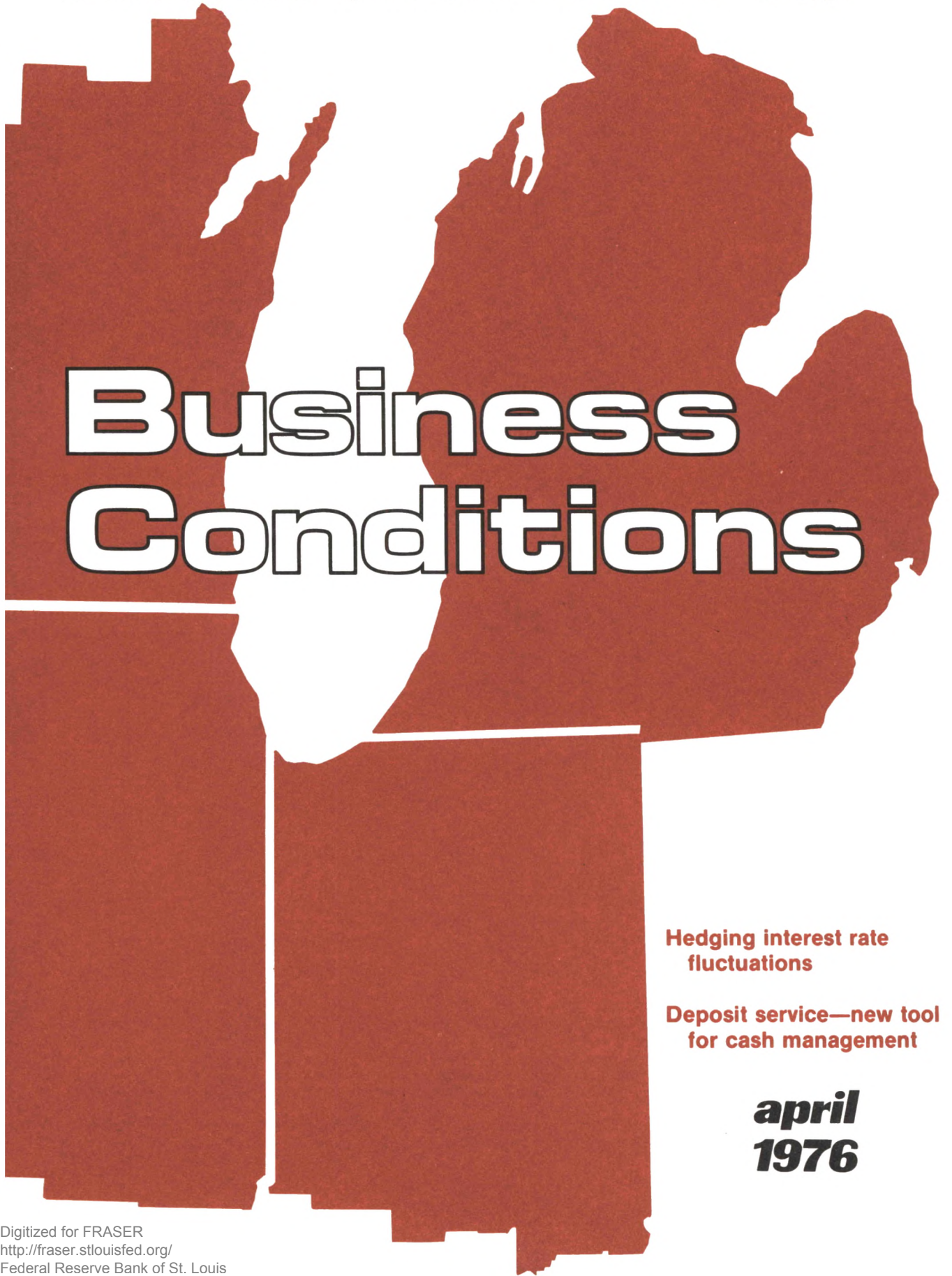
an economic review by the Federal Reserve Bank of Chicago



Business Conditions

Hedging interest rate fluctuations

Deposit service—new tool for cash management

april 1976

Contents

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Hedging interest rate fluctuations

In recent months two new "commodities" have been added to the list already traded on the organized futures markets. These new commodities are unique to the futures markets in that they bear explicit rates of interest. On October 20, 1975 futures trading in Government National Mortgage Association (GNMA) modified pass-through mortgage-backed certificates[1] began on the Chicago Board of Trade. Treasury bills (T-bills) made their debut January 6, 1976 on the International Monetary Market, a division of the Chicago Mercantile Exchange.

The primary function of futures markets is to allow businessmen to hedge, i.e., to transfer the risks of unanticipated commodity price changes to those eager to assume these risks—namely speculators, who hope to profit from correctly forecasting price swings. Hedging involves taking a position in the futures market opposite that in the cash market so that losses in one will be offset by gains in the other if prices move in either direction. A farmer who will have wheat to sell in September might want to sell a September wheat futures contract at today's price. If the price of grain falls, he will lose on the grain sale but will be able to cover his position in the futures market at a lower price.

Why a futures market in interest rates?

Prices of financial assets, such as securities and mortgages, fluctuate inversely with market interest rates. As yields on new obligations rise, outstanding instruments with lower coupon rates can be sold only at a discount that will increase their effective yield, resulting in a capital loss for the sellers.

In recent years the yields on a wide variety of interest-bearing securities have shown increased volatility. Although this increased volatility has posed problems for many groups of borrowers and lenders, few have suffered more than the builders, thrift institutions, and mortgage bankers involved in residential construction. Given the large dollar volume of transactions and the relatively small capital bases of participants, the industry is vitally dependent on credit, and a critical element in its operation is the forward commitment of funds at fixed rates of interest. Both borrowers and lenders stand to lose large sums of money if they incorrectly forecast interest rates over the life of a commitment. The greater the fluctuation in interest rates, the more difficult it is to make accurate forecasts. At times of heightened

[1]These certificates are issued by FHA-approved private financial enterprises, such as mortgage bankers, and are backed by pools of FHA- or VA-guaranteed mortgages. Fixed monthly payments of principal and interest on the mortgages plus prepayments and proceeds from foreclosures are paid or "passed through" to the certificate holders. GNMA, a wholly owned government corporation within the Department of Housing and Urban Development, guarantees that these payments will be made even if the certificate issuer has not actually collected the amounts due from its mortgagors. Although the original maturity of the mortgages backing the GNMA certificates is usually 30 years, yields are quoted on the basis of a 12-year maturity due to FHA actuarial experience of prepayment patterns.

uncertainty parties on both sides of the residential construction credit bargain have grown reluctant to enter into fixed-price, mandatory-delivery commitments, thereby exerting a depressing influence on building activity. Because a futures market in mortgage or mortgage-related instruments offers protection against losses associated with unanticipated changes in interest rates, it might be expected to improve the flow of funds into the industry.

Borrowers and lenders in other sectors also risk higher costs or losses in the value of their assets from fluctuations in interest rates. For example, corporate treasurers face increased difficulties in managing cash balances when short-term borrowing and lending rates are changing rapidly. The sale of an investment in order to meet an immediate need for cash entails a capital loss if interest rates have risen since the investment was made, while income may be lost if rates fall before cash is available. Thus, persistently inaccurate forecasts of short-term rates can lead to significant reductions in corporate profits. A futures market in a short-term, interest-bearing security whose yield is closely correlated with those of other money market instruments would afford participants in these credit markets some protection against losses due to the volatility of short-term interest rates.

The mechanics of futures trading

Trading in the futures market does not involve the buying and selling of an actual physical commodity or security but rather contracts that specify the delivery of a standardized quantity and quality of a commodity at a designated price at some future date. In the GNMA futures market the trading unit is $100,000 principal balance of GNMA modified pass-through mortgage-backed certificates bearing a stated interest rate (coupon rate) of 8.00 percent.[2] Delivery months are March, June, September, and December; and contracts extend forward as much as one and one-half years. The standard contract in the Treasury bill futures market is $1,000,000 face value at maturity of 90-day Treasury bills. The delivery months are March, June, September, and December with contracts extending forward one year.

To buy or sell futures contracts, an individual or institution must first open an account with a brokerage firm that has membership on the exchange on which the particular commodity is traded. Assume that an investor on March 1 wanted to purchase a June contract of GNMA 8s that was selling at 92-22[3] to yield 9.00 percent. The investor's broker would execute the buy order which would then obligate the investor to accept delivery in June of GNMA 8s with $100,000 principal balance upon payment of $92,687.50. The investor would be "long" in GNMA futures since his first transaction was to purchase a contract. On the other side of the transaction, the seller of the contract agrees to deliver the GNMA 8s in June upon receiving payment of $92,687.50. In the case when the futures market participant's first transaction is a contract to sell, the seller is "short" in futures.

A futures contract can be fulfilled by accepting or making delivery of the commodity on the specified date, which occurs in only about 2 percent of all futures contracts. Usually, buyers and sellers of contracts make opposite or offsetting transactions in the futures market, thereby

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[2]Deliverers at their option may substitute GNMAs with a stated interest rate other than 8.00 percent provided the GNMAs delivered bear the same yield as the 8.00 percent GNMA when calculated at par under the assumption of a 30-year mortgage prepaid in the 12th year.

[3]GNMA contract prices are quoted in terms of points and 32nds. For example, 92-22 means 92 and 22-32nds or 92.6875.

eliminating their obligations for delivery or acceptance of delivery.

Contracts in the futures market are bought and sold on margin. The margin deposit, while tangentially related to the value of the commodity, is more a function of the historical price volatility of a commodity. The minimum amount of initial margin for GNMA and T-bill futures contracts is $1,000 and $1,500, respectively, although individual brokerage houses may require larger amounts. Additional margin, called "maintenance" or "variation" margin may be required from the buyer of interest rate futures contracts if contract prices decline (i.e., yields rise) or from the seller if prices rise (yields decline).

In addition to putting up margin when trading in the futures market, a customer must pay a brokerage commission. Although this fee may vary among brokers, the most common charge quoted on a GNMA or T-bill futures "round turn" transaction[4] is $60 per contract.

Hedging

A businessman who holds an inventory of some commodity faces possible losses due to the risk of unanticipated price declines. On the other hand, those who intend to purchase commodities in the future run the risk of having to pay higher than current prices at the time of purchase. Futures markets enable businesses to transfer price-change risks to speculators through the technique known as hedging.

Hedging is defined as taking a position in the futures market equal to and opposite an existing or developing position in the cash or spot market. Consider the case of a mortgage banker who in March holds an inventory of FHA/VA mortages or has entered into a commitment with a builder to accept delivery of mortgages in September at a specified yield. The mortgage banker is long in cash mortgages. Assuming that he intends to form a GNMA mortgage pool and then sell the resulting mortgage-backed securities to permanent mortgage investors, the mortgage banker faces the risk that interest rates may increase between March and September, thereby reducing the capital value of the mortgage pool. In order to reduce the risk of capital loss due to a rise in interest rates, the mortgage banker can sell GNMA futures contracts in March for delivery in September. By so doing, he has hedged his long position in cash mortgages by going short in GNMA futures. In September when the mortgage banker sells his GNMA mortgage-backed securities to permanent investors, he will simultaneously offset his short position in GNMA futures by purchasing contracts. If the prices of interest-bearing securities have fallen (i.e., yields have risen) between March and September and if cash market and futures market prices have moved in the same direction (which they usually do), then the losses that the mortgage banker experiences in the cash market will be offset by his gains in the futures market. If, instead, yields had declined, the mortgage banker would have experienced a capital gain in the cash market but would have sustained a loss in the futures market.

By selling contracts of GNMA futures to hedge his long cash position, the mortgage banker has shifted the risk associated with unanticipated changes in interest rates to the purchaser of the futures contracts—generally, a speculator. The mortgage banker has thus constrained his potential losses but also has implicitly agreed to limit his potential gains. He is content with his usual profits earned from mortgage origination and servicing fees. The speculator, who feels that he has a special expertise in forecasting interest rate movements, agrees to assume the risk

[4] "Round turn" is the term used to describe both the customer's initial and offsetting transactions in the futures market.

of interest rate fluctuations because of the potentially large profits he can reap if his forecasts are correct.

Basis

A successful hedge requires that cash or spot market prices and futures market prices move in the same direction over time. Fortunately for hedgers, this is generally the case. The difference between the futures price and the cash or spot price is called the "basis." In futures markets for interest-bearing securities, the key elements in determining the basis are the factors that enter into the current cost of borrowing money and expectations of what borrowing costs will be in the future.

In hedging, if the basis remains constant—that is, both the futures and spot prices move in the same direction by the same amount—then the hedge is perfect. The gain in one market exactly offsets the loss in the other. In actuality, it is rare that the basis will remain constant. Hedgers must be aware of the possibility of a change in the relationship between futures and spot prices—called basis risk—which may expose them to a loss (or gain) on the hedging transaction. Nevertheless, any losses will usually be much less than would have otherwise occurred had a position in the cash market not been hedged.

Cross-hedging

A futures market in one commodity can be used to hedge against adverse price movements of some other commodity. This technique is called cross-hedging. For cross-hedging to be effective, the spot prices of the two commodities have to move in tandem. Unless the correlation between the two commodities' spot prices is perfect, the cross-hedger exposes himself to higher potential basis risk since market conditions determining the price of one commodity could change significantly relative to the other.

The GNMA futures market would seem to provide a cross-hedging vehicle to those institutions that have exposed positions in mortgage debt and long-term, fixed-income securities. Statistical studies have shown that the correlation between GNMA certificate yields and conventional mortgage yields ranges from approximately 84 percent to 93 percent, depending on the particular mortgage yield series considered. The correlation between GNMA certificate yields and long-term government bond yields is about 93 percent.

The T-bill futures market is more appropriate for cross-hedging positions in short-term obligations such as certificates of deposit, commercial paper, bankers' acceptances, and bank loans tied to the prime rate. Correlations between yields on 13-week Treasury bills and yields on these types of short-term credit market instruments are generally in the neighborhood of 85 percent. Despite these relatively high correlations of yields on GNMAs and T-bills vis-a-vis other interest-bearing debt instruments, the cross-hedger would still be exposed to substantial basis risk.

Potential participants

Institutions that have a significant portion of their assets and/or liabilities in the form of interest-bearing debt instruments may find an interest rate futures market an effective means of hedging exposure to unanticipated fluctuations in yields. Those who expect to borrow at some future date can use the new markets to establish their future borrowing costs with a relatively high degree of certainty. Likewise, future lenders now have a new vehicle which allows them to lock in a current rate of return prior to the time that the actual lending or investing takes place.

The GNMA futures market was developed primarily for participants in the residential mortgage market—builders, in-

terim lenders, and permanent investors. Consider the situation where a builder obtains a forward mortgage commitment from a lender such as a mortgage banker for a certain dollar amount at a specified interest rate. For this commitment the builder may have to put up "earnest money" or "liquidation damages." At the agreed upon time the builder "sells" or delivers mortgages to the mortgage banker at the prevailing mortgage rates. If mortgage rates have declined in the interim, the builder will lose money on the delivery because the mortgage banker will discount the lower-yielding mortgages that he has received by the amount necessary to produce the higher yield specified in the terms of the commitment. Rates may have fallen so much that the builder will minimize his losses by "walking away" from the commitment, that is, not delivering the mortgages and thereby forfeiting his earnest money. The builder can then seek financing from another lender at the lower prevailing yields. If, on the other hand, mortgage rates have risen, then the mortgage banker suffers an "opportunity" loss in that he is committed to making loans at a yield below which he can earn in the current market. If the mortgage banker sells these mortgages to a permanent investor at prevailing yields, then his opportunity loss becomes a realized capital loss.

Both the builder and the mortgage banker could have protected themselves against the risk of adverse interest rate movements by hedging their positions in the GNMA futures market. In this particular example the builder would have covered his short position in cash mortgages[5] against interest rate declines by executing a long hedge, i.e., by purchasing futures contracts. If yields did, in fact, decline between the commitment date and the delivery date, then profits in the futures market would compensate the builder for losses in the cash market. (See Box I, Example 1.) The mortgage banker would have protected his long position against interest rate increases by executing a short hedge through the sale of GNMA futures. A rate increase would produce losses for the mortgage banker in the cash market but gains in the futures market. (See Box I, Example 2.)

Permanent investors in the mortgage market—such as pension funds—might also use the GNMA futures market to hedge their positions. For example, a pension fund that had entered into a commitment with a mortgage banker to purchase GNMA mortgage-backed securities of a certain face value at a given yield at some specified later date might protect its long cash position in GNMA certificates against interim rate increases by placing a short hedge in the futures market.

The futures market could also be used to lock in the current rate of return on investments by investors who anticipate having funds available at a later date but who do not wish to enter into a formal commitment. This could be accomplished by purchasing GNMA futures. If yields have declined by the time the investor is ready to purchase GNMA certificates, then the profits in the futures market obtained by selling the futures contracts at a price higher than at which they were purchased would compensate for the lower prevailing yield in the cash market, thus raising the effective rate of return to the investor.

Participants in the T-bill futures market are expected to include a wide spectrum of institutions that wish to hedge exposed positions in short-term credit market instruments. For example, a corporate treasurer who expects to issue commercial paper at some time in the future could protect his firm against unanticipated higher borrowing costs by selling T-bill futures contracts. If short-term rates have

[5]The builder is short cash mortgages because he has entered into an agreement to sell or deliver mortgages at some future date.

Box I. Hedging examples—GNMA futures market

The following examples illustrate the use of the GNMA futures market in hedging the risk inherent in unanticipated interest rate fluctuations. The yields represent simple, uncompounded monthly payments of principal and interest on a 30-year security bearing a coupon rate of 8.00 percent, assuming that the security is redeemed in the 12th year. Because of the GNMA 15-day interest-free servicing delay provision, an 8.00 percent GNMA yields 8.00 percent at a price of 99-21 (99.65625). For expository purposes this adjustment is also made with regard to mortgage yields and prices.

1. The long hedge

Assume that in March a builder enters into a commitment with a mortgage banker to deliver in September $996,562.50 principal balance of mortgages to yield 8.00 percent. If mortgage rates should drop between the commitment date and the delivery date, the lower yielding mortgages delivered to the mortgage banker will be discounted to yield the rate specified in the commitment. In this case the builder will suffer a capital loss. In order to protect against a capital loss as a result of a fall in mortgage rates, the builder would execute a long hedge in the GNMA futures market.

Cash market	Futures market
March—Builder enters into commitment with mortgage banker to **deliver** in September $996,526.50 principal value of mortgages to yield 8.00 percent.	**March**—Builder **buys** 10 September GNMA 8 contracts to yield 8.00 percent.
Total value: $996,562.50	Price: 99-21 (99.65625) Total value: $996,562.50

Assume that mortgage rates fall in the March-September period so that the average yield on the mortgages that the builder delivers in September is 7.50 percent.

September—Builder **delivers** $996,562.50 principal value of 7.50 percent mortgages discounted to yield 8.00 percent.	**September**—Builder **sells** 10 September GNMA 8 contracts to yield 7.50 percent.
Price: 95-29 (95.90625) Total value: $959,062.50 Loss: $37,500.00*	Price: 103-13 (103.40625) Total value: $1,034,062.50 Gain: $37,500.00*

By placing a long hedge, the loss incurred in the cash market by the builder as a result of the decline in mortgage rates was offset by a gain in the futures market. Had rates risen rather than fallen, then the builder would have experienced a gain in the cash market but a loss in the futures market.

2. The short hedge

The mortgage banker in Example 1 also faces a risk of loss from unanticipated interest rate fluctuations, but his loss will occur if mortgage rates rise above the specified commitment rate. In this event the mortgage banker would have to pay a premium for the mortgages he received from the builder. The mortgage banker would suffer an "opportunity loss" in the sense that he would be lending at below-market rates. If the mortgage banker were to sell in the secondary market the mortgages acquired from the builder, his opportunity loss would become a realized capital loss. In order to protect against losses due to a rise in mortgage rates, the mortgage banker would execute a short hedge.

Cash market	Futures market
March—Mortgage banker enters into a commitment with a builder to **buy** in September $996,562.50 principal value of mortgages to yield 8.00 percent.	**March**—Mortgage banker **sells** 10 September GNMA 8 contracts to yield 8.00 percent.
Total value: $996,562.50	Price: 99-21 (99.65625) Total value: $996,562.50

Assume that mortgage rates rise in the March-September period so that the average yield on the mortgages bought in September by the mortgage banker is 8.50 percent.

September—Mortgage banker **buys** $996,562.50 principal value of 8.50 percent mortgages at a premium to yield 8.00 percent.	**September**—Mortgage banker **buys** 10 September GNMA 8 contracts to yield 8.50 percent.
Price: 103-07 (103.21875) Total value: $1,032,187.50 "Opportunity loss": $35,625.00*	Price: 96-03 (96.09375) Total value: $960,937.50 Gain: $35,625.00*

If the mortgage banker were to sell his recently acquired mortgages in the secondary market at the prevailing rate of 8.50 percent, his opportunity loss would become a capital loss since he would receive only $996,562.50 for the mortgage pool rather than the $1,032,187.50 that he had paid for it.

*The effect of margin costs and commissions on the financial outcome of hedging transactions is not taken into account.

Box II. Hedging examples—T-bill futures market

The following examples illustrate the use of the T-bill futures market in hedging the risk inherent in unanticipated short-term interest rate fluctuations. The yields presented are calculated on a bank discount basis, which is essentially the difference between the face value of a security and its market value on an annualized basis.

1. The long hedge

Assume that in March a corporate treasurer expects to have accumulated approximately $1 million of investable funds by June at which time he anticipates buying 91-day T-bills with these funds. The treasurer finds the current yield of 8.00 percent on 91-day T-bills attractive and desires to lock in this yield for the anticipated future investment. To protect against a decline in bill rates between March and June, the corporate treasurer executes a long hedge in the T-bill futures market.

Cash market	Futures market
March—Corporate treasurer **anticipates buying** $1 million face value of 91-day T-bills in June and decides to lock in the current yield of 8.00 percent.	**March**—Corporate treasurer **buys** 1 September 90-day T-bill contract to yield 8.25 percent.
Current price: $979,777.80	Price: $979,375.00

Assume that in June the spot yield on 91-day T-bills has declined to 7.50 percent.

June—Corporate treasurer **buys** $1 million face value of 91-day T-bills to yield 7.50 percent.	**June**—Corporate treasurer **sells** 1 September 90-day T-bill contract to yield 7.744 percent.
Current price: $981,041.70	Price: $980,638.90 Gain: $1,263.90*

Although the corporate treasurer bought in June $1 million face value of 91-day T-bills for $981,041.70 to yield 7.50 percent, the "effective" price paid was $979,777.80 when the profits earned in the futures market are subtracted from the cash market price ($981,041.70–$1,263.90). At this lower "effective" price the rate of return on the corporate treasurer's investment is increased to 8.00 percent, the spot yield on 91-day T-bills in March.

2. The short (cross-) hedge

Assume that in March a corporate treasurer anticipates borrowing approximately $1 million via 90-day commercial paper in June. Fearing that short-term interest rates may increase by June, the corporate treasurer decides to lock in the spot rate of 8.00 percent on 90-day commercial paper by executing a short hedge in the T-bill futures market.

Cash market	Futures market
March—Corporate treasurer **anticipates selling** $1 million face value of 90-day commercial paper in June and decides to lock in the current borrowing cost of 8.00 percent.	**March**—Corporate treasurer **sells** 1 June 90-day T-bill futures contract to yield 7.75 percent. Price: $980,625.00

Assume that short-term interest rates have risen during the March-June period.

June—Corporate treasurer **sells** $1 million face value of 90-day commercial paper at a yield of 9.00 percent.	**June**—Corporate treasurer **buys** 1 June 90-day T-bill futures contract to yield 8.75 percent.
Price: $977,500.00	Price: $978,125.00 Gain: $2,500.00*

Proceeds from sale of commercial paper	$977,500.00
plus Profit in futures market	2,500.00
Total proceeds	$980,000.00
Interest cost (discount on $1 million face value of commercial paper)	$ 22,500.00
"Effective" interest rate	8.00 percent

When the profits from the futures market transactions are added to the proceeds of the commercial paper sale, the interest cost of $22,500.00 translates into an "effective" borrowing cost of 8.00 percent, the rate that prevailed in March.

*The effect of margin costs and commissions on the financial outcome of hedging transactions is not taken into account.

risen by the time that the commercial paper is issued, then the corporate treasurer will experience a gain in the futures market since he can purchase his T-bill contracts at a lower price than was paid for them. As a result, the corporation's effective cost of credit will be lower than the rate paid on its commercial paper. (See Box II, Example 2.)

This hedging strategy could be used also by a commercial bank that anticipates selling certificates of deposit (CDs) at some time in the future. In general, any company or institution that plans to tap the short-term credit market for funds at some later date can use the T-bill futures market to establish its approximate future borrowing costs as long as the yield on the instrument through which it borrows is highly correlated with the yield on 3-month T-bills.

The T-bill futures market can also be used by cash managers to lock in current returns on funds that they anticipate will be available for short-term investments at some time in the future. By going long in T-bill futures, the investor can protect himself from a fall in the rate of return on his future investment. If short-term rates should decline, then profits made by liquidating a long futures position by the sale of T-bill contracts would compensate the investor for the lower yield on the investment purchased in the cash market. (See Box II, Example 1.) This long-hedge strategy could be employed by corporate treasurers and managers of money market, insurance, trust, and pension funds.

Potential social benefits

The GNMA and T-bill futures markets provide new means by which the risk of unanticipated fluctuations in interest rates can be efficiently redistributed from those who are averse to this risk to those who seek it—speculators. Generally, the transfer of risk from risk avoiders to risk

seekers will result in increased output and/or lower prices.

The developers of the GNMA futures market expect these favorable output and price outcomes to accrue to the residential construction industry. With the ability to hedge, builders can reduce the risk premium that they have been inclined to add to the prices of their houses in order to protect their profits from adverse movements in interest rates. It is also hoped that the availability of mortgage funds will increase and the cost of these funds will decrease as a result of the GNMA futures market. Interim mortgage lenders—such as mortgage bankers—may be willing to commit a larger volume of funds to builders at lower interest rates now that these lenders can hedge against unanticipated rate fluctuations. Likewise, the ability to cover cash market mortgage positions in the futures market may make permanent mortgage investors more willing to enter into larger commitments with interim lenders. In addition, the flow of funds into the mortgage market may be enlarged by commercial banks' willingness to provide a greater quantity of interim "warehousing"[6] financing to mortgage bankers whose inventories of mortgages are hedged since it is these mortgages that serve as collateral for the bank loans. Bankers have usually been willing to commit a larger quantity of funds to a business for inventory financing when that inventory was hedged in the commodities futures markets because the business is at least partially protected against losses arising from a drop in the value of its inventory and thus is less likely to default on its loan.

The T-bill futures market is expected to produce similar benefits. By using the futures market to establish a future borrowing cost, a corporation can lower the price of its product—all other things being equal—because the risk premium associated with interest rate uncertainty, which is included in the product price, has been reduced. Conceivably, the flow of bank credit could increase as a result of the new futures market. For example, banks can reduce the uncertainty as to what their borrowing costs via the CD market will be by hedging in the T-bill futures market. This reduced uncertainty could increase banks' willingness to enter into forward loan commitments.

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[6] "Warehousing" refers to the practice by mortgage bankers of holding inventories of mortgages before delivery to a permanent investor.

Deposit service—new tool for cash management

Competition for deposits is taking a new form. Instead of paying higher interest rates on savings deposits, depository institutions are offering services which enable customers to increase income by keeping less funds in noninterest-bearing checking accounts. These services are being facilitated by regulatory changes and technological developments.

More consumers and small businesses have become interest rate conscious. Depository institutions, unable to pay higher rates on deposits under current legal restrictions, are offering daily interest and making it more convenient for customers to withdraw savings or transfer funds from savings accounts to checking accounts. Faced with the increased costs of both the higher proportion of interest-bearing deposits and the additional services, these institutions are hard pressed to reduce other costs. An important avenue is through technological improvements, especially the developing electronic funds transfer systems (EFTS).

Extending a trend

Rising interest rates during the postwar period caused large corporations to manage their cash balances more efficiently to minimize borrowing costs and increase income through short-term money market investments. Demand deposits were reduced to the lowest possible working level or the minimum balance necessary to compensate commercial banks for services. Commercial banks, faced with the slow growth in corporate demand deposits, sought to attract corporate short-term investment funds by offering certificates of deposit (CDs) at competitive rates. In addition, competition for the funds of consumers and small businesses with limited access to the money market was intensified as these groups gradually grew more interest-sensitive and began to seek higher-yield investments and pare down noninterest-bearing transactions balances.

Nonbank financial intermediaries, particularly savings and loan associations (S&Ls), have long been active solicitors of the savings of individuals and, more recently, small businesses. During the fifties and early sixties interest rates paid on regular savings deposits at S&Ls were substantially higher than those available on passbook savings accounts at commercial banks. This differential has decreased as much as regulations permit—from 75 basis points in September 1966 to 25 basis points currently. Most commercial banks and S&Ls offer long maturity time deposits on which higher rates can be paid. Many offer interest from day of deposit to day of withdrawal. Although these features were adopted mainly to reduce the outflow of savings deposits during periods of tight money when yields on market instruments were high, they are now standard.

NOW accounts

Nonbank savings institutions early recognized that third-party payment services would not only be a stimulus to savings deposit growth, but would be necessary to induce the direct deposit of

payrolls and transfer payments in an environment of electronic systems. Federal laws and regulations state explicitly that savings accounts shall not be subject to check or to negotiable or transferable order of withdrawal. Excepted are the negotiable orders of withdrawal (NOW accounts) permitted in the New England states. The Housing Act of 1968 authorized federal S&Ls to accept an order from a depositor to withdraw money from his savings account and to issue an S&L check to pay a third party. In September 1970 when the original regulation on third-party payment orders was proposed by the Federal Home Loan Bank Board (FHLBB), a special memorandum to associations urged that very careful cost studies be undertaken prior to the offering of third-party payment arrangements. Final regulations issued by the FHLBB in early 1971 restricted orders for periodic or specific third-party payments primarily to expenditures related to housing. Payments for any purpose were permitted in April 1975. Recently, the FHLBB has proposed that savings depositors in federal S&Ls be allowed to authorize payment from their accounts to third parties by orders electronically transmitted through automated clearing houses.

A major innovation in the payment of interest on the equivalent of demand deposits was the introduction of NOWs by mutual savings banks in Massachusetts and New Hampshire in 1972. The following year Congress authorized all federally regulated institutions in those states to offer such accounts. The successful experience there led nonbank financial institutions to seek similar powers in other states. The law was amended to include federally regulated institutions in all New England states effective February 27, 1976 and pressures have developed to extend the NOW account nationwide. Illinois-chartered savings and loan associations were permitted to offer NOW accounts beginning January 1, 1976 (sometimes called NINOWs—noninterest-bearing negotiable orders of withdrawal). Such accounts (except in New England) must be noninterest-bearing because of the prohibition of interest on demand deposits. Transfers, however, can readily be made into the NOW account from a separate regular savings account.

Role of technology

Technological capabilities for the electronic transfer of funds are supporting the new deposit services of both commercial banks and S&Ls. Current major components are the automated teller machine (ATM), point-of-sale (POS) terminal, automated clearing house (ACH), and supporting networks. ATMs may dispense cash from checking or savings accounts or from credit card advances and enable the customer to transfer funds between accounts at any time. They may be located on or off the premises and may or may not be connected on-line to the bank's customer data base. Most are activated by the customer using an encoded plastic card.

A POS terminal does not dispense cash and it requires an operator, usually a clerk in the retail store where it is located. It is generally part of an on-line network and may provide credit authorization or check verification, data collection, or the transfer of funds from the customer's account to the merchant's account. Both ATMs and POS terminals are considered customer-bank communication terminals (CBCTs).

A regional automated clearing house enables commercial banks to exchange debits and credits among themselves electronically as a substitute for the exchange of paper checks and other interbank transfers. Primary emphasis has been on the direct deposit of payrolls and on preauthorized bill payments. The Treasury Department is sponsoring pilot projects us-

ing ACHs for the direct electronic deposit of social security payments and United States Air Force payrolls.

Bank regulations adjusted

Commercial banks, subject to the restrictive rules adopted in the thirties to enforce the prohibition of interest payments on demand deposits, have been at a competitive disadvantage relative to S&Ls that are promoting the use of savings deposits for transactions. To achieve greater equity among financial institutions and to expand the services offered to depositors, three amendments to Federal Reserve and FDIC regulations were adopted during the past year, and a fourth has been proposed for comment.

On April 7, 1975 commercial banks were authorized to permit customers to use the telephone to withdraw funds from their savings accounts or to transfer funds from savings to checking accounts. Security and record-keeping devices made possible by new technology were considered sufficient to keep errors and unauthorized use to a minimum and to permit the rule in effect since 1936 to be rescinded.

Regulations were amended effective September 2, 1975 to permit depositors to authorize the transfer of funds from savings accounts to third parties for payments of any type, except bank overdrafts. Previously, this type of bill-paying service could be offered by commercial banks only for the payment of principal, interest, or other charges related to a real estate loan or mortgage.

Corporations, partnerships, and other profit-making organizations were permitted to maintain savings accounts at commercial banks up to a maximum of $150,000 beginning November 10, 1975. The ceiling amount was intended to make such accounts attractive primarily to small businesses that do not have access to the money markets to earn interest on temporarily idle funds. Thrift institutions were already offering business savings accounts, and the amended regulations allow commercial banks to compete more effectively for these funds.

An amendment to Regulation Q proposed on March 15, 1976 would permit a commercial bank to agree to transfer funds automatically from a depositor's savings account to a demand deposit account or directly to the bank itself when the demand deposit balance is insufficient to permit payment of presented checks or falls below a certain specified amount. The proposal would allow transfers in multiples of $100 or more with at least 30 days interest to be forfeited on the transferred funds. Although the amendment is intended to present an alternative to the costly practice of returning checks drawn on insufficient accounts, it is also likely, if adopted, to encourage depositors to reduce demand deposit account balances. Arrangements already exist whereby S&Ls have agreed to transfer depositors' funds automatically or otherwise to the customer's demand deposit at a commercial bank.

Growth of business savings

The amount of funds held by businesses in regular savings accounts at commercial banks has grown rapidly since the regulation was amended in November. A national survey on January 7, 1976 indicated that there was $1.6 billion outstanding at member banks alone. Business savings accounts at the weekly reporting banks, which were $1.0 billion at the time of survey, had increased to $2.6 billion by April 7, 1976.

Nationally, about nine-tenths of the member banks reported in the survey that they were offering or planning to offer business savings accounts. The other 10 percent were primarily banks with total deposits of less than $10 million. About three-fifths of the banks offering these

savings accounts accepted telephone orders for transfers between savings and demand deposit accounts. Because service was more common at the larger banks, roughly 80 percent of outstanding business savings are estimated to be subject to telephone transfer.

Concern has been expressed that business savings accounts may consist primarily of funds which would normally have been held at less cost to the bank in a demand deposit. Respondents estimated on average that initially about 60 percent of savings represented a shift from a demand deposit although individual bank estimates ranged from none to all. Moderation in savings gains at S&Ls prior to the survey suggests that some part of the inflow to commercial banks was from existing corporate savings accounts at S&Ls.

Reports from Seventh District banks indicate somewhat faster growth than nationally except in Indiana, where the state law did not permit banks to accept business savings accounts until January 14, 1976. In the other four states almost three-fourths of the banks were providing telephone transfer service, and over 90 percent of the business savings were subject to telephone transfer.

Most Seventh District member banks offer business savings accounts . . .

State	Percent offering or planning to offer	Percent of those offering with telephone transfer
Illinois	93	68
Indiana*	71	58
Iowa	94	74
Michigan	98	78
Wisconsin	94	84
United States	90	61

Note: As of January 7, 1976.
*Indiana state law did not permit business savings deposits at banks until January 14, 1976.

Business savings accounts are of particular importance to the smaller banks that offer these accounts. In just two months after inception these deposits accounted for more than 5 percent of total savings deposits at almost one-fourth of the Seventh District banks with total deposits of less than $10 million. None of the big banks (deposits over $500 million) reported business savings proportionately that large. Their large corporate customers have long had access to other outlets for idle cash, such as large certificates of deposit, commercial paper, or short-term government securities. A greater proportion of the customers of the smaller banks are small- and medium-sized firms for whom savings accounts provide a convenient investment for short-term funds.

Road ahead unclear

There are a number of unresolved problems in connection with the increasing payment of interest on funds formerly held in demand deposits. One is the added cost to commercial banks. Currently, in lieu of interest payments, some free services have generally been provided to depositors. Added interest costs may require more explicit pricing for those services. Full scale electronic funds transfer systems offer promise of substantial processing cost savings, but implemen-

. . . with the service more common at larger banks

Total deposits *(million dollars)*	Percent offering or planning to offer	Percent of those offering with telephone transfer
Less than 10	78	69
10 - 50	93	68
50 - 100	98	80
100 - 500	96	83
500 and over	100	95

Note: As of January 7, 1976.

tation entails problems of consumer acceptance, start-up costs, and legal obstacles.

Customers have generally been satisfied with the current paper check system. Acceptance of a paperless transfer system will depend on perceived convenience and the realization that the depositor stands to benefit in interest earnings from possible processing cost reductions.

Electronic funds transfer systems generally involve large capital outlays and require substantial transaction volume to be economically feasible. Some commercial banks establishing POS networks are sharing the systems with other commercial banks and nonbank financial intermediaries. In some districts Federal Reserve banks are providing computer and software support to ACHs.

Commercial banks have been hindered in the expansion of off-premise electronic facilities by the question of whether or not these facilities are branches and thus subject to the regulations and state laws on branching. The Comptroller of the Currency in December 1974 ruled that CBCTs may be operated by national banks without regard to the restrictions on branch banks. The ruling was subsequently modified to limit such facilities to within 50 miles of a home or branch office unless the facility was shared with a local financial institution. Challenges to facilities established under this ruling are currently in the courts. Meanwhile a number of state legislatures have adopted or are considering legislation exempting off-premise electronic facilities from branching laws and regulations. Some contain provisions requiring shared access by other commercial banks and, in some cases, nonbank financial intermediaries. However, the status of shared access under antitrust legislation, even when required by state law, remains uncertain.

Savings and loan associations have been less affected by the branching controversy. Under a temporary regulation issued in January 1974, the FHLBB stated that off-premise information processing devices (such as ATMs and POSs) were not branch offices and authorized experimental systems subject to FHLBB approval. Originally issued to expire in July 1974, the regulation was extended through July 1976. Extension is currently proposed through December 31, 1977, with applications accepted through March 31, 1977. These so-called remote service units (RSUs) may be used to store and transmit information on authorized financial transactions to an association and must be dependent on a machine-readable instrument for access. Authorized financial services to the public by RSUs include deposits or transfers of funds to savings accounts, withdrawals, and loan payments. Opening accounts and obtaining loans and overdrafts are specifically prohibited. RSUs may be located in any place of business within the state in which the home office of the association is located or within the primary service area of any branch office located outside of that state. As of April 15, 1976 the FHLBB had approved 65 applications for 22 individual and nine shared projects in 18 states. Seventy-two federally chartered and 46 state-chartered savings and loan associations, four mutual savings banks, and one commercial bank were involved. The projects were for both fully automated teller terminals and/or merchant-operated terminals. Most of the RSUs are in customer service centers in grocery stores.

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