The Effect of Lenders' Credit Risk Transfer Activities on Borrowing Firms' Equity Returns

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Abstract:
Although innovative credit risk transfer techniques help to allocate risk more optimally, policy-makers worry that they may detrimentally affect the effort spent by financial intermediaries in screening and monitoring credit exposures. This paper examines the equity market's response to loan announcements. In common with the literature it reports a significantly positive average excess return – the well known "bank certification" effect. However, if the lending bank is known to actively manage its credit risk exposure through large scale securitization programmes then the magnitude of the effect falls by two-thirds. The equity market does not appear to place any value on news of loans extended by banks that are known to transfer credit risk off their books.

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> *"Credit derivatives encourage banks to lend more than they otherwise would, at lower rates, to riskier borrowers. Banks with credit derivatives lack incentive to keep a close watch on borrowers… Because credit derivatives leave borrowers unmonitored, they fuel the credit expansion. And, as Charles Kindleberger, the late financial historian, noted, unmonitored expansion of credit precipitates the manias that lead to market panics and crashes."*
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> Frank Partnoy and David Skeel, *Financial Times* 17 July 2006.

> *"banks have every incentive to follow client performance closely even when they have hedged a loan…If a bank were to gain a reputation for being a poor underwriter, its access to liquidity would be quickly withdrawn by the market."*
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> Stuart Lewis, *Financial Times* 26 July 2006.

Recent innovations in credit derivatives markets have improved lenders' abilities to transfer credit risk to other institutions while maintaining relationships with borrowers. Single name products such as credit default swaps (CDS) allow lenders to insure themselves against default loss, although such products are only traded for a relatively small number of large high-profile borrowers with low information asymmetry. However, banks can securitize portfolio credit risk through collateralized loan obligations (CLO) allowing them to sell credit risk originating from smaller, relationship borrowers where information asymmetries may have hitherto prevented risk transfer.

Such innovations have generally received a guarded welcome from regulators and policy-makers who recognize the benefits of allowing credit risk to reside in institutions separate from the loan originators. Diversification benefits are widely thought, although rarely demonstrated, to be large. Even the authors of the first quotation above note that "if banks that lent money to companies such as Enron, WorldCom, Swissair and Railtrack had not used credit derivatives, some surely would have failed in the wave of defaults that followed." Similarly, Alan Greenspan, then Chairman of the Federal Reserve, stated that "the development of credit derivatives has contributed to the stability of the banking system by allowing banks, especially the largest systemically important banks, to measure and manage their credit risks more effectively."[1]

[1] Speech given to the Federal Reserve Bank of Chicago's Forty-First Annual Conference on Bank Structure, 5 May 2005.

The welcome has been guarded at least in part because policy-makers are concerned that credit derivatives may raise moral hazard issues. As Kiff, Michaud and Mitchell (2002) note, moral hazard issues arise in two dimensions.

First, lender moral hazard may occur when the lender purchases credit protection against the wishes of the borrower or without informing the borrower. The purchase of credit protection may send a negative signal about the quality of the borrower (Dahiya, Puri and Saunders, 2001).

Second, borrower moral hazard may result. In the absence of credit risk transfer markets, lenders will monitor borrowers and force them to choose and continue to run first-best projects. This "bank certification" signals the borrower's quality to the market, allowing the borrower to combine more costly loan finance with cheaper bond finance. If the borrower's equity is traded, the signal should also increase the stock price (James, 1987). However, when credit risk transfer instruments exist, reduced bank monitoring by insured lenders will reduce the value of bank certification. The equilibrium outcome may be that borrowers no longer pay a premium for bank loan certification and run first-best projects, but instead issue bonds and run second-best projects (Morrison, 2005). Total welfare may be reduced even though the ability of lenders to hedge credit risk might have been thought to improve welfare. Parlour and Plantin (2008) and Behr and Lee (2005) also derive negative implications for credit risk transfer innovations on monitoring incentives.

Conversely, Arping (2004) and Chiesa (2006) argue that credit risk transfer can enhance monitoring incentives. Arping (2004) shows that credit risk transfer activities can enhance monitoring by making banks act tougher. Chiesa (2006) argues that portfolio credit risk transfer reduces a bank's exposure to the common factor in credit risk but it retains idiosyncratic risks. It is rewarded for monitoring these risks and, since the common credit risk is removed, it now costs less capital for banks to engage in monitoring. For fixed capital, monitored lending now increases following credit risk transfer, consistent with the empirical evidence of Cebenoyan and Strahan (2004) and Goderis et al. (2006), and the quote from Partnoy and Skeel above.

This paper examines the degree to which a borrower receives bank certification in a world where credit risk transfer instruments are available. Following the established literature on the equity price effects of loan announcements we test whether the

known activities of the lender in credit risk transfer markets affect the market's response to a new loan. In common with most of the literature, we find a significant positive equity market response to new loan announcements. The size of the response is shown to depend on both lender and borrower characteristics already highlighted by the literature. The main contribution of the paper comes from showing that obtaining a loan from a bank that has historically transferred credit risk through loan securitization (CLO issuance) produces no significant equity market response. Raising a loan from an otherwise equivalent bank that has not issued a CLO is associated with a rise in the borrower's equity price.

The rest of the paper is structured as follows. Section I reviews the evidence on loan announcement returns. Section II discusses the different credit risk transfer activities available to lenders. We describe the data and econometric approach in Section III, and present the results in Section IV. The article concludes with a summary and interpretation of the key findings.

I. Prior Evidence on Loan Announcements

James (1987) is the first paper to focus on the announcement effects of bank loans. For a sample of 80 bank loan announcements he finds an average borrower abnormal return of 1.93 percent, significant at the one percent level. By contrast, public debt announcements do not elicit a positive stock market response. Subsequent research has refined James' basic conclusion that bank loans are special in that they convey a positive signal to the market (the bank certification effect).

One refinement is that the nature of the loan contract may matter. Lummer and McConnell (1989), and Best and Zhang (1993) distinguish loan renewals from new bank loans. They find that new loans on average generate no abnormal returns and that only renewals are associated with a certification effect. However Billett, Flannery, and Garfinkel (1995) find no difference between the two.[2]

Other papers focus on borrower characteristics. The size of the borrower (Slovin, Johnson, and Glascock, 1992), the risk of the borrower (Best and Zhang, 1993), and

[2] The result appears to hinge on the definition of what constitutes a new loan. See Billett, Flannery, and Garfinkel (1995) for details. In this paper we struggle to identify sufficient unambiguous new or renewal loans to confidently analyse differences between the two.

prior stock price performance of the borrower (James and Smith, 2000) each appear related to the size of the abnormal returns. Smaller firms garner higher abnormal returns, with borrower size possibly being inversely related to the informational advantage of banks as lenders. Best and Zhang (1993) find that borrowers with recent negative trends in earnings or greater dispersion in analysts' earnings expectations receive larger abnormal returns, and James and Smith (2000) conjecture that loan announcements are valued most when the borrower's stock has underperformed and the use of equity finance is limited. All of these are consistent with the market valuing the loan announcement in the context of what is already publicly known about the borrower.

A third set of papers concentrates on the lenders' characteristics. While the initial work of James (1987) suggested that only bank loans generate abnormal announcement returns, Preece and Mullineaux (1994) and Billett, Flannery, and Garfinkel (1994) demonstrate that loans from non-banks are also valued by the equity market. Billett, Flannery and Garfinkel (1995) also show that lenders with a higher credit rating are associated with larger abnormal borrower returns. The value of the certification depends on the perceived quality of the certifier, be they a bank or a non-bank.

We extend the literature by considering whether the credit risk transfer policy of the bank affects the abnormal return, focussing on the newer credit derivatives-based technology. Two papers have looked at the more established credit risk transfer technology of loan sales. Dahiya, Puri and Saunders (2001) verify the logical converse of the positive effect of a loan announcement by finding a negative impact surrounding the announcement a loan sale by a bank. The validity of the negative signal is confirmed in that there is a marked incidence of bankruptcy among borrowers whose loans are sold. Closer to our paper, Gande and Saunders (2005) ask whether bank loan announcements still convey a positive signal when a secondary market already exists for loans to those borrowers. They argue two factors could erode the certification value. First, as argued above, it can reduce the incentive for the lender to monitor. Second, the secondary market may act as an alternative source of information. Nevertheless, Gande and Saunders still find an announcement effect. Further, they find a positive stock price response when a borrower's loans start secondary market trading. Together, their findings suggest that bank certification

remains even when a borrower's loans are traded, and that bank monitoring and secondary market trading are complementary sources of information about borrowers.

The existence of a secondary loan market can be viewed as a borrower characteristic. The existence of a secondary loan market for a borrower does not remove the certification effect of a new loan to that borrower. While the existence of the established secondary market might reduce the cost of transferring the credit risk, it does not imply that the bank will necessarily take advantage of this facility. However, what if the bank has a track record of utilising credit risk transfer techniques? The hypothesis tested in this paper is that the certification effect of a new loan is adversely affected by whether the lender is known to use credit risk transfer techniques that could be applied to that loan. In the following section we briefly survey the credit risk transfer techniques available to banks.

II. Credit Risk Transfer Techniques

The credit risk exposure of banks used typically to remain on the banks' books until maturity of the loan or default. Screening and monitoring of borrowers were the main approaches to bank credit risk management. Two additional tools were available, purchasing credit insurance and loan sales.[3] Both suffered from the lemons problem since the insurer/purchaser was typically at an informational disadvantage to the bank. However, through time, the secondary market for syndicated loans has grown, since all syndicate members have, in theory, access to broadly similar information about the borrower.

Credit default swaps, and variants on the theme, offer a new way of hedging credit risk. Instead of shifting the loan off the balance sheet through a loan sale, the bank can buy credit protection from a third party. The credit exposure remains on the banks' books but the credit risk has been sold. As such, CDS contracts resemble credit insurance. The key differences are that CDS contracts are tradeable, and unlike insurance contracts, credit protection can be bought even if the buyer has no credit exposure. The CDS market is growing but the lemons problem remains for less well-

[3] Loan sales may require the consent of the borrower and alternatively loans are sometimes assigned in the form of a participation where the original lender remains the only direct lender but contracts with a second institution to lay off part of the credit exposure.

known companies, and a liquid market only exists for credit exposures to companies where informational asymmetries are low.

The above approaches are all techniques for managing single-name credit risk exposure. Securitization has long been active for portfolios of homogeneous commodity exposures such as credit card receivables or mortgages, and loan portfolio credit risk transfer techniques have now also evolved. Notably, collateralized debt or loan obligations extend the securitization principle to more heterogeneous credit exposures. A cash collateralized loan obligation is a form of securitization in which assets (bank loans) are removed from a bank's balance sheet and packaged (tranched) into marketable securities that are sold on to investors via a special purpose vehicle (SPV). Different tranches of the CLO have different risk-return characteristics and can be targeted at specific investor classes.[4] De Marzo (2005) shows how pooling and tranching of assets can be used to reduce information asymmetries. The retention of some of the first-loss tranche by the bank can also help align incentives. A more recent innovation has been the development of the synthetic CLO. This does not involve the removal of assets from the bank balance sheet. Instead the credit risk associated with the assets is transferred into the SPV via either a series of single-name CDS or a single CDS referenced to all the credits in the portfolio.

Securitization of widely syndicated or rated loans is relatively straightforward since the information asymmetry is low. A significant innovation, particularly from the perspective of this paper, is the extension into securitizing so-called middle market loans which are typically not rated, are either bilateral or only narrowly syndicated, and where there can be considerable informational advantages for the relationship banks(s). Rating agencies have played a crucial role in this. Lenders rely on proprietary risk scoring models to assess the risk of a loan, and the agencies have established mappings from internal scores to their own ratings. Once the mapping is accepted by investors, the lender can include unrated, bilateral loans to relationship clients in the securitisation.[5]

[4] The first significant step in the development of the CLO market was the $5bn ROSE Funding #1 issue by the UK's National Westminster Bank in September 1996. This CLO was backed by an international portfolio of more than 200 commercial loans. One year later, NationsBank (now part of Bank of America) launched a $4bn CLO, the first significant deal in the US.

[5] Deutsche Bank's CORE CLO in 1999 included loans to medium-sized German companies. In the absence of a CLO-type structure, selling loans made to Mittelstand companies would have been difficult because of the strong lending relationships built up by German banks with their corporate

These relatively recent innovations in single-name and portfolio credit risk management tools mean that some previously immobile credit exposures need no longer stay on a bank's books for the life of the loan. As noted above, an important question then is whether the lender pays as much attention to the borrower as it otherwise would, knowing that the loan will, may or simply could be transferred off the bank's books at some stage. This risk of insufficient attention applies both at the screening stage and while monitoring during the life of the loan.

Bankers such as Mr Lewis, quoted above, clearly believe banks do continue to analyse borrowers carefully, and we have noted theoretical work that would justify this belief. Others such as Messrs Partnoy and Skeel do not, and they too can find support from the theoretical literature. In the analysis that follows, we ask the equity market to adjudicate. Specifically, we ask whether the equity price of a borrower jumps as much following the announcement of a loan from a bank known to use credit risk transfer tools as it would from an otherwise identical bank that does not shift credit risk off its books.

III. Data

A. Loan Announcements

We search the Factiva database for press releases containing news of new loans by companies traded on the NYSE, Nasdaq or American Stock Exchange during the period 1999-2005.[6] Specifically, we first search for press releases containing the phrases "new credit facility", "new credit agreement", "new bank loan" or "new line of credit." This search yields approximately 4,500 stories. We refine this to include only borrowers with identified tickers for one of the three exchanges. This reduces the sample to approximately 2,000 stories. We then discard all stories with contaminating information such as quarterly reports or takeover announcements, leaving 355 clean announcements. Since we will focus on the nature of the credit risk transfer policies of the lender, we further discard all announcements where the lender or lead lender(s) in the case of a syndicated loan are not identified, leaving 300

clients. In the US, Fleet National Bank was among the first commercial bank to securitize middle-market loans with its issue in 2000.

[6] We begin in 1999 as this is the first year that banks reveal credit derivative positions in regulatory filings.

stories. Of these, 77 announcements mention a US-owned bank as lead lender. Non-bank lenders and foreign banks (or US banks majority owned by foreign companies) are excluded since their credit risk management policies are unclear (see below for further discussion). Finally, we find matching stock market data from the CRSP database for each borrower. Since we will use the standard event study approach, sufficient uncontaminated stock price history prior to the event date is needed. Announcements are dropped if stock returns are not available for the 200 trading days prior to the loan announcement, or because more than one loan announcement to a company occurs within a year (in which case only the first loan is retained). The remaining 217 clean announcements form the final sample analyzed below.

B. Loan Characteristics

For each loan announcement, we record the following information (as available):

- Amount of loan (in million dollars) [*AMT*]
- Renewal indicator [*REN*]: The loan is deemed to be a renewal if the press release clearly indicates that this is a new or revised loan agreement with a lender with whom the firm has a prior loan.
- Syndication indicator [*SYND*]: The loan is deemed to be a syndicated loan if it is explicitly called such, or if the press release names the lender as lead agent or arranger.

C. Borrower Characteristics

We combine the data from the loan announcements with information about the borrowers' stock returns (from CRSP) and a set of variables describing the borrowers' financial condition at the end of the quarter preceding the loan announcement (from Compustat). Using these details we construct the following borrower characteristics:[7]

- The standard deviation of the borrower's stock return residual during the estimation period (*t*-200 through *t*-51) [*SDPE*]. Following Best and Zhang

[7] We experimented with other characteristics such as lender size (market capitalization) but these were not statistically significant and their inclusion did not change the key findings in any meaningful way.

(1993) shareholders in a firm with higher idiosyncratic risk should value a bank's certification more highly.

- The borrower's market model beta calculated over the estimation period (*t*-200 through *t*-51) [*BETA*]. Shareholders should value a bank's certification more highly for a firm with higher systematic risk.
- The cumulative abnormal return on the borrower's stock during the ten trading days preceding the announcement based on the market model [*RUNUP*]. Best and Zhang (1993) find that firms that have recently suffered anticipated earnings declines gained more benefit from a loan announcement.

D. Lender Characteristics

We combine the data from the loan announcements with information about the lender at the end of the quarter preceding the loan announcement (from Compustat). Using these details we construct the following lender characteristics:

- The Standard & Poor's issuer credit rating [*CR_LEND*]. Billett, Flannery, and Garfinkel (1995) show that lenders with a higher credit rating are associated with higher abnormal borrower returns. For use in regressions we convert the ordinal rating scale into a numeric one based on the conventional correspondence between S&P and Moody's ratings and the numerical value assignments for Moody's ratings used by Billett, Flannery, and Garfinkel (1995). Finally we take logs since this appears to fit the data better for our sample.
- The logarithm of the lender's total assets [*ASSETS_LEND*]. Since our sample covers several years, in regressions we convert this into real terms [*ASSETS_LEND_REAL*].

We then construct indicators based on the lender's known use of the credit risk transfer technologies discussed above.

- Credit default swap protection purchase [*CDS_BUY*]. From returns of form FRY9C (taken from the Federal Reserve Bank of Chicago database) we observe the total notional outstanding credit derivatives protection purchased

(line A535) of the reporting bank holding company or any of its connected subsidiaries. The indicator takes a value of one if the value is greater than zero at the end of the quarter immediately preceding the loan announcement, zero otherwise. Where banks were too small to return form FRY9C we checked the banks' annual reports for mention of CDS activities. Banks were deemed not to have purchased any protection unless evidence to the contrary could be found.

- Credit default swap net protection purchase [*CDS_NETBUY*]. From the same quarterly returns (or accounts) we observe notional credit derivative protection purchased less notional protection sold (line A535 - line A534). The indicator takes a value of one if the net position is positive in the quarter immediately preceding the loan announcement, zero otherwise.

- Collateralized loan obligation issuance [*CLO*]. Using the *Asset Backed Alert Database*, we record the date of issuance of each CLO. The database contains information on all rated asset-backed issues, mortgage-backed issues and collateralized bond obligations placed anywhere in the world. If the bank holding company or any of its connected subsidiaries has issued a CLO before the loan announcement date the indicator takes the value of one, and zero otherwise.

Table 1 provides summary information about the sample of 217 clean loan announcements of our primary sample. Panels A, B and C report loan, borrower and lender characteristics, respectively. Our sample resembles those used in other key studies such as Billett, Flannery, and Garfinkel (1995).

IV. Results

We use the basic methodology common to this literature. For each clean loan announcement, we run a daily market model regression for the borrowing firm over the period [-200, -51]. We derive abnormal returns as

$$AR_{jt} = R_{jt} - \left(\hat{\alpha}_j + \hat{\beta}_j R_{mt}\right) \quad \textbf{(1)}$$

where R_{jt} is the rate of return on the stock of firm j on day t, and R_{mt} is the rate of return on CRSP's dividend-inclusive equally-weighted market index on day t. The

estimated coefficients of the market model are denoted $\hat{\alpha}$ and $\hat{\beta}$. Abnormal returns are calculated for the period [-11, 1].

Daily abnormal returns are averaged across all firms to produce a daily portfolio average abnormal return

$$AAR_t = \frac{1}{N}\sum_{j=1}^{N} AR_{jt} \quad \textbf{(2)}$$

where N is the number of firms in the sample. Cumulative abnormal returns between days T_1 and T_2 are given by

$$CAR_{T_1,T_2} = \frac{1}{N}\sum_{j=1}^{N}\sum_{t=T_1}^{T_2} AR_{jt}. \quad \textbf{(3)}$$

We use an event window of [0, 1] in the results below. The day after the announcement is included as many press releases are relatively late in the trading day on day 0.

A. Univariate Analysis

Table II reports average two-day abnormal returns for the full sample, and for various samples based on loan, borrower and lender characteristics. The first line in Panel A describes the overall sample of 217 clean loan announcements. The average cumulative abnormal return over the event window [0, 1] is +1.028%, significant at the five percent level. The sign and statistical significance of the CAR are consistent with the literature. The scale of the impact is higher than found in most papers (Billett, Flannery, and Garfinkel (1995) report a one-day average abnormal return of 0.68%, Best and Zhang (1993) report a two-day ACAR of 0.32%, and Lummer and McConnell (1989) report one of 0.61%), although the original study by James (1987) reports a two-day ACAR of 1.93%.

The remaining two lines of Panel A separate syndicated loans from non-syndicated loans.[8] Consistent with Preece and Mullineaux (1996) we find that announcements of non-syndicated loans have significant positive CARs, but that announcements of syndicated loans has no impact on stock prices on average.

[8] Since we could clearly identify very few loan renewals we do not separate renewals from new loans.

Panel B of Table II splits the sample according to borrower characteristics. Borrowers rated by Standard and Poor's at the time of the loan announcement appear to have slightly higher (and more significant) mean abnormal returns than unrated borrowers, although this difference is not statistically significant. Borrower size also appears to have a relatively weak affect on the announcement returns. Loan announcements for large borrowers are associated with zero abnormal returns while smaller borrowers earn positive, although not statistically significant, returns.[9]

Panel C of Table II splits the sample according to lender characteristics. Unlike Billett, Flannery, and Garfinkel (1995), our sample does not contain a wide range of lender credit ratings. All lenders were rated between AA- and BBB- at the time of loan announcements. Nevertheless, splitting the sample of lenders at the median rating shows that higher rated lenders (rated A, or better) are associated with significantly positive CARs. Loans from lower rated lenders do not generate significant abnormal returns.

The size of the lender also appears to matter. Loans from lenders with real assets greater than the median value are associated with significant positive CARs while CARs from smaller banks are not significant. The size of the lender's balance sheet may be reflecting the "quality" of the lender, in much the same way as the lender credit rating matters.

The final lines in Panel C focus on the credit risk transfer tools used by the lenders. Loans from lenders that have outstanding risk protection at the time of the announcement are associated with statistically positive CARs, unlike those from lenders with no reported single-name credit risk protection. At first glance, this result appears counter-intuitive. On the one hand, CDS protection positions should not be relevant for our sample of borrowers as they are not names actively traded in this market. Further, if positions in the CDS market are reflecting wider credit risk transfer activities then the effect should, according to our hypothesis, be negative. One problem is that, as Minton, Stulz, and Williamson (2005) demonstrate, CDS usage is positively correlated with the size of the bank (which, as we have just seen, is positively related to the announcement effect). It is therefore difficult to separate the effect of size (a proxy for lender quality) and CDS usage in a univariate framework.

[9] We define borrowers to be small (large) if their real total assets at the announcement date are below (above) the median of the 175 companies in our sample with balance sheet data in Compustat.

The same correlation with size is true for CLO issuance, although in this case, splitting the sample according to whether the lender has issued a CLO prior to the loan announcement does provide some evidence that loans from banks using portfolio credit risk transfer techniques are not rewarded so well by the stock market. CARs for loans from banks that have issued CLOs are positive but not statistically significant, while the average announcement effect of loans from banks that have not used this type of instrument are larger and statistically significant. The difference between the CDS and CLO results could be explained by recognising that the CLO structure is relevant for the type of loans used in this study whereas CDS are not.[10]

This difficulty of correlation between potential influences on CARs prompts us to now move to analyze the loan announcement effects in a multivariate framework.

B. Multivariate Analysis

As noted in Section III, the literature has identified several variables that may affect the equity market response to loan announcements. The impacts of these known factors for our sample are illustrated in the first three columns of Table III. These report the regression of loan announcement CARs on loan, borrower, and lender characteristics (but exclude the lenders' credit risk management policies). All standard errors reported are robust to heteroscedasticity and are clustered at the bank level.[11]

Loan characteristics are not significant in explaining the distribution of abnormal returns following loan announcements. Borrower characteristics, particularly the idiosyncratic risk of the company (*SDPE*) and, very marginally, the equity

[10] The effect of CDS usage in a univariate framework is a mix of the hypothesized negative impact from risk management activities, mitigated by the fact that CDSs are not actively traded for this group of borrowers, and positive impact from the correlation between CDS use and bank size. Note that this was not an intentional outcome of our sample selection process. It simply appears that the larger borrowers for whom there exist traded CDS contracts tend not to announce new loans to the market place. The effect of CLO issuance however is not mitigated since loans such as those analyzed are ideal for securitization, and hence the univariate effect is more negative.

[11] Clustering allows for the fact that while we have over 200 loan announcements, these relate to loans issued by just different 34 banks. Any measurement error in lender characteristics, or omitted lender characteristics, will fall into the error term which will then be cross-sectionally correlated within bank clusters. Clustering the standard errors takes this into account. We note in passing that our results are essentially unchanged if clustering is not used, suggesting that we have not omitted or significantly mismeasured the lender characteristics (see footnote 12).

performance immediately prior to the loan announcement (*RUNUP*), are significant.[12] The signs of these variables are as expected. Finally, lender characteristics are not individually significant when included jointly. However, the high correlation between the size of the lender and its credit rating induces a classic collinearity problem (the correlation coefficient is 0.74). The *F*-test of joint significance of the lender characteristics is significant at the 1% level. In line with Billett, Flannery, and Garfinkel (1995), a regression of the CARs on log lender credit rating gives a coefficient of 0.137 (*t*-stat 3.00). A regression of CARs on log lender real assets gives a weakly significant coefficient of 0.005 (*t*-stat 1.77). Column (4) includes all the characteristics jointly. The coefficients change very little and the same key variables remain significant.

Columns (5) through (8) include lender credit risk transfer variables. In column (5) we include the credit default swap risk transfer dummy, *CDS_BUY*. It has a positive coefficient but is far from statistical significance. Similarly, the *CDS_NETBUY* indicator is also insignificant (column (6)). It appears that credit risk management activities in the single-name credit default swap market have no material impact on the loan announcement effect. As before, we hypothesis that this is because the borrowers in our sample are typically not traded reference entities in the CDS market.

Column (7) includes the large scale loan securitisation dummy, *CLO*. It has a negative and economically large coefficient, with a p-value of 0.029. The coefficient suggests that a loan from a bank that is known to have issued a CLO results in a CAR that is 3.6% less than that gained from an equivalent deal with a bank that has not issued a CLO. Given the mean CAR in the sample is a little over 1%, this effect is economically meaningful. Interestingly, the inclusion of the *CLO* term increases the magnitude and significance of the *LENDER_ASSETS_REAL* term. This suggests that the size of the lender does matter, but only when the credit risk transfer strategies of the lenders are taken into account. A loan from a large bank, other things equal, produces a larger CAR than a loan from a small bank. The 25th percentile of the distribution of *LENDER_ASSETS_REAL* is 12.08, and the 75th percentile is 13.44. The difference in the CAR between these two lenders is 2.98% (= [13.44-12.08]*0.0219). However, should the larger lender have issued a CLO, then the

[12] *RUNUP* is significant at more conventional levels when the standard errors are not clustered. This is the only variable in the analysis significantly affected by changing the computation of standard errors.

increased CAR due to lender size is more than offset by the -3.6% credit risk management effect.[13]

The key results are robust to the following alternative specifications:

1. adding a set of dummy variables identifying the year in our sample,
2. removing various combinations of insignificant variables from the regression,
3. replacing *LENDER_ASSETS_REAL* with dummy variables based on quartiles of the distribution of real lender size,
4. including the term *BORROWER_ASSETS_REAL*, defined in the same way as *LENDER_ASSETS_REAL*, for the reduced sample of companies for which this figure was available,
5. replacing *CR_LENDER* with either the unlogged numerical credit rating, or dummy variables for AA and BBB rated lenders.

Specifically, the *CLO* term is significantly negative and economically meaningful irrespective of the particular specification of the regression equation.

CLO issuance is correlated with both the size and credit rating of the lender (correlation coefficients 0.67 and 0.30, respectively). To investigate whether these correlations are behind the significance of the *CLO* term we run a probit regression of *CLO* on *LENDER_ASSEST_REAL* and *CR*_LENDER.[14] We then replace *CLO* in Table III with the "residual" of this model, *CLO_RESID* = *CLO* – predicted probability. This approach arbitrarily loads all the common explanatory power shared by *CLO* and the lender characteristics onto the latter. The estimated coefficient on *CLO_RESID* is -0.0264, with a p-value of 0.098. Although down from the original point estimate, it still suggests a significant negative impact of CLO issuance on the loan announcement effect.

While our panel contains 34 different bank lenders some appear relatively frequently.[15] It may be that the CLO effect we have identified is really driven by a

[13] Recall that the very nature of the CLO structure implies that they are more likely to be issued by larger banks with more diversified loan portfolios.
[14] This regression works well with both explanatory variables highly significant, and 86.2% of observations are correctly classified.
[15] Bank of America is the most frequently occurring bank, appearing 44 times. Of the other CLO issuing banks, JP Morgan Chase appears 26 times, Fleet 15 times, Wachovia 14 times and Citibank 10 times. Wells Fargo, a non-CLO issuer, appears 30 times.

fixed effect associated with a CLO-issuing bank that appears frequently in the data set. To examine this we took the five CLO-issuing banks that appear at least ten times in the sample. We sequentially excluded loans made by each of these banks and re-ran the regression. The coefficient on the CLO indicator is always below -0.028 and is always significant at the five percent level or higher. The CLO effect does not appear to be driven by fixed effects associated with frequently occurring banks.

The linear regression assumes that the issuance of a CLO by the lender has a fixed impact on the announcement effect, irrespective of other lender characteristics. We can address the impact of CLO issuance in a slightly different way, and ask "what proportion of the lender quality effect is removed by CLO issuance?" To do this, we run the following non-linear regression:

$$CAR_i = \beta X_i + (1 - \gamma CLO_i)[\alpha_0 + \alpha_1 LENDER\_ASSETS\_REAL_i + \alpha_2 CR\_LEND_i] + \varepsilon_i$$

where X_i is a vector of loan and borrower characteristics, and β is the associated vector of coefficients. The terms in square brackets together capture the lender quality effect on CARs, while the coefficient γ shows by what proportion this effect is reduced should the lender have issued a CLO. The coefficient is unrestricted in the estimation but is expected to lie between zero and one.

We estimate different versions of the equation using non-linear least squares. Varying the contents of X has little impact so we concentrate on a parsimonious specification with just *SDPE* and *RUNUP* and a constant term included in X. Table IV shows that variations in the specification of the lender characteristics have little impact on the γ coefficient – it ranges from 0.59 to 0.77 and is significant at p-values of 0.042 or better. The regressions suggest that around two-thirds of the contribution of lender quality to the loan announcement effect is lost if the lender has issued a CLO.

Based on the estimates in column (1) of Table IV, the predicted lender quality effect for the average bank that has not issued a CLO by the time the loan is announced (mean *LENDER_ASSETS_REAL* = 11.8, mean *CR_LEND* = 2.73) is 3.61%. Banks that have issued CLOs are larger and higher rated (mean *LENDER_ASSETS_REAL* = 13.23, mean *CR_LEND* = 2.77) and their predicted effect would have been 7.40% had they not issued a CLO. However, issuing the CLO reduces the effect to 2.77%, less than the impact from the smaller, lower rated non-CLO lenders.

V. Conclusions

When innovations mean that banks can now sell off credit risk arising from extending loans it is natural to question whether they will continue to monitor loans to the same extent. Several theoretical papers show that monitoring suffers in a world of increased credit risk transfer, while others argue bank monitoring may even be enhanced. Bankers and commentators also take contrasting stances.

In this paper we ask the equity market to adjudicate. There is ample evidence that the equity market rewards companies that raise loans from reputable lenders by increasing the share price of the borrower on the announcement of the loan. This is known as the bank certification effect. We examine whether the equity market also rewards borrowers that obtain loans from banks known to shift credit risk off their books. We use a sample of 217 loan announcements where the lender is a US bank.

The evidence suggests that the bank certification effect is significantly reduced if the lender has in the past sold off portfolio credit risk through issuing a collateralized loan obligation. We see this through three statistical tests. First, the average announcement effect where the lender has not previously issued a CLO is 1.54%, but only 0.6% if the lender has issued a CLO. Second, in a multiple regression of the announcement effect on loan, borrower, and lender characteristics, the negative impact of past CLO issuance is over three percent. This compares to a positive average certification effect of only a little over one percent. Finally, we note that CLO issuing banks are typically larger (and have higher credit ratings) than non-issuers. As such, they are seen as higher quality lenders and a loan from such a bank would, other things equal, be more highly rewarded by the stock market. For the average CLO-issuing bank, the lender quality contribution to the total certification effect would be 7.4% in the absence of CLO issuance. However, CLO issuance reduces this effect by around two-thirds to 2.8%. This is lower than the 3.6% effect that would be expected from the smaller, lower rated banks that had not issued a CLO.

The results suggest that the equity market does not place much value on the information contained in the announcement of new loans extended by banks that have a track record of securitising credit risk. This indicates that the equity market does not believe that banks using this tool for credit risk management continue to monitor borrowers to the full extent. Combined with the evidence that banks that adopt credit

risk management techniques also expand their loan portfolios, the two conditions for a Kindleberger-style mania identified by Partnoy and Skeel appear to have been in place before the current credit crisis. Currently (September 2008), credit losses have been largely confined to sub-prime residential loans. Keys *et al.* (2008) and Mian and Sufi (2008) discuss the links between securitization and residential lending. Our results suggest that the corporate loan sector may have also suffered from inappropriate lending problems if the equity market's judgement proves to be correct.

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Table I

Sample Summary Statistics for 217 "Clean" Loan Announcements

Abnormal returns are two-day cumulative abnormal returns for the interval [0, 1] computed with market model parameters estimated using daily returns over the period [200, -51]. *AMT* is the value of the loan ($m); *REN* is an indicator variable taking the value one of the loan is a renewal, zero otherwise; *SYND* is an indicator variable taking the value one of the loan is syndicated, zero otherwise; *SDPE* is the standard deviation of the residuals from the market model regression over the estimation window; *BETA* is the estimated coefficient from the market model regression over the estimation window; *RUNUP* is the cumulative abnormal return over the interval [-10, -1]; Credit Rating is the Standard and Poor's debt rating of the lender at the time of the loan announcement; *ASSETS_BORROW* is the total asset value of the borrower ($m); *ASSETS_LEND* is the total asset value of the lender ($m). *CDS_BUY* is an indicator variable taking the value one if the lender reports positive outstanding notional credit derivatives protection purchased in the FRY9C return for the quarter immediately prior to the loan announcement, zero otherwise; *CDS_NETBUY* is an indicator variable taking the value one if the lender reports net positive outstanding notional credit derivatives protection purchase in the FRY9C return for the quarter immediately preceding the loan announcement, zero otherwise; *CLO* is an indicator variable taking the value one if the lender (or subsidiary) has issued a collateralized loan obligation prior to the loan announcement, zero otherwise.

	Mean	Median	Minimum	Maximum
Panel A: Loan Characteristics				
Abnormal returns	1.028%	0.236%	-17.01%	50.64%
Loan size (*AMT*)	122.0	60.0	2.0	1500.0
Fraction renewals (*REN*)	5.07%			
Fraction syndicated (*SYND*)	64.52%			
Panel B: Borrower Characteristics				
SDPE	0.0323	0.0250	0.0075	0.1222
BETA	1.2055	1.1206	-2.3119	5.2099
RUNUP	5.49%	2.38%	-72.03%	127.20%
ASSETS_BORROW	3811.8	966.7	12.93	138042.0
Panel C: Lender Characteristics				
Credit Rating		A+	BBB-	AA-
ASSETS_LEND	472058	334250	394	1489981
Fraction *CDS_BUY*	88.26%			
Fraction *CDS_NETBUY*	59.90%			
Fraction *CLO*	53.92%			

Table II

Univariate Statistics for 217 "Clean" Loan Announcements

CDS_BUY is an indicator variable taking the value one if the lender reports positive outstanding notional credit derivatives protection purchased in the FRY9C return for the quarter immediately prior to the loan announcement, zero otherwise; *CDS_NETBUY* is an indicator variable taking the value one if the lender reports net positive outstanding notional credit derivatives protection purchase in the FRY9C return for the quarter immediately preceding the loan announcement, zero otherwise; *CLO* is an indicator variable taking the value one if the lender (or subsidiary) has issued a collateralized loan obligation prior to the loan announcement, zero otherwise. Significance at the 10, 5, and 1 percent level is denoted by *, **, *** respectively.

	Number of Observations	Mean CAR[0,1]	*t*-Statistic
All Loans	217	1.028	2.33**
Syndicated Loans	140	0.450	1.01
Non Syndicated Loans	77	2.079	2.22**
Borrower Rated	91	1.269	1.85*
Borrower Not Rated	126	0.854	1.48
Large Borrowers	87	0.000	0.00
Small Borrowers	88	0.841	1.22
Lenders Rated A+ or above	134	1.567	2.48**
Lenders Rated A or below	83	0.159	0.30
Large Lenders	107	0.894	1.86*
Small Lenders	108	1.098	1.47
CDS_BUY = 1	188	1.302	2.66***
CDB_BUY = 0	25	-0.666	0.70
CLO = 1	117	0.591	1.35
CLO = 0	100	1.540	1.90*

Table III

The Effect of Lender Credit Risk Management Policies on Borrower Returns

Ordinary least squares regressions of two-day cumulative abnormal returns on loan, borrower, and lender characteristics including lender policies on credit risk management. *AMT* is the value of the loan ($m); *REN* is an indicator variable taking the value one of the loan is a renewal, zero otherwise; *SYND* is an indicator variable taking the value one of the loan is syndicated, zero otherwise; *SDPE* is the standard deviation of the residuals from the market model regression over the estimation window; *BETA* is the estimated coefficient from the market model regression over the estimation window; *RUNUP* is the cumulative abnormal return over the interval [-10, -1]; *CR_LEND* is the log of the numerical value of the lender's Standard and Poor's debt rating; *ASSETS_LEND_REAL* is the log of the total assets of the lender deflated with the GDP deflator. *CDS_BUY* is an indicator variable taking the value one if the lender reports positive outstanding notional credit derivatives protection purchased in the FRY9C return for the quarter immediately prior to the loan announcement, zero otherwise; *CDS_NETBUY* is an indicator variable taking the value one if the lender reports net positive outstanding notional credit derivatives protection purchase in the FRY9C return for the quarter immediately preceding the loan announcement, zero otherwise; *CLO* is an indicator variable taking the value one if the lender (or subsidiary) has issued a collateralized loan obligation prior to the loan announcement, zero otherwise. Numbers in parentheses are robust *t*-statistics clustered at the bank level. Significance at the 10, 5, and 1 percent level is denoted by *, **, *** respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CDS_BUY					0.022			0.011
					(1.19)			(0.71)
CLO						-0.036**		-0.034**
						(2.30)		(2.23)
CDS_NETBUY							0.008	
							(0.90)	
AMT	0.000			0.000	0.000	0.000	0.000	0.000
	(0.04)			(0.75)	(0.47)	(0.80)	(0.48)	(0.63)
REN	0.006			0.017	0.017	0.005	0.014	0.005
	(0.20)			(0.72)	(0.75)	(0.22)	(0.58)	(0.23)
SYND	-0.016			-0.011	-0.012	-0.003	-0.009	-0.004
	(1.07)			(0.88)	(0.96)	(0.37)	(0.71)	(0.47)
SDPE		1.146***		1.175***	1.171***	1.245***	1.207***	1.242***
		(3.01)		(3.24)	(3.24)	(3.36)	(3.43)	(3.36)
BETA		0.006		0.006	0.005	0.003	0.006	0.003
		(1.26)		(1.30)	(1.26)	(0.80)	(1.10)	(0.78)
RUNUP		-0.042		-0.045	-0.046	-0.047	-0.044	-0.047
		(1.44)		(1.52)	(1.52)	(1.54)	(1.34)	(1.54)
CR_LEND			0.127	0.047	0.055	-0.058	0.073	-0.058
			(1.33)	(0.53)	(0.51)	(0.72)	(0.73)	(0.55)
ASSETS_LEND_REAL			0.001	0.006	0.001	0.022***	0.003	0.019*
			(0.15)	(0.90)	(0.13)	(2.87)	(0.47)	(1.89)
N	217	217	210	210	209	210	203	209
$\overline{R}^2$	0.001	0.130	0.021	0.143	0.143	0.169	0.147	0.165

Table IV

Non Linear Modelling of Impact of Credit Risk Management Policies on Borrower Returns

Nonlinear least squares regressions of two-day cumulative abnormal returns on borrower and lender characteristics, including lender policies on credit risk management. The equation estimated is of the form:

$$CAR_i = \beta X_i + (1 - \gamma CLO_i)[\alpha_0 + \alpha_1 ASSETS\_LEND\_REAL_i + \alpha_2 CR\_LEND_i] + \varepsilon_i$$

where X_i is a vector containing a constant, *SDPE* and *RUNUP* and β is the associated vector of coefficient estimates. In addition *RATING_AA* and *RATING_BBB* are indicator variables taking the value one if the lender is rated AA or BBB respectively at the time of the loan announcement, zero otherwise. Numbers in parentheses are robust *t*-statistics clustered at the bank level. Significance at the 10, 5, and 1 percent level is denoted by *, **, *** respectively.

	(1)	(2)	(3)	(4)
Constant	-0.094		-0.242***	-0.321***
	(0.61)		(3.35)	(3.42)
ASSETS_LEND_REAL	0.028***	0.030***	0.024***	0.029***
	(3.74)	(3.85)	(4.34)	(3.65)
CR_RATING	-0.075	-0.115***		
	(1.12)	(3.16)		
RATING_AA				-0.030***
				(2.81)
RATING_BBB				0.005
				(0.20)
CLO	0.626**	0.594**	0.604**	0.768***
	(2.25)	(2.14)	(2.16)	(3.18)
$\overline{R}^2$	0.180	0.179	0.178	0.187