Nicola Cetorelli and Stavros Peristiani

The Role of Banks in Asset Securitization

1. Introduction

It is probably safe to assume that Frank Capra's intentions in his classic film *It's a Wonderful Life* were to exalt the fundamental virtues of the human character and to caution us against the perils of material temptations. And yet, almost seventy years later, his film remains one of the best portrayals in Hollywood cinematic history of the role and importance of banks in the real economy. This film could easily be used in a classroom to describe a traditional model of financial intermediation centered on banks, defined here as deposit-taking institutions predominantly engaged in lending.[1]

The typical bank of the 1940s is embodied in the film's Bailey Building and Loan Association, a thrift institution that takes deposits and invests them in construction loans that allow the local residents to disentangle themselves from the clutches of the greedy monopolist, Henry F. Potter. We also see a bank run developing, and we learn of banks' intrinsic fragility when George Bailey, the film's main character and the manager of the thrift, explains to panicked clients demanding withdrawals that their money is not in a safe on the premises, but rather is, figuratively speaking, "in Joe's house . . . that's right next to yours."

The film debuted in 1946, but Bailey's bank has remained the dominant model of banking throughout the decades that followed. Indeed, it is by and large the model that has inspired the supervisory and regulatory approach to financial intermediation, at least until recent times. Because of the significant social externalities associated with banks' activities, close monitoring of the banks' books is warranted in order to minimize the risk of systemic events (there is indeed even room for a bank examiner in the film!).

However, if we were to remake the film and fit it into the current context, many of the events would need significant adaptation. For instance, we could still have the bank, but it would be an anachronism to retain the idea that depositors' money is in their neighbors' houses. Most likely, the modern George Bailey would have taken the loans and passed them through a "whole alphabet soup of levered-up nonbank investment conduits, vehicles, and structures," as McCulley (2007) incisively puts it when describing financial intermediation's evolution to a system now centered around the *securitization of assets.*

Under the securitization model, lending constitutes not the end point in the allocation of funds, but the beginning of a complex process in which loans are sold into legally separate entities, only to be aggregated and packaged into multiple securities with different characteristics of risk and return that will appeal to broad investor classes. And those same securities can then become the inputs of further securitization activities.

The funding dynamics of such activities diverge from the traditional, deposit-based model in several ways. Securitization structures develop the potential for separate funding

[1] See, for example, the Council of Economic Education article, "It's a Not So Wonderful Life," http://www.econedlink.org/lessons/index.php?lid=698&type=student.

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mechanisms, such as issuance of commercial paper backed by the securitized assets. And the creation of these new classes of securities fuels the growth of other nonbank-centered, secured intermediation transactions, such as repurchase agreements and securities lending, in need of what Gorton (2010) calls "informationally insensitive" collateral.

Under such a complex configuration, traditional banks may no longer be needed, as we witness the rise of what McCulley—apparently the first to do so—calls "shadow banks." The goal of our article is to delve more deeply into the analysis of asset securitization activity in order to address the following fundamental question: Have regulated bank entities become increasingly marginalized as intermediation has moved off the banks' balance sheets and into the shadows? Aside from the insights gained, furthering our understanding of the evolution of financial intermediation has first-order normative implications: If regulated banks are less central to intermediation and if intermediation is a potential source of systemic risk, then a diminished bank-based system would require a significant rethinking of both the monitoring and regulatory fields.

This study provides, for the first time, a complete *quantitative mapping* of the markets and entities involved in the many steps of asset securitization. Our findings indicate that regulated banks—here defined at the level of the entire bank holding company—have in fact played a dominant role in the emergence and growth of asset-backed securitization and that, once their roles are explicitly acknowledged, a considerable segment of modern financial intermediation appears more under the regulatory lamppost than previously thought.

Using micro data from Bloomberg, we perform an exhaustive census of virtually the entire universe of nonagency asset-backed-securitization activity from 1978 to 2008. For each asset-backed security (ABS), we focus on the primary roles in securitization: issuer, underwriter, trustee, and servicer. These four roles are critical in the life of an asset-backed security, extending from issuance through maturity, and therefore are also critical for the existence of a securitization-based system of intermediation.

We show that the degree of bank domination varies according to product type and securitization role. Banks are inherently better suited to compete for the data-intensive trustee business, capturing in most cases more than 90 percent of these services. Having a strong role in securities underwriting, banks are able to exploit their expertise to capture a significant fraction of asset-backed underwriting as well. Naturally, in issuing and servicing the different segments of the securitization market, banks face competition from nonbank mortgage lenders and consumer finance companies. Nevertheless, we show that banks were able to retain a significant and growing share of issuance and servicing rights as well. Despite the greater complexity of a system of intermediation based on asset securitization, which appears to have migrated and proliferated outside of the traditional boundaries of banking, our findings suggest that banks maintained a significant footprint in much of this activity through time.

Our article is organized as follows: In the next section, we outline the principal roles in securitization. Section 3 describes our sources of information for the vast number of asset-backed securities. In Section 4, we briefly review the explosive growth and evolving nature of the securitization market. Section 5 documents the dominant role of commercial banks and investment banks in securitization. Section 6 concludes.

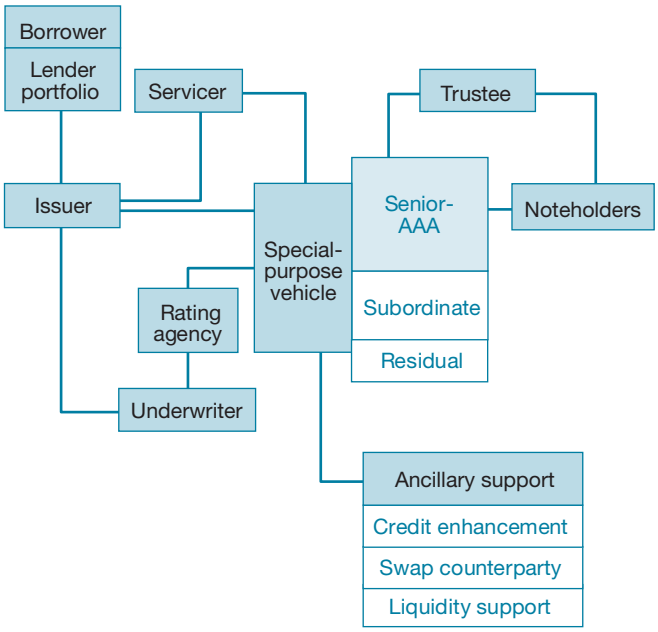
2. Primary Roles in Asset Securitization

The securitization process redistributes a bank's traditional role into several specialized functions (see the appendix for details on the evolution of asset securitization and for basic terminology). The exhibit highlights the key roles in the securitization process: issuer, underwriter, rating agency, servicer, and trustee.[2] The *issuer* (sometimes referred to as sponsor or originator) brings together the collateral assets for the asset-backed security. Issuers are often the loan originators of the portfolio of securitized assets because structured finance offers a convenient outlet for financial firms like banks, finance companies, and mortgage companies to sell their assets.

In the basic example of securitization represented in the exhibit, all of these assets are pooled together and sold to an external legal entity, often referred to as a *special-purpose vehicle*. The SPV buys the assets from the issuer with funds raised from the buyers of the security tranches issued by the SPV. The transfer of the assets to the SPV has the legal implication of obtaining a true sale opinion that removes issuer ownership and insulates asset-backed investors in the event of an issuer bankruptcy. The SPV often transfers the assets to another special-purpose entity—typically a trust. This second entity actually issues the security shares backed by those assets

[2] The lines connecting the different roles (boxes) in the exhibit represent transaction flows of securities, assets, payments, information, and other services. Sometimes these flows are two-way. For example, investors buy security notes issued by the special-purpose vehicle (SPV) in lieu of cash. Admittedly, the securitization example presented is fairly generic, depicting a representative structure of the securitization process. This basic exhibit often varies according to the type of collateral or the complexity of the security. Some asset-backed securities can be more exotic, involving very complex interactions among the involved parties. Even intricate securities—such as synthetic collateralized debt obligations, in which the role of originator is blurrier—rely on an SPV/trust structure.

A Representative Securitization Deal



under GAAP sale rules outlined in the Financial Accounting Standards Board's Statement No. 125.

Another important role in the securitization process is performed by the *servicer,* the party responsible for processing payments and interacting with borrowers, implementing the collection measures prescribed by the pooling and servicing agreements and, if needed, liquidating the collateral in the event of default. In cases in which the issuer is also the lender of the underlying assets, there is a greater likelihood that the issuer would retain these servicing rights.

In addition to managing payment flows, servicers are expected to provide administrative help to the *trustee*. The trustee is an independent firm with the fiduciary responsibility for managing the SPV/trust and representing the rights of the investors (that is, the noteholders). The primary role of the trustee is to disperse payments to investors and to oversee the security on behalf of the investors by collecting information from the servicer and issuer while validating the performance of the underlying collateral.

The role of *underwriters* in structured finance is similar to that in other methods of securities issuance. Asset-backed-security underwriters fulfill traditional arranger roles of representing the issuer (here, the SPV or trust). The primary job of the underwriter is to analyze investor demand and design the structure of the security tranches accordingly. Consistent with traditional, negotiated cash-offer practices, underwriters of asset-backed bonds would buy at a discount a specified amount of the offer before reselling to investors. In addition to marketing and selling these securities, underwriters provide liquidity support in the secondary trading market. Because asset-backed securities trade in over-the-counter markets, the willingness of underwriters to participate as broker-dealers by maintaining an inventory and making a market enhances the issuance process.

Working closely with the *rating agencies*, the underwriter helps design the tranche structure of the SPV to accommodate investors' risk preferences. Under the guidance of rating agencies, the expected cash flows from securitized assets are redirected by the underwriter into multiple tranches. The rating agencies played a critical role in the rapid growth of structured finance in the United States over the past two decades. Rating agencies provide certification services to investors who need to carry out a due-diligence investigation of the underlying assets and evaluate the structure of the security. Ratings are necessary because many large institutional investors and regulated financial firms are required to hold mostly investment-grade assets.

Although asset-backed-security ratings of subordination structures vary across product types, most of them rely on a common blueprint. These securities are typically structured notes, meaning that the collateral cash flows are distributed into several separate tranches. Asset-backed tranches usually have different risk ratings and different maturities derived from the same pool of assets. The diversity in tranches makes them more appealing to a heterogeneous pool of investors with various risk preferences and investment objectives. The core components of each security include a number of senior tranches rated AAA, a class of subordinate tranches with a rating below AAA, and an unrated residual equity tranche. The senior tranches receive overcollateralization protection, meaning that credit losses would initially be absorbed by these subordinate classes. Sometimes junior (mezzanine) below-AAA classes that are subordinate to senior classes may also have a buffer of protection from the residual tranche or receive other credit enhancements. The remaining cash flows are distributed to the residual (equity) certificateholders. The residual investors receive any leftover cash flows, but have no claim on the collateral until all obligations to the more senior classes of securities are fully met.

In addition to overcollateralization cushions, several other *ancillary enhancements* are put in place to further protect investors from default and other risks (such as liquidity risk, currency fluctuation risk, and interest rate risk). In contrast to overcollateralization buffers that are built into the security internally, these credit enhancements are provided for a fee from a third party. For example, it was a common practice in the early years of nonagency mortgage securitization to buy credit bond insurance (often referred to as a wrap) from

independent insurance providers. Foreign exchange and interest rate swaps are sometimes used to improve the overall risk profile of the security, making it more attractive and easier to price for investors. In addition, the SPV may lower risk exposures by obtaining a letter of credit or an asset-swap agreement.

Focusing on this taxonomy of roles allows us to better understand the "shadowy" financial system of securitization. Essentially, we argue that structured finance retains all the unique facets of financial intermediation. Leaving aside rating agencies, we show that securitization requires the primary services of issuer, trustee, underwriter, risk enhancer, and servicer. At the same time, banks perform exactly the same roles in the traditional model of intermediation: They are loan issuers and implicitly underwrite the loan portfolio to investors (the depositors and equityholders). They serve in the role of trustee as the delegated agent for their depositors and provide credit enhancement, represented by the existence of equity held on their balance sheets. They provide liquidity services, on both sides of the balance sheet, to firms and depositors. And they act as a servicer, collecting loan payments and paying interest to depositors.

Although a bank in the traditional model of intermediation performs all these roles, its compensation is determined implicitly by the asset-liability contracts. With asset securitization, however, the same roles can be played by multiple entities, each compensated separately for its services. This proliferation of markets and entities involved in the securitization process is perhaps the main reason why the modern system of intermediation seems so hard to decipher. We hope this study contributes to enhanced understanding of its main dynamics.

3. Data

To analyze the full extent of the securitization market, we combine several databases that provide extensive information on the SPV structure. The primary source for this security-specific information is Bloomberg L.P. Recall that tranches represent the basic building blocks of the SPV. Most asset-backed securities are sold as separate tranches with different risks and corresponding prices. To accommodate this feature of asset-backed securities, CUSIP identifiers are assigned at the tranche level.[3] The Bloomberg database tracks around 153,000 nonagency asset-backed tranches issued globally between 1983 and 2008, corresponding to roughly 19,600 asset pools of SPVs. Similarly, the Bloomberg database traces the issuance of about 130,000 private-label tranches between 1978 and 2008, corresponding to roughly 10,300 multiclass pools.

The Bloomberg mortgage and asset-backed information modules include an array of variables describing the characteristics of the issue (including face value, interest rate, maturity, and ratings at issuance). The database also provides a snapshot of the outstanding balance of the security (for example, amount outstanding, tranche prepayment-rate history, and defaults); however, it offers limited historical information on the performance of the various security tranches. To fill some of the historical performance gaps, our analysis uses the Moody's database of asset-backed securities. The information from Moody's focuses primarily on the securities it rates and therefore does not span the entire population of asset-backed securities available in Bloomberg.

More important for our analysis, the Bloomberg and Moody's databases offer extensive information on the primary institutional parties outlined in our earlier exhibit. Information on these parties allows us to determine the importance of banks as well as other financial intermediaries in the securitization market. Most of the information available on issuers, underwriters, and other parties to the transaction is collected from the prospectus (or related documents). Typically, the prospectus summarizes the underlying structure of the asset-backed security and the parties involved.

In contrast to the traditional bond or equity offerings, in which the corporate issuer is a well-defined entity, the identity of the issuer in asset-backed offerings is often concealed behind the name of the SPV or trust that is legally assigned this role. Thus, while the Bloomberg and Moody's information on underwriter, servicer, and trustee roles is fairly accurate, the true identity of the issuer is masked by the SPV/trust legal name. For instance, throughout the period of our study, Lehman Brothers issued about 4,000 securities identified under the name of about seventy-five sponsoring SPVs or trusts. At times, these issuing programs revealed their Lehman Brothers affiliation (for example, Lehman XS Trust or Lehman ABS Corp); however, the majority of these issuers did not have a recognizable association to Lehman Brothers.

A major task of our empirical analysis was to identify the true issuer of the asset-backed securities. Much of this information was obtained manually using various sources. The detailed information compiled from Bloomberg, Moody's, and other sources allows us essentially to perform an exact quantitative mapping of the asset-backed-securities universe and the types of institutions involved.

[3] This coding system was implemented in 1964 by the Committee on Uniform Security Identification Procedures (CUSIP) to promote more efficient clearing and settlement of U.S. and Canadian securities.

4. The Emergence of Nonagency Structured Finance

Structured finance (agency and nonagency securities combined) was one of the most important sources of debt financing in the United States over the last decade, representing about 30 percent of the aggregate U.S. debt outstanding. Chart 1 shows the explosive growth in the nonagency securitization market over this period. The pace of securitization was particularly strong for mortgage-backed securities (MBS) and home equity products (HELOANs and HELOCs), retail asset-backed securities, and collateralized debt obligations (CDOs), which collectively surged from around $400 billion in 1998 to nearly $1.7 trillion in 2006. (See the appendix for formal terminology of the different categories of asset-backed securities.) However, the implosion of the subprime mortgage market in 2008 not only caused the collapse of nonagency MBS, it also adversely affected all other security products.

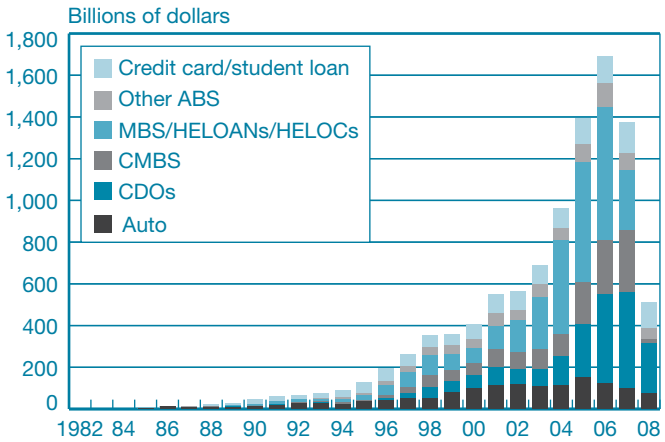
Chart 2 offers a breakdown of issuance by product for subprime MBS and home equity products, retail ABS, and CDOs. It traces the share of each category from 1987 to 2008, excluding the earlier low-volume and more erratic 1983-86 period. The "Other ABS" category includes some of the more unusual cash flow securities (such as equipment leasing, aircraft leasing, trade receivables, royalties, and small-business loans). Notably, in the early years of nonagency securitization, most of the growth came from retail ABS products, particularly auto loans and credit card receivables. This initial trend indicates a pent-up need to securitize outside the mortgage sector, especially in consumer lending. The slower securitization in nonagency MBS was also partly dictated by supply factors, as most originated loans in this earlier period were conforming or prime mortgages and therefore fell under the jurisdiction of the government-sponsored enterprises or the private-label market.

By the mid-2000s, however, subprime MBS, home equity securities, commercial mortgage-backed securities (CMBS), and CDOs became the dominant outlet in securitization. At the peak of the securitization market in 2006, subprime MBS and home-equity-related products represented 26 percent of total nonagency issuance, and CMBS amounted to about 30 percent of the market issuance.[4] The most striking rise in activity was experienced in CDO products, where volume reached $500 billion in 2007, roughly doubling from 2006. The surge in CDO issuance was in part spurred by a sharp rise in global

[4]Admittedly, comparing the aggregate dollar volume of issuance across the different categories of structured products sometimes yields misleading results. For instance, securities backed by credit card receivables require the issuer to maintain a large pool of reserves. Most credit card ABS are structured as stand-alone or master trust SPVs. In the late 1980s, securitization was done mostly by the stand-alone method, which directs cash flow from receivables to a trust representing a single security. Today, the most preferred method is the master trust structure, which allows the issuer to channel cash flow to multiple securities from the same trust. Because of the fluid nature of credit card receivables, the issue manager is expected to maintain a large pool of receivables and is obligated to replenish the trust with new collateral.

Chart 1

Nonagency Asset-Backed Issuance by Type of Collateral, 1982-2008

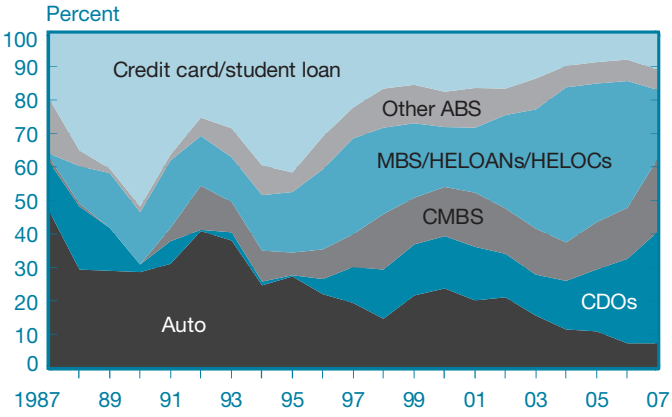


Sources: Bloomberg L.P.; authors' calculations.

Notes: The chart shows nonagency asset-backed issuances for the major securitization products. It does not include originations in the private-label market. ABS are asset-backed securities; MBS are mortgage-backed securities; HELOANs are home equity loans; HELOCs are home equity lines of credit; CMBS are commercial mortgage-backed securities; CDOs are collateralized debt obligations.

Chart 2

Share of Nonagency Asset-Backed Market Issuance by Type of Collateral, 1987-2007

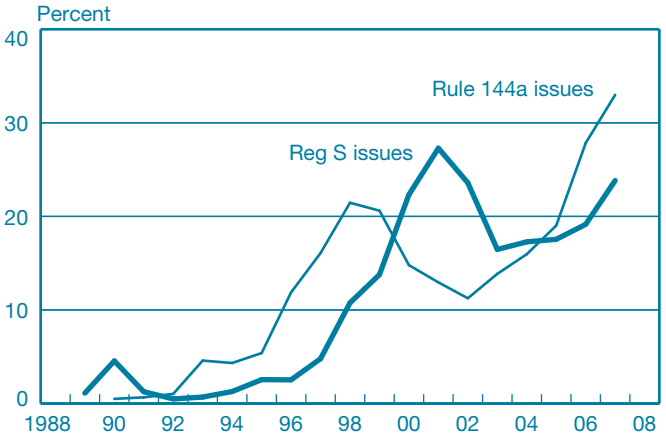


Sources: Bloomberg L.P.; authors' calculations.

Notes: The chart shows nonagency asset-backed issuances for the major securitization products. It does not include originations in the private-label market. ABS are asset-backed securities; MBS are mortgage-backed securities; HELOANs are home equity loans; HELOCs are home equity lines of credit; CMBS are commercial mortgage-backed securities; CDOs are collateralized debt obligations.

Chart 3

Share of Nonagency Asset-Backed Issues Offered Offshore or Placed Privately, 1990-2007



Sources: Bloomberg L.P.; authors' calculations.

Notes: The chart shows the share of nonagency securitizations offered under Rule 144a (private offerings) and Regulation S (off-shore security issues). It does not include private-label originations.

Table 1

Volume of Asset-Backed Issuance by Country, 1983-2008

Country	Volume (Billions of Dollars)	Share (Percent)
United States	7,089	73.1
Cayman Islands	1,227	12.7
Ireland	304	3.1
Netherlands	254	2.6
Great Britain	198	2.1
Italy	167	1.7
Spain	165	1.7
Luxembourg	79	0.8
Other	213	2.2
Total	9,697	

Sources: Bloomberg L.P.; authors' calculations.

Notes: The table summarizes total nonagency issuance by country of issuer. The aggregates represent the volume of originations for all securities with a specified country of origin.

buyout activities that reemerged over this period. Most leveraged buyout transactions were financed by leveraged syndicated loans that were eventually packaged into CDOs. The reported value probably represents a lower bound of CDO volume because it does not include private CDO deals arranged between banks and other counterparties.

4.1 Offering Structure of Nonagency Securities

Depending on investor demand, the underwriter may decide on a public offering or opt for a Rule 144a private issue directed exclusively to qualified institutional buyers. The asset-backed bond can also be sold under Regulation S to investors outside the United States (a so-called offshore transaction).

Chart 3 reveals that the fraction of asset-backed securities falling under Rule144a and Regulation S has gradually increased over the past three decades. By the end of 2008, 34 percent of asset-backed bonds were offered privately to qualified institutional buyers; about one in four securities were sold offshore. Table 1 reveals that much of the growth in overseas securitization issuance (representing issuers domiciled outside the United States) took place in the Cayman Islands. To be sure, a large fraction of the Cayman Islands issuance stems from the growth of CDOs, especially synthetic transactions, which were often sponsored by U.S. financial institutions. Together, the United States and the Cayman Islands accounted for more than 85 percent of the asset-backed-issuance volume.

A goal of Rule 144a and Regulation S is to allow companies to raise funds quickly without having to go through the public registration process mandated by the Securities and Exchange Commission (SEC). While Rule 144a and Regulation S issues are exempt from SEC registration rules, the issuer still needs to provide information to potential investors through a prospectus document; nevertheless, given the heterogeneity in these informal filings, private or Regulation S offerings are generally less transparent.

4.2 Private-Label Securities

Recall that the private-label market was a significant component of nonagency structured finance during this period. In a way, the private-label market can be viewed as the complement of the subprime MBS market in nonagency securitizations, encompassing all prime nonconforming and Alt-A mortgage-based products.[5] The main building block of

[5] Alternative-A (Alt-A) mortgages are an intermediate category of loans falling between the prime and subprime classes. Although Alt-A borrowers typically have fairly good credit histories, their income may not be fully documented. Furthermore, Alt-A loans are characterized by riskier loan-to-value and debt-to-equity ratios, and the borrowers have lower credit scores.

Table 2

Issuance in Private-Label Mortgage Market

Year	Number of Tranches, Non-U.S.	Number of Tranches, U.S.	Volume, Non-U.S. (Billions of Dollars)	Volume, U.S. (Billions of Dollars)	Share, U.S. (Percent)
1995	23	1,567	22.5	28.9	56.2
1996	45	2,187	5.4	37.6	87.4
1997	135	2,636	17.6	55	75.8
1998	186	5,086	21.9	140.1	86.5
1999	251	3,939	43.1	98.5	69.6
2000	384	3,060	71.8	78.4	52.2
2001	414	5,833	97	168.6	63.5
2002	489	7,462	134.7	247.2	64.7
2003	958	9,638	290.9	333.4	53.4
2004	1,067	10,377	315.1	420	57.1
2005	1,284	14,476	369	645.9	63.6
2006	1,918	14,286	555.9	641.9	53.6
2007	1,970	12,391	739.7	701.7	48.7
2008	850	1,209	880.3	64.2	6.8
Total (1978-08)	10,033	105,462	3,569.90	3,909.60	

Sources: Bloomberg L.P.; authors' calculations.

Notes: The private-label market includes prime and Alt-A nonagency securities. The table summarizes private-label originations between 1995 and 2008. The bottom row presents total originations since the inception of the private-label market in 1978. The aggregates represent only the number and volume of originations for securities with a specified country of origin.

private-label MBS is the so-called jumbo loan, which is a loan with an original balance greater than the upper bound of the conforming mortgage limit for government-sponsored enterprises. Although private-label MBS were first issued in the late 1970s, the market remained fairly small compared with the agency-sponsored market. With the robust rise in housing prices in the United States over the last few decades, however, nonconforming jumbo loans became a critical segment in housing finance.

Table 2 depicts the growth and increasing importance of the private-label market in the period from the mid-1990s through the end of 2008. Like nonagency MBS, private-label securities are offered overseas. But in contrast to nonagency MBS, which are offered primarily in the United States, private-label MBS have a strong foothold overseas, especially in the United Kingdom. In fact, total private-label activity between 1995 and 2008 is more or less evenly split between U.S. and overseas issues. One striking difference highlighted by the table is that the structure of prime MBS offered overseas is significantly more concentrated: The average overseas tranche is about ten times the size of the comparable U.S. tranche.

4.3 Security Summary Statistics at the Tranche Level

The various categories of securities in Table 3 indicate that credit card receivable ABS tranches are generally larger, reflecting the shorter average life of the underlying cash flow assets. The average tranche size for MBS is about $62 million, relatively similar to the average for private-label MBS. The minimum tranche size of zero often indicates the presence of a more complex subordination payment structure, such as residual tranches or excess spread tranches that typically have zero balances at the time of issuance.

The significant difference between the mean and median statistics suggests that the face value of issuance is skewed to the right. The degree of skewness is particularly evident in private-label MBS, where the maximum offering is greater than $40 billion, in contrast to a relatively tiny $8 million median offering. Many of these gigantic tranches were originated in Europe. For instance, a $40.7 billion floating-rate tranche was issued in the Netherlands by Rabobank, and it consisted of roughly 198,000 mortgages.

Table 3
Tranche-Level Summary Statistics by Type of Security

Variable	Mean	Median	Minimum	Maximum
Auto ABS				
Face value	198.3	110.0	0.0	5,519.0
Maturity	63.6	60.9	1.9	415.7
Weighted average life	26.2	24.0	0.8	270.6
Weighted average maturity	59.7	55.0	4.0	660.0
Weighted average coupon	11.3	10.2	1.0	30.2
Credit card ABS				
Face value	345.5	165.8	0.0	4,504.0
Maturity	96.3	89.6	5.1	450.4
Weighted average life	56.1	59.3	4.8	239.4
Weighted average maturity	56.6	57.0	6.0	110.0
Weighted average coupon	10.3	9.6	3.9	19.6
Student loan ABS				
Face value	138.9	82.0	0.0	2,910.0
Maturity	301.2	334.4	12.2	495.2
Weighted average life	91.3	84.0	6.1	337.4
Weighted average maturity	151.1	140.0	65.0	278.0
Weighted average coupon	7.2	7.3	3.8	20.7
Other ABS				
Face value	132.7	52.7	0.0	5,064.8
Maturity	162.1	121.3	1.0	1137.3
Weighted average life	52.9	42.0	1.0	383.4
Weighted average maturity	96.0	56.0	2.0	550.0
Weighted average coupon	8.8	8.3	2.8	20.0
Collateralized debt obligations				
Face value	90.2	27.0	0.0	16,600.0
Maturity	269.6	182.6	2.9	1205.3
Weighted average life	90.7	93.4	1.2	604.8
Weighted average maturity	142.2	98.0	1.0	405.0
Weighted average coupon	6.5	5.8	1.9	29.9
Commercial MBS				
Face value	156.0	64.0	0.0	4,199.0
Maturity	283.6	304.5	1.8	751.9
Weighted average life	75.3	69.8	0.6	387.6
Weighted average maturity	118.4	109.0	0.0	443.0
Weighted average coupon	6.8	6.4	0.0	68.0
MBS/HELOCs/HELOANs				
Face value	62.2	19.4	0.0	8,882.0
Maturity	355.6	366.0	0.9	698.7
Weighted average life	54.5	56.9	0.2	706.6
Weighted average maturity	320.6	349.0	1.0	477.0
Weighted average coupon	8.6	8.2	2.7	18.5
Private-label MBS				
Face value	66.1	8.3	0.0	40,720.6
Maturity	359.3	367.1	1.8	1,145.3
Weighted average life	75.6	63.6	0.1	420.0
Weighted average maturity	329.2	357.0	4.0	792.0
Weighted average coupon	6.7	6.6	0.0	22.5

Sources: Bloomberg L.P.; authors' calculations.

Notes: The table presents summary statistics for asset-backed securities (ABS) at the tranche level. Tranche face value is measured in millions of dollars; weighted average life and maturity are measured in months; weighted average coupon is measured in percent. MBS are mortgage-backed securities; HELOCs are home equity lines of credit; HELOANs are home equity loans.

5. The Role of Financial Institutions in Securitization

This section investigates the primary functions of asset-backed securitization: issuer, underwriter, servicer, and trustee. Because of limited data availability, we are unable to examine the various ancillary services in structured finance (institutions providing credit, currency, and liquidity risk enhancements). While the rating process is very important in the asset-backed transaction, this role is confined to a handful of independent, specialized credit-rating agencies and is therefore outside the scope of this article.

5.1 Asset-Backed-Security Issuers

The first step in the securitization process is issuance, the process of assembling the underlying collateral creating the asset-backed security. The issuer is closely linked with the lender, and sometimes these two functions overlap. The structure therefore depends on the type of collateral. Consumer auto finance lenders and large retail banks would be expected to dominate auto securitizations, while banks, nonbank mortgage lenders, and thrifts would compete more effectively in the private-label and MBS sectors.

These concentrations in securitization activities are evident in Table 4, which presents the distribution of asset-backed issuance by type of financial institution. Consistent with our expectations, auto loan issuances are dominated by consumer finance companies, especially captive auto finance companies (Ford Motor Credit, for example) and, to a lesser degree, by retail commercial banks. Over the entire sample period 1983-2008, consumer finance companies accounted for 68.4 percent of auto loan securitizations. Most of the remaining auto loan securities were originated by banks.

Turning to credit card receivables, we find that this segment is mostly under the control of banks, which are responsible for 93.9 percent of the issuance, corresponding to about an 88.3 percent Herfindahl-Hirschman Index (HHI) of market concentration. Not surprising, student loan securities are issued primarily by government-sponsored agencies, such as Sallie Mae, and banks participating in government student-lending programs. The residual category "Other ABS" represents an assortment of assets, ranging from trade and leasing receivables to small-business loans. The largest issuers in this heterogeneous category of securitizations are consumer finance companies, insurance firms, nonfinancial firms (for example, computer and airline companies), and banks.

Table 4

Distribution of Asset Securitizations by Type of Issuer, 1983-2008

	Banks	Investment Banks	Mortgage Brokers	Hedge Funds	Consumer Finance	Government	Total	HHI
Auto ABS	409.1	14.4	15.1	2.3	952.8	0	1,393.6	55.4
	(29.4)	(1.0)	(1.1)	(0.2)	(68.4)	(0.0)		
Credit card ABS	1,095.0	10.1	0.8	6.9	53.9	0	1,166.6	88.3
	(93.9)	(0.9)	(0.1)	(0.6)	(4.6)	(0.0)		
Student loan ABS	54.3	0	0	0	33.7	150.4	238.4	47.0
	(22.8)	(0.0)	(0.0)	(0.0)	(14.1)	(63.1)		
MBS/HELOCs/HELOANs	1,134.3	651.9	758.5	64.2	296.8	2.9	2,908.6	38.4
	(39.0)	(22.4)	(26.1)	(2.2)	(10.2)	(0.1)		
CMBS	740.4	415.7	84.7	37.5	80.2	25.8	1,384.4	37.6
	(53.5)	(30.0)	(6.1)	(2.7)	(5.8)	(1.9)		
CDOs	772.4	119.8	61.8	927.3	103.5	2.4	1,987.2	28.1
	(38.9)	(6.0)	(3.1)	(46.7)	(5.2)	(0.1)		
Other ABS	228.5	36	44.9	39.6	323.8	91.2	764.1	29.2
	(29.9)	(4.7)	(5.9)	(5.2)	(42.4)	(11.9)		
Private-label	5,077.6	837.7	824.2	85.0	604.8	167.5	7,596.6	46.5
	(66.8)	(11.0)	(10.9)	(1.1)	(8.0)	(2.2)		

Sources: Bloomberg L.P.; authors' calculations.

Notes: The table presents a cross-tabulation of asset-backed securities (ABS) by product type and issuer type. Numbers in parentheses represent market shares, measured in percent. The variable HHI denotes the Herfindahl-Hirschman market concentration index. The HHI can take a value of between 0 and 100, with 100 representing a market dominated by a single firm. MBS are mortgage-backed securities; HELOCs are home equity lines of credit; HELOANs are home equity loans; CMBS are commercial mortgage-backed securities; CDOs are collateralized debt obligations.

Commercial banks, investment banks, and mortgage lenders have sponsored most MBS and home equity issuances, which represent the largest consumer retail segment. In particular, commercial banks and investment banks are responsible for close to 62 percent of the volume, while most of the remaining issuances were initiated by mortgage lenders and consumer finance companies. MBS issuances are moderately concentrated, with a 38.4 percent HHI, dominated by a small group of financial institutions led by Countrywide, Lehman Brothers, and Morgan Stanley, which collectively accounted for 25 percent of the overall volume.

Interestingly, much of the MBS issuance among consumer finance companies can be attributed to GMAC, the finance arm of the world's largest automaker, General Motors. GMAC was the third-largest issuer, with roughly $215 billion of MBS during 1983-2008. Most of GMAC's MBS securitization activities were done by its subsidiary Residential Capital LLC (ResCap). Like most other large issuers of MBS, this mortgage unit was eventually overwhelmed by the collapse of subprime mortgages, further contributing to GMAC's financial difficulties.

5.2 The Issuance Structure in CMBS

The securitization methods used in CMBS are similar to those employed in MBS, but with the difference that the underlying collateral consists of commercial mortgages that derive their principal and interest cash flows from property assets. However, there are some distinct operational and structural features in CMBS. For one, CMBS do not burden the investor with significant interest rate risks because commercial mortgages do not generally have a prepayment feature. Commercial real estate lending is dominated by banks and life insurance companies. Banks typically lend shorter-term financing; in comparison, life insurance firms, motivated by the long-dated structure of their liabilities, prefer to provide longer-term real estate loans. Although investment banks are not typically large providers of commercial real estate credit, they are important in the credit intermediation process of real estate finance as lead underwriters in the syndicated loan market.

Considering the importance of commercial and investment banks in lending and arranging commercial real estate credit, it is not surprising that these institutions dominate CMBS issuances with a combined market share of more than 83 percent. Although life insurers are significant credit

providers in real estate, they typically prefer not to securitize these loans, leaving this responsibility to the commercial and investment banks that have the financial expertise to sponsor a wide variety of asset-backed securities.

The HHI for CMBS issuances is around 37.6 percent, very similar to the level of concentration achieved in the MBS sector. The largest issuer of CMBS during 1983-2008 was Credit Suisse (with close to a 13 percent market share), followed by Lehman Brothers (9.2 percent) and JPMorgan Chase (8.3 percent). The remaining list of top issuers is dominated by large global banks.

5.3 CDO Issuers

Arguably, CDO securities represent some of the most unique and intricate securitization structures. The typical MBS derives its cash flow from a large pool of homogenous mortgage loans. In contrast, the most basic CDO comprises a small number of corporate debt obligations. The CDO collateral may include business loans (leveraged loans, revolving credit facilities, and term loans), corporate bonds, and even other asset-backed securities.[6] In addition to the usual benefits of securitization outlined previously, CDO sponsors may be motivated by arbitrage incentives, aiming to profit from purchasing and securitizing corporate debt or other assets at favorable prices.[7] Most of the earlier CDOs were static, meaning that the underlying collateral was held over the life of the security. Concerned by the rise in corporate distress during the 2000s, some investors preferred a *managed CDO* structure, in which the issuer was more proactive in managing credit exposure.

Another important innovation in structured finance is the synthetic CDO, in which the cash flows stem from a credit default swap (CDS) derivative contract written on a reference portfolio of corporate bonds, loans, and CDS indexes. The role of the issuing SPV in a synthetic CDO is very different. In contrast to the more traditional asset-backed structure, in which the SPV draws cash flows from a pool of underlying assets, in a synthetic CDO the entity sells protection on the reference portfolio.[8] The SPV and its investors derive cash flows from the premiums paid by the CDS protection buyers (typically a commercial or investment bank), but are liable for all credit events.

[6] Often, the CDO collateral consists of other existing CDO securities. If a substantial fraction of the underlying asset portfolio stems from existing CDOs, these deals are referred to as CDO^2 or "CDO squared."

[7] Such a CDO security is typically referred to as an *arbitrage CDO*. If the originator securitizes its own assets (corporate loans, bonds, and other large receivables), then the CDO is known as a *balance sheet CDO*. For a more detailed discussion of CDO securities, see Bond Market Association (2004).

[8] For a more detailed discussion, see Adelson and Whetten (2004).

These more complex managed or synthetic CDO structures are more demanding on issuers. Managed CDOs require expertise in corporate debt markets in order to deal with credit exposures. Issuers of synthetic CDOs need to properly price the CDS protection of the reference portfolio. In light of these additional responsibilities, the role of the issuer in CDOs is typically referred to as *collateral manager*.

Table 4 shows that banks were responsible for close to 39 percent of CDO securitizations, sponsoring $772 billion of securities during 1983-2008. It is evident that large sophisticated banks with a large footprint in syndicated lending and bond underwriting are well suited to be CDO collateral managers. The table also reveals that hedge funds accounted for more than half of the CDO issuances. Hedge funds are natural candidates for the role of collateral manager because they often have experience trading corporate securities and CDS derivative contracts. In the case of *arbitrage CDOs*, the responsibilities of collateral managers are very similar to those of hedge fund managers, whose trades seek to take advantage of relative value opportunities.

In general, the CDO issuance market is relatively less concentrated than other markets, having an HHI of close to 28 percent. Hedge funds have been able to compete successfully in this segment, originating nearly half of the CDOs. However, most of the top-tier positions in the league CDO tables are occupied by large and sophisticated bank holding companies and investment banks, such as Goldman Sachs, Credit Suisse, Deutsche Bank, and Société Générale-TCW.

5.4 The Role of Servicer

Throughout the life-span of the structured securities, the servicer has several fiduciary responsibilities: 1) to collect payments generated from the underlying assets, 2) to transfer payments to accounts managed by the trustee, and 3) to manage deposits and investments of the revenue streams on behalf of the trustee.[9] This specialized role requires the servicer to retain all loan or security-specific information in order to collect and divert cash flows as well as track performance. These duties are therefore easier to perform for an entity associated with the lender of the asset-backed-security collateral.

The close links between servicing, issuing, and lending suggest that these roles are often combined. Thus, consumer finance companies not only were the dominant issuers of

[9] In addition to the traditional servicer function (sometimes referred to as primary or master servicer), some ABS transactions may involve variations of these responsibilities. Sometimes the primary or master servicer responsibility may be transferred to a special or backup servicer if the loan or other asset in the security defaults.

Table 5
Distribution of Asset Securitizations by Type of Servicer, 1983-2008

	Banks	Investment Banks	Mortgage Lenders	Hedge Funds	Consumer Finance	Government	HHI
Auto ABS	26.6	1.1	0.8	1.2	70.3	0.0	56.5
Credit card ABS	88.6	0.0	0.2	0.4	10.8	0.0	79.8
Student loan ABS	13.0	0.0	0.0	0.0	3.0	84.0	72.4
MBS/HELOCs/HELOANs	54.2	2.0	22.2	5.3	16.3	0.0	37.3
CMBS	48.8	0.2	45.3	1.5	4.2	0.0	44.6
CDOs	71.8	0.9	11.4	10.3	5.6	0.0	54.2
Other ABS	21.1	0.0	13.2	5.6	52.0	8.1	34.2
Private-label	79.6	0.3	14.7	1.2	3.2	1.0	40.9

Sources: Bloomberg L.P.; authors' calculations.

Notes: The table presents a cross-tabulation of asset-backed securities (ABS) by product type and servicer type. Market shares are measured in percent. The variable HHI denotes the Herfindahl-Hirschman market concentration index. The HHI can take a value of between 0 and 100, with 100 representing a market dominated by a single firm. MBS are mortgage-backed securities; HELOCs are home equity lines of credit; HELOANs are home equity loans; CMBS are commercial mortgage-backed securities; CDOs are collateralized debt obligations.

auto ABS; they also serviced 70.3 percent of these securities (Table 5). Being the largest lenders of revolving credit card debt, banks were able to capture close to 88.7 percent of the credit card ABS servicing (resulting in a 79.8 percent HHI for this class of asset-backed securities).

The data-intensive specialty link between lending and servicing is further evident in real estate securitizations. Large bank lenders are dominant in MBS, CMBS, and CDO servicing, having market shares of 54.2 percent, 48.8 percent, and 71.7 percent, respectively. Although investment banks and hedge funds are also significant issuers in these segments, their capacity to serve as servicer is more limited because they have to build the information infrastructure to compete for these services.

5.5 Underwriters of Asset-Backed Securities

The underwriter is the entity that assumes responsibility for structuring the asset-backed security (for example, designing the composition of tranches, and the size and type of credit and liquidity enhancements) based on the characteristics of the collateral and existing market conditions. Underwriters are also in charge of the actual securities sales, typically acquiring the securities from the special-purpose entities and therefore bearing some of the initial risks associated with the transactions.

Investment banks have traditionally fulfilled this role in bond and equity financing, arranging and selling the offering for issuing firms. Commercial banks bring an additional dimension to the underwriting process by enhancing certification stemming from joint-production informational advantages (gathered primarily from screening and monitoring borrowers) that can be shared with investors. These certification benefits also are present in asset-backed securities such as CMBS or collateralized loan obligations, where the bank has private information on the credit quality of the borrower. Essentially, a bank is an information specialist that can bridge the certification gap between issuers and investors.

The importance of expertise in securities underwriting is quite evident in asset-backed securitization, where commercial and investment banks dominate. Table 6 shows that, together, commercial and investment banks were responsible for nearly all of the underwriting in retail ABS. Because of their significant presence across many of the securitization product segments, banks were better placed to retain a larger share of the underwriting. For instance, banks were able to attract 69.5 percent of the underwriting business in auto ABS, a market in which security issuance was attributable mostly to consumer finance companies. Although investment banks have a very small presence in mortgage lending, they managed to capture a considerable fraction of MBS underwriting.

Table 6
Distribution of Asset Securitizations by Type of Lead Underwriter, 1983-2008

	Banks	Investment Banks	All Others	HHI
Auto ABS	69.4	29.7	0.9	57.1
Credit card ABS	65.7	32.9	1.4	54.0
Student loan ABS	88.6	10.4	1.0	79.5
MBS/HELOCs/ HELOANs	56.1	41.4	2.5	48.7
CMBS	55.2	41.1	3.7	47.4
CDOs	63.7	32.4	3.9	51.1
Other ABS	60.8	35.7	3.5	49.8
Private-label	71.8	24.9	3.3	57.8

Sources: Bloomberg L.P.; authors' calculations.

Notes: The table presents a cross-tabulation of asset-backed securities (ABS) by product type and lead underwriter type. Market shares are measured in percent. The variable HHI denotes the Herfindahl-Hirschman market concentration index. The HHI can take a value of between 0 and 100, with 100 representing a market dominated by a single firm. MBS are mortgage-backed securities; HELOCs are home equity lines of credit; HELOANs are home equity loans; CMBS are commercial mortgage-backed securities; CDOs are collateralized debt obligations.

5.6 Trustee Services

The transactions of the special-purpose entity that buys the loans are typically handled by a trustee. The trustee guarantees that the transactions are administered in accordance with the related documentation and, in a cost-effective manner, takes care of the physical delivery of the securities, follows compliance and performance-related matters, and handles cash and information processing for the noteholders. Significantly, a trustee must work closely with the issuer and servicer to protect the welfare of the investors. In contrast to the roles of issuer or servicer, which can be combined, a trustee should be an independent entity whose sole purpose is to represent the investor and thus eliminate any conflict-of-interest problems.

Given the administrative nature of the trustee business, this service is best suited to large custodian banks with a cost-effective back-office infrastructure to process the information. Table 7 demonstrates the importance of custodian banks across all types of asset-backed securities. The high market concentration measures (the HHI is over 80 percent for most product types) indicate that a handful of banks are responsible for the securitization trustee business. Although not evident from the table, the hierarchy of bank trustees differs across the various types of asset-backed products, reflecting the heterogeneous character of the collateral and its payment infrastructure.

Table 7
Distribution of Asset Securitizations by Type of Trustee, 1983-2008

	Banks	All Others	HHI
Auto ABS	97.9	2.1	95.9
Credit card ABS	98.0	2.0	96.0
Student loan ABS	98.7	1.3	97.5
MBS/HELOCs/HELOANs	96.7	3.3	93.5
CMBS	99.3	0.7	98.6
CDOs	93.2	6.8	87.2
Other ABS	92.1	7.9	85.3
Private-label	83.5	16.5	71.6

Sources: Bloomberg L.P.; authors' calculations.

Notes: The table presents a cross-tabulation of asset-backed securities (ABS) by product type and trustee type. Market shares are measured in percent. The variable HHI denotes the Herfindahl-Hirschman market concentration index. The HHI can take a value of between 0 and 100, with 100 representing a market dominated by a single firm. MBS are mortgage-backed securities; HELOCs are home equity lines of credit; HELOANs are home equity loans; CMBS are commercial mortgage-backed securities; CDOs are collateralized debt obligations.

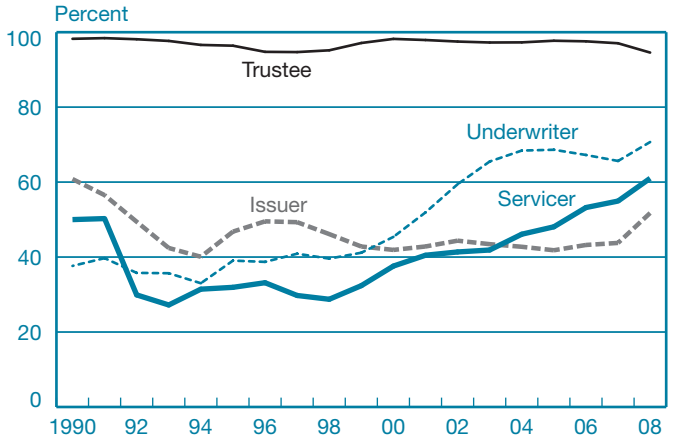
The top four trustees in MBS and home equity products are BNY Mellon, Deutsche Bank Trust, U.S. Bank National Association, and Wells Fargo. BNY Mellon remains the largest trustee for CDO securities, achieving close to a 38 percent market share. However, BNY Mellon is not very active in the CMBS market, which is dominated by LaSalle National Bank and Wells Fargo.

5.7 A Historical Overview of the Securitization Role of Banks

Our findings to this point indicate that banks are by far the predominant force in the securitization market. To further explore the importance of banks, we examine more closely the evolution of their market shares for the principal functions of securitization. We have already highlighted the fact that trustee business in securitization is dominated by a small group of custodian banks. Throughout the entire 1990-2008 period, banks' market share remained well over 90 percent. These trustee banks are best suited to processing information and acting on behalf of investors.

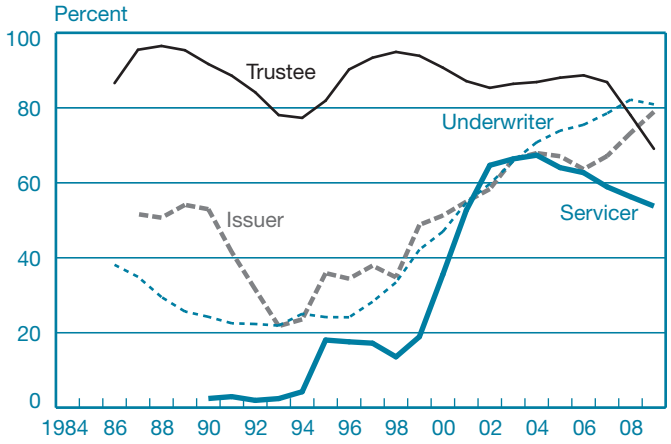
We also find that, typically, banks have issued about half of the nonagency asset-backed securities. Banks were therefore a significant force in these shadow banking segments related to securitization all along. Although banks had to compete with nonbank institutions throughout the different phases of

Chart 4
Nonagency Asset-Backed Securities: Bank Share of Primary Roles, 1990-2008



Sources: Bloomberg L.P.; authors' calculations.
Note: The chart shows the market share of banks for the four primary securitization functions in the nonagency securitization market.

Chart 5
Share of Banks in the Private-Label Mortgage Market



Sources: Bloomberg L.P.; authors' calculations.
Note: The chart shows the market share of banks for the four primary securitization functions in the private-label market.

securitization, they remained formidable players. In contrast to the asset-backed-issuance business, in which they managed to retain a constant market share, banks were more aggressive in expanding servicing and underwriting, increasing their market shares from the early 1980s to the peak of the securitization market in 2007 (Chart 4).

Much of the banks' success in underwriting can be attributed to the Gramm-Leach-Bliley Act (1999), which formally removed many of the legal barriers put in place by the Glass-Steagall Act (1933); Glass-Steagall had prohibited commercial banks from participating in equity and bond underwriting. Actually, the Federal Reserve authorized banks, through their Section 20 subsidiaries, to have limited participation in these underwriting and other ineligible securities activities starting in the late 1980s. After the enactment of Gramm-Leach-Bliley, large banks made a concerted push to expand their securities underwriting business, raising their asset securitization market shares to nearly 70 percent.

Banks also gradually increased their presence in servicing from less than 10 percent in the early 1990s to around 60 percent by the end of 2008. The stronger presence in servicing stems from the changing character of the securitization market, which shifted from retail ABS products to CMBS, MBS, and CDO products in which the underlying collateral and information are primarily originated and kept by bank lenders.

In addition to dominating these key segments of the nonagency asset-backed markets, banks also managed to retain significant trustee business in the private-label market (Chart 5). Relying on their Section 20 subsidiaries, banks expanded their underwriting activities aggressively in this sector starting in the early 1990s to achieve a market share of over 80 percent by the end of 2008. In addition, banks raised their market share of issuance from 20 percent in the early 1990s to 75 percent in 2008. The success of banks in competing and dominating most services in the private-label market can be attributed to their ability to effectively dominate lending in the nonconforming prime mortgage sector.

6. Conclusion

Financial intermediation has grown increasingly complex in recent decades. The system of financial intermediation, which traditionally had centered on banks simultaneously playing the many roles needed to guarantee an efficient match between supply and demand for funds, has become decentralized, and those roles can be played separately by more specialized entities. This transformation in intermediation raises legitimate questions about the role of banks and the role of bank-based supervision and regulation, as systemic risk may be migrating out of the reach of regulators and policymakers.

The thesis here, however, is that a proper assessment of financial intermediation's evolution and its now more complex characterization needs to be done through a proper quantification of the main roles—and thus potential new markets and entity types—involved in the process.

We took our thesis to the data and analyzed in detail the system of asset securitization, which represents the core of the modern system of financial intermediation. For the first time, we have a true quantitative mapping of which party does what along the crucial steps in the credit intermediation chain. Our analysis has focused on four principal functions of securitization: issuer, underwriter, servicer, and trustee. We demonstrate that large bank holding companies—and, to a lesser extent, investment banks—have been significant contributors to all phases of this process. Although much of the securitization activity appears to have been done outside the regulatory boundaries of banking, we find strong evidence to the contrary.

The modern system of financial intermediation appears less complex than it did at first glance. Despite the multiple steps needed for a dollar of funding to reach its destination, the system still requires the same set of basic intermediation functions. And when looked at closely, banking firms—identified according to their broader organizational structure—are still playing a central role. These considerations should be relevant in any future assessments of the role of financial system supervision and regulation.

Appendix: The Evolution of Asset Securitization

The Securitization Market

Securitization is a financial innovation with a long history in U.S. capital markets and in several economies overseas. It involves the issuance of securities that derive their cash flow from underlying assets. The most common asset-backed structure sells shares in this securitized pool to investors. The novelty of asset securitization is that the performance of the security is determined by the cash flow of the pledged collateral and in theory should not depend on the financial strength of the asset issuer.

Agency Mortgage-Backed Securities

Structured finance techniques were the foundation of the *agency mortgage market*, which began in the early 1970s when the Government National Mortgage Association (Ginnie Mae) used these techniques to pool government-sponsored mortgage loans. These structures were later embraced by the Federal Home Loan Mortgage Corporation (Freddie Mac) and the Federal National Mortgage Association (Fannie Mae). The key mechanism in the agency securitization market was the pass-through mortgage-backed security, which facilitated the seamless transfer of cash flows from mortgage lenders to investors.

Another important phase of asset securitization in the United States emerged in the mid-1980s and was aimed at satisfying investors looking for more diverse mortgage securities with different maturities and different interest rate characteristics. Initially, securitization products, such as collateralized mortgage obligations and multiclass structures, were used to transform and resecuritize existing agency mortgage-backed securities. The resecuritization of agency securities greatly expanded the role of Freddie Mac and Fannie Mae, which were chartered by Congress with the mandate of supporting the secondary market in mortgage debt and enhancing credit availability in the housing finance market (Fabozzi and Dunlevy 2001).

Nonagency Asset-Backed Securities

The traditional agency securitization structures offered a mechanism for the creation of a nonagency securitization market that began to flourish in tandem with the agency market in the mid-1980s. A key catalyst in this process was the Tax Reform Act of 1986, which enabled the creation of *real estate mortgage investment conduits* (REMICs). The authorization of REMICs was a watershed event in the agency resecuritization and nonagency market. This accounting vehicle essentially allows the transfer of assets into a bankruptcy-remote trust that is insulated from the performance of the asset issuer.[a]

The REMIC spurred the explosive growth in the securitization of nonconforming mortgage-backed securities using alternative credit enhancement structures. The nonconforming mortgage market, more commonly referred to as the *private-label* securities market, consists of loans that are too large to meet the agencies' size limits. In 1995, the longstanding Community Reinvestment Act was modified to encourage the securitization of lower-credit-quality loans. An environment of lower interest rates also made homeownership affordable, allowing borrowers to refinance and consolidate their debt.

Technological innovations and advanced credit-scoring systems also played a critical role in automating underwriting procedures and lowering borrowing costs. These financial innovations and lower underwriting standards spurred the rapid growth of the subprime mortgage market, which surged from roughly $65 billion in 1995 to about $1.3 trillion in 2007, according to *Inside Mortgage Finance*.

[a] The Tax Reform Act of 1986 required income from REMICs to be treated as regular interest and specified several rules concerning the taxation of the residual payments from REMIC investments.

A key requirement in a REMIC is that the underlying collateral must be static—that is, a real property or a real property derivative. The REMIC structure cannot be applied to a large subset of cash-flow-producing assets, such as car loans, revolving credit card receivables, lease receivables, student loans, corporate debt, and commercial real estate loans. To fill this gap, asset securitization has relied on several alternative bankruptcy-remote structures. The primary mechanisms for securitizing nonmortgage assets are provided by a variety of common-law *trusts* and revolving special-purpose entities such as *master trusts* and *commercial paper conduits*.[b]

Classification of Nonagency Securities

This study follows the Securities Industry and Financial Markets Association (SIFMA) classification and terminology for nonagency asset-backed securities. While it is true that the term *asset-backed security* (ABS) is sometimes used to describe any structured security that is backed by an asset's cash flows, SIFMA uses this definition more narrowly to refer to any asset receivables other than direct mortgage loans. According to this designation, the ABS class represents a wide variety of consumer finance assets (automobile loans, credit card receivables, student loans, consumer loans, and other, more exotic, lease financing receivable structures). The ABS class also encompasses home equity loan (HELOAN) and home equity lines of credit (HELOC) products. Securities backed by mortgages are commonly described as *mortgage-backed securities,* or MBS (sometimes known as RMBS, for residential MBS).

Recall that there are two large subgroups of MBS: private-label MBS (based on prime or Alt-A nonagency mortgage products) and subprime MBS (derived from subprime mortgages). Because subprime MBS, HELOAN, and HELOC securities are all inherently collateralized by the value of a home, our analysis lumps these asset classes together. Finally, structures backed by commercial real estate loans are referred to as *commercial mortgage-backed securities* (CMBS).

Another important asset-backed class is the *collateralized debt obligation* (CDO), which includes securities backed by debt instruments. In particular, CDOs backed by corporate loans or bonds are referred to as *collateralized loan obligations* (CLOs) or *collateralized bond obligations* (CBOs), respectively. Many of the recent and complex multiclass CDO securities that were based on existing nonagency MBS are often referred to as "CDO squared." Over the last few years, an important category to emerge is synthetic CDOs. This class of CDOs relies on credit derivatives (typically, credit default swaps) to transfer asset risks and cash flow payments between investors and issuers.

[b] Static trusts are typically created as *grantor trusts* or as statutory entities referred to as *owner trusts*. In many ways, a grantor trust is similar to a pass-through security in that it facilitates the transfer of income from the underlying asset (for example, automobile interest rate payments and principal) to investors. A grantor trust must be passive, with no management responsibilities for the investors, and limited in the number of asset classes. In comparison, an owner trust sells certificates to investors, allowing for a more complex structure of ownership between senior and subordinate investors and sequential payment distributions according to the maturity of the different tranches. Revolving structures are often very useful for credit card and home equity line asset-backed securities. In a revolving master trust, the principal and interest cash flows are distributed in phases (initially a revolving and subsequently an amortization phase).

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