**Repos**

How do Bond Dealers finance their positions?

Repo = Repurchase agreement = RP

Repo – initiating party wants to borrow funds (sell and repurchase)

Reverse Repo – initiating party wants to obtain collateral

General – any collateral (treasuries) will do

Special – specific collateral desired – rate is lower

Quotes are posted as with bid and ask

Quotes are posted for different maturities

Collateral = security used

Haircut = Margin = Difference between market value of collateral and funds delivered to seller

Example:

A initiates a repo and sells T-bonds to B with a forward contract to repurchase them from B in 2 days at a higher price

The haircut protects B (buyer/lender) because if the value of the T-bonds fall while B has them, A might refuse to buy them back.

Since repo rate is short-term lending, and the yield curve is usually upward sloping, the interest earned on the security is usually > the interest paid on the repo, so the bond dealer has a positive carry.

Bond Dealers can make money three ways:

1. Spread
2. Price appreciation (can lose money if price depreciates)
3. Carry (can lose money if there is a negative carry)

Example:

Issue Date of bond: 9/15/07

First Coupon Paid on 3/15/08

Coupon Rate on bond = 5.00%

3-day Repo Rate = 2.00%

6/10/08 (Settlement Date)

Dealer buys bond and delivers it to repo dealer

Repo dealer takes bond as collateral and lends cash at repo rate

T-bond price is 102.70 + 1.18 accrued interest = 103.88

Repo dealer takes haircut of 50 basis points of market value = .52

Amount borrowed is 103.36

6/13/08 (Settlement Date)

Dealer takes back T-Bond and sells it for 102.65 + accrued interest of 1.22 = 103.87

Dealer pays repo dealer the 103.36 borrowed plus 2% interest for 3 days

 103.36 (1 + [.02 (3/360)]) = 103.38

Note that the interest the bond dealer paid for the repo was:

103.38 – 103.36 = .02

And the interest the bond dealer earned on the bond for three days was:

1.22 – 1.18 = .04

In an open-end repo, the date of the repurchase is not set at the time of the initial purchase. Either party can choose to close out the deal at any time. The repo rate will be the overnight rate (each day) with the interest compounding daily.

**Repos and borrowing using Treasury securities as collateral**

(borrowed from chapter 5 of *Risk Management & Derivatives* by Rene M. Stulz)

Typically, borrowing for those who hold inventories of Treasury securities is done in the repo market. A repo is a transaction that involves as spot market sale of a security and the promise to repurchase the security at a later day at a given price. One can view a repo as a spot market sale of a security with the simultaneous purchase of the security through a forward contract. A repo where the repurchase takes place the next day is called an overnight repo. All repos with a maturity date of more than one day are called term repos. A repo amounts to borrowing using the Treasury securities as collateral. For this reason, rather than stating the price at which the underlying security is bought back at a later day, the contract states a rate that is applied to the spot price at origination to yield the repurchase price. For instance, consider a situation where dealer Black has $100 million of Treasury securities that he has to finance overnight. He can do so using a repo as follows. He can turn to another dealer, dealer White, who will quote a repo rate, say 5 percent, and a haircut. The haircut means that, though White receives $100 million of Treasury securities, he provides cash for only a fraction of that amount. The haircut protects White against credit risk. The credit risk arises because the price of the securities could fall. In this case, Black would have to pay more for the securities than they are worth. If he could walk away from the deal, he would make a profit. However, since he has to pay for only a fraction of the securities to get all of them back if there is a haircut, he will pay as long as the price is below the promised payment by an amount smaller than the haircut. For example, if the haircut is 1 percent, Black receives $100 x (1/1.01) = $99.0099 million in cash. The next day, he has to repay $100 x (1/1.01) x (1 + 0.05/360) = $909.024 million. Hence, if the securities had fallen in value to $99.05 million, Black would still buy them back. With this transaction, Black has funds for one day. Because this transaction is a forward purchase, Black benefits if the price of the securities that are purchased at maturity have an unexpectedly high value. With Treasury securities, therefore, the borrower benefits if interest rates fall. Viewed from White’s perspective, the dealer who receives the securities, the transaction is called a reverse repo. A reverse repo can be used to sell Treasury securities short in the following way. After receiving the securities, the dealer can sell them. He then has to buy them back to deliver them at maturity of the reverse repo. He therefore loses if the price of the securities increases because he has to pay more for them than he receives when he delivers them at maturity.