

The information in this chapter was last updated in 1993. Since the money market evolves very rapidly, recent developments may have superseded some of the content of this chapter.

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Chapter 9

COMMERCIAL PAPER

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Commercial paper is a short-term unsecured promissory note issued by corporations and foreign governments. For many large, creditworthy issuers, commercial paper is a low-cost alternative to bank loans. Issuers are able to efficiently raise large amounts of funds quickly and without expensive Securities and Exchange Commission (SEC) registration by selling paper, either directly or through independent dealers, to a large and varied pool of institutional buyers. Investors in commercial paper earn competitive, market-determined yields in notes whose maturity and amounts can be tailored to their specific needs.

Because of the advantages of commercial paper for both investors and issuers, commercial paper has become one of America's most important debt markets. Commercial paper outstanding grew at an annual rate of 14 percent from 1970 to 1991. Figure 1 shows commercial paper outstanding, which totaled \$528 billion at the end of 1991.

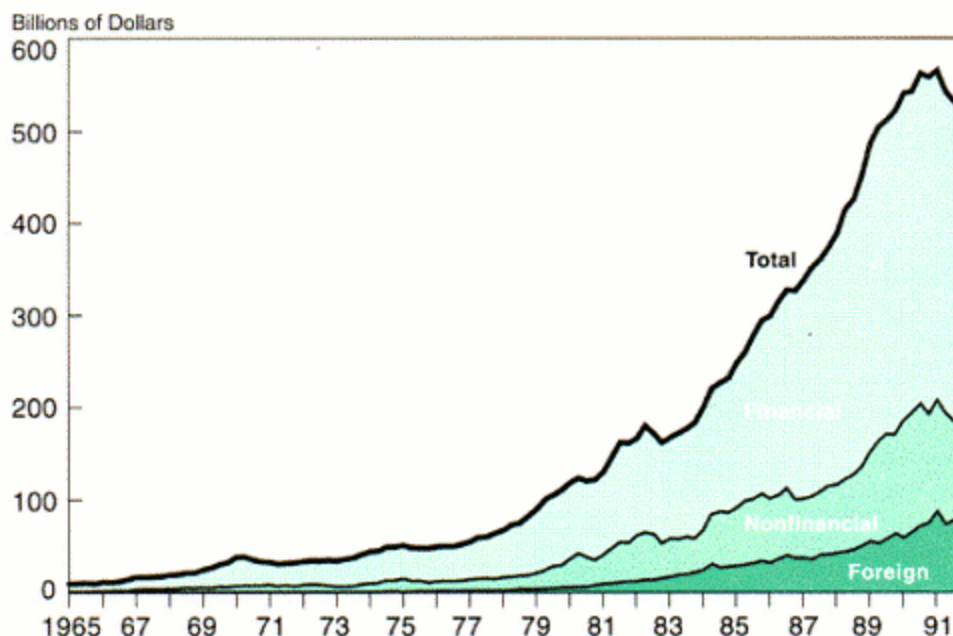
This chapter describes some of the important features of the commercial paper market. The first section reviews the characteristics of commercial paper. The second section describes the major participants in the market, including the issuers, investors, and dealers. The third section discusses the risks faced by investors in the commercial paper market along with the mechanisms that are used to control these risks. The fourth section discusses some recent innovations, including asset-backed commercial paper, the use of swaps in commercial paper financing strategies, and the international commercial paper markets.

CHARACTERISTICS OF COMMERCIAL PAPER

The Securities Act of 1933 requires that securities offered to the public be registered with the Securities and Exchange Commission. Registration requires extensive public disclosure, including issuing a prospectus on the offering, and is a time-consuming and expensive process.¹ Most commercial paper is issued

¹ Registration for short-term securities is especially expensive because the registration fee is a percent of the face amount at each offering. Thirty-day registered notes, rolled over monthly for one year, would cost 12 times as much as a one-time issuance of an equal amount of one-year notes.

FIGURE 1
Commercial Paper Outstanding



Source: Board of Governors of the Federal Reserve System.

under Section 3(a)(3) of the 1933 Act which exempts from registration requirements short-term securities as long as they have certain characteristics.² The exemption requirements have been a factor shaping the characteristics of the commercial paper market.

One requirement for exemption is that the maturity of commercial paper must be less than 270 days. In practice, most commercial paper has a maturity of between 5 and 45 days, with 30-35 days being the average maturity. Many issuers continuously roll over their commercial paper, financing a more-or-less constant amount of their assets using commercial paper. Continuous rollover of notes does not violate the nine-month maturity limit as long as the rollover is not automatic but is at the discretion of the issuer and the dealer. Many issuers will adjust the maturity of commercial paper to suit the requirements of an investor.

² Some commercial paper is issued under one of the two other exemptions to the Securities Act. Commercial paper which is guaranteed by a bank through a letter of credit is exempt under Section 3(a)(2) regardless of whether or not the issue is also exempt under Section 3(a)(3). Commercial paper sold through private placements is exempt under Section 4(2). See Felix (1987) for more information on the legal aspects of commercial paper issuance.

A second requirement for exemption is that notes must be of a type not ordinarily purchased by the general public. In practice, the denomination of commercial paper is large: minimum denominations are usually \$100,000, although face amounts as low as \$10,000 are available from some issuers. Because most investors are institutions, typical face amounts are in multiples of \$1 million. Issuers will usually sell an investor the specific amount of commercial paper needed.

A third requirement for exemption is that proceeds from commercial paper issues be used to finance "current transactions," which include the funding of operating expenses and the funding of current assets such as receivables and inventories. Proceeds cannot be used to finance fixed assets, such as plant and equipment, on a permanent basis. The SEC has generally interpreted the current transaction requirement broadly, approving a variety of short-term uses for commercial paper proceeds. Proceeds are not traced directly from issue to use, so firms are required to show only that they have a sufficient "current transaction" capacity to justify the size of the commercial paper program (for example, a particular level of receivables or inventory).³ Firms are allowed to finance construction as long as the commercial paper financing is temporary and to be paid off shortly after completion of construction with long-term funding through a bond issue, bank loan, or internally generated cash flow.⁴

Like Treasury bills, commercial paper is typically a discount security: the investor purchases notes at less than face value and receives the face value at maturity. The difference between the purchase price and the face value, called the discount, is the interest received on the investment. Occasionally, investors request that paper be issued as an interest-bearing note. The investor pays the face value and, at maturity, receives the face value and accrued interest. All commercial paper interest rates are quoted on a discount basis.⁵

Until the 1980s, most commercial paper was issued in physical form in which the obligation of the issuer to pay the face amount at maturity is recorded by printed certificates that are issued to the investor in exchange for funds. The certificates are held, usually by a safekeeping agent hired by the investor, until

³ Some SEC interpretations of the current transaction requirement have been established in "no-action" letters. "No-action" letters, issued by the staff of the SEC at the request of issuers, confirm that the staff will not request any legal action concerning an unregistered issue. See Felix (1987, p. 39).

⁴ Past SEC interpretations of Section 3(a)(3) exemptions have also required that commercial paper be of "prime quality" and be discountable at a Federal Reserve Bank (Release No. 33-4412). The discounting requirement was dropped in 1980. An increased amount of commercial paper in the later 1980s was issued without prime ratings.

⁵ The Federal Reserve publishes in its H.15 statistical release daily interest rates for dealer-offered and directly placed commercial paper of one-month, three-month and six-month maturities. All rates are based on paper with relatively low default risk. Commercial paper rates of various maturities for select finance issuers and a dealer composite rate are also published daily in *The Wall Street Journal*.

presented for payment at maturity. The exchanges of funds for commercial paper first at issuance and then at redemption, called "settling" of the transaction, occur in one day. On the day the commercial paper is issued and sold, the investor receives and pays for the notes and the issuer receives the proceeds. On the day of maturity, the investor presents the notes and receives payment. Commercial banks, in their role as issuing, paying, and clearing agents, facilitate the settling of commercial paper by carrying out the exchanges between issuer, investor, and dealer required to transfer commercial paper for funds.

An increasing amount of commercial paper is being issued in book-entry form in which the physical commercial paper certificates are replaced by entries in computerized accounts. Book-entry systems will eventually completely replace the physical printing and delivery of notes. The Depository Trust Company (DTC), a clearing cooperative operated by member banks, began plans in September 1990 to convert most commercial paper transactions to book-entry form.⁶ By May 1992, more than 40 percent of commercial paper was issued through the DTC in book-entry form.

The advantages of a paperless system are significant. The fees and costs associated with the book-entry system will, in the long run, be significantly less than under the physical delivery system. The expense of delivering and verifying certificates and the risks of messengers failing to deliver certificates on time will be eliminated. The problem of daylight overdrafts, which arise from nonsynchronous issuing and redeeming of commercial paper, will be reduced since all transactions between an issuing agent and a paying agent will be settled with a single end-of-day wire transaction.

MARKET PARTICIPANTS

Issuers and Uses of Commercial Paper Commercial paper is issued by a wide variety of domestic and foreign firms, including financial companies, banks, and industrial firms. Table 1 shows examples of the largest commercial paper issuers. Figure 2 shows outstanding commercial paper by type of issuer. The biggest issuers in the financial firm category in Figure 2 are finance companies. Finance companies provide consumers with home loans, retail automobile loans, and unsecured personal loans. They provide businesses with a variety of short- and medium-term loans including secured loans to finance purchases of equipment for resale. Some finance companies are wholly owned subsidiaries of industrial firms that provide financing for purchases of the parent firm's products. For example, a major activity of General Motors Acceptance Corporation (GMAC)

⁶ See The Depository Trust Company (1990).

TABLE 1
Commercial Paper Outstanding by Major Issuer

Billions of Dollars

Category	Major Issuer	Average Amount Outstanding	Dealer
Finance	General Electric Capital (subsidiary of GE)	\$36.9	Direct, Multiple
Auto Finance	General Motors Acceptance (subsidiary of GM)	\$23.6	Direct
Investment Banking	Merrill Lynch	\$ 7.5	Dealer is subsidiary
Commercial Banking	J.P. Morgan	\$ 4.4	Multiple
Industrial	PepsiCo	\$ 3.4	Multiple
Foreign	Hanson Finance	\$ 3.5	Multiple
Asset-Backed	Corporate Asset Funding	\$ 5.3	Goldman Sachs

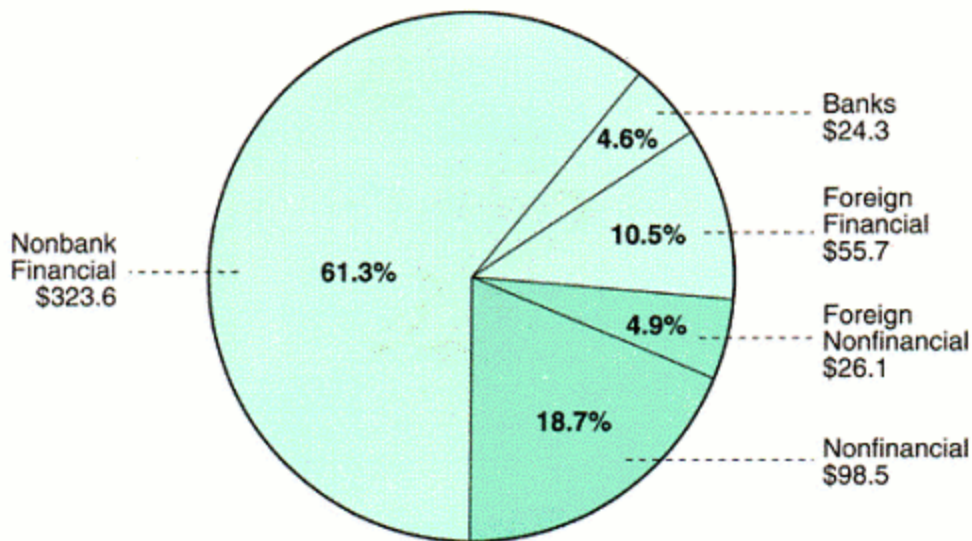
Note: Quarterly Average Commercial Paper is for the first quarter of 1992, except GE, GMAC, and PepsiCo, which are for the fourth quarter of 1991.

Source: *Moody's Global Short-Term Record*, June 1992.

FIGURE 2: Commercial Paper Outstanding by Issuer Type

End of 1991 Total \$528.1 Billion

Billions of Dollars



Source: Board of Governors of the Federal Reserve System.

is the financing of purchases and leases of General Motor's vehicles by dealers and consumers. The three largest issuers—GMAC, General Electric Capital, and Ford Motor Credit—accounted for more than 20 percent of the total nonbank financial paper outstanding at the end of 1991.

The financial issuer category also includes insurance firms and securities firms. Insurance companies issue commercial paper to finance premium receivables and operating expenses. Securities firms issue commercial paper as a low-cost alternative to other short-term borrowings such as repurchase agreements and bank loans, and they use commercial paper proceeds to finance a variety of security broker and investment banking activities.

Commercial bank holding companies issue commercial paper to finance operating expenses and various nonbank activities. Bank holding companies have recently decreased their commercial paper issues following declines in the perceived creditworthiness of many major domestic bank issuers.

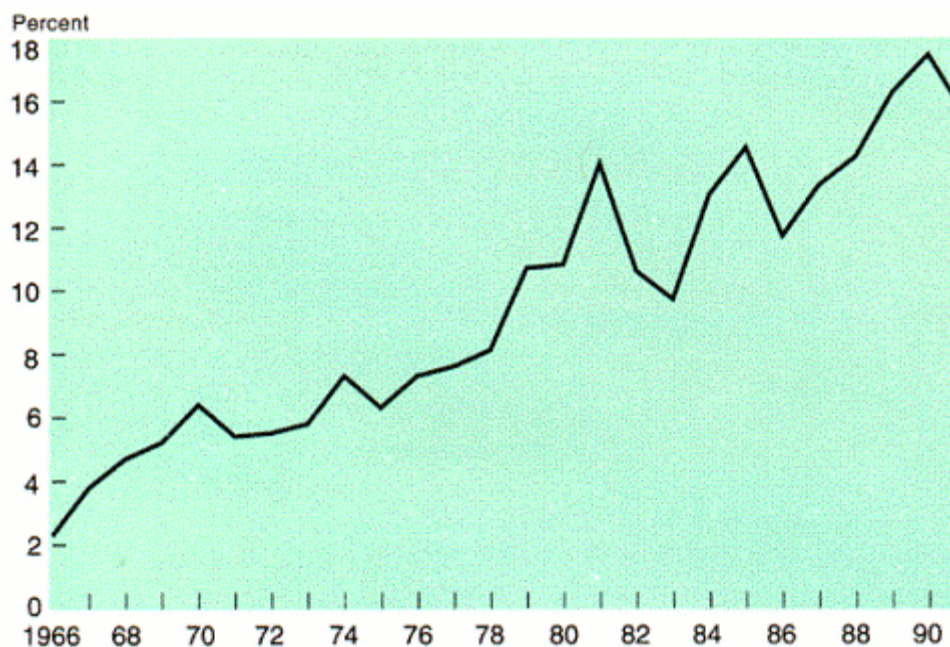
More than 500 nonfinancial firms also issue commercial paper. Nonfinancial issuers include public utilities, industrial and service companies. Industrial and service companies use commercial paper to finance working capital (accounts receivable and inventory) on a permanent or seasonal basis, to fund operating expenses, and to finance, on a temporary basis, construction projects. Public utilities also use commercial paper to fund nuclear fuels and construction. Figure 3 shows that commercial paper as a percent of commercial paper and bank loans for nonfinancial firms rose from just 2 percent in 1966 to over 15 percent at the end of 1991.

The domestic commercial paper issuers discussed above include U.S. subsidiaries of foreign companies. Foreign corporations and governments also issue commercial paper in the U.S. without use of a domestic subsidiary and these foreign issues have gained increased acceptance by U.S. investors. Foreign financial firms, including banks and bank holding companies, issue almost 70 percent of foreign commercial paper (Federal Reserve Bank of New York 1992). Industrial firms and governments issue the remainder. Japan, the United Kingdom, and France are among the countries with a significant number of issuers.

Investors Money market mutual funds (MMFs) and commercial bank trust departments are the major investors in commercial paper. MMFs hold about one-third of the outstanding commercial paper, while bank trust departments hold between 15 and 25 percent.⁷ Other important investors, holding between 5 and 15 percent, are nonfinancial corporations, life insurance companies, and private and government pension funds. Other mutual funds, securities dealers,

⁷Precise data on holdings of commercial paper by investor type, except by MMFs, are not available. Some estimates are provided in Board of Governors of the Federal Reserve System (1992, p. 52), Stigum (1990, p. 1027), and Felix (1987, p. 13).

FIGURE 3
**Commercial Paper as a Percent of Commercial Paper and
 Bank Loans, Nonfinancial Firms**



Source: Board of Governors of the Federal Reserve System.

and banks also hold small amounts of commercial paper. Individuals hold little commercial paper directly because of the large minimum denominations, but they are large indirect investors in commercial paper through MMFs and trusts.

There have been major shifts in ownership of commercial paper during the post-World War II period. Prior to World War II, the most important investors in commercial paper were banks, which used commercial paper as a reserve asset and to diversify their securities portfolios. In the fifties and sixties, industrial firms began to hold commercial paper as an alternative to bank deposits, which had regulated interest rates that at times were significantly below the market-determined rates on commercial paper. Historically high and variable interest rates during the 1970s led households and businesses to hold more of their funds in short-term assets and to transfer funds from bank deposits with regulated interest rates to assets like MMF shares with market-determined rates. At the same time, many large businesses found that they could borrow in the commercial paper market at less expense than they could borrow from banks. MMFs demanded the

TABLE 2
Money Market Mutual Funds and Commercial Paper

Year- End	MMF Assets (\$ billions)	Commercial Paper Outstanding (\$ billions)	MMF Holdings of CP (\$ billions)	CP as Percent of MMF Assets	Percent of CP Held by MMFs
1975	3.7	47.7	0.4	11	1
1980	74.5	121.6	25.0	33	21
1985	207.5	293.9	87.6	42	30
1990	414.8	557.8	199.1	48	36
1991	449.7	528.1	187.6	42	36

Note: MMFs exclude tax-exempt funds.

Source: Board of Governors of the Federal Reserve System.

short-term, large-denomination, relatively safe, and high-yield characteristics offered by commercial paper and hence absorbed a major portion of new commercial paper issues. Table 2 shows that both the commercial paper market and MMFs have experienced very rapid growth since 1975. By the end of 1991, MMFs held 36 percent of the commercial paper outstanding and commercial paper composed 42 percent of their total assets.

Placement and Role of the Dealer Most firms place their paper through dealers who, acting as principals, purchase commercial paper from issuers and resell it to the public. Most dealers are subsidiaries of investment banks or commercial bank holding companies. A select group of very large, active issuers, called direct issuers, employ their own sales forces to distribute their paper. There are approximately 125 direct issuers, most of which are finance companies or bank holding companies. These issuers sell significant amounts of commercial paper on a continuous basis.

When an issuer places its commercial paper through a dealer, the issuer decides how much paper it will issue at each maturity. The dealer is the issuer's contact with investors and provides the issuer with relevant information on market conditions and investor demand. Dealers generally immediately resell commercial paper purchased from issuers and do not hold significant amounts of commercial paper in inventory. Dealers will temporarily hold commercial paper in inventory as a service to issuers, such as to meet an immediate need for a significant amount of funds at a particular maturity.

The difference between what the dealer pays the issuer for commercial paper and what he sells it for, the "dealer spread," is around 10 basis points on an annual basis. A large commercial paper program with \$500 million in paper outstanding for one year would cost the issuer \$500,000 in dealer fees.

Because independent dealers are relatively inexpensive, only large and well-recognized issuers distribute their own commercial paper. Direct issuers are typically committed to borrowing \$1 billion or more in the commercial paper market on a continuous basis (Felix 1987, p. 20). Partly as a result of the decline in dealer spreads over the last ten years, the percentage of total commercial paper issued directly fell from almost 55 percent in 1980 to just 35 percent at the end of 1991. An additional factor in the growth of dealer-placed commercial paper has been the entry into the market of smaller issuers who do not have borrowing needs large enough to justify a direct sales force.

Competition among dealers significantly increased in the late 1980s after the entrance into the market of bank dealers, which are subsidiaries of bank holding companies. Prior to the mid-1980s, commercial banks mainly acted as agents who placed commercial paper without underwriting and who carried out the physical transactions required in commercial paper programs, including the issuing and safekeeping of notes and the paying of investors at maturity. Bank dealers entered the market after legal restrictions on underwriting by bank holding companies were relaxed, and the increased competition led to declines in profit margins and the exit from the market of some major investment bank dealers. Salomon Brothers closed its dealership and Paine Webber sold its dealership to CitiCorp. Goldman Sachs, another important dealer, responded to increased competition by rescinding its longstanding requirement that it be the sole dealer for an issuer's commercial paper. Issuers have increased their use of multiple dealers for large commercial paper programs, frequently including a bank dealer in their team of dealers.

The largest commercial paper dealers are still the investment banks, including Merrill Lynch, Goldman Sachs, and Shearson Lehman. Commercial bank holding companies with large commercial paper dealer subsidiaries include Bankers Trust, CitiCorp, BankAmerica, and J.P. Morgan. Some foreign investment and commercial bank holding companies have also become significant dealers.

The secondary market in commercial paper is small. Partly the lack of a secondary market reflects the heterogeneous characteristics of commercial paper, which makes it difficult to assemble blocks of paper large enough to facilitate secondary trading. Partly it reflects the short maturity of the paper: investors know how long they want to invest cash and, barring some unforeseen cash need, hold commercial paper to maturity. Dealers will sometimes purchase paper from issuers or investors, hold the paper in inventory and subsequently trade it. Bids for commercial paper of the largest issuers are available through brokers.

Some direct issuers offer master note agreements which allow investors, usually bank trust departments, to lend funds on demand on a daily basis at a rate tied to the commercial paper rate. Each day the issuer tells the investor the rate on the master note and the investor tells the issuer how much it will deposit that day. At the end of 1991, approximately 10 percent of GMAC's short-term notes

outstanding were master notes sold to bank trust departments (GMAC 1992, p. 13).

RISK IN THE COMMERCIAL PAPER MARKET

Ratings Since 1970, when the Penn Central Transportation Co. defaulted with \$82 million of commercial paper outstanding, almost all commercial paper has carried ratings from one or more rating agency. Currently, the four major rating agencies are Moody's, Standard & Poor's, Duff & Phelps, and Fitch. An issuer's commercial paper rating is an independent "assessment of the likelihood of timely payment of [short-term] debt" (Standard & Poor's 1991, p. iii). Table 3 lists the four rating agencies, the rating scales they publish, and the approximate number of commercial paper ratings issued at the end of 1990. The ratings are relative, allowing the investor to compare the risks across issues. For example, Standard & Poor's gives an A-1 rating to issues that it believes have a "strong" degree of safety for timely repayment of debt, an A-2 rating to issues that it believes have a degree of safety that is "satisfactory," and an A-3 rating to issues that it believes have a degree of safety that is "adequate." Below these

TABLE 3
Rating Agencies and Commercial Paper Ratings

	Higher A/Prime	Lower A/Prime	Speculative Below Prime	Defaulted	Approx. # of CP Ratings	Major Publication Listing CP Ratings
Moody's	P-1	P-2, P-3	NP	NP	2,000	Moody's Global Short-Term Market Record
Standard & Poor's	A-1+, A-1	A-2, A-3	B, C	D	2,000	S&P Commercial Paper Ratings Guide
Duff & Phelps	Duff 1+, Duff 1, Duff 1-	Duff 2, Duff 3	Duff 4	Duff 5	175	Short-Term Ratings and Research Guide
Fitch	F-1+, F-1	F-2, F-3	F-5	D	125	Fitch Ratings
Range of Likely S&P Long-Term Bond Rating	AAA, AA, A, BBB		BB, B, CCC, CC, C			

three categories are the speculative grades in which the capacity for repayment is small relative to the higher-rated issues. Finally, a D rating indicates the issuer has defaulted on its commercial paper. Almost all issuers carry one of the two highest Prime or A ratings.

Issuers hire the rating agencies to rate their short-term debt and pay the agencies an annual fee ranging from \$10,000 to \$29,000 per year. For an additional fee the agencies will also rate other liabilities of the issuer, including their long-term bonds. The ratings are provided to the public, generally by subscription, either through publications, computer databases, or over the phone. Major announcements by the rating agencies are also reported on news wire services. Table 3 lists each agency's major publication in which commercial paper ratings appear.

Rating agencies rely on a wide variety of information in assessing the default risk of an issuer. The analysis is largely based on the firm's historical and projected operating results and its financial structure. Relevant characteristics include size (both absolute and compared to competitors), profitability (including the level and variation of profits), and leverage. Table 4 shows the means of selected historical characteristics of a sample of publicly traded nonfinancial issuers by commercial paper rating category. The table shows that higher-rated issuers are on average more profitable than lower-rated issuers and, with some exceptions, larger. Additionally, higher-rated issuers rely less heavily on debt financing than lower-rated issuers and have stronger interest-coverage and

TABLE 4
**Characteristics of Industrial Commercial Paper Issuers by Rating,
 Three-Year Averages**

Standard & Poor's Commercial Paper Rating	Number of Companies	Assets (millions)	Interest Coverage	Debt Coverage	Leverage	Profitability
A-1+	91	\$4,547	8x	.7x	27%	18%
A-1	102	\$2,924	5x	.5x	35%	16%
A-2	97	\$1,866	4x	.4x	36%	14%
A-3	9	\$5,252	2x	.2x	52%	10%

Notes: Sample consists of nonfinancial commercial paper issuers required to file with the SEC.

Interest coverage is defined as the ratio of income available for interest to interest expense. Income available for interest is defined as pre-tax income less special income plus interest expense.

Debt coverage is defined as the ratio of cash flow to short- and long-term debt. Cash flow is income plus preferred dividends plus deferred taxes.

Leverage is defined as the ratio of total debt to invested capital. Invested capital is the sum of short- and long-term debt, minority interest, preferred and common equity, and deferred taxes.

Profitability is defined as the ratio of income available for interest to invested capital.

Source: Standard & Poor's Compustat Services.

debt-coverage ratios.⁸ In addition to evaluating the firm's operating results and financial structure, rating agencies also evaluate more subjective criteria like quality of management and industry characteristics. The same factors influence the issuer's short-term and long-term debt rating so there is generally a close correspondence between the commercial paper rating and the bond rating.

Ratings are crucially important in the commercial paper market. Ratings are useful as an independent evaluation of credit risk that summarizes available public information and reduces the duplication of analysis in a market with many investors (Wakeman 1981). Ratings are also used to guide investments in commercial paper. Some investors, either by regulation or choice, restrict their holdings to high-quality paper and the measure of quality used for these investment decisions is the rating. For example, regulations of MMFs limit their holdings of commercial paper rated less than A1-P1. Other market participants, including dealers and clearing agencies, also generally require issuers to maintain a certain quality. Again, credit quality is measured by the rating.

Backup Liquidity Commercial paper issuers maintain access to funds that can be used to pay off all or some of their maturing commercial paper and other short-term debt. These funds are either in the form of their own cash reserves or bank lines of credit. Rating agencies require evidence of short-term liquidity and will not issue a commercial paper rating without it. The highest-rated issuers can maintain liquidity backup of as little as 50 percent of commercial paper outstanding, but firms with less than a high A1-P1 rating generally have to maintain 100 percent backup.

Most commercial paper issuers maintain backup liquidity through bank lines of credit available in a variety of forms. Standard credit lines allow borrowing under a 90-day note. Swing lines provide funds on a day-to-day basis, allowing issuers to cover a shortfall in proceeds from paper issuance on a particular day. Increasingly, backup lines of credit are being structured as more secure multi-year revolver agreements in which a bank or syndicate of banks commit to loan funds to a firm on demand at a floating base rate that is tied to the prime rate, LIBOR rate, or certificate of deposit rate. The spread over the base rate is negotiated at the time the agreement is made and can either be fixed or dependent on the bond rating of the borrower at the time the loan is drawn down. The length of the revolver commitment varies, but the trend in revolvers has been towards shorter terms, typically around three years. As compensation for the revolver commitment, the firm pays various fees to the bank. The facility fee is a percentage of the credit line and is paid whether or not the line is activated. The commitment fee is a percentage of the unused credit line. This type of fee has

⁸ Because ratings depend on historical operating results, researchers have had some success in predicting ratings based on accounting data. See, for example, Peavy and Edgar (1983).

become less common in recent years. A usage fee is sometimes charged if the credit line is heavily used.

Backup lines of credit are intended to provide funds to retire maturing commercial paper when an event prevents an issuer from rolling over the paper. Such an event may be specific to an issuer: an industrial accident, sudden liability exposure, or other adverse business conditions that investors perceive as significantly weakening the credit strength of the issuer. Or the event may be a general development affecting the commercial paper market. For instance, a major issuer might default, as Penn Central did in 1970, and make it prohibitively expensive for some issuers to roll over new paper, or a natural disaster such as a hurricane may interrupt the normal function of the market.

Backup lines of credit will generally not be useful for a firm whose operating and financial condition has deteriorated to the point where it is about to default on its short-term liabilities. Credit agreements frequently contain "material adverse change" clauses which allow banks to cancel credit lines if the financial condition of a firm significantly changes. Indeed, the recent history of commercial paper defaults has shown that as an issuer's financial condition deteriorates and its commercial paper cannot be rolled over, backup lines of credit are usually canceled before they can be used to pay off maturing commercial paper.

General factors affecting the commercial paper market may also result in the disruption of backup lines of credit. Standard & Poor's has emphasized this point in an evaluation of the benefits to investors of backup credit lines: "A general disruption of commercial paper markets would be a highly volatile scenario, under which most bank lines would represent unreliable claims on whatever cash would be made available through the banking system to support the market" (Samson and Bachmann 1990, p. 23). Part of the risk assumed by commercial paper investors is the possibility of this highly volatile scenario.

Credit Enhancements While backup lines of credit are needed to obtain a commercial paper rating, they will not raise the rating above the underlying creditworthiness of the issuer. Issuers can significantly increase the rating of their paper, however, by using one of a variety of credit enhancements which lower default risk by arranging for an alternative party to retire the commercial paper if the issuer cannot. These credit enhancements differ from backup lines of credit in that they provide a guarantee of support which cannot be withdrawn. Some smaller and riskier firms, which normally would find the commercial paper market unreceptive, access the commercial paper market using these enhancements.

Some large firms with strong credit ratings raise the ratings of smaller and less creditworthy subsidiaries by supporting their commercial paper with outright guarantees or with less secure "keepwell" agreements which describe the commitment the parent makes to assist the subsidiary to maintain a certain creditworthiness (Moody's, July 1992). Since parent companies may have incentives

to prevent default by their subsidiaries, the affiliation of a subsidiary with a strong parent can raise the credit rating of the subsidiary issuer.

Firms also raise their credit ratings by purchasing indemnity bonds from insurance companies or standby letters of credit sold by commercial banks. Both of these enhancements provide assurance that the supporting entity will retire maturing commercial paper if the issuer cannot. With a letter of credit, for example, the issuer pays a fee to the bank, attaches the letter of credit to the commercial paper and effectively rents the bank's rating. The attention of the rating agency and investors shift from the issuer to the supporting bank. The issue will generally receive the same rating as the bank's own commercial paper and offer an interest rate close to the bank's paper. Since relatively few U.S. banks have A1-P1 ratings, highly rated foreign banks are the primary sellers of commercial paper letters of credit. At the end of the first quarter of 1992, approximately 6 percent of commercial paper was fully backed by a credit enhancement, primarily bank letters of credit, issued by a third party unaffiliated with the issuer (Federal Reserve Bank of New York 1992).

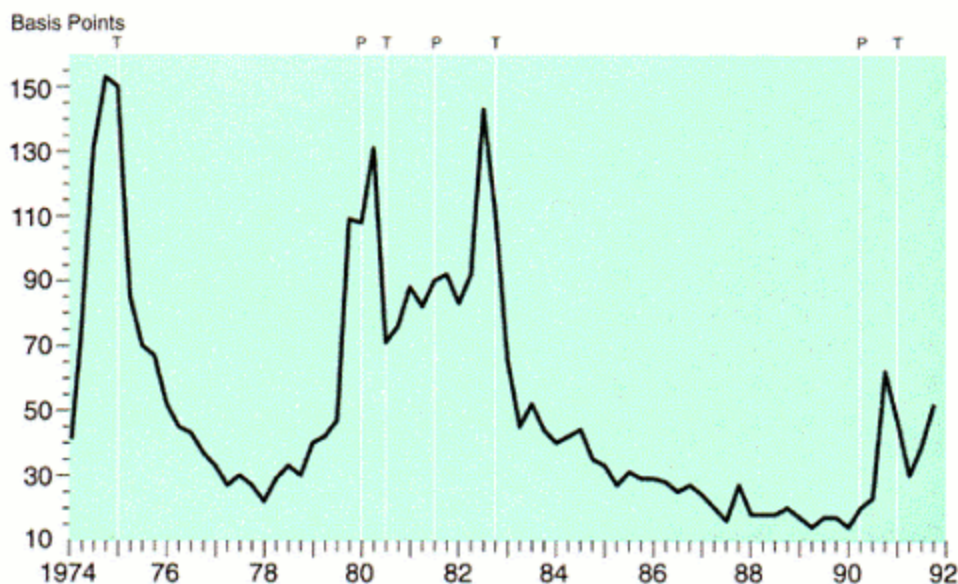
Slovin et al. (1988) show that the announcement of a commercial paper program with a credit enhancement⁹ has been associated with a significant increase in the value of the issuer's equity, but the announcement of a commercial paper program with no credit enhancement has no impact on firm value. This evidence suggests that by issuing a letter of credit and certifying the creditworthiness of the issuer, the commercial bank provides new information to the capital markets. These results provide support for the hypothesis that banks generate information relevant for assessing credit risk that the securities markets do not have. Banks supply this information to the capital market through commercial paper programs supported by letters of credit.

Default History and Yields Commercial paper pays a market-determined interest rate that is closely related to other market interest rates like the rate on large certificates of deposit. Because commercial paper has default risk, its yield is higher than the yield on Treasury bills. From 1967 through 1991, the spread of the one-month commercial paper rate over the one-month Treasury bill rate averaged 117 basis points.

Default risk also creates a differential between the rates on different quality grades of commercial paper. Figure 4 shows the spread between the yield on commercial paper rated A1-P1 and the yield on paper rated A2-P2. This spread averaged 52 basis points from 1974 through 1991. Default risk as measured by the quality spread shows some variation over time, rising during recessions and falling during expansions.

⁹ The credit enhancements examined were standby letters of credit and, for programs outside the United States, note issuance facilities.

FIGURE 4
**Spread Between the Rates on Prime- and
 Medium-Grade Commercial Paper**



Source: Board of Governors of the Federal Reserve System.

Historically, the commercial paper market has been remarkably free of default. As shown in Table 5, in the 20-year period from 1969 through 1988 there were only two major defaults. The low default rates in the commercial paper market largely reflect the tastes of commercial paper investors. As shown in Table 4, investors typically prefer commercial paper issued by large firms with long track records, conservative financing strategies, and stable profitability. Most investors will not buy paper from small, unknown, highly leveraged issuers unless the paper has credit enhancements attached. Moreover, rating services will not assign a prime rating to these issues and most dealers will not distribute the paper.

Even a major issuer can find the commercial paper market unreceptive if its financial condition is perceived by the market to have weakened. Fons and Kimball (1992) estimate that issuers who defaulted on long-term debt withdrew from the commercial paper market an average of almost three years prior to default. As ratings declined, these issuers significantly decreased their commercial paper borrowings. Fons and Kimball (1992) take this "orderly exit" mechanism as evidence that investors in the commercial paper market are "unreceptive to lower-quality paper." Crabbe and Post (January 1992) document the orderly exit

TABLE 5
Major Defaults in the U.S. Commercial Paper Market

Issuer	Date of Default	Amount Outstanding at Default (\$ millions)	Original Rating of Longest Outstanding Defaulting CP	
			Moody's	S&P
Penn Central	6/21/70	82.0	NR	NR
Manville Corp.	8/26/82	15.2	P-2	A-2
Integrated Resources	6/15/89	213.0	NR	A-2
Colorado Ute Electric	8/17/89	19.0	P-1	A-1
Equitable Lomas Leasing	9/12/89	53.0	P-3	A-3
Mortgage & Realty Trust	3/15/90	166.9	NR	A-2
Washington Bancorp	5/11/90	36.7	NR	NR
Stotler Group	7/25/90	0.8	NR	NR
Columbia Gas	6/12/91	268.0	P-2	A-2

Source: Fons and Kimball (1992), *Wall Street Journal*, *Dow Jones News Wire*, *Business Week*, Standard & Poor's.

mechanism using a sample of bank holding company issuers during 1986 to 1990. For issuers which experienced Moody's commercial paper rating downgrades, commercial paper outstanding declined on average by 12.2 percent in the ten weeks prior to the rating change and 15.7 percent in the first four weeks after the change.

The number of commercial paper defaults rose to seven in 1989 to 1991, but even in this period the default rate was low. Fons and Kimball (1992) estimate the dollar amount of defaults over this period as a percentage of the total volume issued.¹⁰ They find that the default rate for the United States was only 0.0040 percent in 1989-91, which means that "an investor purchasing U.S.-issued commercial paper. . . throughout the 1989-1991 period experienced, on average, interruption in promised payments of roughly [40/100] of a penny for every \$100 invested" (p. 13).

The rise in defaults in the 1989 to 1990 period may have partially reflected an increased tolerance for riskier paper in the later part of the 1980s. Unrated commercial paper grew significantly in the late 1980s to \$5 billion in January 1990. Over the same period, the spread between the yields on A1-P1 paper and A2-P2 paper was unusually low (averaging less than 30 basis points). These developments were reversed in the early 1990s following the rise in commercial paper defaults, the deterioration in economic conditions, and the bankruptcy

¹⁰ Fons and Kimball (1992) estimate the total volume of commercial paper issuance as average outstanding commercial paper times (365/average maturity). Average maturity is estimated at 30 days.

of Drexel Burnham, a major dealer and promoter of unrated commercial paper. By early 1991, unrated paper outstanding had fallen to below \$1 billion and the A1-A2 spread had risen to almost 50 basis points, its highest level since 1982.

The commercial paper defaults in 1989 and 1990 had a significant impact on the demand for lower-rated paper by money market mutual funds. Several MMFs were major holders of defaulted paper of Integrated Resources and Mortgage & Realty Trust.¹¹ Following these defaults, some MMFs began to voluntarily restrict their commercial paper holdings to A1-P1 issues. Then in June 1991, SEC regulations became effective that limited MMFs to investing no more than 1 percent of their assets in any single A2-P2 issuer and no more than 5 percent of assets in A2-P2 paper. Previously, there had been no restriction on MMF total holding of A2-P2 paper, and MMFs had held approximately 10 percent of their assets in A2-P2 paper at the end of 1990. Crabbe and Post (May 1992) find that by the end of 1991, MMFs had reduced their holdings of A2-P2 commercial paper to almost zero. Along with the 1989 and 1990 defaults, they point to the June 1991 regulations as an important factor influencing MMF investment choices.

INNOVATIONS

Asset-Backed Commercial Paper A relatively new innovation in the commercial paper market is the backing of commercial paper with assets. The risk of most commercial paper depends on the entire firm's operating and financial risk. With asset-backed paper, the paper's risk is instead tied directly to the creditworthiness of specific financial assets, usually some form of receivable. Asset-backed paper is one way smaller, riskier firms can access the commercial paper market. The advantages of asset-backed securities have led large, lower-risk commercial paper issuers to also participate in asset-backed commercial paper programs. Asset-backed programs have grown rapidly since the first program in 1983. Standard & Poor's has rated more than 60 asset-backed issues (Kavanagh et al. 1992, p. 109) with an estimated \$40 billion outstanding.

Asset-backed commercial paper is issued by a company, called a special purpose entity, which purchases receivables from one firm or a group of firms and finances the purchase with funds raised in the commercial paper market. The sole business activity of the special company is the purchase and finance of the receivables so the risk of the company and the commercial paper it issues is isolated from the risk of the firm or firms which originated the receivables.

¹¹ Value Line's MMF, for example, held 3.5 percent of its portfolio in \$22.6 million of Integrated's paper. Value Line protected the fund's investors, absorbing the loss at an after-tax cost of \$7.5 million.

The trade receivables and credit card receivables that are typically used in asset-backed programs have a predictable cash flow and default rate so the risk of the assets can be estimated. Asset-backed paper programs are structured so that the amount of receivables exceeds the outstanding paper. In addition to this over-collateralization, credit enhancements are used, including guarantees by the firm selling the receivables, bank letters of credit, or surety bonds. As with all commercial paper issues, rating agencies require backup liquidity.

The combining of similar receivables from a group of companies into a pool large enough to justify a commercial paper program allows small firms to participate in asset-backed programs and serves to diversify some of the receivables' default risk. Typically, the financing firm which pools the receivables is managed by a commercial bank which purchases assets from its corporate clients.

Swaps A factor in the growth of the commercial paper market during the 1980s has been the rapid growth in the market for interest rate swaps. Interest rate swaps are one of a variety of relatively new instruments that have significantly increased the financing options of commercial paper issuers. Swaps provide issuers with flexibility to rapidly restructure their liabilities, to raise funds at reduced costs, and to hedge risks arising from short-term financing programs.

Interest rate swaps are agreements between two parties to exchange interest rate payments over some specified time period on a certain amount of unexchanged principle. To appreciate the role of swaps it is necessary to understand that there are two interest rate risks associated with commercial paper borrowing. First, the firm faces market interest rate risk: the risk that the rate it pays on commercial paper will rise because the level of market interest rates increases. A change in the risk-free rate, such as the Treasury bill rate, will cause a corresponding change in all commercial paper and borrowing rates. Second, the firm faces idiosyncratic interest rate risk: the risk that commercial paper investors will demand a higher rate because they perceive the firm's credit risk to have increased. With idiosyncratic risk, the rate on its commercial paper can rise without an increase in the risk-free rate or in other commercial paper rates.

A commercial paper issuer can eliminate market interest rate risk by entering into a swap and agreeing to exchange a fixed interest rate payment for a variable interest rate. For example, in the swap the firm may pay a fixed interest rate that is some spread over the multi-year Treasury bond rate and receive the floating six-month LIBOR rate. If the commercial paper rate rises because of a general rise in the market interest rate, the firm's increased interest payment on its commercial paper is offset by the increased payment it receives from the swap. This swap allows the firm to transform its short-term, variable-rate commercial paper financing into a fixed-rate liability that hedges market interest rate risks in the same manner as long-term fixed-rate, noncallable debt. Note that the firm still bears the risk of idiosyncratic changes in its commercial paper rate. If its own commercial paper rate rises while other rates, including the LIBOR rate, do not

rise, the cost of borrowing in the commercial paper market will rise without a corresponding increase in the payment from the swap.

Alternatively, the firm can fix the cost of its idiosyncratic risk by borrowing in the long-term market at a fixed rate and entering into a swap in which it pays a floating rate and receives a fixed rate. The swap effectively converts the long-term fixed-rate liability into a floating-rate liability that is similar to commercial paper. The firm now faces the risk of a general change in the level on interest rates, just like a financing strategy of issuing commercial paper, but has fixed the cost of its idiosyncratic risk by borrowing long-term in the bond market at a fixed-rate.

One important and unresolved issue is what the advantage of swaps are relative to alternative financing strategies. For example, why would a firm issue short-term debt and swap the flexible rate into a long-term rate instead of issuing long-term debt? Researchers have advanced a variety of hypotheses to explain the rapid growth of the interest rate swap market, but no real consensus has been reached. Many explanations view swaps as a way for firms to exploit differences in the premium for credit risk at different maturities and in different markets. For example, one firm may find it can issue commercial paper at a rate close to the average for similarly rated issuers but pays a significantly higher spread in the long-term fixed-rate market. If the firm prefers fixed-rate financing, a commercial paper program combined with a swap may provide cheaper financing than issuing fixed-rate debt. But it is uncertain what causes these borrowing differentials.¹²

The two interest rate swaps discussed above are the most basic examples of a wide variety of available swaps. The examples are constructed to highlight some important aspects of interest rate swaps, but it is not known how many of these swaps are currently being used in conjunction with commercial paper programs.¹³ Some commercial paper programs involve international debt issues in conjunction with both interest rate and currency swaps.

Foreign Commercial Paper Markets While the U.S. market is by far the largest, a variety of foreign commercial paper markets began operating in the 1980s and early 1990s. Table 6 lists the international markets and shows estimates of paper outstanding at the end of 1990. Even though the U.S. commercial paper market continued to grow in the later 1980s, its share of the worldwide commercial paper market fell from almost 90 percent in 1986 to less than 65 percent in 1990. The Japanese market, which began in 1987, is the largest commercial paper market outside the United States. In Europe, the French, Spanish, and

¹² Some suggested reasons include market inefficiencies and differences in agency costs and bankruptcy costs across various forms of debt. Wall and Pringle (1988) provide a review of the uses and motivations for interest rate swaps.

¹³ Einzig and Lange (1990) discuss some examples of interest rate swaps used in practice.

TABLE 6
International Commercial Paper Markets
Amounts Outstanding, End of 1990

Billions of U.S. Dollars

United States	557.8
Japan	117.3
France	31.0
Canada	26.8
Sweden	22.3
Spain	20.0 *
Australia	10.9
United Kingdom	9.1
Finland	8.3
Norway	2.6
Netherlands	2.0
Euro-CP	70.4
Total	878.5

* Estimate

Source: Bank for International Settlements.

Swedish commercial paper markets are well established and the German market has shown rapid growth since it began in 1991.¹⁴

Some U.S. firms simultaneously maintain a commercial paper program in the United States and issue dollar-denominated commercial paper abroad in the Euro commercial paper market. The Euro commercial paper market developed from note issuance and revolving underwriting facilities of the late 1970s in which firms issued tradable notes with the characteristics of commercial paper in conjunction with a loan agreement in which a bank or bank syndicate agreed to purchase the notes if the issuer was unable to place them with investors. In the early 1980s, higher-quality issuers began issuing notes without the backup facilities. The Euro commercial paper market grew rapidly from 1985 to 1990. By the middle of 1992, outstanding Euro commercial paper totaled \$87 billion. U.S. financial and industrial firms are important issuers, either directly or through their foreign subsidiaries. Approximately 75 percent of Euro commercial paper is denominated in U.S. dollars while the remainder is denominated in European currency units, Italian liras, and Japanese yen. Issuers commonly issue Euro commercial paper in dollars and use swaps or foreign exchange transactions to convert their borrowings to another currency. The foreign markets, including the Euro commercial paper market, provide issuers flexibility in raising

¹⁴ Bank for International Settlements (1991) reviews the international commercial paper markets. Also see Euromoney (1992) for a review of the European money markets.

short-term funds, allowing them to diversify their investor base, to establish presence in the international credit markets, and to obtain the lowest cost of funds.

While the Euro commercial paper market has similarities to the U.S. market, there are some important differences. The maturity of Euro commercial paper has been longer than in the United States, typically between 60 to 180 days, and, partly reflecting the longer maturities, there is an active secondary market. There is some evidence that the credit quality of the typical issuer in the Euro commercial paper market is not as high as in the U.S. market. Both Standard & Poor's and Moody's rate Euro commercial paper programs, but ratings have not been as crucial in the Euro market as they have been in the U.S. market. U.S. firms with less than A1-P1 ratings have found that the Euro market has been more receptive than the domestic market to commercial paper issues with no credit enhancements attached. Higher default rates abroad reflect the less stringent credit standards. Fons and Kimball (1992) estimate that the amount of defaults as a percent of the total volume of commercial paper issued in the non-U.S. markets (including the Euro commercial paper market) in 1989 to 1991 was 0.0242 percent, which was significantly greater than the 0.0040 percent in the U.S. market. In 1989, the four Euro commercial paper defaults affected almost 1 percent of the market.

The Growing Importance of Commercial Paper The rapid growth of commercial paper shown in Figure 1 reflects the advantages of financing and investing using the capital markets rather than the banking system. To a significant extent, the advantage of commercial paper issuance is cost: high-quality issuers have generally found borrowing in the commercial paper to be cheaper than bank loans. The cost of commercial paper programs, including the cost of distribution, agent fees, rating fees, and fees for backup credit lines, are small, amounting to perhaps 15 basis points in a large program. A highly rated bank borrows at a cost of funds comparable to other commercial paper issuers, and it must add a spread when lending to cover the expenses and capital cost of its operations and to cover any reserve requirements. Riskier firms are willing to pay this spread because the bank adds value by generating information about the creditworthiness of the borrower which enables it to lend at less cost than the commercial paper market. A large creditworthy issuer will generally find it cheaper to bypass the bank and raise funds directly in the credit market.

The growth of the commercial paper market can be viewed as part of a wider trend towards corporate financing using securities rather than bank loans. Other aspects of this trend, commonly referred to as asset securitization, include the rapid growth of the bond and junk bond markets and the market for asset-backed securities. The pace of asset securitization increased sharply in the 1980s. New security technology, including the development of risk management tools like

swaps and interest rate caps, became widespread. At the same time, established markets expanded to include new issuers. Smaller, riskier firms increased their issuance of long-term bonds and entered the commercial paper market with asset-backed paper and letter of credit programs. Commercial paper is likely to remain a significant source of financing for domestic and foreign firms and a relatively safe short-term security for investors.

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