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The Rise of the Originate-to-Distribute Model and the Role of Banks in Financial Intermediation

1. Introduction

Historically, banks used deposits to fund loans that they then kept on their balance sheets until maturity. Over time, however, this model of banking started to change. Banks began expanding their funding sources to include bond financing, commercial paper financing, and repurchase agreement (repo) funding. They also began to replace their traditional originate-to-hold model of lending with the so-called originate-to-distribute model. Initially, banks limited the distribution model to mortgages, credit card credits, and car and student loans, but over time they started to apply it to corporate loans. This article documents how banks adopted the originate-to-distribute model in their corporate lending business and provides evidence of the effect that this shift has had on the growth of nonbank financial intermediation.

Banks first started "distributing" the corporate loans they originated by syndicating loans and also by selling them in the secondary loan market.[1] More recently, the growth of the market for collateralized loan obligations (CLOs) has provided banks with yet another venue for distributing the loans that they originate. In principle, banks could create CLOs using the loans they originated, but it appears they prefer to use collateral managers—usually investment management companies—that put together CLOs by acquiring loans, some at the time of syndication and others in the secondary loan market.[2]

Banks' increasing use of the originate-to-distribute model has been critical to the growth of the syndicated loan market, of the secondary loan market, and of collateralized loan obligations in the United States. The syndicated loan market rose from a mere $339 billion in 1988 to $2.2 trillion in 2007, the year the market reached its peak. The secondary loan market, in turn, evolved from a market in which banks participated occasionally, most often by selling loans to other banks through individually negotiated deals, to an active, dealer-driven market where loans are sold and traded much like other debt securities that trade over the counter. The volume of loan trading increased from $8 billion in 1991 to $176 billion in 2005.[3] The securitization of corporate loans also experienced spectacular growth in the years that preceded the financial crisis. Before 2003, the annual volume of new CLOs issued in the United States rarely surpassed $20 billion. After

[1] In loan syndications, the lead bank usually retains a portion of the loan and places the remaining balance with a number of additional investors, usually other banks. This arrangement is made in conjunction with, and as part of, the loan origination process. In contrast, the secondary loan market is a seasoned market in which a bank, including lead banks and syndicate participants, can subsequently sell an existing loan (or part of a loan).

[2] According to the Securities Industry and Financial Markets Association, 97 percent of corporate loan CLOs in 2007 were structured by financial institutions that did not originate the loans.

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that, loan securitization grew rapidly, topping $180 billion in 2007.

Investigating the extent of U.S. banks' adoption of the originate-to-distribute model in corporate lending has proved difficult because of data limitations. Thomson Reuters Loan Pricing Corporation's DealScan database, arguably the most comprehensive data source on the syndicated loan market and the source used by many researchers in the past, imposes serious limitations on the investigation of this issue. This database includes information available only at the time of loan origination, making it impossible to use it to investigate what happens to the loan after origination. Furthermore, DealScan has very limited information on investors' loan shares at the time of origination. The information on the credit shares that each syndicate participant holds is sparse, and even the information on the share that the lead bank—the bank that sets the terms of the loan—retains at origination is missing for 71 percent of all DealScan credits.

The Loan Syndication Trading Association database contains micro information on the loans traded in the secondary market, but it has no information about the identity of the seller(s) or buyer(s), ruling out its use to close the information gaps in DealScan. Financial statements filed with the Federal Reserve, in turn, contain information only on the credit that banks keep on their balance sheets and thus cannot be used to ascertain the volume of credit that banks originate. These statements contain information on the loans that banks hold for sale, but, as Cetorelli and Peristiani (2012) explain in detail elsewhere in this volume, this variable provides limited information on the extent to which banks have replaced the originate-to-hold model with the originate-to-distribute model in their lending business.[4]

We rely instead on a novel data source, the Shared National Credit program (SNC) run by the Federal Deposit Insurance Corporation, the Board of Governors of the Federal Reserve System, and the Office of the Comptroller of the Currency. Like DealScan, the SNC program is dominated by syndicated loans. In contrast to DealScan, however, the SNC program tracks loans over time, and it has complete information on investors' loan shares over the life of the credit. We discuss the SNC database in more detail in the data section.

Our study of the change in banks' corporate lending model yields a number of significant findings. Although the data indicate that lead banks increasingly used the originate-to-distribute model from the early 1990s on, we conclude that this increase was limited to a large extent to term loans; in their credit-line business with corporations, banks continued to rely on the traditional originate-to-hold model. Further, we find that lead banks increasingly "distributed" their term loans by selling larger portions of them not only at the time of the loan origination, but also in the years after origination. For example, in 1988, the first year of our sample, lead banks retained in aggregate 21 percent of the term loans they originated that year. In 2007, lead banks retained only 6.7 percent of the term loans originated in that year. By 2010, lead banks had managed to further lower their share in the credits they had originated in 2007 to 3.4 percent.

Our investigation into the entities investing in bank loans confirms that other banks were not quick to step in and take over as lead banks reduced their stake in the loans they originated. Instead, we find that new loan investors, including investment managers and CLOs, increasingly assumed control of the credit business. In 1993, all together, nonbank investors acquired 13.2 percent of the term loans originated that year. In 2007, they acquired 56.3 percent of the term loans originated in that year, a 327 percentage point increase from fifteen years earlier.

The trends documented in this article have important implications. Banks' increasing use of the originate-to-distribute model in their term-lending business will lead to a transfer of important portions of credit risk out of the banking system. In the process, however, it will contribute to the growth of financial intermediation outside the banking system, including a larger role for unregulated "shadow banking" institutions.[5] It will also, over time, make the credit kept by banks on their balance sheets less representative of the still-essential role they perform in financial intermediation.

In addition, banks' increasing use of the originate-to-distribute model could lead to some weakening of lending standards. According to several theories—including those of Ramakrishnan and Thakor (1984), Diamond (1984), and Holmström and Tirole (1993)—banks add value because of their comparative advantage in monitoring borrowers. To carry out this task properly, banks *must* hold the loans they originate until maturity. If they instead anticipate keeping only a small portion of a loan, their incentives to screen loan

[3] Researchers have suggested several explanations for the development of the secondary market, including the capital standards introduced with the 1988 Basel Accord (Altman, Gande, and Saunders 2004), the standardization of loan documentation and settlement procedures that came about with the establishment of the Loan Syndication Trading Association in 1995 (Hugh and Wang 2004), and the increase in demand and liquidity resulting from the increasing involvement of institutional investors (Yago and McCarthy 2004). See Gorton and Haubrich (1990) for a detailed description of the loan-sales market in the 1980s.

[4] This variable does not distinguish corporate loans from all the other loans that banks may intend to sell. Further, since there is no information on when the loans held for sale were originated, ascertaining banks' relative use of the originate-to-distribute model based on this variable is difficult. Lastly, the variable reports only the loans that banks "intend" to sell, not the actual loans that they sold.

[5] See Pozsar et al. (2010) for a detailed account of the growth of shadow banking in the United States.

applicants properly and to design the terms of the loan contract will diminish.[6] They will also have less incentive to monitor borrowers during the life of the loan.[7] The growth of the CLO business has likely exacerbated these risks because CLO investors invest in new securities that depend on the performance of the "reference portfolio," which is made up of many loans, often originated by different banks.[8]

Banks' adoption of the originate-to-distribute model may also hinder the ability of corporate borrowers to renegotiate their loans after they have been issued.[9] This difficulty may arise not only because the borrower will have to renegotiate with more investors but also because the universe of investors acquiring corporate loans is more heterogeneous.

Finally, our evidence that banks continue to use the traditional originate-to-hold model in the provision of credit lines supports the argument that banks retain a unique ability to provide liquidity to corporations, possibly because of their access to deposit funding.[10] Our findings are in line with the theories advanced by Holmström and Tirole (1998) and Kashyap, Rajan, and Stein (2002) concerning banks' liquidity provision to corporations. Still, as Santos (2012) documents, banks' provision of liquidity to depositors and corporations exposes them to a risk of concurrent runs on both sides of their balance sheets.

The remainder of our article is organized as follows. The next section presents our data and methodology and characterizes our sample. Section 3 documents U.S. banks' transition from the originate-to-hold model to the originate-to-distribute model in corporate lending over the past two decades. Section 4 identifies the relative role of the various investors that increasingly buy the credit originated by banks. Section 5 summarizes our findings and their larger implications.

[6] See Pennacchi (1988) and Gorton and Pennacchi (1995) for models that capture these moral hazard problems.

[7] Recent studies, including Sufi (2007), Ivashina (2009), and Focarelli, Pozzolo, and Casolaro (2008), document that lead banks in loan syndicates use the retained share to align their incentives with those of syndicate participants and commit to future monitoring.

[8] See Bord and Santos (2010) for evidence that the rise of the CLO business contributed to riskier lending.

[9] Borrowers often renegotiate their credits to adjust the terms of their loans (Roberts and Sufi 2009) or to manage the maturity they have left in their credits (Mian and Santos 2011).

[10] See Gatev, Schuermann, and Strahan (2009) and Gatev and Strahan (2006) for empirical evidence in support of banks' dual liquidity role to depositors and corporations.

2. Data, Methodology, and Sample Characterization

2.1 Data

Our main data source for this project is the Shared National Credit program, run by the Federal Deposit Insurance Corporation, the Federal Reserve Board, and the Office of the Comptroller of the Currency. At the end of each year, the SNC program gathers confidential information on all credits that exceed $20 million and are held by three or more federally supervised institutions.[11]

For each credit, the SNC program reports the identity of the borrower, the type of the credit (term loan or credit line, for example), purpose (such as working capital, mergers, or acquisitions), amount, maturity date, and rating. In addition, the program reports information on the lead arranger and syndicate participants, including their identities and the share of the credit they hold.

The SNC data fit nicely with our goal of investigating the role that banks continue to play in the origination of corporate credit in the United States and the role they have played in the growth of financial intermediation outside the banking system. Since the SNC program gathers information on each syndicated credit at the end of every year, we can link credits over time and determine the portion of each credit that stays in the banking sector and the portion acquired by nonbank financial institutions both at the time of the credit origination and in each subsequent year during the life of the credit. In addition, since we have this information over the past two decades, we can investigate how the relative importance of the various players in the syndicated loan market has evolved over time.

We complement the SNC data with information from the Moody's Structured Finance Default Risk Service Database and from Standard and Poor's Capital IQ. The Moody's database has information on structured finance products, including the size, origination date, and names. We rely on the Moody's database to identify CLOs among the syndicate participants reported in the SNC program that do not have the letters *CLO* in their names. We use the Capital IQ database to identify private equity firms, hedge funds, and mutual funds among the syndicate participants.

[11] The confidential data were processed solely within the Federal Reserve for the analysis presented in this article.

2.2 Methodology

Our investigation into the effect of the originate-to-distribute model on the importance of banks in financial intermediation has two parts. We begin by investigating how the rise of that model affected the portion of each credit that the lead bank retains during the life of the credit. To this end, for each credit in the SNC program, we first compute the portion that the lead bank retains on its balance sheet at origination. Next, because banks sometimes sell or securitize part of their credits *after* they originate them, we compute the portion of the credit that the lead bank still retains on its balance sheet three years after the origination year.

In the second part of our investigation, we identify the buyers of bank credits and how the role of the various buyers has changed over the past two decades. For each credit, we compute the portion that the lead bank sells to other banks and the portion that it sells outside the banking sector, distinguishing in the latter case whether the acquiring institution is an insurance company, a finance company, a pension fund, an investment manager, a private equity firm, a CLO, or a broker or investment bank. This part of our investigation allows us to pin down the role that banks have played in the growth of financial intermediation outside the banking system in general and their role in the growth of shadow banking in particular.

Because the nature of the credit contract may affect the lead bank's ability to sell or securitize the credit, we distinguish between term loans and credit lines throughout our investigation. For a similar reason, we also categorize the credits according to their purpose: that is, whether they are to fund mergers and acquisitions or capital expenditures or whether they are to serve corporate purposes.

2.3 Sample Characterization

Our sample covers the period 1988-2010. On average, we observe 7,432 credits each year. Of these, 1,758 are new credits originated in the year, and 5,674 are credits originated in prior years. Even though the criteria for inclusion of a credit in the SNC program remained unchanged throughout the sample period, inflation and growth over the past two decades contributed to an upward trend in the number of credits in the SNC database. In 1989, the SNC database had 5,402 credits, of which 1,368 were originated in that year. In 2007, at the peak of the business cycle, it had 8,248 credits, of which 2,114 were originated in that year.

To get a better sense of the SNC database coverage, we compare the annual value of credits included in that database with the annual value of credits in DealScan, the database mentioned above that has been extensively used for research on bank corporate lending in recent years.[12] Chart 1 reports the annual value of new credits—that is, credits originated in each year—in the SNC database and the annual value of credits reported in DealScan. Since SNC covers only credits above $20 million, we also report the annual value of credits in DealScan above that threshold. To make the information from the two databases even more comparable, we further adjust the information reported from DealScan by excluding credits that are classified as "restatements" of previous credits, since this indicates a renegotiation of an existing credit.[13]

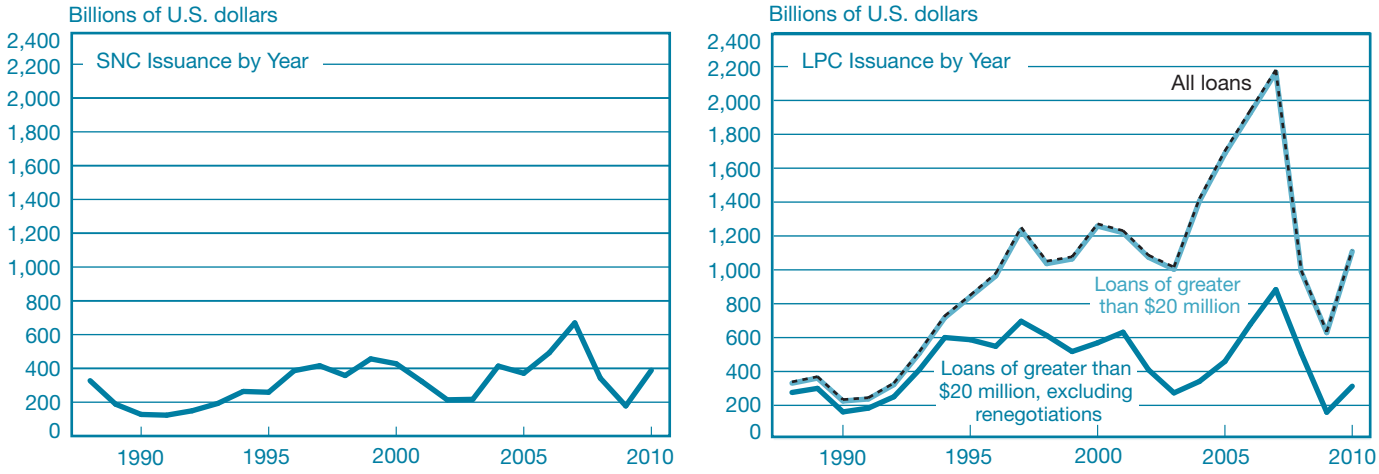
From Chart 1, it is apparent that both databases pick up the positive trend in the volume of credit as well as the effect of the three recessions in the United States during the sample period (1990-91, 2001, and 2008-09). It is also clear that the main difference between the two databases is that DealScan reports information on new credits as well as information on renegotiations of existing credits. The fact that SNC reports only credits above $20 million while DealScan contains information on credits above $100,000 does not constitute an important difference between the two databases. When we adjust the information reported in DealScan to "match" the credits reported in the SNC database, the difference between the two databases becomes very small. On average, each year the volume of credit reported in the SNC database is 37.2 percent of that reported in DealScan. When we restrict the credits in DealScan to those above $20 million, that share increases to 37.8 percent; when we further drop renegotiations from DealScan, the share rises to 74.4 percent.

[12] Examples of papers that use DealScan include Dennis and Mullineaux (2000), Hubbard, Kuttner, and Palia (2002), Santos and Winton (2008, 2010), Hale and Santos (2009, 2010), Sufi (2007), Bharath et al. (2009), Santos (2011), Paligorova and Santos (2011), and Bord and Santos (2011).

[13] In SNC, renegotiations do not usually give rise to a new credit, while in DealScan they do.

Chart 1

Loan Volumes Reported in the SNC and DealScan Databases



Sources: Shared National Credit (SNC) database, produced jointly by the Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, and Office of the Comptroller of the Currency; DealScan database, produced by Thomson Reuters Loan Pricing Corporation (LPC).

3. From Originate-to-Hold to Originate-to-Distribute

In traditional banking, banks originate credits and hold them on their balance sheet until their maturity. Over time, however, banks began to replace the originate-to-hold model with the originate-to-distribute model, whereby they originate a credit and sell or securitize a portion of it at the time of origination or later. In this section, we investigate how the adoption of the originate-to-distribute model reduced the exposure of banks to the credits they originated over the past two decades.

3.1 Distribution at the Time of Credit Origination

To investigate the effect of the originate-to-distribute model on the exposure of banks to the credits they originate, we begin by looking at the lead banks' market share of the credits they originate, at the time of the credit origination.

For our purposes, "banks" are all institutions that are regulated and that perform the traditional bank roles of maturity and credit transformation. Thus, the banks discussed throughout our article refer to all commercial banks, bank holding companies (BHCs), thrifts and thrift holding companies, credit unions, and foreign banking organizations, including their domestic branches. Note that whether an institution is classified as a bank may vary over time. For example, Morgan Stanley and Goldman Sachs are classified as banks only from January 1, 2009, when they became BHCs. For the period preceding this date, they are not counted as banks since they were operating as investment banks.

In 1988, the first year of the sample period, lead banks retained in aggregate a stake of 17.6 percent of the credits they originated in that year, including term loans and credit lines (Chart 2).[14] Beginning in 1990, when they retained in aggregate 22.2 percent, lead banks started to decrease their share of the credits they originated, reaching a low of 10.5 percent in 1999. During the 2000s, the aggregate shares varied with the business cycle but generally remained steady at around 13 percent.

The market share of the credits that lead banks retain at origination has clearly fallen, but the representation of this decline in Chart 2 is skewed by the large number of credit lines in our sample. As we can see from Chart 3, while banks have increasingly replaced the originate-to-hold model with the originate-to-distribute model over the past two decades, this substitution has been far more pronounced in the origination of term loans than of credit lines. To be sure, this difference was not immediately apparent: In 1988, lead banks retained in aggregate 17.6 percent of the credit lines and 21 percent of the

[14] Here, and throughout the rest of the article, we use the terms *market share* and *aggregate share* interchangeably. By lead banks' *market* or *aggregate share*, we mean the share of all credits that the lead banks, taken together, retain. It is computed as the sum of all the lead banks' retained credit amounts divided by the sum of all new credits they originated that year.

term loans they extended in that year. These shares declined to 10.3 percent and 10.0 percent, respectively, by 1999.

However, in the first decade of the 2000s, while lead banks continued the trend of decreasing their market share of term loans, they reversed the trend for credit lines. By 2006, the last year before the data pick up the effects of the most recent financial crisis, lead banks increased their market share of the credit lines they originated to 14.1 percent but decreased their market share of the term loans they originated to 8.8 percent.

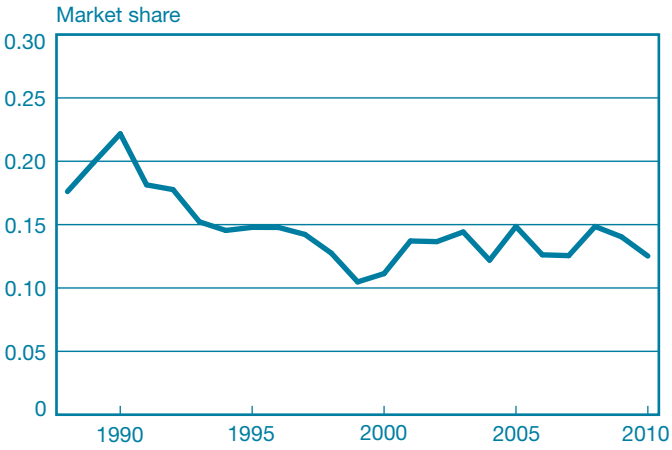
These aggregate trends are consistent with the trends in the average share of the credit that the lead bank retains on its balance sheet. This share was equal to 32 percent for credit lines in 1988 and 31 percent for term loans in the same year. By 1999, these shares had declined to 17 percent and 16 percent, respectively. Then, in the first decade of the new century, the average credit-line share retained by the lead bank increased to 24 percent by 2006, whereas the average share retained in term loans increased slightly but essentially remained stable, at 17 percent, by the same year.

Since average retained shares are much higher than the aggregate (market) shares, the data indicate that banks tend to keep smaller shares of the larger credits that they originate. Recall that the average retained share is a simple average of the credit shares that banks keep on the balance sheet, while the aggregate share is a weighted average of these shares, with the weights defined by the size of the credits.

The disparity between the trends in lead banks' market shares of credit lines and term loans shows the effect of banks' increasing syndication and securitization of term loans. These trends, though suggestive of these effects, do not reflect the whole story, since they account only for the role of lead banks and exclude that of banks that participate in the loan syndicate (syndicate-participant banks). We discuss this issue further in a later section.

Chart 2

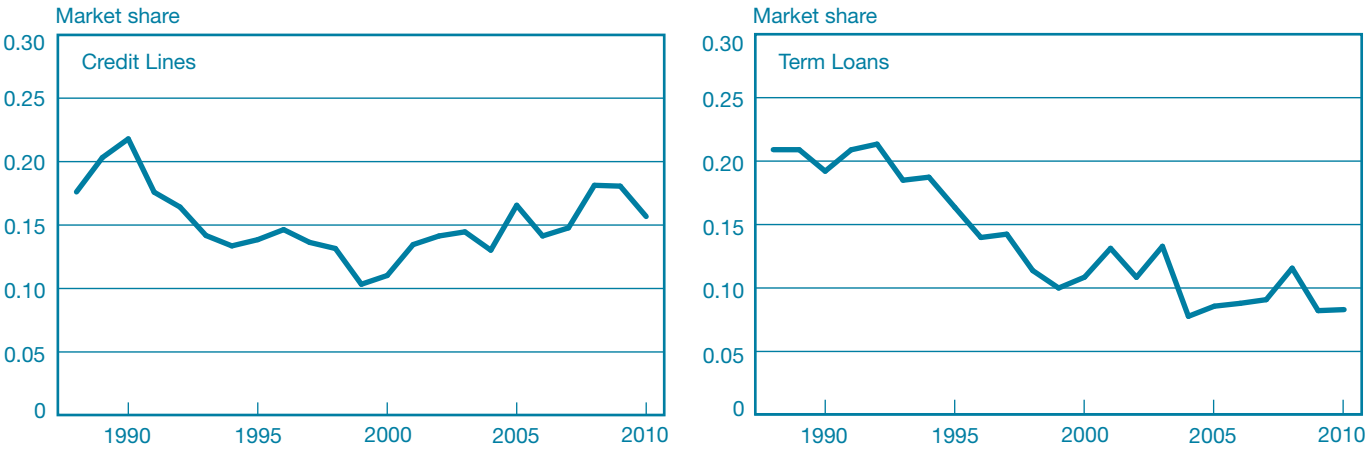
Lead Banks' Market Share of Syndicated Loans at Credit Origination



Source: Shared National Credit database, produced jointly by the Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, and Office of the Comptroller of the Currency.

Chart 3

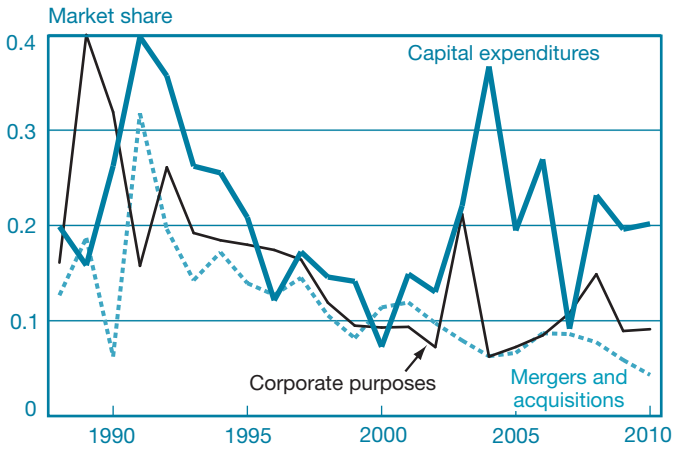
Lead Banks' Market Share of Credits at Origination, by Credit Type



Source: Shared National Credit database, produced jointly by the Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, and Office of the Comptroller of the Currency.

Even though banks substituted the originate-to-distribute model for the originate-to-hold model at a faster pace in their term-loan business, they did not use the former uniformly across all types of term loans. For instance, they varied their retention rates depending on the purpose of the loan, as can be seen in Chart 4. Over time, banks increasingly used the originate-to-distribute model when they extended loans for corporate purposes and in particular to fund mergers and acquisitions, possibly because of the additional risk such loans tend to carry. In contrast, they continued to use their traditional originate-to-hold model when they extended loans for capital expenditures.

Chart 4
Lead Banks' Market Share of Term Loans at Origination by Credit Purpose



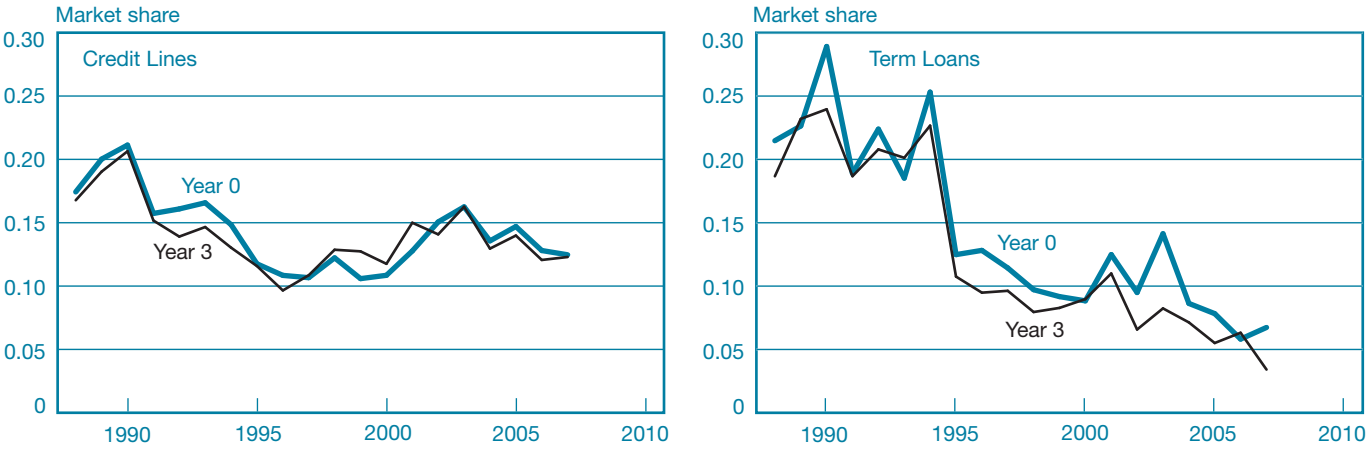
Source: Shared National Credit database, produced jointly by the Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, and Office of the Comptroller of the Currency.

3.2 Distribution after the Credit Origination

The decline in the share of credits that lead banks originate did not occur only at the time of the credit origination but continued throughout the life of the credit. To investigate this effect, we began by selecting *cohorts* of credits originated each year that we observed for at least three years. Next, we computed the market share of the credits that the lead banks retained at the time of origination and three years later. Both of these shares are depicted in Chart 5. The left panel shows the market shares for credit lines, while the right panel shows the market shares for term loans. To allow us to observe all the credits for three years, we end the chart with credits originated in 2007. Recall that our sample ends in 2010.

A quick look at Chart 5 shows two important results. First, in the years after credit-line origination, lead banks either did not sell off additional portions of the credit lines or sold off a very small (aggregate) share. This practice prevailed at the beginning of our sample period in the late 1980s and continued throughout the sample period, with the exception of the early-to-mid-1990s when lead banks seemed to have sold off more of the credit lines.

Chart 5
Lead Banks' Market Share of Credits at Origination and Three Years Later



Source: Shared National Credit database, produced jointly by the Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, and Office of the Comptroller of the Currency.

Second, as the term loans held by lead banks aged, the banks increasingly reduced their aggregate exposure to them. In the previous section, we documented that, over time, lead banks retained at origination a smaller market share of the term loans they originated. Chart 5 shows that this decline continued even after the origination year. For example, of the term loans that banks originated in 1988, they retained in aggregate 21.4 percent at origination. Three years later, these banks had, in aggregate, 18.7 percent of these term loans on their balance sheet. In 2004, lead banks retained in aggregate 8.6 percent of the term loans they originated in that year. Three years later, the banks' aggregate exposure to the same set of term loans had been reduced to 7.1 percent. In 2007, the last year in our sample for which we conducted this exercise, lead banks retained a market share of 6.7 percent of their term loans at the time of origination. By 2010, they had lowered their market share of these same term loans to 3.4 percent.

We obtain similar results when we track the individual share of each credit that the lead bank retains on its balance sheet. For credit lines, lead banks either decreased their average retained shares very little or not at all. For example, of the credit lines originated in 1988, on average banks retained 30.5 percent at origination and 28.5 percent three years later. In 2004, lead banks retained, on average, 21.6 percent at origination and 21.2 percent three years later. For term loans, however, lead banks tended to cut back more of their credit exposure. Of the term loans originated in 1988, banks retained an average of 35.2 percent at origination and 30.7 percent three years later. In 2004, banks retained on average 19.2 percent at origination and 18.0 percent three years later.

In sum, the results reported in this section show that over the past two decades, banks largely continued to use the traditional originate-to-hold model when they extended credit lines to corporations but increasingly switched to the originate-to-distribute model for term loans. This evidence suggests that banks have a unique ability to provide liquidity to corporations by extending credit lines to them. It also highlights the need to reconsider the measures traditionally used to capture the importance of banks as providers of credit to corporations. As banks increasingly adopt the originate-to-distribute model, conventional measures of bank lending activity, which rely on the credit kept by banks on their balance sheets, will tend to understate the role they play in the credit-origination process. In the next section, we investigate which institutions are buying the credits that banks originate.

4. Who Buys Bank Credit Lines and Term Loans?

Given our finding that over time lead banks are retaining a smaller and smaller portion of the credits they originate (especially in the case of term loans), a natural question to ask is, Who buys these credits? Answering this question—and, in particular, finding out whether banks or other institutional investors such as pension funds and hedge funds are buying these credits—is important because these institutions have quite different monitoring capabilities and incentives for renegotiating existing credits. Answering this question also helps us understand the growth of shadow banking in the past decade and the links of these institutions to the banking sector.

4.1 The Role of Banks as Credit Acquirers

We start by investigating whether, as the lead banks have lowered the share of credits they retain at origination, other banks have increased the share of credit they hold as syndicate participants. The left panel of Chart 6 shows for the total credit extended under credit lines each year, the portion that lead banks retained, the portion acquired by banks that are syndicate participants, and the portion acquired by the remaining investors. The right panel of the chart reports the same information for term loans.

As the chart shows, although the market share of credit lines retained by lead banks decreased through the 1990s and increased through the 2000s, the total market share held by all banks (both lead and syndicate-participant banks) remains fairly stable, at an average of 92 percent during the pre-crisis sample period. In fact, when lead banks' market share decreased in the 1990s, the syndicate-participant banks' market share increased, and that share increased more than the lead banks' share decreased. Similarly, from 2000 to 2010, syndicate-participant banks' market share decreased more than the lead banks' market share increased. In other words, credit-line provision continues to be in essence a "bank business."

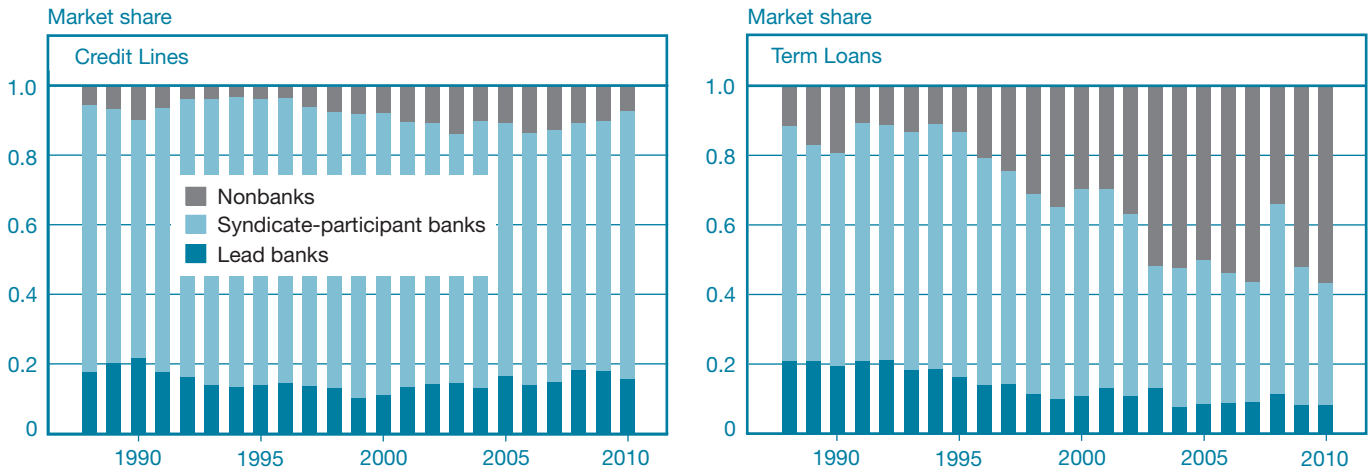
Term loans, however, present a different picture. As we can see from the right panel of Chart 6, the decline in the lead banks' aggregate retained share was accompanied by an even bigger decline in the share of the term loans acquired by other banks.[15]

[15] The picture is fairly similar when we consider the average share held by banks. For credit lines, the average share held by syndicate-participant banks remained stable at approximately 10 percent throughout the time period. By contrast, for term loans, the average share held by syndicate-participant banks decreased from its peak of 14 percent in 1991 (11 percent in 1988) to 6.3 percent in 2006.

Of the $47 billion in term loans originated in 1988, banks, including lead banks and syndicate-participant banks, retained on their balance sheet 88.6 percent of the amount of credit. Of the $315 billion in term loans originated in 2007, banks retained on their balance sheet 43.7 percent. Thus, banks (lead banks and syndicate-participant banks) more than halved their market share of term loans from 1988 to 2007.

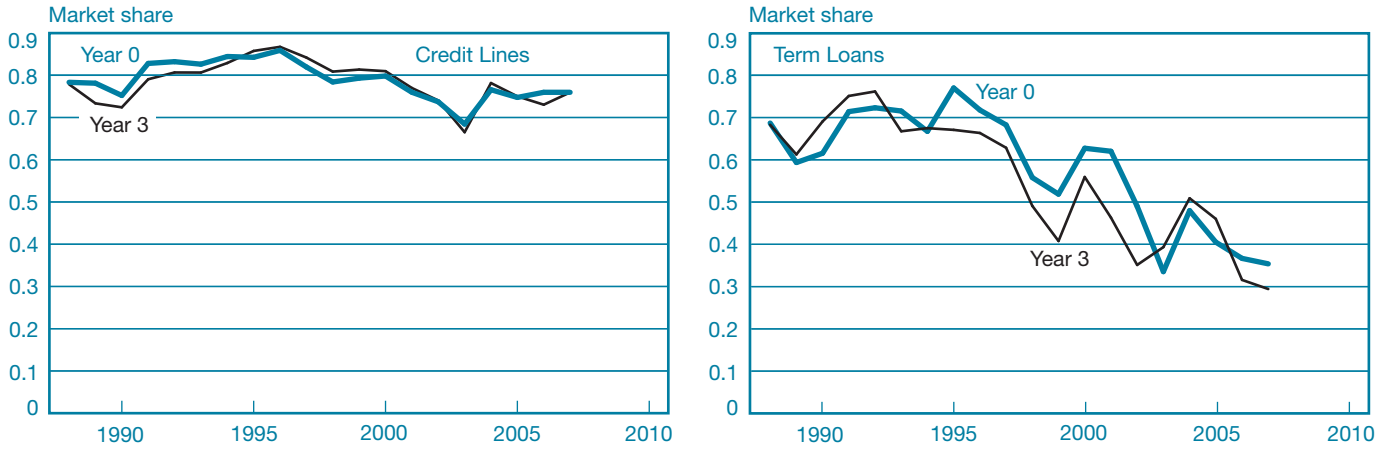
These patterns remain when we consider how the market share of bank investors changed over the life of the loan. As Chart 7 shows, syndicate-participant banks did not sell off their market share of credit lines during the lifetime of the loans but, apart from short periods in the early 1990s and mid-2000s, they did decrease their market share of term loans as the loans matured. In fact, for term loans that we observe for at least

Chart 6
Banks' Retained Credits at Origination: Lead Banks versus Non-Lead Banks



Source: Shared National Credit database, produced jointly by the Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, and Office of the Comptroller of the Currency.

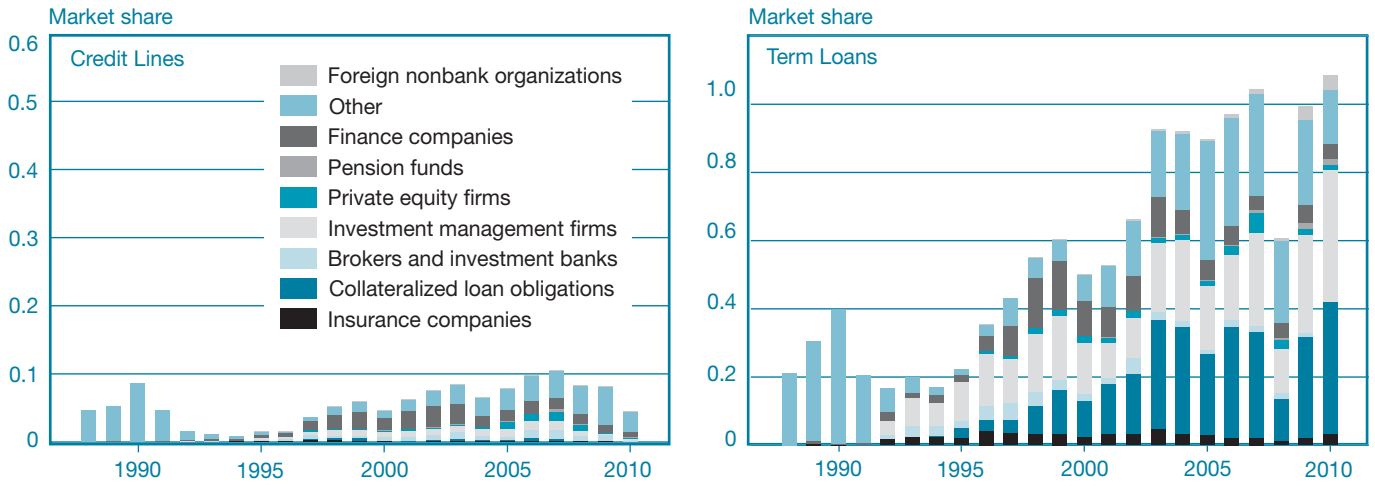
Chart 7
Syndicate-Participant Banks' Market Share of Credits at Origination and Three Years Later



Source: Shared National Credit database, produced jointly by the Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, and Office of the Comptroller of the Currency.

Chart 8

Nonbank Investors' Market Share by Credit Type



Source: Shared National Credit database, produced jointly by the Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, and Office of the Comptroller of the Currency.

three years, of the $17 billion of such loans originated in 1988, banks (both lead and syndicate-participant banks) kept on their balance sheets 90.2 percent in 1988 but only 86.9 percent three years later. Similarly, of the $17 billion in term loans issued in 2007, banks kept on their balance sheets 42.1 percent at origination but only 32.8 percent three years later.

Thus, for credit lines, syndicate-participant banks tended to offset the actions of the lead banks at origination, and they tended to hold the credit lines to maturity (or at least for three years). For term loans, in contrast, syndicate-participant banks, like lead banks, have been decreasing the market share they retain at origination and over the years after origination.[16]

4.2 The Role of Nonbank Financial Institutions

Given the decline in the portion of term loans retained in the banking sector, the next question to ask is, Who are the investors that have been increasing their presence in this market? To address this question, we report in Chart 8 the market shares at the time of credit origination in the credit-line market (left panel) and the term-loan market (right panel) of the main nonbank investors in these markets: insurance companies, investment management firms, finance companies, collateralized loan obligation managers, private equity firms, brokers and investment banks, pension funds, and foreign nonbank organizations.[17]

Looking at the information on credit lines, we see that the market share of nonbank investors in credit lines is very small, less than 10 percent in each year. This finding was expected, given our previous evidence that banks continue to play a dominant role in the provision of liquidity to corporations through credit lines. The nonbank entities that have the highest market share are finance companies, pension plans, investment managers, and "other."[18] Finance companies first appear in our credit-line data in 1992, when they held a market share of 0.2 percent. They reached their peak market share in 2002 with 3.2 percent of all credit lines originated.

[16] Interestingly, the average shares for syndicate-participant banks did not change much over the life of the credit, for both credit lines and term loans. With the exception of loans originated during the recessions of 1990 and 2001 (for which the average participant bank share decreased over the loans' lifetime), on average, syndicate-participant banks retained the same share at origination as three years later.

[17] The different categories are identified in a variety of ways: by keyword; by information from the National Information Center run by the Federal Reserve System, which identifies banks, bank holding companies, foreign banking organizations, finance companies, insurance companies, and so on; by matching to the Moody's Structured Finance Database, which allows us to identify CLOs; and by matching to Capital IQ to identify investment management firms and private equity firms. Investment management firms are identified as hedge funds, mutual funds, or asset managers. Note that institutions may shift across categories over time. For example, for most of our sample, Goldman Sachs and Morgan Stanley are identified as investment banks. However, after they officially converted their status to BHCs in the first quarter of 2009, they are classified as BHCs. Finally, note that for the remaining analysis, we exclude nonbank entities that are part of banking entities—for example, finance companies that are part of BHCs. (Including them does not substantially change our analysis.)

Turning our attention to term loans, we see from the right panel of Chart 8 that finance companies, CLOs, brokers, and investment managers have been increasing their share in the market for term loans and that nonbank investors—particularly, investment managers and CLOs—play a much bigger role in this market than in the credit-line market. Investment managers first appear in our data in 1992, when they acquired 2 percent of the term loans originated that year. Similarly, CLOs first appear in our data in 1994, when they held 0.3 percent of the term loans originated in that year. By 2007, these investors had acquired 13.6 percent and 15.5 percent, respectively, of the term loans issued in that year. Again, note that all of these numbers underestimate the true presence of each category in the market since the "other" grouping contains institutions that could not be accurately matched to any of the categories from our sources; nonetheless, most of these institutions probably do fall into one of these categories. Finance companies first appear in the term-loan data in 1989, when they acquired 0.03 percent of the term loans issued that year; at their peak in 1998, they held 7.3 percent of the term loans issued that year. Private equity firms currently represent a small share of the market (0.8 percent in 2010), but they have been steadily building their presence in this market, from 0.4 percent in 1996 to 3 percent in 2007. In contrast, insurance companies continue to play a minor role: the share of the term loans held by insurance companies increased from 0.2 percent in 1988 to 1.0 percent in 2007.

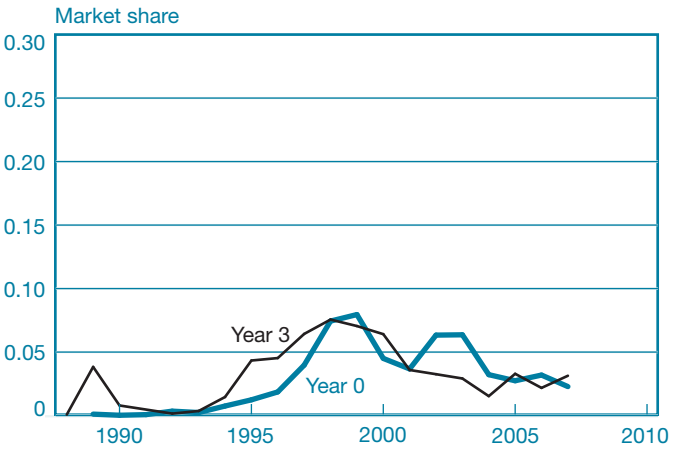
4.3 Nonbank Investors' Shares after Loan Origination

We documented earlier that both lead banks and syndicate-participant banks continue to reduce the share of their term loans in the years following origination. In Charts 9 through 11, we examine the market shares of the top three nonbank investors in the syndicated loan market at the time of the credit origination and three years later. Because these nonbank investors invest mainly in term loans, we limit our analysis to the term-loan market.

Finance companies kept their share of the term-loan market more or less constant over the past decade. In contrast, CLOs and investment managers have been increasing their market share of the term-loan business. These investors have been buying larger portions of the credits at the time of their origination, and they continue to increase such investments in the years after origination. From 2000 to 2007, on average, CLOs acquired 12.6 percent of the term loans originated in each year, while investment managers acquired on average

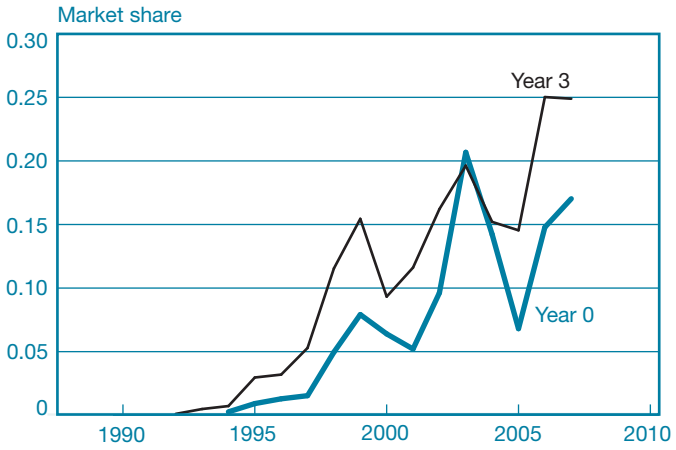
[18] The majority of the institutions in the "other" category were not clearly identified by our sources as belonging to one of the categories discussed above. Because much of the identification was done through name matching, institutions for which the quality of the match was in question were also placed in the "other" category. Finally, the category also contains a very small number of Article XII New York investment companies, data processing servicers, individuals, and foundations.

Chart 9
Role of Finance Companies



Source: Shared National Credit database, produced jointly by the Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, and Office of the Comptroller of the Currency.

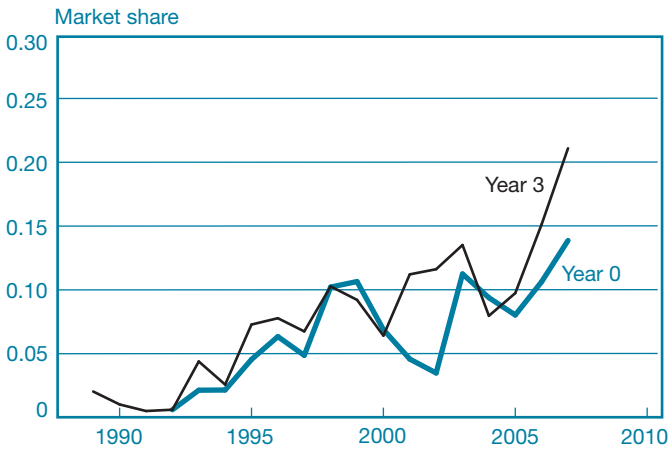
Chart 10
Role of Investment Managers



Source: Shared National Credit database, produced jointly by the Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, and Office of the Comptroller of the Currency.

Chart 11

Role of Collateralized Loan Obligations



Source: Shared National Credit database, produced jointly by the Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, and Office of the Comptroller of the Currency.

8.7 percent of this market. Three years later, such institutions held 18.2 percent and 12.9 percent of these loans, respectively. This evidence shows that over the past two decades, as banks have increasingly opted to retain on their balance sheet a smaller portion of the term loans they originated, they have been fueling the growth of nonbank institutions, in particular CLOs and investment managers.

5. Final Remarks

Our analysis of banks' role in financial intermediation reveals that beginning in the early 1990s, lead banks increasingly used the originate-to-distribute model in their corporate lending business. This increase, however, was largely limited to term loans. In general, banks continued to rely on the traditional originate-to-hold model in the credit-line business. Further, we find that more and more lead banks "distributed" their term loans by selling larger portions of them, not only at the time of the loan origination but also in the years after origination.

Our investigation into the investors that bought the bank loans shows that traditional institutional investors and, in particular, new loan investors—including investment managers and CLOs—began taking over more of the credit business.

Our findings have several important implications for the theme of this volume. They show that in evaluating the importance of banks in financial intermediation, analysts must use measures of the credit that banks originate, as opposed to measures of the credit they retain on their balance sheets. Indeed, our findings confirm that measures of the importance of banks that rely on the credit held by banks on their balance sheets will increasingly understate the essential role that banks play in financial intermediation. Our findings also show that banks have been an important contributor to the so-called shadow banking system.[19] For example, in 1993, of the $22.7 billion in term loans originated, banks sold $2.2 billion to the shadow banking system. By comparison, in 2007, of the $315 billion in term loans originated, they sold $125 billion to the shadow banking system. In about two decades, the annual volume of term loans that banks supplied to nonaffiliated shadow-banking institutions increased by $123 billion.

Lastly, our findings suggest some interesting questions for future research. Does the increasing presence of nonbank financial institutions in loan syndicates affect lending terms or hinder borrowers' ability to renegotiate their credits? Does the decline in a lead bank's retained share of the credits it originates affect the nature of its relationship with borrowers? What are the implications of the decline in a bank's retained share for its incentives to assess the creditworthiness of loan applicants or to track the viability of loans? Researchers have been using the share of a credit held by the lead bank at the time of origination as a proxy for the bank's monitoring incentives. As our evidence shows, however, this share may be a biased proxy for the bank's exposure during the life of a loan. It would be interesting to investigate the implications of the decline in the bank's credit share for its monitoring incentives during the life of the credit.

[19] For these computations, "shadow banking institutions" are defined as CLOs, brokers and investment banks, investment managers, private equity firms, finance companies, and foreign nonbank institutions.

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