Chapter 2 - Asset Classes and Financial Instruments

Richard Herron

D'Amore-McKim School of Business, Northeastern University

The money market consists of very short-term and highly marketable debt securities

- Treasury Bills (T–bills)
- Certificates of Deposit (CDs)
- Commercial Paper
- Bankers' Acceptance
- Eurodollars
- Repurchase Agreements (Repos)
- Federal Funds
- Brokers' Calls
- London Interbank Offered Rate (LIBOR), which the Secured Overnight Financing Rate (SOFR) will replace in the U.S.

Money market securities are low-risk but not risk-free, so they have higher yields than T-bills

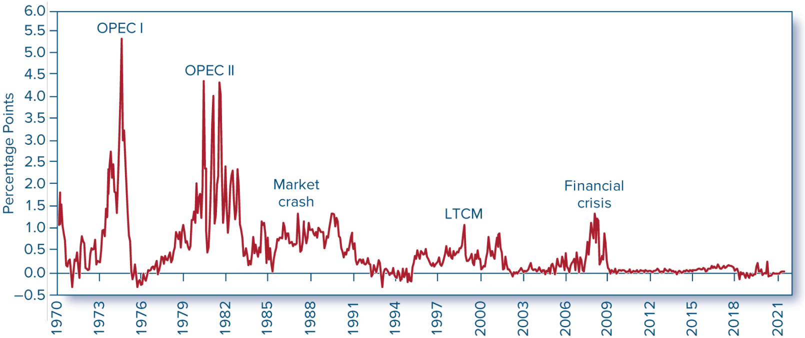

Figure 1: Spread between federal funds rate and T-bill rate (BKM 2023, Figure 2.2)

The bond market consists of longer-term debt instruments than the money market

- Often called the fixed-income capital market
  - Fixed-income: promise a fixed stream of income
  - Capital market: longer-term borrowing to finance real assets
- Securities
  - Treasury Notes (maturity up to 10 years) and Bonds (maturity beyond 10 years)
  - Inflation-Protected Treasury Bonds (TIPS in the U.S.)
  - Federal Agency Debt
  - International Bonds
  - Municipal Bonds
  - Corporate Bonds
  - Mortgage and Asset-Backed Securities

T-bond & T-note quotes are per $100 of face, and yields are twice the semiannual yield

LISTING OF TREASURY ISSUES

MATURITY	COUPON	BID	ASKED	CHANGE	ASKED YIELD TO MATURITY
15-Nov-21	2.000	100.206	100.212	–0.008	0.013
31-Mar-22	1.750	101.060	101.064	–0.006	0.056
15-May-25	2.125	105.252	105.256	0.058	0.592
15-Feb-36	4.500	138.234	138.244	0.960	1.525
15-Nov-40	4.250	139.160	139.180	0.158	1.815
15-May-51	2.375	108.224	108.244	1.128	1.984

Figure 2: Listing of Treasury bonds and notes (BKM 2023, Figure 2.3)

Municipal bond interest income is tax-exempt in the U.S., so investors accept lower yields

- For the marginal investor, the after-tax yield on taxable bonds must equal the after-tax yield on tax-free “munis”
- Therefore

$$r_{taxable}(1 - t) = r_{muni}$$

  where r values are yields and t is the marginal tax rate, so the “cutoff tax bracket” is

$$t = 1 - \frac{r_{muni}}{r_{taxable}}$$

The ratio of yields on municipal to Baa-rated corporate bonds varies over time

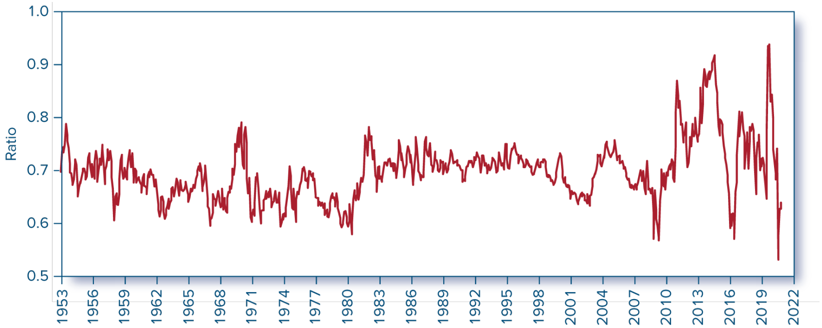

Figure 3: Ratio of yields on municipal debt to corporate Baa-rated debt (BKM 2023, Figure 2.5)

Common stock represents ownership in a corporation and offers a share in votes and financial benefits

- Owners elect a board of directors with one vote per share
  - The board controls the corporation
  - The board only meets a few times a year, so it selects managers to run the corporation on a day-to-day basis
  - The board incentivizes and monitors these managers to act in the best interest of owners
- Owners share proportionally in corporate profits via dividends

Common stock is a residual claim on the corporation with limited liability

- “Residual claim” means that stockholders are last in line to claim corporate assets and income
  - For a corporation in liquidation, tax authorities, employees, suppliers, bondholders, and creditors are paid before stockholders
  - For a corporation not in liquidation, stockholder residual claims are either reinvested or paid out as a dividend
- “Limited liability” means that stockholders cannot lose more than their initial investment
  - This limited liability is in contrast to owners of unincorporated firms, whose creditors can claim owner personal assets

Common stock quotes are per share and provide other salient information

NAME	SYMBOL	CLOSE	CHANGE	VOLUME	52 WK HIGH	52 WK LOW	DIV	YIELD	P/E
Herbalife Nutrition	HLF	51.45	−0.05	434,355	59.00	43.01	....	....	13.77
Hershey	HSY	177.57	1.64	658,253	178.36	131.46	3.22	1.81	26.42
Hess Corp	HES	80.39	−3.52	2,143,509	91.09	34.82	1.00	1.24	....
Hewlett Packard	HPE	14.01	0.25	9,448,992	16.74	8.28	0.48	3.43	28.42
Home Depot	HD	319.22	2.17	33,775,308	345.69	246.59	6.60	2.07	23.27
Honda	HMC	32.54	0.13	406,532	33.32	23.10	1.02	3.13	9.00
Honneywell	HON	227.22	3.69	2,602,709	234.02	146.21	3.72	1.64	34.87

Figure 4: Listing of stocks trades on the New York Stock Exchange (BKM 2023, Figure 2.8)

Preferred stock is a hybrid security with features similar to bonds and equity

- Like bonds
  - Promises to pay a fixed amount of income each year as dividends
  - Does not offer voting rights to control the firm
- Like equity
  - No contractual obligation to pay dividends, but preferred dividends are typically cumulative, so they cumulate and must be paid before common stock receives its dividend
  - Preferred dividends are not a tax-deductible expense for the paying firm
  - Preferred dividends are a partially tax-deductible income for the receiving firm

American Depositary Receipts (ADRs) trade in the U.S. and represent shares of a foreign corporation

- ADRs make it easier for foreign corporations to meet U.S. security registration requirements
- ADRs are the most common way for U.S. investors to invest in shares of foreign corporations directly

The Dow Jones Industrial Average (DJIA) is a price-weighted index of 30 “blue-chip” corporations

- Originally computed as the average share price of stocks in the index
  - Therefore, the percentage change in the DJIA measures the returns (excluding dividends) on a portfolio that holds one share of each stock
  - Therefore, the dollar investment in each stock is proportional to its share price
  - So, the DJIA is a price-weighted index
- The DJIA is no longer the average share price to avoid jumps in the index following stock splits, large dividends, and new stocks
- Instead, the DJIA is the sum of prices divided by a divisor, adjusted after events to keep the same index level

The S&P 500 stock index is a market-value-weighted index of 500 large stocks

- The S&P 500 provides 2 advantages over the DJIA
  - Bigger basket of stocks that represents more of the stock market
  - Market-value-weighted instead of price-weighted
- Price-weighted and market-value-weighted indexes have different interpretations
  - Price-weighted: Portfolio of investment of one share in each stock
  - Market-value-weighted: Portfolio of investment in each stock proportional to market capitalization
  - *But neither is a total return index accounting for dividends!*

There are many other indexes!

- Russell Indexes are market-value-weighted indexes of several slices of the 4,000 largest stocks by market capitalization
- NYSE, NASDAQ, Wilshire 5000, etc.
- Equal-weighted indexes make equal dollar investments in each stock, regardless of its price or market capitalization
  - Easy to calculate portfolio returns as the average of stock returns
  - However, equal-weighted indexes must rebalance every period to get back to equal (i.e., $\frac{1}{N}$) portfolio weights
- Foreign and international stock market indexes
- Bond indexes, although bond indexes are difficult to calculate because bonds trade less frequently than stocks

Futures, options, and related derivatives contract payoffs depend on the values of other variables

- Such as commodity prices, bond prices, stock prices, interest rates, or index levels
- Options
  - A *call* option gives its holder the right (but not the obligation) to *buy* a specific asset at a specific price (exercise or strike price) on or before a specific date (expiration date or expiry)
  - A *put* option is similar but gives its holder the right to *sell*
- Futures
  - A futures contract is an obligation to deliver a specific asset at a specific delivery date (maturity date) at a specific price (futures price)
  - The long position commits to purchase, and the short position commits to sell

Summary from BKM (2023)

1. Money market securities are very-short-term debt obligations. They are usually highly marketable and have relatively low credit risk. Their low maturities and low credit risk ensure minimal capital gains or losses. These securities trade in large denominations, but they may be purchased indirectly through money market mutual funds.
2. Much of U.S. government borrowing is in the form of Treasury bonds and notes. These are coupon-paying bonds usually issued at or near par value. Treasury notes and bonds are similar in design to coupon-paying corporate bonds.
3. Municipal bonds are distinguished largely by their tax-exempt status. Interest payments (but not capital gains) on these securities are exempt from federal income taxes. The equivalent taxable yield offered by a municipal bond equals $r_{\text{muni}}/(1-t)$, where r_{muni} is the municipal yield and t is the investor's tax bracket.
4. Mortgage pass-through securities are pools of mortgages sold in one package. Owners of pass-throughs receive the principal and interest payments made by the borrowers. The originator that issued the mortgage merely services it and "passes through" the payments to the purchasers of the pool. A federal agency may guarantee the payments of interest and principal on mortgages pooled into its pass-through securities, but these guarantees are absent in private-label pass-throughs.
5. Common stock is an ownership share in a corporation. Each share entitles its owner to one vote on matters of corporate governance and to a prorated share of the dividends paid to shareholders. Stock (equivalently, equity) owners are the residual claimants on the income earned by the firm.
6. Preferred stock usually pays fixed dividends for the life of the firm; it is a perpetuity. A firm's failure to pay the dividend due on preferred stock, however, does not precipitate corporate bankruptcy. Instead, unpaid dividends simply cumulate. Variants of preferred stock include convertible and adjustable-rate issues.
7. Many stock market indexes measure the performance of the overall market. The Dow Jones averages, the oldest and best-known indicators, are price-weighted indexes. Today, many broad-based, market-value-weighted indexes are computed daily. These include the Standard & Poor's 500 stock index, the NASDAQ index, the Wilshire 5000 index, and indexes of many non-U.S. stock markets.
8. A call option is a right to purchase an asset at a stipulated exercise price on or before an expiration date. A put option is the right to sell an asset at some exercise price. Calls increase in value while puts decrease in value as the price of the underlying asset increases.
9. A futures contract is an obligation to buy or sell an asset at a stipulated futures price on a maturity date. The long position, which commits to purchasing, gains if the asset value increases while the short position, which commits to delivering, loses.

Key equations from BKM (2023)

Equivalent taxable yield: $\frac{r_{\text{muni}}}{1-t}$, where r_{muni} is the rate on tax-free municipal debt and t is the federal plus state combined tax rate

Cutoff tax rate (for indifference to taxable versus tax-free bonds): $1 - \frac{r_{\text{muni}}}{r_{\text{taxable}}}$

References I

Bodie, Zvi, Alex Kane, and Allan J. Marcus (2023). *Investments*. 13th ed. New York: McGraw Hill.