Supply and Demand for Assets

Economics 301: Money and Banking

Goals and Learning Outcomes

LO3: Predict changes in interest rates using fundamental economic theories including present value calculations, behavior towards risk, and supply and demand models of money and bond markets.

Reading

- Read Mishkin, Chapter 5, pages 91-108.

Demand for Bonds

- For simplicity, focus on discount bonds.
- The **quantity demanded** for bonds is the total face value of all bonds lenders/savers are willing and able to purchase at given bond prices.
- **Demand curve/schedule** for bonds is a figure or table that illustrates the quantity demanded for bonds for given bond prices.
- **Law of demand for bonds:** The quantity demanded for bonds increases as the rate of return on holding bonds increases.

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Price versus Interest Rate

Yield to maturity, y, on a discount bond, face value, F, maturity date, T, and price, P:

$$P = \frac{F}{1+y}$$

Gross yield to maturity...

$$1 + y = \frac{F}{P}$$

Annualized gross yield to maturity...

$$(1 + i)^T = 1 + y$$

$$1 + i = (1 + y)^{1/T} = \left(\frac{F}{P}\right)^{1/T}$$

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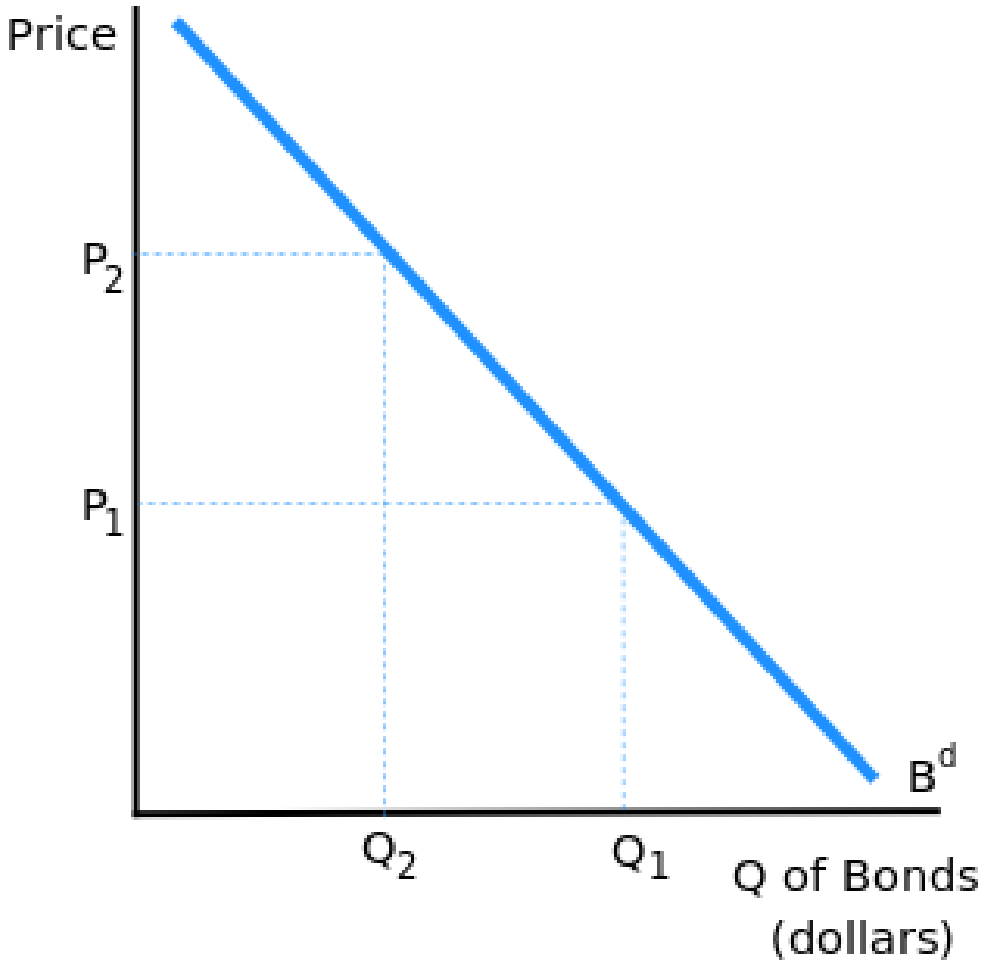
Demand Curve for Bonds

- Interest rate is inversely proportional to the price of the bond.
- Law of demand for bonds implies the demand curve will be downward sloping.



Determinants of Asset Demand

- When something *besides the price of the bond* affects the demand for bonds, we say there is a **change in demand** or a **shift in demand**
- Wealth: total value of all resources owned by an individual, including all assets.
  - An increase in wealth shifts the demand for bonds to the right.
- Expected return: changes in expectations of returns for given asset *and related assets*.
- Risk: degree of uncertainty regarding the return of an asset (includes interest and capital gains).
- Liquidity: ease and speed to which an asset can be converted to a means of payment.
  - An increase in liquidity causes an increase in demand for an asset.

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Expected Return

- Expected return: weighted average of all possible cash flows for an asset.
- Example: suppose a discount bond with one year maturity is sold for \$120, there is a 15% chance that an issuer of a discount bond will default, and an 85% chance the issuer will pay the face value of \$150.

$$P = \frac{F}{1+i}, \qquad 1+i = \frac{F}{P}$$

  - Return if default $\equiv R_d = 0$
  - Return if no default $\equiv R = 150/120 - 1 = 0.25$
  - Expected return $\equiv R^e = 0.15(0) + 0.85(0.25) = 0.2125$.
- An increase in expected return relative to other assets increases demand for the asset today.
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- Suppose you expect interest rates to rise.
  - What do you expect will happen to the price of the bond?
  - What do you expect will happen to capital gains on the bond?
  - What does effect does this expectation have on *today's* demand for the bond?
- Expected Return should consider *real* return, not *nominal return*.
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Risk

- **Risk averse:** a lender/saver is risk averse if he/she is willing to accept a lower expected return for an asset that has greater *certainty* for the rate of return.
- **Risk neutral:** a lender/saver is risk averse if uncertainty regarding a return *does not affect* the demand for an asset. Only expected return is considered important.
- **Risk loving:** a lender/saver is risk loving if he/she is willing to accept a lower expected return for an asset that has greater *uncertainty* for the rate of return.
- Assuming risk averse lenders/savers, an increase in the risk of an asset causes a decrease in the demand for the asset.

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Supply Curve for Bonds

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Determinants of Supply

- When something *besides the price of the bond* affects the supply for bonds, we say there is a **change in supply** or a **shift in supply**.
- An increase in expected profitability of investment opportunities increases the supply of bonds.
  - A recession decreases the profitability of businesses, causes a decrease in supply of bonds.
- Expected inflation: an increase in inflation decreases the real purchasing power of the cash flow.
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- Government budget: when Federal government runs a budget deficit, they sell government bonds, increasing the supply of bonds.

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Equilibrium

- Equilibrium quantity and price (and therefore interest rate) are determined by intersection of supply and demand curves.
- Predict how quantity of bonds, price of bonds, and interest rates will change if...
  - the Federal Reserve sells reserves of Treasury bills on the open market.
  - there is a break down in financial markets that makes it more difficult to buy and sell bonds on the secondary market.
  - people expect the economy will very soon be recovering from a recession.
  - people expect the Federal Reserve will soon be raising interest rates.
  - people start to suspect the Federal Reserve will be unable to effectively control interest rates.

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  - people expect the economy will very soon be recovering from a recession.
  - people expect the Federal Reserve will soon be raising interest rates.
  - people start to suspect the Federal Reserve will be unable to effectively control interest rates.

Equilibrium

- Equilibrium quantity and price (and therefore interest rate) are determined by intersection of supply and demand curves.
- Predict how quantity of bonds, price of bonds, and interest rates will change if...
  - the Federal Reserve sells reserves of Treasury bills on the open market.
  - there is a break down in financial markets that makes it more difficult to buy and sell bonds on the secondary market.
  - people expect the economy will very soon be recovering from a recession.
  - people expect the Federal Reserve will soon be raising interest rates.
  - people start to suspect the Federal Reserve will be unable to effectively control interest rates.

Where we go from here...

- More on behavior of interest rates: term structure of interest rates.
  - Chapter 6.
- MyEconLab homework on supply and demand for interest rates.