alpha + \beta_1 POST_t + \beta_2 ATLR_{it-1} + \beta_3 ATLR_{it-1} * POST_t + \mathrm{X}' * \Gamma + \varepsilon_{it} \quad (2)$$

where FIN_{it} and INV_{it} represent financing variables (FINTOT, FINDBT, and FINEQY) and investment variables (INVTOT, INVCPX, INVRND, and INVACQ) for firm i and fiscal year t. $ATLR_{it-1}$ represents asymmetric timely loss recognition for firm i and fiscal year t-1. In order to facilitate economic interpretation, the raw values of ATLR are ranked into quintiles 0 through 4 and then divided by 4 so that the resulting values range between zero and one. $POST_t$ is an indicator variable that takes the value of one if an observation belongs to the post-collapse period (1990–1991), and zero otherwise. X' and Γ represent a vector of control variables and their coefficients, respectively. Following prior work (see Hubbard [1998] for a review), I include Tobin's q (TOBINQ) and cash flows from operation (CFO) to control for investment opportunity set and financing constraints, respectively. I also include a set of variables that prior work shows are associated with corporate financing and investment decisions (e.g., Richardson [2006]; Biddle et al. [2009]): total assets (AT); firm age (FIRMAGE); asset tangibility (TANG); the volatility of return on assets (STDROA); the volatility of total investment (STDINV); leverage ratio (LEV); Altman Z-score (ZSCORE). Prior work shows that insulation from hostile takeovers affects corporate financing and investment decisions. Bertrand and Mullainathan [2003] find that firms are less likely to destruct and create plants following the state adoption of antitakeover laws from the late 1980s to the early 1990s. Thus, I include an indicator variable (BC) that takes the value of one if an observation is incorporated in a state in which antitakeover laws were adopted and belongs to the post-

adoption period. The definitions and measurement of variables are provided in LIST OF ABBREVIATIONS. To account for inter-temporal dependence across residuals, I cluster standard errors by firm. I also include year- and industry-indicator (one-digit SIC) variables to control for unobservable year- and industry-fixed effects.

The coefficients of main interest are β_1 and β_3. β_1+β_3 (β_1) measures the incremental change in financing and investment for the top (bottom) ATLR quintile in the post-collapse period relative to the pre-collapse period, respectively. β_3 captures the difference in the incremental shift between the top and bottom ATLR quintiles. Consistent with the prediction that high (low) ATLR firms are less (more) likely to experience a decline in debt financing and investment, I expect β_3 (β_1) to be positive (negative).

Next, to test whether SPG firms recognizing economic losses in a timelier fashion are less likely to curtail investment through debt financing, I modify eq. (2) as follows:

$$INV_{it} = \alpha + \beta_1 POST_t + \beta_2 ATLR_{it-1} + \beta_3 ATLR_{it-1} * POST_t + \beta_4 FINDBT_{it} + \beta_5 FINDBT_{it} * POST_t + \beta_6 ATLR_{it-1} * FINDBT_{it} + \beta_7 ATLR_{it-1} * FINDBT_{it} * POST_t + \mathrm{X}' * \Gamma + \varepsilon_{it} \quad (3)$$

where all variables are previously defined. X' and Γ represent a vector of the same set of control variables and their coefficients as in eq. (2), respectively. My interest focuses on β_5 and β_7. β_5+β_7 (β_5) captures the incremental change in investment through debt financing for the top (bottom) ATLR quintile from the pre- to post-collapse period, respectively. β_7 measures the difference in the incremental shift in investment through debt financing between the top and bottom ATLR quintiles. If high (low) ATLR firms are less (more) likely to experience a decline in investment through debt financing, then I expect β_7 (β_5) to be positive (negative).

4.2.2 Results

The estimation results displayed in Table A2 are consistent with H1. The first three columns of Panel A report the results for financing variables. In column (2) (FINDBT), I find that the coefficient estimate on POST (β_1) is negative and statistically different from zero (β_1 = -0.094, p-value = 0.001). In contrast, $\beta_1+\beta_3$ is insignificant ($\beta_1+\beta_3$ = -0.015, p-value = 0.636). The coefficient estimate on ATLR*POST (β_3) is significantly positive (β_3 = 0.079, p-value = 0.063). These results imply that following the collapse of the junk bond market, all SPG firms experience a decrease in debt financing, but the top ATLR quintile firms experience a much smaller reduction in debt financing relative to the bottom ATLR quintile firms. The top (bottom) ATLR quintile experiences 1.5% (9.4%) decline in debt financing of lagged total assets [-0.015 (-0.094 + 0.079) versus -0.094]. The difference in the incremental shift in debt financing between the top and bottom ATLR quintiles is also economically significant. The coefficient of 0.079 (β_3) comprises 82 percent of the interquartile range of FINDBT in my sample {(0.82 = 0.079 / 0.096 [0.050 - (-0.046)]}.

To facilitate understanding of the above reported empirical results, I provide a graphical representation of the empirical relation between ATLR and debt financing for the pre- and post-collapse periods in Figure B2. Similar to Figure B1, the solid (dashed) line represents the relation between ATLR and debt financing for the top (bottom) ATLR quintile. Note that the estimated relation between ATLR and debt financing shown in Figure B2 accords generally with the posited relation depicted in Figure B1. I observe a downward slope for the bottom ATLR quintile, but I observe a relatively flat slope for the top ATLR quintile. Nevertheless, the level of debt financing in the pre-collapse period is slightly higher for the bottom ATLR quintile than for the top ATLR quintile.

The last four columns in Panel A of Table A2 provide the results for tests for the incremental shift in investment. As predicted, β_1 is negative and statistically different

from zero for INVTOT (β_1 = -0.057, *p*-value = 0.028), INVCPX (β_1 = -0.023, *p*-value = 0.018), and INVACQ (β_1 = -0.032, *p*-value = 0.095), which suggests that the bottom ATLR quintile substantially curtails total investment, capital expenditures, and acquisitions in the post-collapse period relative to the pre-collapse period. Conversely, $\beta_1+\beta_3$ is insignificant for INVTOT, INVCPX, and INVACQ, which indicates that the top ATLR quintile does not experience a decline of similar magnitude in investment. Nevertheless, I cannot reject the null that the coefficient on ATLR*POST (β_3) is zero at the conventional level (*p*-value = 0.193 for INVTOT, *p*-value = 0.207 for INVCPX, *p*-value = 0.466 for INVACQ).

Panel B of Table A2 presents the results of tests for differences in the incremental shift for investment through debt financing from the pre- to post-collapse period. Recall that $\beta_5+\beta_7$ (β_5) measures the incremental shift in investment through debt financing for the top (bottom) ATLR quintile in the post-collapse period relative to the pre-collapse period. β_5 is significantly negative for INVACQ (β_5 = -0.288, *p*-value = 0.054), which indicates that the bottom ATLR quintile experiences the incremental decline in acquisitions through debt financing after the collapse of the junk bond market. Interestingly, $\beta_5+\beta_7$ is significantly positive for INVACQ ($\beta_5+\beta_7$ = 0.411, *p*-value = 0.066). This indicates that the top ATLR quintile firms exhibit an incremental increase in acquisitions through debt financing from the pre- to post-collapse period. Note that β_7 is positive and significant for INVACQ (β_7 = 0.700, *p*-value = 0.032). [12]

Taken together, the results reported in this section support H1. I find that firms with low ATLR exhibit a substantial decline in debt financing, investment, and

[12] Anecdotal evidence appears consistent with the empirical results: "In a typical late 1980s US bid, the predator company would finance its highly leveraged offer through a combination of bank loans and a 'bridging loan' from an investment bank – a quickly obtainable line of credit which would then be refinanced through the issue of junk bonds." "Takeovers are still taking place, but they tend to be mounted by companies with good strategic arguments for a deal, rather than financier expert at breaking up businesses; they will be financed by bank debt, or even equity, rather than junk bonds." Financial Times, 25 June 1990

acquisitions through debt financing from the pre- to post-collapse period. I do not, however, observe similar patterns for firms with high ATLR. These findings suggest that ATLR improves SPG firms' ability to obtain private debt financing after the collapse of the junk bond market, and thus prevents a reduction in investments.

4.3 Falsification Tests

There are several concerns that may cloud my inferences that ATLR enhances SPG firms' ability to raise private debt financing and sustain pre-existing levels of investment following the collapse of the junk bond market. In this section, I conduct several falsification tests to mitigate these concerns. My identification strategy requires that the variation in ATLR at the time of the collapse of the junk bond market be exogenous to observed financing and investment behavior in the post-collapse period. However, a firm's ATLR at a point in time may be correlated with future growth opportunities. As information asymmetry between insiders and outsiders increases in the investment opportunity set (Smith and Watts [1992]), capital suppliers demand greater ATLR from firms with greater investment opportunities (LaFond and Watts [2008]; LaFond and Roychowdury [2008]). Thus, it is not surprising to observe a positive relation between beginning-of-year ATLR and debt financing and investment.

To address this concern, I run two sets of analyses. First, I construct a new sample by adding back observations whose fiscal-year-ends do not fall in December or January to the original sample. Note that I excluded these observations in constructing the original sample in order to minimize misclassification errors between the pre- and post-collapse periods. Thus, the inclusion of firms with non-December and non-January fiscal-year-ends will increase classification errors. At the same time, I hold investment opportunities constant, because a firm's investment opportunities are unlikely to be correlated with its fiscal-year-end. That is, a firm' fiscal-year-end serves as an instrument that is correlated

with the magnitude of the shock (i.e., the collapse of the junk bond market), but uncorrelated with individual firms' investment opportunities. For this noisy sample, I rerun eq. (2) and eq. (3). If the main results reported in the previous section are due to uncontrolled investment opportunities, I would expect the main results to remain unchanged for the noisy sample. That is, I expect that a positive relation between beginning-of-year ATLR and the incremental shift in debt financing and investment should be a general characteristic of data, and hence should not vary depending on firms' fiscal-year-ends.

Second, I repeat the main analyses for a placebo shock. Specifically, I rerun eq. (2) and (3) for a sample of firm-years over the period 1986–1989 as if the collapse of the junk bond market had occurred in early 1988. Again, if a relation between beginning-of-year ATLR and the incremental shift in debt financing and investment is attributable to uncontrolled investment opportunities, then such a relation should be apparent for this pseudo shock period. Alternatively, if the main results presented in the previous section are associated with the collapse of the junk bond market I should not observe a similar phenomenon for this placebo shock.

The results documented in Table A3 and A4 do not support the argument that uncontrolled investment opportunities explain the positive relation between beginning-of-year ATLR and the incremental change in debt financing and investment. The results for tests for the noisy sample are displayed in Table A3. The coefficient estimates on variables of main interest decrease both in magnitude and in statistical significance. In column (2), Panel A, the coefficient estimate on POST (β_1) becomes smaller in absolute terms for FINDBT (β_1 = -0.088) compared with the corresponding coefficient estimate in Table A2, Panel A (β_1 = -0.094). β_3 becomes insignificant for FINDBT (β_3 = 0.051, *p*-value = 0.200), whereas the corresponding coefficient for the original sample is statistically different from zero (β_3 = 0.079, *p*-value = 0.063). The results of tests for

investment through debt financing reported in Panel B, Table A3 reveal that β_7 becomes insignificant for INVACQ ($\beta_7 = 0.435$, *p*-value = 0.238) compared with the corresponding coefficient reported in Table A2, Panel B ($\beta_3 = 0.700$, *p*-value = 0.032). In essence, the results for the noisy sample mitigate the concern that uncontrolled investment opportunities are a viable explanation for a positive relation between ATLR and the incremental shift in debt financing and investment following the collapse of the junk bond market.

The results from the placebo shock tests are reported in Table A4. The results for tests for financing and investment reported in Panel A reveal that β_1 and β_3 are not statistically different from zero for FINDBT and INVACQ. In Panel B, I find that β_7 also becomes insignificant for all four investment variables, whereas β_5 is significantly positive for INVTOT and INVACQ. None of these results are consistent with a possibility that a relation between beginning-of-year ATLR and the incremental shift in debt financing, investment, and investment through debt financing is attributable to uncontrolled investment opportunities. Collectively, the tests for the noisy sample and the placebo shock do not support the view that uncontrolled investment opportunities explain the main results reported in the previous section.

Another concern is that my results may reflect changes in demand for financing and investment in the early 1990s recession. The U.S. economy entered the recession in July 1990 and this recession lasted until March 1991. As the recession likely affected all firms in the U.S., the recession per se cannot explain a positive relation between ATLR and the incremental shift in debt financing and investment. Nevertheless, if the 1990 recession differentially influenced high and low ATLR firms, it could explain my findings. Suppose that low ATLR firms experienced a greater decline in demand for products than high ATLR firms did. Then one would expect to observe that firms with low ATLR experienced a larger decline in debt financing and investment than firms with

high ATLR. To address this concern, I construct a sample of firms with S&P long-term domestic issuer credit ratings of A or above and repeat my analyses. If my results reflect differential demand for products in the 1990 recession, then I expect to observe a similar relation between ATLR and debt financing and investment for this sample. A possible correlation between ATLR and demand for products in the 1990 recession should not vary depending on a firm's credit ratings.

The results of tests for firms with S&P long-term domestic issuer credit ratings of A or above are presented in Table A5. In Column (2) of Panel A, the coefficient on ATLR*POST (β_3) is not statistically different from zero for FINDBT ($\beta_3 = 0.017$, *p*-value = 0.243). In Column (4) of Panel B, the coefficient on ATLR*FINDBT*POST (β_7) is also insignificant for INVACQ ($\beta_7 = 0.124$, *p*-value = 0.454).[13] These results suggest that differences in demand for products are unlikely to explain the main results presented in the previous section.[14]

Taken together, the results of the falsification tests reported in this section indicate that neither omitted investment opportunities nor differential demand for products in the early 1990s recession explains the main results reported in the previous section. Instead, these supplemental tests corroborate the notion that asymmetric timely loss recognition facilitates SPG firms' access to the debt market, and thus acts to deter a sharp decline in investments after the collapse of the junk bond market.

[13] Interestingly, the coefficient estimate on POST (β_1) for FINDBT is negatively significant. This suggests that demand for debt financing was not constant from the late 1980s to the early 1990s.

[14] These findings also alleviate concerns with the use of an industry-level measure of ATLR. If ATLR captures an unknown industry effect, I should observe similar patterns for firms with S&P long-term domestic issuer credit ratings of A or above, but I do not.

4.4 Heterogeneity in the Effect of Asymmetric Timely Loss Recognition on Debt Financing and Investment

In this section, I test whether the effect of ATLR on SPG firms' debt financing and investment varies depending on whether there exist alternative channels through which lenders can alleviate information asymmetry with borrowing firms. I examine three alternative mechanisms: (1) collateral and (2) the information environment, and (3) relationship lending.

4.4.1 Collateral

To test whether a relation between ATLR and SPG firms' debt financing and investment in the post-collapse period varies as a function of collateral, I measure firms' ability to pledge collateral. Following recent empirical research (Benmelech et al. [2005]; Benmelech et al. [2008]), I employ asset liquidation value as a proxy for pledgeable assets. As with prior work (Berger et al. [1996]; Collins et al. [1997]; Almeida and Campello [2007]) I compute asset liquidation value as $1 * CHE_{it} + 0.715 * REC_{it} + 0.547 * INV_{it} + 0.535 * PPE_{it}$ where CHE_{it} is cash and cash equivalents, REC_{it} is account receivables, PPE_{it} is property, plant, and equipment.[15] I divide the sample into above- and below-median asset-liquidation-value subsamples and then rerun eq. (2) and eq. (3) for these two subsamples, respectively. If collateral indeed serves as a substitute for ATLR to reduce financing frictions, then the effect of ATLR on SPG firms' debt financing and investment should be more pronounced for the below-median asset-liquidation-value subsample.

The estimation results reported in Table A6 are consistent with my prediction about the effects of collateral on firms' ability to obtain debt financing in the post-

[15] Following Collins et al. [1999] I also subtract accounts payable and long-term debt to calculate asset liquidation value. The main results remain unchanged.

collapse period. In Panel A, β_1 is significantly negative for FINDBT (β_1 = -0.168, *p*-value < 0.001) only for the below-median asset-liquidation-value subsample. In contrast, $\beta_1+\beta_3$ is statistically indistinguishable from zero for FINDBT for both the above- and below-median asset-liquidation-value subsamples. β_3 is 0.181 and statistically different from zero at *p*-value = 0.023 only for the below-median asset-liquidation-value subsample. The tests of the equality of β_3 between the high and low subsamples reveal that two coefficient estimates for FINDBT are statistically different from each other (*p*-value = 0.035). In essence, these results indicate that SPG firms that recognize economic losses in a less timely fashion experience a sharp decline in debt financing only when their level of pledgeable assets is low.

I present the results of tests for the effect of collateral on investment in Panel B of Table A6. In INVTOT and INVACQ columns, I find that β_1 is significantly negative for INVTOT and INVACQ only among the below-median asset-liquidation-value subsample (β_1 = -0.103, *p*-value = 0.039; β_1 = -0.085, *p*-value = 0.043). I also find that $\beta_1+\beta_3$ is statistically indistinguishable from zero for both the above- and below-median asset-liquidation-value subsamples. Nevertheless, I cannot reject the null hypothesis that the coefficient estimates on ATLR*POST (β_3) are equal to zero for INVACQ for either the above- or below-median asset-liquidation-value subsample. I also test the equality of the coefficients on ATLR*POST (β_3) between the above- and below-median asset-liquidation-value subsamples for INVACQ, and reject the null that these two coefficients are equal at *p*-value = 0.055.

The results of tests for the effect of collateral on investment through debt financing reported in Panel C of Table 6 are similar to those reported in Panel B. In the INVACQ column, β_5 and β_7 are -0.475 and 1.130, respectively and both coefficient estimates are statistically different from zero (*p*-value = 0.019; *p*-value = 0.008) only for the below-median asset-liquidation-value subsample. $\beta_5+\beta_7$ is positive (0.655) at *p*-value

= 0.025. I find that the coefficient estimate on ATLR*FINDBT*POST (β_7) is statistically different between the above- and below-median asset-liquidation-value subsamples at *p*-value = 0.006 for INVACQ. These results for investment and investment through debt financing suggest that low ATLR SPG firms exhibit a substantial reduction in acquisitions and acquisitions through debt financing when they lack pledgeable assets. I do not observe a similar pattern for high ATLR SPG firms.

Overall, the results reported in this section are consistent with H2a. SPG firms that recognize economic losses in a less timely manner exhibit a larger reduction in debt financing and acquisitions through debt financing following the collapse of the junk bond market than SPG firms that recognize economic losses in a timelier manner, but only when they lack pledgeable assets. These findings are consistent with the notion that collateral acts as a substitute for ATLR to improve firms' ability to access debt markets, and thus curb a decrease in investment that otherwise would follow.

4.4.2 Information Environment

In this section, I investigate whether alternative source of information available in capital markets moderates the effect of ATLR on SPG firms' access to private debt markets. To test for cross-sectional variation in the role of ATLR as a function of the information environment, I measure the richness of the information environment by using sell-side equity analysts following (Best and Zhang [1993]; Healy and Palepu [2001]; Cheng and Subramanyam [2008]; Beyer et al. [2010]). I divide my sample into the high and low information-environment subsamples depending on whether a firm is followed by sell-side equity analysts or not. If information provided by analysts serves as a substitute for ATLR to mitigate information asymmetry between private lenders and borrowing firms, the main results should be more pronounced for firms that are not followed by sell-side equity analysts.

The results presented in Table A7 support my prediction. The results of tests for the effect of analyst following on debt financing are reported in Panel A. In the FINDBT column, β_1 is negative and statistically different from zero for both the high and low information-environment subsamples, whereas $\beta_1+\beta_3$ is insignificant for both subsamples. However, I find that the difference in the incremental shift in debt financing is statistically different from zero only for the low information-environment subsample (β_3 = 0.115, *p*-value = 0.062). The results of tests for the effects of analyst following on investment are presented in Panel B of Table 7. In column (2) and (4), I find that β_1 is significantly negative for INVTOT (β_1 = -0.070, *p*-value = 0.055) and INVCPX (β_1 = -0.039, *p*-value = 0.010) for the low information-environment subsample, while $\beta_1+\beta_3$ is insignificant for INVTOT (*p*-value = 0.270) and INVCPX (*p*-value = 0.831). Further, β_3 is statistically different from zero only for the low information-environment subsample. In contrast, I do not find similar patterns for the high information-environment subsample. Nevertheless, the tests of the equality of β_3 between the high and low information-environment subsamples cannot reject the null that the differences in the incremental change (β_3) are equal to zero (*p*-value = 0.182 for INVTOT; *p*-value = 0.122 for INVCPX).[16]

In summary, the results of tests for the information environment support H2b. The results reveal that SPG firms recognizing economic losses in a timelier fashion experience a smaller decline in debt financing and capital expenditures than firms recognizing economic losses in a less timely fashion only when they are not followed by sell-side equity analysts. These findings suggest that sell-side equity analysts act as a substitute for ATLR to reduce information asymmetry between lenders and borrowing firms.

[16] In Panel C of Table A7, I do not find that the effect of ATLR on investment through debt financing varies depending on whether firms are followed by sell-side equity analysts.

4.4.3 Relationship Lending

To test whether the effects of ATLR on SPG firms' debt financing and investment are more pronounced for firms with weak lending relationships than for firms with strong lending relationships, I use firm age as a proxy for the degree of relationship lending following prior work (Berger and Udell [1995]). I decompose my sample into the above- and below-median age subsamples and then re-estimate eq. (2) and eq. (3) for these two subsamples, separately.

The results documented in Table A8 do not support H2c. In Panel A and B, I do not observe the differential impact of ATLR on SPG firms' access to the private debt market and investment between the above- and below-median age subsamples. The coefficient estimates on ATLR*POST (β_3) are not statistically different from zero for either the above- or below-median age subsample. As reported in Panel C of Table A8, the results of tests for the effect of relationship lending on the relation between ATLR and investment through debt financing are also inconsistent with H2c. The coefficient estimates on ATLR*FINDBT*POST (β_7) are significantly positive for both the above- and below-median age subsamples ($\beta_7 = 0.971$, *p*-value = 0.051 for the above-median age subsample; $\beta_7 = 0.965$, *p*-value = 0.070 for the below-median age subsample).

Collectively, the results reported in this section do not support H2c. These findings suggest that firms with public long-term debt ratings are less likely to benefit from relationship lending (Bharath et al. [2011]).[17] Nevertheless, it is possible that firm age is a noisy proxy for the strength of relationship lending.

[17] Bharath et al. [2009] report that the benefits of relationship lending as measured by interest rates charged on loans do not exist for firms with S&P long-term domestic issuer credit ratings.

4.5 Changes in Asymmetric Timely Loss Recognition

The results thus far indicate that ATLR facilitates SPG firms' access to private debt markets, and thus curbs a decrease in investment and investment through debt financing after the collapse of the junk bond market. I also find that these patterns vary as a function of collateral and the information environment. In this section, I test the shift in ATLR from the pre- to post-collapse period. The research design is described below, and the results follow.

4.5.1 Methodology

To test for the shift in ATLR from the pre- to post-collapse period, I estimate the following regression:

$$ATLR_{it} = \alpha + \beta_1 POST_t + \beta_2 LEV\_BK_{it} + \beta_3 MB_{it} + \beta_4 SIZE_{it} + \varepsilon_{it} \quad (4)$$

where LEV_BK is the ratio of long-term debt to total assets (book leverage ratio), MB is the ratio of the market value of equity to the book value of equity, and SIZE is the log of total assets. ATLR and POST are as defined previously. [18] Standard errors are clustered by firm. Year- and industry-indicator variables are also included. Following prior work (LaFond and Roychowdhury [2008]; Khan and Watts [2009]), I include LEV_BK to control for debt holders' demand for accounting conservatism. I also include MB to control for the effect of investment opportunity set on accounting conservatism. Further, I add SIZE to control for both the richness of the information environment and political costs.

[18] For this test, I estimate eq. (1) for each two-digit SIC industry over the period 1990–1991 to exclude the effects of non-collapse period observations. I require at least 20 observations for each two-digit SIC. I then assign the estimated industry-level asymmetric timeliness coefficients for all SPG firms within a given two-digit SIC over the same period. I repeat the same procedures over the period 1988–1989. When I repeat the analyses with the previously estimated ATLR (see section 3.2.1), the results continue to hold.

My interest focuses on α and β_1. α and $\alpha+\beta_1$ measure ATLR in the pre- and post-collapse periods, respectively. β_1 measures the shift in ATLR from the pre- to post-collapse period. If SPG firms have stronger incentives to recognize economic losses in earnings in the post-collapse period relative to the pre-collapse period, then I expect β_1 to be positive. I also estimate eq. (4) for a sample of SPG firms with net debt issuances and with net debt retirements in the post-collapse period, respectively.[19] If SPG firms indeed increase ATLR in their financial statements in order to obtain debt financing, I expect β_1 to be greater for the former than the latter.

4.5.2 Results

In Panel A of Table A9, I provide evidence consistent with these predictions. Column (1) reports the estimation results for the full sample. The coefficient estimate on POST (β_1) is positive (0.056) at *p*-value = 0.062, which indicates that SPG firms, on average, increase ATLR in the post-collapse period relative to the pre-collapse period. The results reported in columns (2) and (3) also support the prediction that the shift in ATLR is more pronounced for firms with net issuance of debt. β_1 is positive and statistically different from zero for a sample of firms with net issuance of debt in the post-collapse period (β_1 = 0.116, *p*-value = 0.026). I do not observe similar patterns for a sample of firms with net retirement of debt. I reject the null hypothesis that the coefficient estimates (β_1) between two subsamples are equal at *p*-value = 0.070.[20]

[19] Firms with net debt changes equal to zero are included in the net debt retirement sample.

[20] As an alternative specification, I augment the Basu [1997] and estimate the regressions as follows: $E_{it} = \alpha + \delta_1 D_{it} + \delta_2 RET_{it} + \delta_3 RET_{it} * D_{it} + \delta_4 POST_t + \delta_5 POST_t * D_{it} + \delta_6 POST_t * RET_{it} + \delta_7 POST_t * RET_{it} * D_{it} + Controls + \varepsilon_{it}$. Controls include SIZE, LEV_BK, MB, and their interaction terms with D, RET, and RET*D. The results are qualitatively the same. The coefficient on δ_7 is 1.042 and statistically different from zero (p-value = 0.008) for the full sample. The coefficient on δ_7 is greater for firms with net issuance of debt (1.899) than firms with net retirement of debt (0.897). However, I cannot reject the null hypothesis that these two coefficients are equal at p-value = 0.147.

4.5.3 Accounting Practices

To provide further evidence on the shift in accounting conservatism following the collapse of the junk bond market, I investigate specific accounting practices that reflect accounting conservatism. Specifically, I expect conservative accounting treatments such as asset impairments and goodwill impairments to increase following the collapse of the junk bond market. To test this prediction, I regress special items plus gains and losses from discontinued operations (SP & DO) on POST and an array of control variables.[21] To facilitate the interpretation of the results, I multiply SP & DO by negative one so that higher values of this variable represent higher accounting conservatism.[22] The results reported in Panel B of Table A9 are consistent with the notion that SPG firms adopt more conservative accounting treatment when the junk bond market collapsed. In column (1), the coefficient on POST is 0.159 and statistically different from zero (*p*-value = 0.020) for the full sample. The coefficient on POST is significantly positive (0.225) only for firms with net issuance of debt (*p*-value = 0.040).[23]

Overall, the results reported in this section support H3. I find that accounting conservatism increases for SPG firms following the collapse of the junk bond market and that this increase is more pronounced for SPG firms with net issuance of debt. These findings suggest that SPG firms increase ATLR in an attempt to obtain private debt financing when the junk bond market that they previously depended on collapsed.

[21] Special items (Compustat Acronym SPI) include impairment of goodwill, inventory write-downs, restructuring charges, write-down of assets, and write-downs of receivables and intangibles, among others.

[22] I replace missing values with zeros.

[23] However, I cannot reject the null that the coefficients on POST between firms with net debt issuances and with net debt retirements are equal (*p*-value = 0.293).

CHAPTER 5 ADDITIONAL ANALYSES

5.1 The Likelihood of Underinvestment

The findings thus far show that firms recognizing economic losses in a timelier manner experienced a smaller decline in debt financing and investment after the collapse of the junk bond market than firms recognizing economic losses in a less timely manner. This evidence per se, however, cannot directly speak to whether ATLR attenuates *underinvestment*. An alternative interpretation of these findings is that firms recognizing economic losses in a timelier manner over-financed or overinvested in the post-collapse period, whereas firms recognizing economic losses in a less timely manner did not.

To distinguish between these two competing interpretations, I directly examine whether ATLR reduces a likelihood of underinvesting. Following Biddle et al. [2009] and Chen et al. [2011], I employ a two-stage approach. First, I compute deviations from expected investment by estimating a firm specific investment model with all Compustat firms for each year over the period 1988–1991 as follows:

$$INVTOT_{it} = \alpha + \theta_1 TOBINQ_{it-1} + \theta_2 CFO_{it} + \epsilon_{it} \quad (5)$$

where all variables are defined previously. Tobin's q (TOBINQ) and cash flows from operation (CFO) are designed to control for investment opportunity set and financing constraints. I use the residuals obtained from the above regressions and identify firm-years in which firms tend to underinvest. Specifically, I rank firms into five groups by the residuals for each year and then classify observations in the bottom quintile as underinvesting. Second, I estimate a logistic model as follows:

$$Prob\ (UNDERINV_{it} = 1) = \alpha + \beta_1 POST_t + \beta_2 ATLR_{it-1} + \beta_3 ATLR_{it-1} * POST_t + \mathrm{X}' * \Gamma + \varepsilon_{it} \quad (6)$$

where $UNDERINV_{it}$ is an indicator variable that takes the value of one if an observation falls into the bottom quintile of the distribution of the residuals obtained from estimating eq. (5). All other variables are defined previously. X' and Γ represent the same vector of control variables and their coefficients, respectively as in eq. (2). Standard errors are clustered by firm. Year- and industry-indicator variables are also included.[24]

My interest centers on β_1 and $\beta_1+\beta_3$. β_1 ($\beta_1+\beta_3$) measures the incremental shift in a likelihood of underinvesting from the pre- to post-collapse period for the bottom (top) ATLR quintile. β_3 captures the difference in the incremental change in a probability of underinvesting in the post-collapse period relative to the pre-collapse period between the bottom and top ATLR quintiles. Thus, if ATLR decreases the likelihood of underinvesting following the collapse of the junk bond market, then I expect β_3 to be negative.

The estimation results of eq. (6) are displayed in Table A10. The results indicate that ATLR prevents SPG firms from underinvesting in the post-collapse period. In column (1), β_1 is positive ($\beta_1 = 1.602$) and $\beta_1+\beta_3$ is negative ($\beta_1+\beta_3 = -1.080$), which indicates that the bottom (top) ATLR quintile exhibits an increase (decrease) in a likelihood of underinvesting in the post-collapse period relative to the pre-collapse period. β_3 is statistically different from zero (*p*-value = 0.011). However, β_1 and $\beta_1+\beta_3$ are not statistically different from zero in two-tail *t*-tests at the conventional level (*p*-value = 0.140 for β_1, *p*-value = 0.115 for $\beta_1+\beta_3$).

As an alternative specification, I estimate eq. (6) for the pre-collapse period and for the post-collapse period, separately.[25] The results reported in column (2) and (3)

[24] This is effectively a joint test of the assumption that a firm is correctly classified as underinvesting in the first-stage OLS regressions and the hypothesis that asymmetric timely loss recognition reduces a likelihood of underinvesting in the second-stage logit regressions. I view this test as complementing the main tests.

[25] It can be unreliable to compare cross-group differences by interacting a variable of interest with an indicator variable that equals one if an observation belongs to one group and zero otherwise in non-linear models such as a probit model or a logistic model (Allison [1999]; Ali and Norton [2003]; Hoetker [2007]; Greene [2010]). Hoetker [2007] recommends that researchers run regressions for two groups, separately.

provide more convincing evidence that ATLR reduces a likelihood of underinvesting in the post-collapse period. The coefficient estimate on ATLR (β_2) is negative and statistically different from zero for the post-collapse period (β_1 = -1.927, *p*-value = 0.067) but insignificant for the pre-collapse period (β_1 = -0.345, *p*-value = 0.641). Collectively, the results reported in this section support the view that ATLR attenuates underinvestment after the collapse of the junk bond market.

5.2 Anticipation

Although the collapse of the junk bond market is exogenous with respect to demand for junk bonds, it is possible that some firms that were dependent upon junk bonds anticipated the demise of the junk bond market to some extent, and accordingly attempted to raise debt financing earlier.[26] To assess this possibility, I replace POST with three indicator variables: POST1989, POST1990, and POST1991, where POST1989 (POST1990) [POST1991] takes the value of one if an observation belongs to 1989 (1990) [1991], and zero otherwise. I then repeat the estimation of eq. (2) and eq. (3). Variables of primary interest are ATLR*POST89 and ATLR*FINDBT*POST89. If the market anticipated the collapse of the junk bond market, then I expect the coefficient estimates on two variables to be positive. Untabulated results reveal that none of the coefficient estimates on ATLR*POST89 and ATLR*FINDBT*POST89 are statistically different from zero. These findings suggest that the market does not appear to anticipate the collapse of the junk bond market.

5.3 Alternative Measures of Financial Reporting Quality

In this section, I examine alternative measures of financial reporting quality that are related to ATLR: (1) timely loss recognition, (2) timely gain recognition, and (3)

[26] Anecdotal evidence indicates this possibility: "Drexel Burnham Lambert Inc.'s problems boiled over in barely six days. But its credit problems had been steadily growing behind the scenes for six months." *The Wall Street Journal*, 15 February 1990.

overall earnings timeliness. In doing so, I seek to provide convergent and divergent evidence on the effect of financial reporting quality on SPG firms' ability to obtain private debt financing and their ability to sustain investments across multiple proxies for financial reporting quality.

I begin by discussing how ATLR differs from each of these three measures of financial reporting quality. Timely loss recognition, per se, does not imply higher verification requirement for gains than losses nor does it result in an understatement of net asset values (Roychowdhury [2010]). That is, it is the asymmetry between loss and gain recognition timeliness that gives rise to understated net assets, which provides lower bound measures of net assets in the event of liquidation (Watts [2003a]). Thus, in so far as verifiable lower bound measures of net assets are informative to private lenders' lending decisions to SPG firms, then ATLR is more relevant to private lenders than timely loss recognition.

ATLR is accomplished either by recognizing losses in a timelier fashion or by delaying the recognition of gains, or both. Hence, holding timely loss recognition constant less timely gain recognition can be more relevant to lenders' lending decisions than timely gain recognition. Given lenders' asymmetric payoff with respect to economic losses versus gains, lenders usually prefer delayed recognition of gains to timely recognition of gains. However, as mentioned previously, delayed recognition of economic gains is also costly.[27] Thus, it is conceivable that private lenders prefer both timely gain and loss recognition to ATLR. Put differently, lenders may view overall earnings timeliness highly desirable when assessing loans to SPG firms following the collapse of the junk bond market.

I measure timely loss recognition (TLR), timely gain recognition (TGR), and overall earnings timeliness (TIME) by estimating eq. (1). Specifically, I measure timely

[27] As noted in section II, delayed gain recognition can result in frequent false alarms, which makes lenders unnecessarily intervene in firms' decision processes (Guay and Verrechia [2006]; Guay [2006]).

loss recognition (TLR) and timely gain recognition (TGR) as $\delta_2+\delta_3$ and δ_2, respectively. Overall earnings timeliness (TIME) is measured as R^2 from estimating eq. (1). As with ATLR, eq. (1) is estimated at the two-digit SIC level over the ten years preceding the year in which financing and investment variables are computed. I re-estimate eq. (2) and eq. (3) by replacing ATLR with each of these timeliness measures.

In Table A11, I find that the main results become weaker compared with the results reported in Table A2. In Panel A, the coefficient estimate on TLR*POST (β_3) becomes statistically insignificant at the conventional level (*p*-value = 0.148) for debt financing (FINDBT). In Panel B, the coefficient estimates on TLR*FINDBT*POST (β_7) also become insignificant (*p*-value = 0.267 for total investment (INVTOT), *p*-value = 0.552 for acquisitions (INVACQ)). These results suggest that the difference in the incremental shift in debt financing and investment through debt financing from the pre- to post-collapse period between the top and bottom TLR quintiles becomes less pronounced than between top and bottom ATLR quintiles.

The results for TGR as reported in Table A12 indicate that less TGR improves SPG firms' ability to obtain debt financing, and thus deters a reduction in investment through debt financing. $\beta_1+\beta_3$ is significantly negative for debt financing (FINDBT) ($\beta_1+\beta_3$ = -0.089, *p*-value = 0.003), total investment (INVTOT) ($\beta_1+\beta_3$ = -0.069, *p*-value = 0.006), and capital expenditures (INVCPX) ($\beta_1+\beta_3$ = -0.022, *p*-value = 0.015), whereas β_1 is insignificant. This suggests that firms accelerating gain recognition exhibit a larger decrease in debt financing and investment than firms delaying gain recognition. [28]

The results for TIME are provided in Table A13. I find that TIME is unrelated to SPG firms' access to the private debt market and investment. The coefficient estimates on TIME*POST (β_3) and TIME*FINDBT*POST (β_7) are not statistically different from

[28] Bushman and Piotroski [2006], LaFond and Watts [2008], and Watts and Zuo [2011] view less timely gain recognition as more conservative reporting.

zero for debt financing (FINDBT) and for acquisitions (INVACQ), respectively (*p*-value = 0.650, *p*-value = 0.914).

Collectively, the results reported in this section suggest that asymmetry between loss and gain recognition timeliness appears relevant to lenders' decisions to make loans to SPG firms following the collapse of the junk bond market. It is possibly because lenders demand more information about verifiable liquidation values from SPG firms after the collapse of the junk bond market. The significant effect of delayed gain recognition on SPG firms' debt financing and investment reported in this section can also be attributable to lenders being concerned that SPG firms manipulate earnings upward by accelerating unverifiable gains in an attempt to avoid violating covenants.

5.4 Robustness Checks

5.4.1 The Role of Junk Bonds after the Collapse of the Junk Bond Market

Thus far I have assumed that SPG firms obtained bank loans to finance their projects instead of issuing junk bonds after the collapse of the junk bond market. This assumption is reasonable for at least three reasons. First, as Figures B3 and B4 suggest, the junk bond market virtually disappeared in the early 1990s. Second, bank loans are a close substitute for junk bonds (Benveniste et al. [1993]). Third, collateral is more likely to serve as a substitute for ATLR in bank loan contracts than in public bond contracts. Nevertheless, I directly test whether junk bond financing in the post-collapse period affects the main results.

To conduct this test, I identify firm-years in which a firm issued public junk bonds during 1990 – 1991 on SDC (Security Data Corporation) database. I exclude them from the original sample of 450 firm-years, resulting in a sample of 440 firm-years. Thus, there are only 10 firm-years with junk bond financing in the post-collapse period. For this

sample of 440 firm-years, I rerun eq. (2) and eq. (3). If the effects of ATLR on SPG firms' debt financing and investment are due to SPG firms that obtained bank loans in the post-collapse period, then they should remain unaffected. I find that this is indeed the case. Untabulated results demonstrate that main findings remain unchanged after removing firm-years in which firms obtained junk bond financing in the post-collapse period.

5.4.2 The Role of the 1990 Bank Capital Crunch

The early 1990s recession is characterized as a bank capital crunch. A bank capital crunch refers to a phenomenon that impaired bank balance sheets result in a sharp decline in banks' capacity to lend. If the early 1990 bank capital crunch uniformly affected SPG firms, it is unlikely to explain my findings. Note that my primary inferences are based on differences in the incremental shift in debt financing and investment between high and low ATLR firms from the pre- to post-collapse period. Nevertheless, it is possible that banks' impaired ability to lend had greater impact on low ATLR firms than high ATLR firms.

In order to assess whether the 1990 bank capital crunch confounds the main results, I utilize geographic variations in the degree of the 1990 bank capital crunch. The 1990 bank capital crunch disproportionately affected firms located in New England (Bernanke and Lown [1991]). Thus, I identify firms whose headquarters are located in New England and exclude them from the original sample. This procedure results in 408 firm-years. If the main results (i.e., positive relations between ATLR and debt financing and investment) are mainly attributable to the 1990 bank capital crunch, then the exclusion of firms located in New England should substantially weaken the main

findings.[29] Our main findings are virtually unaffected (untabulated), which suggests that the 1990 bank capital crunch is not a viable alternative explanation for my results.

5.4.3 An Industry-Year Level Measure of ATLR

Given my use of an industry-year level measure of ATLR, one concern is that this proxy simply captures an industry effect. I have already addressed this concern in several ways. First, I have conducted falsification tests for several alternative samples. Since I adopt a differences-in-differences design, uncontrolled industry factors are unlikely to explain the main results. In other words, in order for an unobservable industry factor to explain the main results, that factor would need to be correlated both with the collapse of the junk bond market and with ATLR. Second, I have included industry-fixed effects in all my specifications using one-digit SIC industry-level indicator variables. As a robustness check, I include two-digit SIC industry-level indicator variables. The inclusion of these indicator variables effectively removes cross-sectional variation in ATLR but leaves inter-temporal variation in ATLR, because ATLR is estimated at the two-digit SIC level. Under these restrictive conditions, the main results continue to hold but become statistically less significant.

Nevertheless, I conduct some additional tests to ensure that my results are not driven by an unknown industry effect. First, I add industry-level control variables to all regressions. Specifically, I control for two-digit SIC averages of TOBINQ, CFO, AT, TANG, STDROA, STDINV, LEV, and SLACK. All results remain robust. Second, because all observations in the same two-digit SIC have the same ATLR, standard errors can be underestimated due to possible intra-industry dependence across the error terms. To account for this possibility, I cluster standard errors at the industry level (two-digit

[29] This prediction assumes that firms, on average, are more likely to access local banks. Prior work provides evidence consistent with this assumption (Bharath et al. [2007]).

SIC) instead of firm level. All findings remain virtually the same. Taken together, the results indicate that an unknown industry effect is unlikely to explain my findings.

5.4.4 Alternative Methods of Estimating Asymmetric Timely Loss Recognition

In this section, I check the robustness of the main results to alternative methods of estimating ATLR. First, I estimate the Ball and Shivakumar [2005] model. Specifically, I regress total accruals on cash flows from operation, an indicator variable that equals one if changes in cash flows from operation are negative, zero otherwise, and an interaction term between these two variables. For this alternative method, I obtain similar results. Second, Collins et al. [2012] argue that asymmetric timeliness of reporting cash flows confounds earnings-based measures of asymmetric timeliness as a proxy for conditional accounting conservatism. To mitigate this concern I re-estimate the Basu [1997] model by replacing earnings with total accruals.[30] Finally, I estimate the Khan and Watts [2009] firm-year measure of ATLR and repeat the main analyses.[31] Khan and Watts [2009] model a firm-year level of ATLR as weighted linear combinations of size, the market to book value of equity, and leverage. The weights are obtained from estimating the Basu [1997] model annually. Untabulated results reveal that the effect of ATLR on debt financing becomes stronger, whereas the effect of ATLR on acquisitions through debt

[30] For this test and the test for the Ball and Shivakumar [2005] model, because information about cash flows from operation became available from 1988, I estimate the Basu [1997] model and the Ball and Shivakumar [2005] model with all observations at the two-digit SIC level over the period 1988–1989 and then assign the same asymmetric coefficients to observations in the same two-digit SIC cohort for the entire sample period.

[31] For these analyses, I include two-digit SIC level-indicator variables in order to control for time-invariant industry-fixed effects.

financing becomes weaker.[32] Overall, I conclude that the main results remain robust to these alternative methods for estimating ATLR.

5.4.5 Corporate Governance and Auditing

Prior research argues that enforcement mechanisms, such as corporate governance and auditing, must exist in order for accounting conservatism to be effective (Ball [2001]; Kothari et al. [2010]; Roychowdhury [2010]). Consistent with this argument, prior evidence demonstrates that accounting conservatism is associated with strong corporate governance structures and audit quality (e.g., Basu et al. [2000]; Ahmed and Duellman [2007]; Garcia Lara et al. [2009]). Prior research also shows that a firm's creditworthiness is related to its governance features and audit characteristics (e.g., Ashbaugh-Skaife et al. [2006]; Minnis [2011]). Thus, it is important to investigate whether the main results continue to hold after controlling for firms' governance attributes and the features of auditing that prior work has shown to be associated with ATLR and creditworthiness.

To assess the robustness of the main results to corporate governance structures, I control for several attributes of board of directors that are associated with ATLR as well as creditworthiness. Specifically, I repeat the main analyses after controlling for (1) the proportion of independent directors (Ahmed and Duellman [2007]), (2) the existence of directors who have legal expertise (Krishnan et al. [2011]), and (3) the existence of directors who have accounting expertise (Ashbaugh-Skaife et al. [2006]; Krishnan and Visvanathan [2008]).[33] In unreported results, I find that my inferences remain unaffected

[32] In column (2) of Table 2, Panel A, the coefficient on β_3 is 0.157 at *p*-value = 0.024. In column (4) of Table 2, Panel B, the coefficient in β_7 is 0.391 at *p*-value = 0.276.

[33] I search for annual proxy statements on Microfiche for sample firms. To make hand-collection procedure manageable, I only read 1989 annual proxy statements. Then I construct these three variables and assign the same values to all observations within a firm during the entire sample period. If a variable is missing, I set it to be zero and then create an indicator variable that takes the value of one if a variable is missing and zero otherwise. The three variables are as follows: (1) the ratio of independent directors to total directors, (2) an indicator variable that takes the value of one if at least one independent director is described as an

after controlling for these three variables either individually or simultaneously. I also investigate whether my findings are robust to auditor quality. Specifically, I repeat the main tests after controlling for an indicator variable that takes the value of one if a firm's auditor is one of BIG N firms and zero otherwise. Again, the main results continue to hold. In summary, ATLR appears to play a distinct role in improving SPG firms' access to the private debt market, thus mitigating underinvestment that would otherwise arise following the collapse of the junk bond market.

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attorney, a lawyer, or a partner in a law firm and zero otherwise, and (3) an indicator variable that takes the value of one if at least one independent director is described as a Chartered Public Accountant, a partner in an auditing firm, or Chief Financial Officer of another firm, and zero otherwise.

CHAPTER 6 CONCLUSION

This paper uses the collapse of the junk bond market in the early 1990s as a natural experimental setting to study the effect of asymmetric timely loss recognition (ATLR) on firms' access to private debt markets and underinvestment. For a sample of 450 firm-years over the period 1988–1991, I find that SPG firms that recognize economic losses in a less timely fashion exhibit a sharper decline in debt financing, investment, and investment through debt financing following the collapse of the junk market relative to similar firms that recognize economic losses in a timelier fashion. These findings are consistent with the notion that ATLR improves firms' ability to immediately obtain private debt financing, and thus limits a reduction in investment when risky public bond markets seize up. Next, I investigate interdependencies between ATLR and other mechanisms that reduce information asymmetry between lenders and borrowing firms. The results reveal that ATLR has a greater effect on SPG firms' access to private debt markets and ability to maintain pre-existing levels of investment when they lack collateral or are not followed by sell-side equity analysts. These findings support the notion that collateral and sell-side equity analysts serve as substitutes for ATLR to attenuate financing frictions in private debt markets. Further, I find that ATLR increases after the collapse of the junk bond market, particularly for those firms with net debt issuances. These findings suggest that SPG firms increase ATLR in order to obtain private debt financing in response to private lenders' greater demand for it.

The interpretation of these findings is subject to several caveats. First, I cannot completely rule out the possibility that ATLR is correlated with an attribute of corporate governance that enhances SPG firms' access to private debt markets. Although the main results are robust to controlling for several governance features that prior work has shown are associated with ATLR, corporate governance is multi-faceted and other dimensions of corporate governance that I have not controlled for may be driving my results (e.g.,

Ashbaugh-Skaife et al. [2006]; Larcker et al. [2007]; Brickley and Zimmerman [2010]). Second, I examine the role of ATLR for a sample of SPG firms under circumstances in which credit rationing is a severe concern. Thus, readers should be cautious to generalize these findings to other types of firms or other time periods.

Notwithstanding these limitations, the findings reported in this paper should be of interest to both academic scholars and standard setters. My findings enhance our understanding of the effect of ATLR on corporate financing and investment decisions. My paper also sheds light on how public financial reporting interacts with other mechanisms in reducing information asymmetry in capital markets. Among both accounting standard setters and scholars, there has been a heated debate over whether U.S. accounting standards should move away from conservative financial reporting to neutral financial reporting (e.g., Watts [2003a]; Watts and Zuo [2011]; FASB [2010]). The evidence presented in this paper informs this debate over accounting conservatism by demonstrating that firms with low credit quality can benefit from conservative reporting when financial markets do not operate normally.

This paper suggests several avenues for future research. First, I find that not all SPG firms increase accounting conservatism following the collapse of the junk bond market. One possibility is that SPG firms are less likely to increase ATLR when doing so forces them to violate debt covenants on existing junk bonds. Second, one might examine whether other attributes of financial reports (e.g., accrual quality) affect SPG firms' ability to raise debt financing and sustain pre-existing levels of investment after the collapse of the junk bond market. I leave these questions for future research.

APPENDIX A. TABLES

Table A1. Sample, Descriptive Statistics, and Univariate Tests

Panel A: Sample Selection

	Number of firm-years
All Compustat firm-years with S&P long-term domestic issuer credit rating for 1988-1991	5,819
Less firms with above-investment-grade ratings	(3,558)
Less firms in the financial industry (6000 <= SIC <= 6999)	(204)
Less observations without sufficient data to compute dependent and independent variables	(1,002)
Less observations with non-December and non-January fiscal-year-ends	(372)
Less observations that exist only either in the pre- or post-collapse period	(233)
Final sample	450

Table A1. Continued

Panel B: Descriptive Statistics

	N	Mean	STD	Q1	Median	Q3
S&P Long-term Domestic Issuer Credit Rating	450	7.302	1.992	6.000	7.000	9.000
Dependent variables						
$FINTOT_{(t)}$	450	0.042	0.188	-0.043	0.000	0.065
$FINDBT_{(t)}$	450	0.034	0.176	-0.046	-0.002	0.050
$FINEQY_{(t)}$	450	0.010	0.086	-0.006	0.000	0.003
$INVTOT_{(t)}$	450	0.118	0.155	0.036	0.070	0.141
$INVCPX_{(t)}$	450	0.074	0.069	0.031	0.053	0.093
$INVRND_{(t)}$	450	0.017	0.044	0.000	0.000	0.008
$INVACQ_{(t)}$	450	0.030	0.103	0.000	0.000	0.007
Independent variables						
$ATLR_{(t-1)}$	450	0.295	0.141	0.219	0.271	0.342
$TLR_{(t-1)}$	450	0.313	0.145	0.227	0.269	0.384
$TGR_{(t-1)}$	450	0.018	0.080	-0.034	0.013	0.060
$TIME_{(t-1)}$	450	0.128	0.059	0.087	0.123	0.163
Control variables						
$TOBINQ_{(t-1)}$	450	1.281	0.596	0.944	1.103	1.420
$CFO_{(t)}$	450	0.055	0.086	0.012	0.051	0.104
$AT_{(t-1)}$	450	6.200	1.200	5.283	6.010	7.023
$FIRMAGE_{(t-1)}$	450	20.798	13.169	7.000	21.000	31.000
$TANG_{(t-1)}$	450	0.394	0.228	0.224	0.334	0.574
$STDROA_{(t-1)}$	450	0.286	1.071	0.030	0.056	0.093
$STDINV_{(t-1)}$	450	0.304	0.785	0.042	0.085	0.233
$LEV_{(t-1)}$	450	0.476	0.241	0.285	0.469	0.666
$ZSCORE_{(t-1)}$	450	1.985	1.383	1.112	1.931	2.796
$SLACK_{(t-1)}$	450	0.141	0.211	0.025	0.068	0.162
BC	450	0.682	0.466	0.000	1.000	1.000

Table A1. Continued

Panel C: Mean Values of Financing and Investment Variables for the Pre- and Post-Collapse Periods

	POST = 0		POST = 1		Difference	*p*-value
	Mean	N	Mean	N		
Financing variables						
$FINTOT_{(t)}$	0.066	227	0.018	223	-0.048	*0.007*[a]
High $ATLR_{(t-1)}$	0.043	112	0.026	113	-0.016	*0.488*
Low $ATLR_{(t-1)}$	0.089	115	0.009	110	-0.079	*0.003*[a]
High - Low	-0.046		0.017			
p-value	*0.112*		*0.375*			
$FINDBT_{(t)}$	0.064	227	0.004	223	-0.060	*0.000*[a]
High $ATLR_{(t-1)}$	0.051	112	0.019	113	-0.031	*0.187*
Low $ATLR_{(t-1)}$	0.077	115	-0.011	110	-0.088	*< 0.001*[a]
High - Low	-0.026		0.030			
p-value	*0.242*		*0.051*[c]			
$FINEQY_{(t)}$	0.009	227	0.012	223	0.003	*0.709*
High $ATLR_{(t-1)}$	0.002	112	0.007	113	0.006	*0.591*
Low $ATLR_{(t-1)}$	0.016	115	0.017	110	0.001	*0.947*
High - Low	-0.014		-0.010			
p-value	*0.285*		*0.328*			
Investment variables						
$INVTOT_{(t)}$	0.135	227	0.100	223	-0.035	*0.015*[b]
High $ATLR_{(t-1)}$	0.119	112	0.103	113	-0.016	*0.461*
Low $ATLR_{(t-1)}$	0.151	115	0.096	110	-0.055	*0.006*[a]
High - Low	-0.032		0.007			
p-value	*0.182*		*0.655*			
$INVCPX_{(t)}$	0.078	227	0.069	223	-0.009	*0.172*
High $ATLR_{(t-1)}$	0.077	112	0.082	113	0.005	*0.599*
Low $ATLR_{(t-1)}$	0.080	115	0.056	110	-0.023	*0.004*[a]
High - Low	-0.003		0.026			
p-value	*0.759*		*0.006*[a]			
$INVRND_{(t)}$	0.017	227	0.018	223	0.001	*0.760*
High $ATLR_{(t-1)}$	0.003	112	0.003	113	0.000	*0.942*
Low $ATLR_{(t-1)}$	0.030	115	0.033	110	0.003	*0.679*
High - Low	-0.027		-0.030			
p-value	*< 0.001*[a]		*< 0.001*[a]			
$INVACQ_{(t)}$	0.042	227	0.017	223	-0.025	*0.010*[b]
High $ATLR_{(t-1)}$	0.046	112	0.023	113	-0.023	*0.122*
Low $ATLR_{(t-1)}$	0.038	115	0.011	110	-0.027	*0.026*[b]
High - Low	0.008		0.012			
p-value	*0.627*		*0.200*			

* *p*-values are based on two-sided *t*-tests.

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Table A1. Continued

Panel A describes sample selection procedures. Panel B presents descriptive statistics for variables used in this study. Panel C provides mean values of variables for the pre- and post-collapse period subsamples. S&P's long-term issuer credit ratings range from AAA (22) to D (1). FINTOT is total financing; FINDBT is debt financing; FINEQY is equity financing; INVTOT is total investment; INVCPX is capital expenditures; INVRND is R&D; INVACQ is acquisitions; ATLR is a measure of asymmetric timely loss recognition; TLR is a measure of timely loss recognition; TGR is a measure of timely gain recognition; TIME is overall earnings timeliness; POST is an indicator variable equal to one if an observation belongs to the post-collapse period (1990 – 1991) and zero otherwise; TOBINQ is Tobin's q; CFO is cash flows from operation; AT is the natural logarithm of total assets; FIRMAGE is a firm age; TANG is asset tangibility; STDROA is the volatility of ROA over the past five years; STDINV the volatility of INVTOT over the past five years; LEV is market leverage ratio; ZSCORE is Altman Z-score; SLACK is the ratio of cash to total assets; BC is an indicator variable that equals one if an observation belongs to a state in which business combination law was adopted and to the post-adoption period.

Table A2. Asymmetric Timely Loss Recognition, Financing, and Investment

Panel A: Financing and Investment

Dependent =	FINTOT (1)	FINDBT (2)	FINEQY (3)	INVTOT (4)	INVCPX (5)	INVRND (6)	INVACQ (7)
Intercept (α)	-0.030	-0.096	0.015	-0.001	0.054	-0.004	0.028
	[0.810]	[0.359]	[0.742]	[0.994]	[0.170]	[0.855]	[0.606]
POST (β_1)	**-0.077**[a]	**-0.094**[a]	**0.011**	**-0.057**[b]	**-0.023**[b]	**0.004**	**-0.032**[c]
	[0.009]	[0.001]	[0.391]	[0.028]	[0.018]	[0.391]	[0.095]
$ATLR_{(t-1)}$ (β_2)	-0.019	-0.022	0.000	-0.018	0.015	-0.029[a]	-0.003
	[0.676]	[0.616]	[0.996]	[0.674]	[0.154]	[0.004]	[0.937]
$ATLR_{(t-1)}$*POST (β_3)	**0.076**[c]	**0.079**[c]	**-0.004**	**0.057**	**0.018**	**0.006**	**0.024**
	[0.069]	[0.063]	[0.813]	[0.193]	[0.207]	[0.332]	[0.466]
Joint Significance							
$\beta_1 + \beta_3$	**-0.001**	**-0.015**	**0.007**	**0.000**	**-0.005**	**0.009**[b]	**-0.008**
p-value	0.965	0.636	0.651	0.987	0.564	0.029	0.675
Control variables							
$TOBINQ_{(t-1)}$ (β_4)	0.070[a]	0.029	0.035[a]	0.050[a]	0.024[b]	0.012	-0.002
	[0.008]	[0.161]	[0.007]	[0.005]	[0.041]	[0.155]	[0.813]
$CFO_{(t)}$ (β_5)	-0.696[a]	-0.391[a]	-0.239[a]	0.003	0.026	-0.071	0.108[c]
	[<.0001]	[0.002]	[0.003]	[0.977]	[0.686]	[0.177]	[0.080]
$AT_{(t-1)}$ (β_6)	0.009	0.012	-0.001	0.001	-0.004	0.001	-0.001
	[0.490]	[0.263]	[0.835]	[0.928]	[0.256]	[0.759]	[0.837]
$FIRMAGE_{(t-1)}$ (β_7)	-0.002[b]	-0.001	-0.001[a]	-0.002[b]	-0.001[c]	0.000[c]	0.000
	[0.017]	[0.543]	[0.001]	[0.032]	[0.082]	[0.078]	[0.353]
$TANG_{(t-1)}$ (β_8)	0.148[b]	0.147[a]	0.012	0.134[b]	0.113[a]	0.016	-0.018
	[0.011]	[0.007]	[0.565]	[0.021]	[<.0001]	[0.235]	[0.637]
$STDROA_{(t-1)}$ (β_9)	-0.008	-0.006	-0.003	-0.030[c]	-0.005	-0.004	-0.017
	[0.708]	[0.825]	[0.666]	[0.097]	[0.367]	[0.311]	[0.233]
$STDINV_{(t-1)}$ (β_{10})	0.018	0.025	-0.002	0.035	0.008	-0.002	0.022
	[0.537]	[0.501]	[0.795]	[0.198]	[0.356]	[0.752]	[0.236]
$LEV_{(t-1)}$ (β_{11})	-0.100[b]	-0.155[a]	0.036[c]	-0.093[b]	-0.034[c]	-0.026	-0.019
	[0.043]	[0.002]	[0.071]	[0.028]	[0.089]	[0.102]	[0.540]
$ZSCORE_{(t-1)}$ (β_{12})	0.033[a]	0.028[a]	0.008	0.017[b]	0.010[b]	0.002	-0.001
	[0.000]	[0.000]	[0.159]	[0.020]	[0.017]	[0.472]	[0.847]
$SLACK_{(t-1)}$ (β_{13})	0.027	-0.016	0.017	0.097[b]	0.018	0.053[b]	0.024
	[0.550]	[0.706]	[0.469]	[0.045]	[0.367]	[0.029]	[0.464]
BC (β_{14})	0.018	0.038[b]	-0.010	0.027	0.026[a]	-0.007	0.014
	[0.420]	[0.033]	[0.256]	[0.118]	[0.001]	[0.358]	[0.259]
Observations	450	450	450	450	450	450	450
R^2	0.264	0.181	0.193	0.237	0.338	0.431	0.071

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Table A2. Continued

Panel B: Investment through Debt Financing

Dependent =	INVTOT (1)	INVCPX (2)	INVRND (3)	INVACQ (4)
Intercept (α)	0.070	0.072[c]	-0.009	0.074
	[0.313]	[0.065]	[0.656]	[0.104]
POST (β_1)	-0.006	-0.016[c]	0.004	0.005
	[0.747]	[0.063]	[0.426]	[0.723]
$ATLR_{(t-1)}$ (β_2)	0.010	0.012	-0.026[b]	0.022
	[0.709]	[0.235]	[0.013]	[0.298]
$ATLR_{(t-1)}$*POST (β_3)	0.000	0.011	0.005	-0.020
	[0.991]	[0.382]	[0.404]	[0.388]
$FINDBT_{(t)}$ (β_4)	0.566[a]	0.042	0.019	0.418[a]
	[0.001]	[0.216]	[0.533]	[0.003]
$FINDBT_{(t)}$*POST (β_5)	**-0.371[c]**	**0.046**	**-0.022**	**-0.288[b]**
	[0.084]	[0.642]	[0.612]	[0.054]
$ATLR_{(t-1)}$*$FINDBT_{(t)}$ (β_6)	-0.316	0.076	-0.051	-0.321
	[0.276]	[0.256]	[0.144]	[0.170]
$ATLR_{(t-1)}$*$FINDBT_{(t)}$*POST (β_7)	**0.893[b]**	**0.051**	**-0.014**	**0.700[b]**
	[0.014]	[0.796]	[0.748]	[0.032]
Joint Significance				
$\beta_5 + \beta_7$	**0.522[b]**	**0.097**	**-0.036**	**0.411[c]**
p-value	0.026	0.461	0.182	0.066
Control variables				
$TOBINQ_{(t-1)}$ (β_8)	0.031[b]	0.020[c]	0.012	-0.016[c]
	[0.049]	[0.073]	[0.130]	[0.060]
$CFO_{(t)}$ (β_9)	0.199[c]	0.076	-0.082	0.235[a]
	[0.076]	[0.227]	[0.120]	[0.001]
$AT_{(t-1)}$ (β_{10})	-0.006	-0.006[c]	0.001	-0.006
	[0.328]	[0.063]	[0.596]	[0.123]
$FIRMAGE_{(t-1)}$ (β_{11})	-0.001[b]	0.000	0.000[c]	0.000
	[0.033]	[0.112]	[0.063]	[0.604]
$TANG_{(t-1)}$ (β_{12})	0.067	0.100[a]	0.017	-0.064[c]
	[0.146]	[<.0001]	[0.208]	[0.056]
$STDROA_{(t-1)}$ (β_{13})	-0.022[c]	-0.004	-0.004	-0.011
	[0.064]	[0.440]	[0.272]	[0.350]
$STDINV_{(t-1)}$ (β_{14})	0.018	0.006	-0.002	0.010
	[0.316]	[0.446]	[0.725]	[0.533]
$LEV_{(t-1)}$ (β_{15})	-0.031	-0.016	-0.030[c]	0.018
	[0.360]	[0.403]	[0.069]	[0.491]
$ZSCORE_{(t-1)}$ (β_{16})	0.004	0.007[c]	0.003	-0.010[b]
	[0.545]	[0.082]	[0.442]	[0.047]
$SLACK_{(t-1)}$ (β_{17})	0.105[b]	0.016	0.054[b]	0.031
	[0.018]	[0.387]	[0.024]	[0.306]
BC (β_{18})	0.007	0.022[a]	-0.007	0.000
	[0.628]	[0.004]	[0.399]	[0.976]
Observations	450	450	450	450
R^2	0.490	0.404	0.443	0.326

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Table A2. Continued

Panel A presents the results of testing the effect of ATLR on financing and investment. Panel B presents the results of testing the effect of ATLR on investment through debt financing. The sample consists of speculative-grade firms between 1988 and 1991. Variable definitions are as follows: FINTOT is total financing; FINDBT is debt financing; FINEQY is equity financing; INVTOT is total investment; INVCPX is capital expenditures; INVRND is R&D; INVACQ is acquisitions; ATLR is asymmetric timely loss recognition measured as the coefficient estimate on δ_3 from estimating $E_{it} = \delta_0 + \delta_1 D_{it} + \delta_2 RET_{it} + \delta_3 RET_{it} * D_{it} + \varepsilon_{it}$ at the two-digit SIC level over the past ten years, where E is earnings divided by lagged market capitalization, D is an indicator variable that takes the value of one if RET is negative, and zero otherwise, and RET is buy-and-hold stock returns; POST is an indicator variable equal to one if an observation belongs to the post-collapse period (1990 – 1991); TOBINQ is Tobin's q; CFO is cash flows from operation; AT is the log of total assets; FIRMAGE is a firm age; TANG is asset tangibility; STDROA is the volatility of ROA; STDINV the volatility of INVTOT; LEV is market leverage ratio; ZSCORE is Altman Z-score; SLACK is the ratio of cash to total assets; and BC is an indicator variable that equals one if an observation belongs to a state in which antitakeover laws were adopted and to the post-adoption period. Year- and industry-fixed effects are included. Standard errors are clustered by firm. p-values reported in brackets are based on two-sided t-tests. p-values under joint significance are based on two-tailed F-tests.

Table A3. Falsification Test I: Add non-December and non-January Fiscal-Year-End Firms

Panel A: Financing and Investment

Dependent =	FINTOT (1)	FINDBT (2)	FINEQY (3)	INVTOT (4)	INVCPX (5)	INVRND (6)	INVACQ (7)
Intercept (α)	0.096	-0.018	0.038	0.056	0.063[b]	0.002	0.020
	[0.395]	[0.859]	[0.168]	[0.455]	[0.042]	[0.925]	[0.721]
POST (β_1)	**-0.064[b]**	**-0.088[a]**	**0.012**	**-0.042[c]**	**-0.017[b]**	**0.012[b]**	**-0.033[c]**
	[0.014]	[0.000]	[0.166]	[0.057]	[0.015]	[0.014]	[0.070]
$ATLR_{(t-1)}$ (β_2)	0.021	0.005	0.006	0.005	0.002	-0.019[a]	0.022
	[0.582]	[0.898]	[0.574]	[0.904]	[0.813]	[0.006]	[0.525]
$ATLR_{(t-1)}$*POST (β_3)	**0.042**	**0.051**	**-0.004**	**0.005**	**0.013**	**-0.010[c]**	**-0.002**
	[0.285]	[0.200]	[0.758]	[0.891]	[0.189]	[0.075]	[0.958]
Joint Significance							
$\beta_1 + \beta_3$	**-0.022**	**-0.037**	**0.008**	**-0.036**	**-0.004**	**0.002**	**-0.035**
p-value	0.414	0.181	0.398	0.137	0.617	0.458	0.102
Control variables	X	X	X	X	X	X	X
Observations	718	718	718	718	718	718	718
R^2	0.182	0.142	0.125	0.177	0.377	0.338	0.086

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Panel B: Investment through Debt Financing

Dependent =	INVTOT (1)	INVCPX (2)	INVRND (3)	INVACQ (4)
Intercept (α)	0.084	0.067[b]	-0.001	0.047
	[0.180]	[0.025]	[0.972]	[0.328]
POST (β_1)	0.002	-0.011[c]	0.013[b]	0.001
	[0.905]	[0.078]	[0.013]	[0.936]
$ATLR_{(t-1)}$ (β_2)	0.001	-0.001	-0.018[b]	0.023
	[0.969]	[0.888]	[0.016]	[0.195]
$ATLR_{(t-1)}$*POST (β_3)	-0.018	0.008	-0.011[c]	-0.021
	[0.406]	[0.388]	[0.064]	[0.243]
$FINDBT_{(t)}$ (β_4)	0.534[a]	0.038[c]	0.013	0.442[a]
	[<.0001]	[0.094]	[0.462]	[0.001]
FINDBT*POST (β_5)	**-0.277[c]**	**0.064**	**0.014**	**-0.341[b]**
	[0.076]	[0.366]	[0.724]	[0.031]
$ATLR_{(t-1)}$*$FINDBT_{(t)}$ (β_6)	0.029	0.028	-0.020	-0.023
	[0.887]	[0.422]	[0.296]	[0.917]
$ATLR_{(t-1)}$*$FINDBT_{(t)}$*POST (β_7)	**0.370**	**0.045**	**-0.040**	**0.435**
	[0.205]	[0.763]	[0.326]	[0.238]
Joint Significance				
$\beta_5 + \beta_7$	**0.093**	**0.108**	**-0.027**	**0.095**
p-value	0.632	0.278	0.150	0.711
Control variables	X	X	X	X
Observations	718	718	718	718
R^2	0.527	0.423	0.341	0.418

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Table A3. Continued

Panel A (B) presents the results of testing the effect of ATLR on financing and investment (investment through debt financing) for a sample of speculative-grade firms including non-December and non-January Fiscal-year-end firms over the period 1986–1989. For brevity, the results for control variables are suppressed. Variable definitions are as follows: FINTOT is total financing; FINDBT is debt financing; FINEQY is equity financing; INVTOT is total investment; INVCPX is capital expenditures; INVRND is R&D; INVACQ is acquisitions; ATLR is asymmetric timely loss recognition measured as the coefficient estimate on δ_3 from estimating $E_{it} = \delta_0 + \delta_1 D_{it} + \delta_2 RET_{it} + \delta_3 RET_{it} * D_{it} + \varepsilon_{it}$ at the two-digit SIC level over the past ten years, where E is earnings divided by lagged market capitalization, D is an indicator variable that takes the value of one if RET is negative, and zero otherwise, and RET is buy-and-hold stock returns; and POST is an indicator variable equal to one if an observation belongs to the post-collapse period (1990 – 1991). Year- and industry-fixed effects are included. Standard errors are clustered by firm. p-values reported in brackets are based on two-sided t-tests. p-values under joint significance are based on two-tailed F-tests.

Table A4. Falsification Test II: Placebo Shock

Panel A: Financing and Investment

Dependent =	FINTOT (1)	FINDBT (2)	FINEQY (3)	INVTOT (4)	INVCPX (5)	INVRND (6)	INVACQ (7)
Intercept (α)	0.031	0.008	0.028	0.189[b]	0.092[a]	-0.005	0.123[c]
	[0.819]	[0.951]	[0.385]	[0.025]	[0.009]	[0.764]	[0.095]
POST (β_1)	**-0.024**	**-0.030**	**-0.007**	**0.002**	**0.004**	**0.006**	**-0.014**
	[0.636]	[0.562]	[0.622]	[0.944]	[0.692]	[0.149]	[0.644]
$ATLR_{(t-1)}$ (β_2)	0.018	0.014	-0.001	0.005	0.039[a]	-0.019[a]	-0.008
	[0.694]	[0.760]	[0.971]	[0.897]	[0.001]	[0.005]	[0.826]
$ATLR_{(t-1)}$*POST (β_3)	**0.014**	**0.024**	**0.007**	**0.005**	**-0.026[c]**	**-0.003**	**0.040**
	[0.837]	[0.705]	[0.749]	[0.920]	[0.074]	[0.434]	[0.411]
Joint Significance							
$\beta_1 + \beta_3$	**-0.009**	**-0.005**	**0.000**	**0.008**	**-0.022[c]**	**0.003**	**0.026**
p-value	0.817	0.888	0.984	0.808	0.065	0.402	0.384
Control variables	X	X	X	X	X	X	X
Observations	501	501	501	501	501	501	501
R^2	0.270	0.261	0.073	0.256	0.339	0.321	0.143

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Panel B: Investment through Debt Financing

Dependent =	INVTOT (1)	INVCPX (2)	INVRND (3)	INVACQ (4)
Intercept (α)	0.186[a]	0.089[a]	-0.004	0.120[b]
	[0.003]	[0.006]	[0.826]	[0.037]
POST (β_1)	0.009	0.004	0.005	-0.005
	[0.626]	[0.707]	[0.243]	[0.776]
$ATLR_{(t-1)}$ (β_2)	-0.003	0.029[a]	-0.019[a]	-0.008
	[0.904]	[0.002]	[0.003]	[0.712]
$ATLR_{(t-1)}$*POST (β_3)	-0.005	-0.020	-0.003	0.024
	[0.864]	[0.129]	[0.506]	[0.323]
$FINDBT_{(t)}$ (β_4)	0.312[b]	0.023	0.017	0.254[b]
	[0.030]	[0.435]	[0.300]	[0.048]
$FINDBT_{(t)}$*POST (β_5)	**0.348[b]**	**0.030**	**-0.016**	**0.292[c]**
	[0.040]	[0.496]	[0.397]	[0.054]
$ATLR_{(t-1)}$*$FINDBT_{(t)}$ (β_6)	0.014	0.120[b]	0.004	-0.075
	[0.946]	[0.032]	[0.870]	[0.663]
$ATLR_{(t-1)}$*$FINDBT_{(t)}$*POST (β_7)	**0.111**	**-0.101**	**-0.018**	**0.237**
	[0.639]	[0.186]	[0.580]	[0.287]
Joint Significance				
$\beta_5 + \beta_7$	**0.459[a]**	**-0.071**	**-0.035**	**0.529[a]**
p-value	0.001	0.168	0.140	0.001
Control variables	X	X	X	X
Observations	501	501	501	501
R^2	0.541	0.402	0.334	0.437

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Table A4. Continued

Panel A (B) presents the results of testing the effect of ATLR on financing and investment (investment through debt financing) for a sample of speculative-grade firms over the period 1986–1989. For brevity, the results for control variables are suppressed. Variable definitions are as follows: FINTOT is total financing; FINDBT is debt financing; FINEQY is equity financing; INVTOT is total investment; INVCPX is capital expenditures; INVRND is R&D; INVACQ is acquisitions; ATLR is asymmetric timely loss recognition measured as the coefficient estimate on δ_3 from estimating $E_{it} = \delta_0 + \delta_1 D_{it} + \delta_2 RET_{it} + \delta_3 RET_{it} * D_{it} + \varepsilon_{it}$ at the two-digit SIC level over the past ten years, where E is earnings divided by lagged market capitalization, D is an indicator variable that takes the value of one if RET is negative, and zero otherwise, and RET is buy-and-hold stock returns; and POST is an indicator variable equal to one if an observation belongs to the post-collapse period (1990 – 1991). Year- and industry-fixed effects are included. Standard errors are clustered by firm. p-values reported in brackets are based on two-sided t-tests. p-values under joint significance are based on two-tailed F-tests.

Table A5. Falsification Test III: Firms with S&P Long-term Domestic Issuer Credit Ratings of A or Above

Panel A: Financing and Investment

Dependent =	FINTOT (1)	FINDBT (2)	FINEQY (3)	INVTOT (4)	INVCPX (5)	INVRND (6)	INVACQ (7)
Intercept (α)	0.129[b]	0.075	0.056[b]	0.034	0.085[b]	-0.038	0.030[b]
	[0.011]	[0.117]	[0.027]	[0.422]	[0.027]	[0.104]	[0.026]
POST (β_1)	**-0.010**	**-0.019[b]**	**0.005**	**-0.009**	**-0.008**	**0.003[c]**	**-0.008[c]**
	[0.222]	[0.032]	[0.190]	[0.137]	[0.106]	[0.062]	[0.052]
$ATLR_{(t-1)}$ (β_2)	-0.011	-0.017	0.002	-0.010	0.000	-0.011[c]	-0.001
	[0.411]	[0.174]	[0.741]	[0.422]	[0.985]	[0.085]	[0.855]
$ATLR_{(t-1)}$*POST (β_3)	**0.014**	**0.017**	**0.003**	**-0.005**	**0.000**	**-0.009[a]**	**0.007**
	[0.305]	[0.243]	[0.596]	[0.663]	[0.952]	[0.002]	[0.334]
Joint Significance							
$\beta_1 + \beta_3$	**0.004**	**-0.002**	**0.009[b]**	**-0.014[c]**	**-0.007**	**-0.006[a]**	**-0.001**
p-value	0.683	0.818	0.038	0.058	0.146	0.004	0.835
Control variables	X	X	X	X	X	X	X
Observations	681	681	681	681	681	681	681
R^2	0.180	0.087	0.315	0.362	0.339	0.515	0.096

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Panel B: Investment through Debt Financing

Dependent =	INVTOT (1)	INVCPX (2)	INVRND (3)	INVACQ (4)
Intercept (α)	-0.002	0.066	-0.035	0.013
	[0.972]	[0.153]	[0.133]	[0.361]
POST (β_1)	-0.004	-0.006	0.002	-0.003
	[0.460]	[0.182]	[0.354]	[0.289]
$ATLR_{(t-1)}$ (β_2)	-0.010	-0.002	-0.012[c]	0.001
	[0.351]	[0.809]	[0.054]	[0.786]
$ATLR_{(t-1)}$*POST (β_3)	-0.012	-0.002	-0.009[b]	0.002
	[0.139]	[0.713]	[0.010]	[0.677]
$FINDBT_{(t)}$ (β_4)	0.285[a]	0.122[b]	-0.044	0.185[b]
	[0.004]	[0.018]	[0.230]	[0.017]
$FINDBT_{(t)}$*POST (β_5)	**0.093**	**0.142[b]**	**0.091**	**-0.113**
	[0.481]	[0.047]	[0.179]	[0.209]
$ATLR_{(t-1)}$*$FINDBT_{(t)}$ (β_6)	0.403[b]	0.296[a]	0.061	0.032
	[0.015]	[0.006]	[0.276]	[0.814]
$ATLR_{(t-1)}$*$FINDBT_{(t)}$*POST (β_7)	**0.082**	**-0.038**	**-0.037**	**0.124**
	[0.692]	[0.806]	[0.682]	[0.454]
Joint Significance				
$\beta_5 + \beta_7$	**0.175**	**0.104**	**0.054**	**0.012**
p-value	0.206	0.388	0.228	0.918
Control variables	X	X	X	X
Observations	681	681	681	681
R^2	0.570	0.500	0.520	0.236

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Table A5. Continued

Panel A (B) presents the results of testing the effect of ATLR on financing and investment (investment through debt financing) for a sample of firms with long-term domestic issuer credit rating of A or above S&P between 1988 and 1991. For brevity, the results for control variables are suppressed. Variable definitions are as follows: FINTOT is total financing; FINDBT is debt financing; FINEQY is equity financing; INVTOT is total investment; INVCPX is capital expenditures; INVRND is R&D; INVACQ is acquisitions; ATLR is asymmetric timely loss recognition measured as the coefficient estimate on δ_3 from estimating $E_{it} = \delta_0 + \delta_1 D_{it} + \delta_2 RET_{it} + \delta_3 RET_{it} * D_{it} + \varepsilon_{it}$ at the two-digit SIC level over the past ten years, where E is earnings divided by lagged market capitalization, D is an indicator variable that takes the value of one if RET is negative, and zero otherwise, and RET is buy-and-hold stock returns; and POST is an indicator variable equal to one if an observation belongs to the post-collapse period (1990 – 1991). Year- and industry-fixed effects are included. Standard errors are clustered by firm. p-values reported in brackets are based on two-sided t-tests. p-values under joint significance are based on two-tailed F-tests.

Table A6. Cross-sectional Variation in the Effect of Asymmetric Timely Loss Recognition: Collateral

Panel A: Financing

Dependent =	FINTOT		FINDBT		FINEQY	
	Above (1)	Below (2)	Above (3)	Below (4)	Above (5)	Below (6)
Intercept (α)	0.093	-0.083	0.061	-0.091	-0.017	-0.009
	[0.441]	[0.548]	[0.606]	[0.455]	[0.831]	[0.796]
POST (β_1)	**-0.018**	**-0.136**[a]	**-0.015**	**-0.168**[a]	**0.000**	**0.019**
	[0.613]	[0.002]	[0.658]	[0.000]	[0.998]	[0.231]
$ATLR_{(t-1)}$ (β_2)	0.050	-0.084	0.070[b]	-0.112	0.000	0.013
	[0.220]	[0.306]	[0.042]	[0.141]	[0.998]	[0.613]
$ATLR_{(t-1)}$*POST (β_3)	**0.036**	**0.142**[c]	**0.003**	**0.181**[b]	**0.019**	**-0.024**
	[0.418]	[0.072]	[0.937]	[0.023]	[0.482]	[0.415]
Joint Significance						
$\beta_1 + \beta_3$	**0.018**	**0.006**	**-0.012**	**0.013**	**0.019**	**-0.005**
p-value	0.579	0.914	0.684	0.829	0.407	0.828
β_3 [H_a: A < B H_0: A = B]	*0.160*		*0.035*		*0.851*	
Control variables	X	X	X	X	X	X
Observations	225	225	225	225	225	225
R^2	0.419	0.249	0.243	0.298	0.271	0.151

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Panel B: Investment

Dependent =	INVTOT		INVCPX		INVRND		INVACQ	
	Above (1)	Below (2)	Above (3)	Below (4)	Above (5)	Below (6)	Above (7)	Below (8)
Intercept (α)	-0.333	-0.225	0.030	-0.026	-0.092	0.011	-0.125	-0.024
	[0.219]	[0.412]	[0.880]	[0.839]	[0.275]	[0.842]	[0.380]	[0.905]
POST (β_1)	**-0.013**	**-0.103**[b]	**-0.029**	**-0.003**	**0.003**	**-0.001**	**0.008**	**-0.085**[b]
	[0.643]	[0.039]	[0.135]	[0.810]	[0.744]	[0.902]	[0.626]	[0.043]
$ATLR_{(t-1)}$ (β_2)	0.088[c]	-0.035	0.064[b]	0.041[b]	-0.021	-0.017[a]	0.033	-0.051
	[0.091]	[0.690]	[0.010]	[0.046]	[0.224]	[0.049]	[0.319]	[0.466]
$ATLR_{(t-1)}$*POST (β_3)	**0.002**	**0.113**	**0.028**	**-0.014**	**0.004**	**0.002**	**-0.024**	**0.108**
	[0.964]	[0.231]	[0.380]	[0.444]	[0.758]	[0.662]	[0.458]	[0.155]
Joint Significance								
$\beta_1 + \beta_3$	**-0.011**	**0.010**	**-0.001**	**-0.017**	**0.006**	**0.002**	**-0.016**	**0.023**
p-value	0.778	0.861	0.959	0.133	0.465	0.404	0.401	0.581
β_3 [H_a: A < B H_0: A = B]	*0.187*		*0.920*		*0.600*		*0.055*	
Control variables	X	X	X	X	X	X	X	X
Observations	227	228	227	228	227	228	227	228
R^2	0.310	0.259	0.254	0.416	0.543	0.315	0.088	0.152

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Table A6. Continued

Panel C: Investment through Debt Financing

Dependent =	INVTOT		INVCPX		INVRND		INVACQ	
	Above (1)	Below (2)	Above (3)	Below (4)	Above (5)	Below (6)	Above (7)	Below (8)
Intercept (α)	-0.238	-0.245	0.068	-0.012	-0.106	0.013	-0.082	-0.063
	[0.223]	[0.290]	[0.676]	[0.925]	[0.237]	[0.804]	[0.491]	[0.687]
POST (β_1)	-0.012	0.013	-0.024[c]	0.009	0.005	0.003	0.004	0.000
	[0.588]	[0.673]	[0.094]	[0.447]	[0.566]	[0.647]	[0.719]	[0.990]
$ATLR_{(t-1)}$ (β_2)	0.031	0.076	0.040[b]	0.042[b]	-0.015	-0.016[c]	0.010	0.044
	[0.303]	[0.124]	[0.032]	[0.030]	[0.371]	[0.070]	[0.594]	[0.318]
$ATLR_{(t-1)}$*POST (β_3)	0.002	-0.041	0.005	-0.023	0.003	-0.002	-0.015	-0.012
	[0.967]	[0.426]	[0.840]	[0.162]	[0.802]	[0.824]	[0.523]	[0.786]
$FINDBT_{(t)}$ (β_4)	0.024	0.706[a]	0.049	0.045	0.063	0.004	-0.070	0.555[a]
	[0.924]	[0.001]	[0.704]	[0.187]	[0.460]	[0.720]	[0.531]	[0.000]
$FINDBT_{(t)}$*POST (β_5)	**-0.023**	**-0.413**	**-0.020**	**0.083**	**-0.167[c]**	**0.072**	**0.150**	**-0.475[b]**
	[0.949]	[0.162]	[0.935]	[0.403]	[0.086]	[0.304]	[0.362]	[0.019]
$ATLR_{(t-1)}$*$FINDBT_{(t)}$ (β_6)	0.558	-0.514	0.115	0.103[c]	-0.105	-0.016	0.323	-0.569[c]
	[0.400]	[0.186]	[0.650]	[0.075]	[0.278]	[0.435]	[0.356]	[0.079]
$ATLR_{(t-1)}$*$FINDBT_{(t)}$*POST (β_7)	**0.224**	**1.084[b]**	**0.558**	**-0.177**	**0.126**	**-0.068**	**-0.238**	**1.130[a]**
	[0.752]	[0.035]	[0.111]	[0.183]	[0.263]	[0.322]	[0.553]	[0.008]
Joint Significance								
$\beta_5 + \beta_7$	**0.201**	**0.670[b]**	**0.538[a]**	**-0.094**	**-0.042**	**0.004**	**-0.088**	**0.655[b]**
p-value	0.668	0.042	0.006	0.169	0.326	0.764	0.747	0.025
β_7 [H_a: A < B H_0: A = B]	*0.210*		*0.992*		*0.912*		*0.006*	
Control variables	X	X	X	X	X	X	X	X
Observations	227	228	227	228	227	228	227	228
R^2	0.443	0.588	0.398	0.478	0.556	0.331	0.159	0.462

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Panel A, B, and C present the results of testing cross-sectional variation in the effect of asymmetric timely loss recognition on financing, investment, and investment through debt financing for the above- and below-median asset-liquidation-value subsamples, respectively. For brevity, the results for control variables are suppressed. Asset liquidation value is calculated as 1*CHE+0.715*REC+0.547*INV+0.535*PPE. The sample consists of speculative-grade firms between 1988 and 1991. Variable definitions are as follows: FINTOT is total financing; FINDBT is debt financing; FINEQY is equity financing; INVTOT is total investment; INVCPX is capital expenditures; INVRND is R&D; INVACQ is acquisitions; ATLR is asymmetric timely loss recognition measured as the coefficient estimate on δ_3 from estimating $E_{it} = \delta_0 + \delta_1 D_{it} + \delta_2 RET_{it} + \delta_3 RET_{it} * D_{it} + \varepsilon_{it}$ at the two-digit SIC level over the past ten years, where E is earnings divided by lagged market capitalization, D is an indicator variable that takes the value of one if RET is negative, and zero otherwise, and RET is buy-and-hold stock returns; and POST is an indicator variable equal to one if an observation belongs to the post-collapse period (1990 – 1991) and otherwise zero. Year- and industry-fixed effects are included. Standard errors are clustered by firm. *p*-values reported in brackets are based on two-sided t-tests. *p*-values under joint significance are based on two-tailed F-tests. *p*-values for the difference between the high and low asset liquidation value subsamples are based on one-sided *t*-test.

Table A7. Cross-sectional Variation in the Effect of Asymmetric Timely Loss Recognition: Information Environment

Panel A: Financing

Dependent =	FINTOT		FINDBT		FINEQY	
	High (1)	Low (2)	High (3)	Low (4)	High (5)	Low (6)
Intercept (α)	-0.210[c]	0.045	-0.179	-0.112	-0.056	0.083
	[0.098]	[0.724]	[0.147]	[0.387]	[0.109]	[0.177]
POST (β_1)	**-0.076[c]**	**-0.060**	**-0.088[b]**	**-0.077[c]**	**0.013**	**0.009**
	[0.068]	[0.147]	[0.010]	[0.077]	[0.418]	[0.708]
$ATLR_{(t-1)}$ (β_2)	0.068	-0.051	0.027	-0.038	0.023	-0.007
	[0.218]	[0.416]	[0.643]	[0.538]	[0.381]	[0.785]
$ATLR_{(t-1)}$*POST (β_3)	**0.024**	**0.124[b]**	**0.035**	**0.115[c]**	**-0.007**	**0.002**
	[0.666]	[0.045]	[0.562]	[0.062]	[0.780]	[0.935]
Joint Significance						
$\beta_1 + \beta_3$	**-0.051**	**0.064[c]**	**-0.053**	**0.038**	**0.006**	**0.012**
p-value	0.287	0.088	0.304	0.241	0.797	0.580
β_3 [H_a: H < L H_0: H = L]	*0.079*		*0.143*		*0.315*	
Control variables	X	X	X	X	X	X
Observations	221	229	221	229	221	229
R^2	0.296	0.393	0.235	0.271	0.284	0.183

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Panel B: Investment

Dependent =	INVTOT		INVCPX		INVRND		INVACQ	
	High (1)	Low (2)	High (3)	Low (4)	High (5)	Low (6)	High (7)	Low (8)
Intercept (α)	-0.097	0.148	-0.040	0.080	0.044	0.020	-0.043	0.124
	[0.334]	[0.243]	[0.353]	[0.124]	[0.132]	[0.507]	[0.523]	[0.172]
POST (β_1)	**-0.038**	**-0.070[c]**	**-0.005**	**-0.039[b]**	**0.011[c]**	**-0.001**	**-0.039**	**-0.022**
	[0.310]	[0.055]	[0.725]	[0.010]	[0.096]	[0.836]	[0.161]	[0.414]
$ATLR_{(t-1)}$ (β_2)	0.012	-0.028	-0.001	0.031[b]	-0.021	-0.037[a]	0.020	-0.002
	[0.793]	[0.663]	[0.940]	[0.047]	[0.234]	[0.002]	[0.582]	[0.964]
$ATLR_{(t-1)}$*POST (β_3)	**0.030**	**0.100[c]**	**-0.001**	**0.036[b]**	**0.001**	**0.014[c]**	**0.031**	**0.025**
	[0.667]	[0.088]	[0.945]	[0.073]	[0.866]	[0.072]	[0.578]	[0.570]
Joint Significance								
$\beta_1 + \beta_3$	**-0.008**	**0.031**	**-0.006**	**-0.003**	**0.012**	**0.013[b]**	**-0.008**	**0.003**
p-value	0.870	0.270	0.653	0.831	0.107	0.015	0.827	0.873
β_3 [H_a: H < L H_0: H = L]	*0.182*		*0.122*		*0.177*		*0.566*	
Control variables	X	X	X	X	X	X	X	X
Observations	221	229	221	229	221	229	221	229
R^2	0.286	0.292	0.394	0.413	0.475	0.504	0.062	0.193

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Table A7. Continued

Panel C: Investment through Debt Financing

Dependent =	INVTOT		INVCPX		INVRND		INVACQ	
	High (1)	Low (2)	High (3)	Low (4)	High (5)	Low (6)	High (7)	Low (8)
Intercept (α)	0.030	0.218[c]	-0.023	0.119[b]	0.036	0.014	0.047	0.156[c]
	[0.649]	[0.068]	[0.596]	[0.041]	[0.266]	[0.661]	[0.309]	[0.062]
POST (β_1)	-0.008	-0.023	0.000	-0.031[b]	0.009	-0.002	-0.011	0.009
	[0.725]	[0.351]	[0.988]	[0.015]	[0.142]	[0.783]	[0.568]	[0.626]
$ATLR_{(t-1)}$ (β_2)	-0.011	0.016	-0.013	0.027[c]	-0.021	-0.034[a]	0.020	0.032
	[0.692]	[0.718]	[0.330]	[0.074]	[0.276]	[0.006]	[0.284]	[0.391]
$ATLR_{(t-1)}$*POST (β_3)	0.026	0.018	0.004	0.016	0.003	0.017[c]	0.012	-0.026
	[0.453]	[0.669]	[0.852]	[0.373]	[0.777]	[0.057]	[0.692]	[0.434]
$FINDBT_{(t)}$ (β_4)	0.336	0.684[a]	0.045	-0.016	-0.020	0.023	0.322	0.503[a]
	[0.143]	[0.001]	[0.425]	[0.667]	[0.533]	[0.563]	[0.105]	[0.007]
$FINDBT_{(t)}$*POST (β_5)	**-0.219**	**-0.416[b]**	**0.086**	**0.026**	**0.005**	**-0.051**	**-0.278**	**-0.282**
	[0.550]	[0.046]	[0.591]	[0.869]	[0.945]	[0.337]	[0.181]	[0.110]
$ATLR_{(t-1)}$*$FINDBT_{(t)}$ (β_6)	0.143	-0.595[c]	0.125	0.086	0.002	-0.042	-0.126	-0.473
	[0.721]	[0.069]	[0.104]	[0.353]	[0.958]	[0.407]	[0.721]	[0.106]
$ATLR_{(t-1)}$*$FINDBT_{(t)}$*POST (β_7)	**0.671**	**0.978[b]**	**-0.197**	**0.339**	**-0.048**	**-0.008**	**0.794[b]**	**0.519**
	[0.179]	[0.013]	[0.252]	[0.125]	[0.536]	[0.894]	[0.029]	[0.103]
Joint Significance								
$\beta_5 + \beta_7$	**0.452[c]**	**0.562[b]**	**-0.111[c]**	**0.365[a]**	**-0.043**	**-0.059**	**0.516[b]**	**0.236**
p-value	0.079	0.039	0.080	0.007	0.210	0.182	0.019	0.267
β_7 [H_a: H < L H_0: H = L]	*0.284*		*0.014*		*0.705*		*0.728*	
Control variables	X	X	X	X	X	X	X	X
Observations	221	229	221	229	221	229	221	229
R^2	0.552	0.517	0.473	0.502	0.486	0.518	0.372	0.413

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Panel A, B, and C present the results of testing cross-sectional variation in the effect of asymmetric timely loss recognition on financing, investment, and investment through debt financing for the high and low information-environment subsamples, respectively. For brevity, the results for control variables are suppressed. The sample consists of speculative-grade firms between 1988 and 1991.The high (low) information-environment subsample is defined as firms (not) followed by sell-side equity analysts. Variable definitions are as follows: FINTOT is total financing; FINDBT is debt financing; FINEQY is equity financing; INVTOT is total investment; INVCPX is capital expenditures; INVRND is R&D; INVACQ is acquisitions; ATLR is asymmetric timely loss recognition measured as the coefficient estimate on δ_3 from estimating $E_{it} = \delta_0 + \delta_1 D_{it} + \delta_2 RET_{it} + \delta_3 RET_{it} * D_{it} + \varepsilon_{it}$ at the two-digit SIC level over the past ten years, where E is earnings divided by lagged market capitalization, D is an indicator variable that takes the value of one if RET is negative, and zero otherwise, and RET is buy-and-hold stock returns; and POST is an indicator variable equal to one if an observation belongs to the post-collapse period (1990 – 1991). Year- and industry-fixed effects are included. Standard errors are clustered by firm. *p*-values reported in brackets are based on two-sided t-tests. *p*-values under joint significance are based on two-tailed F-tests. *p*-values for the difference between the high and low information-environment subsamples are based on one-sided *t*-test.

Table A8. Cross-sectional Variation in the Effect of Asymmetric Timely Loss Recognition: Relationship Lending

Panel A: Financing

Dependent =	FINTOT		FINDBT		FINEQY	
	Above (1)	Below (2)	Above (3)	Below (4)	Above (5)	Below (6)
Intercept (α)	0.028	0.142	-0.195	0.107	0.112[b]	0.042
	[0.858]	[0.367]	[0.141]	[0.469]	[0.012]	[0.494]
POST (β_1)	**-0.076[c]**	**-0.099[b]**	**-0.085[c]**	**-0.111[a]**	**0.005**	**0.008**
	[0.092]	[0.017]	[0.059]	[0.006]	[0.737]	[0.749]
$ATLR_{(t-1)}$ (β_2)	-0.046	-0.008	-0.019	-0.024	-0.023	0.012
	[0.510]	[0.876]	[0.790]	[0.678]	[0.298]	[0.608]
$ATLR_{(t-1)}$*POST (β_3)	**0.091**	**0.050**	**0.078**	**0.081**	**0.016**	**-0.033**
	[0.147]	[0.387]	[0.227]	[0.181]	[0.509]	[0.314]
Joint Significance						
$\beta_1 + \beta_3$	0.015	-0.049	-0.007	-0.030	0.021	-0.025
p-value	0.678	0.293	0.869	0.509	0.178	0.438
β_3 [H_a: A < B H_0: A = B]	*0.570*		*0.382*		*0.862*	
Control variables	X	X	X	X	X	X
Number of firm-years	230	220	230	220	230	220
R^2	0.161	0.428	0.228	0.240	0.152	0.290

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Panel B: Investment

Dependent =	INVTOT		INVCPX		INVRND		INVACQ	
	Above (1)	Below (2)	Above (3)	Below (4)	Above (5)	Below (6)	Above (7)	Below (8)
Intercept (α)	0.114	0.077	0.070	0.001	0.018	-0.004	0.092	0.147
	[0.337]	[0.500]	[0.107]	[0.988]	[0.463]	[0.907]	[0.306]	[0.064]
POST (β_1)	**-0.031**	**-0.092[a]**	**-0.016**	**-0.031[b]**	**0.000**	**0.000**	**-0.019**	**-0.043[c]**
	[0.445]	[0.005]	[0.273]	[0.025]	[0.971]	[0.996]	[0.547]	[0.057]
$ATLR_{(t-1)}$ (β_2)	0.011	-0.063	0.037[b]	-0.020	-0.010	-0.050[a]	-0.015	0.003
	[0.862]	[0.203]	[0.033]	[0.281]	[0.144]	[0.001]	[0.757]	[0.937]
$ATLR_{(t-1)}$*POST (β_3)	**0.001**	**0.084**	**0.000**	**0.025**	**0.000**	**0.009**	**0.003**	**0.028**
	[0.986]	[0.144]	[0.999]	[0.155]	[0.932]	[0.433]	[0.948]	[0.531]
Joint Significance								
$\beta_1 + \beta_3$	-0.030	-0.008	-0.016	-0.006	0.000	0.009	-0.015	-0.015
p-value	0.429	0.829	0.200	0.658	0.947	0.233	0.579	0.582
β_3 [H_a: A < B H_0: A = B]	*0.117*		*0.088*		*0.178*		*0.323*	
Control variables	X	X	X	X	X	X	X	X
Observations	230	220	230	220	230	220	230	220
R^2	0.176	0.398	0.417	0.443	0.300	0.575	0.144	0.134

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Table A8. Continued

Panel C: Investment through Debt Financing

Dependent =	INVTOT		INVCPX		INVRND		INVACQ	
	Above (1)	Below (2)	Above (3)	Below (4)	Above (5)	Below (6)	Above (7)	Below (8)
Intercept (α)	0.197[b]	0.023	0.082[c]	-0.009	0.016	-0.007	0.154[b]	0.125[b]
	[0.030]	[0.774]	[0.050]	[0.865]	[0.530]	[0.813]	[0.027]	[0.024]
POST (β_1)	0.015	-0.035	-0.009	-0.027[b]	0.000	0.001	0.013	0.000
	[0.559]	[0.119]	[0.497]	[0.027]	[0.821]	[0.903]	[0.554]	[0.999]
$ATLR_{(t-1)}$ (β_2)	0.045	-0.037	0.039[b]	-0.027	-0.010	-0.043[a]	0.013	0.028
	[0.178]	[0.190]	[0.014]	[0.135]	[0.181]	[0.007]	[0.634]	[0.289]
$ATLR_{(t-1)}$*POST (β_3)	-0.057	0.032	-0.014	0.028	0.000	0.006	-0.033	-0.018
	[0.248]	[0.286]	[0.412]	[0.131]	[0.987]	[0.632]	[0.429]	[0.540]
$FINDBT_{(t)}$ (β_4)	0.587[b]	0.536[a]	0.057[b]	0.008	-0.005	0.050	0.442[b]	0.378[c]
	[0.015]	[0.004]	[0.023]	[0.895]	[0.506]	[0.359]	[0.014]	[0.083]
FINDBT*POST (β_5)	**-0.261**	**-0.589[c]**	**0.020**	**-0.041**	**0.000**	**-0.061**	**-0.286[c]**	**-0.242**
	[0.321]	[0.085]	[0.879]	[0.792]	[0.998]	[0.459]	[0.088]	[0.338]
$ATLR_{(t-1)}$*$FINDBT_{(t)}$ (β_6)	-0.442	-0.207	-0.031	0.173[c]	-0.011	-0.113	-0.348	-0.290
	[0.325]	[0.521]	[0.566]	[0.055]	[0.323]	[0.126]	[0.307]	[0.387]
$ATLR_{(t-1)}$*$FINDBT_{(t)}$*POST (β_7)	**0.971[c]**	**0.965[c]**	**0.437[c]**	**-0.039**	**0.000**	**0.054**	**0.544**	**0.690**
	[0.051]	[0.070]	[0.069]	[0.837]	[0.992]	[0.575]	[0.117]	[0.141]
Joint Significance								
$\beta_5 + \beta_7$	**0.710[c]**	**0.376**	**0.456[a]**	**-0.080**	**0.000**	**-0.007**	**0.258**	**0.448[c]**
p-value	0.051	0.201	0.006	0.396	0.983	0.865	0.356	0.093
β_7 [H_a: A < B H_0: A = B]	*0.523*		*0.955*		*0.336*		*0.381*	
Control variables	X	X	X	X	X	X	X	X
Observations	230	220	230	220	230	220	230	220
R^2	0.423	0.626	0.535	0.490	0.309	0.591	0.355	0.387

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Panel A, B, and C present the results of testing cross-sectional variation in the effect of asymmetric timely loss recognition on financing, investment, and investment through debt financing for the above- and below-median firm-age subsamples, respectively. For brevity, the results for control variables are suppressed. The sample consists of speculative-grade firms between 1988 and 1991. Variable definitions are as follows: FINTOT is total financing; FINDBT is debt financing; FINEQY is equity financing; INVTOT is total investment; INVCPX is capital expenditures; INVRND is R&D; INVACQ is acquisitions; ATLR is asymmetric timely loss recognition measured as the coefficient estimate on δ_3 from estimating $E_{it} = \delta_0 + \delta_1 D_{it} + \delta_2 RET_{it} + \delta_3 RET_{it} * D_{it} + \varepsilon_{it}$ at the two-digit SIC level over the past ten years, where E is earnings divided by lagged market capitalization, D is an indicator variable that takes the value of one if RET is negative, and zero otherwise, and RET is buy-and-hold stock returns; and POST is an indicator variable equal to one if an observation belongs to the post-collapse period (1990 – 1991). Year- and industry-fixed effects are included. Standard errors are clustered by firm. *p*-values reported in brackets are based on two-sided t-tests. *p*-values under joint significance are based on two-tailed F-tests. *p*-values for the difference between the high and low information-environment subsamples are based on one-sided *t*-test.

Table A9. Changes in Asymmetric Timely Loss Recognition

Panel A: Asymmetric Timely Loss Recognition

Dep. Variable =	ATLR		
	ALL	Net Debt Issuances	Net Debt Retirements
	(1)	(2)	(3)
Intercept (α)	0.311[a]	0.203[c]	0.180[a]
	[0.006]	[0.066]	[0.007]
POST (β_1)	**0.056[c]**	**0.116[b]**	**0.023**
	[0.062]	**[0.026]**	**[0.531]**
$LEV\_BK_{(t)}$ (β_2)	0.052	0.029	0.024
	[0.222]	[0.667]	[0.642]
$MB_{(t)}$ (β_3)	0.001	0.005	0.000
	[0.687]	[0.134]	[0.942]
$SIZE_{(t)}$ (β_4)	0.014	0.024[b]	0.012
	[0.202]	[0.041]	[0.500]
β_1 [H_a: (2) > (3) H_0: (2) = (3)]		*0.070*	
Observations	446	174	272
R^2	0.185	0.341	0.200

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Panel B: Special Items + Discontinued Operations

Dep. Variable =	-1 * (Special Items + Discontinued Operations)		
	ALL	Net Debt Issuances	Net Debt Retirements
	(1)	(2)	(3)
Intercept (α)	-0.390[c]	-0.145	-0.157
	[0.050]	[0.369]	[0.362]
POST (β_1)	**0.159[b]**	**0.225[b]**	**0.147**
	[0.020]	**[0.040]**	**[0.125]**
$AT_{(t)}$ (β_2)	0.029	0.006	0.063
	[0.252]	[0.740]	[0.107]
$FIRMAGE_{(t)}$ (β_3)	0.003	0.000	-0.003
	[0.171]	[0.666]	[0.396]
$TANG_{(t)}$ (β_4)	0.186	0.091	0.247
	[0.179]	[0.513]	[0.271]
$ZSCORE_{(t)}$ (β_5)	-0.027	0.005	-0.026
	[0.222]	[0.854]	[0.365]
$STDCF_{(t)}$ (β_6)	0.036[b]	0.021	0.015
	[0.020]	[0.409]	[0.436]
$LEV\_BK_{(t)}$ (β_7)	0.152	-0.018	0.157
	[0.254]	[0.907]	[0.501]
β_1 [H_a: (2) > (3) H_0: (2) = (3)]		*0.293*	
Observations	450	178	272
R^2	0.223	0.485	0.252

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Table A9. Continued

Panel A presents the results of regressing ATLR on POST, LEV_BK, MB, and SIZE. Panel B presents the results of regressing -1 * (special items plus gains and losses of discontinued operations) on POST and an array of control variables. A firm belongs to the net debt issuances subsample (the net debt retirements subsample) if more debt is issued than retired in the post-collapse period (otherwise). The sample consists of SPG firms between 1988 and 1991. Variable definitions are as follows: ATLR is asymmetric timely loss recognition measured as the coefficient estimate on δ_3 from estimating $E_{it} = \delta_0 + \delta_1 D_{it} + \delta_2 RET_{it} + \delta_3 RET_{it} * D_{it} + \varepsilon_{it}$ at the two-digit SIC level for the pre- and post-collapse period, separately, where E is earnings divided by lagged market capitalization, D is an indicator variable that takes the value of one if RET is negative, and zero otherwise, and RET is buy-and-hold stock returns; POST is an indicator variable equal to one if an observation belongs to the post-collapse period (1990 – 1991), and zero otherwise; LEV_BK is the ratio of long-term debt to total assets (book leverage ratio); MB is the ratio of the market value of equity to the book value of equity; and SIZE is the log of total assets. Year- and industry-fixed effects are included. Standard errors are clustered by firm. p-values reported in brackets are based on two-sided t-tests. p-values for the difference between the net debt issuances and net debt retirements subsamples are based on one-sided t-test.

Table A10. Asymmetric Timely Loss Recognition and the Likelihood of Under-investing

	UNDERINV = 1		
	1988 ~ 1991	1988 ~ 1989	1990 ~ 1991
	(1)	(2)	(3)
Intercept (α)	13.041[a]	14.805[a]	11.552[a]
	[<.0001]	[<.0001]	[<.0001]
POST (β_1)	**1.602**		
	[0.140]		
$ATLR_{(t-1)}$ (β_2)	0.238	**-0.345**	**-1.927[c]**
	[0.705]	**[0.641]**	**[0.067]**
$ATLR_{(t-1)}$*POST (β_3)	**-2.683[b]**		
	[0.011]		
Joint Significance			
$\beta_1 + \beta_3$	**-1.080**		
p-value	0.115		
Control variables			
$TOBINQ_{(t-1)}$ (β_4)	-0.459	-0.522	-0.426
	[0.229]	[0.374]	[0.398]
$CFO_{(t)}$ (β_5)	-1.263	-1.505	-1.149
	[0.594]	[0.641]	[0.786]
$AT_{(t-1)}$ (β_6)	-0.166	-0.327	-0.093
	[0.333]	[0.234]	[0.702]
$FIRMAGE_{(t-1)}$ (β_7)	0.013	0.027	0.009
	[0.398]	[0.237]	[0.747]
$TANG_{(t-1)}$ (β_8)	1.905[b]	2.861[b]	1.671
	[0.022]	[0.045]	[0.214]
$STDROA_{(t-1)}$ (β_9)	0.100	0.134	0.421
	[0.664]	[0.617]	[0.399]
$STDINV_{(t-1)}$ (β_{10})	-0.180	-0.305	-0.518
	[0.587]	[0.484]	[0.512]
$LEV_{(t-1)}$ (β_{11})	0.468	1.629	-0.046
	[0.663]	[0.300]	[0.981]
$ZSCORE_{(t-1)}$ (β_{12})	0.135	0.153	0.159
	[0.382]	[0.585]	[0.645]
$SLACK_{(t-1)}$ (β_{13})	1.790	1.272	2.450
	[0.133]	[0.243]	[0.201]
BC (β_{14})	0.228	-1.275[b]	1.056
	[0.662]	[0.049]	[0.168]
Observations	450	227	223
Pseudo-R^2	0.177	0.247	0.267

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Table A10. Continued

This table presents the results of the logistic regressions of a likelihood of underinvesting on ATLR, POST, an interaction between ATLR and POST, and a set of control variables. The sample consists of speculative-grade firms between 1988 and 1991. Variable definitions are as follows: UNDERINV is an indicator variable that takes the value of one if an observation belongs to the bottom quintile of the distribution of the residuals from firm specific investment regressions in which total investment is regressed on Tobin's q and cash flow from operation, and zero otherwise; ATLR is asymmetric timely loss recognition measured as the coefficient estimate on δ_3 from estimating $E_{it} = \delta_0 + \delta_1 D_{it} + \delta_2 RET_{it} + \delta_3 RET_{it} * D_{it} + \varepsilon_{it}$ at the two-digit SIC level over the past ten years, where E is earnings divided by lagged market capitalization, D is an indicator variable that takes the value of one if RET is negative, and zero otherwise, and RET is buy-and-hold stock returns; POST is an indicator variable equal to one if an observation belongs to the post-collapse period (1990 – 1991), and zero otherwise; TOBINQ is Tobin's q; CFO is cash flows from operation; AT is the log of total assets; FIRMAGE is a firm age; TANG is asset tangibility; STDROA is the volatility of ROA; STDINV the volatility of INVTOT; LEV is market leverage ratio; ZSCORE is Altman Z-score; SLACK is the ratio of cash to total assets; and BC is an indicator variable that equals one if an observation belongs to a state in which antitakeover laws were adopted and to the post-adoption period. Year- and industry-fixed effects are included. Standard errors are clustered by firm. *p*-values reported in brackets are based on two-sided *t*-tests. *p*-values under joint significance are based on two-tailed F-tests.

Table A11. Alternative Measures of Financial Reporting Quality: Timely Loss Recognition

Panel A: Financing and Investment

	FINTOT (1)	FINDBT (2)	FINEQY (3)	INVTOT (4)	INVCPX (5)	INVRND (6)	INVACQ (7)
Intercept (α)	-0.032	-0.098	0.016	-0.005	0.054	-0.007	0.025
	[0.800]	[0.346]	[0.720]	[0.955]	[0.178]	[0.745]	[0.639]
POST (β_1)	**-0.076**[b]	**-0.086**[a]	**0.004**	**-0.040**	**-0.020**[b]	**0.008**[c]	**-0.020**
	[0.017]	[0.005]	[0.811]	[0.106]	[0.048]	[0.074]	[0.248]
$TLR_{(t-1)}$ (β_2)	-0.011	0.000	-0.014	0.016	0.026[c]	-0.027[a]	0.021
	[0.818]	[0.997]	[0.475]	[0.708]	[0.059]	[0.002]	[0.508]
$TLR_{(t-1)}$*POST (β_3)	**0.071**[c]	**0.060**	**0.012**	**0.021**	**0.010**	**-0.004**	**-0.002**
	[0.069]	[0.148]	[0.572]	[0.588]	[0.474]	[0.527]	[0.933]
Joint Significance							
$\beta_1 + \beta_3$	**-0.005**	**-0.026**	**0.016**	**-0.020**	**-0.010**	**0.005**	**-0.022**
p-value	0.845	0.339	0.304	0.389	0.294	0.248	0.157
Control variables	X	X	X	X	X	X	X
Observations	450	450	450	450	450	450	450
R^2	0.264	0.180	0.194	0.236	0.344	0.434	0.072

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Panel B: Investment through Debt Financing

	INVTOT (1)	INVCPX (2)	INVRND (3)	INVACQ (4)
Intercept (α)	0.070	0.071	-0.011	0.075
	[0.317]	[0.084]	[0.602]	[0.112]
$TLR_{(t-1)}$ (β_1)	0.012	0.020	-0.021	0.009
	[0.647]	[0.109]	[0.032]	[0.639]
POST (β_2)	0.000	-0.013	0.009	0.002
	[0.995]	[0.153]	[0.126]	[0.839]
$TLR_{(t-1)}$*POST (β_3)	-0.013	0.006	-0.006	-0.016
	[0.624]	[0.675]	[0.443]	[0.372]
$FINDBT_{(t)}$ (β_4)	0.417[b]	0.054	0.023	0.216
	[0.019]	[0.111]	[0.497]	[0.141]
FINDBT*POST (β_5)	**-0.130**	**0.061**	**-0.031**	**-0.055**
	[0.535]	[0.528]	[0.464]	[0.714]
$TLR_{(t-1)}$*$FINDBT_{(t)}$ (β_6)	0.010	0.053	-0.060	0.127
	[0.975]	[0.461]	[0.208]	[0.632]
$TLR_{(t-1)}$*$FINDBT_{(t)}$*POST (β_7)	**0.439**	**0.031**	**0.011**	**0.209**
	[0.267]	[0.866]	[0.841]	[0.552]
Joint Significance				
$\beta_5 + \beta_7$	**0.309**	**0.092**	**-0.020**	**0.153**
p-value	0.255	0.463	0.503	0.542
Control variables	X	X	X	X
Observations	450	450	450	450
R^2	0.475	0.405	0.445	0.304

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Table A11. Continued

Panel A presents the results of testing the effect of TLR on financing and investment. Panel B presents the results of testing the effect of TLR on investment through debt financing. The sample consists of speculative-grade firms between 1988 and 1991. Variable definitions are as follows: FINTOT is total financing; FINDBT is debt financing; FINEQY is equity financing; INVTOT is total investment; INVCPX is capital expenditures; INVRND is R&D; INVACQ is acquisitions; TLR is timely loss recognition measured as the coefficient estimate on $\delta_2 + \delta_3$ from estimating $E_{it} = \delta_0 + \delta_1 D_{it} + \delta_2 RET_{it} + \delta_3 RET_{it} * D_{it} + \varepsilon_{it}$ at the two-digit SIC level over the past ten years, where E is earnings divided by lagged market capitalization, D is an indicator variable that takes the value of one if RET is negative, and zero otherwise, and RET is buy-and-hold stock returns; POST is an indicator variable equal to one if an observation belongs to the post-collapse period (1990 – 1991); Year- and industry-fixed effects are included. Standard errors are clustered by firm. p-values reported in brackets are based on two-sided t-tests. p-values under joint significance are based on two-tailed F-tests.

Table A12. Alternative Measures of Financial Reporting Quality: Timely Gain Recognition

Panel A: Financing and Investment

	FINTOT (1)	FINDBT (2)	FINEQY (3)	INVTOT (4)	INVCPX (5)	INVRND (6)	INVACQ (7)
Intercept (α)	-0.050	-0.141	0.029	-0.033	0.039	0.002	0.007
	[0.695]	[0.199]	[0.504]	[0.699]	[0.318]	[0.926]	[0.910]
POST (β_1)	**-0.030**	**-0.018**	**-0.005**	**0.010**	**-0.004**	**0.007**[c]	**0.007**
	[0.356]	[0.596]	[0.761]	[0.682]	[0.650]	[0.074]	[0.657]
$TGR_{(t-1)}$ (β_2)	-0.004	0.052	-0.029	0.030	0.013	-0.005	0.025
	[0.924]	[0.237]	[0.140]	[0.373]	[0.389]	[0.567]	[0.285]
$TGR_{(t-1)}$*POST (β_3)	**-0.021**	**-0.071**	**0.026**	**-0.079**[b]	**-0.018**	**-0.006**	**-0.054**[c]
	[0.651]	[0.148]	[0.241]	[0.044]	[0.177]	[0.234]	[0.057]
Joint Significance							
$\beta_1 + \beta_3$	**-0.051**[c]	**-0.089**[a]	**0.021**	**-0.069**[a]	**-0.022**[b]	**0.001**	**-0.048**[b]
p-value	0.081	0.003	0.167	0.006	0.015	0.706	0.013
Control variables	X	X	X	X	X	X	X
Observations	450	450	450	450	450	450	450
R^2	0.259	0.179	0.198	0.241	0.328	0.402	0.077

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Panel B: Investment through Debt Financing

	INVTOT (1)	INVCPX (2)	INVRND (3)	INVACQ (4)
Intercept (α)	0.050	0.059	-0.004	0.067
	[0.481]	[0.132]	[0.846]	[0.188]
$TGR_{(t-1)}$ (β_1)	-0.027	0.012	-0.002	-0.032[b]
	[0.224]	[0.375]	[0.805]	[0.033]
POST (β_2)	-0.002	-0.002	0.009[c]	-0.012
	[0.870]	[0.822]	[0.079]	[0.235]
$TGR_{(t-1)}$*POST (β_3)	-0.009	-0.013	-0.010	0.013
	[0.693]	[0.302]	[0.101]	[0.394]
$FINDBT_{(t)}$ (β_4)	0.171	0.109[b]	0.013	-0.056
	[0.164]	[0.019]	[0.731]	[0.481]
FINDBT*POST (β_5)	**0.501**[b]	**0.041**	**-0.072**	**0.514**[a]
	[0.015]	[0.701]	[0.110]	[0.005]
$TGR_{(t-1)}$*$FINDBT_{(t)}$ (β_6)	0.494[b]	-0.064	-0.032	0.645[a]
	[0.033]	[0.299]	[0.506]	[<.0001]
$TGR_{(t-1)}$*$FINDBT_{(t)}$*POST (β_7)	**-0.727**[b]	**0.215**	**0.021**	**-0.878**[a]
	[0.039]	[0.241]	[0.756]	[0.001]
Joint Significance				
$\beta_5 + \beta_7$	**-0.226**	**0.255**[c]	**-0.051**	**-0.364**[b]
p-value	0.371	0.051	0.275	0.015
Control variables	X	X	X	X
Observations	450	450	450	450
R^2	0.500	0.398	0.414	0.398

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Table A12. Continued

Panel A presents the results of testing the effect of TGR on financing and investment. Panel B presents the results of testing the effect of TGR on investment through debt financing. The sample consists of speculative-grade firms between 1988 and 1991. Variable definitions are as follows: FINTOT is total financing; FINDBT is debt financing; FINEQY is equity financing; INVTOT is total investment; INVCPX is capital expenditures; INVRND is R&D; INVACQ is acquisitions; TGR is timely gain recognition measured as the coefficient estimate on δ_2 from estimating $E_{it} = \delta_0 + \delta_1 D_{it} + \delta_2 RET_{it} + \delta_3 RET_{it} * D_{it} + \varepsilon_{it}$ at the two-digit SIC level over the past ten years, where E is earnings divided by lagged market capitalization, D is an indicator variable that takes the value of one if RET is negative, and zero otherwise, and RET is buy-and-hold stock returns; POST is an indicator variable equal to one if an observation belongs to the post-collapse period (1990 – 1991); Year- and industry-fixed effects are included. Standard errors are clustered by firm. p-values reported in brackets are based on two-sided t-tests. p-values under joint significance are based on two-tailed F-tests.

Table A13. Alternative Measures of Financial Reporting Quality: Overall Earnings Timeliness

Panel A: Financing and Investment

	FINTOT (1)	FINDBT (2)	FINEQY (3)	INVTOT (4)	INVCPX (5)	INVRND (6)	INVACQ (7)
Intercept (α)	-0.035	-0.101	0.018	0.000	0.054	-0.002	0.028
	[0.778]	[0.332]	[0.688]	[0.996]	[0.203]	[0.918]	[0.609]
POST (β_1)	**-0.048**	**-0.046**	**0.004**	**-0.029**	**-0.019**[c]	**0.006**	**-0.007**
	[0.120]	[0.120]	[0.766]	[0.210]	[0.065]	[0.182]	[0.634]
$TIME_{(t-1)}$ (β_2)	0.028	0.068	-0.004	0.049	0.017	-0.008	0.052
	[0.576]	[0.173]	[0.858]	[0.276]	[0.320]	[0.344]	[0.125]
$TIME_{(t-1)}$*POST (β_3)	**0.015**	**-0.021**	**0.010**	**-0.002**	**0.011**	**-0.001**	**-0.029**
	[0.731]	[0.650]	[0.683]	[0.968]	[0.419]	[0.801]	[0.353]
Joint Significance							
$\beta_1 + \beta_3$	**-0.032**	**-0.067**[b]	**0.014**	**-0.031**	**-0.008**	**0.004**	**-0.036**[c]
p-value	0.302	0.041	0.440	0.290	0.351	0.266	0.094
Control variables	X	X	X	X	X	X	X
Observations	450	450	450	450	450	450	450
R^2	0.261	0.182	0.193	0.239	0.335	0.401	0.080

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Panel B: Investment through Debt Financing

	INVTOT (1)	INVCPX (2)	INVRND (3)	INVACQ (4)
Intercept (α)	0.078	0.070[c]	-0.008	0.084[c]
	[0.268]	[0.099]	[0.735]	[0.076]
$TIME_{(t-1)}$ (β_1)	-0.007	0.009	-0.003	0.003
	[0.829]	[0.540]	[0.681]	[0.902]
POST (β_2)	-0.017	-0.014	0.006	-0.006
	[0.284]	[0.135]	[0.233]	[0.579]
$TIME_{(t-1)}$*POST (β_3)	0.022	0.011	-0.003	-0.002
	[0.442]	[0.429]	[0.666]	[0.900]
$FINDBT_{(t)}$ (β_4)	0.245[c]	0.076[c]	0.019	0.055
	[0.083]	[0.070]	[0.625]	[0.565]
$FINDBT_{(t)}$*POST (β_5)	**0.070**	**0.075**	**-0.057**	**0.111**
	[0.708]	[0.453]	[0.213]	[0.308]
$TIME_{(t-1)}$*$FINDBT_{(t)}$ (β_6)	0.295	-0.001	-0.036	0.360[c]
	[0.259]	[0.992]	[0.391]	[0.050]
$TIME_{(t-1)}$*$FINDBT_{(t)}$*POST (β_7)	**0.117**	**0.047**	**0.010**	**-0.031**
	[0.730]	[0.783]	[0.847]	[0.914]
Joint Significance				
$\beta_5 + \beta_7$	**0.188**	**0.122**	**-0.048**[c]	**0.080**
p-value	0.425	0.300	0.076	0.714
Control variables	X	X	X	X
Observations	450	450	450	450
R^2	0.486	0.396	0.413	0.338

* a, b, and c indicate significance at the 1, 5, and 10% level (two-tailed).

Table A13. Continued

Panel A presents the results of testing the effect of TIME on financing and investment. Panel B presents the results of testing the effect of TIME on investment through debt financing. The sample consists of speculative-grade firms between 1988 and 1991. Variable definitions are as follows: FINTOT is total financing; FINDBT is debt financing; FINEQY is equity financing; INVTOT is total investment; INVCPX is capital expenditures; INVRND is R&D; INVACQ is acquisitions; TIME is overall earnings timeliness measured as R^2 from estimating $E_{it} = \delta_0 + \delta_1 D_{it} + \delta_2 RET_{it} + \delta_3 RET_{it} * D_{it} + \varepsilon_{it}$ at the two-digit SIC level over the past ten years, where E is earnings divided by lagged market capitalization, D is an indicator variable that takes the value of one if RET is negative, and zero otherwise, and RET is buy-and-hold stock returns; POST is an indicator variable equal to one if an observation belongs to the post-collapse period (1990 – 1991); Year- and industry-fixed effects are included. Standard errors are clustered by firm. p-values reported in brackets are based on two-sided t-tests. p-values under joint significance are based on two-tailed F-tests.

APPENDIX B. FIGURES

Figure B1. The Hypothesized Relation between Asymmetric Timely Loss Recognition and Debt Financing

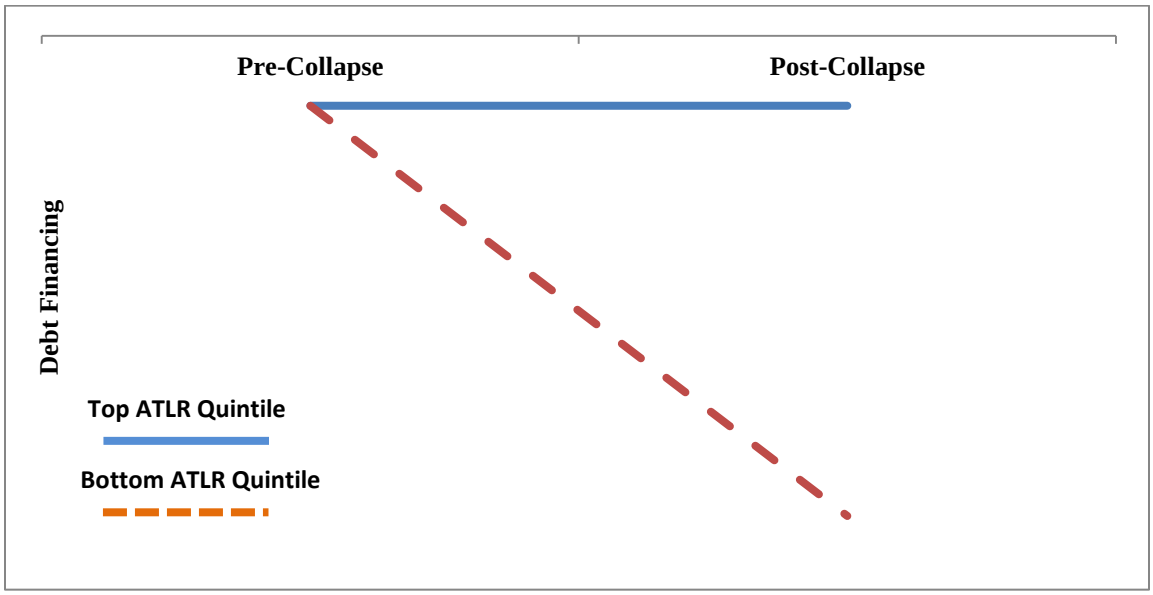


Figure B1 portrays the posited relation between asymmetric timely loss recognition and debt financing for the pre- and post-collapse periods

Figure B2. The Empirical Relation between Asymmetric Timely Loss Recognition and Debt Financing

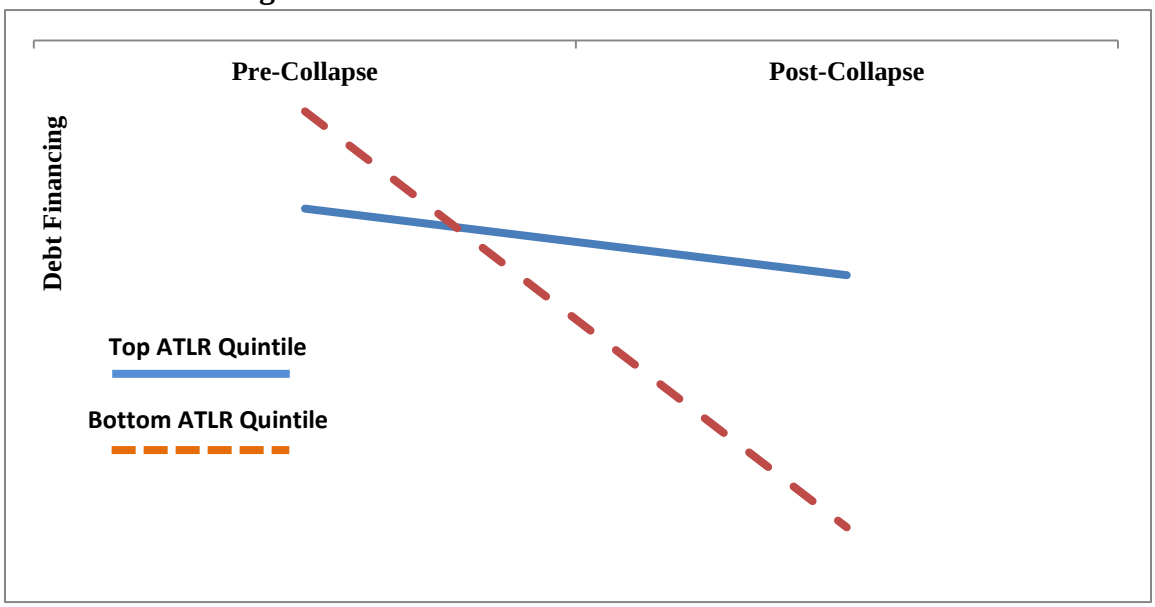
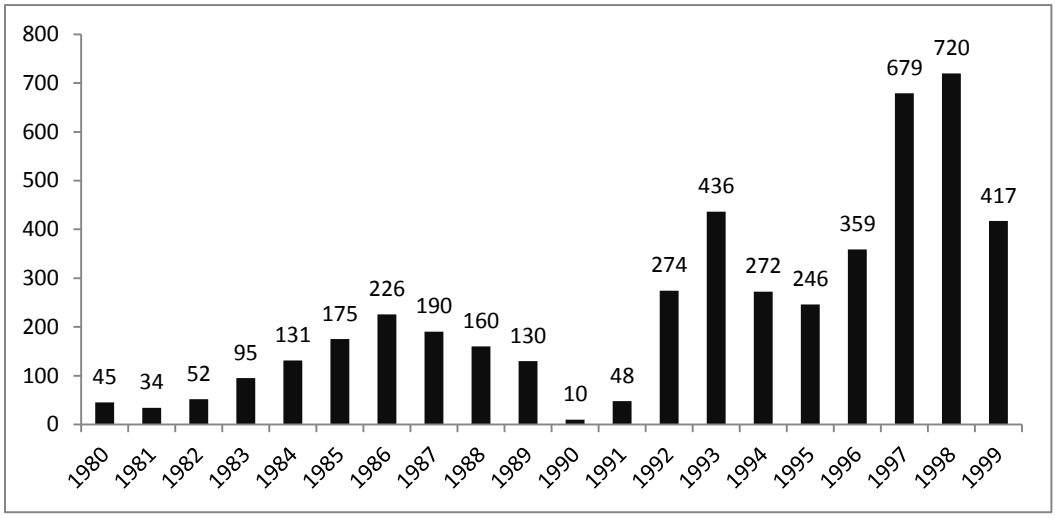


Figure B2 portrays the estimated relation between asymmetric timely loss recognition and debt financing for the pre- and post-collapse periods

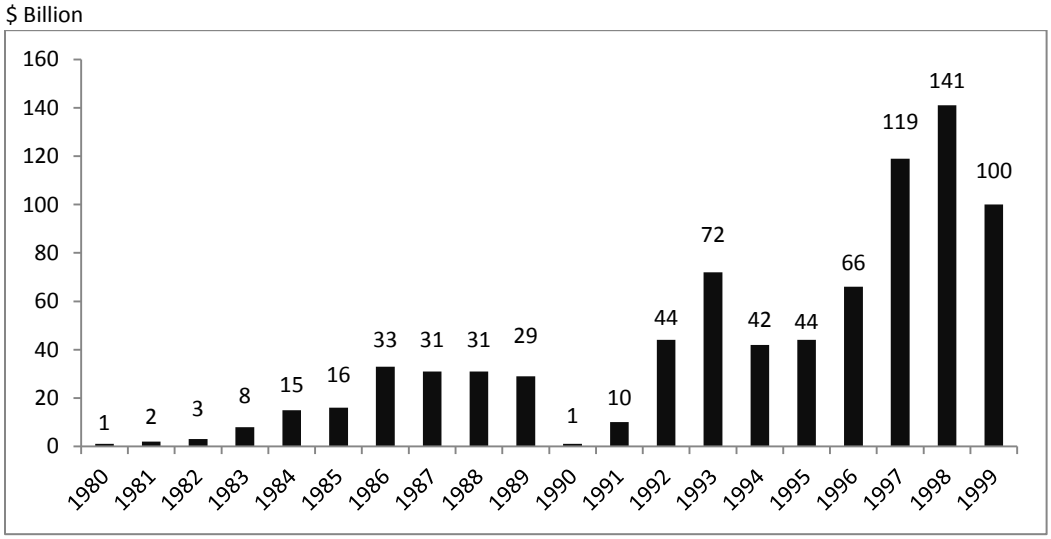
Figure B3. The Number of New U.S. Junk Bonds Issued



* Reprinted from Freeman [2000], Data source: Merrill Lynch & Co.

Figure B3 describes the number of new U.S. junk bonds issued over the period 1980 – 1999

Figure B4. The Dollar Value of New U.S. Junk Bonds Issued



* Reprinted from Freeman [2000], Data source: Merrill Lynch & Co.

Figure B4 describes the dollar value of new U.S. junk bonds issued over the period 1980 – 1999

APPENDIX C. TEXT

Institutional Background on the Junk Bond Market

Before the late 1970s the junk bond market consisted of "fallen angels" that were originally issued as above-investment-grade bonds and subsequently downgraded to speculative-grades (Taggart [1988]). During this period, commercial bank loans were primary funding sources for SPG firms. In the 1980s, the original-issue junk bond market rapidly grew and became a substitute for the bank loan market (Loeys [1990]; Benveniste et al. [1993]). Drexel played a major role in the rapid growth of the junk bond market both as an underwriter for original-issue junk bonds and as a market-maker in the secondary market (Benveniste et al. [1993]; Livingston and Williams [2007]). Uncertainty about inflation and volatile interest rates also had a favorable impact on the growth of the junk bond market (Taggart [1988]). Proceeds of junk bonds issuances were used for a variety of reasons, including bank debt pay-down, financing acquisitions, and general purposes investments, of which financing acquisitions drew the greatest public attention (Taggart [1988]).

Growing rapidly in the 1980s, the junk bond market disappeared in the early 1990s. The total amount of new junk bond issues was approximately $1.4 billion ($10 billion) in 1990 (1991), compared with $28.8 billion in 1989 (Freeman [2000]). Three concurrent events were responsible for the rapid decline of the junk bond market in the early 1990s. First and foremost, the bankruptcy of Drexel adversely affected new junk bond issues. According to Benveniste et al. [1993], Drexel comprised 46% of market share in terms of the number of issues underwritten from 1978 to 1985 and 57% in terms of dollar value. After Michael Milken left the firm due to indictment on securities law violations in March 1989, Drexel's role as a primary underwriter as well as a market-maker for junk bonds was called into question (Benveniste et al. [1993]). Despite the departure of Milken, Drexel maintained a sizeable market share. Drexel underwrote

approximately 40% of new issues in dollar terms in 1989. On February 13, 1990, Drexel suddenly filed for bankruptcy and departed the junk bond market. Drexel's biggest assets were intangibles such as its extensive investors' network and its reputation for providing back-up capital (Benveniste et al. [1993]). Drexel was willing to buy out primary investors at the issuance price if junk bonds defaulted shortly after issuance. Thus, competitors were not readily available to fill the void left when Drexel exited the junk bond market (Benveniste et al. [1993]). Not surprisingly, the shutdown of Drexel resulted in a significant decline in junk bond issues (Benveniste et al. [1993]; Livingston and Williams [2007]).

Two regulatory changes also adversely affected the junk bond market in the early 1990s. First, in response to S&L crisis, Congress passed the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA) which prohibited savings and loans from investing in junk bonds and simultaneously mandated them to dispose of speculative-grade bonds in their balance sheets. This regulatory change brought substantial selling pressure to the junk bond market (Brewer and Mondschean [1994]; Altman [2000]; Livingston and Williams [2007]). Second, the National Association of Insurance Companies' (NAIC) decision to change corporate debt ratings in order to follow NRSROs (Nationally Recognized Statistical Rating Organizations) increased speculative-grade bond holdings in insurance companies' portfolio, and hence decreased demand for privately placed speculative-grade debt (Carey et al. [1993]).

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