The Bond Market

This set of slides was developed based on the reference books as listed in the course document.

Preview

- Here, we focus on longer-term securities: bonds. Bonds are like money market instruments, but they have maturities that exceed one year. These include Treasury bonds, corporate bonds, mortgages, and the like.

Purpose of the Capital Market

- Original maturity is *greater* than one year, typically for long-term financing or investments
- Best known capital market securities:
  - Stocks and bonds

Capital Market Participants

- Primary issuers of securities:
  - Federal and local governments: debt issuers
  - Corporations: equity and debt issuers
- Largest purchasers of securities:
  - You and me

Remarks: What is the difference between stock and equity

- Stock is the type of equity that represents equity investment.
- Stocks and equity are same, as both represent the ownership in an entity (company) and are traded on the stock exchanges.
- Equity by definition means ownership of assets after the debt is paid off.
- Stock generally refers to traded equity.

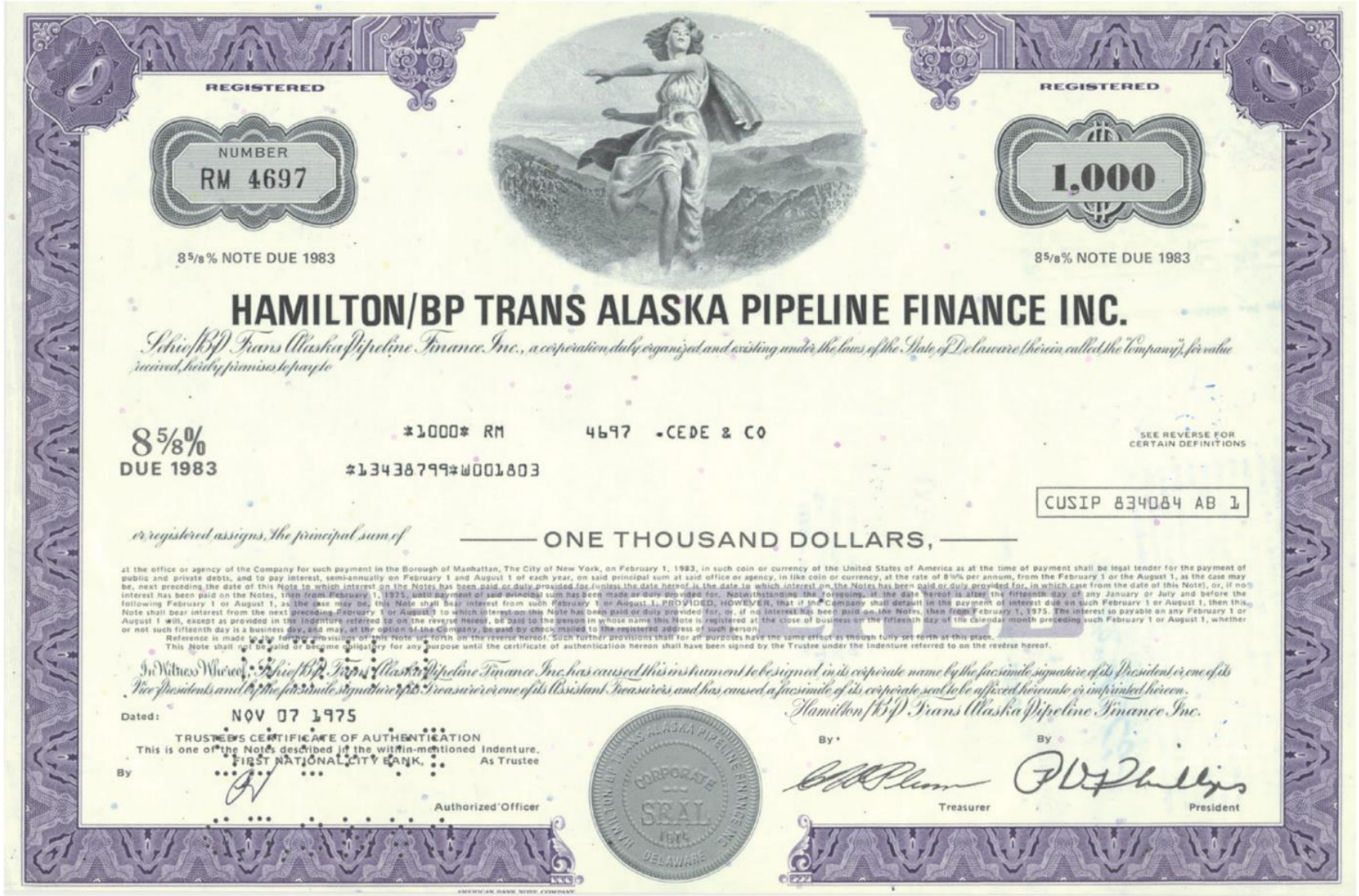
Capital Market Trading

1. Primary market for initial sale
   -Initial Public Offering (IPO)
2. Secondary market
   - Over-the-counter (場外交易)
   - Organized exchanges (i.e., Hong Kong Stock Exchange (HKEX), or New York Stock Exchange)

Types of Bonds

- ***Bonds*** are securities that represent debt owed by the issuer to the investor, and typically have specified payments on specific dates.
- Types of bonds we will examine include long-term government bonds (T-bonds), municipal (市政) bonds, and corporate bonds.

Hamilton/BP Corporate Bond



REGISTERED

NUMBER
RM 4697

8⅝% NOTE DUE 1983

REGISTERED

1,000

8⅝% NOTE DUE 1983

HAMILTON/BP TRANS ALASKA PIPELINE FINANCE INC.

Schieffelin & Co., as nominee for Hamilton/BP Trans Alaska Pipeline Finance Inc., a corporation duly organized and existing under the laws of the State of Delaware (herein called the "Company"), for value received, hereby promises to pay to

8⅝%
DUE 1983

1000 RM 4697 -CEDE & CO

#13438799#W001803

SEE REVERSE FOR CERTAIN DEFINITIONS

CUSIP 834084 AB 1

or registered assigns, the principal sum of —— ONE THOUSAND DOLLARS, ——

at the office or agency of the Company for such payment in the Borough of Manhattan, The City of New York, on February 1, 1983, in such coin or currency of the United States of America as at the time of payment shall be legal tender for the payment of public and private debts, and to pay interest, semi-annually on February 1 and August 1 of each year, on said principal sum at said office or agency, in like coin or currency, at the rate of 8⅝% per annum, from the February 1 or the August 1, as the case may be, next preceding the date of this Note to which interest on the Notes has been paid or duly provided for (unless the date hereof is the date to which interest on the Notes has been paid or duly provided for, in which case from the date of this Note), or, if no interest has been paid on the Notes, then from February 1, 1975, until payment of said principal sum has been made or duly provided for. Notwithstanding the foregoing, if the date hereof is after the fifteenth day of any January or July and before the following February 1 or August 1, as the case may be, this Note shall bear interest from such February 1 or August 1; PROVIDED, HOWEVER, that if the Company shall default in the payment of interest due on such February 1 or August 1, then this Note shall bear interest from the next preceding February 1 or August 1 to which interest on this Note has been paid or duly provided for, or, if no interest has been paid on the Notes, then from February 1, 1975. The interest so payable on any February 1 or August 1 will, except as provided in the Indenture referred to on the reverse hereof, be paid to the person in whose name this Note is registered at the close of business on the fifteenth day of the calendar month preceding such February 1 or August 1, whether or not such fifteenth day is a business day, and may, at the option of the Company, be paid by check mailed to the registered address of such person.

Reference is made to the further provisions of this Note set forth on the reverse hereof. Such further provisions shall for all purposes have the same effect as though fully set forth at this place.

This Note shall not be valid or become obligatory for any purpose until the certificate of authentication hereon shall have been signed by the Trustee under the Indenture referred to on the reverse hereof.

In Witness Whereof, Schieffelin & Co., as nominee for Hamilton/BP Trans Alaska Pipeline Finance Inc. has caused this instrument to be signed in its corporate name by the facsimile signature of its President or one of its Vice Presidents and by the facsimile signature of its Treasurer or one of its Assistant Treasurers and has caused a facsimile of its corporate seal to be affixed hereunto or imprinted hereon.

Hamilton/BP Trans Alaska Pipeline Finance Inc.

Dated: NOV 07 1975

TRUSTEE'S CERTIFICATE OF AUTHENTICATION
This is one of the Notes described in the within-mentioned Indenture.
FIRST NATIONAL CITY BANK, As Trustee

By _____ Authorized Officer

CORPORATE SEAL 1975 DELAWARE

By _____ Treasurer

By _____ President

Corporate Bonds (1 of 3)

- Typically have a face value of $1,000, although some have a face value of $5,000 or $10,000
- Pay interest semi-annually

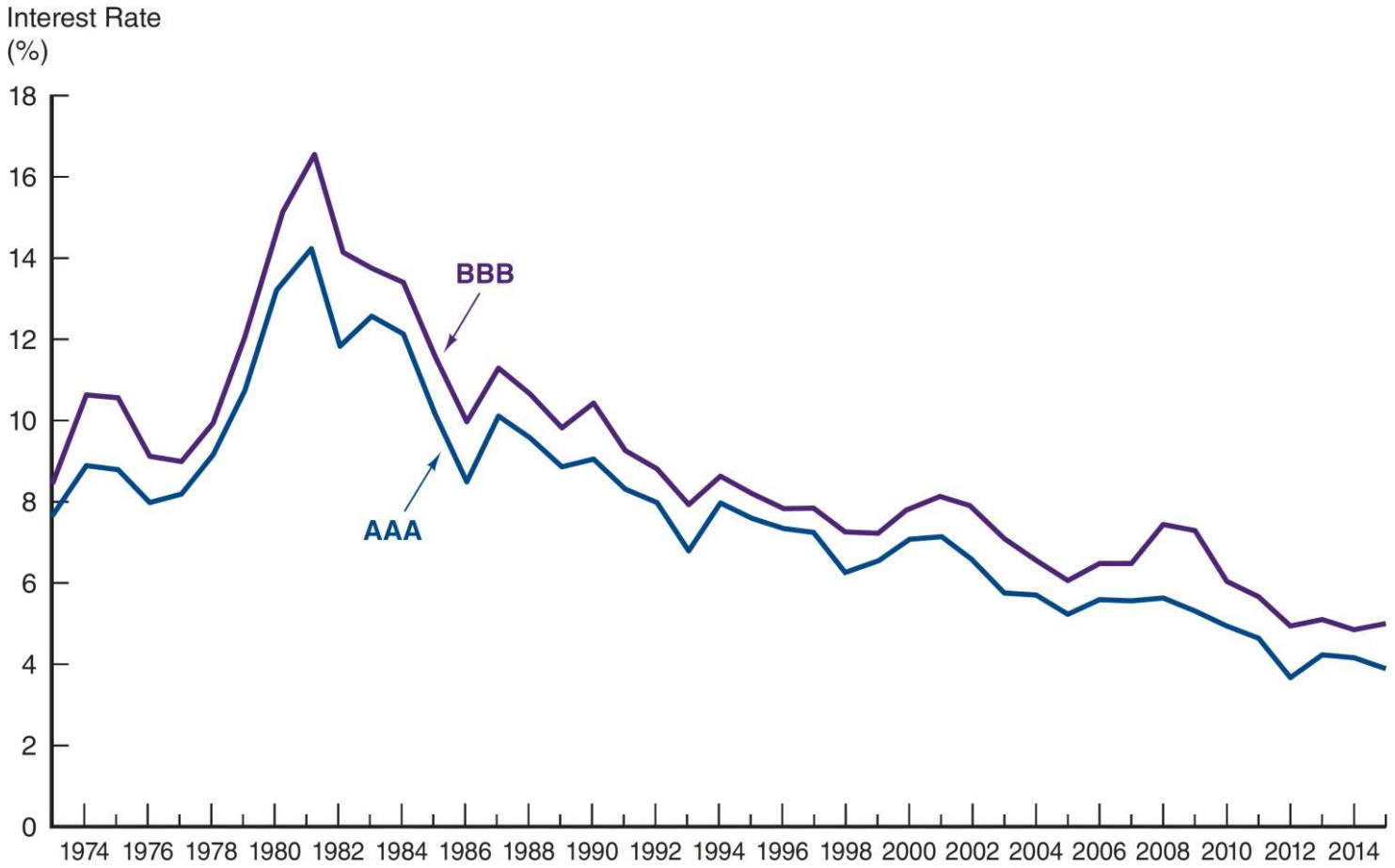
Corporate Bonds (2 of 3)

- Cannot be redeemed anytime the issuer wishes, unless a specific clause states this (call option).
- Degree of risk varies with each bond, even from the same issuer. Following suite, the required interest rate varies with level of risk.

Corporate Bonds (3 of 3)

- The degree of risk ranges from low-risk (AAA) to higher risk (BBB). Any bonds rated below BBB are considered sub-investment grade debt.

Figure 12.5 Corporate Bond Interest Rates, 1973–2015 (End of year)



Source: http://www.federalreserve.gov/releases/h15/data.htm.

Corporate Bonds: Characteristics of Corporate Bonds

- Junk Bonds
  - Debt that is rated below BBB
  - Often, trusts and insurance companies are not permitted to invest in junk debt
  - Michael Milken developed this market in the mid-1980s, although he was subsequently convicted of insider trading

Table 12.2 Debt Rating Descriptions (1 of 4)

Standard & Poor's	**Moody's**	**Definition**
AAA	Aaa	Best quality and highest rating. Capacity to pay interest and repay principal is extremely strong. Smallest degree of investment risk.
AA	Aa	High quality. Very strong capacity to pay interest and repay principal and differs from AAA/Aaa in a small degree.
A	A	Strong capacity to pay interest and repay principal. Possess many favorable investment attributes and are considered upper-medium-grade obligations. Somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions.

Table 12.2 Debt Rating Descriptions (2 of 4)

Standard & Poor's	**Moody's**	**Definition**
BBB	Baa	Medium-grade obligations. Neither highly protected nor poorly secured. Adequate capacity to pay interest and repay principal. May lack long-term reliability and protective elements to secure interest and principal payments.
BB	Ba	Moderate ability to pay interest and repay principal. Have speculative elements and future cannot be considered well assured. Adverse business, economic, and financial conditions could lead to inability to meet financial obligations.
B	B	Lack characteristics of desirable investment. Assurance of interest and principal payments over long period of time may be small. Adverse conditions likely to impair ability to meet financial obligations.

Table 12.2 Debt Rating Descriptions (3 of 4)

Standard & Poor's	**Moody's**	**Definition**
CCC	Caa	Poor standing. Identifiable vulnerability to default and dependent on favorable business, economic, and financial conditions to meet timely payment of interest and repayment of principal.
CC	Ca	Represent obligations that are speculative to a high degree. Issues often default and have other marked shortcomings.
C	C	Lowest-rated class of bonds. Have extremely poor prospects of attaining any real investment standard. May be used to cover a situation where bankruptcy petition has been filed, but debt service payments are continued.

Table 12.2 Debt Rating Descriptions (4 of 4)

Standard & Poor's	**Moody's**	**Definition**
CI	Caa	Reserved for income bonds on which no interest is being paid.
D	Ca	Payment default.
NR		No public rating has been requested.
(+) or (−)	C	Ratings from AA to CCC may be modified by the addition of a plus or minus sign to show relative standing within the major rating categories.

Financial Guarantees for Bonds (1 of 2)

- Some debt issuers purchase *financial guarantees* to lower the risk of their debt.
- The guarantee provides for timely payment of interest and principal, and are usually backed by large insurance companies.

Financial Guarantees for Bonds (2 of 2)

- As it turns out, not all guarantees actually make sense!
  - In 1995, JPMorgan created the Credit Default Swap (CDS), a type of insurance on bonds.
  - In 2000, Congress (US) removed CDSs from any oversight.
  - By 2008, the CDS market was over $62 trillion!
  - 2008 losses on mortgages lead to huge payouts on this insurance.

Current Yield Calculations

- Bond yields are quoted using a variety of conventions, depending on both the type of issue and the market.
- We will examine the current yield calculation that is commonly used for long-term debt.

Bond Current Yield Calculation

What is the **current yield i_c** for a bond with a **face value** of
$1,000, a current price of $921.01, and a **coupon rate** of 10.95%?

Answer:

$$i_c = \text{C} / \text{P} = \$109.50 / \$921.01 = 11.89\%$$

Note: C (coupon) $= 10.95\% \times \$1{,}000$

$= \$109.50$

Table 12.3 Bond Terminology (1 of 3)

Term	**Definition**
Coupon interest rate	The stated annual interest rate on the bond. It is usually fixed for the life of the bond.
Current yield	The coupon interest payment divided by the current market price of the bond.
Face amount	The maturity value of the bond. The holder of the bond will receive the face amount from the issuer when the bond matures. Face amount is synonymous with par value.

Table 12.3 Bond Terminology (2 of 3)

Term	**Definition**
Indenture (契約)	The contract that accompanies a bond and specifies the terms of the loan agreement. It includes management restrictions, called covenants.
Market rate	The interest rate currently in effect in the market for securities of similar risk and maturity. The market rate is used to value bonds.

Table 12.3 Bond Terminology (3 of 3)

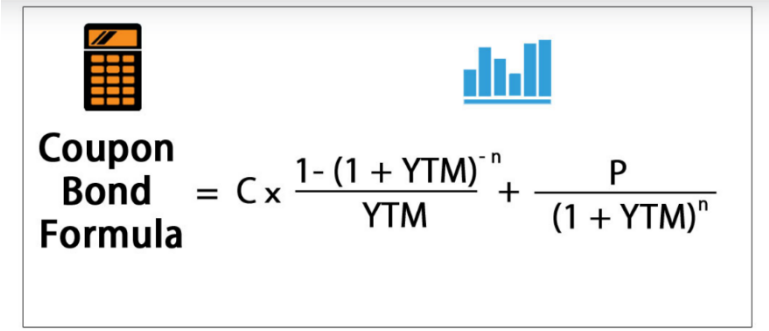
Term	**Definition**
Maturity	The number of years or periods until the bond matures and the holder is paid the face amount.
Par value	The same as *face amount*, the maturity value of the bond.
Yield to maturity	The yield an investor will earn if the bond is purchased at the current market price and held until maturity.

Finding the Value of Coupon Bonds (1 of 2)

Let's use a simple example to illustrate the bond pricing idea.

What is the price of two-year, 10% coupon bond (semi-annual coupon payments) with a face value of $1,000 and a required rate of (YTM annual) 12%?

$$P = \sum_{T=1}^{n} \frac{PMT}{(1+YTM)^T} + \frac{FV}{(1+YTM)^n}$$



PMT = 1000x10%/2 = 50; YMT = 0.06; FV = 1000 ➔ P = 965.35

Finding the Value of Coupon Bonds (2 of 2)

Solution:

1. Identify the cash flows:
   - $50 is received every six months in interest
   - $1000 is received in two years as principal repayment
2. Find the present value of the cash flows (calculator solution):
   - N = 4, FV = 1000, PMT = 50, I = 6 (YTM 6 months)
   - Computer the PV. PV = 965.35

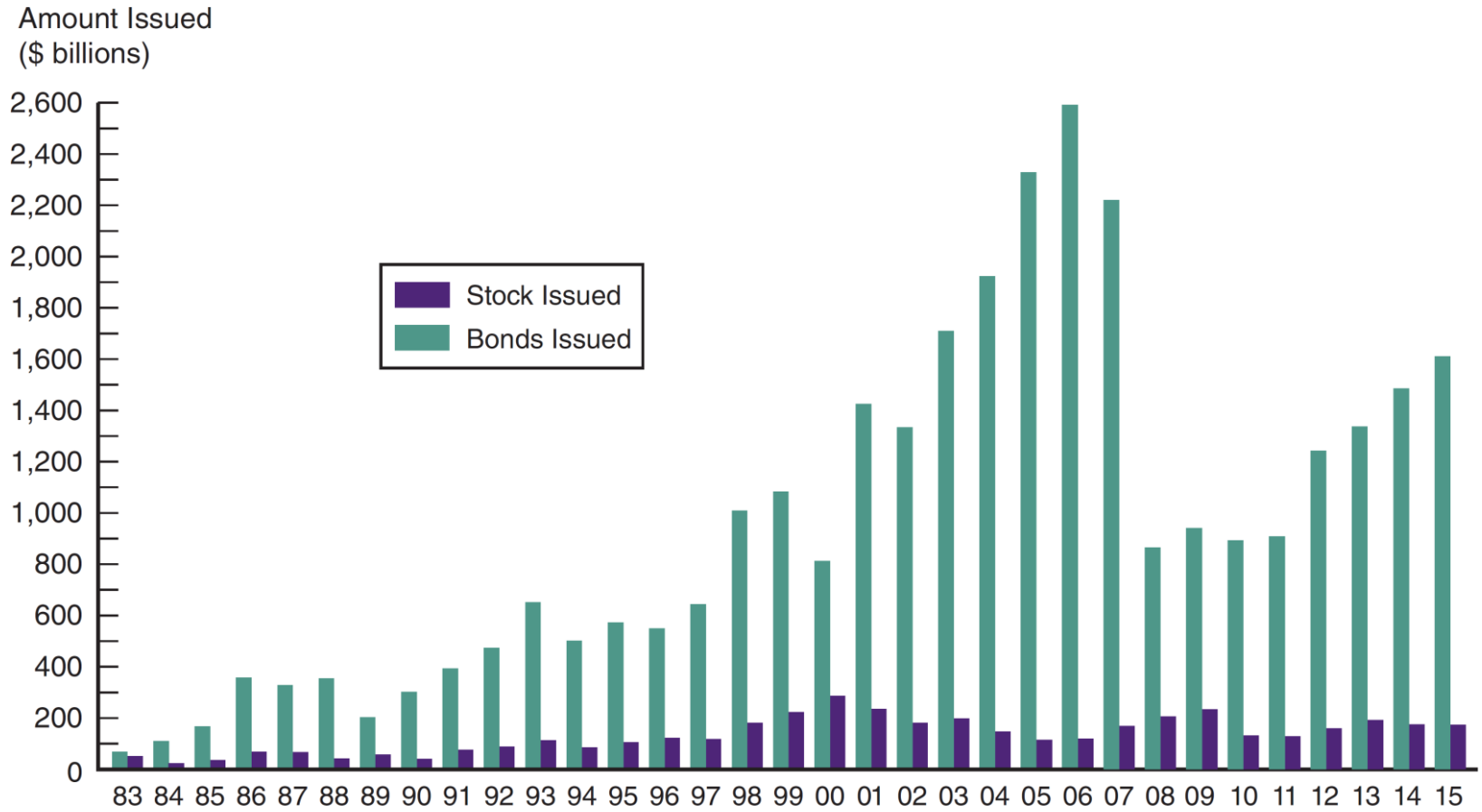
$$VP = \frac{50}{(1.06)^1} + \frac{50}{(1.06)^2} + \frac{50}{(1.06)^3} + \frac{1050}{(1.06)^4} = 965.35$$

https://www.graduatetutor.com/corporate-finance-tutoring/yields-bond-valuation-pricing/

Investing in Bonds

- Bonds are the most popular alternative to stocks for long-term investing.
- Even though the bonds of a corporation are less risky than its equity, investors still have risk: *price risk* and *interest rate risk*

Figure 12.6 Bonds and Stocks Issued, 1983–2015



Source: http://www.federalreserve.gov/econresdata/releases/corpsecure/current.htm.