

# **Topic 1A: Financial Instruments**

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# Use of Financial Instruments

- Allocation of Capital
  - Financing of projects
- Allocation of Risk
  - Diversification
  - Hedging/Insurance
- Consumption Smoothing:
  - Saving and borrowing
- Meeting place for investors with different needs

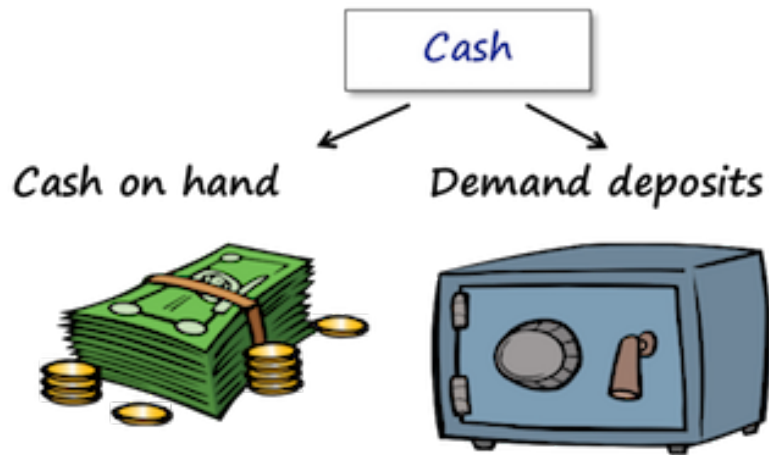
# Financial Instruments

- Cash / Money
- Bonds / Loans
- Stocks
- Funds
- Derivatives

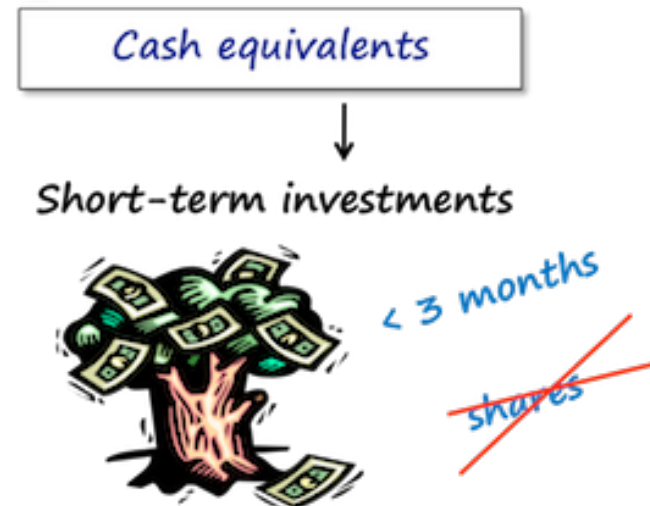
# What is Money?

- Examples
  - Coin, currency, deposits, money orders, certified checks, savings accounts
- What are the key attributes of money?
  - Safe and liquid savings: always available
  - Medium of exchange: can be used to buy stuff
  - Unit of accounts: we count our wealth in \$

# Cash and Cash Equivalents



- Coin, currency,
- Deposits, money orders, certified checks
- *Big stones at bottom of ocean?*



- Savings accounts, certificates of deposits
- Money market funds
- *Short term treasury bills?*

# The Island of Stone Money



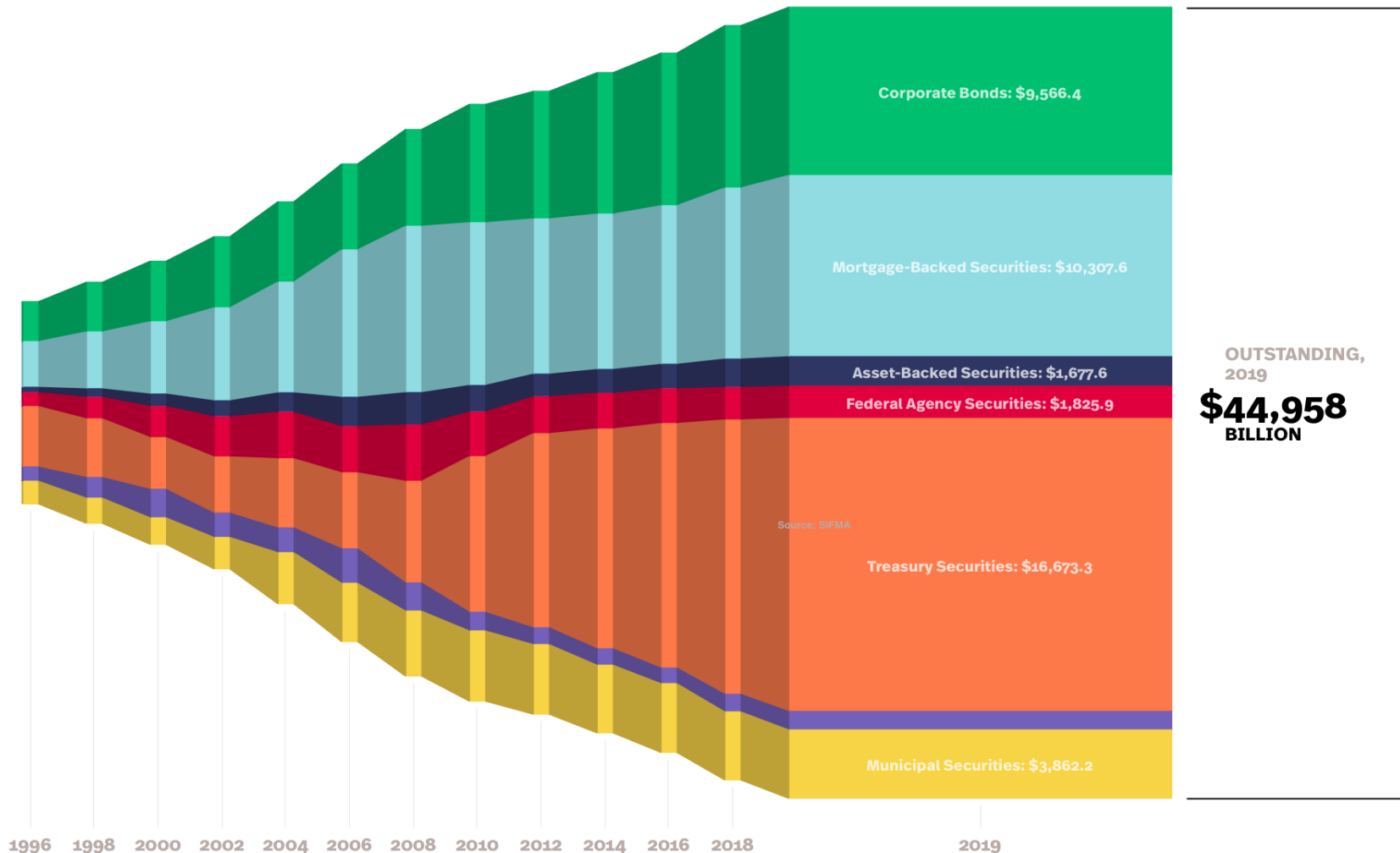
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# What is a Bond?

- A bond is a **fixed income** asset.
  - Fixed income means that the *promised* cash flows are known in advance
  - The *realized* cash flows may still be risky!
- Face value and coupon payments
  - **Face value/Principal**, denoted **F**: the size of the bond, repaid at the end.
  - **Coupon** payments, denoted **C**.
  - **Coupon rate** =  $C/F$
- Valuation
  - *Time value of money (TVM)*
  - *Credit/default risk*

# U.S. fixed income: \$45 trillion market

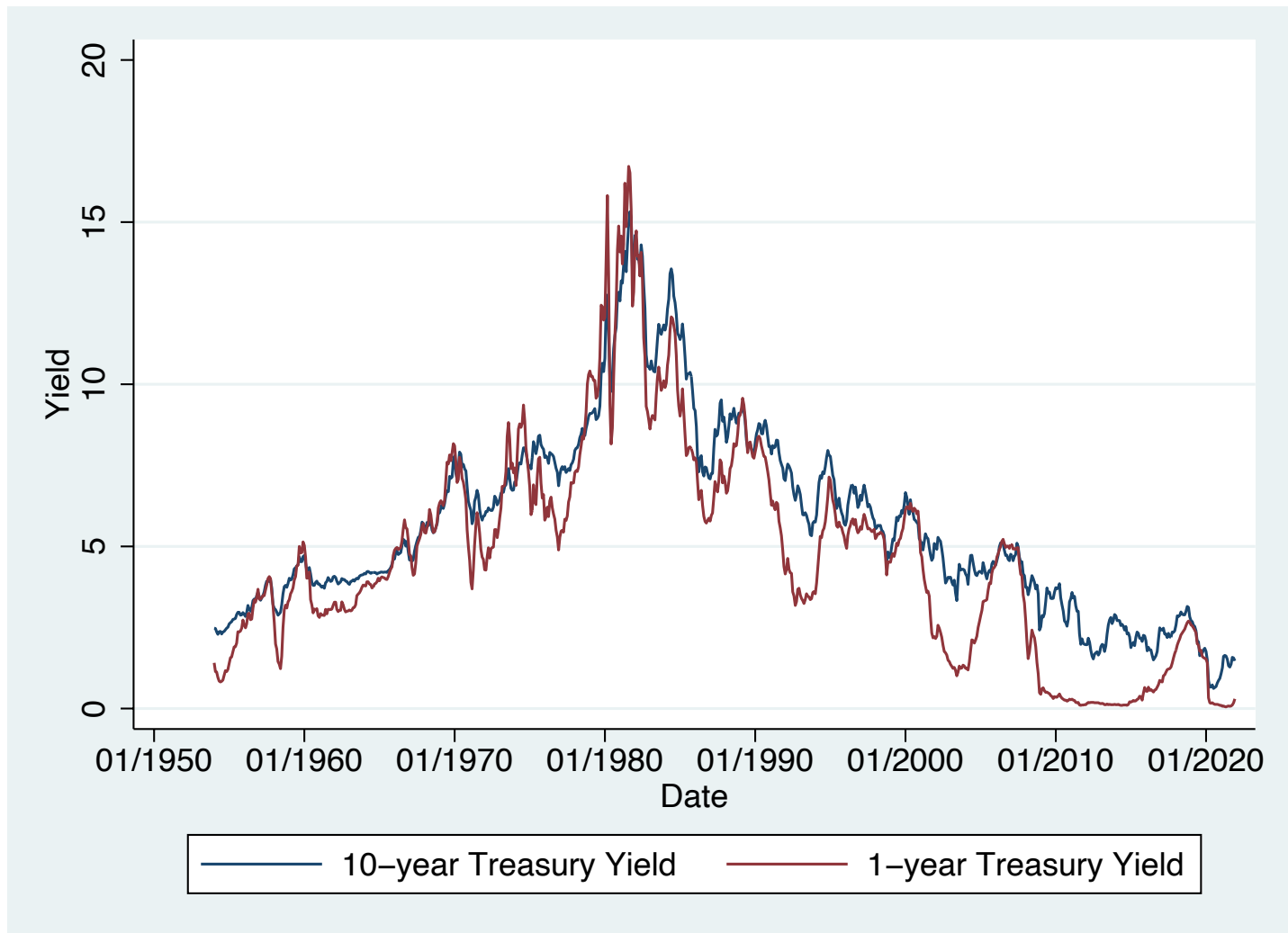




# The most important bonds: Treasury Bonds

- Types of Treasury bonds
  - Treasury Bills (less than 1 year maturity)
  - Treasury Notes (1-10 year maturity)
  - Treasury Bonds (10-30 year maturity)
- Semi-annual coupon payments.
- Why are government bonds traditionally seen as a safe investment?
- Which bond pays a higher interest rate: a 10-year T-bond or a 1-year T-note?

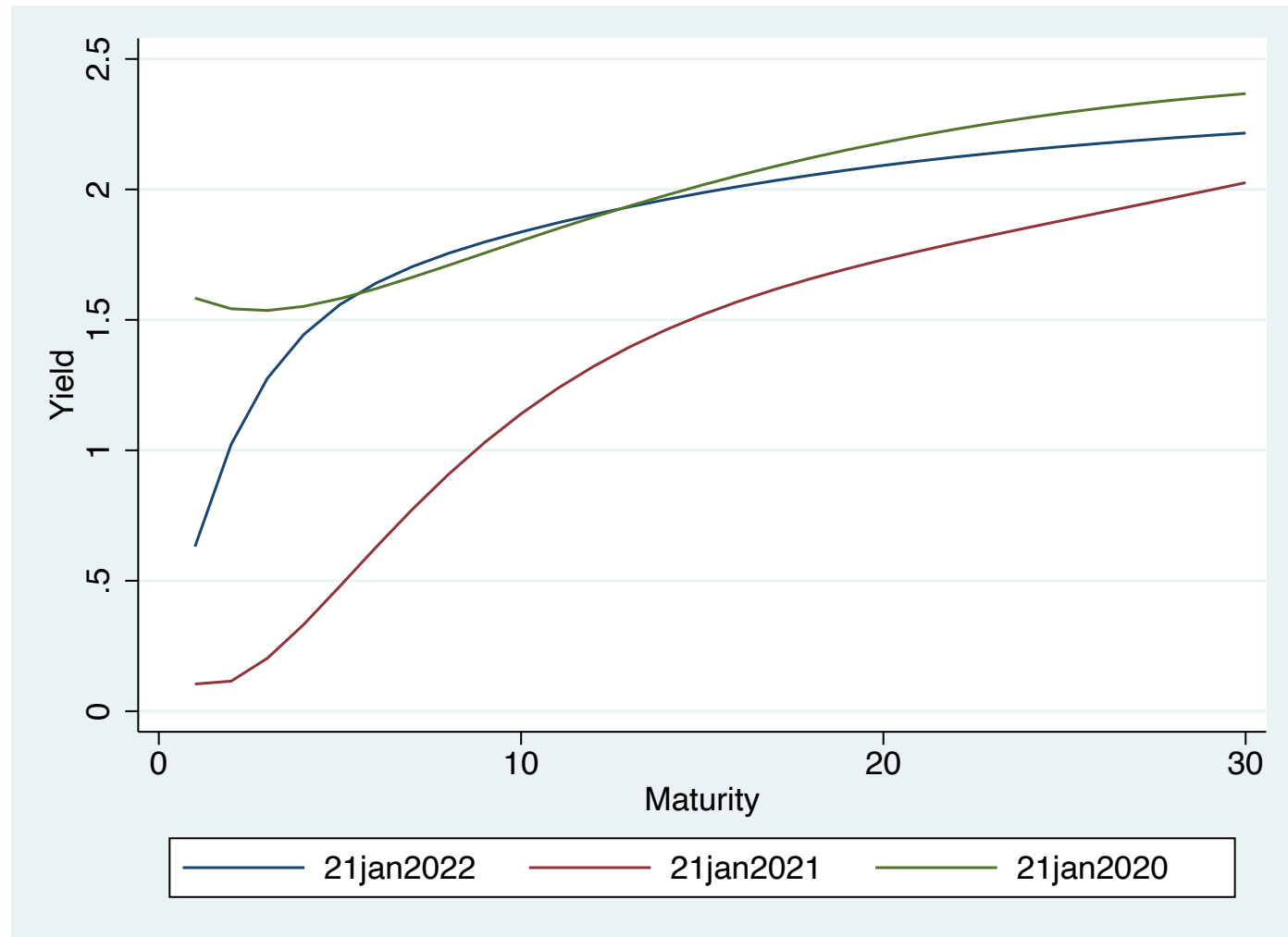
# U.S. Treasury interest rates



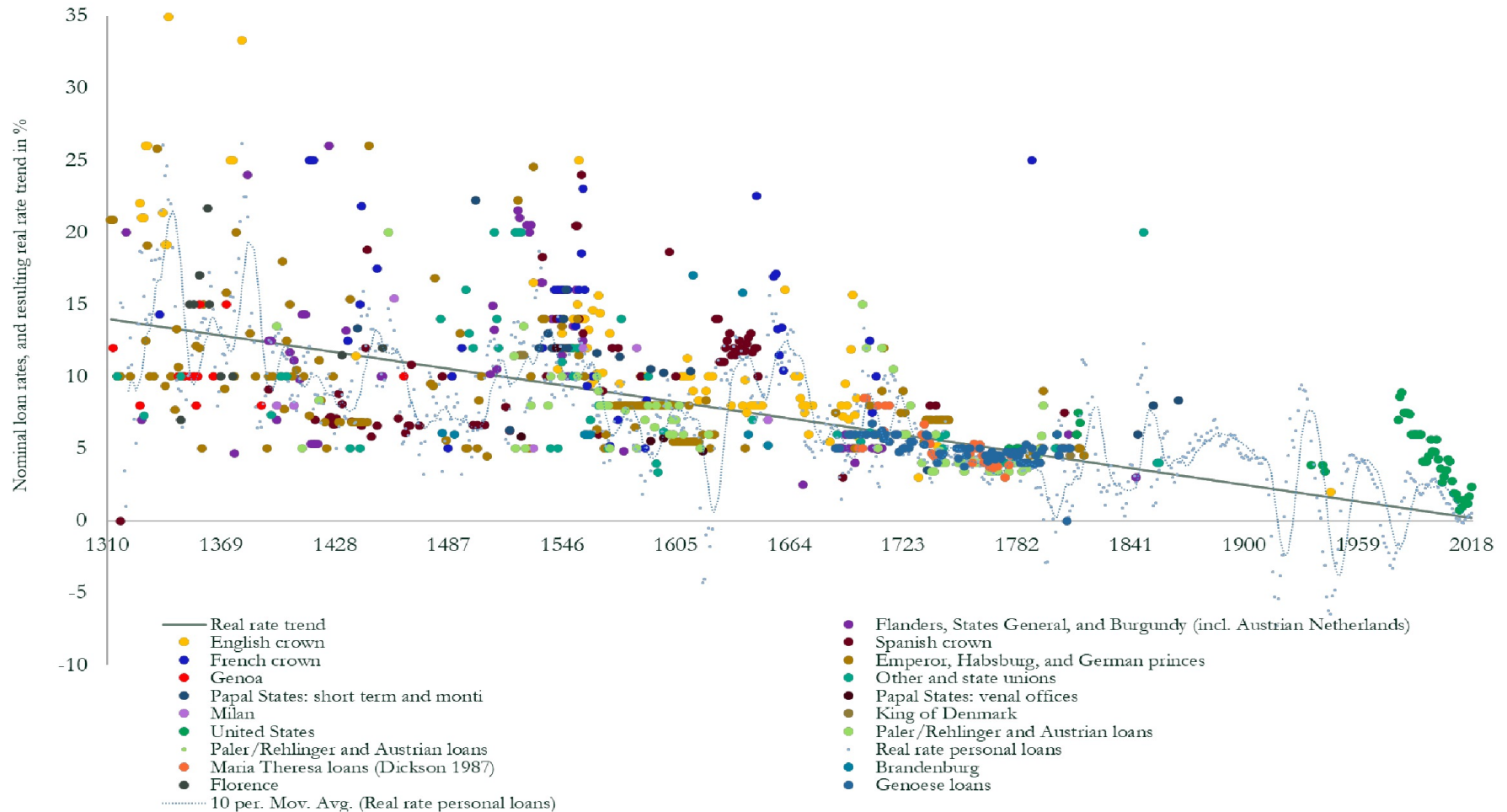
# The Yield Curve

- Interest rates on all the Treasuries of different maturities
  - Longer term rates reveal what investors expect about future short term rates
- Typically upward-sloping
  - we will see why in Fixed Income lectures
- But there are exceptions: **Yield curve inversions**
  - Signal of upcoming recessions?
  - Why?

# The Yield Curve in recent years



# 700 years of declining global interest rates...



Schmelzing (2022)

# Low interest rates

- Causes: Savings vs. investments...
  - Demographics
  - Inequality
  - Technological slowdown?
  
- Consequences...
  - “Reaching for yield”, financial instability?
  - Bank margins
  - Fiscal policy
  - Monetary policy: the Zero Lower Bound

# Municipal Bonds

Issued by state and local governments

- Exempt from federal income tax
- Exempt from (issuing) state local tax

Moody's: "Aa2"

S&P: "AA-"

(See "Ratings" herein)

NEW ISSUE – BOOK-ENTRY ONLY



**DAC Bond**

**\$862,755,000**

**DORMITORY AUTHORITY OF THE STATE OF NEW YORK  
NEW YORK UNIVERSITY REVENUE BONDS**

**\$603,460,000**

**Series 2019A  
(Tax-Exempt)**

**\$176,125,000**

**Subseries 2019B-1  
(Taxable)**

**\$83,170,000**

**Subseries 2019B-2  
(Taxable)  
(Green Bonds)**

**Dated: Date of Delivery**

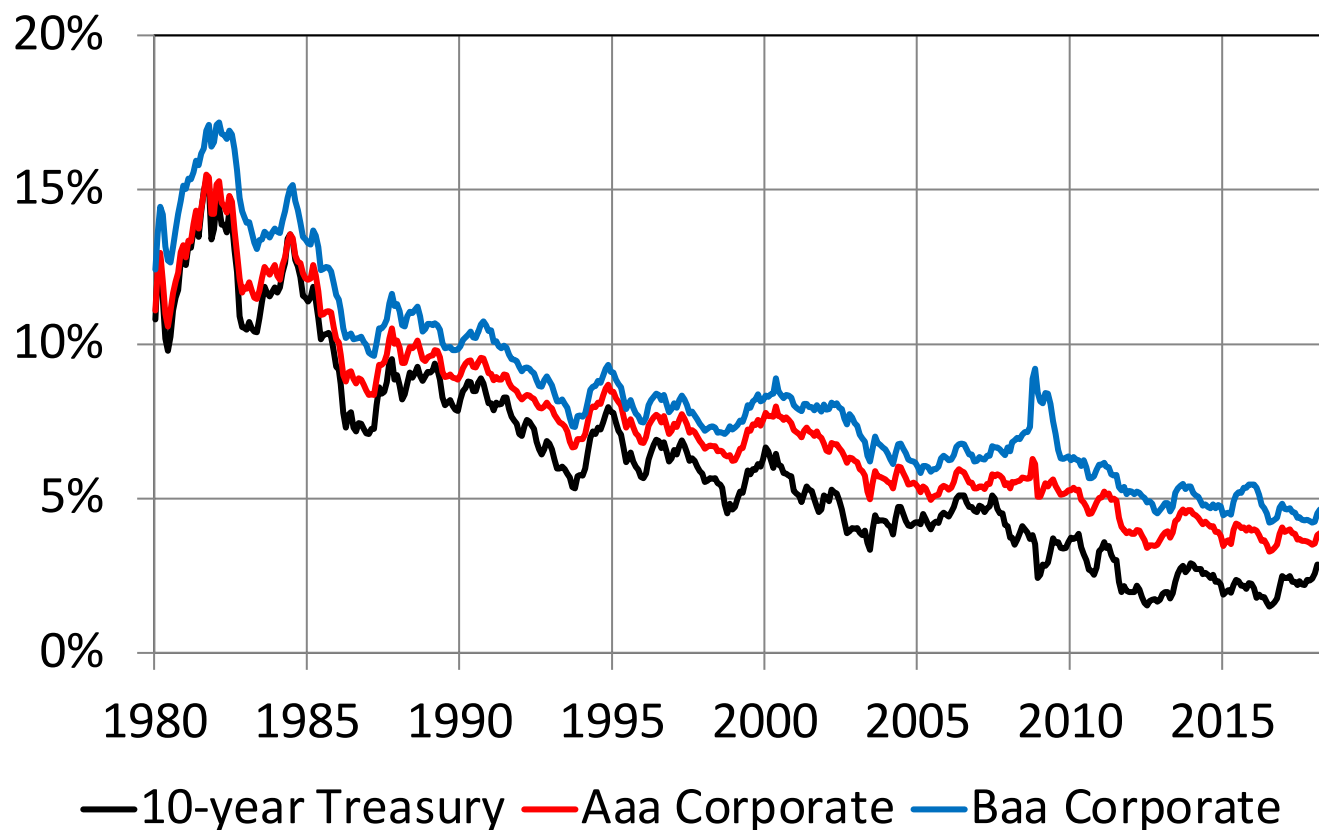
**Due: July 1, as shown on the inside cover**

# Corporate Bonds

- Commercial paper
  - Short term
- Corporate bond
  - Longer term
  - Different “seniority” classes
    - Senior
    - Junior or subordinated



## Credit Ratings and Bond Yields



Consider 10-year junior and senior bonds issued by the same company.

Which one pays a higher rate?

1. Junior bond
2. Senior bond
3. Impossible to tell

# Loans vs Bonds

- Loans and bonds are both debt instruments
- There are some differences
  - Bonds are issued by (big) firms and governments and bought by investors (e.g., pension funds and insurance companies). Loans are taken out by firms and households and issued (primarily) by banks.
  - **Bonds are traded** among investors after issuance. Loans are harder to trade, and many do not trade at all and remain on the balance sheet of the originating bank.

# Mortgages

- A mortgage is a loan secured by a piece of real estate
  - In **residential mortgages** the collateral is a house. In **commercial mortgages** the collateral is a commercial building
- Mortgages are used by households and firms to make a large purchase without paying the entire price up front.
  - Unlike bonds and traditional loans, payments on mortgages are the same each month. Most popular mortgages are 15- or 30-year fixed, but you can also get an adjustable rate mortgage.

# Equity (= Stocks)

- Equity
  - Cash flows: **Dividends** or stock repurchases (buybacks)
  - Future cash-flows are not fixed, but uncertain
  - Maturity is indefinite
  - Valuation: TVM + *risk adjustment*
- Two main classes of equities
  - Common Stock: voting rights (“junior”)
  - Preferred Stock: non-voting (“senior”)

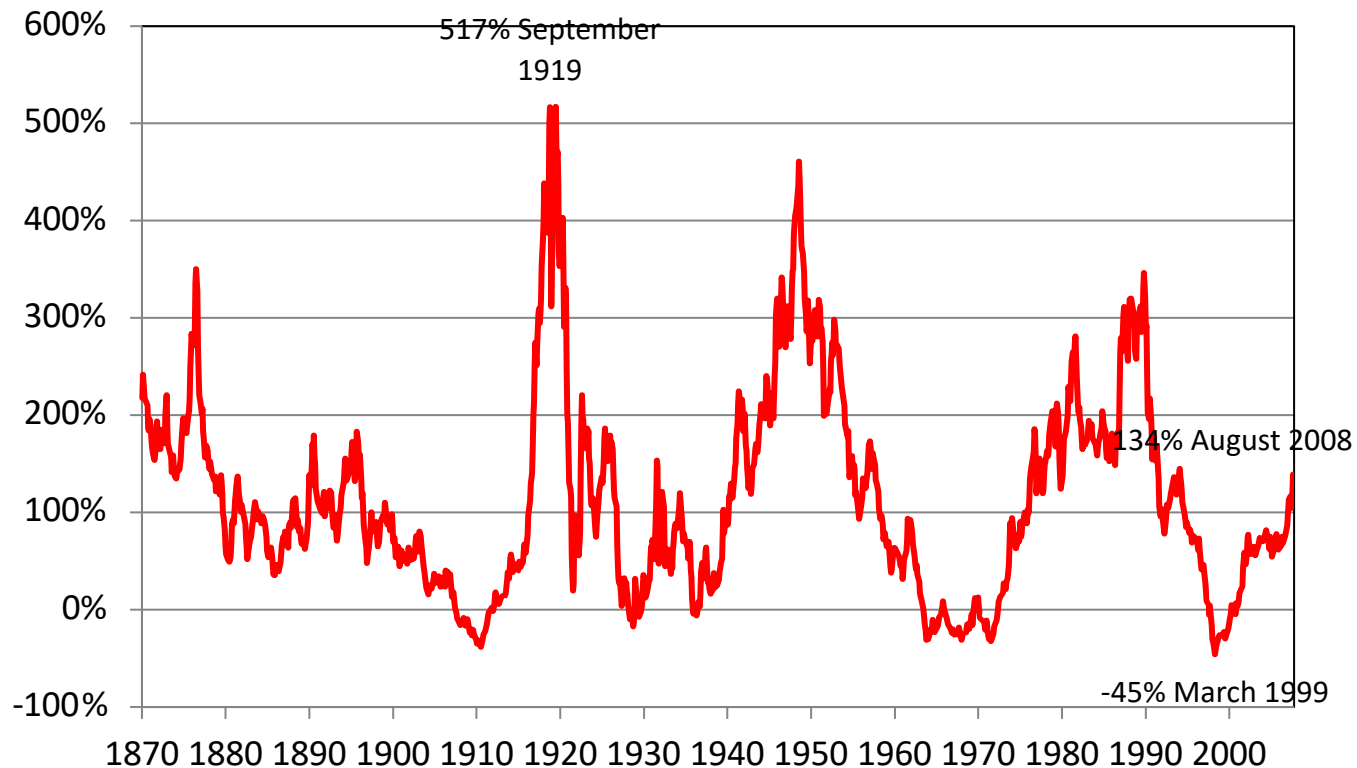
# Bankruptcy

Order payments in case of bankruptcy (Chapter 7)

1. Government
2. Employees (wages)
3. Bondholders
4. Preferred Stockholders
5. Common Stockholders

# Are stocks safe in long-run?

**10-Year Real U.S. Stock Returns**



# Mutual Funds

- **Mutual funds** pool money from many investors and invest in stocks and bonds
  - Buying stocks and bonds one by one is complicated and expensive. You can buy a share in the fund which holds a portfolio of assets on our behalf
- Example
  - You want to spread your investment across 1,000 stocks but you do not have enough to buy one share of each. You call up 99 friends and pool the money. Now each of you own  $1/100$  share of each stock. This is a mutual fund.



# Other Important Financial Assets

- **Derivatives**

- Definition: “securities whose cash-flows depend on the values of other assets”.
- Examples: Options, Futures, Swaps
- Valuation: TVM + risk + *option adjustment*

- **Asset-Backed Securities**

# Derivatives: Options and Futures

- **Call (Put) Option: Right to buy (sell)** the underlying asset
  - At a specified price (strike price).
  - On a specified date (maturity).
- **Long (Short) Futures: Obligation to buy (sell)** the underlying asset
  - At a specified price.
  - On a specified date.

# Asset-Backed Securities

- Bundling of existing securities such as
  - mortgages
  - auto loans
  - corporate bonds
- Different tranches have different risk
- **Securitization** is example of financial engineering

# The ABS market fell off a cliff

