

Debt Markets and Instruments

Federal Reserve Bank of New York

Central Banking Seminar
Preparatory Workshop in Financial Markets,
Instruments and Institutions

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Introduction

- Debt (or fixed income) instrument is obligation of borrower of funds to make specified interest and principal payments to lender of funds
- Channels money from those with surplus of funds to those with productive investment opportunities
- U.S. debt markets largest and most liquid
- Debt market discussion broken into two parts
 - Short-term lending/borrowing (money market)
 - Longer-term lending/borrowing (bond market)

The Money Market

- Short-term market for borrowing and lending funds
 - Instruments have original maturities of 1 year or less
- Very safe (little default or interest rate risk)
- Highly liquid
- Largely a wholesale, over-the-counter market
- Lenders: low-cost source of temporary funds
- Borrowers: liquid, safe store of value

Money Market: Treasury Bills

- Short-term debt obligations of federal government
- 4-, 13-, and 26-week bills, issued weekly
 - 4-week bills introduced in 2001
 - 52-week bill issuance suspended in 2001
- Cash-management bills issued on an *ad hoc* basis
- *Discount securities* – no interest payments
- Considered to be free of default risk
- Highly liquid secondary market

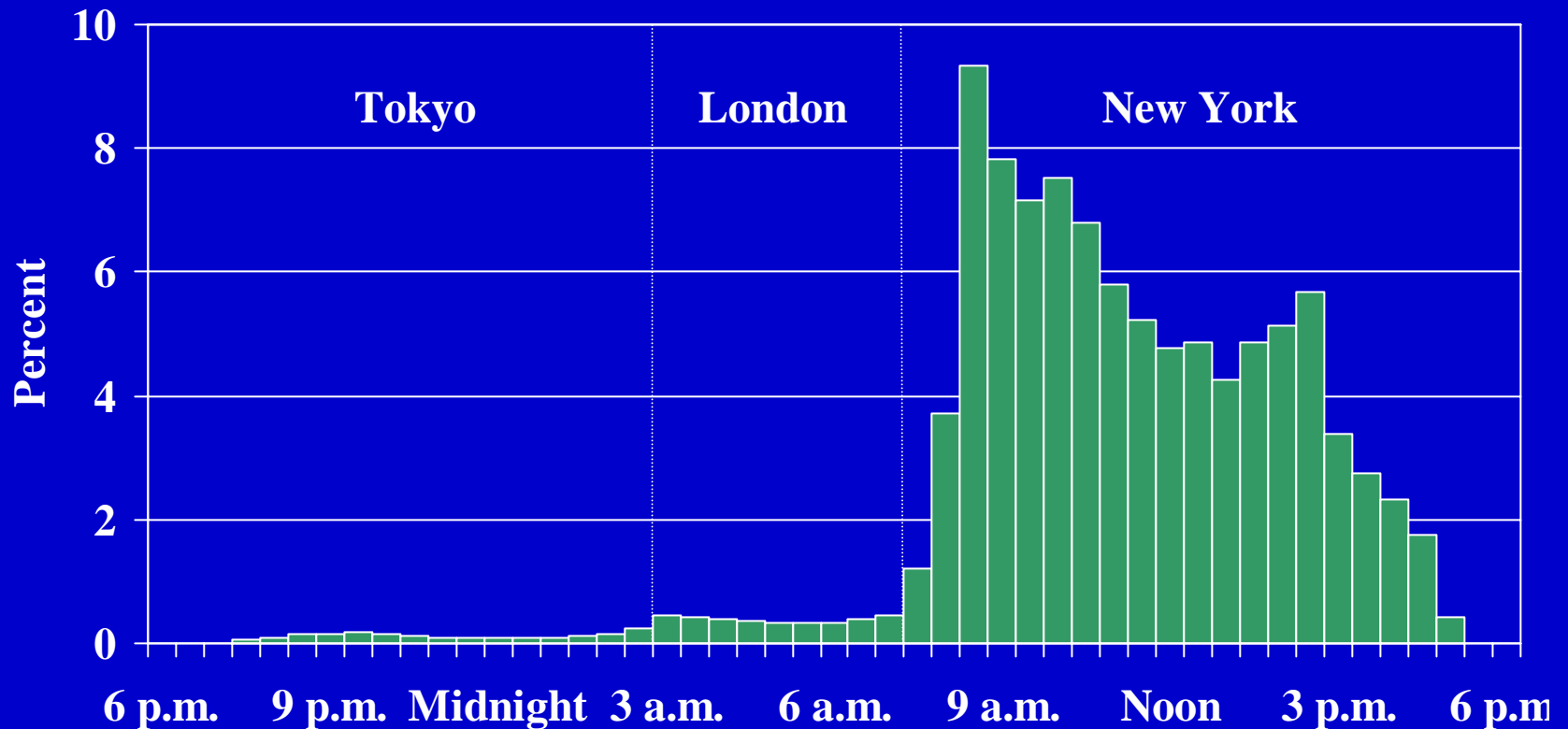
How Are Treasury Securities Sold?

- (Note that issuer sells securities in *primary market*)
- Sold via competitive single-price auction
- Announced a few days in advance, auction results released immediately, issued several days later
- *Reopening* refers to issuance of additional amount of outstanding security
- *Primary dealers* (currently 22) have special role
- Securities announced for auction but not yet issued trade in liquid *when-issued* market

How do Treasury Securities Trade?

- (Already issued securities trade in *secondary market*)
- Multiple-dealer, over-the-counter market
- Round-the-clock trading during the week
- Primary dealers are principal marketmakers
 - Daily dealer-customer volume of \$334 billion (2005:Q2)
- Dealers trade with one another via interdealer brokers
 - eSpeed and BrokerTec are the largest (both electronic)
 - Daily dealer-dealer volume of \$241 billion (2005:Q2)

Trading Volume of U.S. Treasury Securities



Source: Chart 2, Fleming, Michael, 1997, "The Round-the-Clock Market for U.S. Treasury Securities."

Role of Federal Reserve in Treasury Market

- Agent for Treasury in primary and secondary markets
- Market surveillance and monitoring role
- Buys and sells securities through open market operations to implement monetary policy
- Owner (\$731 billion as of August 31, 18% of total)
- Custodian of foreign central bank holdings (\$1.1 trillion as of August 31, 27% of total)

Money Market: Commercial Paper

- Short-term unsecured borrowing of large corporation
 - Original maturity of less than 270 days
- Low default risk as borrowers are high quality and paper is often backed by bank line of credit
- Used to finance current transactions
 - Consumer lending by finance companies
 - Inventory financing of manufacturing firms
- Often sold directly to buyer
 - Inactive secondary market

Money Market: Negotiable Certificates of Deposit

- Bank-issued security documenting deposit and specifying interest rate and maturity date
 - 1 to 12 month original maturities most common
- Denominated in sizes of \$100,000 plus
- Uninsured, but level of default risk is relatively low as issuers tend to be large, well-capitalized banks
- Negotiability allows for secondary market trading

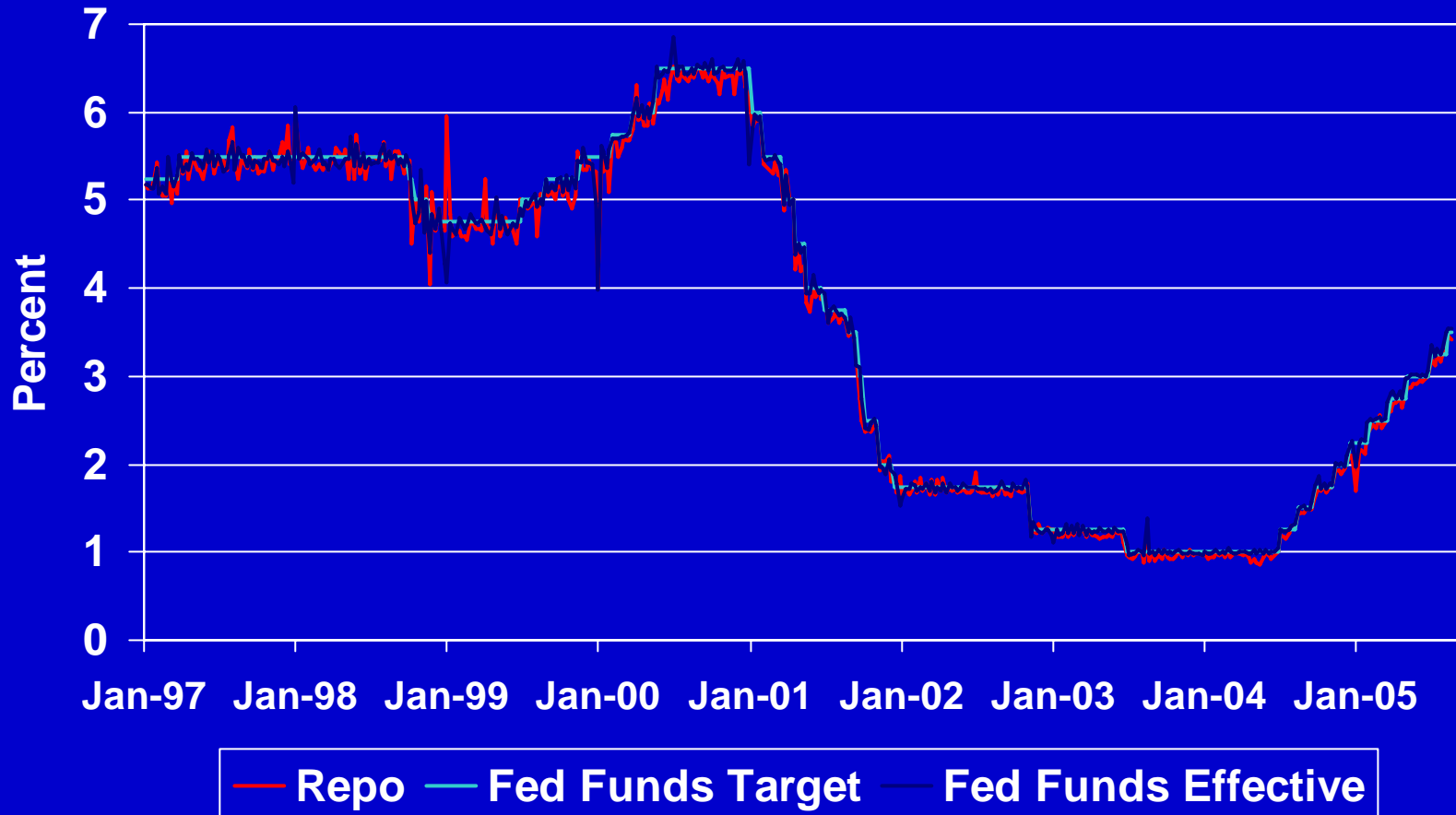
Money Market: Federal (Fed) Funds

- Overnight (mostly), unsecured loans between banks
- Banks with excess funds lend to those who need funds (often to meet reserve requirements)
- *Fed funds target rate*: monetary policy objective of the Federal Open Market Committee (FOMC)
 - Fed affects rate through open market operations
- *Fed funds effective rate*: actual (average) fed funds rate based on reported transactions

Money Market: Repurchase Agreements

- Also called *Repos* or *RPs*
- Short-term (often overnight) loans between institutional investors secured by collateral
- Investor sells securities while agreeing to buy them back for a higher price on a future date
- Dealers and others use to finance positions
- Safe and liquid investment for lenders
- Used by Fed to implement monetary policy

Overnight Fed Funds and Repo Rates

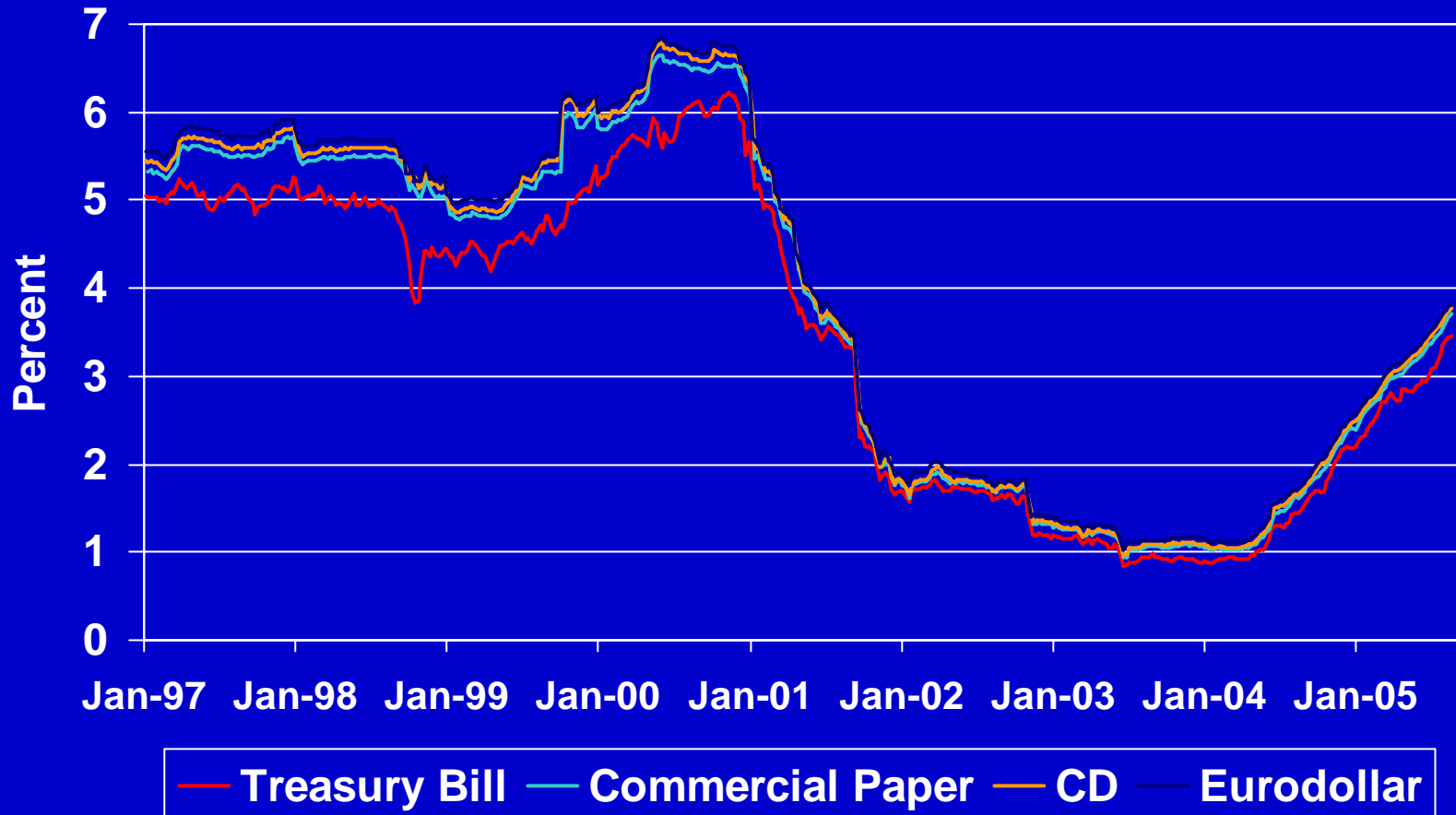


Sources: Bloomberg, Federal Reserve.

Money Market: Eurodollar Deposits

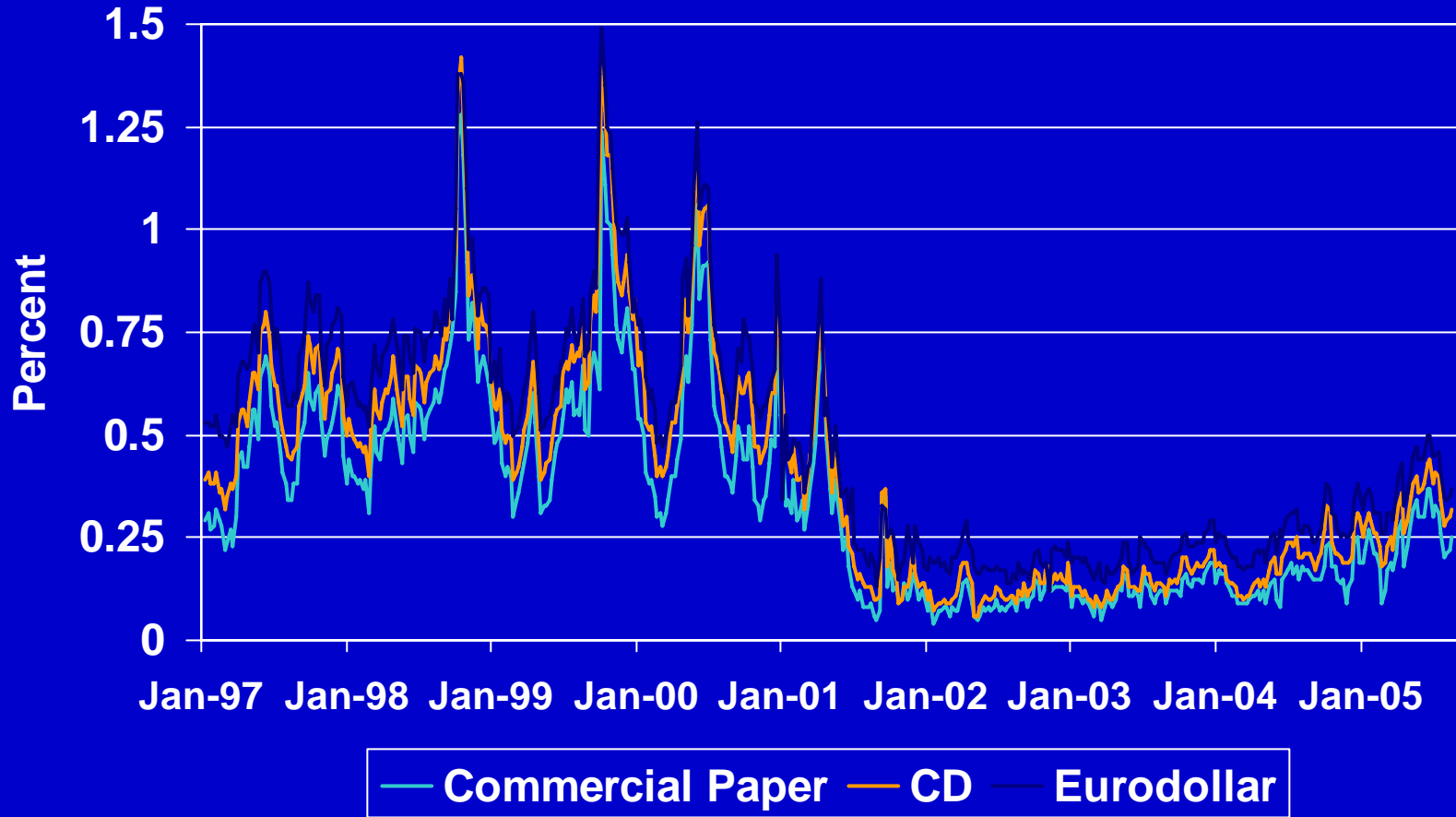
- Short-term dollar loans between foreign banks or foreign branches of U.S. banks
- Overnight to 6-month original maturity most common
- *LIBOR (London Interbank Offer Rate)* is lending rate for highly-rated banks
- Relatively low credit risk as issuers tend to be large, well-capitalized international banks

Selected 3-Month Interest Rates



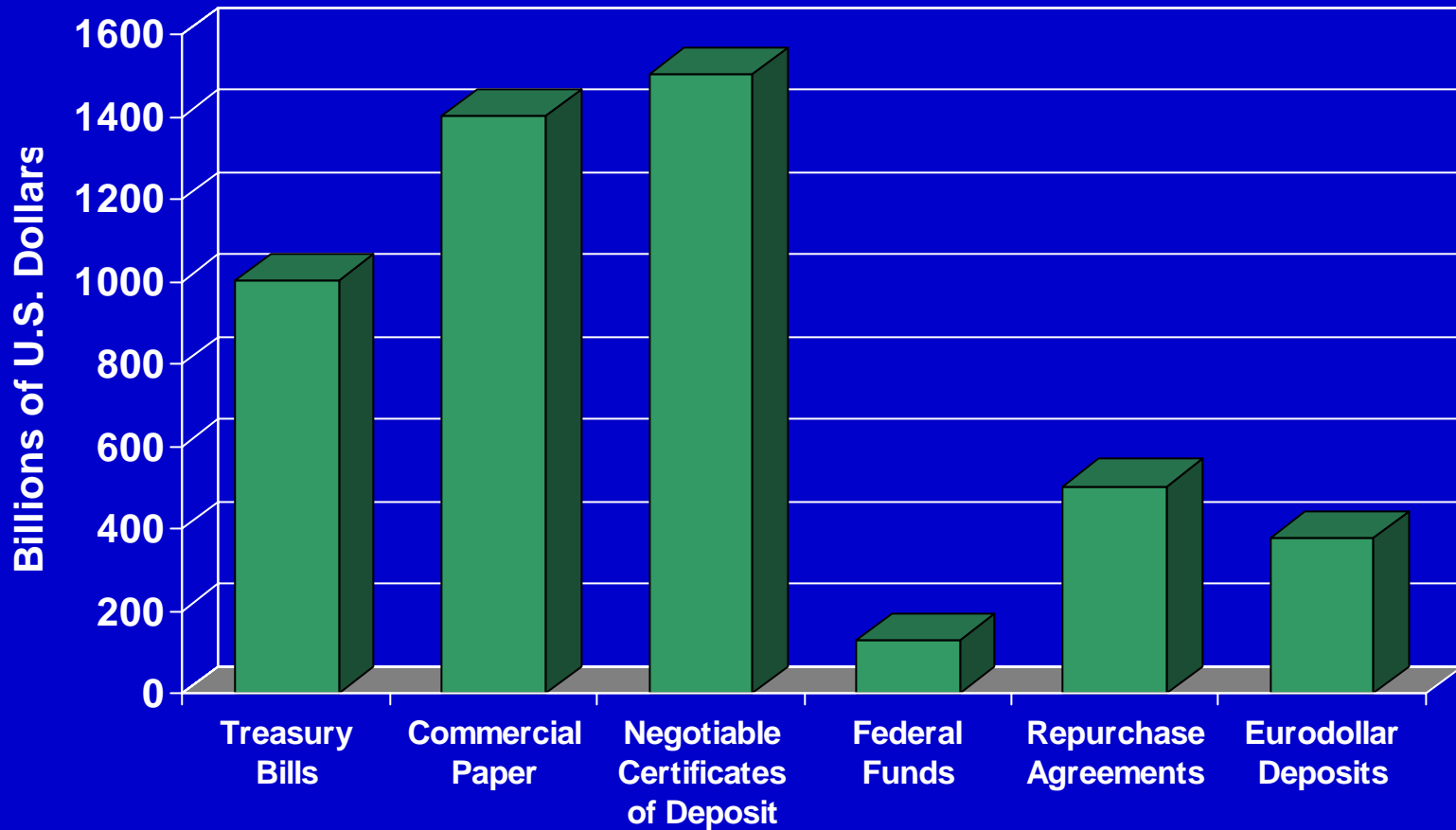
Sources: Bloomberg, Federal Reserve.

3-Month Interest Rate Spreads to Treasuries



Sources: Bloomberg, Federal Reserve.

Money Market Size, December 31, 2004



Source: Federal Reserve.

The Bond Market

- Longer-term market for borrowing and lending funds
 - Securities with original maturities of more than 1 year
 - Issuer usually makes fixed periodic interest payments based on *coupon rate (coupon securities)*
 - Issuer pays *par/principal/face value* at maturity
- Borrowers secure long-term access to funds at known rate to finance long-term projects
- Credit and interest rate risk can be large
- Liquid secondary market
- Mostly wholesale, over-the-counter market

Bond Market: Treasury Notes and Bonds

- Longer-term debt obligations of federal government
- Securities with original maturity of more than 1 year but less than 10 years are called notes
 - 2-year, 3-year, 5-year, 10-year notes
- Original maturity of more than 10 years: bonds
 - 30-year bonds returning next year
- Considered to be free of default risk
 - Interest rate risk can be large, depending on maturity
- Highly liquid secondary market

Bond Market: Treasury Inflation-Protected Securities

- *TIPS* were introduced in January 1997
- Principal of securities is adjusted for inflation
 - Interest payments are fixed percentage of adjusted principal and adjusted principal is paid at maturity
- Original maturities of 5, 10, and 20 years
- Inflation protection valuable to investors
- Inflation protection not necessarily costly to issuer
- Give market-based measure of inflation expectations

Bond Market: Treasury STRIPS

- STRIPS are not issued by the Treasury Dept.
- Created from existing notes and bonds
 - Security coupon payments separated from principal
 - Each component trades separately
 - Components referred to as *zero coupons* or *zeros*
- Zeros sell at discount to face value
- Allow investors to match liabilities with cash flows
 - Popular with pension funds and insurance companies

Bond Market: Agency Notes and Bonds

- Obligations of government agencies or *government-sponsored enterprises (GSEs)*
- Issued to finance housing, farming, or education
- Typically not backed by federal government
- Viewed as having very low credit risk nonetheless
- Come with a variety of attributes
 - *Benchmark programs* introduced in late 1990s
- Also popular with foreign central banks
 - \$369 billion held in custody at Fed as of August 31

Bond Market: Corporate Bonds

- Longer-term debt obligations of corporations
 - Usually large, well-established, publicly traded
- Variety of structures and maturities
- *Secured bonds* backed by specific collateral
- *Debentures* not backed by specific collateral
- Often *callable*
- Default risk varies tremendously
 - Bonds rated below *investment grade* are called *speculative-grade, high-yield, or junk*

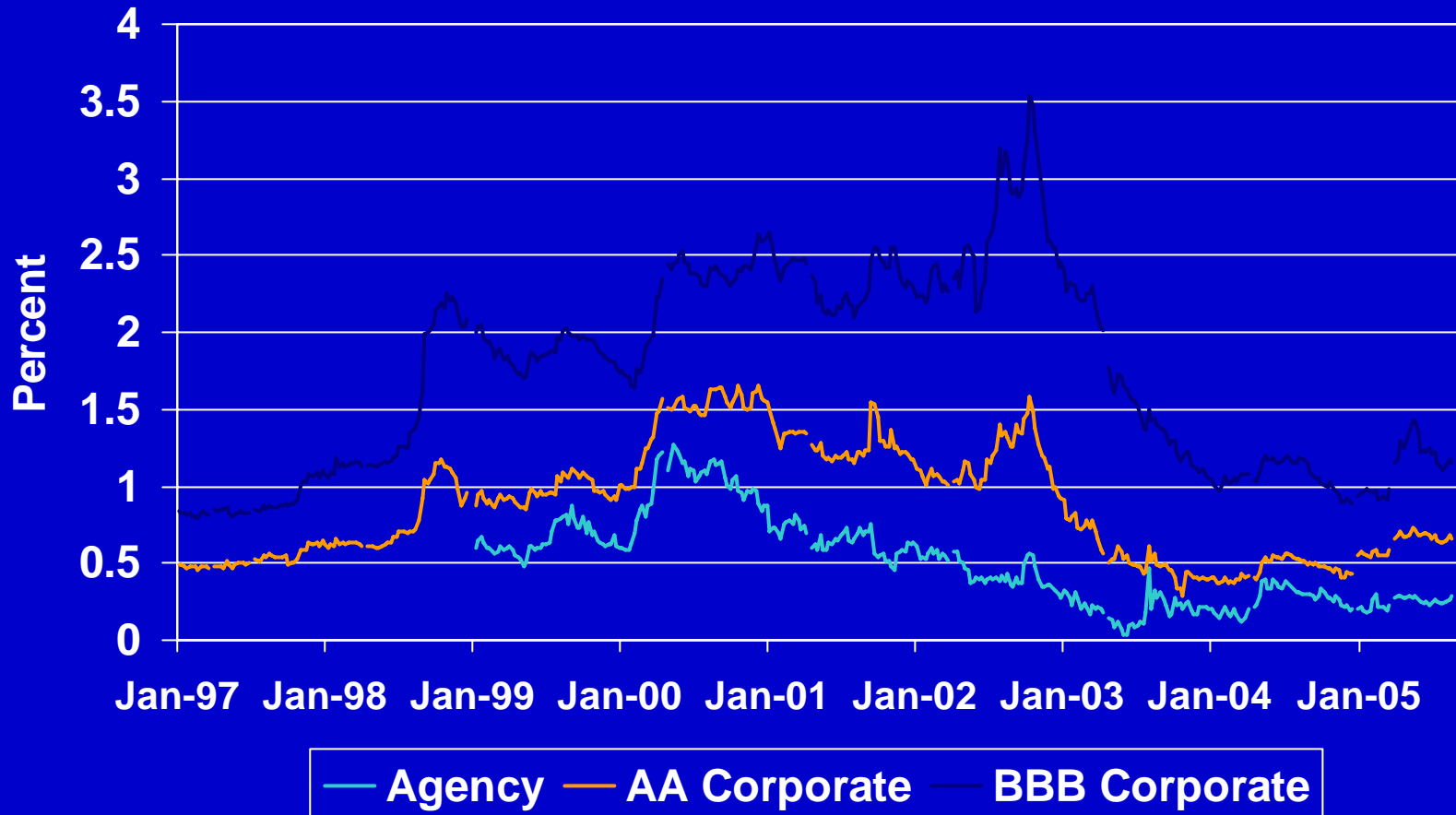
Selected 10-Year Yields



Sources: Bloomberg, Merrill Lynch.

Note: Agency and corporate yields are based on securities with 7-10 years to maturity.

10-Year Yield Spreads to Treasuries



Sources: Bloomberg, Merrill Lynch.

Note: Agency and corporate yields are based on securities with 7-10 years to maturity.

Bond Market: Municipal Bonds

- Debt obligations of local, county, and state govts.
- Used to finance government projects
- *Revenue bonds* backed by particular project
- *General obligation bonds* backed by issuer
- Many are insured
- Interest income usually exempt from federal taxation
 - Sometimes exempt from state and local taxation
 - Popular with retail investors

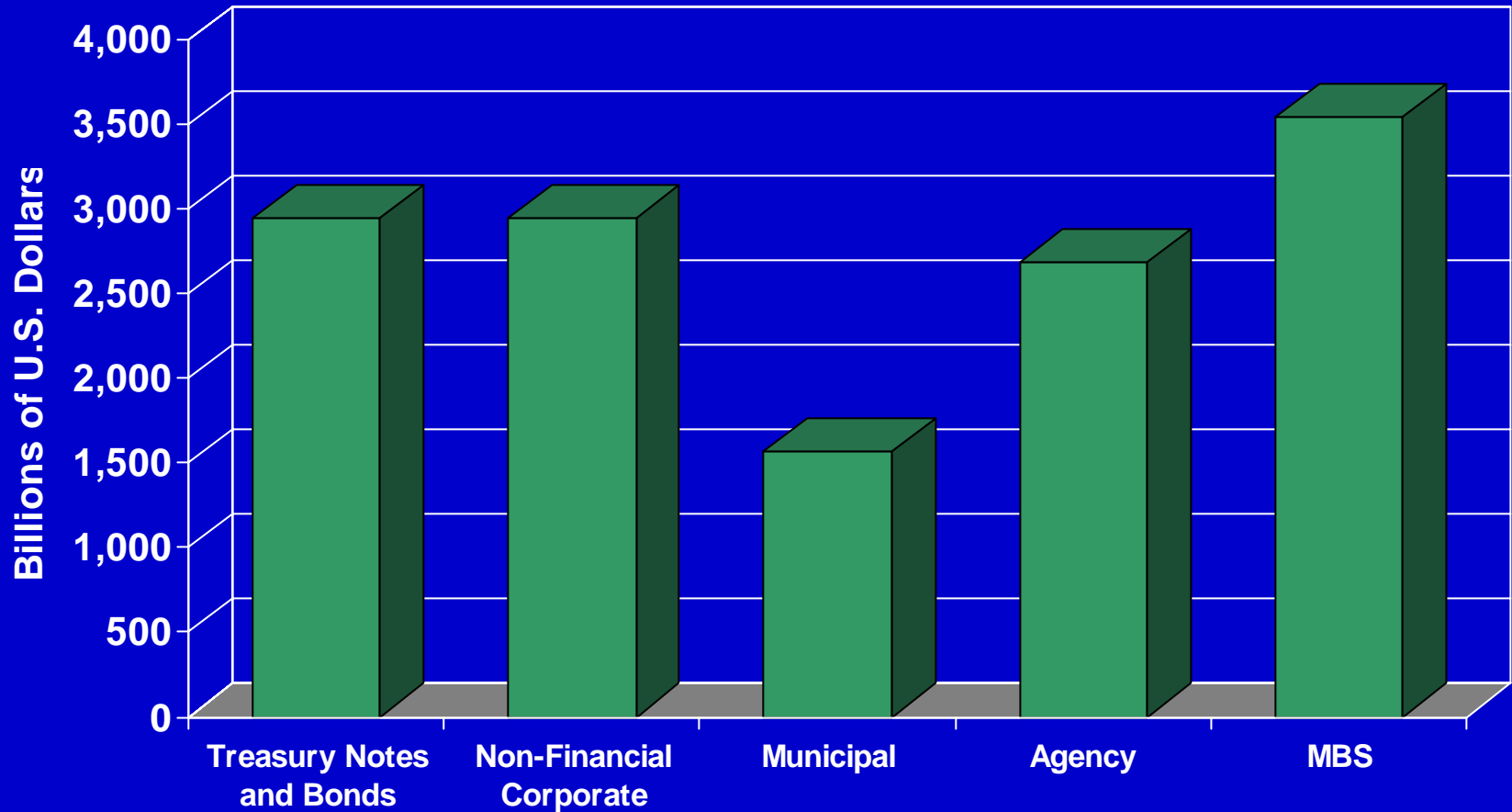
Bond Market: Mortgage-Backed Securities I

- Mortgage: long-term loan secured by real estate
 - Paid off over time (*amortized*)
- Variety of maturities and forms
 - Most common residential mortgage in U.S. is 30-year fixed-rate loan with option to repay at any time
 - Adjustable-rate mortgages are also common
- Loans intermediated through banks, S&Ls, or other
 - Institutions often do not want to hold mortgages
 - Mortgages are often sold to other investors

Bond Market: Mortgage-Backed Securities II

- MBS: security backed by a pool of mortgages
- Usually created by federal agency or GSE
 - Ginnie Mae, Fannie Mae, Freddie Mac
- Low default risk (often guaranteed)
- Variable and unpredictable interest rate risk including *prepayment risk* and *extension risk*
- *Securitization* reduces risk to lenders and gives borrowers access to national capital market

Bond Market Size, December 31, 2004



Sources: Federal Reserve, Treasury Department.