New six-month money market certificates—explanations and implications

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Banks and savings institutions were authorized to begin issuing on June 1 a new kind of savings certificate with a maturity of six months. What is different about this new certificate is that its maximum issuing rate floats weekly with the average issuing rate on six-month Treasury bills established in the weekly T-bill auctions.

Because the offering rate on these new certificates is tied to the rate on T-bills, which are money market instruments, they are known, among other things, as *money market certificates* (MMCs). The maximum simple annual interest rate that commercial banks can offer on MMCs is the average discount rate at which six-month T-bills were awarded in the most recent auction. Savings institutions (mutual savings banks and savings and loan associations) can offer MMCs at one-quarter percent above the average T-bill auction rate.

The new certificates were introduced so that depository institutions subject to statutory maximum offering rates on deposits (Regulation Q ceilings) could compete more effectively for funds when open market interest rates are above Regulation Q ceiling rates.

MMCs versus T-bills

Several criteria can be used to show how MMCs offered by commercial banks and savings institutions fare against T-bills.

Yield—Over the range of T-bill rates paid during periods of "high interest" since World War II, the ranking of the three alternatives from highest *pretax* yield to lowest would be MMCs offered by savings institutions, T-bills, and MMCs offered by commercial banks. However, as T-bill rates (on a discount basis) reach 10 percent, T-bills take over first place in terms of yield.

To compare yields of the three alternatives, an investor must take into account how the different yields are computed and quoted so the comparisons can be made on a consistent basis. The rate usually quoted on T-bills and the rate on which MMC offering rates are based is called the *bank discount rate* or simply the *discount rate*.[1] This is an annualized rate that determines the dollar discount from face value at which T-bills are sold.[2] For example, a T-bill with 182 days (six months) to maturity selling at a 7 percent discount could be purchased at a dollar discount of $353.89 per $10,000, or a price of $9,646.11 ($10,000-$353.89).

The discount rate, however, is not an accurate reflection of the investor's actual annual percentage yield on the T-bill, because the investor's return is $353.89 on an actual investment of $9,646.11, not $10,000, and a 365-day year should be used in computing the yield rather than a 360-day year, as is used in calculating the discount. Furthermore, to make the T-bill yield comparable to the way banks and savings institutions are allowed to quote yields on MMCs, the investor should compute a semiannually compounded annual yield on the T-bill. With all these factors taken into consideration, an investor's

[1]The discount rate used in reference to T-bills should not be confused with the interest rate charged on member bank borrowings from Federal Reserve Banks, which is also referred to as the discount rate.

[2]In contrast to all other marketable Treasury securities that pay a specified coupon rate of interest in semiannual instalments, T-bills bear no explicit rate of interest. Rather, the interest earned on T-bills is solely the difference between their purchase price and their sale price if sold prior to maturity or their face value if held to maturity.

semiannually compounded annual yield to maturity on a 182-day T-bill purchased at a 7 percent discount would be 7.49 percent.

Although the maximum simple annual interest rate at which commercial banks can offer MMCs is the average discount rate at which six-month T-bills were awarded in the most recent weekly auction, the effective yield to the depositor can be increased at the bank's discretion if the interest is compounded. One common method of daily compounding would raise a base rate of 7 percent to an effective 7.35 percent annual yield.

In addition to compounding interest, savings institutions can add another quarter percent to the T-bill discount rate. Assuming a bank discount rate of 7 percent, savings institutions could offer MMCs at an effective annual yield of 7.63 percent.

The accompanying table compares pretax compounded annual yields for the three investment alternatives at various discount rates on 182-day T-bills. The investor must be aware that these compounded annual yields assume that at the end of 182 days, the original funds plus the accrued interest can be reinvested for another 183 days at the original simple annual interest rate. This assumption cannot be guaranteed, since the discount rate at which six-month T-bills are auctioned changes from week to week.

Tax considerations—In comparing yields, investors should also consider the tax consequences of investing in T-bills against those of investing in MMCs. Earnings on both are subject to federal income taxes. Earnings on T-bills, however, are exempt from state and local income taxes, while earnings on MMCs are not. For residents of states of the Seventh District, the difference in tax exemption reduces the attractiveness of the MMCs relative to T-bills. In Indiana, where the state income tax rate is a flat 2 percent of adjusted gross income, residents would earn a higher after-state-tax income on six-month T-bills selling in excess of 6.63 percent (discount basis) than on MMCs offered by savings institutions based on these bank discount rates. This assumes savings institutions' maximum one-quarter percent differential and daily interest compounding. In Illinois, where the state income tax rate is 2½ percent of net income, the breakeven discount rate would be 6.29 percent. Breakeven rates after state income taxes would be substantially lower in Iowa, Michigan, and Wisconsin. Michigan's state income tax rate is 4.6 percent of taxable income. Iowa and Wisconsin have graduated state income tax rates. In Iowa, a family with a taxable income of $17,500, would be taxed at a rate of 8 percent. In Wisconsin, it would be

Yield comparisons—T-bills and MMCs[1]

Six-month T-bill discount rate	T-bill yield	Commercial bank MMC yield[2]	Savings institution MMC yield[3]
		(percent)	
6.00	6.37	6.27	6.54
6.50	6.93	6.81	7.08
7.00	7.49	7.35	7.63
7.50	8.06	7.90	8.17
8.00	8.63	8.45	8.72
8.50	9.21	9.00	9.28
9.00	9.79	9.55	9.83
9.50	10.37	10.11	10.39
10.00	10.96	10.67	10.95

[1]Yields calculated on a compounded annual basis (see Appendix).

[2]Based on the six-month T-bill discount rate compounded daily, using a 360-day year.

[3]Based on the six-month T-bill discount rate plus 0.25 percent compounded daily, using a 360-day year.

taxed at a rate of 11.4 percent.

Purchase denominations—Under this criterion, MMCs have an advantage over T-bills. The minimum denomination for both is $10,000. However, MMCs can be issued in any amount above the $10,000 minimum. Additional T-bills must be bought in minimum increments of $5,000.

Transactions cost—MCCs can be bought with no transactions cost other than the time and effort involved. Transactions costs of buying T-bills are sometimes higher, but they need not be significantly higher. Investors can hold down costs by submitting tenders directly to the Federal Reserve. Tenders in weekly auctions can be either presented at the Federal Reserve Bank or its branch or mailed to the Federal Reserve Bank along with the payment in a form acceptable to the Treasury. Examples of acceptable payment are currency, certified personal checks, cashier's checks, and maturing T-bills.

If an investor buys T-bills through a commercial bank or securities brokerage firm, transactions charges can reduce any yield advantage T-bills might have over MMCs. For example, a service charge or brokerage commission of $25 paid at the time of purchase of a $10,000 six-month T-bill at a 7 percent discount will lower the compounded annual yield from 7.49 percent to 6.95 percent.

Certainty of amount and yield—In that MMCs can be bought at a known yield, they may have an advantage over T-bills.[3] If an investor wants to buy T-bills, he must submit a tender in a weekly auction for the amount he is interested in buying. The tender can be either competitive or noncompetitive. Either way, there are uncertainties. In submitting a competitive tender, the investor states the face-value amount of T-bills he wants to buy at the bank discount rate he is willing to accept. There is uncertainty, then, in the amount of bills he will be able to buy. If his bid is too high in terms of rate—which means too low in terms of price—he may receive only part of what he wanted, or none of it.

As considerable market judgment is needed to submit a successful competitive tender, only the most sophisticated T-bill investors, including government securities dealers and large banks, usually submit this type of tender. Others, to avoid the uncertainty of how many T-bills they will be able to buy, are more apt to submit noncompetitive tenders. Noncompetitive tenders allow them to receive the amount tendered for at the weighted average discount rate at which accepted competitive tenders were awarded. With this type of tender, the investor is sure of the amount he can buy but he cannot be sure of the yield.

Liquidity—A T-bill is a negotiable instrument that can be sold before maturity. But because T-bill rates, and therefore T-bill prices, fluctuate in the secondary market, an investor cannot be sure about the price he can sell his T-bills for. Sales in the secondary market are also subject to transactions costs that usually vary inversely with the amount of T-bills involved.

MMCs, on the other hand, are not negotiable. If a certificate holder wants to withdraw his funds early, he must forfeit 90 days' interest with the regular passbook interest rate applying to the rest of the time the funds were on deposit. The maximum passbook rate is 5¼ percent at savings institutions and 5 percent at commercial banks. Though not required to make such loans, institutions issuing MMCs can make loans to certificate holders up to the amount of the certificate at an interest rate not less than 1 percent above the rate at which the MMC was issued. But some lending institutions and brokerage firms also take T-bills as collateral for loans.

Likely economic effects

The introduction of MMCs is expected to increase the relative flow of deposit funds to savings institutions, helping keep residential mortgage rates lower than they would be otherwise. Higher borrowing rates in other credit markets are also implied by the increased flow of deposit funds to savings institutions.

[3]Regulations allow but do not require the downward adjustment of MMC yields prior to maturity if so stated in the issuing institutions' terms of sale.

In the past, when yields on competing financial assets have risen above Regulation Q ceilings on deposits, savings institutions have found it increasingly difficult to attract new deposits. In some cases, they have suffered disintermediation, a net outflow of deposits.[4] With the coming of MMCs, savings institutions are better able to compete for funds. And since savings institutions are the single most important source of residential mortgage credit, an increased flow of deposit funds to them (or a decreased net outflow) should tend to keep residential mortgage rates from rising as much as they would without MMCs.

Some argue that because disintermediation at savings institutions is expected to be reduced, MMCs will reduce the effects of monetary policy on the general economy. In their view, disintermediation is the "cutting edge" of monetary policy. With a reduction in disintermediation, interest rates other than those on residential mortgages will have to rise more than they would otherwise to produce the same degree of economic restraint.

There is nothing here, however, to imply that MMCs have reduced the effectiveness of monetary policy. Rather, the implication is that the direct impact of monetary restraint on the residential housing industry will be alleviated and the impact on other industries increased.

Squeeze on profits?

Profits of savings institutions are usually squeezed in the latter stages of an interest rate cycle, as their average cost of funds rises relative to their average return on assets. Some analysts have warned that to the extent that MMCs increase the average cost of funds, they will make the situation worse.

The reason savings institutions are particularly vulnerable to this kind of squeeze is related to the average maturity of their assets. Mostly mortgage loans, their assets are longer term than their liabilities. Portfolios are often heavily weighted by lower yielding mortgages made when interest rates were generally lower. Liabilities, on the other hand, are often heavily weighted by fairly short-term funds that are being acquired at progressively higher rates of interest.

This problem is alleviated to the extent that an institution has variable rate mortgages in its portfolio. These are mortgages with rates that can be adjusted as the institution's average cost of funds changes. Larger state-chartered savings and loan associations in California have been leaders in variable rate mortgages—and they have been more enthusiastic about MMCs than savings and loans in other regions.

MMCs are not as apt to affect the profits of banks as much as those of savings institutions. Commercial banks usually have closer matches in the maturities of their assets and liabilities. And more of their loans are already booked on a floating rate basis.

There is little doubt that as short-term interest rates rise, MMCs will lead to a higher average cost of deposit funds to savings institutions. It is less certain, however, that the average cost of funds from all sources will be higher for savings institutions than if there were not MMCs. MMCs should make it possible for savings institutions to attract new funds and retain other deposits that, in pre-MMC days, would have been lost to higher yielding competing assets. To the extent that the cost of funds raised through MMCs is less than the cost of advances from the Federal Home Loan Bank System[5] and of other

[4]For a discussion of this cyclical deposit-flow problem see Eleanor Erdevig, "Disintermediation Again?", *Economic Perspectives*, Federal Reserve Bank of Chicago (May/June 1978), pp. 10-13.

[5]MMC rates paid by savings institutions are currently below rates being charged by Federal Home Loan Banks on advances. During the 1973-74 disintermediation period, however, hypothetical MMC rates exceeded Federal Home Loan Bank advance rates [see Dennis Jacobe and Thomas J. Parliment, "Take Another Look at Savings Strategy," *Savings & Loan News*, United States League of Savings Associations, (July 1978), pp. 50-54.]. Restrictions are placed on the outstanding amount of advances that an individual member savings institution can have from its Federal Home Loan Bank. Therefore, a lower stated advance rate may not be a lower effective rate than the MMC rate if an individual savings institution has reached the limit of its line of credit on advances.

sources of funds, such as large CDs exempt from Regulation Q ceilings, MMCs will have a salutary effect on the average cost of funds at savings institutions. Countering this salutary effect, however, could be a tendency toward a higher average cost of funds resulting from the substitution of MMCs for lower yielding deposits by depositors that, in the absence of MMCs, would have left their funds in lower yielding deposits and even added to them.

Appendix

I. Dollar discount and price of T-bills:

$$\text{Dollar discount} = \frac{\text{discount rate}}{100} \times \frac{\text{days to maturity}}{360 \text{ days}} \times \text{T-bill face value in dollars}$$

$$\text{Dollar price} = \text{face value in dollars} - \text{dollar discount}$$

Example: What is the dollar discount and dollar price of a 182-day $10,000 face value T-bill selling at a 7 percent discount?

$$\text{Dollar discount} = \frac{7.00}{100} \times \frac{182}{360} \times \$10{,}000 = \$353.89$$

$$\text{Dollar price} = \$10{,}000 - \$353.89 = \$9{,}646.11$$

II. Semiannually compounded annual yield on 182-day T-bill:

$$\text{Yield} = \left[\left(1 + \frac{\text{dollar discount}}{\text{dollar price}}\right)^{\frac{365}{182}}\right] - 1$$

Example: What is the semiannually compounded annual yield on a 182-day T-bill selling at a 7 percent discount?

$$\text{Yield} = \left[\left(1 + \frac{\$353.89}{\$9{,}646.11}\right)^{2.005}\right] - 1 = 7.49 \text{ percent}$$

III. Daily compounded annual yield on MMC based on a 360-day year:

$$\text{Yield} = \left[\left(1 + \frac{\text{simple annual rate}}{100 \times 360}\right)^{365}\right] - 1$$

Example: What is the daily compounded annual yield on an MMC based on a 7 percent simple annual rate?

$$\text{Yield} = \left[\left(1 + \frac{7.00}{100 \times 360}\right)^{365}\right] - 1 = 7.35 \text{ percent}$$