Supply and Demand for Assets

Economics 301: Money and Banking

Demand for Bonds
Supply for Bonds
Equilibrium

Goals
Reading

Goals and Learning Outcomes   1/ 14

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.

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Goals
Reading

Reading   2/ 14

- Read Hubbard and O'Brien, Chapter 4.

Demand for Bonds   3/ 14

- 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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Demand Curve
Determinants of Demand

Demand for Bonds   3/ 14

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Price versus Interest Rate   4/ 14

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   5/ 14

- 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   6/ 14

- 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
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Expected Return   7/ 14

- 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.
- An increase in expected return for alternative assets decreases demand for the asset today.

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Expected Return   8/ 14

- Previous example assumed asset was held through maturity date, so rate of return = yield to maturity.
- 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.
    - What would happen to the demand for a bond if there is an increase in expected inflation?

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Risk   9/ 14

- **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
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- Assuming risk averse lenders/savers, an increase in the risk of
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Supply for Bonds   10/ 14

- The **quantity supplied** for bonds is the total face value of all bonds borrowers/issuers are willing and able to sell at given bond prices.

- **Supply curve/schedule** for bonds is a figure or table that illustrates the quantity supplied for bonds for given bond prices.

- **Law of supply for bonds:** The quantity supplied for bonds decreases as the rate of return on holding bonds increases.

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Supply Curve
Determinants of Supply

Supply Curve for Bonds

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Determinants of Supply   12/ 14

- 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.
    - An increase in expected inflation causes an increase in the
      supply of bonds.
- Government budget: when Federal government runs a budget
  deficit, they sell government bonds, increasing the supply of
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    - 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.
    - An increase in expected inflation causes an increase in the supply of bonds.
- Government budget: when Federal government runs a budget deficit, they sell government bonds, increasing the supply of bonds.

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.

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- Chapter 5: More on behavior of interest rates: term structure of interest rates.