The Repo Market

Outline and Readings

- Outline
  - Repurchase Agreements (Repos)
  - The Repo Market
  - Uses of Repos in Practice
- Buzzwords

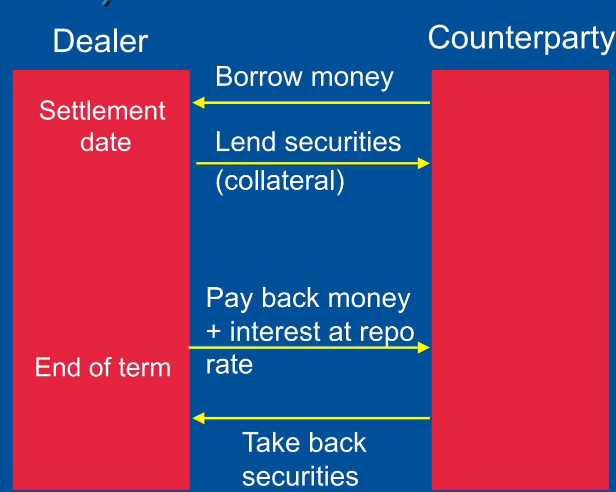
  Repo, Reverse repo, Repo rates, Collateral, Margin, Haircut, Matched book, Special

- Suggested reading
  - Veronesi, Chapter 1
  - Tuckman, Chapter 15
  - Pozsar, et al., Shadow Banking

Repos

- We often talk about buying and shorting securities.
- In the fixed income market, these transactions are accomplished with the use of the ***repo market***.
- A ***repurchase agreement***, or ***repo***, is a **sale of securities for cash with a commitment to repurchase them at a specified price at a future date.**
- Practically, the repurchase agreement by itself is simply a **collateralized loan**.

Repo Diagram



Example

Dealer repos $30 million par of a Treasury bond to a municipality for 51 days.

- The market value of the collateral is $31,228,715.
- The municipality takes a 2% haircut, lending 98% of the market value, or $30,604,140.70 at a repo rate of 5.25%.
- After 51 days, the municipality returns the $30 million bonds, and the dealer repays
  - $30,604,140.70 (1+0.0525 x 51/360) = $30,831,759.
- Note that repo rates are *simple interest* rates that use an *actual/360* calendar (in the U.S.--some other countries use actual/365).

Reverse Repo

- A *reverse repo* transaction is essentially just the other side of a repo transaction.
- However, the labels are determined from the dealer's viewpoint, so
  - if the dealer borrows money, it's a repo
  - if the dealer lends money, it's a reverse repo.

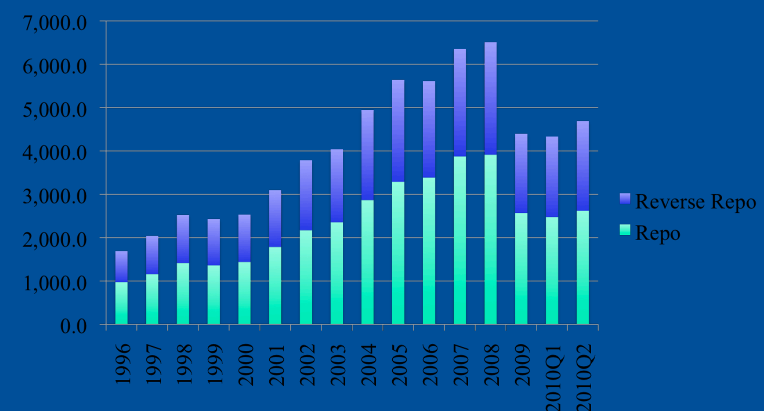
Types of Collateral

- Treasuries
- Agencies
- Mortgage-backed securities
- Even corporate bonds, equity, or custom collateral

Good Security Design

- The repo market provides an excellent form of collateralization
- Inexpensive financing for security holders
- Relatively safe loans for short term investors

Average Daily Outstanding, in $Billions, 1996-2010



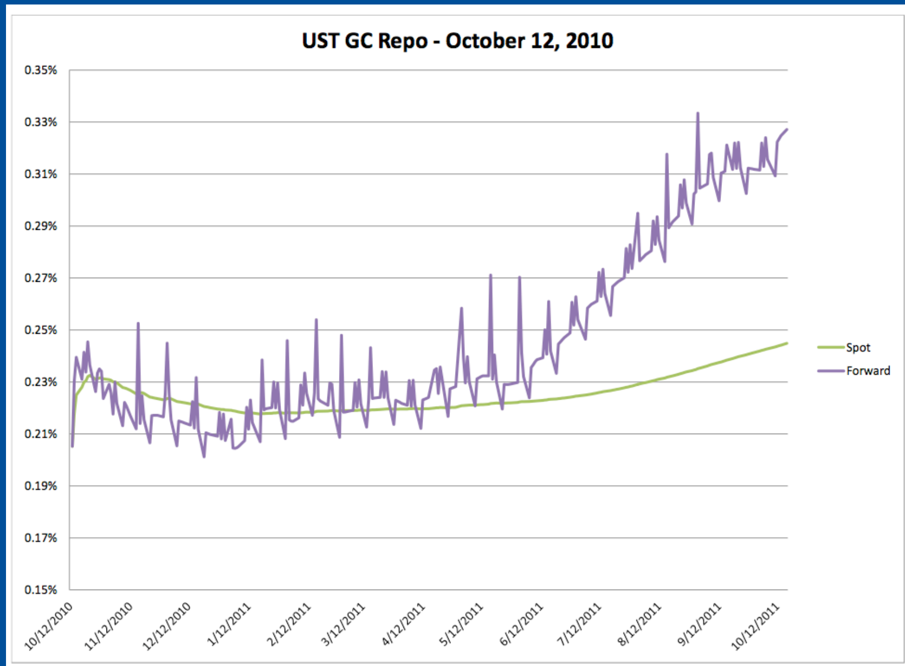
Financing by U.S. government primary dealers involving U.S. government, federal agency, corporate and federal agency MBS securities. Source: SIFMA.

Typical Market Participants

Cash Providers	Securities Providers
Money Market Mutual Funds	Securities Lenders
Insurance Companies	Hedge Funds / Levered Accounts
Corporations	Central Banks
Municipalities	Commercial Banks
Central Banks	Insurance Companies
Securities Lenders	
Commercial Banks	

Term of the Loan

- If the duration of the loan is one day, the agreement is called an *overnight repo*.
  * Approximately 50% of the market.
- Otherwise the agreement is a *term repo*
  * The term can be as long as one year.
  * The vast majority of repos have maturities of three months or less.
- *Open repo* is an overnight repo whose term is renegotiated on an ongoing basis.



Credit Risk in Repo

- For example, suppose a school district enters into a $10mm 30-day *repo* with a low capitalized dealer.
- The dealer delivers $10mm worth of a T-Note.
- If the dealer is forced into bankruptcy and cannot repurchase the T-Note, then the school district must sell the collateral in the open market to get its money back.
- However, if the market has dropped, then the district will suffer a loss.

→ Both parties are subject to credit risk, because the market value of the collateral can change during the life of the loan.

Ways of reducing the credit exposure

- Margin (Haircut)
  - Lenders often require a margin, or overcollateralization to limit their credit exposure (typically 1% to 3% for high grade collateral, but could be as high as 50% for some kinds if collateral).
- Mark to Market on a regular basis
  - If the collateral value changes by too much, collateral levels or loan balances are adjusted.
- 1992: the first global master industry standard repurchase agreement

Uses of Repos in Practice: Financing a Long Position

- Dealers do not own all their inventory outright.
- They can finance the purchase of a Treasury by simultaneously entering into a repo using the same Treasury as collateral.
- Note that this amounts to a forward purchase of the Treasury: establishing a long position in bonds with no cash up front.
- This is an easy way to execute a levered bet on bond prices rising.

	LONG POSITION	**REPO**
Open market	Dealer	Customer
Time 0	buys securities worth P_0	Receive collateral of securities worth P_0
	pay P_0	lend P_0 x (1 - hc)

Time 0 cash flow to dealer = $-P_0$ x hc

Time T	sell securities	Tender back collateral
	receive P_T	Get P_0 x (1 - hc) + repo int

Time T cash flow to dealer = P_T - (P_0 x (1 - hc) + repo interest)

Time 0 cash flow + Time T cash flow = P_T - P_0 - repo interest

Uses of Repos in Practice: Short positions

- Suppose a dealer wants a position that will profit if bond prices decline.
- He can simultaneously enter into a reverse repo and sell the collateral.
- He borrows the bond and sells it, using the proceeds of the sale to lend into the reverse repo.
- At the end of the term of the repo, his loan is repaid with the agreed upon interest, and he buys the bond back in the open market to deliver into the reverse repo.

Uses of Repos in Practice: Running a Matched Book

- The dealer may simply act as a market maker, or intermediary, entering into repo transactions with some counterparties, and offsetting reverse repos with others.
- The dealer's compensation is that the reverse repo rate (the dealer's lending rate) is typically about 5 basis points higher than the repo rate (the dealer's borrowing rate).

Two Repo Markets

- General Collateral: this market is about the money – investors lending money to securities holders
- Specific Issue: this market is about the bonds – getting and giving possession of specific securities

Determinants of the Repo Rate

The repo rate varies with

- the quality of the collateral (agencies and mortgages may also serve as collateral in addition to Treasuries),
- the term of the loan, and
- the nature of the delivery of the collateral. If the lender requires delivery of the collateral, he may get a lower rate than if he allows the counterparty to merely place the collateral in a separate account at his bank.

Special Repo Rates

- Sometimes certain Treasury bonds go on *special*.
  - Current issues are often on special.
  - A *short squeeze* in which a lot of dealers who have shorted a particular bond need to cover their short positions can cause the issue to become special.
- Reverse repos provide the dealer an opportunity to borrow issues on special.
  - In that case, the issue commands a *special repo rate* below the repo rate for general collateral.

Pricing: Specific Issues/ Specials

- Supply
  - Total Issuance Size
  - Lendable/Nonlendable Supply
  - Re-openings/Buybacks
  - Distribution of Supply
- Demand
  - Overall Size of Short Base
  - Distribution of Shorts