

EC371 Economic Analysis of Asset Prices

Asset Market Microstructure

R. E. Bailey

Department of Economics
University of Essex

University week 11

Outline

- 1 Financial markets: functions & participants
 - Stock and flow approaches
- 2 Trading mechanisms
 - Quote-driven markets
 - Order-driven markets
 - Order- & quote- driven markets compared
- 3 Industrial Organisation of Financial Markets
 - Competition within and among exchanges
- 4 Asset prices in a call market
- 5 Bid-ask spreads: inventory-based models
- 6 Bid-ask spreads: information-based models

Reading: **Economics of Financial Markets**, chapter 2

Markets: functions and participants

- ▶ What is a market?

Any set of arrangements which enables **voluntary agreements** to be reached between its participants.

- ▶ Functions of a market:

- 1 Price discovery
- 2 Provide a trading mechanism
- 3 Enable the execution of agreements

- ▶ Participants:

- 1 Public investors
- 2 Brokers
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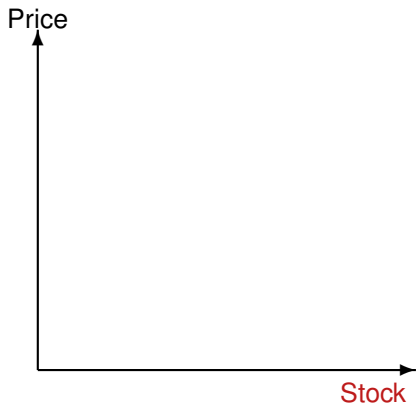
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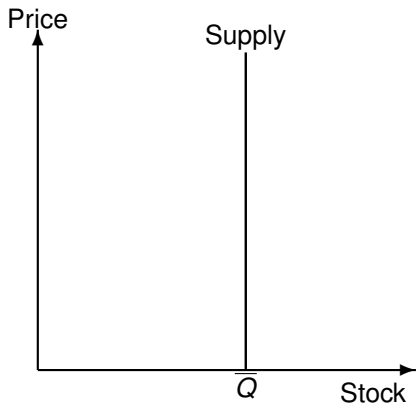
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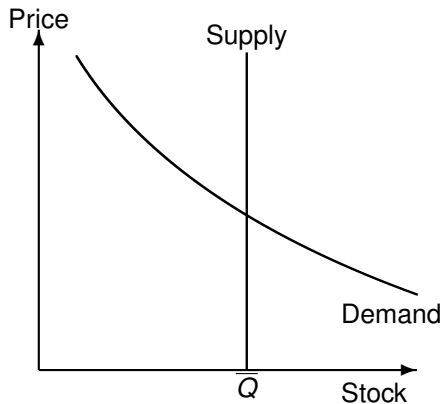
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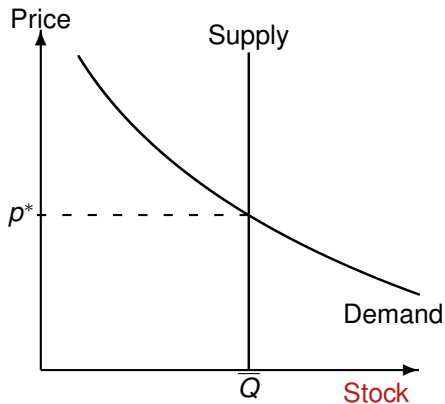
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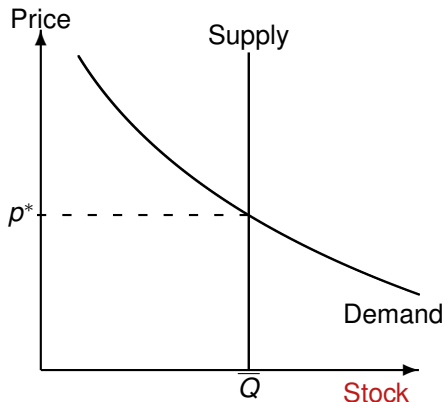
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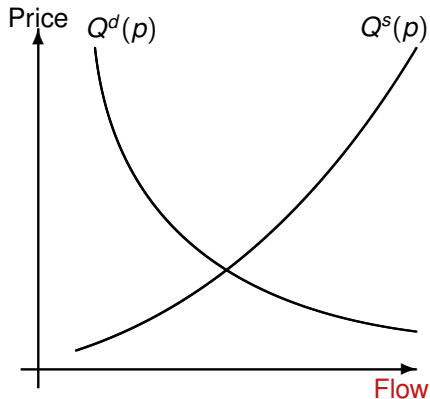


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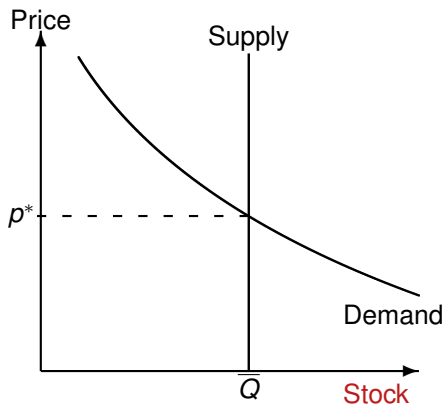


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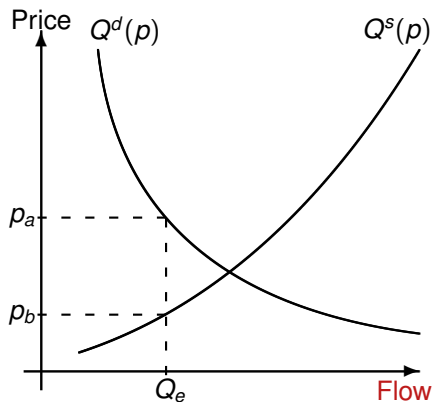


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The "stock" approach to market equilibrium.



The "flow" approach to market equilibrium.

Quote-driven markets

- ▶ Dealers quote bid and ask prices at which they will buy and sell.
- ▶ Quote driven markets need a mechanism for publicising dealers' price quotations and guaranteeing settlement
- ▶ But otherwise don't need much formal organisation.
- ▶ Trades take place sequentially so that transaction prices depend on whether a sale or purchase occurs.

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Order-driven markets

- ▶ **Order-driven markets: sometimes known as ‘agency’ or ‘auction’ markets.**
- ▶ Public investors issue instructions to buy or sell according to specified conditions, perhaps at a given price.
- ▶ Example: ‘limit order’:
an order to buy (sell) if the asset price is no greater than (no lower than) a specified ‘limit’ value.
- ▶ Call markets: prices set at discrete points of time perhaps as a result of an auction.
- ▶ Continuous auction market: orders to buy or sell are entered in a ‘limit order book’
– orders are matched automatically according to a rule determined by the exchange.

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Order- & quote- driven markets compared

- ▶ **Criteria for comparison: liquidity and transparency.**
- ▶ Liquidity: 'interchangeability of assets and money'
- ▶ Transparency: ability to observe recent trades (prices and quantities).
- ▶ Quote driven markets: more liquid but less transparent than order driven markets.
- ▶ Are liquidity and transparency always desirable?
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Industrial Organisation of Financial Markets

- ▶ **Main types of control of markets:**
 - 1 Mutually owned (members' co-operatives)
 - 2 Shareholder owned companies
- ▶ Forces for change:
 - 1 advances in information technology;
 - 2 regulatory reform – liberalization – in financial markets
- ▶ Trend is from mutually owned towards shareholder companies, then for the companies to merge or to be taken-over.

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Regulation and competition

- ▶ Regulation: often **self-regulation**.
 - ▶ For whose benefit?
 - members of the public or members of the exchange?
 - ▶ Supposed to benefit members of the public
 - ▶ But may restrict competition
 - thus benefiting the members of the exchange.
- ▶ Competition within exchanges is often restricted
 - ▶ by imposing capital guarantees
 - ▶ by designating monopoly specialists
 - ▶ restricting off-floor trading.
- ▶ Competition between exchanges:
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Asset prices in a call market

▶ Kyle divides investors into 3 groups:

- 1 Informed investors
- 2 Uninformed investors ('noise traders')
- 3 Market makers (who set prices).

- ▶ Market makers observe aggregate demand but not the identity of each trader
- ▶ Hence, the market price reflects information, but only partially because of the informational asymmetry.
- ▶ Kyle's solution:

$$p(y) = \mu_v + 2 \frac{\sigma_v}{\sigma_u} y, \quad x(v) = \frac{\sigma_u}{\sigma_v} (v - \mu_v). \quad (1)$$

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Kyle's model: implications

- ▶ Asymmetry of information generates trade.
- ▶ When the informed trader is 'important', (σ_v large relative to σ_u) price is very sensitive to aggregate demand but the informed trader restricts the volume of trade.
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Bid-ask spreads: inventory-based models

▶ **Main influences on bid-ask spread:**

- 1 Dealers' costs of holding inventories
- 2 Dealers' market power (power to influence prices)
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▶ **Two implications:**

- 1 Changes in transactions prices are negatively correlated: increases tend to be followed by falls
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- ▶ Hence, market-makers quote ask prices higher than bid prices to compensate for their imperfect information.

Bid-ask spreads: information-based models (1)

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Bid-ask spreads: information-based models (2)

- ▶ As time passes, market-makers learn about the proportion of informed investors in the market.
- ▶ Implications:
 - Transaction prices follow a martingale.
 - Market-makers beliefs eventually converge to the 'true' distribution of the asset value.
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Summary

- 1** Markets enable price discovery, they provide a trading mechanism and support settlement of contracts.
- 2 Two main mechanisms: quote-driven and order-driven markets.
- 3 Industrial organisation: there may be a trade-off between competition and quality of service.
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- 5 Inventory approach emphasizes costs of doing business on bid-ask spreads.
- 6 Information approach emphasizes importance of asymmetric information.

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