Securitization

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A primary function of financial intermediaries is to facilitate the flow of capital from savers to borrowers. Financial institutions exist because they can do this at a lower cost than would be possible through direct financing arrangements. Banks and other depository institutions perform this intermediary function by making loans and accepting deposits. Sometimes, however, a financial intermediary's demand for loans at a given rate is greater than its supply of deposits, in which case it may purchase fed funds or other uninsured deposits, sell securities under repurchase agreements, sell short-term securities such as commercial paper or bankers acceptances, or sell assets such as government securities or loans. When an institution sells loans, it can sell whole loans or loan participations, or it can "securitize" a portfolio of similar loans.

Securitization is a recent innovation in asset sales. It involves the pooling and repackaging of loans into securities, which are then sold to investors. Like whole loan sales and participations, securitization provides an additional funding source and eliminates assets from a bank's balance sheet. Unlike whole loan sales and participations, securitization is often used to market small loans that would be difficult to sell on a stand-alone basis. Most importantly, securitization can increase the liquidity and diversification of a loan portfolio. The ability to package and sell these otherwise illiquid assets in an established secondary market increases their liquidity. Greater diversification can be achieved because an institution can hold the same dollar amount of a particular type of loan in the form of a security backed by the loans of numerous borrowers, as opposed to holding whole loans of relatively few borrowers. Securitization can also be used as a tool for gap management because it facilitates the sale of long-term assets of depository institutions. It may also enable institutions to attract long-term funds more profitably than would be possible with conventional tools. Because of these benefits, banks, savings and loan associations, and various nondeposit-based firms engage in securitization.

This paper describes the major types of loan-backed securities and discusses their implications for the financial services industry. The first section describes the various kinds of securitized loan products. The second discusses the costs and benefits from securitization. The third section looks at the factors that determine whether a loan can be securitized and examines the possibilities for further securitization, including the securitization of commercial and industrial loans and other loans on the books of commercial banks. The final section discusses the implications of securitization for the financial services industry, and depository institutions in particular.

Types of loan-backed securities

Loan-backed securities are collateralized by residential, multifamily, and commercial mortgage loans, automobile loans, credit card receivables, Small Business Administration loans, computer and truck leases, loans for mobile homes, and various finance receivables, but the majority of all loan-backed securities are collateralized by single-family, residential mortgages. Securitization began in 1970 when the Government National Mortgage Association (GNMA) developed the "Ginnie Mae" pass-through, a mortgage-backed security collateralized by single-family Federal Housing Administration (FHA) and Veterans Administration (VA) mortgage loans. There are three basic types of loan-backed securities, each of which developed out of the secondary mortgage market.

Pass-throughs

The first type of loan-backed security was the pass-through. A pass-through represents direct ownership in a portfolio of mortgage loans that are similar in term to maturity, interest rate, and quality. The portfolio is placed in trust, and certificates of ownership are sold

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to investors. The loan originator services the mortgage portfolio and collects interest and principal, passing them on, less a servicing fee, to the investors. Often there is a second middleman involved between borrowers and investors. If one of the federal mortgage agencies, such as the GNMA, is involved, it receives the principal and interest from the originator and passes it along to the investors. Ownership of the mortgages in the portfolio lies with the investors; thus, pass-throughs are not debt obligations of the mortgage originator and do not appear on the originator's financial statement.

The most common type of pass-through is the Ginnie Mae. A Ginnie Mae is a mortgage-backed security collateralized by FHA-VA mortgages. The GNMA, a direct agency of the federal government, guarantees the timely payment of principal and interest. Because Ginnie Maes are backed by government-guaranteed mortgages and federal agency guarantees, investors face virtually no default risk. An active and well-developed secondary market provides a high degree of marketability for these securities.

The Federal Home Loan Mortgage Corporation (Freddie Mac), an indirect agency of the federal government, developed a similar pass-through security in 1971, the "participation certificate" (PC), and the Federal National Mortgage Association (FNMA, or Fannie Mae) developed the mortgage-backed security (MBS) in 1981. Both the PC and the MBS are backed by portfolios of uninsured and privately insured mortgage loans. Monthly interest and full repayment of principal on PCs are guaranteed by Freddie Mac. The timing of the principal payments, however, is not guaranteed. Because conventional and privately-insured mortgages tend to be repaid more quickly than FHA-VA mortgage loans, the average life of a PC or an MBS is about seven to nine years.

As shown in Table 1 and Figure 1, the growth in the securitization of mortgage loans has been rapid. The total dollar volume of mortgage pass-throughs issued by federal agencies was over three times the amount outstanding at the end of 1980 and represents nearly 25 percent of all residential mortgages outstanding in 1985. Figure 1 indicates that mortgage pass-through securities have also been growing faster than the overall market for taxable, fixed-income securities. In 1972, such mortgage pass-throughs represented only 1 percent of all taxable, fixed-income securities; in September 1984, they accounted for 14 percent of such securities.

Ginnie Maes account for the largest proportion of mortgage pass-throughs, but their proportion has declined over time. In 1985 Ginnie Maes constituted 58 percent of mortgage pass-throughs, down from 67 percent in 1982, the first full year that all three federal agencies issued pass-throughs. Fannie Mae MBSs account for most of Ginnie Maes' lost "market share." One reason for FNMA's success is its swap program. This program allows a mortgage lender to swap whole mortgage loans for MBSs.

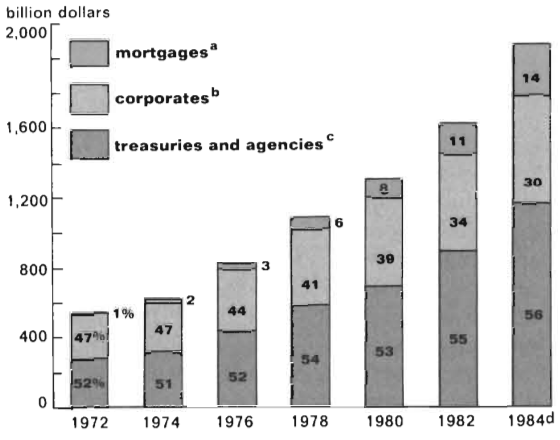
Private sector pass-throughs are not as prevalent as the federal agency pass-throughs.

Table 1
Mortgage pass-through securities and home mortgages outstanding ($ billions)

	1980	1981	1982	1983	1984	1985
Mortgage pass-throughs						
GNMA	$ 94	$106	$119	160	$180	$212
Freddie Mac PC	17	20	43	58	71	99
FNMA MBS	n.a.	1	15	25	36	55
Total	114	127	177	243	287	366
1-4 family mortgages	891	1,065	1,075	1,190	1,319	1,467
Mortgage pass-throughs as a % of 1-4 family mortgages	12.8%	11.9%	16.5%	20.4%	21.8%	24.9%

SOURCE: Board of Governors of the Federal Reserve System, *Federal Reserve Bulletin*, various issues.

Figure 1
Taxable fixed income securities: Amount outstanding at year-end



[a]GNMA, FHLMC and FNMA mortgage-backed securities, and publicly sold conventional pass-throughs.
[b]Private placements, convertible bonds, foreign issues sold in the U.S., and straight domestic public issues.
[c]Treasury notes and bonds and nonmortgage agency issues.
[d]As of September 30, 1984.
SOURCE: Salomon Brothers, *Mortgage Securities: 1972-84*, by Michael Waldman and Steve Gutterman, (New York, March 1985).

In 1977, Bank of America issued the first private sector pass-through. The securities were backed by conventional mortgages, and private mortgage insurance covered the entire pool of loans rather than each individual loan. Only $10 billion in private sector pass-throughs were outstanding at year-end 1984.[1] This amounted to only 3.5 percent of all federal agency pass-throughs outstanding at that time.

Popularity of mortgage pass-throughs has been greatest among savings institutions. This popularity probably results from S&Ls' ability to substitute pass-throughs for whole mortgage loans, thus increasing the diversification and liquidity of their portfolios. Pass-throughs accounted for about 15 percent of all savings institution assets, 8 percent of insurance company assets, 7 percent of commercial bank assets, and 5 percent of pension fund assets.[2]

Mortgage-backed bonds

The second type of mortgage-backed security is the mortgage-backed bond (MBB). Like the pass-through, the MBB is collateralized by a portfolio of mortgages. Sometimes an MBB is backed by a portfolio of mortgage pass-through securities such as Ginnie Maes. Unlike the pass-through, the MBB is a debt obligation of the issuer, so the portfolio of mortgages used as collateral remain on the issuer's books as assets and the MBBs are reported as liabilities. Also, the cash flows from the collateral are not dedicated to the payment of principal and interest on MBBs. MBBs have a stated maturity (usually between five and 12 years), and interest is generally paid on a semiannual basis.

One important characteristic of MBBs is that they are usually overcollateralized. The collateral is evaluated quarterly, and if its value falls below the level stated in the bond indenture, more mortgage loans or securities must be added to the collateral.

There are three reasons for the overcollateralization of MBBs.[3] First, because the cash flows accrue to the issuer rather than to the mortgage pool or to the bondholders, the outstanding balance of any mortgage pool may decline faster over time than the principal on the MBBs. Second, the excess collateral provides additional protection to the bondholder against default on individual mortgages in the portfolio. Third, the excess collateral protects bondholders from declines in the market value of the collateral between valuation dates. Premiums for default risk and risk of collateral depreciation could be captured in the yield on MBBs; however, because payment of principal and interest accrues to the issuer and can be used for reinvestment the issuer may prefer to use overcollaterization.

Both the private sector and federal agencies issue MBBs, although they are more prevalent among private issues. In the private sector, they are issued by savings and loan associations and mutual savings banks. The number of issues, however, has been somewhat limited. At the end of 1984, savings and loans had issued only $5 billion in MBBs.[4] One reason for this limited activity is that MBBs may be more costly to issue than pass-throughs. Because the mortgages that serve as collateral from MBBs remain on the issuer's books, a depository institution that issues MBBs must cover these loans with a certain proportion of capital.

Pay-throughs

The third type of mortgage-backed security is the pay-through bond. This bond combines some of the features of the pass-through with some from the MBB. The bond is collateralized by mortgage loans and appears on the issuer's financial statements as debt. The cash flows from the mortgages, however, are dedicated to servicing the bonds in a way similar to that of pass-throughs.

In June 1983, Freddie Mac issued a pay-through bond known as the CMO (collateralized mortgage obligation). Each CMO issue was divided into three maturity classes, and each class received semiannual interest payments. Class 1 bondholders, however, received the first installments of principal payments and any prepayments until Class 1 bonds were paid off. Class 2 bondholders, in turn, received principal payments and prepayments before Class 3 bondholders received any principal payments. The original Freddie Mac CMO was structured so that Class 1 bonds were repaid within five years of the offering date; Class 2 bonds, within 12 years; and Class 3, within 20 years.

The structure of CMOs makes the term of the securities more certain. Therefore, bondholders are given a kind of "call protection." This call protection is one of the primary reasons for the success of CMOs. Because CMOs mitigate the prepayment risk, and provide shorter maturity classes of mortgage securities, investors who might not have otherwise invested in mortgages have been attracted to the mortgage securities market.

Since Freddie Mac developed the first CMO, many variations have been developed. Issues of CMOs now have from three to more than six maturity classes. Most CMO issues, however, have four maturity classes.

In addition to Freddie Mac, private sector firms also issue pay-throughs. As shown in Table 2, at least six different types of private firms issue CMOs. Home builders have accounted for the most issues of CMOs (33) as of June 1985. Investment banks, however, have issued the greatest dollar volume of CMOs—$7.4 billion, or 34 percent.

The level of activity in pay-throughs has been limited compared to mortgage pass-throughs. Total dollar volume of CMOs was only $22 billion as of June 1985, less than one-tenth of the volume of mortgage pass-throughs issued by GNMA, FNMA, and Freddie Mac over that same time period. Furthermore, the federal agency pass-throughs serve as collateral for 45 percent of CMOs issued since June 1983. Conventional mortgages are collateral for 28 percent of CMOs issued, and a mixture of conventional mortgages and federal agency pass-throughs account for the remaining 27 percent.

One reason that nongovernment intermediaries have been more successful as issuers of CMOs than of other mortgage-related securities is that nearly half of all CMOs are backed by GNMAs and other federal agency mortgage securities. Thus, by issuing CMOs investment bankers and other intermediaries primarily provide investors with call protection and shorter-term mortgage securities. The value of call protection and the value to breaking mortgage securities into various maturity classes is reflected in the spread between the underlying assets and the yields on CMOs.

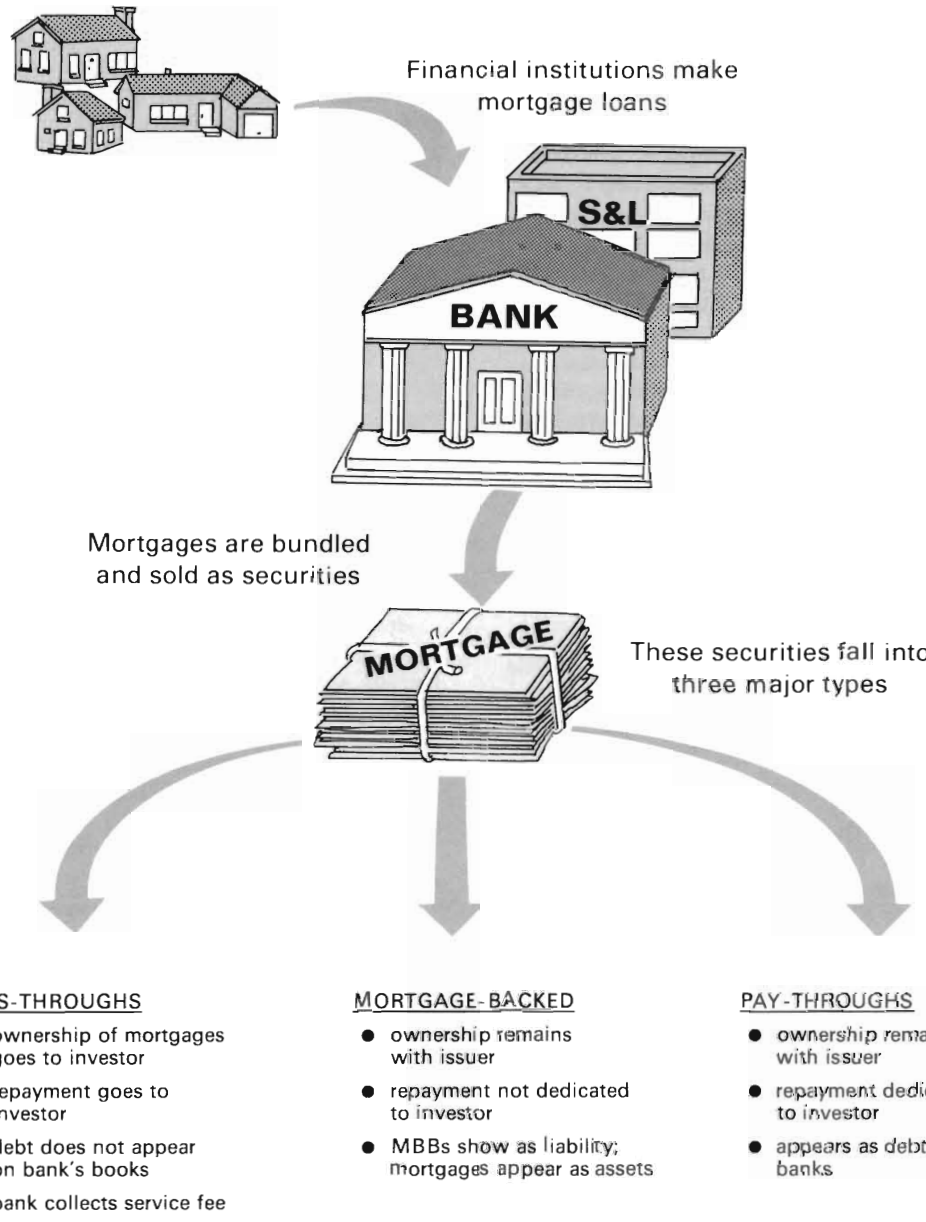
The primary investors in CMOs are insurance companies, pension funds, thrift institutions and commercial banks. As shown in Table 3, insurance companies and pension funds account for the largest share of CMOs in the long-term maturity classes. As expected, the CMOs held by thrifts and banks are from the short-term maturity class.

CARS and other loan-backed securities

Although most loans packaged and sold in the secondary market are mortgages, other types of loans have been securitized. As of September 1985, GNMA had issued $3.2 billion in pass-throughs collateralized by mobile home loans.[5] In addition, auto loans, computer leases, credit card loans, and other receivables have recently been securitized.

In 1985 automobile loans were first packaged and sold as securities. These loan-backed securities, known as certificates of automobile receivables (CARs), are pass-through securities, in which the interest and principal of the underlying auto loans are passed on to the security holders. CARs generally require a higher servicing fee than do mortgage-backed securities because an auto loan requires more monitoring. The collateral, a car, is not sta-

Figure 2
Turning mortgages into securities



tionary, and the collateral does not maintain its value as well as a home.

CARs were developed and first issued by Salomon Brothers in January 1985. Salomon privately placed $10 million of CARs for a firm that specializes in financial services for auto dealers. The CARs were backed by a pool of auto loans, each of which carried its own credit insurance. In addition, the pool of auto loans was insured by a private insurer.

The first public offering of CARs occurred in March 1985 when Salomon Brothers offered

Table 2
CMOs by issuer and by type of collateral:
June 1983 - June 1985
($ billions)

	$ millions	% of total	Number of issues
Issuer			
Investment bankers	$7,377	34	22
FHLMC	4,869	22	7
Home builders	4,459	20	33
Mortgage bankers	1,678	8	9
S&Ls	1,547	7	7
Insurance companies	1,522	7	2
Commercial banks	500	2	1
Collateral			
GNMAs	$8,808	40	38
Conventional mortgages	6,231	28	11
Mixed collateral	5,833	27	26
FHLMC PCs	728	3	4
FNMAs	350	2	2

SOURCE: Joseph Hu, "Proliferation of Mortgage-Backed Securities," *Mortgage Banking* 45 (September 1985): 38.

$60 million of pass-through securities backed by automobile loans originated and serviced by Marine Midland Bank. Originally, Marine Midland Bank was to issue the CARs with its holding company, Marine Midland Banks, Inc., insuring the transaction. The Federal Reserve Board, however, indicated that it would impose reserve requirements on the issue and the auto loans remain on the bank's books as assets for computing capital requirements.[6] The offering, therefore, was restructured. A private insurer was secured to insure the pool of auto loans, and a trust was established to hold the underlying loans.

CARs have not been nearly as successful as mortgage pass-throughs. Less than one-half of 1 percent of all auto loans outstanding have been securitized. A major reason for the CARs' lack of success can be attributed to the Federal Reserve's decision concerning Marine Midland's public offering. Additionally, the need to secure private insurance or forego insurance makes many of these deals unprofitable. However, recently the market for CARs has shown signs of improving. General Motors Acceptance Corporation (GMAC), the largest auto lender in the country based on auto loans outstanding, issued nearly $525 million of securitized auto loans. A spokesman for GMAC said that subject to interest rates, GMAC could issue $500 million of CARs every quarter.[7]

Credit card receivables have also been securitized. In April 1986, Salomon Brothers privately placed $50 million of pass-throughs backed by a pool of Bank One credit card receivables. The "certificates of amortizing revolving debts" (CARDs) were unrated and have a stated maturity of five years. For the first 18 months, only interest payments are passed through to investors. Principal payments made during this time are used to purchase additional receivables. After the first 18 months, investors receive principal payments.

The CARDs were not guaranteed by a third-party; rather, Bank One established a reserve fund equal to twice the historical default rate on credit card debt, and Bank One retained a 30 percent interest in the credit card pool. When the CARDs mature, if there are no defaults within the pool, the bank recoups the entire value of the reserve fund. The reserve fund concept is not only applicable to CARDs. It could be applied to CARs and other loan-backed securities where recourse or private insurance is thought to be necessary.

Other types of securitized loans include loans guaranteed by the Small Business Administration, computer leases, and various types of trade credit.[8] The first SBA loan-backed securities were sold in August 1985, and

Table 3
Major buyers of CMOs

Maturity class (weighted average life)	Thrift institutions	Banks	Insurance companies	Pension funds	Other
Class 1 (less than 4 years)	26.9%	17.7%	18.1%	33.2%	4.1%
Class 2 (4.1 - 7 years)	7.2	2.1	57.4	29.1	4.2
Class 3 (7.1 - 10 years)	5.5	3.4	40.4	48.7	2.0
Class 4 (more than 10 years)	3.3	—	29.3	67.4	—

SOURCE: Salomon Brothers, "Comments on Credit," March 9, 1985, p. 3.

in February 1986, First National Bank of Wisconsin became the first bank to package SBA loans and sell them as securities.

The securities backed by lease receivables and trade credit are similar to mortgage-backed bonds. Commercial paper or corporate bonds are collateralized by lease and trade credit receivables. The receivables remain on the books of the issuer. Some companies, however, sell their receivables to a subsidiary set up for the purpose of issuing debt backed by the parent's receivables. AMAX, a metals and mining company, is responsible for developing the securitization of trade credit. Since 1982, AMAX has been selling a portion of its receivables to a subsidiary. To buy the receivables, the subsidiary issues commercial paper insured by a private insurance company.

The securitization of computer leases was pioneered by Comdisco early in 1985. The firm sold $35 million in four and one-half year bonds backed by computer leases. In March 1985, Sperry Corporation followed Comdisco's lead and issued $192.5 million of six-year notes backed by computer leases, and in September 1985, Sperry issued another $145.8 million in debt collateralized by computer leases.[9]

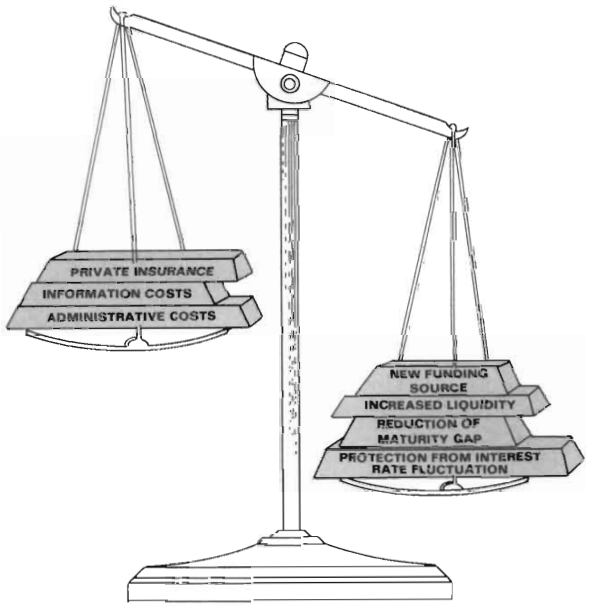
Why securitize?

A pool of loans will, of course, only be securitized if the benefits from doing so exceed the costs, and if the net benefits are greater than those from other funding sources. The primary costs of securitization are the administrative costs, such as investment banking fees, the cost of providing information to investors and the rating agencies, and, in some instances, the cost of private insurance.[10] The benefits from securitization include protection from interest rate risk (and sometimes prepayment risk), increased liquidity for original lenders and for investors, a more efficient flow of capital from investors to borrowers, and new and less expensive funding sources for original lenders.

The first two benefits are particularly applicable to the mortgage market. Savings and loans associations (S&Ls), the primary suppliers of mortgage credit, hold residential mortgages with average stated maturities of 27.5 years and fixed interest rates. Although originations of adjustable-rate mortgages have been increasing, 62 percent of all mortgages held by S&Ls are still fixed-rate loans.[11] Sixty-five percent of the typical S&L's liabilities, primarily time and savings deposits, mature in one year or less. This gross mismatching of maturities leaves S&Ls open to the risk that interest rates will rise. Savings institutions have several techniques available to hedge interest rate risk. For example, they can utilize the options and futures markets. These techniques, however, can be costlier than securitization, and thrift managers may be more familiar with securitization than with other gap management tools.

Pass-through mortgage securities as well as mortgage-backed bonds and pay-through bonds allow S&Ls to reduce the maturity gap between their assets and liabilities. With pass-throughs, an S&L sells a pool of mortgages; thus, the long-term assets are taken off its books, shortening the average maturity of its assets and decreasing its required level of capital. The thrift, however, continues to service the loans and collects the servicing fees. Pass-throughs, therefore, have the added advantage of allowing the issuer to earn income on fewer assets and less capital, thereby greatly improving its return on assets and equity.

Figure 3
Cost vs. benefits from securitization



In addition to issuing pass-throughs, S&Ls can hold mortgage pass-throughs and CMOS in their portfolios in place of whole mortgage loans. By holding pass-throughs and CMOs, thrifts can further diversify their assets, and with CMOs they can protect themselves against prepayment risk. Pass-throughs and CMOs can also increase the liquidity of their portfolios because pass-throughs trade in an active secondary market.[12] Trading in mortgage-backed securities increased from $243 billion in 1981 to $1.2 trillion in 1985.[13] Also, the ability to liquify such assets as mortgage loans, consumer loans, credit card receivables, and leases increases an institution's ability to manage its liquidity position.

With MBBs and pay-through bonds, the portfolio of loans remains on the issuer's books, serving as collateral for the bonds. The issuer, therefore, increases its leverage by issuing more debt; however, by issuing the bonds, the thrift lengthens the average maturity of its liabilities. An MBB has an average maturity of about five to 12 years, while most deposits have maturities of less than one year.

Table 4 shows how S&Ls are using mortgage-backed securities to restructure their balance sheets. In 1980, pass-throughs held at and MBBs issued by S&Ls represented only 7.3 percent of their 1-4 family mortgages. By 1984, however, pass-throughs and MBBs were over 28 percent of 1-4 family mortgages at S&Ls.

Securitization also provides for a more efficient flow of funds from investors to borrowers. Large institutional investors, such as insurance companies and pension funds, have long-term liabilities; however, they generally do not have decentralized investment operations or distribution systems that allow them to make residential mortgages directly. Thrifts, as already discussed, have very short-term liabilities and an expertise in making residential mortgage loans. Securitization links the long-term funds of insurance companies and pension funds with the long-term assets of S&Ls, thus allowing more capital to flow into the market for mortgage credit.

Securitization may also provide a firm with a relatively inexpensive source of funds. For example, a thrift may have to increase the rate it pays on savings deposits from 8 percent to 9 percent to raise additional funds. Alternatively, it could issue MBBs at 10 percent. The marginal cost of issuing the MBBs may be less than that of raising deposit funds because the higher rate paid on savings deposits will have to be paid on all deposits, old and new.

Securitization can provide an inexpensive funding source when a firm's overall credit rating is lower than the credit rating on its receivables. For instance, Gelco Corp., a firm that leases trucks, was rated BB- by Standard and Poor's. Its commercial paper backed by high-quality leases was rated A-1. The firm saved about 80 basis points in borrowing costs by securitizing its lease receivables.[14] Similarly, securitization can enable small and new companies to offer customer financing.

Finally, securitization can also provide a depository institution with an inexpensive source of funds because, in some cases, it can enable a depository institution to avoid "intermediation taxes," i.e., reserve and capital requirements and deposit insurance premiums. If a depository institution sells mortgage pass-throughs, it eliminates the underlying mortgage loans from its balance sheet and, therefore, no longer has to hold capital against these loans. Since the proceeds from the sale of pass-

Table 4
One-to-four family mortgages, pass-throughs and mortgage-backed bonds at S&Ls

	1980	1981	1982	1983	1984
Pass-throughs	27	33	61	93	118
Pass-throughs/1-4 family	6.4%	7.6%	15.5%	23.7%	27.3%
Mortgage-backed bonds	4	3	3	4	5
MBBs/1-4 family	0.9%	0.7%	0.9%	0.9%	1.1%

SOURCE: Federal Home Loan Bank Board, *Quarterly Financial Report, State of Condition* (as of December 1980 to 1984), and Board of Governors of the Federal Reserve System, *Federal Reserve Bulletin*, various issues.

throughs are not deposits, the issuer does not have to hold reserves or pay for deposit insurance against the proceeds. As "intermediation taxes" increase, this benefit from securitization, and therefore securitization itself, would be expected to increase as well.

To the extent that intermediation taxes are too high on some types of bank assets, securitization may be a reaction to these taxes. For example, deposit insurance and capital requirements are flat taxes; thus, high-risk loans are taxed at the same rate as low-risk loans. The cost of funding low-risk loans "after tax" may be higher than the costs faced by nonregulated competitors or by the borrowers themselves. Therefore, in reaction to intermediation taxes, banks may be selling off these high quality assets and substituting high-risk assets. Indeed, some bankers have suggested that securitization would dry up if capital requirements and deposit insurance were "correctly" priced according to risk.

In some ways, securitization could facilitate the implementation of deposit insurance. The primary problem with implementing a risk-based deposit insurance scheme is in measuring risk. However, if most of a bank's assets were securities and trading in a secondary market, the market value of a bank's assets and their corresponding risk could be measured. Securitization, therefore, would facilitate risk-based deposit insurance by increasing the available information on bank riskiness.

One very serious problem, however, still remains. If each bank that issues loan-backed securities guarantees the principal and interest on the securities, and if the FDIC makes good on all contingent liabilities of failed banks, then, indirectly, the FDIC is guaranteeing the securities. This guarantee will be reflected in the price of the securities; i.e., they will have lower yields and be less risky than if they were not guaranteed. Then the primary problem with administering risk-based deposit insurance would be valuing the indirect guarantee of the FDIC on loan-backed securities.

Can everything be securitized?

Not all loans are easy to securitize. Loan terms and structures vary significantly. Also, the benefits to any individual firm from securitization depend upon each firm's particular situation and upon the type of loan securitized. The costs of securitizing are not uniform across different types of loans.

The riskiness of a loan-backed security is the main determinant of its price. The riskier the security, the lower the price, and therefore the higher the yield. If the yield on the security is greater than the average yield on the underlying pool of loans, the benefits from securitizing may be eliminated. In addition, if securities are rated below BBB or Baa by the rating agencies (Moody's and Standard and Poor's), then regulated financial institutions usually will not invest in them because they have to justify such investments to the regulatory authorities.

However, several options to decrease the riskiness of an issue are available to a securities issuer. For loan-backed bonds, such as mortgage-backed bonds, a high degree of over-collateralization will increase the safety of the bonds and decrease the required return. Another way to increase the safety of an issue is to insure the securities themselves.

When an issuer of loan-backed securities uses a private firm to insure the loans or the portfolio underlying the securities, the issuer passes the default risk on to the insurer. The insurer then has to evaluate the portfolio's de-

fault risk. The premium that the insurer charges is compensation for the default risk and the cost of evaluating the portfolio. The cost of evaluating complicated portfolios may eliminate the benefits of securitization. Therefore, the easier a portfolio is to evaluate, the more likely that it will be securitized.

The ability to evaluate the pool of loans that underlies a security issue, and therefore the securities themselves, seems to be the key to securitization. The credit characteristics of the underlying portfolio must be understandable to the rating agencies and to investors. Loans that are very large or have complex credit characteristics are better suited for whole loan sales or loan participations. Other important credit characteristics for securitization include a well-defined payments pattern and a sufficiently long maturity, at least one and one-half to two years.

Mortgage loans are illustrative of characteristics that make a loan a prime candidate for securitization. Mortgages are relatively homogeneous products that are relatively easy to evaluate. There is a secondary market for whole mortgage loans, and a wealth of data is collected on mortgages, delinquencies, and prepayments, broken down by various demographic characteristics.[15] Also, the structures and terms of mortgage loans, at least fixed-rate mortgage loans, are similar. And even though most mortgage loans are prepaid, the actual average maturity is about 12 years.

Historically, mortgage loans have had excellent credit characteristics, although recently mortgage default rates have reached record levels. The delinquency rate on mortgages was 6 percent of the total number of loans outstanding in the fourth quarter of 1985; only 0.81 percent resulted in foreclosures.[16] The collateral backing mortgage loans contributes to their excellent credit characteristics. The value of a single-family house does not depreciate as fast as other forms of collateral. In fact, it often appreciates. During the 1970s, housing prices soared, so the collateral backing many mortgages far exceeded the value of the loan. Also, these mortgages were not prepaid quickly because interest rates rose during this period as well.

Adjustable-rate mortgages (ARMs) do not have characteristics that make them good candidates for securitization. They do not have fixed payments streams and are generally priced below the fixed-rate loans. As these loans are repriced, the rate fluctuates with market rates; however, there are usually limitations placed on how much the rate on the loan can fluctuate or how much monthly payments can increase over the life of the loan.

Thus, negative amortization is possible. Also, the period for interest rate adjustments and the index to which the rate is tied varies across loans. As a result of these complications, securities backed by adjustable-rate mortgages have not been successful, and they trade more like whole loan packages than like securities. Nonetheless, FNMA has issued over $5 billion in adjustable-rate mortgage-backed securities, and Freddie Mac recently issued a "standardized" ARM-backed security with ARMs that are tied to Treasury rates and have 2 percent annual caps and 5 percent lifetime caps.

Besides residential mortgages, consumer loans such as auto loans, credit card receivables, lease receivables, and loans for boats and mobile homes are probably the best candidates for securitization. As discussed earlier, auto loans, credit card receivables, and lease receivables have already been securitized.

Commercial and industrial (C&I) loans are relatively difficult to securitize. One type of commercial loan, however, has been securitized—small business loans guaranteed by the Small Business Administration (SBA), an agency of the federal government. The structure of these loans is fairly standard, and the federal government assumes much of the risk and many of the evaluation problems for a pool of SBA loans by guaranteeing 85 percent of the principal and interest. Still, very few SBA loans have been securitized and the number of participants in this market is very small. As of February 1986, only five of 19 approved pool assemblers have securitized SBA loans.

Nonguaranteed C&I loans would be the most difficult to securitize, and to date, none have been. C&I loans are not homogeneous, and the terms and structures of C&I loans vary across borrowers.[17] For example, the maturity of C&I loans ranges from less than one year to about eight years. The pricing of C&I loans also varies, and the stream of payments from a C&I loan is not fixed. C&I loans are also repriced frequently, and the timing of payments is generally tailored to meet individual borrower needs.

Securitization and the regulatory environment

Securitization has raised two regulatory questions. First, are the proceeds from the sale of securitized assets that are sold with an obligation to repurchase the assets considered deposits, and does a bank have to hold reserves against these proceeds? And second, if a bank sells securitized assets with recourse, does it have to hold capital against the securities, and if so, how much?

Deposits and reservability

The question of reservability was formally addressed in 1983 by the Federal Reserve Board's Legal Division in response to banks' sales of industrial revenue bonds (IRBs). Because of poor earnings, banks were not able to profit from tax-exempt income. Consequently, they were selling IRBs with an *unconditional* obligation to repurchase the bonds in the event of default. The Board's legal staff said:

> For purposes of Regulation D, the sale of the loan subject to an unconditional agreement to repurchase is properly regarded as a borrowing by the bank . . . As such, we continue to be of the view that the bank's obligation to repurchase gives rise to the creation of a deposit . . .[1]

There have been exceptions to this rule. First, Regulation D states that a deposit does not include "an obligation arising from the retention by a depository institution of no more than a 10 percent interest in a pool of conventional one-to-four family mortgages that are sold to third parties." Thus, if a bank issues mortgage pass-through securities and promises to compensate purchasers for losses up to 10 percent of the market value of underlying pool of mortgages at the time of sale, the proceeds from the sale of the pass-throughs are not considered deposits. Therefore, they are not reservable. This 10 percent rule, however, applies only to mortgage pass-through securities and does not extend to securities backed by a pledge of mortgages or other types of assets, nor to other asset sales. The Fed allows the proceeds from pass-throughs to be exempt from reserve requirements in order to encourage the growth of the secondary mortgage market.[2]

A second exception was made by Board staff for asset sales with recourse in 1980. A bank proposed to sell IRBs and retain an insurance company to guarantee the bonds. The bank paid a premium for the guarantee, but the bank also agreed to indemnify the insurer for any losses incurred as a result of the bonds. The purchasers of the bonds only knew that the insurance company guaranteed the bonds; they were not aware of the agreement for reimbursement between the bank and the insurer. The Board's Legal staff reasoned that "the insurance broke the nexus between the sale of the asset by the bank and the purchase of the assets by the third party. Thus, the bank's obligation was not regarded as issued in connection with the raising of funds."[3] Therefore, the proceeds from the sale of the IRBs were not considered deposits and were not reservable in the 1980 case.

With the recent rise in asset sales and securitization of nonmortgage loans, the Federal Reserve Board has increasingly received requests for interpretations of Regulation D, especially with regard to the reservability of asset sales with recourse by depository institutions. Consequently, in May 1986, the Board issued for comment a proposal to amend the definition of "deposit." This proposed amendment would define "deposit" to include "sales of assets where the depository institution issues or undertakes a liability supporting the assets sold or retains a reversionary interest in these assets, regardless of whether the liability or interest is conditional, unconditional or contingent or whether the liability covers all or a portion of the assets sold."[4] The proposal would preserve the Board's earlier exception to the definition of "deposit" for sales with

recourse of one-to-four-family mortgage pools where the seller retains no more than a 10-percent interest in the pool.

While the Board's recent proposal would not extend this exception to other types of assets, it does provide for a few exceptions to the definition of "deposit" for other types of assets sold with some kind of investor protection. First, if a depository institutions sells an asset and agrees to be liable for 75 percent or less of the *losses* from that asset as they are realized, then under the proposal, the proceeds from the asset sale would not be reservable. Second, the proposal would continue the former treatment of sales of assets by a depository institution that are guaranteed by a third party and "the depository institution's only liability in the transaction is to reimburse a third-party guarantor of the assets sold," the proceeds from such a transaction would generally not be considered deposits under the Board's proposal.

Finally, the proposal would also exclude obligations of affiliates from the definition of deposit "if the proceeds from an affiliate's obligation are used to purchase assets from a depository institution without recourse;" the proposal would extend the definition of "affiliate" to include any organization that a depository institution effectively manages or controls. Currently Regulation D regards obligations of affiliates as deposits when the obligations are used to fund the depository institution, if the obligation would have been a deposit if it had been issued by the institution.

Regardless of whether or not an asset sold with recourse meets the above exceptions, the proceeds from the asset sale still might not be reservable under the current proposal if the maturity of the "liability," the recourse provision, is greater than 18 months. The Fed proposes to determine the maturity according to the remaining maturity of the asset sold unless the maturity is effectively shortened by the nature of the asset or the guarantee. The Fed is considering setting the maturity at the "earliest time" the guarantee could be exercised, but the definition of "earliest time" is still an unresolved issue. Even if the effective maturity was determined to be one day, the reserve requirements on an asset could be minimal if payments to the purchaser in the first 18 months primarily consist of interest payments, as reserves would apply only to the principal repaid in the first 18 months.

Capital requirements

The Federal Reserve's policy with regard to the second question—capital requirements on assets sold with recourse—is more stringent than its policy with regard to reserve requirements. The question of capital requirements arises because securitization reduces the assets of the bank but would leave the riskiness of a bank unchanged when the bank agrees to buy back all or a portion of the portfolio of underlying loans in the event of default, or when the bank guarantees the payment of principal and interest on the securities. If the bank guarantees the securities, it still assumes the risk of the underlying loans. Therefore, should a bank have to hold capital against the sale of securitized assets if the securities are somehow guaranteed by the bank, and if so, how much?

In general, the Federal Reserve Board and the other bank regulatory agencies do require banks to hold capital against assets sold with recourse. According to the revisions of the instructions for filing the Reports of Condition and Income, "A transfer of loans, securities, receivables, or other assets is to be reported as a sale of the transferred assets" by the selling institution and a purchase by the purchasing institution only if the selling institution retains no risk of loss from the sale of assets and has no obligation to any party to pay principal or interest on the assets sold.[5] Thus, "if risk of loss or obligation for payment of principal or interest is retained by, or may fall

back upon, the seller, the transaction must be reported by the seller as a borrowing from the purchaser and by the purchaser as a loan to the seller."[6] The selling institution must keep the assets on its books and include them in the calculation of capital requirements. These revisions do not apply to the sale of fed funds, securities subject to repurchase agreements, or pass-through pools of residential mortgages.

Even if the selling institution promises to compensate purchasers for losses up to a certain portion of the assets sold, the entire amount of the assets must be reported and carried on the seller's books. Only if the selling institution guarantees a percentage of the losses, rather than a percentage of the assets, can the seller reduce the capital that it is required to hold. In that case, the seller would have to report that percentage of the total amount of the asset on its balance sheet. Thus, if a bank sold $1 million of auto loans and promises to compensate purchasers for losses up to 10 percent of the portfolio the bank would have to continue to report the entire $1 million as assets on its balance sheet and continue to hold roughly $55,000 of capital against these loans. But if the bank guaranteed 10 percent of the default losses incurred on the portfolio, the bank would have to report only $100,000 as assets on its balance sheet and hold $5,500 of capital against these loans.

The Financial Accounting Standards Board (FASB) differs in the treatment of asset sales with recourse on the balance sheet. According to FASB 77, such a sale should be recognized as a sale if the seller "surrenders control of the future economic benefits embodied in" the assets sold; the seller's "obligation under the recourse provisions can be reasonably estimated;" and the buyer "cannot require the [seller] to repurchase the receivables [assets] except pursuant to the recourse provisions."[7] Therefore, in the example of the sale of auto loans above, the bank would reduce its holdings of auto loans by $1 million and, under GAAP, be expected to show $20,000 in reserve against this portfolio of assets since a well-diversified portfolio has an expected default rate of about 2 percent.[8] If the FASB standard were employed in Federal Reserve calculations of capital requirements, the banks would have to hold significantly less capital. The Federal Reserve Board feels that if the seller of the assets assumes the risk of default, regardless of what the expected default rate might be, the seller retains the total risk inherent in the assets sold and the correct proportion of capital to be held against the assets is equal to the capital requirement.

Some bankers are concerned that the Fed's treatment of asset sales with recourse will eliminate a useful tool for liquidity at a time when many institutions have, or still could encounter, liquidity problems. The Federal Reserve Board's policy, however, is consistent with the idea that the benefits to the safety of the banking system that result from requiring banks to hold capital against the entire amount of assets sold with recourse outweigh the costs associated with losing what many bankers believe to be a valuable tool for liquidity management.

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[1] Letter from Gilbert T. Schwartz to Reserve Bank General Counsels, March 7, 1983.

[2] Federal Financial Institutions Examination Council, October 28, 1985, memo to The Chief Executive Officer of the bank addressed from Robert J. Lawrence.

[3] Letter from Gilbert T. Schwartz of March 7, 1983.

[4] Board of Governors of the Federal Reserve System, 12 CFR Part 204, May 1, 1986.

[5] Federal Financial Institution's Examination Council, October 28, 1985, memo.

[6] Ibid.

[7] Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 77—Reporting by Transferors for Transfers to Receivables with Recourse.

[8] American Bankers Association, "Consumer Credit Delinquency Survey," 4th Q, 1985.

These characteristics make evaluating C&I loans difficult. Many of the difficulties are similar to those encountered when buying or selling a loan participation. A bank sells, or participates, portions of a loan to a relatively small number of banks. Participations are used primarily for loans that are too big for a bank legally or practicably to hold on its books. The buyer of a participation is responsible for the credit evaluation. Usually, to ameliorate the evaluation problem, a "coinsurance" scheme is used whereby the originator keeps 10 percent of the loan and sells 90 percent. In addition, the originator may agree to buy back the 90 percent if there are any difficulties. But even when the sale is made with recourse and the originator keeps a portion of the loan, the buyer still evaluates the quality of the loan.

A similar coinsurance arrangement could be made for securities backed by C&I loans. However, with a C&I participation, a few buyers evaluate only one loan at a time. With securitization, many buyers evaluate a pool of loans. Also, if a bank sells loan-backed securities with recourse, the bank usually must hold reserves against the proceeds from the sale and capital against the loans sold (see box).

Another complication in evaluating C&I loans is that their credit characteristics vary greatly. Some loans are collateralized and others are not. Even if the loans in a pool are collateralized, the collateral differs across loans, and there may not be a ready market for the collateral in the event of default. Furthermore, prepayments rates are not stable and predictable. Consequently, only securities backed by high quality loans could be sold. But the securitization of high-quality, C&I-backed securities would leave banks with portfolios of the riskiest loans, and the depositors, or at least their guarantor, the FDIC, as well as uninsured depositors and shareholders, would be placed at great risk.

In addition to the technical difficulties in securitizing C&I loans, there are less costly alternatives. Whole loan sales, participations, syndications, and commercial paper provide good alternatives to securitization. According to the Federal Reserve System's February 1986 Senior Loan Officer Opinion Survey on Bank Lending Practices, 60 large banks had approximately $26 billion in domestic commercial and industrial loan participations and sales outstanding at year-end 1985.[18] The nine largest

Figure 4
Growth of business loans vs. commercial paper

SOURCE: *Federal Reserve Bulletin*, various issues.

banks accounted for $15 billion in domestic C&I loans sold. Sixty-seven percent of the loans sold by the 60 respondents were loans made to investment grade borrowers, and 87 percent of the loans sold by the nine largest banks were obligations of investment grade borrowers. This is consistent with the argument that intermediation taxes encourage banks to sell loans of high quality borrowers because "after tax" these borrowers face a lower cost of funds than banks do.

Corporate borrower sources for these cheaper funds are found by directly accessing the capital markets, but analysis of the market for corporate debt since 1975 does not indicate that bank asset disintermediation is rampant. Total corporate bonds plus commercial paper as well as bank loans to nonfinancial corporate business increased 3 times over the 1975-85 period.[19] The growth in the commercial paper market, however, has by far outpaced the growth of commercial and industrial loans held at banks. Since 1975, commercial paper outstanding has increased over sevenfold. In addition, studies have found that in the late 1970s, large New York City banks experienced weak loan demand because large corporate customers with high credit ratings (typical customers of money center banks) were turning to the commercial paper market.[20] As shown in Figure 4, C&I loans outstanding at all com-

mercial banks have fallen dramatically since the beginning of 1984. The fall has been most precipitous at the large New York banks, but as smaller nonfinancial firms begin to securitize their own assets by backing their commercial paper with their high-quality receivables, smaller banks throughout the country may begin to feel the impact of commercial paper and other forms of direct corporate borrowing.

Implications for the financial services industry

Since 1970, when the GNMA introduced the first mortgage pass-through security, the growth in the securitization of loans has been phenomenal. As investment banking firms and others involved in securitization move along the learning curve, the development and issuance of new loan-backed securities will become less expensive. More issues will likely be brought to market, and more types of loans, perhaps even commercial and industrial loans, will be securitized. If the securitization of loans other than mortgages becomes as successful as mortgage-backed securities, the financial services industry will be transformed into a system in which banks increasingly have to compete with nonbanks in allocating credit, especially if banks are limited in their ability to securitize loans. Also, if a large part of the loan portfolios of all commercial banks become securitized, then the banking industry will be very different than it is today. Banks will operate like brokers or investment bankers, warehousing loans to be sold to investors.

Securitization will cause banks to compete increasingly with manufacturers and retailers who finance their own customers' purchases. Currently, banks compete for consumer and commercial loans with the captive finance companies of the large retailers and manufacturers such as Sears and General Motors. Securitization could allow many consumers who would have taken out a bank loan to purchase, say, a new household appliance from a small retailer to bypass the bank and finance their purchases directly through the retailer. Also, banks' inability to securitize commercial and industrial loans combined with the Fed's imposition of reserve and capital requirements on asset sales with recourse, may "permit greater relative advantages to nonbank originators of credit in liquifying and diversifying portfolios, matching assets and liabilities, and achieving funding costs (at AAA rates) lower than those of most banks."[21] If, however, commercial banks could securitize the majority of their loan portfolios, securitization could transform the banking industry into one that is more fragmented and specialized than it is today. Consider the following scenarios.

Banks accept deposits and make loans. Individual banks, however, specialize in making certain types of loans. For instance, one bank might emphasize consumer loans while another specializes in making commercial loans. Or the lines of specialization could be narrower: one bank specializes in making auto loans, and another, in loans to the shipping industry. Each bank packages and sells its loans as securities to other banks, other depository institutions, and to the public. The only whole loans on a bank's balance sheet at a given point in time are loans that are in the securitization pipeline. Banks fund new loans with deposits and with the proceeds from the sale of loan-backed securities. Consequently, most of a bank's income is derived from servicing the loans it originates and from underwriting fees.

This scenario does not imply that banks would no longer provide maturity and default risk intermediation. Securitization allows for the diversification of default risk through the pooling of loans, and securitization also enables a financial intermediary to match long-term borrowers with long-term investors.

A second possible scenario is that banks specialize in either deposit taking or lending.[22] One bank might have a comparative advantage in operating a retail distribution network and collecting deposits, while another bank has a comparative advantage in making and servicing loans. The first bank then would collect deposits and invest them in securities purchased from the second bank.

If banks do have comparative advantages along either product or functional lines, then securitization could provide for a more efficient banking system. If there are economies of scale in the functions of deposit taking and lending, or in lending categories, securitization would allow a bank to generate the volume necessary to realize those economies. Securitization would also allow banking services to be provided with less capital and could allow funds to flow more easily to their most productive uses. It would provide for lower interest rates,

more nationally uniform rates, and greater availability of funds for loans.[23] Therefore, securitization would enable banks to compete more effectively in an increasingly competitive financial services environment.

Securitization has already begun to change the financial services industry. It has enhanced the flow of credit, changed the way firms manage their portfolios, and increased the number of firms that compete for commercial and retail customer financing. As securitization becomes more widespread, its impact on the financial services industry and the banking industry, in particular, will likely depend on a clear understanding of the costs and benefits of asset securitization by both the market and regulators.

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[1] Judy Hustick, Salomon Brothers, telephone conversation with author, November 13, 1985.

[2] Board of Governors of the Federal Reserve System, *Federal Reserve Bulletin* 71 (March 1985): A18, A26, and Board of Governors of the Federal Reserve System, *Flow of Funds Accounts, Fourth Quarter 1984*, p. 11.

[3] John R. Brick, "A Primer on Mortgage-Backed Securities," *Bankers Magazine*, 167 (January-February 1984), p. 48.

[4] Federal Home Loan Bank Board, *Quarterly Financial Report, State of Condition as of December 1984.*

[5] Salomon Brothers, "Mortgage Security Prepayment Rate Profile," (September 1985): p. 6.

[6] *American Banker*, May 15, 1985, p. 3.

[7] *Wall Street Journal*, December 13, 1985, p. 33.

[8] Harvey D. Shapiro, "The securitization of practically everything," *Institutional Investor* 19 (May 1985): p. 196.

[9] "Growth of Securitization," *The Vanderwicken Report*, New Hope, Pennsylvania, October 1985, p. 1.

[10] Cunningham and Hendershott have estimated that the insurance premium on a 30-year, level-payment, residential mortgage with a loan-to-value ration of 80 percent is between 5 and 15 basis points. See Donald F. Cunningham and Patric H. Hendershott, "Pricing FHA Mortgage Default Insurance," *Housing Finance Review*, (3 October 1984), p. 373.

[11] Diana Fortier and Dave Phillis, "Bank and Thrift Performance Since DIDMCA," *Economic Perspectives*, Federal Reserve Bank of Chicago, IX (September/October 1985): p. 65.

[12] In 1983, mortgage pass-throughs turned over about 5 times; this compares with 9.6 times for Treasury securities. see Michael Stamper, Patricia Dodson, and Rick Watson. "Mortgage-Backed Securities Track Record," *Mortgage Banking* 45 (December 1984) p. 24 and *Secondary Mortgage Markets*, (Spring 1985) p. 39.

[13] Robert Gunther, "Mortgage-Exchange Proposal Is Studied," *Wall Street Journal*, February 26, 1986, p. 6.

[14] Shapiro, p. 201.

[15] The Federal Reserve System, the Federal Home Loan Bank, the federal mortgage agencies, and the Mortgage Bankers Association, among others, collect data on mortgages.

[16] Mortgage Bankers Association of America, "National Delinquency Survey," (February 28, 1986).

[17] For a description of commercial loans, see Richard Brealey and Stewart Myers, *Principles of Corporate Finance*, 2nd ed. (New York: McGraw-Hill, 1984), pp. 688-94.

[18] The respondents included six large banks in the New York Federal Reserve District, six in the San Francisco District; three in the Minneapolis District, and five in each of the other nine Federal Reserve Districts.

[19] Board of Governors of the Federal Reserve System, *Flow of Funds Accounts, Financial Assets and Liabilities Year-end, 1961-84*, p. 10, and *Flow of Funds Accounts, Fourth Quarter 1985*, p. 11.

[20] John P. Judd, "Competition Between the Commercial Paper Market and Commercial Banks," *Economic Review*, Federal Reserve Bank of San Francisco, (Winter 1979), pp. 39-53.

[21] "Growth of Securitization," p. 5.

[22] James McCormick, "Transforming Banks into Capital-Efficient Intermediaries: Part I," *American Banker*, 20 September 1985, p. 8.

[23] "Growth of Securitization," p. 2.