

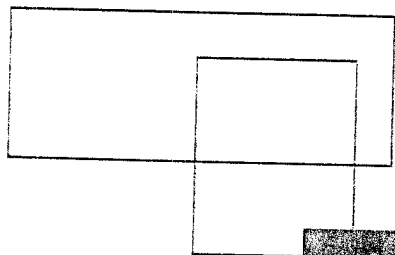
1993

DUKE
THE FUQUA
SCHOOL
OF BUSINESS



Managing the structure of Treasury debt

BY CAMPBELL R. HARVEY



This article is based on testimony by Campbell R. Harvey, associate professor of finance at Fuqua, to the Committee on Ways and Means of the U.S. House of Representatives.

Today's adjustable-rate mortgages are much cheaper than their fixed-rate counterparts—more than 2 percent cheaper.

With today's interest rate environment, the U.S. Treasury should supplement its bond offerings with new adjustable-rate—or floating-



rate—bonds. The interest cost of these bonds is sharply lower than fixed-rate coupon bonds.

In addition to reducing the cost of servicing the government's debt, this strategy would reduce long-term interest rates. It would relieve some of the burden on the long-maturity, fixed-coupon bonds. Reducing the supply of the fixed-coupon bonds would increase prices and decrease long-term yields. Another 1 percent reduction in long-term interest rates should help spur spending, construction and capital expenditures.

This idea is a proven winner in the corporate world. In the Eurobond market, there is a large supply (over \$100 billion) of floating-rate corporate bonds. The coupon adjusts according to a formula based on interest rates on Certificates of Deposit (in U.S. dollars) in London banks. Investment banks also earn profits by purchasing U.S. Treasuries and transforming them into floating-rate bonds. The Treasury could easily bypass the middleperson and issue their own floating rate bonds.

**ANY PLAN THAT
REDUCES LONG-TERM
RATES WILL
INCREASE INVESTMENT,
SPENDING, HOUSING STARTS
AND EMPLOYMENT.**

Long-term rates

The overwhelming economic goal is to accelerate job creation and economic growth without sparking inflation. While considerable previous attention has focused on lowering short-term rates, most of the economic kick comes from long-term rates. Capital investment, consumer credit and mortgage rates all are linked closely to long-term rates—not short-term rates. Any plan that reduces long-term rates will increase investment, spending, housing starts and employment.

Indeed, we have seen long-term rates drop almost a full percentage point in the last six months. This is encouraging. However, long-term interest rates still are almost 4 percent higher than short-term rates. This huge spread is virtually unprecedented over the past 35 years.

There are a number of forces that affect long-term interest rates. Two of the most important forces are the supply of bonds and the market expectations of long-term inflation.

As a result, one way to lower long-term rates is to reduce the immense burden of long-term bonds in the market. As the supply is reduced, bond prices rise and interest rates fall. A reduction in the deficit will lessen the pressure on the long-term bond market and reduce rates. Another option is to shorten the maturity structure of the bond offerings, i.e. offer more short-term debt and less long-term debt. This would decrease long-term rates and increase short-term rates.

The floating-rate scenario is another possibility for success, but it has received no attention. Currently, the Treasury is issuing 30-year bonds with an effective yield of about 6.8 percent. If the Treasury issued a 30-year floating-rate bond (with a coupon rate that changes as short-term interest rates change), it could save at least 300 basis points (3 percent) in interest servicing costs in the first year. With an estimated \$1.41 trillion of debt hitting the market in 1993, the interest savings would be impressive if some floating-rate debt was issued.

The introduction of floating-rate bonds would diminish the supply of the long-term fixed rate bonds and hence long-term interest rates will decrease. Lower rates reduce the interest servicing cost of new long-term, fixed-rate debt. In addition, the lower long-term rates provide an environment that encourages capital investment, spending and construction.

Coupon adjustment

I envision the floating coupon being determined by the weighted average of the 26-week Treasury bill auction yields over the previous six months. Given that this market is extremely liquid, there is little likelihood that any one investor could manipulate the coupon rate. The weighting ensures that smaller auctions receive a lesser weight in determining the coupon rate.

This coupon-setting strategy also dominates the inflation-indexed coupon. Last year there was some discussion of creating a "real bond." The bond is real in the sense that the coupon increases as inflation increases and this allows investors to hedge against price inflation.

Unfortunately, the inflation rate is imprecisely measured and usually five weeks stale when it is released. As a result, a lot of people know the numbers before the official release date. In addition, the index numbers are subject to revision. Finally, the items that we include in the consumer's basket could change over time.

Resetting the coupon based on the Treasury bill auction bypasses all of the inflation-related difficulties. It creates a bond that has real qualities: as inflation increases so will short-term interest rates and hence the coupon rises on the floating-rate bond. Investors can use the floating-rate bond as an inflation hedge. In addition, the information on the coupon reset is easily calculated and readily available to all investors.

**THE CHANGES IN THE
TREASURY'S FINANCING
STRATEGY THAT I AM
PROPOSING SHOULD
LEAD TO A FURTHER
REDUCTION IN LONG-TERM
INTEREST RATES.**



Expected inflation

The other important factor that determines long-term interest rates is expected inflation. Indeed, the present yield curve (difference between long-term rates and short-term rates) suggests that investors expect increased inflation in the future. The fact that the Treasury is offering 30-year bonds at 6.8 percent suggests that the Treasury agrees with the market!

If the Treasury really believes that inflation is going to be lower in the long term, then it does not make sense to finance at 6.8 percent. If the Treasury believes that the market is attaching an unreasonably high inflation premium to the long-term bonds, then it should pursue a strategy of shorter-maturity financing—or floating-rate bonds.

Adopting a policy of floating-rate bonds or shortening the maturity structure, sends a strong signal to the market that investors' long-term inflation expectations

are too high. I believe that initiating this policy would cause the market to revise their long-term inflation expectations and reduce long-term interest rates by another 1 percent—irrespective of the supply effect previously discussed.

There is another important angle on the floating-rate and shorter maturity financing. It provides the incentives for the government to be policy consistent. That is, a deviation from the policy of low inflation will be very costly. Higher inflation immediately raises short-term rates and, consequently, the Treasury must pay more in financing costs. Investors like these types of policies. There are strong built-in incentives to keep inflation under control. These are the types of policies that cause investors to revise their expectations of long-term inflation downward, thereby reducing long-term interest rates.

Finally, it is an automatic stabilizing policy. During the last five recessions, the yield curve has been positively sloping (short-term rates lower than long-term rates). The interest servicing cost on floating-rate debt is cheapest exactly when the government needs extra funds for stimulative expenditures.

Operation Twist

The floating-rate bond offers a number of advantages over the strategy of shortening the maturity structure of the Federal debt, also known as Operation Twist.

Operation Twist refers to the strategy followed by the Federal Reserve in 1961. The Fed purchased long-term bonds and sold short-maturity securities. This reduced the supply of the long-term bonds and thereby raised their prices. Higher prices for the long-term bonds meant lower yields. The opposite happened with the short-term securities.

Operation Twist was designed to twist the yield curve. The objectives were to decrease long-term rates, to support the dollar and to provide the conditions for accelerated economic growth.

Of course, if the Federal Reserve mounted the same strategy today, it would surely fail. With over \$4 trillion in Treasury debt outstanding, the Federal Reserve is not a large enough player in the market to substantially impact the yield curve. However, it is possible that the Treasury could successfully initiate a modern-day Operation Twist.

Managing the maturity structure will have a significant effect on the shape of the yield curve. Last summer, when long-term rates were more than 4 percent

above short-term rates. I suggested that the Treasury consider a shift in the maturity structure. By decreasing the reliance on (but not eliminating) the long-term bonds and replacing them with short-term bonds, I estimated that the Treasury could save over \$5 billion in interest servicing costs.

The downside

There is an important downside to Operation Twist. A shortening of the maturity structure will likely increase short-term rates. Increased supply of shorter maturity debt will drive prices down and yields upward.

Another disadvantage is that the Treasury must continually go to the market. That is, if a 30-year bond is replaced with 90-day bills, the Treasury must issue those bills 120 times. The Treasury bears the cost of going to the market each time. In addition, the investor must bear the transactions costs of rolling over the Treasury bills.

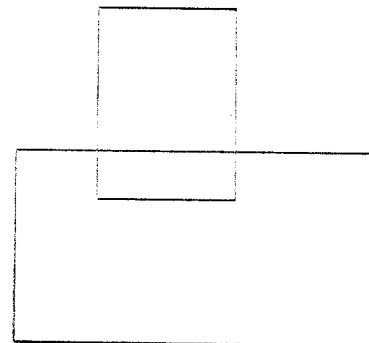
One possible solution is to combine a shortening of the maturity structure with some floating-rate bonds. The floating-rate bonds reduce long-term rates because the supply of long-term bonds is decreased. It is not clear that there would be the same upward pressure on short-term rates.

With floating rate bonds, you are not replacing long-term bonds with Treasury bills. The amount of Treasury bills could remain constant. However, some of the current Treasury bill investors might be drawn to the floating-rate bonds. This might provide some mild upward pressure on short-term rates.

Benefits of change

The changes in the Treasury's financing strategy that I am proposing should lead to a further reduction in long-term interest rates. The introduction of floating-rate coupon bonds will reduce the burden placed on the long-term fixed coupon bonds and hence reduce the long-term rates. Given that consumer spending, construction and capital expenditures are linked to long-term interest rates, changes in the Treasury's financing strategy will have a stimulative effect on economic growth. In addition, the strategy reduces the government's interest servicing costs.

Of course, variable-rate debt could be expensive if interest rates go up. However, short-term interest rates have to rise dramatically to meet today's long-term rates. In addition, my research on the business cycle and the yield curve shows that the interest servicing costs will be the lowest in recessions and highest in recoveries. As a result, the policy stabilizes or reduces the volatility of the business cycle. ▲



Batterymarch honors Harvey

Associate professor Campbell R. Harvey has received the prestigious 1993 Batterymarch Fellowship. The award honors his pioneering research in finance and investment theory. It comes with a \$75,000 stipend to support Harvey's research initiatives for a one-year period beginning in July.

Established in 1969, Batterymarch has \$5.7 billion in assets under management. Investing in 42 countries, the firm manages U.S., international and emerging markets portfolios. Dean LeBaron, the founder of Boston-based Batterymarch Financial Management, established the award in 1989 to demonstrate the firm's appreciation of the academic world. The selection committee included LeBaron, Deborah H. Miller of Batterymarch and former Batterymarch Fellows.