



CHAPTER 8

BOND MARKETS

Capital Markets

- Economic purpose - brings together long-term (over 1 year) borrowers and investors.
 - Corporate stock - studied in Chapter 10
 - Bonds - studied here in Chapter 8
 - Mortgages - studied in Chapter 9

- Major Issuers (borrowers)
 - Households - mortgages.
 - Business - bonds and stock
 - Governments - federal, state, and local bonds.

- Major Investors
 - Households (directly or indirectly through financial intermediaries).
 - Foreign investors.

Economic Sectors

EXHIBIT 8.1

Net Financial Positions of Major Sectors of the Economy, December 2005 (\$ in billions)

Sector	Financial Assets	Financial Liabilities	Net Financial Position	
			Surplus	Deficit
Households and nonprofits	\$38,802.3	\$12,214.2	\$26,588.1	
Nonfinancial business	13,749.4	14,698.9		\$949.5
State and local government	2,163.3	2,337.7		174.4
Federal government	605.4	5,856.9		5,251.5
Financial institutions	51,500.3	50,171.4	1,328.9	
Remainder	11,029.3	5,546.2	5,483.1	
Total	<u>\$117,850.0</u>	<u>\$90,825.3</u>	<u>\$33,400.1</u>	<u>\$6,375.4</u>

Source: Board of Governors, Federal Reserve System. *Flow of Funds Accounts of the United States*, December 7, 2006.

Capital Market Instruments Outstanding

EXHIBIT 8.2

Capital Market Instruments Outstanding (\$Billions)

Instrument	Year					Annual Growth Rate (%)
	1970	1980	1990	2000	2005	
Treasury debt (more than 1 year)	\$124	\$407	\$1,668	\$2,320	\$3,220	9.8
Federal agency debt (more than 1 year)	44	277	1,446	4,345	6,276	15.2
Municipal bonds (more than 1 year)	144	350	956	1,223	1,738	7.4
Corporate bonds	202	495	1,706	5,050	8,358	11.2
Corporate stock (at market value)	906	1,634	3,543	17,566	18,277	9.0
Mortgages	470	1,449	3,808	6,934	12,146	9.7
Total	\$1,890	\$4,612	\$13,127	\$37,438	\$50,015	9.8

Source: Board of Governors, Federal Reserve System, *Flow of Funds Accounts of the United States*, and Bureau of the Public Debt, *Monthly Statement of the Public Debt of the United States*.

U.S. Treasury and Agency Securities

- U.S. Government Issues - Notes and Bonds
 - Coupon issues.
 - Notes - one to ten-year maturity.
 - Bonds - over ten-year maturity.
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- Inflation-Indexed Notes and Bonds (TIPS)
 - Principal adjusts for inflation
 - Fixed coupon rate determined by auction process
 - Minimum denomination is \$1,000.

- Separate Trading of Registered Interest and Principal (STRIP).
 - Each coupon and principal of U.S. Treasury note or bond is sold separately by a dealer.
 - Each separated security is a zero-coupon bond.
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How to Read Treasury Quotes

EXHIBIT 8.3

Selected Quotations on Treasury Bonds and Notes on March 7, 2007

Government Bonds and Notes						U.S. Treasury STRIPS					
Rate	Maturity Mo/Yr ^a	Bid ^b	Asked	Chg	Ask Yld	Maturity	Type ^c	Bid	Asked	Chg	Ask Yld
3.375	Feb 07 n	100:00	100:00	+1	3.32	May 07	np	99.067	99.087	+0.016	4.91
4.250	Nov 07 n	99:12	99:13	+1	5.05	Feb 07	np	91.621	91.641	+0.153	4.55
3.875	Jan 09 i	103:02	103:03	+4	2.19	Aug 07	np	86.001	86.021	+0.113	4.42
12.000	Aug 13	110:06	110:07	+1	4.72	May 07	ci	99.069	99.089	+0.015	4.89
7.250	May 16	118:25	118:26	+13	4.71	Aug 07	ci	89.730	89.750	+0.172	4.48

^adesignates a note; i designates an inflation-indexed issue; and no designation following the maturity year indicates a bond.

^bColons in bid and asked quotes represent 32nds. For example, 100:02 means 100 $\frac{2}{32}$.

^cdesignates stripped coupon interest; np designates stripped principal from a Treasury note.

Source: Wall Street Journal Online, March 7, 2007.

State and Local Government Bonds

- Municipal Bonds (*munis*)
 - General Obligation (GO) - backed by taxing power of political entity.
 - Revenue - financed and paid back with cash flows from a specific project.
 - Industrial Development Bonds (IDB) -
- Primary market for munis
 - Many individual smaller issuers.
 - Underwritten by investment bankers from local to national mkts.
 - Most general obligation (GO) bonds are sold by competitive bid.
- Secondary market not well-developed - OTC market made by dealers.
 - thin secondary markets lead to larger bid-ask spreads.
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- Relation between Municipals and Taxable Yields
 - Interest on municipal bonds is exempt from federal income tax.
 - Munis and taxable corporates are similar except for the taxation of interest.
 - yields $i_{\text{muni}} = i_{\text{taxable}} (1-T)$ where T is marginal tax rate.

Corporate vs. Muni Bond

- An investor has the choice of an AA-rated corporate bond with a yield of 6% or an AA-rated muni yielding 4%. If the investor has a marginal tax rate of 30%, which bond should he/she select?
- A1: The after-tax rate on the **corporate** is
- A2: The pretax equivalent rate on the **muni** bond would be
- *Select the corporate bond!*

Municipal Bonds (continued)

- Three groups of investors in munis mostly affected by high tax exposure :
 - Households - affected by income level and marginal tax rates.
 - Casualty insurance co - investment determined by industry profitability.
 - Commercial banks - **Tax Reform Act of 1986** ended tax deductibility of interest expense incurred on borrowing for purchase of tax exempt securities.

EXHIBIT 8.6

Holders of Municipal Bonds (December 31, 2005)

Holder	Amount (\$ in Billions)	Percentage of Total
Households	\$816.0	36.7
Commercial banks	157.7	7.1
Casualty insurance companies	313.2	14.1
Money market mutual funds	337.1	15.1
Mutual funds	311.7	14.0
Other	289.9	13.0
Total	<u>\$2225.6</u>	<u>100.0</u>

Source: Board of Governors, Federal Reserve System, *Flow of Funds Accounts of the United States*, December 7, 2006.

Corporate Bonds

- Debt contracts (indentures) requiring borrowers to make periodic payments of interest and repay principal, often \$1,000, at maturity date.
 - Bearer bonds - coupon bond owned by bearer.
 - Registered bonds -
- Maturities
 - Term bonds - all bonds in issue mature on one date.
 - Serial bonds - bonds in issue mature on different dates.
 - Most munis are serial issues;
- Major investors include:
 - Life insurance companies; Pension funds;
 - Households; Foreign Investors.
- Default risk – next slide
- Financial Guarantees – covers pymt of principal and interest in case of default.
 - Substitutes the credit standing of the guarantor for that of the issuer.
 - Commercial banks - letters of credit to back commercial paper or swaps.
 - Insurance companies -

Corporate bonds – default risk

- Default risk – Credit agencies examine character, capacity, collateral, covenants
 - Character – examines mgt strategy, conservatism, history, control systems
 - Investment Grade: S&P: AAA, AA, A, BBB (Moody: Aaa, Aa, A, Baa).
BBB – normally adequate capacity to repay, but subject to adverse economic conditions or changing circumstances.
 - Speculative, Junk – BB, B, CCC, C, D (M: Ba, B, Caa, C, D).
BB – predominantly speculative capacity to repay. Quality and protective characteristics outweighed by uncertainties or risk exposures.

- Cumulative default rates – 1980-2000 (approx)

	1 yr	5 yr	10 yr
AAA	<1%	<1%	<1%
AA	<1%	<1%	<2%
A	1%	2%	3%
BBB	<1%	~5%	~8%
BB	4%	~12%	22%
B	8%	~27%	35%
CCC	30%	>50%	57%

Corporate Bond Indenture

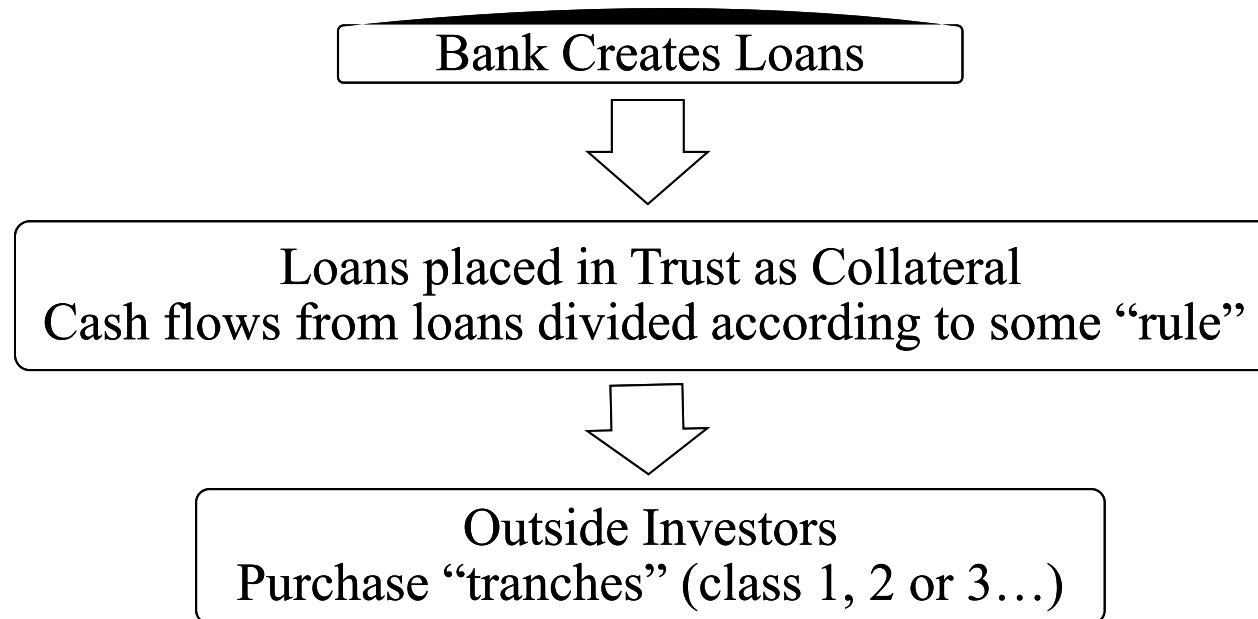
- Corporate Bond indenture – legal agreement between borrower and lender.
 - Specifies whether bond is secured or unsecured (debenture) and covenants.
 - Covenants may restricts actions of mgt
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- Collateral
 - Mortgage bond - real assets pledged.
 - Equipment trust certificates - specific, titled, or identifiable equipment.
 - Collateral bonds -
 - Debentures –
- Claim on assets
 - Senior debt - first priority to general assets.
 - Subordinated - ranking of unsecured debentures below senior.
- Means of principal payment
 - Sinking fund – building sum to retire issue or periodic retirement of randomly selected bonds.
 - Call provision - borrower right to retire bond before maturity.
 - Bonds more likely to be called with interest rates fall (why?)

Market for Corporate Bonds

- Public sale - open to all interested buyers.
 - *Competitive sale* - public auction among underwriters.
 - *Negotiated sale* - underwriting contract signed with specific underwriters.
- Most secondary trading of corporate bonds occurs through dealers
 - volume of trading is low – thus wide bid/ask differential in the market.
 - corporate bonds are less marketable
- Private placement - sold to limited number (< 35) of sophisticated (accredited) investors, avoiding SEC registration and prospectus.
 - private placements have increased relative to public sale.
 - SEC Rule 144a (1990) liberalized the regulation of private placements.
 - allows secondary market trading of private placements.

Securitized Credit Instruments

- **Securitization** - packaging loans and selling claims to future cash flows.
 - Originator (bank) creates loans (e.g., mortgages).
 - Loans placed in legal “trust” or pool.
 - Trust issues new securities (claims) with different risk properties (tranches).
 - Investors buy the new claims.



More on Securitization

- More on securitization – example of “slicing” default risk.
 - Tranche 1 (“bond” with 7% coupon) may first receive all promised pymts.
 - Tranche 4 (“bond” with 12% coupon) may be first to absorb any defaults.
 - Followed by tranches 3, 2, 1.
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- More on default risk.
 - Value of new (packaged) securities exceeds value of loan cash flows, providing incentives to securitize.
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 - Many asset securitized: Mortgages, A/R, car loans, credit card receivables..
 - Privately originated asset-backed securities often have credit enhancements. Especially for highest risk tranches.

Financial Markets Regulators

- Securities and Exchange Commission - principle regulator of financial markets.
 - SEC established in Federal Securities Act of 1933.
 - Ranges from disclosure requirements to proper operation of capital mkts.
 - Public firms file regular reports with the SEC.
 - All states have security laws related to issuing and trading securities.
- Securities industry also has private self-regulation
 - E.g., National Association of Security Dealers (NASD)
 - Assist in maintaining the trust of the general public.

Global Bond Markets

- ***Foreign Bonds*** – issued in a financial market of a nation by a foreign company.
 - Yankee bonds – bond issued by a foreign co. (e.g, Nestle-Swiss) in U.S.
 - Samurai bonds – similarly, foreign firms issuing bonds in Japanese market
 - Must conform to regulations imposed in country of issue, denominated in that currency, be brought to market by investment bankers of that country, and sold only to investors of that country.
- ***Eurobonds*** – issued by an entity in one or more countries denominated in a currency other than currency of country where bonds are issued.
 - E.g., IBM issues a dollar denominated bond outside of the U.S.
 - Eurobonds are brought to market by multinational syndicate of i-banks.
 - Eurobonds are often bearer bonds and do not have to be registered.
 - Some Eurobonds are convertible, while call provisions are common.
- International credit ratings - more significant than domestic ratings.
 - take country or political risk into consideration.