Rating Asset-backed Securities

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ABSTRACT:

One of the most important features of securitization is the ability to create securities whose credit risk is based on the quality of a pool of loans rather than the credit risk of the lender who originated the assets. However, the recent failure of many specialized lenders who relied on securitization, and the subsequent extremely poor performance of their securities, raises the question whether the performance of the security can be separated from the financial condition of its sponsor.

Our results suggest a very strong link between the financial condition of the sponsor of an asset-backed security (ABS) and the subsequent performance of the securitization. Securities sponsored by investment-grade financial institutions retain their initial ratings up to 20 percent longer before being downgraded than identically-rated securities that are sponsored by a financial institution with a non-investment grade credit rating. In some specifications, securities sponsored by domestic banks retain their initial rating about 15 percent longer before a downgrade than those sponsored by other types of sponsors. Among domestic firms, securities sponsored by a well-capitalized firm are less likely to be downgraded than those sponsored by a poorly capitalized firm. Diversified lenders--those in more lines of business--also issue better-performing securities. Also, securities sponsored by vertically integrated lenders—those who service their own securitizations—retain their initial rating about 9 percent longer than those sponsored by lenders who contract out servicing. In order to control for investor perceptions of risk, we also proxy for yield spread using coupon spread at issuance and find that, while highly statistically significant, the coupon spread does not diminish the estimated effects of the other variables. Finally, we present preliminary evidence that managers may have been aware of some of the risks associated with their troubled securitizations. That is, securitizations whose insiders sold stock in the firm in the three months prior to issuance were downgraded sooner.

These findings suggest that successfully restarting securitization will rely on ensuring that sponsors are well-capitalized and the structure is managed by vertically-integrated institutions that service their own deals. For some lending markets, such as residential and commercial real estate, these conditions would represent an appreciable change from previous practices.

INTRODUCTION

One of the most important features of securitization is the ability to create securities whose credit risk derives from the quality of a pool of loans rather than the credit risk of the lender who originated the assets. This feature conveys two important advantages over issuing corporate debt. First, investors in the securitization are usually able to obtain access to the collateral if they stop receiving coupon payments without going through the bankruptcy process. Also, in the event of a sponsor bankruptcy, the pool of assets backing the ABS will not be caught up in the bankruptcy proceeding.[1] Second, the sponsor can strictly prioritize payments among tranches to enhance the credit quality of some securities. As a result of these features, many lenders raised funds more cheaply through securitization than they could by issuing corporate debt. In our sample of more than 110,000 securities sponsored in the last two decades, only about 1.3 percent had a sponsor which rated AAA by Standard & Poor's, yet almost 60 percent of securities representing 92 percent of the dollar value of the securities were able to obtain a AAA rating (Tables 2 and 4).

Securitization allowed many new types of lender to gain market share in areas that once had been dominated by banks or credit unions. Initially, many securitizations were sponsored by entities such as Ford Motor Credit, GMAC, Countrywide, or New Century Financial Corporation. Between 1999 and 2008, non-banking entities such as finance companies, investment banks, and insurance companies sponsored more than one-half of all securitizations rated by Standard & Poor's.[2] In addition, securitization enabled foreign banks to enter the large and fast-growing US lending markets without raising deposits locally, a slow process that involves building local branches and introducing their own brand name to consumers. For example, banks such as HSBC, Nomura, and Credit Suisse quickly became large players in the US residential and commercial mortgage markets. While foreign lenders sponsored only five percent of securitizations in 1999, they sponsored about one-quarter of securitizations by 2004.

[1] The extent to which securitization is completely bankruptcy remote is currently being challenged by the bankruptcy of GGP, a publicly-traded REIT that owns and operates shopping malls. In this case, the bankruptcy judge has allowed the borrower to take certain steps toward consolidating the cash flows for underlying properties that were used as collateral for securitized mortgages with a separate legal ownership.

[2] Interestingly, the reliance on securitization later created problems for some sponsors of these specialized lenders. For example, GMAC was initially created to provide auto loans for purchasers of General Motors cars. However, the enhanced access to credit through securitization may have allowed GMAC to expand to provide commercial mortgages and subprime loans. When the subprime mortgage market collapsed, problems at GMAC made it much harder for buyers of GM cars to obtain credit relative to rivals at Toyota, Chrysler, and Ford, whose specialized lenders did not significantly expand beyond their primary purpose of providing auto loans.

Finally, specialized regional banks such as Indy Mac and Golden West used securitization to grow their mortgage lending businesses far faster than they could have funded these lines of business using traditional deposits.

For many securitizations, the sponsor was not liable for the subsequent performance of the securities beyond typical representations and warranties about the origination information and initial payment performance.[3] So initially investors, regulators, and rating agencies focused on quality of the collateral, not the financial condition of the sponsor, as the key determinant of the security's performance. For example, regulators gave favorable capital treatment to owners of rated securities relative to whole loans.

More recently, some have questioned whether the performance of the security can be separated from the financial condition of the sponsor. For example, Moody's Investor Service (2006) concluded that lower-rated sponsors are associated with higher ABS spreads and weaker credit performance. Gorton and Souleles (2006) found that credit card backed securities sponsored by riskier sponsors (as measured by the sponsor's bond rating) require higher yields.

In this paper, we examine the relationship between the characteristics of the sponsor at the time of the securitization and the subsequent performance of the securities. We focus on measures of sponsor credit quality, such as the type of sponsor, as well as the sponsor's credit rating, capital ratio, probability of bankruptcy, and insider stock sales. We also examine the effect of vertical integration between the sponsor and the servicer on subsequent security performance.

Our results suggest a very strong link between the financial condition of the sponsor and the subsequent performance of the securitization. Securities sponsored by higher-rated sponsor retain their initial rating longer before being downgraded than securities sponsored by a lower-rated sponsor. Securities sponsored by domestic nonbanks are downgraded sooner than those sponsored by banks. Within domestic nonbanks, financial condition also matters. Securities sponsored by a nonbank with a low likelihood of default – as measured by the Altman's Z-score (Altman 1968) – retain their initial rating longer than securities sponsored by a nonbank with a higher likelihood of default. Measures of capital also matter. Securities sponsored by a

[3] For example, the originator typically agreed to repurchase a mortgage from a pool if the borrower misses one of the first three payments or if material information about the borrower or the property turns out to be untrue. Nonetheless, investors found that collateral behind these promises was more important than they had realized in the case of problems at lenders like New Century who found themselves unable to repurchase all of the troubled mortgages they originated and securitized.

domestic bank with relatively high Tier 1 capital retain their initial rating longer than securities sponsored by a domestic bank with a lower Tier 1 capital. Securities sponsored by those who service their own securitizations—retain their initial rating about 6 percent longer than those sponsored by lenders who contract out servicing. Finally, there is some indication that both investors and insiders acted upon additional information related to the quality of these securities. Controlling for security rating, securities with a higher coupon spread were downgraded sooner than those with a lower coupon spread, suggesting that the low quality of some of the securities were priced by buyers of ABS. Also, securities in which the manager of the sponsoring firm sold stock in the firm also perform worse, all else equal, suggesting that managers also appear to be able to anticipate security performance. All of these results are robust to the inclusion of controls for year of issuance, the type of collateral, and the initial credit rating of the security.

The next section describes the data used for analysis, while the subsequent section describes the econometric model and presents results. A short conclusion follows.

DATA

Our dataset derives primarily from Lewtan Technologies' ABSNet securitization database, which provides information on public, domestic, asset-backed securitizations that closed between 1995 and 2008.[4] The ABSNet database records important characteristics of the securities such as the type of asset underlying the securities, the initial rating of the security, the date of the security's issuance, and the date of any subsequent upgrade or downgrade.

Using the Standard & Poor's (S&P's) rating history provided by ABSNet for each security, we constructed our primary measure of security performance, the time to first downgrade. Although most ABSs have at least two ratings, we chose to analyze S&P ratings alone because S&P rated the highest share of ABS, and had the most complete ratings history for ABS securities. Thirty percent of securities in the database were downgraded during our sample period. Conditional on being downgraded, the average time to downgrade is 27 months from origination. The seventy percent of securities that were not downgraded as of the fourth quarter of 2009 were treated as right-censored. In this sample, the probability of a downgrade peaks in

[4] Some securitizations are treated as private, where information on the underlying securitization and their ratings are only available to a very restricted group of actual and potential investors. This private structure was particularly prevalent for CDOs, but is sometimes used for other asset types. Thus CDOs are likely substantially under-represented in our sample.

the second year following issuance at about 1.2 percent (Figure 1). However, this peak is driven by downgrades among securities sponsored in 2004 or later. In this group, the hazard rate peaks about two years following issuance at about 1.9 percent, whereas for securities sponsored in 1995 through 2003, the hazard rate peaks at nearly five years. This figure suggests that the underlying survival distribution appears lognormal, but that it is important to control for the time period in subsequent regressions.

The largest securitized asset class represented in the dataset is home equity, which refers to securities backed by either second liens on real estate or subprime first liens on real estate. Half of the deals in the dataset are home equity, while another 34 percent are residential mortgage-backed security deals (RMBS) (Table 1). The home equity securities are smaller on average than in the other asset classes, and the dollar share of outstanding home equity ABS is about 42 percent. The remaining asset classes are commercial mortgage-backed securities (CMBS), auto loan-backed securities, collateralized debt securities (CDOs), and a few smaller asset types.[5] We excluded master trusts from the sample because the sponsors of securities with this structure have an ongoing role in the securitization that sponsors of other types do not have. The exclusion of master trusts implies that we dropped all credit card ABS from the sample. The distribution of deals across asset classes is somewhat similar to that widely reported by Bloomberg. The major difference is that Bloomberg contains a much larger portion of CDO deals (23 percent), reflecting the fact that a large fraction of CDO deals were private and thus not included in our sample.

The majority of the securities in our sample (59%) were rated AAA by S&P at issuance with an even distribution of lower ratings (Table 2). Owing to their size relative to the other tranches, the AAA securities represented an overwhelming share (92%) of the dollar value of the securities. Non-investment grade securities (those rated BB or below) represented only 0.6 percent of the dollar value. The large share of AAA-securities highlights one of the benefits of securitization: financial institutions with a below-AAA corporate rating can sponsor AAA securities. These highly rated securities obtained favorable capital treatment with regulators and thus were in great demand by investors.

Although relatively few deals in the dataset were initiated this year, 77 percent were originated in the last five years (Table 3). Securitization volume expanded rapidly between 2003

[5] Including student loans, small business loans, manufactured housing, auto leases, and auto dealer floor plans.

and 2005 as the total number of securities issued grew by about 60% and the dollar volume of securitizations nearly doubled.

We augmented these data with information on the sponsor of each securitization. Consistent with SEC Regulation AB, we define the sponsor as the entity that "organizes and initiates an asset-backed securities transaction by selling or transferring assets, either directly or indirectly, including through an affiliate, to the issuing entity."[6] The sponsor may or may not be the originator of the receivables. We identified the parent company of the listed sponsor through individual internet and database searches, and in the case of mergers or other consolidations we use the name and attributes of the parent at the time of the security origination.[7] We then merged in the parent's Standard & Poor's (S&P's) issuer credit rating at the time of deal closing from S&P's RatingsXpress database. About 85 percent of securities were sponsored by an institution whose parent was rated by S&P's. Of the rated sponsors, approximately 90 percent were rated investment-grade (Table 4).

In addition to credit rating categories, sponsors were also categorized into sectors using data from the National Information Center (NIC) and North American Industrial Classification System (NAICS) classifications. All sponsors were identified in the NIC database. Those that were classified in the NIC database as a US-based financial holding company, a bank holding company, a federal savings bank, or a national bank were classified as banks. All other US-based firms, including finance companies, securities brokers and dealers, insurance companies, other financial, and nonfinancial firms were grouped as nonbanks. Two firms in the sample, Countrywide Financial Corporation and Capital One Financial Corporation, are nonbanks early in the sample but later acquire bank subsidiaries. However, due to their history as finance companies and their limited retail banking operations, we classify them as nonbanks for the entire sample.

The NIC database allowed us further subdivision of these firms into foreign and domestic entities. Eighty percent of securities were sponsored by domestic entities, about one-third of which were sponsored by banks and about two-thirds by nonbanks, while twenty percent were sponsored by foreign entities, with the bulk of those securities sponsored by banks (Table 5).

[6] 17 C.F.R. § 229.1101.

[7] In less than 1% of deals where several sponsors were identified, the first listed sponsor was assumed to be the primary sponsor associated with the deal.

For securities where we can identify the parent's sector, Table 6 presents the market share for each parent sector over time. Prior to 2002, domestic institutions dominated the securitization market, with non-banks sponsoring more than one-half of all securitizations. However, foreign banks quickly entered the US market, issuing between 20 and 23 percent of securitizations between 2003 and 2006.

For domestic institutions we also incorporate two additional measures of financial stability. For domestic banks we identify the Tier 1 capital ratio of the sponsor's parent company, and for domestic nonbanks we calculate Altman's Z-score (Altman 1968). The mean Tier 1 capital ratio for domestic banks in the sample is 8.6 and the mean Z-score is 0.3 (Table 10). The low mean Z-score reflects low reported sales at finance companies, and in turn a low capital-turnover component of the Z-score (sales divided by total assets).

Another potential indicator of the financial stability of the parent is the number of markets that the firm operates in. Firms that operate in more markets are likely to be more diversified and less susceptible to financial shocks. Table 8 categorizes securities based on the number of collateral types sponsored by the parent firm. The table shows substantial variation in the extent to which parents are diversified. About one-fifth of securities are sponsored by parents who specialize in securities of a single collateral type. On the other extreme, about one-quarter of securities are sponsored by diversified parents who operate in more than four securitization markets. Not surprisingly, most of the highly diversified parents are domestic or foreign banks.

The ABSNet database identifies the name of the servicer for approximately 90 percent of the securities (Table 7). Among those with the servicer identified, the sponsor also services the loans for about 61 percent of the securities.

We collected data on insider sales to examine the extent to which managers are able to anticipate problems in their firms and securitizations. Table 9 shows the distribution of insider sales or purchases in the quarter prior to security issuance. For about 89 percent of securities, managers were net sellers in the previous quarter. This high share is not surprising given that managers who are compensated with stock are much more likely to sell stock than to purchase stock in their own firms.

Finally, because these securities are predominantly priced at par at issuance, we construct a coupon spread to proxy for the yield spread at issuance. The median issuance price in the 37%

of the sample for which an issuance price is provided by Bloomberg was par and 95 percent of this subsample had an issuance price greater than 99.8% of the par value.

We construct the coupon spread using the coupon at issuance indicated by ABSNet. For approximately 19 percent of fixed-rate securities in the sample, ABSNet provides an expected maturity. For the expected maturity of those fixed-rate securities with missing data, we used the average expected maturity for securities in the same asset class and with the same initial rating as a proxy.. The approximately 500 securities backed by manufactured housing were dropped because the expected maturity was missing. The comparable-maturity Treasury yield was subtracted from the initial coupon to create a coupon spread.

For the floating-rate securities in the sample, an expected maturity is available for approximately 22 percent of securities and in those cases a coupon spread was created by subtracting the appropriate benchmark yield from the initial coupon. For those floating-rate securities without a known index benchmark, the modal benchmark for securities in the same asset class was used as a proxy for the benchmark yield.

About 63 percent of the securities with a coupon spread are floating-rate securities and the mean coupon spread is 0.81 percentage points (Table 11).

EMPIRICAL RESULTS

Before looking at the effect of sponsor characteristics on subsequent performance, we determined whether these characteristics played a role in the initial rating of the security. Rating agencies state that their ratings are based on the collateral and deal structure, and consistent with these claims, we find that the initial ratings of the securities are uncorrelated with the characteristics of the sponsor, including parent rating, sector, diversification, and capital (See Appendix Table 1).

To discern whether the characteristics of the sponsor influence subsequent performance, we estimate a lognormal survival time model of the length of time between the issuance of a security and its first downgrade (if any). In this model, a security is at risk while its rating is at or above its initial rating and the security experiences a failure when its rating falls below its initial rating. If a security has not been downgraded by the end of the sample period, it is considered censored.

The determinants of security downgrade can be grouped broadly into those related to the security and those related to the sponsor.[8] The first category of variables includes the asset type underlying the security, the initial rating of the security, and its date of issuance. The second group includes the sponsor's issuer rating, the sponsor's sector, its vertical integration and specialization, and measures of financial condition.

The first set of security characteristics is the type of asset underlying the security. The omitted collateral type in the regression is CMBS, which accounts for about 6.4 percent of the securities (see Table 1). As shown in Figure 2, CMBS is downgraded later than other asset classes.[9] The predicted survival curves in Figure 2 show the gap between the survival curves of CMBS and those of the other asset classes. Securities backed by manufactured housing were clearly more likely to be downgraded sooner than other asset classes, followed by CDOs, home equity, RMBS, equipment loans, auto loans and student loans. These findings generally result from concentrated periods of stress for each of these asset classes: for example, manufactured housing and subprime auto ABS in the mid-1990s, and CDOs, home equity, and RMBS over the past three years.

The second set of security characteristics includes fixed effects for the security rating at the time of issuance; the omitted initial rating in the regression is BB and below, which accounts for about 8 percent of the securities. The effect of initial rating on time to downgrade is as one would expect. Securities rated BBB or above are downgraded significantly later than securities rated below BBB and the predicted survival graphs generally show a monotonicity in which higher rated securities are much less likely to be downgraded (Figure 3).

The third set of security characteristics include fixed effects for the issue date of the security by half-year; the omitted issue date is the first half of 1999. ABS sponsored in later years have a shorter time to downgrade than those sponsored in earlier years. As shown in Figure 4, the survival curves for securities sponsored in 2004 and earlier lie clearly above those for securities sponsored in 2006 and later. This is consistent with the differences in hazard functions between the earlier and later time periods noted above. Moreover, ABS sponsored in 2005-2007 show a consistent deterioration; each successive vintage's survival curve lies below the one

[8] Our base model also controls for the 6-month period the security was sponsored and year dummies for the 2005-2007 time period when ratings downgrades became quite common. Results Appendix Table 2 reports coefficients on these basic controls.

[9] Our data do not extend to the S&P downgrades of CMBS in the third quarter of 2009.

before it. Performance improved in 2008, although this may reflect the change in the mix of securities sponsored and seasoning effects.

Turning to characteristics of the sponsor, it has often been argued that securitization allows lower-rated sponsors to access the capital markets at a lower cost than unsecured corporate debt because securitization isolates the credit risk of the assets from that of the sponsor. As noted earlier, the initial rating of the security is independent of the credit rating of the parent.[10] In our base regression (Table 12, column 1 and Figure 5), we find that the survival time of a security until downgrade generally increases with the rating of the sponsor. Securities whose sponsor whose rating was investment grade at the time of issuance maintain its rating longer before being downgraded than a security whose sponsor was non-investment grade (BB or lower). In most specifications, each rating fixed effect is statistically significant except for the AAA fixed effect. This may be due to the relatively small number of AAA-rated parents in the sample since only about one percent of the securities are sponsored by an institution rated AAA.

To gain a better sense of what aspect of a sponsor's financial situation is driving our results, we added additional characteristics of the sponsor. The first of these are fixed effects for the type of sponsor (domestic bank, a domestic nonbank, a foreign bank, or a foreign nonbank). Securities whose sponsor is a domestic bank were downgraded significantly later than those sponsored by other sponsors. The point estimates suggest that securities sold by domestic banks maintain their initial rating longer than those sold any other type of institution. ABS sold by foreign banks are downgraded 14 percent more quickly, while those sponsored by US nonbanks are downgraded 15 percent faster. Securities whose sponsor is a foreign nonbank perform the worst, surviving 23 percent less. Figure 6 plots survival times for various sectors evaluating the remaining variables at their mean values. It shows that securities sponsored by domestic banks may maintain their initial rating up to 2 years longer than those sponsored by foreign non-banks.

Because the sponsor's sector is correlated with its rating and the extent of diversification and vertical integration in a deal, adding the sponsor's sector to the specification reduced the coefficients on the parent rating, however the coefficients are still predominantly significant. The coefficients on vertical integration and diversification drop in magnitude, but remain statistically significant with 90 percent confidence.

[10] ABS are generally structured with a senior, AAA-rated tranche and several subordinated tranches that range in rating from AA to B. Although the initial rating of an ABS may not depend on the rating of the sponsor, the tranches' subordination may.

Next, we examine the impact of other measures of sponsor's financial situation. For domestic banks, we include the amount of tier 1 capital held by the bank. The mean amount of tier 1 capital for domestic banks in our sample at the time they issue securities is about 8 percent, with a standard deviation of 3 percent (Table 10). For domestic nonbanks, we include the Altman Z-score. Because these measures are not available for all the domestic entities in the sample, the sample size is about 20 percent smaller than in the base regression, but many of our earlier results continue to hold in this smaller sample. The hazard model suggests that a one standard deviation rise in the Tier 1 capital ratio is associated with a 4 percent increase in security survival time. In addition, a one standard deviation rise in the Altman Z score is associated with a 3 percent increase in security survival time. These results are particularly striking given that the investors essentially have no claim on the assets of the sponsor. Somewhat surprisingly, despite the correlation between these alternative measures of financial situation and credit rating, many of the coefficients on credit rating remained significant when these measures were included.

The results so far suggest that the policy of rating the collateral and structure rather than the financial condition of the sponsor may have appreciable flaws. More stable sponsors like regulated banks, especially those with greater capital, nonbanks with lower likelihood of bankruptcy, sponsors with higher credit ratings, and more diversified sponsors issue securities that retain their initial ratings longer before being downgraded. Securities whose servicer is also the sponsor also perform better. When the sponsor services the underlying assets, a security maintains its rating about 9 percent longer than when the servicer is a separate entity. Also, the bonds of diversified sponsors who sell securities in many asset classes (more than 4 collateral types) survive about 10 percent longer prior to being downgraded. Recently, rating agencies have recognized that the performance of an ABS may be affected by participants in the securitization process and have begun issuing servicer ratings.

Because securities sponsored after 2004 had a much shorter survival rate to the period of first downgrade, the question arises whether these results are being driven by this later period, which was characterized by rating agency competition and (according to some) particularly inaccurate ratings (Bolton, et. al., 2009). However, we do not find this to be the case. In a specification that includes only securities sponsored from 1999 to 2003, many of the same

conclusions can be drawn (Table 12).[11] Securities sponsored by parents with a stronger credit rating, and those whose servicer was the same entity as the sponsor perform much better than the overall sample of ABS. While the amount of tier 1 capital seems to be insignificant in this specification, the Z-score coefficient retains significance and becomes larger. So, the evidence that sponsors matter for securitization has been present well before the current time period.

In a specification that includes only securities sponsored in the later 2004 to 2008 time period, the coefficients on parent rating are no longer statistically significant, but securities sponsored by banks still perform much better, as do securities sponsored by diversified firms and those where the sponsor services the loans (Table 14). The coefficients on tier 1 capital and Altman Z remain positive and statistically significant in this time period.

Sponsor and deal characteristics may play different roles in security performance depending upon the seniority of the security. In particular, effective servicing can have a disproportionate impact on lower-rated securities because losses will impact those securities first. In addition, in a weak economic environment junior tranches will perform poorly regardless of the quality of a deal's collateral so an increase in overall deal quality will be disproportionately observed in the performance of more senior securities. To examine these hypotheses, we estimate our survival time model using only securities rated AAA at issuance and, separately, only those securities rated below AAA at issuance. The fixed effect indicating whether the sponsor is also the servicer is only significant for lower-rated securities, consistent with the importance of effective servicing for these securities (Table 15). In addition, sponsor credit rating, tier 1 capital, and Z-score are larger and much more significant for AAA securities (Table 16).

In order to control for market perceptions of risk, we also estimate each specification for the whole sample while including the initial coupon spread and the square of the spread where the initial coupon is provided by ABSNet (Table 17). The coefficient on the spread is negative and significant, indicating that higher spreads at issuance predict a shorter time-to-downgrade and that the market was able to price some downgrade risk in this sample. However, the coefficients on all of the other explanatory variables change very little in magnitude and maintain their significance, indicating that the market was also not adequately incorporating relevant

[11] During this time, overall survival times were much longer, so we would expect that coefficients in the lognormal survival function would be much larger in magnitude for an equivalent sized economic effect as in the specification in Table 10 that includes the later time period as well.

information about the sponsor. Both the rating agencies and market participants did not fully appreciate the sponsor's influence on ABS performance.

A fixed effect is also included that equals one when a security has a floating-rate coupon, and the coefficient on this variable is negative and significant in every specification. To the extent that floating-rate securities are backed by floating-rate collateral, this indicates floating-rate loans have significantly underperformed fixed-rate loans. This is consistent with statements made by Standard & Poor's that floating-rate CMBS performed poorly in 2009 in part because "floating-rate loans are typically collateralized by 'unstable' properties and are generally originated with the assumption that cash flows will increase to a stabilized level after the property is complete and operational. However, achieving stabilization has been difficult for many of these properties due to the weak economy and deteriorating property fundamentals."[12]

Finally, we consider the possibility that managers might have also anticipated the success or failure of the securities sponsored by their firm. Some have claimed that executives sell stock in anticipation of the failure of their firms; we examine this issue for securitizations. The findings suggest that managers are at least to some degree able to anticipate the success of their firm's ABS sales. In particular, securities are downgraded about 10 percent more quickly in firms where insiders were net sponsors of stock in the 3 months prior to issuance of a security, relative to firms where there were no insider sales or purchase in the year prior to the ABS issuance (Table 18).[13] Interestingly this effect is significant for securities issued between 2004 and 2008, but not in the earlier subsample, indicating that insider sales became more informative as issuance volume began to peak.

DISCUSSION AND CONCLUSION

These findings suggest that the financial condition of an ABS sponsor is strongly related to the performance of its securities. These findings question the widely held view of securitization as a means of separating the credit risk of assets from the credit risk of the sponsor. Securities sponsored by investment-grade institutions retain their initial ratings up to 20 percent longer before being downgraded than securities (with an identical rating) that are sponsored by a

[12] Standard & Poor's Press Release. "Lower Property Valuations Drove 2009 Floating-Rate CMBS Downgrades." February 18, 2010.

[13] These regressions include all other variables in the full specification from Table 12 that do not include sponsor characteristics (columns 1, 3, and 5) and those in the specification with all sponsor variables besides Tier 1 capital and Altman's Z-score (columns 2, 4, and 6).

lender with a non-investment grade credit rating. In addition, ABS sponsored by banks retain their initial credit rating longer than ABS sponsored by foreign banks or more loosely regulated non-banks.

There are a couple of possible explanations of this finding. The first arises from the well-known result that reputation is an imperfect mechanism to discipline corporate performance, especially when firms face a risk of failure. Reputation may play an important role in the ABS market because, as has been demonstrated in other work, sponsors almost surely know more about the assets underlying their own securitizations than rating agencies or investors. Investors may punish firms that issue poorly performing securities by raising spreads on future issuance. This threat incents firms to issue high-quality ABS. However, as sponsor financial conditions deteriorate, the force of this threat declines as the benefit of future business opportunities fall relative to current survival. Thus, financially troubled sponsors might have originated more troubled securities in order to survive for another day, even if survival comes at an appreciable cost.

Alternatively, more poorly rated sponsors may operate in lines of business where assets are more likely to be impaired over time. Although this analysis attempted to control for lines of business using asset type fixed effects, these lines of business may be even more specialized, such as prime versus subprime. Because our data does not include the performance of the underlying assets, we were unable to control for this level of specialization. That said, this information may have been available to the rating agency, which could have incorporated it in their rating methodology. Some might point to excessive competition to rate ABS that led the rating agencies to a "race to the bottom" to issue inflated ratings (for example, see Bolton, et. al., 2008, Becker and Milborn, 2008, Faltin-Traeger, 2009, and Sangiorgi, et. al., 2008). In this case, competition might have led agencies to overlook factors like sponsor quality in rating securities.

This analysis also suggests that securities perform better when sponsors also service their own securities. This results is consistent with work by Ashcraft and Schuermann (2008) and Gan and Mayer (2008) showing that agency conflicts can serve as an important barrier to security performance. Future securitization should consider having a greater extent of vertical integration in the individual functions of the securitization, rather than having many different functions performed by separate parties with their own interests that are not necessarily in the interest of the securitization as a whole.

Finally, managers appear to be able to anticipate security performance, selling stock at periods when lower-quality securities are sponsored (lower quality securities are more likely to be downgraded, conditional on the rating). The managers' stock sales are predictive above and beyond any additional information about the issuing firm. These findings show the challenges of a market when sponsors are better informed than investors about the future performance of their securities.

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Table 1: Collateral Type

Collateral Type	Securities	% of Securities	% of Dollar Volume	Notes
Auto loans	2,143	1.9%	5.5%	
CDOs	4,030	3.6%	4.0%	
CMBS	7,082	6.4%	14.5%	Omitted FE
Equipment	434	0.4%	0.6%	
Home equity	57,232	51.8%	42.5%	
Manuf. housing	572	0.5%	0.4%	
RMBS	37,753	34.2%	22.6%	
Student loans	1,287	1.2%	3.7%	
Total	110,533	100.0%	93.8%	

Table 2: Security Initial Rating

Security Initial Rating	Securities	% of Securities	% of Dollar Volume	Notes
AAA	65,500	59.3%	91.9%	
AA	12,592	11.4%	3.7%	
A	11,829	10.7%	2.1%	
BBB	12,443	11.3%	1.7%	
BB and below	8,169	7.4%	0.6%	Omitted FE
Total	110,533	100.0%	100.0%	

Table 3: Vintage

Half-year of Initial Rating	Securities	% of Securities	% of Dollar Volume	Notes
1999h1	1,115	1.0%	1.0%	Omitted FE
1999h2	832	0.8%	1.0%	
2000h1	3,205	2.9%	2.2%	
2000h2	1,488	1.3%	1.7%	
2001h1	1,963	1.8%	2.0%	
2001h2	2,463	2.2%	2.5%	
2002h1	3,287	3.0%	3.2%	
2002h2	4,043	3.7%	3.6%	
2003h1	6,507	5.9%	4.5%	
2003h2	7,192	6.5%	5.3%	
2004h1	7,262	6.6%	5.6%	
2004h2	8,514	7.7%	7.1%	
2005h1	9,524	8.6%	8.7%	
2005h2	13,449	12.2%	12.4%	
2006h1	10,833	9.8%	9.8%	
2006h2	11,052	10.0%	10.6%	
2007h1	11,328	10.2%	10.5%	
2007h2	5,713	5.2%	7.0%	
2008h1	763	0.7%	1.2%	
Total securities	110,533	100.0%	100.0%	

Table 4: Sponsor Rating at Issuance

Sponsor Rating at Issuance	Securities	% of Securities	% of Dollar Volume	Notes
AAA	1,457	1.3%	1.7%	
AA	26,105	23.6%	23.5%	
A	48,940	44.3%	42.8%	
BBB	9,384	8.5%	8.2%	
BB and below	8,888	8.0%	8.5%	Omitted FE
NR/Not in S&P	15,759	14.3%	15.4%	
Total	110,533	100.0%	100.0%	

Table 5: Sponsor Sector

Sector	Firms	Percent	Securities	Percent	Notes
Domestic bank	49	11.4%	27,596	25.5%	
Domestic nonbank	298	69.3%	58,652	54.1%	
Foreign bank	42	9.8%	20,262	18.7%	Omitted FE
Foreign nonbank	41	9.5%	1,870	1.7%	

Table 6: Percent of Securities by Vintage and Sponsor Sector

Year Initial Rating	Domestic Bank Share	Domestic Nonbank Share	Foreign Bank Share	Foreign Nonbank Share	Total
1999	38%	57%	2%	3%	100%
2000	16%	77%	4%	3%	100%
2001	28%	57%	13%	2%	100%
2002	31%	50%	16%	3%	100%
2003	31%	48%	20%	1%	100%
2004	24%	51%	23%	2%	100%
2005	23%	56%	20%	2%	100%
2006	24%	54%	20%	1%	100%
2007	27%	54%	17%	1%	100%
2008	28%	50%	17%	5%	100%

Table 7: Vertical Integration

Variable	Securities	Percent	Notes
seller = servicer	60,692	54.9%	
seller != servicer	38,875	35.2%	Omitted FE
servicer unidentified	10,966	9.9%	
Total securities	110,533	100.0%	

Table 8: Percent of Securities by Number of Collateral Types Issued by Sponsor During Five Years Prior to Issuance

Number of Collateral Types Issued	% of All Securities	Domestic Bank Share	Domestic Nonbank Share	Foreign Bank Share	Foreign Nonbank Share	Total
1	22%	3%	90%	3%	4%	100%
2	15%	16%	47%	37%	0%	100%
3	19%	28%	33%	36%	4%	100%
4	21%	4%	89%	6%	0%	100%
5	16%	60%	9%	31%	0%	100%
6	7%	100%	0%	0%	0%	100%

Table 9: Insider Sales Fixed Effect Distribution by Security

Variable	Securities	Percent	Notes
I(net insider sales = 0)	6,401	6%	Ommitted
I(net insider sales > 0)	98,489	89%	
I(net insider sales < 0)	5,643	5%	

Table 10: Tier 1 Capital Ratio and Altman Z-score Summary Statistics

Variable	Securities	Mean	Std. Dev.	Min	Max
Tier 1 capital (Domestic banks only)	27501	8.60	2.97	5.78	92
Altman Z-score (Domestic nonbanks only)	38592	0.30	0.74	-1.69	18

Table 11: Coupon Spread and Floating-rate Fixed Effect Summary Statistics

Variable	Securities	Mean	Std. Dev.	Min	Max
Coupon spread	94052	0.81	1.78	-6.77	27
Floating-rate security fixed effect	94052	0.63	0.48	0	1

Table 12: Lognormal Survival Time Regression Results

	Whole Sample				
	(1)	(2)	(3)	(4)	(5)
Variables	base	+ sector	distress measures observed	+ distress measures	without sponsor rating
Sponsor rated AAA	0.119	0.116	0.061	0.043	
	(0.087)	(0.086)	(0.090)	(0.091)	
Sponsor rated AA	0.132***	0.084**	0.106**	0.104**	
	(0.032)	(0.037)	(0.043)	(0.043)	
Sponsor rated A	0.103***	0.078***	0.077**	0.075**	
	(0.026)	(0.027)	(0.033)	(0.033)	
Sponsor rated BBB	0.115***	0.101**	0.181***	0.172***	
	(0.039)	(0.041)	(0.053)	(0.053)	
Sponsor not rated or not in S&P Database	0.109***	0.099***	0.145***	0.130***	
	(0.032)	(0.032)	(0.041)	(0.042)	
Domestic bank		0.147***	0.127***	0.018	-0.003
		(0.033)	(0.034)	(0.053)	(0.055)
Domestic nonbank		0.023	0.026	0.019	0.005
		(0.030)	(0.031)	(0.031)	(0.025)
Foreign nonbank		-0.114	-0.141*	-0.130*	-0.103
		(0.075)	(0.073)	(0.072)	(0.066)
Sponsor = servicer	0.090***	0.042*	0.065***	0.063**	0.056**
	(0.020)	(0.023)	(0.025)	(0.025)	(0.024)
Servicer unidentified	0.031	0.027	0.062	0.059	0.061
	(0.043)	(0.048)	(0.054)	(0.054)	(0.054)
Sponsor issued more than 4 collateral types	0.107***	0.049*	0.063**	0.064**	0.059**
	(0.024)	(0.026)	(0.028)	(0.028)	(0.027)
Tier 1 capital (Domestic banks only)				0.013***	0.016***
				(0.005)	(0.005)
Altman Z-score (Domestic nonbanks only)				0.037**	0.046***
				(0.016)	(0.016)
Observations	582654	569585	453384	453384	453384
Log pseudolikelihood	-49950	-48448	-39291	-39272	-39318
Vintage half-year FE included	Yes	Yes	Yes	Yes	Yes
Collateral type FE included	Yes	Yes	Yes	Yes	Yes
Initial rating FE included	Yes	Yes	Yes	Yes	Yes
Failure year FE included	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

***** p<0.01, ** p<0.05, * p<0.1**

Table 13: Lognormal Survival Time Regression Results – Subperiod 1999-2003

	1999-2003				
	(1)	(2)	(3)	(4)	(5)
Variables	**base**	**+ sector**	**distress measures observed**	**+ distress measures**	**without sponsor rating**
Sponsor rated AAA	1.084***	0.951**	0.948**	0.840*	
	(0.405)	(0.410)	(0.453)	(0.457)	
Sponsor rated AA	1.485***	0.890***	0.787***	0.759***	
	(0.273)	(0.289)	(0.289)	(0.289)	
Sponsor rated A	1.156***	0.894***	0.712***	0.708***	
	(0.233)	(0.224)	(0.216)	(0.216)	
Sponsor rated BBB	0.769***	0.486**	0.963***	0.944***	
	(0.235)	(0.236)	(0.283)	(0.282)	
Sponsor not rated or not in S&P Database	0.731***	0.721***	0.705***	0.592**	
	(0.244)	(0.242)	(0.259)	(0.260)	
Domestic bank		0.428**	0.289	0.429	0.442
		(0.211)	(0.220)	(0.290)	(0.279)
Domestic nonbank		-0.600***	-0.445**	-0.524**	-0.684***
		(0.206)	(0.225)	(0.229)	(0.192)
Foreign nonbank		-1.106***	-1.429***	-1.343***	-1.400***
		(0.426)	(0.420)	(0.423)	(0.407)
Sponsor = servicer	0.590***	0.567***	0.600***	0.560***	0.535***
	(0.135)	(0.135)	(0.147)	(0.148)	(0.145)
Servicer unidentified	0.138	0.073	0.298	0.256	0.262
	(0.225)	(0.247)	(0.311)	(0.309)	(0.311)
Sponsor issued more than 4 collateral types	0.256**	0.006	0.167	0.116	0.058
	(0.127)	(0.148)	(0.171)	(0.172)	(0.163)
Tier 1 capital (Domestic banks only)				-0.014	-0.009
				(0.022)	(0.021)
Altman Z-score (Domestic nonbanks only)				0.254*	0.282**
				(0.136)	(0.138)
Observations	248509	240457	178625	178625	178625
Log pseudolikelihood	-6728	-6198	-4386	-4379	-4398
Vintage half-year FE included	Yes	Yes	Yes	Yes	Yes
Collateral type FE included	Yes	Yes	Yes	Yes	Yes
Initial rating FE included	Yes	Yes	Yes	Yes	Yes
Failure year FE included	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

***** p<0.01, ** p<0.05, * p<0.1**

Table 14: Lognormal Survival Time Regression Results – Subperiod 2004-2008

	2004-2008				
	(1)	(2)	(3)	(4)	(5)
Variables	**base**	**+ sector**	**distress measures observed**	**+ distress measures**	**without sponsor rating**
Sponsor rated AAA	0.051	0.047	-0.026	-0.038	
	(0.070)	(0.070)	(0.072)	(0.072)	
Sponsor rated AA	0.062**	0.044	0.057	0.056	
	(0.027)	(0.032)	(0.038)	(0.038)	
Sponsor rated A	0.041*	0.029	0.025	0.024	
	(0.022)	(0.023)	(0.028)	(0.028)	
Sponsor rated BBB	0.048	0.042	0.077	0.070	
	(0.038)	(0.040)	(0.048)	(0.048)	
Sponsor not rated or not in S&P Database	0.069**	0.062**	0.092***	0.082**	
	(0.028)	(0.028)	(0.035)	(0.036)	
Domestic bank		0.107***	0.089***	-0.034	-0.044
		(0.030)	(0.030)	(0.052)	(0.058)
Domestic nonbank		0.035	0.040	0.036	0.024
		(0.027)	(0.027)	(0.028)	(0.022)
Foreign nonbank		-0.031	-0.030	-0.022	-0.019
		(0.062)	(0.062)	(0.062)	(0.056)
Sponsor = servicer	0.059***	0.024	0.046**	0.045**	0.037*
	(0.018)	(0.020)	(0.022)	(0.022)	(0.022)
Servicer unidentified	0.060	0.061	0.090*	0.087*	0.089*
	(0.039)	(0.044)	(0.048)	(0.048)	(0.047)
Sponsor issued more than 4 collateral types	0.092***	0.054**	0.064***	0.066***	0.063***
	(0.022)	(0.024)	(0.025)	(0.025)	(0.024)
Tier 1 capital (Domestic banks only)				0.014***	0.015***
				(0.005)	(0.006)
Altman Z-score (Domestic nonbanks only)				0.026*	0.032**
				(0.014)	(0.014)
Observations	334145	329128	274759	274759	274759
Log pseudolikelihood	-39777	-38935	-32109	-32091	-32121
Vintage half-year FE included	Yes	Yes	Yes	Yes	Yes
Collateral type FE included	Yes	Yes	Yes	Yes	Yes
Initial rating FE included	Yes	Yes	Yes	Yes	Yes
Failure year FE included	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

***** p<0.01, ** p<0.05, * p<0.1**

Table 15: Lognormal Survival Time Regression Results – AAA Securities Only

	Securities Initially Rated AAA				
	(1)	(2)	(3)	(4)	(5)
Variables	**base**	**+ sector**	**distress measures observed**	**+ distress measures**	**without sponsor rating**
Sponsor rated AAA	0.565***	0.529***	0.575***	0.551***	
	(0.125)	(0.121)	(0.163)	(0.162)	
Sponsor rated AA	0.167***	0.150***	0.189***	0.185***	
	(0.041)	(0.043)	(0.056)	(0.056)	
Sponsor rated A	0.096***	0.084***	0.099**	0.095**	
	(0.028)	(0.030)	(0.039)	(0.039)	
Sponsor rated BBB	0.061	0.049	0.179***	0.175***	
	(0.039)	(0.041)	(0.057)	(0.057)	
Sponsor not rated or not in S&P Database	0.184***	0.153***	0.161***	0.143***	
	(0.041)	(0.039)	(0.050)	(0.050)	
Domestic bank		0.112***	0.094**	0.034	0.028
		(0.043)	(0.045)	(0.053)	(0.055)
Domestic nonbank		0.052	0.053	0.044	0.004
		(0.037)	(0.040)	(0.040)	(0.034)
Foreign nonbank		-0.012	-0.032	-0.020	-0.034
		(0.067)	(0.068)	(0.068)	(0.061)
Sponsor = servicer	0.018	-0.022	0.004	0.002	-0.018
	(0.026)	(0.029)	(0.032)	(0.032)	(0.031)
Servicer unidentified	0.002	-0.037	-0.002	-0.005	0.002
	(0.061)	(0.066)	(0.073)	(0.073)	(0.072)
Sponsor issued more than 4 collateral types	0.091***	0.048	0.056	0.056	0.067*
	(0.033)	(0.034)	(0.037)	(0.037)	(0.038)
Tier 1 capital (Domestic banks only)				0.007**	0.008**
				(0.003)	(0.004)
Altman Z-score (Domestic nonbanks only)				0.051***	0.069***
				(0.018)	(0.021)
Observations	363660	357439	286387	286387	286387
Log pseudolikelihood	-19415	-18974	-15835	-15823	-15901
Vintage half-year FE included	Yes	Yes	Yes	Yes	Yes
Collateral type FE included	Yes	Yes	Yes	Yes	Yes
Failure year FE included	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

***** p<0.01, ** p<0.05, * p<0.1**

Table 16: Lognormal Survival Time Regression Results -- Below AAA Securities Only

	Securities Initially Rated Below AAA				
	(1)	(2)	(3)	(4)	(5)
Variables	base	+ sector	distress measures observed	+ distress measures	without sponsor rating
Sponsor rated AAA	0.016	0.023	-0.001	-0.009	
	(0.103)	(0.102)	(0.107)	(0.108)	
Sponsor rated AA	0.070*	-0.015	0.014	0.014	
	(0.037)	(0.044)	(0.051)	(0.051)	
Sponsor rated A	0.067**	0.026	0.037	0.037	
	(0.032)	(0.033)	(0.039)	(0.039)	
Sponsor rated BBB	0.126**	0.108**	0.139**	0.130*	
	(0.051)	(0.053)	(0.068)	(0.068)	
Sponsor not rated or not in S&P Database	0.044	0.047	0.113**	0.106**	
	(0.037)	(0.038)	(0.048)	(0.049)	
Domestic bank		0.163***	0.144***	0.054	0.031
		(0.037)	(0.038)	(0.061)	(0.075)
Domestic nonbank		-0.021	-0.018	-0.020	0.002
		(0.034)	(0.036)	(0.037)	(0.029)
Foreign nonbank		-0.195**	-0.218**	-0.211**	-0.145*
		(0.088)	(0.087)	(0.087)	(0.078)
Sponsor = servicer	0.128***	0.080***	0.104***	0.104***	0.106***
	(0.023)	(0.025)	(0.028)	(0.028)	(0.027)
Servicer unidentified	0.059	0.094*	0.130**	0.128**	0.127**
	(0.044)	(0.049)	(0.054)	(0.054)	(0.054)
Sponsor issued more than 4 collateral types	0.109***	0.047	0.061*	0.062*	0.057*
	(0.027)	(0.030)	(0.032)	(0.032)	(0.031)
Tier 1 capital (Domestic banks only)				0.011*	0.015*
				(0.006)	(0.008)
Altman Z-score (Domestic nonbanks only)				0.016	0.025
				(0.019)	(0.019)
Observations	218994	212146	166997	166997	166997
Log pseudolikelihood	-28242	-27233	-21682	-21678	-21698
Vintage half-year FE included	Yes	Yes	Yes	Yes	Yes
Collateral type FE included	Yes	Yes	Yes	Yes	Yes
Initial rating FE included	Yes	Yes	Yes	Yes	Yes
Failure year FE included	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

***** p<0.01, ** p<0.05, * p<0.1**

Table 17: Lognormal Survival Time Regression Results with Coupon Spread

	Whole Sample				
	(1)	(2)	(3)	(4)	(5)
Variables	**base**	**+ sector**	**distress measures observed**	**+ distress measures**	**without sponsor rating**
Sponsor rated AAA	0.018	0.017	-0.001	-0.009	
	(0.092)	(0.091)	(0.096)	(0.096)	
Sponsor rated AA	0.125***	0.076**	0.106***	0.105**	
	(0.031)	(0.036)	(0.041)	(0.041)	
Sponsor rated A	0.087***	0.064**	0.075**	0.073**	
	(0.024)	(0.025)	(0.030)	(0.030)	
Sponsor rated BBB	0.107***	0.092**	0.177***	0.168***	
	(0.037)	(0.039)	(0.051)	(0.050)	
Sponsor not rated or not in S&P Database	0.122***	0.117***	0.156***	0.148***	
	(0.030)	(0.030)	(0.037)	(0.038)	
Domestic bank		0.114***	0.100***	-0.024	-0.052
		(0.032)	(0.033)	(0.049)	(0.059)
Domestic nonbank		-0.003	-0.000	-0.002	-0.017
		(0.029)	(0.030)	(0.030)	(0.024)
Foreign nonbank		-0.101	-0.132**	-0.123*	-0.095
		(0.068)	(0.065)	(0.065)	(0.058)
Sponsor = servicer	0.087***	0.053**	0.070***	0.069***	0.060***
	(0.019)	(0.022)	(0.024)	(0.024)	(0.023)
Servicer unidentified	0.061	0.059	0.099*	0.099*	0.101**
	(0.040)	(0.046)	(0.051)	(0.051)	(0.051)
Sponsor issued more than 4 collateral types	0.083***	0.034	0.040	0.042	0.033
	(0.024)	(0.026)	(0.026)	(0.026)	(0.026)
Tier 1 capital (Domestic banks only)				0.014***	0.018***
				(0.004)	(0.006)
Altman Z-score (Domestic nonbanks only)				0.018	0.033*
				(0.020)	(0.019)
Floating-rate security	-0.079***	-0.077***	-0.067***	-0.067***	-0.065***
	(0.017)	(0.017)	(0.018)	(0.018)	(0.018)
Coupon spread	-0.020***	-0.021***	-0.026***	-0.026***	-0.027***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)
Coupon spread squared	0.002***	0.001***	0.001	0.001	0.001
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
Observations	488718	478688	376511	376511	376511
Log pseudolikelihood	-42884	-41854	-33585	-33572	-33636
Constant included	Yes	Yes	Yes	Yes	Yes
Vintage half-year FE included	Yes	Yes	Yes	Yes	Yes
Collateral type FE included	Yes	Yes	Yes	Yes	Yes
Initial rating FE included	Yes	Yes	Yes	Yes	Yes
Failure year FE included	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses
***** p<0.01, ** p<0.05, * p<0.1**

Table 18: Insider Sales Regressions

	Whole Sample		1999-2003		2004-2008	
Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Net insider sales > 0	-0.124***	-0.100**	0.089	-0.040	-0.131***	-0.108***
	(0.038)	(0.040)	(0.175)	(0.191)	(0.036)	(0.037)
Net insider sales < 0	-0.017	-0.040	0.329	0.213	-0.045	-0.060
	(0.057)	(0.059)	(0.229)	(0.241)	(0.056)	(0.058)
Observations	604932	569585	270787	240457	334145	329128
Log pseudolikelihood	-50519	-48417	-7157	-6196	-39841	-38889
Vintage half-year FE included	Yes	Yes	Yes	Yes	Yes	Yes
Collateral type FE included	Yes	Yes	Yes	Yes	Yes	Yes
Initial rating FE included	Yes	Yes	Yes	Yes	Yes	Yes
Failure year FE included	Yes	Yes	Yes	Yes	Yes	Yes
Vertical integration FE included	Yes	Yes	Yes	Yes	Yes	Yes
Sponsor rating FE included	No	Yes	No	Yes	No	Yes
Sponsor sector FE included	No	Yes	No	Yes	No	Yes
Sponsor diversification FE included	No	Yes	No	Yes	No	Yes

Robust standard errors in parentheses

***** p<0.01, ** p<0.05, * p<0.1**

Figure 1: Raw Hazard Functions by Sample Period

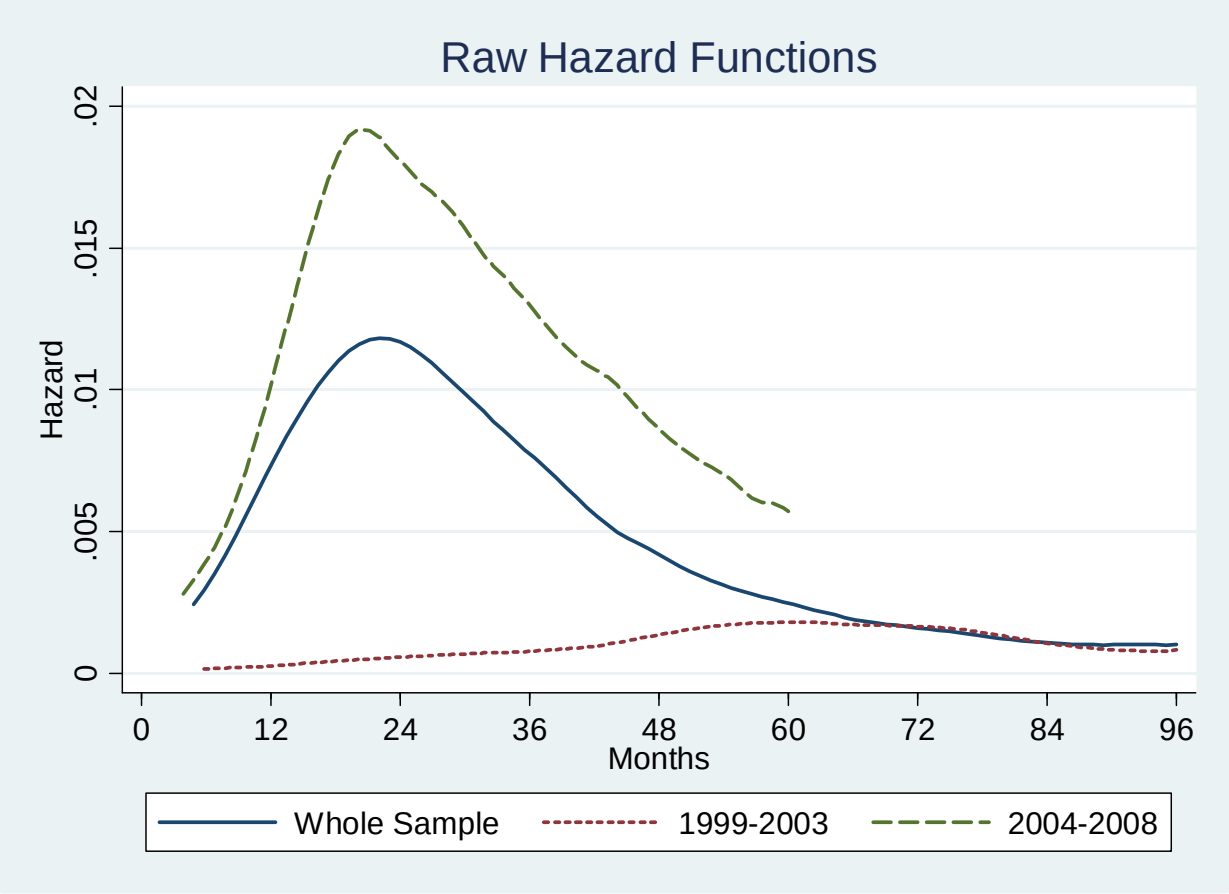


Figure 2: Predicted Survival Curves by Asset Class

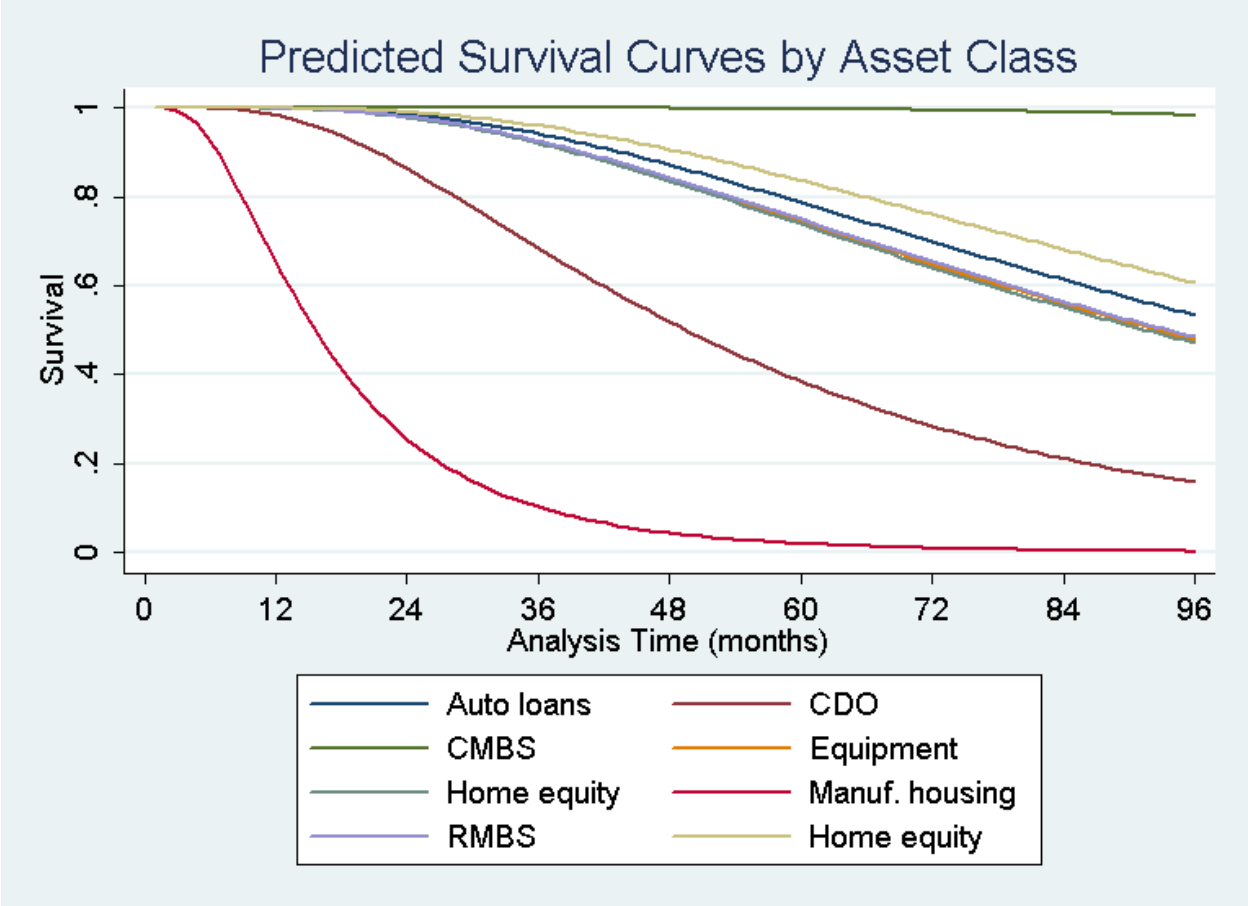


Figure 3: Predicted Survival Curves by Initial Rating

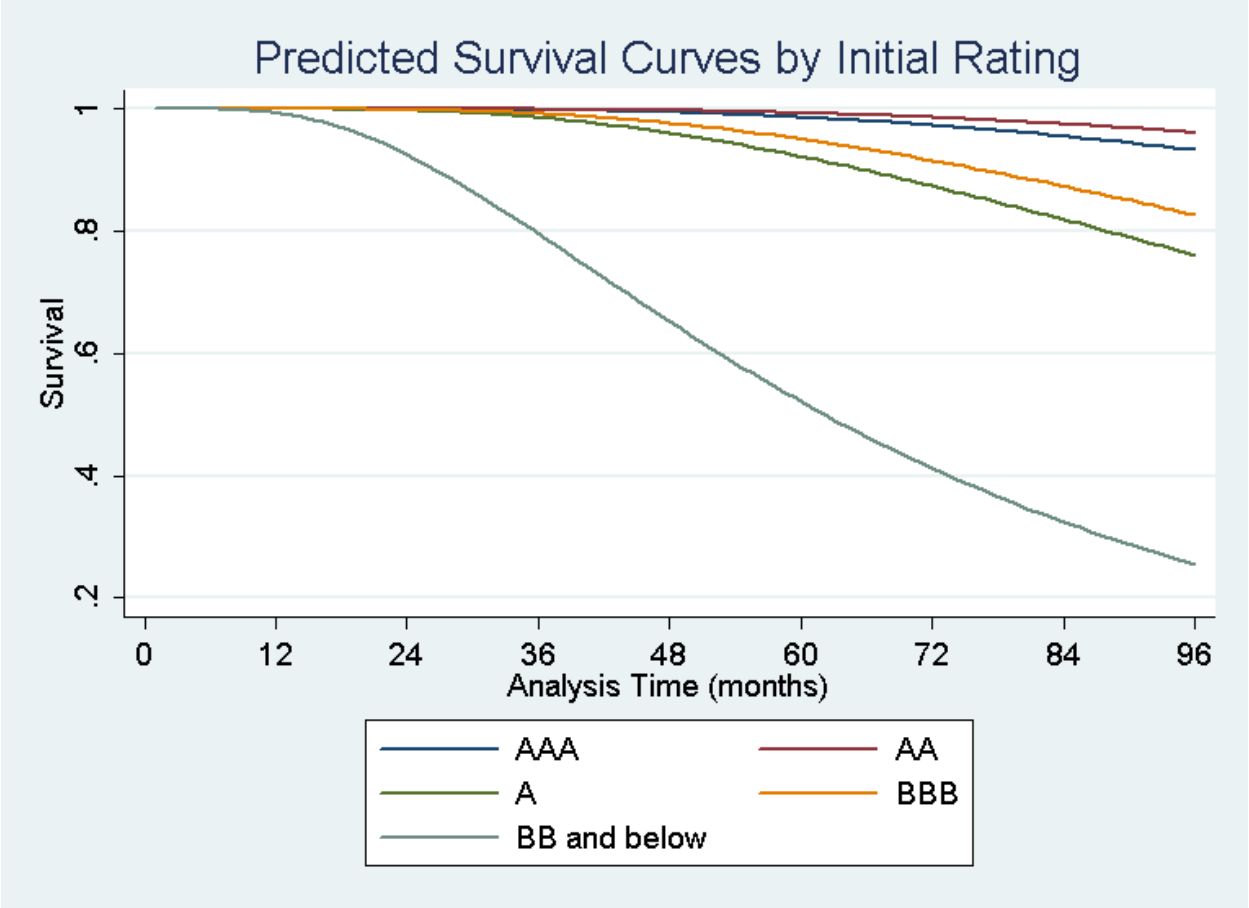


Figure 4: Raw Survival Curves by Vintage

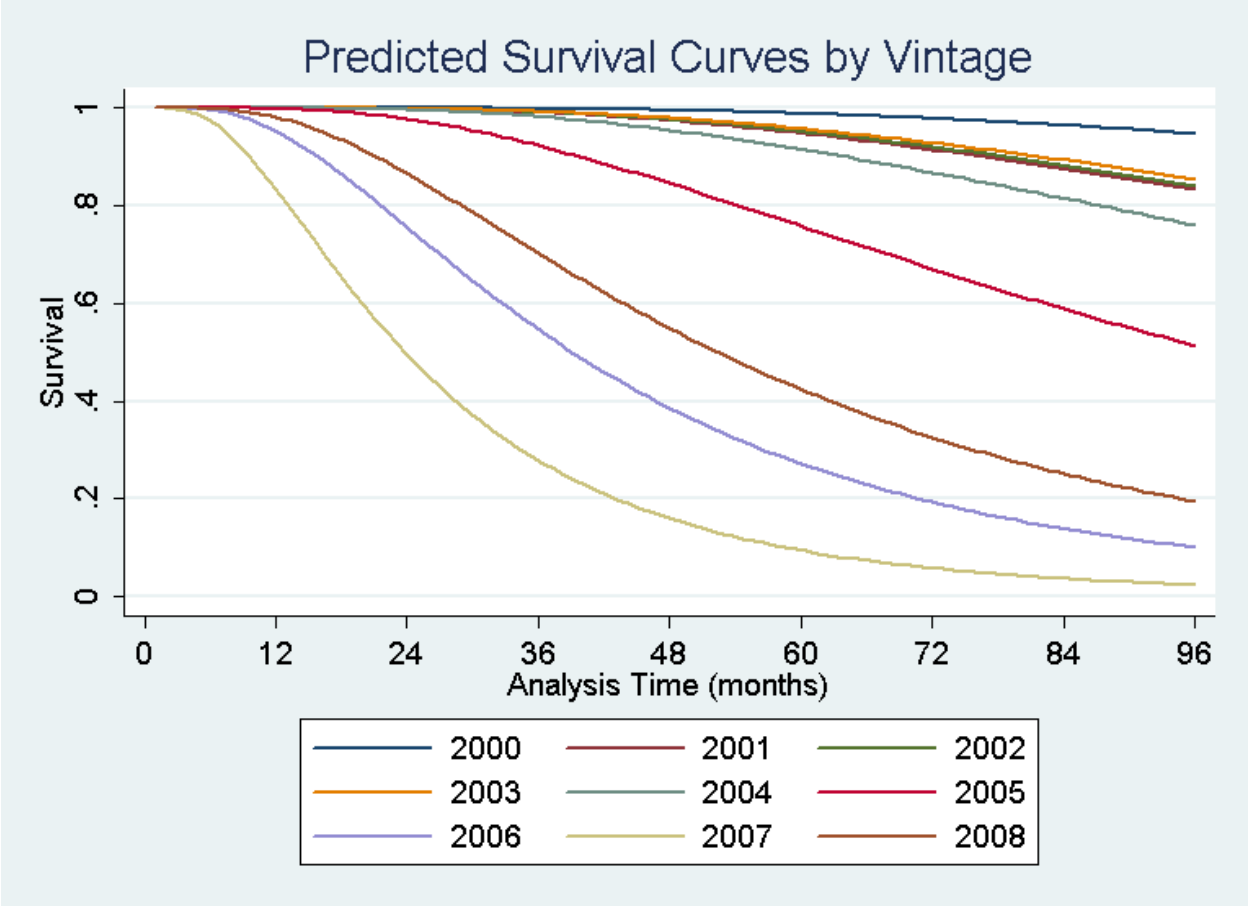


Figure 5: Predicted Survival Curves by Sponsor Rating

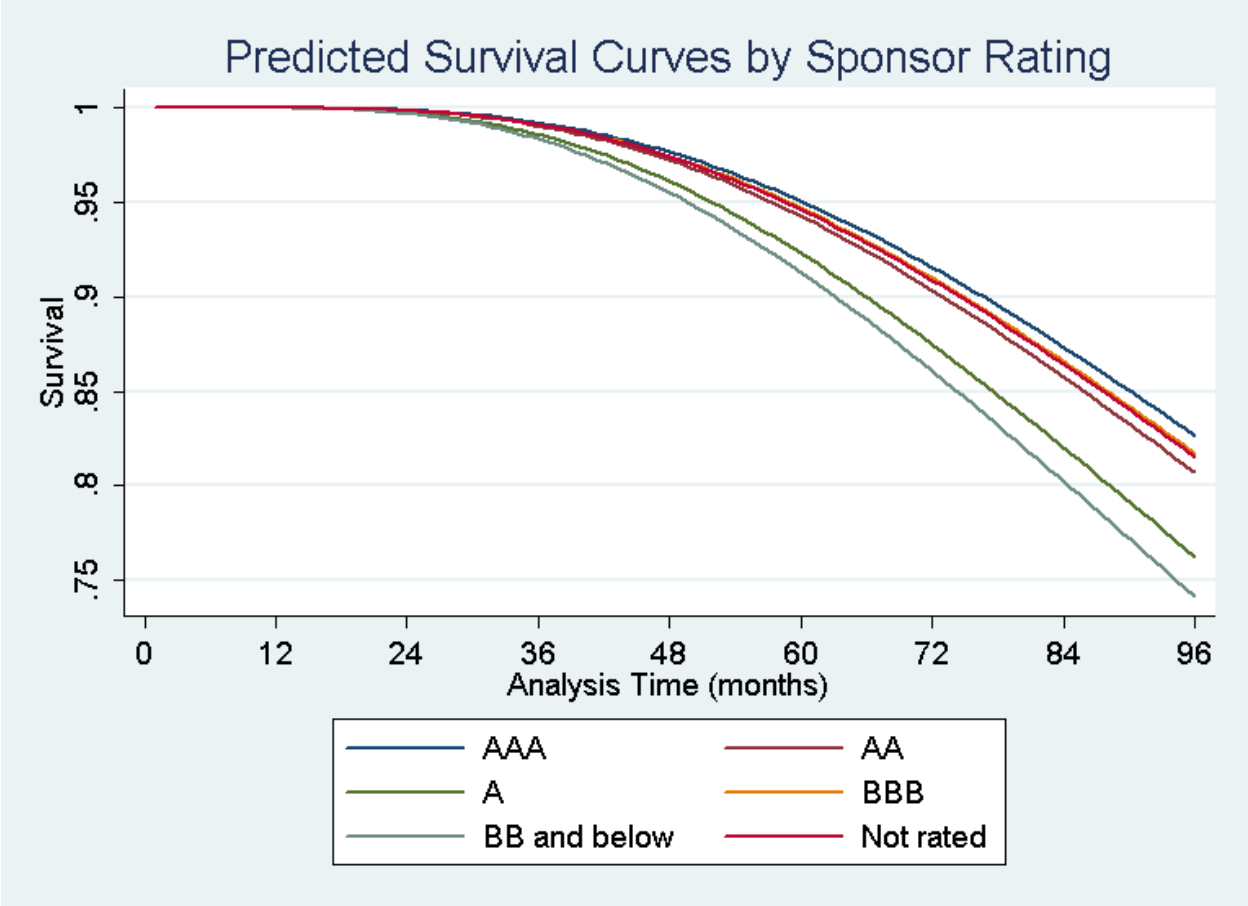
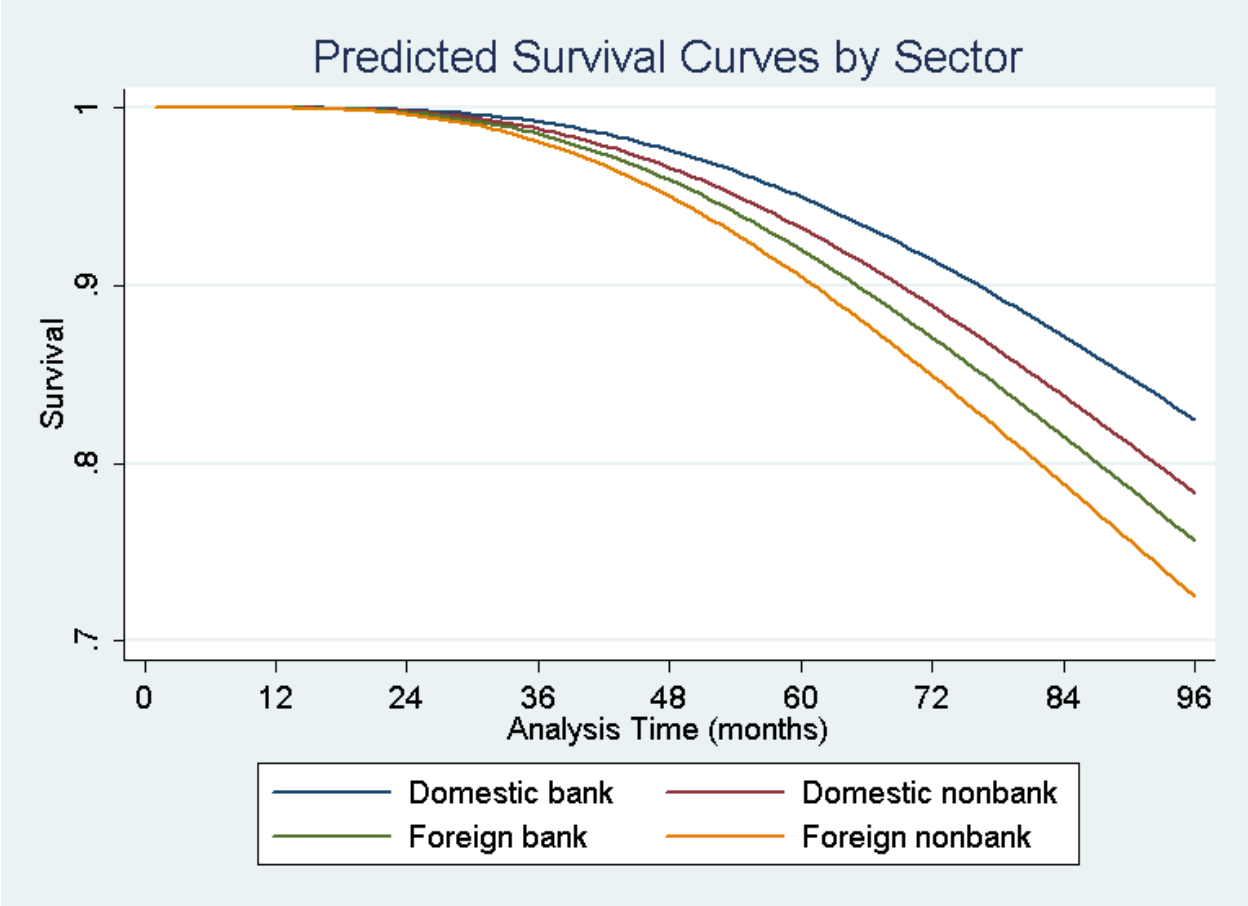


Figure 6: Predicted Survival Curves by Sponsor Sector



Appendix Table 1: Pairwise Correlations

	Sponsor: AAA	Sponsor: AA	Sponsor: A	Sponsor: BBB	Sponsor: < BBB	Sponsor: NR	Domestic bank	Domestic nonbank	Foreign bank	Foreign nonbank	More 4 coll. types	Tier 1 capital	Altman's Z-score
Initial rating FE (AAA)	-0.01	-0.01	0.07	0.05	0.00	-0.11	0.07	-0.02	-0.05	0.00	0.04	0.06	-0.02
Initial rating FE (AA)	0.00	0.00	-0.03	-0.03	0.01	0.06	-0.05	0.03	0.02	0.00	-0.03	-0.05	0.01
Initial rating FE (A)	0.00	-0.01	-0.03	-0.02	0.00	0.07	-0.04	0.02	0.02	0.01	-0.02	-0.04	0.02
Initial rating FE (BBB)	0.01	0.00	-0.04	-0.02	0.00	0.07	-0.04	0.01	0.02	0.00	-0.02	-0.04	0.02
Initial rating FE (Below BBB)	0.00	0.03	0.00	-0.01	-0.01	-0.02	0.03	-0.04	0.02	-0.01	0.02	0.02	-0.02
Sponsor rated AAA	1.00	-0.07	-0.12	-0.05	-0.04	-0.06	-0.08	0.09	-0.03	0.00	0.05	-0.07	0.16
Sponsor rated AA		1.00	-0.46	-0.17	-0.14	-0.22	0.16	-0.51	0.51	-0.06	0.11	0.16	-0.14
Sponsor rated A			1.00	-0.31	-0.25	-0.38	0.09	0.05	-0.12	-0.07	0.07	0.08	-0.05
Sponsor rated BBB				1.00	-0.09	-0.14	0.04	0.04	-0.15	0.17	-0.19	0.07	-0.03
Sponsor rated below BBB					1.00	-0.12	-0.15	0.22	-0.12	0.02	-0.15	-0.14	0.03
Sponsor not rated						1.00	-0.22	0.31	-0.18	0.01	0.03	-0.22	0.21
Domestic bank							1.00	-0.66	-0.27	-0.08	0.43	0.93	-0.18
Domestic nonbank								1.00	-0.50	-0.15	-0.37	-0.61	0.29
Foreign bank									1.00	-0.06	-0.01	-0.25	-0.13
Foreign nonbank										1.00	-0.05	-0.08	-0.04
Sponsor issued more than 4 coll. types											1.00	0.35	-0.07
Tier 1 capital (Domestic banks only)												1.00	-0.16
Altman's Z (Domestic nonbanks only)													1.00

Appendix Table 2: Regression Fixed Effects – Whole Sample

	Whole Sample				
	(1)	(2)	(3)	(4)	(5)
Variables	**base**	**+ sector**	**distress measures observed**	**+ distress measures**	**without sponsor rating**
Collateral type FE - Auto loans	-0.492***	-0.460***	-0.849***	-0.886***	-0.890***
	(0.125)	(0.121)	(0.133)	(0.133)	(0.135)
Collateral type FE - CDOs	-1.262***	-1.211***	-1.230***	-1.255***	-1.247***
	(0.091)	(0.094)	(0.114)	(0.115)	(0.114)
Collateral type FE - Equipment	-0.619**	-0.543*	-0.070	-0.076	-0.098
	(0.293)	(0.301)	(0.299)	(0.299)	(0.295)
Collateral type FE - Home equity	-1.081***	-1.067***	-1.138***	-1.138***	-1.134***
	(0.068)	(0.069)	(0.073)	(0.073)	(0.072)
Collateral type FE - Manuf. Housing	-2.382***	-2.341***	-2.410***	-2.419***	-2.428***
	(0.148)	(0.144)	(0.149)	(0.149)	(0.150)
Collateral type FE - RMBS	-0.849***	-0.851***	-0.941***	-0.939***	-0.931***
	(0.064)	(0.065)	(0.069)	(0.069)	(0.068)
Collateral type FE - Student loans	-0.278	-0.331	-0.506**	-0.505**	-0.488**
	(0.200)	(0.202)	(0.218)	(0.218)	(0.217)
Initial rating FE (AAA)	1.299***	1.293***	1.314***	1.314***	1.313***
	(0.058)	(0.058)	(0.064)	(0.064)	(0.064)
Initial rating FE (AA)	0.734***	0.739***	0.753***	0.753***	0.755***
	(0.036)	(0.037)	(0.041)	(0.041)	(0.041)
Initial rating FE (A)	0.381***	0.387***	0.396***	0.396***	0.398***
	(0.024)	(0.024)	(0.027)	(0.027)	(0.027)
Initial rating FE (BBB)	0.123***	0.128***	0.136***	0.135***	0.138***
	(0.017)	(0.017)	(0.019)	(0.019)	(0.019)
Failure year FE (2007)	-0.157***	-0.159***	-0.145***	-0.145***	-0.142***
	(0.027)	(0.027)	(0.030)	(0.030)	(0.030)
Failure year FE (2008)	-0.704***	-0.686***	-0.641***	-0.641***	-0.636***
	(0.071)	(0.070)	(0.076)	(0.076)	(0.075)
Failure year FE (2009)	-0.187***	-0.182**	-0.187**	-0.187**	-0.182**
	(0.071)	(0.071)	(0.080)	(0.080)	(0.080)
Constant	5.568***	4.278***	4.279***	5.625***	4.376***
	(0.116)	(0.185)	(0.202)	(0.132)	(0.203)
ln(sigma)	-0.394***	-0.415***	-0.436***	-0.437***	-0.437***
	(0.037)	(0.037)	(0.041)	(0.041)	(0.041)

Robust standard errors in parentheses

***** p<0.01, ** p<0.05, * p<0.1**