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THE CASE OF CLOS

Efraim Benmelech
Jennifer Dlugosz
Victoria Ivashina

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ABSTRACT

For nearly a decade prior to the collapse of structured finance markets in late 2007, securitization by collateralized loan obligations (CLOs) was a key source of capital for the high-yield corporate loan market. In this paper, we investigate whether securitization was associated with risky lending in the corporate loan market by examining the performance of individual loans held by CLOs. We employ two different datasets that identify loan holdings for a large set of CLOs and find that adverse selection problems in corporate loan securitizations are less severe than commonly believed. Controlling for borrowers' credit quality, securitized loans perform no worse, and under some criteria even better, than unsecuritized loans of comparable credit quality. However, within a CLO portfolio, loans originated by the bank that acts as the CLO underwriter underperform the rest of the loan portfolio. Overall, we argue that the securitization of corporate loans is fundamentally different from securitization of other assets classes because securitized loans are fractions of syndicated loans. Therefore, mechanisms used to align incentives in a lending syndicate also reduce adverse selection in the choice of CLO collateral.

Efraim Benmelech
Harvard University
Department of Economics
Littauer 233
Cambridge, MA 02138
and NBER
effi_benmelech@harvard.edu

Victoria Ivashina
Harvard Business School
Baker Library 233
Soldiers Field
Boston, MA 02163
and NBER
vivashina@hbs.edu

Jennifer Dlugosz
Federal Reserve Board
20th Street and Constitution Ave. NW
Washington, DC 20551
jennifer.l.dlugosz@frb.gov

In the third quarter of 2007, structured finance markets ground to a halt after nearly a decade of phenomenal growth. Mortgage-backed securities (MBSs) and Collateralized Debt Obligations (CDOs) suffered a major blow to their reputation after being tied to a record-breaking wave of downgrades and bank losses.¹ Both academics and practitioners have blamed securitization for encouraging risky lending and for being responsible, in part, for the recent credit crisis. In particular, several empirical studies of MBSs have shown that securitization resulted in lower lending standards, which led to adverse selection in the collateral pools underlying these products.²

The focus of our paper is collateralized loan obligations (CLOs), or CDOs backed by corporate loans. We analyze performance of loans purchased by CLOs between 1997 and 2007 and, contrary to the findings for the other forms of securitization, we find no evidence that securitized corporate loans were riskier than similar loans that were not securitized. In fact, we find that securitized loans performed marginally better than unsecuritized loans controlling for firm characteristics. While our findings can be viewed as a negative result—we find that securitization is not statistically significant in predicting poor performance—there are important positive results in our paper: Adverse selection is not an inevitable consequence of securitization, and not all securitized markets are the same.

One explanation for the different findings between papers that study mortgage securitization and our paper has to do with the fact that corporate loans are only partially securitized. Corporate loans are significantly larger than mortgages and, therefore, they are typically syndicated; that is, they are originated by a lead bank which retains a fraction of the

¹See “S&P may cut \$12 billion of subprime mortgage bonds,” *Bloomberg*, 27 March, 2007; “Moody's may cut \$5 billion of Subprime-backed CDOs,” *Bloomberg*, 11 July, 2007; “In UBS case, emails show CDO worries,” *WSJ* 11 September, 2009.

² See for example Keys, Mukherjee, Seru and Vig (2010), Drucker and Mayer (2008), and Nadauld and Sherlund (2009).

loan, and sells the rest to other banks and institutional investors. Fractions of the same underlying loan are simultaneously held by multiple CLOs as well as by other institutional investors and banks, whereas mortgages tend to be sold in one piece to MBS issuers.³ In addition, the bank that originated the loan typically retains a fraction of the loan on its balance sheet and each underlying loan is rated. Large corporate loans, therefore, involve a greater number of formal and informal screeners whose reputation is at stake and the loan originator has “skin in the game”.

There is a large body of literature that looks at the mechanisms that mitigate asymmetric information associated with corporate loan sales; notably, Gorton and Pennacchi (1995), Dennis and Mullineaux (2000), Sufi (2007), Drucker and Puri (2009), and Ivashina (2009). Overall, the lead bank’s share and the lead’s reputation are the key mechanisms for reducing information asymmetry between the originating bank and other lenders in loan syndication. Thus, syndication before securitization makes CLOs unique.

Is it trivial then that securitization of syndicated corporate loans is adverse-selection proof? Judging by the sudden contraction in CLO issuance (along with other structured issuance) in the third quarter of 2007 and the absence of a subsequent rebound, the answer is no (see Figure 1). A simultaneous disconnect between yields on existing CLO tranches and corporate bonds with similar ratings suggests that the market perceived the underlying problem as specific to structured finance. Indeed, the disappearance of CLO issuance coincided with the widespread fear that strong demand for securitizable assets may have led to risky lending in the corporate sector.⁴

³Throughout the paper we refer to loans with CLO investors as securitized loans or loans sold to CLO investors.

⁴ See for example “Seeds of Credit Crunch Grow in LBO Loan Market,” *Reuters*, 19 June 2007: *In the old days of relationship banking, banks relied on credit quality control and huge balance sheets to ride out any problems, but CLO investors may be more short-term oriented. Lack of credit quality control by some managers of CLOs is*

To the best of our knowledge, this is the first paper to provide a comprehensive analysis of the performance of securitized corporate loans. Our results are consistent with Shivdasani and Wang (2009) who analyzed the effect of CDO issuance on the supply of funding for leveraged buyouts (LBOs). Based on the borrowers' characteristics, the deals' financing structure, and the loan pricing Shivdasani and Wang (2009) conclude that an increase in securitization did not lead to riskier LBOs. The contribution of our study is that we observe the underlying CLO collateral, this enables us to look at a broader set of corporate transactions affected by securitization and to investigate directly the effects of securitization on loan underwriting standards.

Our findings have broad implications for the design of securitized assets and provide evidence in support of the spirit of the recent financial legislation. In an effort to reduce agency problems in securitization going forward, Section 941 of the Dodd-Frank Wall Street Reform and Consumer Protection Act requires federal agencies to develop credit risk retention requirements for securitizers and originators. Our paper provides insight into the effectiveness of risk retention mechanisms by studying a sector of the structured finance market where risk retention by originators existed prior to the new legislation.⁵

The message that not all securitizations are the same also has more immediate relevance. In the years preceding the financial crisis, CLOs played a key role in financing billions of dollars in loans around the world (Figure 2). According to the Loan Syndications and Trading

particularly frightening to veteran private equity investors. "What all of this will show - and it will show more as CLOs become more popular - is that risk management has not been very well practiced," said billionaire financier Wilbur Ross, founder of private equity firm WL Ross & Co. Also, "Easy Money: Behind the Buyout Surge, a Debt Market Booms -- CLOs Spark Worries of Volatility and Risk; Loan Standards Loosen," WSJ, 26 June 2007: Investors searching for higher yields have put so much money into CLOs that even weak companies can get loans at relatively low interest rates...These days, banks that arrange large buyout financings hold on to very little of the loans themselves. Bank underwriting standards have slipped as banks have become mere intermediaries.

⁵ While our findings suggest that risk retention may help reduce agency problems in securitization, there are dangers to the current one-size-fits-all approach to risk retention requirements described in the Dodd-Frank Act, which does not account for differences in the securitization process across sectors. For example, to the extent that risk retention by originators already exists in the market for syndicated corporate loans, imposing additional retention requirements on top of that could have an unintentionally restrictive effect on the supply of loans to large companies.

Association (LSTA), as of the end of October 2010, CLOs were holding nearly half of all outstanding non-investment grade loans in the U.S. Roughly 80% of these loans (\$400 billion) are expected to mature before 2015 and many of these borrowers will seek refinancing. Therefore, it is pivotal to understand whether the contraction in CLO issuance was a response to fundamentals or the result of a structural shift in demand for securitized assets.

It is worth noting that many CLOs were downgraded or placed on negative credit watch during the crisis.⁶ These actions were triggered by downgrades in the underlying loans held by CLOs, since rating agency models primarily use the ratings of collateral assets to estimate their probability of default. However, despite widespread downgrades, there were very few defaults on CLO tranches. According to the LSTA, less than 1% of CLOs rated by Moody's defaulted. We should stress that our findings *do not* imply that securitized loans should perform well in absolute terms, but rather that securitized loans should not perform worse than other non-investment grade loans syndicated to non-banks. This leaves open the possibility that all leveraged loans are of an intrinsically worse quality than believed at the time of loan origination. Also, by design, CLOs primarily acquire non-investment grade securities so the securitized pool of loans should be expected to underperform the overall population of loans.

The rest of the paper is organized as follows. The first section highlights the key informational frictions involved in the securitization of corporate loans. Section two describes the data. Section three presents the empirical results, and section four concludes.

⁶ Between December 2008 and December 2009, 65% of CLO tranches rated Aaa by Moody's were downgraded, most of them (75%) to Aa. Lower-rated tranches were downgraded at a higher frequency (Moody's CLO Interest newsletter, April 2010).

I. Collateralized Loan Obligations and Adverse Selection

Our results are organized around two hypotheses that are related to two central channels that could lead to adverse selection in the quality of CLO collateral:⁷

H1: Syndicated loans bought by CLOs (securitized loans) are worse quality than unsecuritized loans (extensive margin).

H2: Securitized loans arranged by the bank underwriting the CLO are worse quality than other securitized loans within the same portfolio (intensive margin).

A. *CLOs and the effects of securitization (H1)*

The key friction underlying the securitization process is the information asymmetry about loan quality. To structure a CLO, a collateral manager—typically an investment management company—sets up a bankruptcy-remote special purpose vehicle (SPV).⁸ It then acquires a portfolio of corporate loans, engages with the underwriter and credit rating agency to both structure and rate the deal, and issues securities to investors backed by the principal and interest payments from the loans.⁹ Because multiple agents are involved, there is an information cascade between the originating banks, the CLO arranger and the ultimate CLO investors¹⁰, where the originating bank is best informed and ultimate CLO investors are worst informed about loan

⁷ Notice that the second hypothesis—intensive margin— is conditional on securitization.

⁸ A bank can structure a CLO backed by originated loans to reduce its risk exposure. However, the Securities Industry and Financial Markets Association (SIFMA) reports that in 2007, 97% of corporate loans CLOs were structured by financial institutions that did *not* originate loans and instead acquired pieces of loans at syndication or in the secondary market with the purpose of securitization. This type of CLO—in which the issuer did not originate the assets—is referred to as an “arbitrage CLO.”

⁹ These CLOs, also known as “cash-flow” or “cash” CLOs, are the focus of our paper.

¹⁰ When talking about lenders or investors in loans, we use “CLO investor” to refer to special purpose vehicles (SPVs) that directly invest in syndicated loans. “Ultimate CLO investor” denotes companies that purchase CLO notes (e.g., insurance companies that used to buy CLO AAA tranches). In the data, we do not observe ultimate CLO investors. We classify loan as securitized if it was acquired by an SPV.

quality. (The different steps and agents involved in the securitization process are illustrated in Figure 3.)

Corporate loans acquired by a CLO are typically syndicated. The key mechanisms that generally ameliorate asymmetric information between the lead bank and syndicate participants are the lead's reputational concerns and the implicit requirement that the lead bank retain a share of the loan on its balance sheet. It is possible that lead's incentives to conduct due diligence and monitor the borrower have become weaker due to broader syndication resulting from large CLO demand. For example, Ivashina and Scharfstein (2010) show that lead share fell dramatically during the 2004-2007 credit expansion. In addition, asymmetric information between the CLO manager and its investors could also lead to adverse selection of collateral.

CLOs differ from other institutions that participate in the high yield loan market in several ways, which can result in CLO managers having weaker incentives to screen and monitor than other market participants. First, in the CLO managers' compensation is largely independent of the collateral performance. CLO managers receive a base fee on the order of 40-50 basis points per year, typically senior to all notes (Tavakoli, 2002). CLO managers are not required to hold equity in the deal, but there are cases where they own a share of the equity, receive an incentive fee that is subordinate to equity, or have a partial claim on the residual interest.¹¹ Judging from a random sample of CLO rating reports, we estimate that CLO managers have equity-like incentives in approximately 50% of deals. However, a back of the envelope

¹¹ An example of an incentive management fee taken from Benmelech and Dlugosz's (2009) sample is "The manager receives an incentive fee after equity has achieved an IRR of 14%". An example of a manager having a claim on residual interest without having made an equity investment is "Once equityholders have achieved a 14% IRR, residual interest proceeds are split 80/20 between equityholders and the manager."

calculation suggests that, even in these cases, base management fees are an order of magnitude larger than incentive fees and, therefore, that CLO management is primarily a volume business.¹²

A second distinctive feature of CLOs (as opposed to banks or other investors in loans) is that their cost of funding is largely determined by rating agency models. The models used by the credit rating agencies to evaluate CLO portfolios and rate deals rely primarily on loan ratings to assess the default risk of the underlying collateral. As a result, CLO managers could select worse quality loans because they exert relatively less effort on collateral selection.¹³ (Within a given rating class, the CLO manager is also incentivized to select loans with a higher spread, however we control for spread throughout the paper.)

There are some constraints that might restrict CLO manager's risk taking. In particular, downgrades in the collateral can force the manager to pay down notes early, thus forgoing an annual fee. Therefore, a CLO manager cares about deterioration in the ratings of the collateral assets because too many downgrades could lead to deal termination. The manager also faces a reputational constraint.¹⁴ When assets in the collateral pool miss payments or default, the deal's equityholders bear the loss. If equityholders do not earn an adequate return, the manager may have difficulty selling the equity tranche in future deals. Both of these constraints should attenuate the conflict of interest between the CLO manager and ultimate CLO investors in the selection of the collateral. However, these mechanisms are not unique to corporate loans

¹² Suppose a CLO manager earns a base fee of 50 basis points per year and has a claim to 20% of residual interest after equity achieves an IRR of 14%. According to Fabozzi, Goodman and Lucas (2006, p. 370), 18% is an optimistic estimate of the return on CLO equity. Given an average CLO size of \$500 million and an average equity tranche worth 10% of deal par, the annual base fee would be \$2.5 million (0.005×500) while the annual incentive fee would be \$0.4 million ($0.2 \times (.18 - .14) \times (0.10 \times 500)$).

¹³ At least one rating agency model primarily used rating, maturity, seniority, jurisdiction, and industry to compute an expected loss distribution for the underlying collateral. Benmelech and Dlugosz (2009) and Coval, Jurek, and Stafford (2009) provide extensive detail on rating models. Also see the testimony of Eric Baggesen, Senior Investment Officer California Public Employees' Retirement System before the House Committee on Oversight and Government Reform on September 30, 2009.

¹⁴ In 2008, S&P started to explicitly highlight managers' experience and record as one of the mitigating factors in addressing risks underlying CLO structure (e.g., S&P Harbourmaster CLO 11 B.V. Presale Report).

securitizations and given the evidence from mortgage securitizations, their effectiveness is questionable.

We should point out that in addition to CLOs there are other lenders who participate in the lending syndicate. This means that these other lenders would need to internalize the cost of adverse selection for a given loan. Why would they be willing to do that? For many non-CLO investors, participating in the syndicated loan market could lead to other sources of revenue. For example, "...the spread offered to pro rata investors (banks) is important, but even more important, in most cases, is the amount of other, fee-driven business a bank can capture by taking a piece of a loan" (Standard and Poor's, 2006.) The same argument is likely to be true for insurance companies. On the other hand, hedge funds and mutual funds could be willing to take higher because they could use information obtained in the loan market to trade in other securities (Ivashina and Sun, 2007). In general, the syndicated loan market is a private market and access to deal flow might be another reason why investors would be willing to pay an additional cost on some loans.

B. Effects of underwriting in securitization (H2)

In addition to the collateral manager, a CLO has an underwriter (typically a bank) responsible for screening the loan portfolio and working with the rating agencies to get CLO tranches rated, priced, and allocated. In essence, the role of the underwriter in CLO deals is similar to the role of the underwriter in stock or bond issuance.¹⁵ As compensation, the underwriter receives a fee on the notional value of the deal. While the collateral manager has formal authority over asset selection, the underwriter may exert influence over collateral choice. Although the presence of an underwriter should improve the screening of the underlying

¹⁵ CLOs are typically underwritten on a best efforts basis (LSTA, 2007).

collateral, underwriting banks may use this channel to sell fractions of their *own* riskier loans to CLOs. Put differently, even if CLOs do not end up with worse quality loans than other loan investors on average, they may end up with worse quality loans when they buy them from the underwriter of their deal. We estimate that about 10% of loans sold to CLOs were originated by the CLO underwriter.

II. Data

A. Sample construction

To test the first hypothesis we employ *two* different samples. The first sample—which we will refer to as the “at-origination sample”—includes loans originated between 1997 and May 2007. In this sample, we determine whether a loan was securitized using the names of CLO SPVs who are part of the lending syndicate based on the information available at the time of loan origination and loan amendment.¹⁶ The second sample—which we will refer to as the “portfolio sample”—is constructed using a proprietary source that enables us to observe the *complete* portfolios of a comprehensive set of CLOs. These data consist of monthly CLO trustee reports covering the period between July 2008 and January 2010. Loans that appear in the CLOs’ portfolios are labeled as securitized. Below, we describe the data and discuss potential selection issues in more detail.

A.1. At-origination sample

To identify loans that were purchased by CLOs at origination we start with the sample of loans to U.S. companies (public and private) reported in Reuters’ DealScan and containing Term

¹⁶ Investors that buy tranches of CLOs (ultimate CLO investors) would never appear in the lending syndicate, because they do not hold a direct claim against the loan.

loan B or C facilities.¹⁷ We also include all term-loans that have a credit rating and have non-lending institutions, such as hedge funds, mutual funds, pension funds, distressed funds, or structured financial vehicles, in the lending syndicate. Generally speaking, there are two distinct investor groups in the loan market: banks (the traditional investors) and institutional investors. Institutional investors, including CLOs, primarily participate in the non-investment grade (leveraged) segment of the loan market and compete for the same loans.

We use two methods to tie loans to specific CLOs. First, we search through the list of lenders at the time of syndication available through DealScan. The identity of the investors (names of SPVs) is crosschecked with the list of CLOs constructed by combining information from: (i) Reuters CDO pipeline, (ii) Standard&Poor's (S&P) Quarterly CDO Deal List, and (iii) S&P's RatingsDirect.¹⁸

The second method we use to link loans to CLOs is to look into purchases of loans in the secondary market using information from loan amendments. We use both primary and secondary loan market transactions instead of focusing only on primary market data since loans can also be acquired on the secondary market.¹⁹ This is especially important for the control sample; not being able to observe CLO investors perfectly might lead us to misclassify securitized loans as

¹⁷ Term loans are installment loans. Term loans B and C are specifically structured for nonbank, institutional investors. The term loan B or C label formally refers to a facility within a loan package. However, after CLO investors are identified we collapse the data to one observation per loan. For the regression analysis, in case of multiple facilities, we look at the largest facility for spread, performance pricing provision, and maturity and we control for the overall loan size.

¹⁸ The S&P Deal List and RatingsDirect have substantial overlap but there are some transactions that appear exclusively in one or the other. The Deal List summarizes all global CDOs rated by S&P from September 1994 to March 2007. RatingsDirect is a real-time database of the agency's ratings which allows us to identify more current deals but it drops information on CLOs when they mature or have their ratings withdrawn. Reuters tracks CLOs that invest in loans more generally, regardless of what agency rated them, and is available from 2006 forward. Having collected a comprehensive list of CLOs originated over the sample period enables us to check the full list of non-bank investors reported in DealScan and not just those that contain "CDO" or "CLO" in the name. For example, we were able to classify "WhiteHorse III, Ltd." and "Stone Tower VII" as CLO investors although it is not directly implied by the names.

¹⁹ Information available at loan origination might also under-report securitization if loans are warehoused (ie, temporarily held by banks or other institutions with the intent of selling them to a CLO). In this case, the original syndicate might not list CLO investors, despite the fact that the loans would ultimately be allocated to a CLO.

unsecuritized, biasing the results against finding differences in performance between the two groups. We mitigate this concern by detecting warehousing and secondary market purchases using loan amendments.²⁰ A material loan amendment, such as a change in the spread, pricing grid, repayment schedule, maturity, or loan amount requires the unanimous approval of all lenders.²¹ In such cases, the signatures and identities of all the lenders appear at the bottom of the document. We collect the first material amendment for each loan in our sample and search the signers for CLOs. Loan amendments are available to us from 1997 through 2007; accordingly, we constrain the overall loan sample to this period.

We classify loans as securitized if there is at least one CLO investor in the lending syndicate at the time of loan origination or loan amendment. The final sample contains 487 loans, 302 which we classify as securitized or having CLO investors.²² The set of unsecuritized loans is conditional on having a material loan-amendment, which explains the relatively small sample size. 185 loans did not have CLO investors at origination or at the time of amendment so we classify them as unsecuritized; these loans constitute our control group. For 104 of the 302 securitized loans (34%), we detected additional CLO investors through amendments in addition to those picked up by DealScan. However, of these 302 securitized loans, 292 (97%) had at least one CLO investor at origination according to DealScan. In other words, most loans that appear in CLOs at the time of amendment also had at least one CLO investor at origination, which should diminish concerns about under-identifying securitization because of warehousing.

We are also aware of potential selection bias concerns. Tests of the first hypothesis are based on a comparison of securitized (treatment group) and unsecuritized (control group) loans.

²⁰ Amendments are typically disclosed as a part of SEC filings (see Ivashina and Sun, 2007).

²¹ A discussion on the requirements of the syndicate voting and public disclosure of the amendments can be found in Ivashina and Sun (2007). On average, loans have a material amendment 7.5 months after the loan origination.

²² To be conservative, we drop 46 unsecuritized loans from the sample that showed up in trustee reports of the second sample.

To ensure that loans in the control group were not sold to a CLO in the secondary market, our control group was constrained to loans with amendments.²³ Yet, our treatment group includes loans with and without loan amendments, as long as they had a CLO investor at the origination. If amended and un-amended loans are fundamentally different then our results may be biased. However, it is unclear whether the presence of an amendment reflects positive or negative news.²⁴ If observable amendments are a reflection of successful renegotiations and loans without amendments in fact reflect failed renegotiations, then our control group is on average of better quality. Alternatively, if most of the firms soliciting amendments and receiving amendments are troubled firms, then our treatment group is on average of better quality. We address this issue empirically by re-examining the results in the subsample where treatment and control group were constrained to the sample with loan amendments; the results do not change our conclusions.

Overall, we identify 555 unique CLO investors corresponding to 302 securitized loans. On average, our sample contains 6 loans per CLO. The median size of a CLO issued during that period was \$460 million (Benmelech and Dlugosz, 2009) and the average minimum investment in the institutional loan market is \$5 million, hence, as a lower bound, six loans represent roughly 6% of the collateral pool.²⁵ While the at-origination sample provides only a partial look at each CLO's collateral pool, we identify some loans for approximately 60% of outstanding U.S. CLOs.

A.2. Portfolio sample

²³ This is a conservative criterion because all but ten loans that had CLO investors at the loan amendment also had CLO investors at the loan origination; that is, presence of a CLO investor at the loan origination is a reliable proxy of whether the loan is securitized.

²⁴ Ivashina and Sun (2007) find that on average abnormal return on the stock or secondary loan market around loan amendments is zero as a result of offsetting reactions within the sample.

²⁵ Many CLOs are not 100% invested or hold bonds in addition to corporate loans. Most CLOs are structured as 'revolving pools' that allow the manager to turnover 10 to 20% of the collateral per year for the first five to seven years of the typical twelve year life of a CLO.

The second sample used in the analysis comes from Creditflux, a leading global information source for credit trading and investing which maintains a comprehensive database of CDOs and credit hedge funds. We have the entire Creditflux CLO database, which includes monthly trustee reports detailing the *complete* investment portfolios for a large set of CLOs covering the period between July 2008 and January 2010. We hand match the portfolio level data to DealScan and Compustat. Matching to DealScan returns 2,297 unique U.S. corporate loans. The sample covers 277 U.S. CLOs issued between 1999 and 2008. Using the total CLO volume tracked by the Securities Industry and Financial Markets Association (SIFMA), we estimate that our sample covers 46% of CLOs issued between 2003 and 2007.²⁶ (This is a lower-bound estimate of coverage because the SIFMA statistics might include synthetic CLOs.) On the other hand, comparing this sample to the one in Benmelech and Dlugosz (2009) indicates that the new sample covers 65% of deals issued between 2003 and 2007. (This is likely to be an upper-bound because Benmelech and Dlugosz only look at S&P rated vehicles.)

In this sample, any loan that appears in a CLO's portfolio is categorized as securitized. As before, a sample of unsecuritized loans is drawn from the set of loans in Dealscan that have Term Loans B and C facilities or are held by other institutional investors more broadly. We limit the treatment and control groups to loans originated between January 2005 and July 2007 that mature between 2010 and 2015 for two reasons.²⁷ First, our CLO portfolio observations span the period from 2008 to 2010. We could misclassify earlier loans as unsecuritized if they matured before our CLO observations start.²⁸ Second, the focus of our study is the performance of loans that were originated with the intent of being sold to CLOs. Securitization (CLOs' purchases of

²⁶ This assumes that the average CLO has a par value of \$500 million.

²⁷ Focusing on a shorter horizon (2006 and 2007 loans) renders similar results.

²⁸ Less than 10% of loans originated in 2005-2007 have maturities beyond 2015. Most term loans have maturities of 5-7 years so these very long maturity loans may be outliers, or data entry errors.

loans) in the corporate loan market is a continuous process as opposed to a one-shot deal as in the MBS market. As we illustrate in the previous section, a loan that originally did not have CLO investors might end up in a CLO portfolio later on. This is especially true for the period of 2008 and beyond. Over this period very few new loans were originated and many companies went bankrupt, expanding CLOs' penetration of the loan market. Thus, the potential challenge in the portfolio sample is opposite of the one we face in the at-origination sample; we are concerned that we could misclassify loans as securitized (type II error).

B. Summary statistics

We begin by reporting descriptive statistics and tests of the first hypothesis for both the at-origination sample and the portfolio sample. Table I, Panel A presents summary statistics on the loans in both samples. Institutional loans are large loans made to large borrowers; the average loan size is roughly \$600 million and the average borrower had roughly \$1.7 billion in sales at the time of loan origination. Generally speaking, loans purchased by CLOs are non-investment grade senior-secured loans with ratings in the BB or B range and spreads in the neighborhood of 300 basis points.²⁹

In comparing the two samples, it is important to keep in mind their relative differences. The at-origination sample covers a longer period of time (loans originated 1997-2007 versus 2005-2007). However, it conditions on the presence of a loan amendment, which effectively eliminates some smaller loans (the average loan in the at-origination sample is \$560 million while the average loan in the portfolio sample is \$463 million). Table I, Panel B presents a more extensive description of the borrowers, using Compustat data for the fiscal year ending prior to

²⁹ Benmelech and Dlugosz (2009) find that CLOs are typically backed by collateral pools with a weighted average rating of BB-/B+/B. Many restrict the amount of securities rated below CCC+ to 5-7 percent of the pool, suggesting that the average loan put in a CLO has a BB or B rating.

loan origination. Looking at the portfolio sample, securitized loans and borrowers are larger than their unsecuritized counterparts on average, but not significantly different on other dimensions. In the at-origination sample, securitized loans are smaller (as a result of conditioning on amendment) but borrowers are not significantly different in size. Securitized borrowers look riskier on some dimensions, however, including leverage and interest coverage. Next we examine whether loan and borrower characteristics predict securitization in a multivariate setting.

[TABLE I]

Table II examines whether ex-ante loan and borrower characteristics can predict securitization; this repeats the analysis in Table I in a multivariate setting. We estimate a probit model where the dependent variable is a dummy equal to one if a loan was securitized and zero otherwise; the independent variables are loan and borrower characteristics at origination. Both sets of results suggest that larger borrowers or larger loans are more likely to be sold to CLOs. In the at-origination sample, a one standard deviation increase in the log of borrower assets (1.3) is associated with a 7.8 percentage point increase in the probability of securitization. In the portfolio sample, a one standard deviation increase in the log of loan size (1.3) is associated with a 12 percentage point increase in the probability of securitization. In the portfolio sample, various loan characteristics also predict securitization. LBO loans, debt repayment loans, and loans with higher spreads are more likely to be sold to CLOs.

[TABLE II]

III. Results

A. Hypothesis I: Does Securitization Predict Performance?

Since CLO collateral managers can observe ex-ante loan and borrower characteristics, the results of the previous section do not necessarily suggest an information asymmetry problem. In this section we test whether loans sold to CLOs are *unobservably* worse quality than loans sold to other institutions. To do this, we examine whether securitization predicts future performance, controlling for observables. The unit of observation for the analysis is a loan and performance is measured around the loan origination date, controlling for observables just prior to origination. We use three types of measures of borrower performance: (i) borrower accounting performance as measured by return on assets and Z-score, (ii) credit rating changes corresponding to senior secured debt (i.e., loan ratings), and (iii) changes in market-assessed probability of default as measured by changes in senior debt CDS spreads.³⁰

Syndicated loans are usually senior secured debt and in that sense multiple measures that we employ are good proxies for performance of syndicated loans and securitized loan facilities. When a company receives a syndicated loan, typically no other loan with the same seniority can be outstanding or issued later. Not all the facilities within a loan package are securitized (i.e., they can have different investors/lenders), but all the facilities are governed by the same loan contract, they receive the same priority in repayment, and they are covered by the same covenant structure.³¹ What affects the syndicated loan affects securitized facilities within the loan and vice versa.

Table III compares borrowers' accounting performance around the loan origination date depending on whether their loan was purchased by CLOs. Panel A focuses on return on assets (ROA) and Panel B focuses on Z-score; both are industry-median adjusted at the 2-digit SIC

³⁰ Unfortunately, we do not have secondary loan price data. Looking at defaults would severely narrow our sample. Recovery rate data is even scarcer.

³¹ The exception to this rule are second-lien (subordinated) facilities, however these represent a very small fraction of the syndicated loans. Moreover, term loan B, are never second-lien.

code level. Accounting performance is the dependent variable in each regression and the key explanatory variable is a dummy indicating whether the borrower's loan was sold to a CLO (*Securitized*).

The at-origination sample includes loans originated between 1997 and May 2007. The portfolio sample includes loans originated between January 2005 and July 2007. To make coefficients comparable between the two samples we include a dummy indicating origination in 2005-2007 for the at-origination sample regressions. For at-origination sample, *Securitized in 2005-2007* is essentially an interaction term reflecting the marginal effect for loans securitized between 2005 and 2007.

Turning to the ROA results first, the at-origination sample results consistently indicate that borrowers whose loans were sold to CLOs outperform borrowers in the control sample in the first two years after loan origination. In the first year, borrowers whose loans were sold to CLOs have industry adjusted ROA that is 1 percentage point (25%) higher than borrowers in the control sample on average; in the following year, their outperformance is larger by 2 percentage points (40% relative to the sample mean).³² The difference in the magnitude of coefficients between the first and second years should be interpreted carefully because of survivorship bias; companies that perform better are more likely to have ROA information available over a longer horizon.³³ In the portfolio sample, we find no significant differences in ROA performance between securitized and unsecuritized borrowers.

Turning to Z-score, we find no significant difference in performance between securitized and unsecuritized borrowers in either sample. In most specifications, the coefficient on the

³² We obtain similar results after limiting the sample to amended loans (results are omitted for brevity).

³³ The number of observations drops from 284 at time t to 274 at time $t+1$ to 254 at time $t+2$.

Securitized dummy is positive—indicating that securitized borrowers tend to have higher (better) post-origination Z-scores on average—but the coefficients are not statistically significant. The at-origination sample results show that borrowers who received loans in 2005-2007 tended to have worse Z-scores ex-post (as one would expect, given the onset of the crisis). However, borrowers whose loans were originated and securitized in those years did not perform any worse than their unsecuritized counterparts.

Overall, these tests provide no evidence that borrowers whose loans are purchased by CLOs underperform unsecuritized loan borrowers in terms of industry-adjusted ROA or Z-score. In fact, it appears that securitized loan borrowers actually outperform unsecuritized loan borrowers in terms of ROA for loans originated prior to the height of the securitization boom from 2005 through the first half of 2007.

[TABLE III]

Accounting measures are only available for publicly traded companies; however, a large fraction of securitized loans, and institutional loans in general, financed LBO transactions for which post-transaction accounting data does not exist. To address this issue, we next examine whether securitization can predict downgrades or upgrades in borrowers' credit ratings. Collateral credit ratings are central to the CLO evaluation models used by rating agencies which re-running the rating model at regular intervals after issuance. In addition, most CLOs include covenants that restrict the manager's asset allocation by credit rating.³⁴ Violating these covenants or failing a ratings test can trigger accelerated pay-down of the notes or require the manager to adjust the collateral pool through sales and purchases.³⁵

³⁴ Covenants may take the form of weighted-average rating requirements or basket-type allocation requirements, e.g., no more than 7% of the portfolio can be rated CCC+ or lower.

³⁵ Using credit rating as a measure of future performance potentially introduces a bias against finding downgrades for the securitized loans as CLO managers might pick borrowers that are likely to have stable ratings. However,

In Table IV, we look separately at upgrade and downgrade frequency and compare loans sold to CLOs with comparable unsecuritized loans. The data comes from Reuters Gold Sheets (compiled from S&P and Moody's) and covers the period between May 2001 and April 2010. Rating changes are measured based on a scale that combines Moody's and S&P senior secured ratings for the borrowers. Our rating scale incorporates credit watches so that 'downgrades' include placements onto negative credit watch and 'upgrades' include placements onto positive credit watch.³⁶

Controlling for loan and borrower characteristics at the event date, we find little support for the hypothesis that securitization predicts deterioration of credit ratings between 1997 and 2007. Although the sign of the coefficients suggests that downgrades over a 1-year horizon are more likely for securitized loans, these results are statistically insignificant. Over a 1-year horizon, upgrades are significantly more likely (except for the loans originated in 2005-2007, which are unlikely to be upgraded.) These results for the late period are also confirmed in the portfolio sample. The only evidence for securitized loans being worse quality is concentrated in the portfolio sample over the 2-year horizon. It is not clear however that this suggests a fundamental problem with securitization.

[TABLE IV]

Our third approach for measuring performance is to use CDS spreads. We obtain CDS data from Markit for the period between 2003 and June 2009. CDS quotes are not available for all of the loans in our sample, but they provide us with a forward-looking measure of borrower performance that is not restricted to publicly traded companies. CDS spreads measure the

ratings transitions are an important measure of loan performance and are highly correlated with other measures of performance.

³⁶ Letter ratings have been converted into a numerical scale (1=AAA, 2=AA+, 3=AA, etc.) where credit watch negative or positive counts at + or - 0.5, respectively. Borrowers are considered to be "downgraded" or "upgraded" when the numerical rating changes.

amount an investor would have to pay to insure against a company's default. As a company's default risk rises, its CDS spread increases. The advantage of CDS data over accounting data is that CDS contracts will often continue to trade if a company is taken private. A large fraction of the loans in our sample are LBO loans, so measuring borrower performance with accounting returns in a long-term window introduces a major constraint. Using CDS prices as a measure of performance reduces survivor bias; however, it limits the analysis to the largest companies in the sample because only large companies have liquid CDS contracts. We use daily quotes for the CDS corresponding to the 5-year insurance on senior debt. For each of the borrowers in our sample that have CDS data, we calculate the percentage change in the borrower's CDS spreads in a two year window after a given CLO acquired the loan. We use first and last CDS quotes in the event window to construct our measure.

The dependent variable in Table V is the percentage change in CDS spreads over a given window following the event date. The main explanatory variable is a dummy indicating whether the loan was sold to a CLO. Controlling for the borrower's credit rating and lagged CDS volatility (calculated in the six months prior to the beginning of the performance window), we find that borrowers with securitized loans experience significant improvement in credit quality one year after the securitization as compared to borrowers with unsecuritized loans. The average securitized loan borrower experiences an 84% decline in CDS spreads relative to the average unsecuritized loan borrower. This is economically large, given that the average percentage change in CDS spreads over this window is a 20% increase (the standard deviation is 99%). This result goes in the same direction as the downgrade result and rejects the hypothesis that securitized loans are riskier than unsecuritized loans. There is a weak indication of deterioration in

performance during the financial crisis. The results remain qualitatively the same when we limit the control sample to amended loans (results are available from the authors).

[TABLE V]

None of these performance measures is perfect, however taken together the three different measures provide a comprehensive picture of performance. To summarize, controlling for observables at the time of loan origination, securitized loans perform similarly to other institutional loans from the same lead arranger that are unsecuritized. The results indicate that agency problems in loan securitization may be less important than commonly believed. Despite the fact that CLOs are subject to additional layers of agency and adverse selection problems, their investment choices appear no different than the investment choices of other non-lending institutions (in terms of ex-post performance).³⁷

In both samples, we limit attention to loans that are likely candidates for securitization to assure that securitized and unsecuritized loans are comparable. However in the absence of a clear mechanism that explains the selection of loans into CLOs there might be some residual concern that the case and control subsets are not comparable. To address this issue in Table VI we explore a quasi-experimental setting, where we rely on temporary imbalances between institutional investors' demand for loans and loan origination. The argument is that CLOs face an investment constraint which they cannot smooth over time. We consider several proxies for the aggregate imbalance between supply and demand at the quarterly frequency: (i) CLO issuance (CLO fund flow); (ii) the change in the CLO pipeline, reflecting CLO volume that is not closed;

³⁷ The implied assumption behind our test is that there is no ex-ante unobservable difference between loans with and without CLO investors. To relax this assumption, in an unreported test, we also look within the sample of the loans with CLO investors and test whether, controlling for loan size, the number of CLOs in the syndicate or the share of the loan allocated to CLO investors predicts future loan performance. Because corporate loans are not fully securitized and are held by other investors including banks, we expect that larger CLO presence will be associated with worse quality loans. However, the intensity of CLO investment has no predictive power for performance in our regressions.

(iii) CLO issuance scaled by total term loan issuance; (iv) net cash flow into all institutional accounts investing in the corporate loan market; (v) net cash flow into institutional accounts scaled by total term loan issuance; and (vi) the net spread flexing down on institutional loans. An increase in any of these six variables represents an increase in either CLO demand or, more broadly, institutional demand. CLO flow data and institutional spread flexing is compiled using CLO calendars published by Reuters Gold Sheets. Institutional investors fund flow data is from S&P LCD Quarterly Review covering activity in the leveraged loan market. Total term loan issuance is constructed using DealScan.

Aggregate trends, in particular at the overall institutional level, are likely to be exogenous to the loan selection made by any individual CLO. The basic intuition is that an increase in aggregate demand for loans should push CLOs to invest in loans that would typically be held by other institutional investors. If those loans are of a better (or worse) quality, we would expect that the marginal loans picked by CLOs during these times would differ from the average quality of CLO collateral. (Given the exogenous nature of the demand proxies, the quality of the overall pool of potentially securitizable loans is likely to be unchanged.) Table VI replicates the three tests presented for the first hypothesis (Tables III-V) including the six alternative proxies for investors' demand for loans. In addition to controls used in the analysis in Tables III to V we include a fund-flow proxy and its interaction with the *Securitized* dummy; the interaction terms are the coefficients of interest. Coefficients on benchmark controls and fund-flow proxies are omitted for compactness of presentation.

Out of 54 coefficients of interest (interaction terms) eight are statistically significant, of which four indicate outperformance and four indicate underperformance. Two of the demand pressure measures, including net cash flows into institutional investors' accounts scaled by the

total term loan issuance, return no significant coefficients of interest. Overall, we interpret this evidence as consistent with the findings in Tables III through V—there is nothing marginally special about securitized loans—the marginal loans purchased under exogenous market pressure are of the same quality as the average. Our point is that loans with CLO investors are no different than loans held by other institutional investors. When temporarily higher loan demand by CLOs pushes them to invest in loans that would typically be held by other institutional investors, these loans are no better or worse than average securitized loan.

[TABLE VI]

B. Hypothesis II: When the CLO Underwriter is a Loan Arranger

In this section, we examine the performance of a subset of securitized loans for which we expect agency problems to be particularly pronounced. As discussed earlier, adverse selection problems should be particularly acute when banks engage on both sides of the loan market—originating loans and underwriting CLOs that purchase loans for collateral. This presents the greatest opportunity for a bank to sell poor quality loans to a CLO, because there is one less monitor of loan quality at the CLO level.

Since we cannot identify the seller of the loan in secondary market purchases, we limit the sample to primary market purchases for this part of the analysis (hence, we can only use the at-origination sample). This ensures that it is the arranging bank selling the loan to the CLO. We separate primary market purchases of loans by CLOs into two groups: cases where the loan arranger is the CLO underwriter (*same bank*) and cases where the loan arranger is different from the CLO underwriter (*different bank*). Then we compare post-origination borrower performance across the two types of loans, within a given CLO portfolio, using our three different performance measures. Note that in order to compare the performance of different loans within

the same CLO portfolio, we are using a loan-CLO dataset.³⁸ Given that our comparison is between two groups of securitized loans, it is unlikely that the results are driven by unobservable factors that might explain why some loans are securitized. Thus, by studying the intensive margin of securitization we alleviate some of the concerns about the endogeneity of the securitization decision itself. Additionally, we only include CLOs that have a clearly identified underwriter.

Table VII examines borrower accounting performance across the two types of loans. In Panel A, we regress borrowers' industry-adjusted ROA on a dummy indicating whether their loan was sold to any CLOs underwritten by the lead arranger (*same bank*), controlling for observable characteristics at the time the loan was sold. In Panel B, we use industry-adjusted Z-score as the dependent variable. These regressions, and all other regressions in this section, include CLO fixed effects so that we compare the performance of loans within a given CLO portfolio, depending on whether they were purchased from the CLO underwriter. Based on ROA, there is no evidence that *same bank* borrowers perform worse than other borrowers in the three years following loan origination. Interestingly, there is some evidence that they underperform based on Z-score. The coefficients on the *same bank* dummy are negative in all of the Z-score specifications. However, the coefficient is only significant in the third year following origination. This provides some suggestive evidence that borrowers whose loans are securitized in CLOs underwritten by their own lead banks tend to underperform.

[TABLE VII]

Table VIII examines whether securitization by the lead arranger predicts borrower downgrades or upgrades after securitization. Panel A presents the downgrade results and Panel B presents the upgrade results. In the year after origination, borrowers whose loans are sold to

³⁸ In all regressions, we include CLO fixed effects and cluster standard errors by loan.

CLOs underwritten by their lead arranger are significantly more likely to be downgraded and less likely to be upgraded than other borrowers. They are also less likely to be upgraded over a two year period.³⁹

In Table IX, we examine borrower performance using CDS spreads. Because of the small number of *same bank* loans with CDS data, we use concurrent CDS volatility as a control rather than lagged CDS volatility, which decreases the sample size. Controlling for the borrower's credit rating and CDS volatility, we find no significant difference in performance between the two sub-groups. However, the paucity of CDS data for *same bank* borrowers limits the power of this test.

[TABLES VIII & IX]

Our results provide some support for our second hypothesis and suggest that conflicts of interest may exist when banks that arrange loans also underwrite CLOs. Loans purchased from the CLO underwriter at syndication perform significantly worse than other loans (in the same CLO portfolio) purchased at syndication according to Z-score and credit ratings.

IV. Conclusion

Using a unique dataset on loans used as CLO collateral we examine whether securitization led to risky lending in the corporate loan market. Contrary to the adverse selection hypothesis, we find that loans sold to CLO investors were of similar quality as loans sold to other institutional investors. In fact, borrowers whose loans were sold to CLOs in some instances perform better than comparable unsecuritized loans. While we find some weak evidence of agency problems in a particular set of transactions—when a CLO purchases loans arranged by its

³⁹ They appear less likely to be downgraded over a two year period as well, but the result is not robust to including z-score in the regression.

underwriter—overall, there is *no* evidence that securitization led to risky lending in the CLO market.

Our results provide a broad insight about structured finance products: Adverse selection is not an inevitable consequence of securitization. The “skin in the game” on the part of the originating lender and distribution among investors may be sufficient to alleviate concerns about adverse selection in collateral pools. This supports risk retention requirements like those outlined in the Dodd-Frank Act. However, another important point that emerges from our paper is that there are vast differences in the securitization process, and the attendant incentive problems, across structured asset classes. To that extent, the one-size-fits-all approach to risk retention taken in the financial reform bill could miss its mark and have the unintended effect of limiting the supply of credit to firms.

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FIGURE 1
CLO issuance

The figure is compiled using weekly CLO calendars published by Reuters, Gold Sheets. Pipeline indicates CLOs that have not yet closed (i.e., been allocated to ultimate investor).

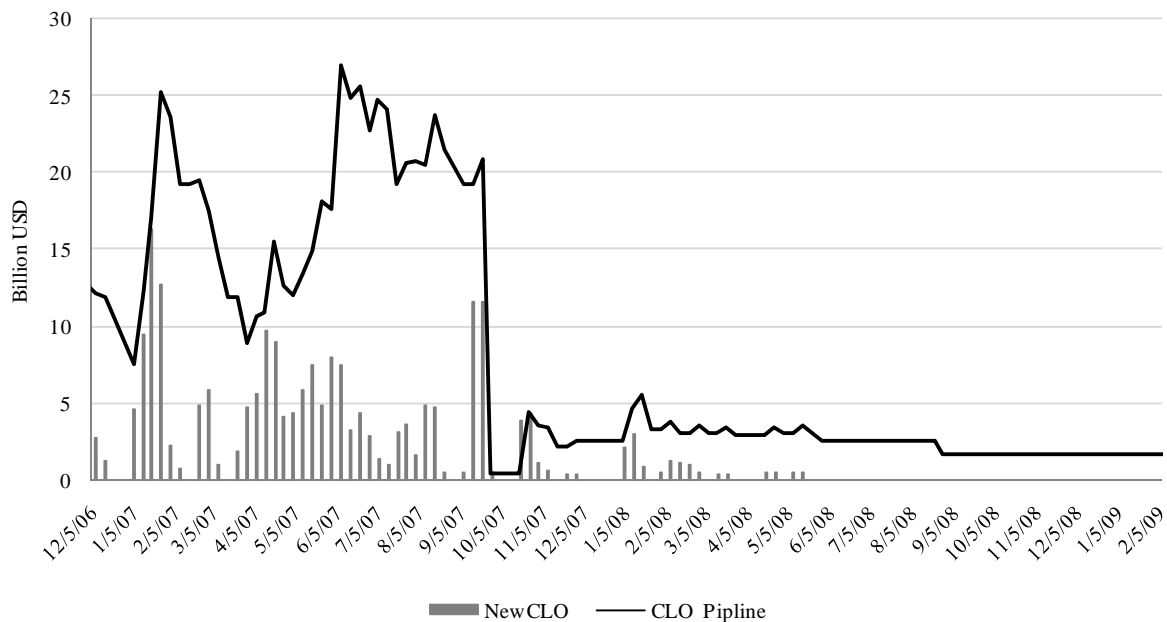
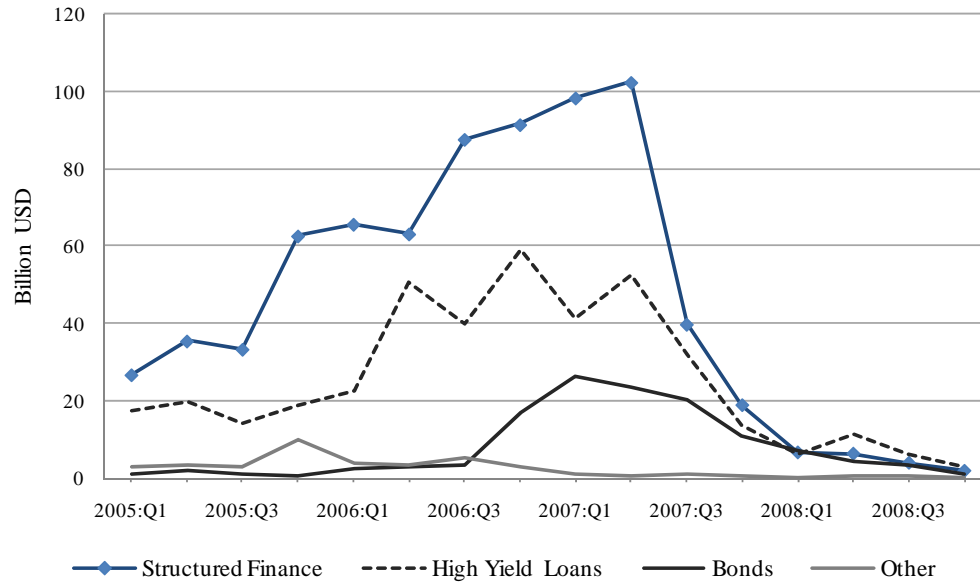


FIGURE 2
Quarterly global CDO issuance, 2005-2008

This figure is compiled using issuance data published by the Securities Industry and Financial Markets Association (SIFMA). Structured finance corresponds to global CDO issuance backed by collateral that is itself structured (e.g., residential and commercial mortgages-backed securities, asset-backed securities, credit default swaps, or other CDOs). For example, mortgages are usually pooled into pass-through securities before they are purchased by CDOs.



**FIGURE 3
CLO STRUCTURING**

This figure illustrates different steps involved in securitization of the corporate loans and highlights involvement of different agents (CLO manager, Underwriter, etc.) during the separate stages of the process.

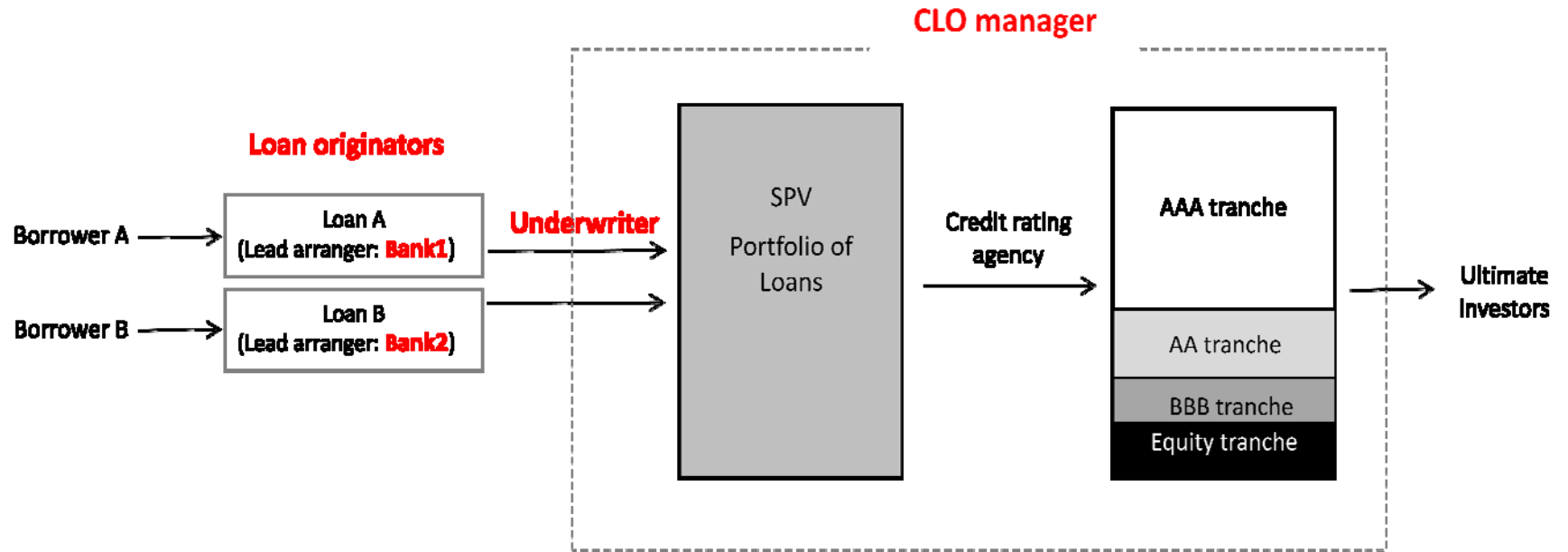


TABLE I
SUMMARY STATISTICS

This table reports summary statistics for two alternative samples. The at-origination sample includes loans originated between 1997 and May 2007. The portfolio sample includes loans originated between January 2005 and July 2007. Statistics are also split based on the two main hypotheses tested in the paper. *Same bank* (H2) indicates loans that appeared in a CLO underwritten by their lead arranger. Loan variables are constructed using DealScan. *Minimum assignment* is the minimum investment for syndicate participants. *Sales at close* is taken at the time the loan is closed. *Leverage (loan)* is the size of the loan divided by the borrower's sales at close. *All-in-drawn spread* is defined as total (fees and interest) annual spread paid over LIBOR for each dollar drawn down from the loan net of upfront fees. *Senior debt rating* and *Loan rating* come from Reuters Gold Sheets (compiled from S&P and Moody's). *Performance pricing* dummy indicates that the spread on the loan is tied to the firm's financial indicators. *LBO*, *M&A* and *Debt repayment* dummies indicate the purpose of the loan. In Panel B, financial data corresponds to the fiscal year that ended just prior to loan origination. Industries are measured at the 2-digit SIC code level and industry adjusted figures have the industry median subtracted for the corresponding fiscal year. Compustat variables: *Leverage* is Total Long-Term Debt plus Debt in Current Liabilities divided by Total Assets. *Loan size/Assets* is the loan size from DealScan divided by Compustat's Total Assets. *Interest coverage* is EBITDA divided by Interest and Related Expense. *Return on assets* (ROA) is EBITDA divided by Total Assets. *Q* is [Assets + Market Value of Equity – Book Value of Equity – Deferred Taxes]/Assets. *Z-score* is defined as in Altman (1968). In Panel B, the number of observations corresponds to the loans for which pre-origination assets is available. All dollar figures are measured in millions.

Panel A: Loan terms

		H1: Effects of securitization						H2: Effects of underwriting		
		At-origination sample			Portfolio sample			At-origination sample		
		Securitized:		Diff.	Securitized:		Diff.	Same bank:		Diff.
		Yes	No	<i>t</i> -stat	Yes	No	<i>t</i> -stat	Yes	No	<i>t</i> -stat
Number of loans		302	185		1,084	2,525		104	198	
Loan size	Mean	522	623	1.96	738	346	9.41	614	474	2.61
Minimum assignment	Mean	3.5	3.4	0.56	3.3	3.5	1.30	3.1	3.8	2.42
Sales at loan close	Mean	1,788	1,680	0.38	2,617	1,272	3.55	1,711	1,831	0.30
Leverage (loan)	Mean	0.72	0.87	1.65	1.09	1.02	0.95	0.70	0.73	0.35
All-in-drawn spread (bps)	Mean	304	313	0.81	288	278	1.82	289	313	1.62
All-in-drawn spread (bps)	Median	275	300		275	250		275	300	
Senior debt rating (borrower)	Mean	B+/B	B+/B	1.58	B+/B	B+	4.16	B+	B+/B	1.79
Senior debt rating (borrower)	Median	B+	B+		B	B		B+	B+	
Loan rating	Mean	BB-/B+	BB-/B+	1.29	B+	BB-/B+	3.30	BB-/B+	BB-/B+	0.91
Loan rating	25 th %	BB-	BB-		BB-	BB-		BB-	BB-	
Loan rating	Median	BB-/B+	BB-		B+	B+		BB-	B+	
Loan rating	75 th %	B+	B+		B	B		B+	B+	
Perf. pricing (dummy)	Mean	0.38	0.40	0.52	0.14	0.12	1.81	0.41	0.36	0.95
LBO loan (dummy)	Mean	0.44	0.29	3.35	0.61	0.39	12.5	0.45	0.43	0.38
M&A loan (dummy)	Mean	0.13	0.18	1.80	0.10	0.12	1.44	0.14	0.12	0.70
Debt repayment loan (dummy)	Mean	0.09	0.13	1.75	0.03	0.01	3.85	0.05	0.12	1.94

TABLE I – continued
Panel B: Borrower characteristics (sample matched to Compustat)

	At-origination sample							Portfolio sample						
	Securitized loans			Unsecuritized loans			Diff.	Securitized loans			Unsecuritized loans			Diff.
	(Obs.=220)			(Obs.=166)				(Obs.=996)			(Obs.=649)			
Median	Mean	SD	Median	Mean	SD	<i>t</i> -stat	Median	Mean	SD	Median	Mean	SD	<i>t</i> -stat	
Total assets	944	2,184	3,742	804	2,107	4,179	0.19	1,253	8,180	46,292	865	3,093	8,128	2.72
Net sales	782	2,022	3,406	611	1,642	2,790	1.17	1,110	4,405	15,641	694	2,407	8,057	3.55
Market cap.	576	1,144	2,206	603	1,314	2,075	0.66	1,048	2,326	3,568	798	2,518	5,696	0.50
Loan size/Assets	0.42	0.55	0.50	0.44	0.63	0.63	1.41	0.49	11.2	115	0.38	3.11	50.3	1.54
Leverage	0.51	0.53	0.36	0.42	0.44	0.29	2.70	0.43	0.56	1.53	0.37	0.48	1.24	0.92
Interest coverage	2.78	5.60	11.9	3.06	13.6	60.7	1.87	3.53	24.8	249	4.26	30.5	427	0.22
Return on assets	0.12	0.12	0.07	0.12	0.12	0.09	0.11	0.11	0.07	0.85	0.12	0.09	0.65	0.42
Z-score	2.12	4.15	14.7	2.26	9.70	40.0	1.54	2.63	13.7	115	2.95	19.2	113	0.60
Q	1.33	1.50	0.62	1.41	1.54	0.68	0.42	1.60	2.15	3.80	1.52	2.05	3.28	0.37
Return on equity	0.07	0.01	1.23	0.07	0.55	4.03	1.90	0.09	0.01	3.05	0.10	-0.02	2.33	0.14
PPE/Assets	0.44	0.52	0.36	0.42	0.50	0.34	0.73	0.44	0.53	0.43	0.46	0.54	0.41	0.50
Leverage (ind. adj.)	0.23	0.27	0.37	0.17	0.21	0.29	1.87	0.21	0.33	1.54	0.14	0.26	1.24	0.80
Interest coverage (ind. adj.)	-0.31	2.30	11.7	0.10	10.3	60.3	1.88	-0.89	20.0	250	-0.50	25.3	428	0.21
Return on assets (ind. adj.)	0.04	0.05	0.10	0.03	0.06	0.10	0.06	0.02	-0.02	0.86	0.02	0.01	0.65	0.48
Z-score (ind. adj.)	-0.92	0.71	14.8	-1.26	5.60	40.0	1.36	-1.28	9.41	115	-0.92	14.8	113	0.59

TABLE II

DETERMINANTS OF SECURITIZATION: LOAN AND BORROWER CHARACTERISTICS AT ORIGINATION

This table examines the impact of loan and borrower characteristics on the probability that a loan is sold to a CLO. The dependent variable is a dummy that equals 1 if a loan was sold to a CLO and 0 if not. The at-origination sample includes loans originated between 1997 and May 2007. The portfolio sample includes loans originated between January 2005 and July 2007. Borrower financials are taken from Compustat for the fiscal year ending prior to loan origination and industry adjustment is done at the 2-digit SIC level. The *Compustat* dummy equals 1 when a company has pre-origination data available in Compustat. Other variable definitions are the same as in Table II. For the regression analysis, the ratings were coded on a numeric scale where AAA is 1, AA+ is 2, etc. Year fixed effects control for the year of loan origination. The coefficients shown are marginal effects. Standard errors are clustered by loan lead arranger in all specifications. Significance at the 1%, 5%, and 10 % levels is indicated by ***, **, and *, respectively.

	<u>At-origination sample</u>				<u>Portfolio sample</u>							
	Coeff.	z-stat	Coeff.	z-stat	Coeff.	z-stat	Coeff.	z-stat				
Borrower characteristics:												
Senior debt rating	0.01	0.71		-0.00	0.14		0.01	1.40	0.01	1.12		
Log(Assets _{t-1})	0.06	2.39	**	0.03	0.85		-0.01	0.90	-0.01	1.28		
ROA _{t-1} (ind. adj.)	0.05	0.16		0.22	1.11		-0.07	1.59	-0.01	0.53		
Leverage _{t-1} (ind. adj.)	0.18	2.33	**	--			-0.04	1.64	*	--		
Coverage _{t-1} (ind. adj.)	-0.00	1.30		--			0.00	1.17		--		
Z-score _{t-1} (ind. adj.)	--	--		-0.00	2.93	***	--		-0.00	0.33		
Not rated (dummy)	-0.01	0.04		-0.18	0.75		0.06	0.58	0.05	0.39		
Compustat (dummy)	-0.49	4.20	***	-0.40	2.45	**	0.08	1.38	0.07	1.02		
Loan characteristics:												
Loan maturity	-0.03	1.28		-0.03	1.35		0.10	12.9	***	0.09	13.6	***
Log(Loan size)	-0.05	1.32		-0.02	0.70		0.09	9.39	***	0.09	9.35	***
All-in-drawn spread (bps)	-0.00	1.07		-0.00	1.02		0.00	4.99	***	0.00	5.43	***
Perf. pricing (dummy)	-0.07	1.56		-0.12	2.25	**	-0.02	0.50		-0.00	0.09	
LBO loan (dummy)	0.09	1.50		0.09	1.27		0.13	7.87	***	0.13	6.72	***
M&A loan (dummy)	0.02	0.26		0.03	0.34		0.03	0.79		0.02	0.79	
Debt repayment (dummy)	-0.08	1.12		-0.01	0.08		0.21	3.61	***	0.22	3.55	***
Year fixed effects	Yes			Yes			Yes			Yes		
Pseudo R-squared	0.11			0.13			0.18			0.10		
Observations	445			345			3,167			2,953		

TABLE III

DOES SECURITIZATION PREDICT FUTURE PERFORMANCE? (H1): RETURN ON ASSETS

This table compares the ex-post accounting performance of borrowers whose loans were securitized and borrowers whose loans were not securitized. In Panel A, the dependent variable is industry-adjusted ROA. In Panel B, the dependent variable is industry-adjusted Z-score (lower Z-score corresponds to worse credit quality). The event year (t) is the year of loan origination. Each observation in the analysis is an individual loan. The at-origination sample includes loans originated between 1997 and May 2007. The portfolio sample includes loans originated between January 2005 and July 2007. The 2005-2007 dummy equals one for loans originated between 2005 and 2007, zero otherwise. Securitized in 2005-2007 is essentially an interaction term reflecting the marginal effect for loans securitized between 2005 and 2007. Financial data comes from Compustat and goes through June 2009. Variable definitions are the same as in Table II. Standard errors are clustered by loan lead arranger in all specifications. Significance at the 1, 5, and 10 percent levels is indicated by ***, **, and *, respectively.

Panel A: Return on assets

Dependent variable:	At-origination sample						Portfolio sample					
	ROA _t (ind. adj.)		ROA _{t+1} (ind. adj.)		ROA _{t+2} (ind. adj.)		ROA _t (ind. adj.)		ROA _{t+1} (ind. adj.)		ROA _{t+2} (ind. adj.)	
	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat
Securitized (dummy)	0.01	3.55 ***	0.02	2.72 ***	0.02	1.33	--	--	--	--	--	--
2005-2007 (dummy)	0.01	0.84	0.01	0.64	-0.01	0.66	--	--	--	--	--	--
Securitized in 2005-2007	-0.02	1.14	-0.01	0.78	0.02	0.71	-0.00	0.28	0.01	0.81	-0.01	0.60
Borrower characteristics:												
Senior debt rating	0.00	0.75	0.00	1.48	0.00	1.20	0.00	0.32	-0.00	0.20	-0.00	0.10
Log(Assets _{t-1})	0.01	2.45 **	0.01	1.36	0.01	1.69 *	0.00	1.37	0.00	0.94	0.01	1.75 *
ROA _{t-1} (ind. adj.)	0.89	26.2 ***	0.89	16.5 ***	0.85	10.5 ***	0.88	15.5 ***	0.80	12.2 ***	0.80	10.5 ***
Leverage _{t-1} (ind. adj.)	0.02	1.83 *	-0.00	0.27	0.02	1.35	0.01	1.01	0.03	1.55	0.03	1.46
Coverage _{t-1} (ind. adj.)	0.00	0.26	0.00	1.69 *	0.00	3.81 ***	-0.00	1.50	-0.00	0.79	-0.00	0.78
Loan characteristics:												
Loan maturity	0.00	0.49	0.00	1.75 *	0.00	1.99 **	-0.00	0.79	-0.00	0.51	0.00	0.44
Log(Loan size)	0.00	0.21	0.00	0.67	0.00	0.58	-0.01	3.21 ***	-0.01	2.82 ***	-0.02	2.86 ***
All-in-drawn spread	-0.00	1.82 *	-0.00	1.27	-0.00	0.24	-0.00	0.78	-0.00	0.46	-0.00	1.25
Perf. pricing (dummy)	0.00	0.46	0.00	0.37	-0.01	1.67 *	-0.00	0.42	0.00	0.91	-0.00	0.34
LBO loan (dummy)	-0.01	1.69 *	-0.00	0.15	-0.00	0.56	-0.01	2.18 **	-0.01	1.45	0.00	0.32
M&A loan (dummy)	-0.03	4.28 ***	-0.02	1.75 *	-0.03	3.92 ***	-0.03	4.04 ***	-0.02	2.96 ***	-0.02	1.61
Debt repayment (dummy)	0.01	0.99	-0.00	0.26	-0.00	0.45	-0.01	0.94	-0.01	1.23	0.01	0.51
Year fixed effects	No		No		No		Yes		Yes		Yes	
Adjusted R-squared	0.79		0.71		0.57		0.82		0.70		0.62	
Observations	282		274		254		508		480		338	

Panel B: Z-score

Dependent variable:	At-origination sample						Portfolio sample					
	Z-score _t (ind. adj.)		Z-score _{t+1} (ind. adj.)		Z-score _{t+2} (ind. adj.)		Z-score _t (ind. adj.)		Z-score _{t+1} (ind. adj.)		Z-score _{t+2} (ind. adj.)	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Securitized (dummy)	0.12	0.31	0.30	0.67	-2.50	0.98	--	--	--	--	--	--
2005-2007 (dummy)	-1.43	1.79 *	-1.45	2.17 **	-5.86	1.23	--	--	--	--	--	--
Securitized in 2005-2007	0.72	0.85	1.74	1.57	3.31	0.94	0.27	1.04	0.39	1.20	-0.22	0.56
Borrower characteristics:												
Senior debt rating	-0.23	3.63 ***	-0.21	3.18 ***	0.12	0.55	-0.48	2.90 ***	-0.83	2.07 **	-0.32	2.20 **
Log(Assets _{t-1})	-0.14	0.88	-0.29	0.84	0.45	0.85	0.73	3.06 ***	1.14	2.61 ***	0.31	1.27
ROA _{t-1} (ind. adj.)	-3.09	3.56 ***	-2.06	1.08	-8.47	1.03	2.73	1.84 *	5.09	3.06 ***	3.75	2.35 **
Z-score _{t-1} (ind. adj.)	0.01	1.97 **	0.01	2.04 **	-0.00	0.03	0.01	1.51	0.03	1.31	0.02	1.66 *
Loan characteristics:												
Loan maturity	-0.08	1.03	-0.17	0.67	-0.08	0.38	-0.13	0.88	-0.39	3.10 ***	-0.37	2.08 **
Log(Loan size)	0.08	0.49	-0.37	1.04	-3.69	1.21	-0.68	3.41 ***	-0.76	1.44	0.01	0.08
All-in-drawn spread	-0.00	1.59	-0.00	3.32 ***	-0.01	1.63	-0.00	0.62	-0.00	0.48	-0.00	2.21 **
Perf. pricing (dummy)	0.50	1.91 *	0.38	0.96	1.91	1.19	0.21	0.40	-0.53	0.60	-0.41	0.89
LBO loan (dummy)	-0.14	0.44	0.73	1.26	-0.48	0.25	0.64	1.62	0.15	0.31	0.76	1.43
M&A loan (dummy)	-0.61	1.27	-0.61	1.05	-0.13	0.22	-1.07	2.33 **	-1.78	2.04 **	-0.82	1.35
Debt repayment (dummy)	0.42	1.25	0.25	0.50	-0.95	0.54	0.30	1.06	0.38	0.44	1.38	1.63
Year fixed effects	No		No		No		Yes		Yes		Yes	
Adjusted R-squared	0.21		0.18		0.12		0.23		0.27		0.42	
Observations	202		189		176		371		350		238	

TABLE IV

DOES SECURITIZATION PREDICT FUTURE PERFORMANCE? (H1): RATING CHANGES

This table compares ratings downgrades and upgrades for securitized loans and unsecuritized loans. The dependent variable in the regressions is a dummy that indicates whether a loan was downgraded or upgraded in a given period after loan origination. Ratings data comes from Reuters Gold Sheets (compiled from S&P and Moody's) and covers the period from May 2001 through April 2010. The at-origination sample includes loans originated between 1997 and May 2007. The portfolio sample includes loans originated between January 2005 and July 2007. The 2005-2007 dummy equals one for loans originated between 2005 and 2007, zero otherwise. Securitized in 2005-2007 is essentially an interaction term reflecting the marginal effect for loans securitized between 2005 and 2007. Specifications with the interaction term are estimated using linear model. Variable definitions are the same as in Table II. Loan purpose fixed effects include *LBO*, *M&A* and *Debt repayment* dummies. The coefficients are marginal effects. Standard errors are clustered by loan lead arranger. Significance at the 1%, 5%, and 10 % levels is indicated by ***, **, and *, respectively.

	At-origination sample								Portfolio sample													
	1-year horizon				2-year horizon				1-year horizon				2-year horizon									
	Coeff	z-stat	Coeff	z-stat	Coef	z-stat	Coeff	z-stat	Coeff.	z-stat	Coeff.	z-stat	Coeff.	z-stat	Coeff	z-stat						
Panel A: Downgrades																						
Securitized (dummy)	0.05	0.66	0.03	0.45	0.02	0.29	0.01	0.12	--	--	--	--	--	--	--	--						
2005-2007 (dummy)	-0.16	1.24	-0.09	0.67	-0.22	1.11	-0.24	1.20	--	--	--	--	--	--	--	--						
Securit. in 2005-2007	0.18	0.67	0.13	0.63	0.06	0.25	-0.04	0.18	0.02	0.57	0.03	0.73	0.15	3.02	***	0.16	2.74	***				
Borrower characteristics:																						
Senior debt rating	0.03	1.42	0.04	1.86	*	0.01	0.80	0.03	1.51	0.00	0.56	0.01	0.97	0.01	0.57	0.01	0.42					
Log(Assets _{t-1})	0.06	1.22	0.07	2.53	**	0.01	0.24	-0.01	0.16	0.01	0.63	0.02	1.25	-0.02	0.62	-0.03	1.06					
ROA _{t-1} (ind. adj.)	-1.35	2.39	**	0.26	0.57	-1.67	2.66	***	-0.78	0.83	0.33	1.88	*	0.27	1.26	-0.07	0.32	-0.18	0.92			
Leverage _{t-1} (ind. adj.)	-0.03	0.17	--	--	-0.10	0.43	--	--	-0.07	0.74	--	--	-0.07	0.89	--	--	--					
Coverage _{t-1} (ind. adj.)	0.01	2.09	**	--	0.01	1.86	*	--	-0.00	0.07	--	--	-0.00	0.51	--	--	--					
Z-score _{t-1} (ind. adj.)	--	--	-0.00	1.59	--	--	-0.00	0.51	--	--	-0.00	3.46	***	--	--	-0.00	0.95					
Loan characteristics:																						
Loan maturity	-0.02	1.01	-0.02	0.64	-0.04	2.11	**	-0.06	1.99	**	-0.04	2.24	**	-0.03	2.31	**	-0.05	2.20	**	-0.05	1.68	*
Log(Loan size)	0.04	0.65	-0.07	1.34	0.00	0.01	-0.06	0.85	0.02	0.99	0.01	0.72	0.05	1.59	0.06	2.13	**					
All-in-drawn spread	0.00	1.46	0.00	0.04	-0.00	0.45	-0.00	1.89	*	0.00	1.89	*	0.00	2.33	**	0.00	0.98	0.00	0.63			
Perf. pricing	-0.05	0.58	-0.12	2.00	**	-0.04	0.52	-0.16	1.65	*	-0.11	2.94	***	-0.06	1.60	-0.09	2.01	**	-0.04	0.86		
Fixed effects:																						
Loan purpose	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes					
Year	No		No		No		No		Yes		Yes		Yes		Yes		Yes					
Industry	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes					
Pseudo R-squared	0.26		0.24		0.18		0.21		0.23		0.27		0.13		0.11							
Observations	147		105		182		137		293		194		366		258							

TABLE IV – *continued*

	At-origination sample								Portfolio sample							
	1-year horizon				2-year horizon				1-year horizon				2-year horizon			
	Coeff	z-stat	Coeff	z-stat	Coef	z-stat	Coeff	z-stat	Coeff.	z-stat	Coeff.	z-stat	Coeff.	z-stat	Coeff	z-stat
Panel B: Upgrades																
Securitized (dummy)	0.10	1.70 *	0.05	1.01	0.05	0.67	0.11	1.65 *	--	--	--	--	--	--	--	--
2005-2007 (dummy)	0.03	0.30	-0.06	0.90	0.14	0.72	0.34	1.25	--	--	--	--	--	--	--	--
Securit. in 2005-2007	-0.11	2.73 ***	-0.02	0.25	-0.21	1.91 *	-0.22	1.79 *	-0.02	0.50	-0.08	2.30 **	0.01	0.18	-0.07	1.04
Borrower characteristics:																
Senior debt rating	0.03	4.13 ***	0.02	2.18 **	0.01	0.35	0.01	0.58	0.01	1.07	0.02	1.69 *	0.00	0.40	0.01	0.59
Log(Assets _{t-1})	0.00	0.09	0.01	0.46	-0.04	1.00	-0.04	0.61	0.03	1.84 *	0.04	1.76 *	0.04	1.41	0.03	1.50
ROA _{t-1} (ind. adj.)	1.03	3.00 ***	0.42	2.23 **	0.06	0.12	1.60	2.26 **	-0.15	0.96	-0.04	0.27	-0.71	2.50 **	-0.48	1.99
Leverage _{t-1} (ind. adj.)	0.03	0.34	--	--	0.21	1.47	--	--	0.01	0.12	--	--	0.06	0.47	--	--
Coverage _{t-1} (ind. adj.)	-0.01	1.37	--	--	0.00	0.47	--	--	0.00	0.44	--	--	0.00	1.60	--	--
Z-score _{t-1} (ind. adj.)	--	--	-0.00	2.07 **	--	--	-0.00	1.63	--	--	0.00	2.04 **	--	--	0.00	1.74
Loan characteristics:																
Loan maturity	-0.02	1.09	0.01	0.57	-0.01	0.53	-0.00	0.07	-0.02	1.26	-0.02	0.78	-0.03	1.11	-0.04	1.02
Log(Loan size)	0.07	1.15	0.01	0.26	0.09	1.28	0.07	0.89	0.01	0.42	-0.00	0.14	0.01	0.46	0.03	0.75
All-in-drawn spread	-0.00	1.05	-0.00	1.04	0.00	0.89	0.00	0.87	-0.00	0.45	-0.00	0.70	-0.00	0.43	-0.00	0.67
Perf. pricing	0.20	6.43 ***	0.09	1.99 **	0.20	4.50 ***	0.10	1.35	0.04	1.08	0.05	1.15	-0.00	0.02	-0.04	0.72
Fixed effects:																
Loan purpose	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Year	No		No		No		No		Yes		Yes		Yes		Yes	
Industry	Yes		No		Yes		Yes		Yes		Yes		Yes		Yes	
Pseudo R-squared	0.35		0.19		0.19		0.22		0.14		0.13		0.09		0.09	
Observations	116		154		181		118		314		241		377		274	

TABLE V

DOES SECURITIZATION PREDICT FUTURE PERFORMANCE? (H1): CDS SPREAD

This table compares the change in credit default swaps (CDS) spreads for securitized loan borrowers with that of unsecuritized borrowers. The dependent variable is the percentage change in a borrower's CDS spread in a given period after the loan origination. CDS data comes from Markit and corresponds to 5-year contracts. CDS quotes are available for the period 2003 through June 2009. The at-origination sample includes loans originated between 1997 and May 2007. The portfolio sample includes loans originated between January 2005 and July 2007. The 2005-2007 dummy equals one for loans originated between 2005 and 2007, zero otherwise. Securitized in 2005-2007 is essentially an interaction term reflecting the marginal effect for loans securitized between 2005 and 2007. Loan purpose fixed effects include *LBO*, *M&A* and *Debt repayment* dummies. In some specification the fixed effects are removed due to limited data availability. Significance at the 1%, 5%, and 10 % levels is indicated by ***, **, and *, respectively.

	At-origination sample				Portfolio sample				
	0-12 months post-event		13-24 months post-event		0-12 months post-event		13-24 months post-event		
	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	
Securitized (dummy)	-0.84	2.72 ***	0.55	1.44	--		--		
2005-2007 (dummy)	-0.32	0.48	0.04	0.09	--		--		
Securitized in 2005-2007	1.08	1.44	-0.34	0.73	0.26	1.84 *	-0.04	0.16	
Borrower characteristics:									
Senior debt rating	-0.25	1.08	0.07	1.01	0.07	1.92 *	-0.17	2.70 ***	
Realized CDS vol.	0.01	2.63 ***	-0.00	1.08	0.00	2.22 **	0.01	6.07 ***	
Loan characteristics:									
Loan maturity	-0.43	1.60	0.21	1.76 *	-0.04	0.43	-0.01	0.11	
Log(Loan size)	-0.56	1.30	-0.03	0.24	-0.04	0.65	0.10	0.83	
All-in-drawn spread	-0.00	1.61	0.00	2.10 **	-0.00	1.80 *	-0.00	0.40	
Perf. Pricing	0.23	0.45	-0.45	1.52	0.29	2.03 **	0.40	3.65 ***	
Fixed effects:									
Loan purpose	Yes		Yes		Yes		Yes		
Year	No		No		Yes		Yes		
Industry	No		Yes		Yes		Yes		
Adjusted <i>R</i> -squared	0.71		0.99		0.68		0.71		
Observations	23		44		158		171		

TABLE VI
LOAN SELECTION UNDER FUND FLOW PRESSURE (QUASI-EXPERIMENT)

This table seeks to address a potential selection bias. We replicated results in Tables III-V using six alternative proxies for investors' demand for loans. The basic idea is to look at the marginal quality of loans securitized in periods when the demand for loans is generally high. In addition to controls used in the analysis in Tables III to V we include a fund-flow proxy and its interaction with the *Securitized* dummy. Coefficients on benchmark controls and fund-flow proxies are omitted for compactness of presentation. For ratings downgrades and upgrades we report the specification that includes *Z-score*. ΔCLO pipeline (billions) is the accumulation of CLOs in the pipeline, i.e., excess demand for loans by CLOs. *Net price flexing* is the net percentage of loans for which spread flexed down; a positive number indicates excess of demand for loans by institutional investors (CLOs included). Fund-flow data is at quarterly frequency. The analysis is done using the at-origination sample that includes loans originated between 1997 and May 2007. Significance at the 1%, 5%, and 10 % levels is indicated by ***, **, and *, respectively.

Table	Dependent var.	Explanatory var.	Fund-flow proxy (investors' demand for loans)											
			CLO issuance		ΔCLO pipeline		CLO fund flow/ Term loan issuance		Net cash flows into institutional accounts		Net cash flows into inst./ Term loan issuance		Net price flexing (%)	
			Coeff.	Stat	Coeff.	Stat	Coeff.	Stat	Coeff.	Stat	Coeff.	Stat	Coeff.	Stat
Tbl. III	ROA _t	Securitized	0.005	0.53	0.000	0.04	-0.01	0.40	0.003	0.51	0.002	0.43	-0.020	1.51
Tbl. III	ROA _t	Securitized*Fund fl.	-0.001	0.59	0.004	1.73	0.08	0.46	-0.001	0.36	-0.04	0.41	0.120	2.13 **
Tbl. III	ROA _{t+1}	Securitized	0.020	3.00 ***	0.010	1.64	0.04	1.95 *	0.010	1.96 **	0.01	2.02 **	-0.030	0.83
Tbl. III	ROA _{t+1}	Securitized*Fund fl.	-0.001	1.52	0.001	0.23	-0.26	1.47	-0.001	0.68	-0.11	0.98	0.150	1.42
Tbl. III	ROA _{t+2}	Securitized	0.008	0.87	0.020	1.66 *	0.03	1.40	0.020	1.62	0.02	1.66 *	-0.020	0.41
Tbl. III	ROA _{t+2}	Securitized*Fund fl.	0.002	1.40	0.002	0.55	-0.13	0.69	-0.003	1.00	-0.21	1.18	0.230	1.74 *
Tbl. III	Z-score _t	Securitized	0.36	0.61	0.20	0.42	1.32	2.00 **	0.22	0.44	0.26	0.53	0.66	0.73
Tbl. III	Z-score _t	Securitized*Fund fl.	-0.02	0.42	-0.02	0.16	-11.6	1.74 *	0.00	0.01	-1.57	0.51	-0.92	0.18
Tbl. III	Z-score _{t+1}	Securitized	0.40	0.54	0.48	0.80	1.45	1.56	0.68	1.02	0.63	0.99	0.46	0.25
Tbl. III	Z-score _{t+1}	Securitized*Fund fl.	0.02	0.55	-0.02	0.11	-9.25	1.13	-0.02	0.28	-0.16	0.03	3.21	0.43
Tbl. III	Z-score _{t+2}	Securitized	-3.83	1.02	-2.58	0.97	-6.82	0.78	-2.43	0.82	-2.64	0.91	-0.66	0.21
Tbl. III	Z-score _{t+2}	Securitized*Fund fl.	0.26	0.96	0.47	0.55	56.6	0.71	0.32	0.50	32.8	0.69	3.64	0.26
Tbl. IV	Downgr. (1-y.)	Securitized	0.001	0.01	0.060	1.02	0.36	2.07 **	0.140	1.61	0.13	1.55	0.470	0.78
Tbl. IV	Downgr. (1-y.)	Securitized*Fund fl.	0.010	0.66	0.010	0.14	-3.05	1.71 *	-0.030	1.43	-1.49	1.19	-1.080	0.47
Tbl. IV	Downgr. (2-y.)	Securitized	-0.060	0.45	0.010	0.06	0.30	1.03	0.050	0.33	0.04	0.24	0.570	1.08
Tbl. IV	Downgr. (2-y.)	Securitized*Fund fl.	0.010	0.39	-0.040	0.78	-3.41	1.60	-0.040	1.24	-1.57	1.04	-1.570	0.92
Tbl. IV	Upgr. (1-y.)	Securitized	0.090	0.79	0.040	0.40	0.03	0.23	0.060	0.64	0.06	0.69	0.140	0.51
Tbl. IV	Upgr. (1-y.)	Securitized*Fund fl.	-0.010	0.99	0.010	0.70	0.04	0.04	-0.010	1.22	-0.84	1.10	-0.110	0.10
Tbl. IV	Upgr. (2-y.)	Securitized	0.150	1.06	0.040	0.50	0.01	0.05	0.120	1.27	0.08	0.92	0.250	0.58
Tbl. IV	Upgr. (2-y.)	Securitized*Fund fl.	-0.020	1.12	0.020	0.62	0.48	0.31	-0.030	1.95 *	-0.80	0.54	-1.800	1.88 *
Tbl. V	ΔCDS (1-12 m.)	Securitized	-1.220	1.21	-0.370	0.39	-2.87	0.76	-0.004	0.01	-1.15	0.12	0.010	0.01
Tbl. V	ΔCDS (1-12 m.)	Securitized*Fund fl.	0.130	1.07	0.300	1.65 *	25.4	0.56	0.110	0.93	0.79	0.14	-2.180	0.35
Tbl. V	ΔCDS (13-24 m.)	Securitized	1.320	1.59	-0.040	0.04	0.27	0.13	0.290	0.42	0.21	0.31	-1.150	0.34
Tbl. V	ΔCDS (13-24 m.)	Securitized*Fund fl.	-0.140	1.58	-0.450	1.18	2.28	0.12	0.040	0.62	4.18	0.91	0.380	0.12

TABLE VII

DOES SECURITIZATION BY THE ORIGINATOR PREDICT FUTURE PERFORMANCE? (H2): RETURN ON ASSETS

This table compares the accounting performance of borrowers whose loans were sold to a CLO underwritten by their lead arranger with other borrowers whose loans were securitized. The sample only includes securitized loans. Each observation is a loan-CLO pair and performance is measured in a window following the loan origination date. The sample is limited to loans purchased by CLOs in the primary market. All specifications include CLO fixed effects. In Panel A, the dependent variable is industry-adjusted return on assets. In Panel B, the dependent variable is industry-adjusted Z-score (lower Z-score corresponds to worse credit quality). The focus is on the *Same bank* dummy which is equal to 1 when a loan appears in a CLO underwritten by its lead arranger and 0 otherwise. Financial data comes from Compustat and goes through June 2009. Standard errors are clustered by loan. Variable definitions are the same as in Table II. Significance at the 1%, 5%, and 10 % levels is indicated by ***, **, and *, respectively.

<i>Panel A: Return on assets</i>									
Dependent variable:	At-origination sample								
	ROA _t (ind. adj.)		ROA _{t+1} (ind. adj.)		ROA _{t+2} (ind. adj.)				
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat			
Same bank (dummy)	-0.00	0.44	-0.00	0.53	0.01	0.71			
Borrower characteristics:									
Senior debt rating	-0.00	0.69	-0.00	0.57	-0.01	1.56			
Log(Assets _{t-1})	0.01	2.10	**	0.01	1.72	*	0.01	0.96	
ROA _{t-1} (ind. adj.)	0.99	21.9	***	0.98	17.5	***	1.02	13.0	***
Leverage _{t-1} (ind. adj.)	0.02	1.51		0.01	0.65	**	0.05	1.50	
Coverage _{t-1} (ind. adj.)	-0.00	2.97	***	-0.00	1.69	*	-0.00	2.30	**
Loan characteristics:									
Loan maturity	-0.00	0.17		0.00	1.95	*	0.01	3.04	***
Log(Loan size)	-0.00	0.60		-0.00	0.42		0.01	1.05	
All-in-drawn spread	0.00	1.70	*	0.00	1.66	*	0.00	2.23	**
Perf. pricing (dummy)	0.00	0.22		0.01	1.23		0.01	0.74	
LBO loan (dummy)	0.02	1.89	*	0.01	0.55		-0.00	0.27	
M&A loan (dummy)	0.00	0.20		-0.00	0.20		-0.02	1.18	
Debt repayment	0.04	3.38	***	0.02	1.49		0.01	0.59	
Fixed effects:									
CLO	Yes			Yes			Yes		
Year	Yes			Yes			Yes		
Adjusted R-squared	0.91			0.87			0.83		
Observations	1,636			1,619			1,552		

Panel B: Z-score

Dependent variable:	At-origination sample					
	Z-score _t (ind. adj.)		Z-score _{t+1} (ind. adj.)		Z-score _{t+2} (ind. adj.)	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Same bank (dummy)	-0.42	1.55	-0.50	1.54	-0.63	1.75 *
Borrower characteristics:						
Senior debt rating	-0.38	4.49 ***	-0.37	3.51 ***	-0.36	2.78 ***
Log(Assets _{t-1})	-0.10	0.35	-0.30	0.92	-0.37	0.86
ROA _{t-1} (ind. adj.)	-9.26	5.69 ***	-4.60	2.01 **	-5.61	2.51 **
Z-score _{t-1} (ind. adj.)	0.02	3.52 ***	0.01	1.61	0.00	0.26
Loan characteristics:						
Loan maturity	-0.07	0.64	-0.03	0.23	0.07	0.49
Log(Loan size)	0.21	0.64	0.08	0.18	0.13	0.26
All-in-drawn spread	-0.00	0.17	-0.00	0.70	-0.00	0.27
Perf. pricing (dummy)	0.88	1.87 *	0.84	1.47	1.03	1.46
LBO loan (dummy)	-1.35	2.35 **	-1.19	1.38	-1.72	1.63
M&A loan (dummy)	-0.94	1.70 *	-1.04	1.35	-1.63	2.01 **
Debt repayment	0.37	0.64	0.73	0.81	0.19	0.22
Fixed effects:						
CLO	Yes		Yes		Yes	
Year	Yes		Yes		Yes	
Adjusted R-squared	0.67		0.52		0.53	
Observations	1,156		1,082		995	

TABLE VIII

DOES SECURITIZATION BY THE ORIGINATOR PREDICT FUTURE PERFORMANCE? (H2): RATING CHANGES

This table compares the post-origination downgrade and upgrade frequency of borrowers whose loans were sold to a CLO underwritten by their lead arranger with other borrowers whose loans were securitized. The sample only includes securitized loans. The dependent variable in the regressions is a dummy that indicates whether a loan was downgraded or upgraded in a given period after the loan origination date. The focus is on the *Same bank* dummy equal to 1 when a loan appears in a CLO underwritten by its lead arranger and 0 otherwise. Ratings data comes from Reuters Gold Sheets (compiled from S&P and Moody's) and covers the period from May 2001 through April 2010. Standard errors are clustered by loan. Variable definitions are the same as in Table II. Loan purpose fixed effects include *LBO*, *M&A* and *Debt repayment* dummies. Significance at the 1%, 5%, and 10 % levels is indicated by ***, **, and *, respectively.

	At-origination sample										
	1-year horizon					2-year horizon					
	Coeff.	z-stat		Coeff.	z-stat	Coeff.	z-stat	Coeff.	z-stat		
Panel A: Downgrades											
Same bank (dummy)	0.15	1.95	*	0.16	3.48	***	-0.20	2.02	**	0.06	0.41
Borrower characteristics:											
Senior debt rating	0.17	4.36	***	0.01	3.19	***	-0.09	2.02	**	0.04	0.82
Log(Assets _{t-1})	0.19	2.25	**	-0.00	0.02		0.21	1.82	*	0.02	0.14
ROA _{t-1} (ind. adj.)	-2.54	2.94	***	0.05	1.24		-2.11	1.55		-0.53	0.28
Leverage _{t-1} (ind. adj.)	-0.50	1.50		--			-0.59	1.28		--	
Coverage _{t-1} (ind. adj.)	0.01	0.77		--			0.01	0.62		--	
Z-score _{t-1} (ind. adj.)	--			-0.00	1.37		--			0.00	0.05
Loan characteristics:											
Loan maturity	0.13	3.44	***	0.01	2.25	**	-0.13	2.31	**	0.03	0.57
Log(Loan size)	-0.09	0.77		-0.03	2.78	***	-0.38	2.47	**	-0.52	2.98
All-in-drawn spread (bps)	0.00	2.04	**	-0.00	0.11		-0.00	0.42		-0.00	1.13
Perf. Pricing (dummy)	-0.23	2.98	***	-0.08	4.18	***	-0.49	3.57	***	-0.68	5.34
Fixed effects:											
Loan purpose	Yes			Yes			Yes			Yes	
CLO	Yes			Yes			Yes			Yes	
Industry	Yes			No			Yes			Yes	
Pseudo R-squared	0.65			0.52			0.48			0.61	
Observations	386			504			692			540	
Panel B: Upgrades											
Same bank (dummy)	-0.00	1.23		-0.19	2.71	***	-0.03	0.38		-0.23	2.50
Borrower characteristics:											
Senior debt rating	0.00	3.56	***	-0.00	0.00		0.05	1.27		-0.03	0.58
Log(Assets _{t-1})	-0.00	1.74	*	-0.11	1.09		-0.07	0.63		0.15	0.83
ROA _{t-1} (ind. adj.)	-0.01	3.21	***	-0.45	0.57		-0.06	0.05		3.76	2.44
Leverage _{t-1} (ind. adj.)	-0.00	1.52		--			-0.02	0.07		--	
Coverage _{t-1} (ind. adj.)	-0.00	2.31		--			-0.01	1.26		--	
Z-score _{t-1} (ind. adj.)	--			-0.01	0.54		--			-0.22	3.39
Loan characteristics:											
Loan maturity	-0.00	1.13		0.03	0.69		-0.03	0.77		-0.04	0.84
Log(Loan size)	-0.00	2.70	***	0.15	1.17		-0.08	0.59		0.19	0.89
All-in-drawn spread (bps)	-0.00	0.02		-0.00	0.32		0.00	0.52		0.01	2.88
Perf. Pricing (dummy)	0.99	4.35	***	0.27	1.77	*	0.40	3.10	***	0.64	3.93
Fixed effects:											
Loan purpose	Yes			Yes			Yes			Yes	
CLO	Yes			Yes			Yes			Yes	
Industry	Yes			No			Yes			Yes	
Pseudo R-squared	0.82			0.32			0.35			0.58	
Observations	302			480			676			487	

TABLE IX

DOES SECURITIZATION BY THE ORIGINATOR PREDICT FUTURE PERFORMANCE? (H2): CDS

This table compares the change in CDS spreads following loan origination for borrowers whose loans were securitized by their lead arranger versus other securitized loans. The sample only includes securitized loans. The dependent variable is the percentage change in a borrower's CDS spread in a given period after loan origination. The focus is on the *Same bank* dummy equal to 1 when a loan appears in a CLO underwritten by its lead arranger and 0 otherwise. CDS data comes from Markit and corresponds to 5-year contracts. CDS spreads are available for the entire evaluation period, which spans 2003 through June 2009. Loan purpose fixed effects include *LBO*, *M&A* and *Debt repayment* dummies. Standard errors are clustered by loan. Significance at the 1%, 5%, and 10 % levels is indicated by ***, **, and *, respectively.

	At-origination sample			
	0-12 months post-event		13-24 months post-event	
	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat
Same bank (dummy)	0.06	1.03	0.00	0.03
Borrower characteristics:				
Senior debt rating	-0.22	4.41 ***	-0.01	0.26
Realized CDS vol.	0.01	6.65 ***	0.00	4.32 ***
Loan characteristics:				
Loan maturity	-0.34	2.68 ***	-0.01	0.22
Log(Loan size)	-0.54	3.04 ***	0.33	4.92 ***
All-in-drawn spread	0.00	0.25	0.00	7.64 ***
Perf. pricing	2.39	4.39 ***	0.38	3.55 ***
Fixed effects:				
Loan purpose	Yes		Yes	
CLO	Yes		Yes	
Industry	Yes		Yes	
Adjusted <i>R</i> -squared	0.98		0.99	
Observations	269		348	