Andreas Krause

Trading with informed investors

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Outline

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Traders in the market

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▶ A number of traders receive information about the future value of an asset

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Traders in the market

- A number of traders receive information about the future value of an asset
- Before the information is publicly revealed, they can make a several of trades
- Informed traders are choosing their trades as to maximize their total profits

Informed traders
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Market efficiency
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Traders in the market

- A number of traders receive information about the future value of an asset
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- Informed traders are choosing their trades as to maximize their total profits
- In addition, noise traders are trading for exogenous reasons without optimizing their behaviour

Traders in the market

- ▶ A number of traders receive information about the future value of an asset
- ▶ Before the information is publicly revealed, they can make a several of trades
- ▶ Informed traders are choosing their trades as to maximize their total profits
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Price determination

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Price determination

▶ The information is only known to informed investors

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Price determination

▶ The information is only known to informed investors, other investors can only observe orders that have been submitted

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Price determination

- ▶ The information is only known to informed investors, other investors can only observe orders that have been submitted
- ▶ Whether an order originates from an informed trader or noise trader is not known

Price determination

- The information is only known to informed investors, other investors can only observe orders that have been submitted
- Whether an order originates from an informed trader or noise trader is not known
- Prices are set such that it reflects the value based the information from the total demand over time demand of the informed traders and noise traders
- $P_t = \mathsf{E}\left[V | \sum_{\tau=1}^{N} Q_\tau + \sum_{\tau=1}^{M} U_\tau\right]$

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- We assume prices are linear in the total demand

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- ▶ $P_t = \mu_t + \lambda_t \left(\sum_{\tau=1}^{N} Q_\tau + \sum_{\tau=1}^{M} U_\tau\right)$

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Order determination for informed traders

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Order determination for informed traders

▶ Profits from a trade arise from the difference between the asset value and the price paid

▶ $\Pi_t^i = (V - P_t)$

Order determination for informed traders

▶ Profits from a trade arise from the difference between the asset value and the price paid, for each asset traded

▶ $\Pi_t^i = (V - P_t) Q_t^i$

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Order determination for informed traders

▶ Profits from a trade arise from the difference between the asset value and the price paid, for each asset traded, plus any future profits the traders will receive

▶ $\Pi_t^i = (V - P_t) \, Q_t^i + \Pi_{t+1}^i$

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- ▶ $Q_t^i = \alpha_t + \beta_t V$
- ▶ We assume that profits are quadratic in the difference between the value and price of the asset

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Solution of the model

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Solution of the model

► Informed investors will maximize their profits by choosing an optimal order size for each time period until the information is revealed publicly

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▶ $\lambda_t = \frac{N\beta_t \sigma_{t-1}^2}{N^2 \beta_t^2 \sigma_{t-1}^2 + t\sigma_U^2}$

$\beta_t = \frac{1 - 2\gamma_t \lambda_t}{\lambda_t(1 + N(1 - \gamma_t \lambda_t))}$

$\mu_t = P_{t-1}$

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Measuring market efficiency

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Measuring market efficiency

▶ Of interest is the variance of the value, given the price

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Measuring market efficiency

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Measuring market efficiency

- Of interest is the variance of the value, given the price
- $\sigma_t^2 = \mathsf{Var}\left[V|P_t\right] = \left(1 - N\lambda_t\beta_t\right)\sigma_{t-1}^2$
- This reflects the uncertainty an uninformed trader has about the value of the asset

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▶ This reflects the uncertainty an uninformed trader has about the value of the asset when observing the price

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▶ σ_0^2 is the uncertainty without any price information

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- ▶ This reflects the uncertainty an uninformed trader has about the value of the asset when observing the price
- ▶ σ_0^2 is the uncertainty without any price information
- ▶ We can interpret $1 - \frac{\sigma_t^2}{\sigma_0^2}$ as a measure of market efficiency

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- ▶ σ_0^2 is the uncertainty without any price information
- ▶ We can interpret $1 - \frac{\sigma_t^2}{\sigma_0^2}$ as a measure of market efficiency
- ▶ If the variance on observing the price does not reduce, $\sigma_t^2 = \sigma_0^2$, the market is inefficient
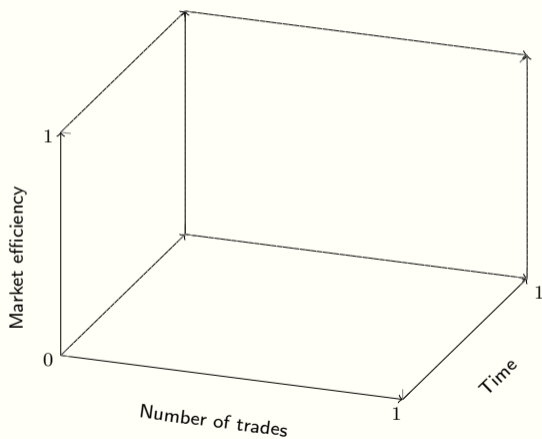
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▶ If the variance on observing the price does not reduce, $\sigma_t^2 = \sigma_0^2$, the market is inefficient

▶ If the variance on observing the price is zero, $\sigma_t^2 = 0$, the market is perfectly efficient

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Measuring market efficiency

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▶ We can interpret $1 - \frac{\sigma_t^2}{\sigma_0^2}$ as a measure of market efficiency

▶ If the variance on observing the price does not reduce, $\sigma_t^2 = \sigma_0^2$, the market is inefficient

▶ If the variance on observing the price is zero, $\sigma_t^2 = 0$, the market is perfectly efficient

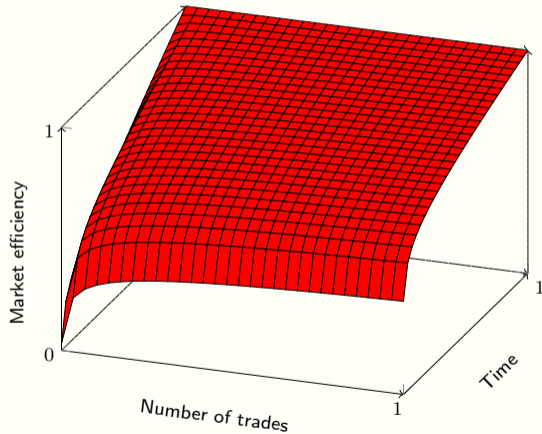Informed traders
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Few informed investors

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Few informed investors and many informed investors

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Market efficiency develops over time

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Market efficiency develops over time

▶ Markets become efficient over time as information is incorporated into prices

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Market efficiency develops over time

▶ Markets become efficient over time as information is incorporated into prices with each trade informed traders conduct

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Market efficiency develops over time

▶ Markets become efficient over time as information is incorporated into prices with each trade informed traders conduct

▶ Informed investors trade strategically

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Market efficiency develops over time

► Markets become efficient over time as information is incorporated into prices with each trade informed traders conduct

► Informed investors trade strategically and hide their trades among the random trades of noise traders

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Market efficiency develops over time

▶ Markets become efficient over time as information is incorporated into prices with each trade informed traders conduct

▶ Informed investors trade strategically and hide their trades among the random trades of noise traders

▶ Uninformed market participants do not know whether the demand is from noise traders or informed traders

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Market efficiency develops over time

▶ Markets become efficient over time as information is incorporated into prices with each trade informed traders conduct

▶ Informed investors trade strategically and hide their trades among the random trades of noise traders

▶ Uninformed market participants do not know whether the demand is from noise traders or informed traders

▶ The larger the demand, the less likely it is from noise traders

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Summary
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Market efficiency develops over time

▶ Markets become efficient over time as information is incorporated into prices with each trade informed traders conduct

▶ Informed investors trade strategically and hide their trades among the random trades of noise traders

▶ Uninformed market participants do not know whether the demand is from noise traders or informed traders

▶ The larger the demand, the less likely it is from noise traders, and hence the more the price would be adjusted

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Market efficiency develops over time

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▶ The larger the demand, the less likely it is from noise traders, and hence the more the price would be adjusted

▶ This reduces the profits of informed traders

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Market efficiency develops over time

- ▶ Markets become efficient over time as information is incorporated into prices with each trade informed traders conduct
- ▶ Informed investors trade strategically and hide their trades among the random trades of noise traders
- ▶ Uninformed market participants do not know whether the demand is from noise traders or informed traders
- ▶ The larger the demand, the less likely it is from noise traders, and hence the more the price would be adjusted
- ▶ This reduces the profits of informed traders and they will submit smaller orders

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Market efficiency develops over time

▶ Markets become efficient over time as information is incorporated into prices with each trade informed traders conduct

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▶ Uninformed market participants do not know whether the demand is from noise traders or informed traders

▶ The larger the demand, the less likely it is from noise traders, and hence the more the price would be adjusted

▶ This reduces the profits of informed traders and they will submit smaller orders

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More frequent trading increases market efficiency

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More frequent trading increases market efficiency

▶ If informed investors can trade more frequently, the market will be more efficient more quickly

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More frequent trading increases market efficiency

▶ If informed investors can trade more frequently, the market will be more efficient more quickly

▶ With more frequent trades, there is more information available at any time

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More frequent trading increases market efficiency

► If informed investors can trade more frequently, the market will be more efficient more quickly

► With more frequent trades, there is more information available at any time and the market incorporates this information more quickly into the price

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More frequent trading increases market efficiency

▶ If informed investors can trade more frequently, the market will be more efficient more quickly

▶ With more frequent trades, there is more information available at any time and the market incorporates this information more quickly into the price

▶ Informed traders will spread their trades over time optimally

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More frequent trading increases market efficiency

▶ If informed investors can trade more frequently, the market will be more efficient more quickly

▶ With more frequent trades, there is more information available at any time and the market incorporates this information more quickly into the price

▶ Informed traders will spread their trades over time optimally, but at any given point of time will trade more

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More frequent trading increases market efficiency

- If informed investors can trade more frequently, the market will be more efficient more quickly
- With more frequent trades, there is more information available at any time and the market incorporates this information more quickly into the price
- Informed traders will spread their trades over time optimally, but at any given point of time will trade more

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increases market efficiency

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increases market efficiency

▶ Informed traders obtain an informational advantage over noise traders

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increases market efficiency

► Informed traders obtain an informational advantage over noise traders and will exploit this advantage like an oligopoly

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increases market efficiency

▶ Informed traders obtain an informational advantage over noise traders and will exploit this advantage like an oligopoly

▶ The more informed traders are in the market, the more they will compete with each other

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increases market efficiency

▶ Informed traders obtain an informational advantage over noise traders and will exploit this advantage like an oligopoly

▶ The more informed traders are in the market, the more they will compete with each other

▶ This competition leads to traders submitting larger orders to obtain more profits now

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increases market efficiency

▶ Informed traders obtain an informational advantage over noise traders and will exploit this advantage like an oligopoly

▶ The more informed traders are in the market, the more they will compete with each other

▶ This competition leads to traders submitting larger orders to obtain more profits now, given that other traders can reduce future profits by submitting larger order now

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increases market efficiency

▶ Informed traders obtain an informational advantage over noise traders and will exploit this advantage like an oligopoly

▶ The more informed traders are in the market, the more they will compete with each other

▶ This competition leads to traders submitting larger orders to obtain more profits now, given that other traders can reduce future profits by submitting larger order now

▶ Submitting larger orders now implies that the observed demand is more likely to come from informed traders

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increases market efficiency

▶ Informed traders obtain an informational advantage over noise traders and will exploit this advantage like an oligopoly

▶ The more informed traders are in the market, the more they will compete with each other

▶ This competition leads to traders submitting larger orders to obtain more profits now, given that other traders can reduce future profits by submitting larger order now

▶ Submitting larger orders now implies that the observed demand is more likely to come from informed traders, revealing information

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increases market efficiency

▶ Informed traders obtain an informational advantage over noise traders and will exploit this advantage like an oligopoly

▶ The more informed traders are in the market, the more they will compete with each other

▶ This competition leads to traders submitting larger orders to obtain more profits now, given that other traders can reduce future profits by submitting larger order now

▶ Submitting larger orders now implies that the observed demand is more likely to come from informed traders, revealing information and adjusting the price more

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increases market efficiency

- ▶ Informed traders obtain an informational advantage over noise traders and will exploit this advantage like an oligopoly
- ▶ The more informed traders are in the market, the more they will compete with each other
- ▶ This competition leads to traders submitting larger orders to obtain more profits now, given that other traders can reduce future profits by submitting larger order now
- ▶ Submitting larger orders now implies that the observed demand is more likely to come from informed traders, revealing information and adjusting the price more
- ▶ This also reduces future profits as the price adjusts more

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increases market efficiency

▶ Informed traders obtain an informational advantage over noise traders and will exploit this advantage like an oligopoly

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▶ This competition leads to traders submitting larger orders to obtain more profits now, given that other traders can reduce future profits by submitting larger order now

▶ Submitting larger orders now implies that the observed demand is more likely to come from informed traders, revealing information and adjusting the price more

▶ This also reduces future profits as the price adjusts more

▶ The increased competition between more informed traders increases demand

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increases market efficiency

- ▶ Informed traders obtain an informational advantage over noise traders and will exploit this advantage like an oligopoly
- ▶ The more informed traders are in the market, the more they will compete with each other
- ▶ This competition leads to traders submitting larger orders to obtain more profits now, given that other traders can reduce future profits by submitting larger order now
- ▶ Submitting larger orders now implies that the observed demand is more likely to come from informed traders, revealing information and adjusting the price more
- ▶ This also reduces future profits as the price adjusts more
- ▶ The increased competition between more informed traders increases demand and markets become more efficient

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increases market efficiency

▶ Informed traders obtain an informational advantage over noise traders and will exploit this advantage like an oligopoly

▶ The more informed traders are in the market, the more they will compete with each other

▶ This competition leads to traders submitting larger orders to obtain more profits now, given that other traders can reduce future profits by submitting larger order now

▶ Submitting larger orders now implies that the observed demand is more likely to come from informed traders, revealing information and adjusting the price more

▶ This also reduces future profits as the price adjusts more

▶ The increased competition between more informed traders increases demand and markets become more efficient

▶ If competition was perfect, markets would be instantly efficient

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increases market efficiency

► Informed traders obtain an informational advantage over noise traders and will exploit this advantage like an oligopoly

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► This also reduces future profits as the price adjusts more

► The increased competition between more informed traders increases demand and markets become more efficient

► If competition was perfect, markets would be instantly efficient

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

▶ The amount of noise trading and asymmetric information does not affect market efficiency

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

- ▶ The amount of noise trading and asymmetric information does not affect market efficiency
- ▶ More noise trading allows informed traders to hide their orders better

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

▶ The amount of noise trading and asymmetric information does not affect market efficiency

▶ More noise trading allows informed traders to hide their orders better and the market should be come less efficient as less information is revealed

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

► The amount of noise trading and asymmetric information does not affect market efficiency

► More noise trading allows informed traders to hide their orders better and the market should be come less efficient as less information is revealed

► Informed traders compensate for this by submitting larger orders

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

- ▶ The amount of noise trading and asymmetric information does not affect market efficiency
- ▶ More noise trading allows informed traders to hide their orders better and the market should be come less efficient as less information is revealed
- ▶ Informed traders compensate for this by submitting larger orders, offsetting the effect of more noise traders

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

▶ The amount of noise trading and asymmetric information does not affect market efficiency

▶ More noise trading allows informed traders to hide their orders better and the market should be come less efficient as less information is revealed

▶ Informed traders compensate for this by submitting larger orders, offsetting the effect of more noise traders

▶ Markets with higher asymmetric information, a higher initial variance of the value, will see larger trades by informed investors

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

▶ The amount of noise trading and asymmetric information does not affect market efficiency

▶ More noise trading allows informed traders to hide their orders better and the market should be come less efficient as less information is revealed

▶ Informed traders compensate for this by submitting larger orders, offsetting the effect of more noise traders

▶ Markets with higher asymmetric information, a higher initial variance of the value, will see larger trades by informed investors

▶ This implies that prices will adjust more

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

▶ The amount of noise trading and asymmetric information does not affect market efficiency

▶ More noise trading allows informed traders to hide their orders better and the market should be come less efficient as less information is revealed

▶ Informed traders compensate for this by submitting larger orders, offsetting the effect of more noise traders

▶ Markets with higher asymmetric information, a higher initial variance of the value, will see larger trades by informed investors

▶ This implies that prices will adjust more, giving rise to the same market efficiency

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

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▶ Markets with higher asymmetric information, a higher initial variance of the value, will see larger trades by informed investors

▶ This implies that prices will adjust more, giving rise to the same market efficiency

Informed traders

Market efficiency

Market liquidity

Summary

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Measuring liquidity

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Measuring liquidity

▶ A noise trader submitting an order will affect the price as it is not known whether he is informed or not

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Measuring liquidity

▶ A noise trader submitting an order will affect the price as it is not known whether he is informed or not

▶ The amount by which prices move when uninformed traders submit orders is referred as market liquidity

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Measuring liquidity

► A noise trader submitting an order will affect the price as it is not known whether he is informed or not

► The amount by which prices move when uninformed traders submit orders is referred as market liquidity

► This market liquidity was captures by the parameter $\lambda_t = \frac{N\beta_t\sigma_{t-1}^2}{N^2\beta_t^2\sigma_{t-1}^2 + t\sigma_U^2}$

Informed traders
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Market efficiency
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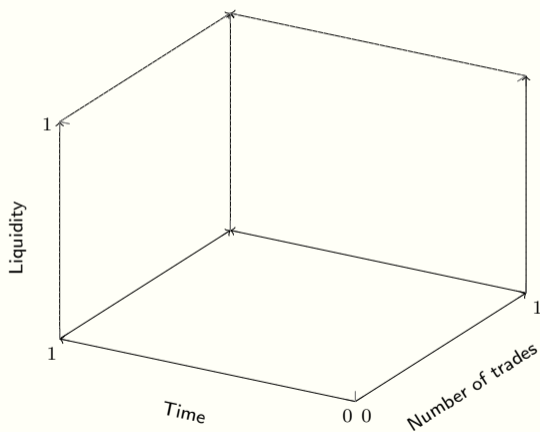Market liquidity
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Summary
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Measuring liquidity

▶ A noise trader submitting an order will affect the price as it is not known whether he is informed or not

▶ The amount by which prices move when uninformed traders submit orders is referred as market liquidity

▶ This market liquidity was captures by the parameter $\lambda_t = \frac{N\beta_t\sigma_{t-1}^2}{N^2\beta_t^2\sigma_{t-1}^2+t\sigma_U^2}$

▶ It measures how much the price changes per unit of demand by traders

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Measuring liquidity

- A noise trader submitting an order will affect the price as it is not known whether he is informed or not

- The amount by which prices move when uninformed traders submit orders is referred as market liquidity

- This market liquidity was captures by the parameter $\lambda_t = \frac{N\beta_t\sigma_{t-1}^2}{N^2\beta_t^2\sigma_{t-1}^2+t\sigma_U^2}$

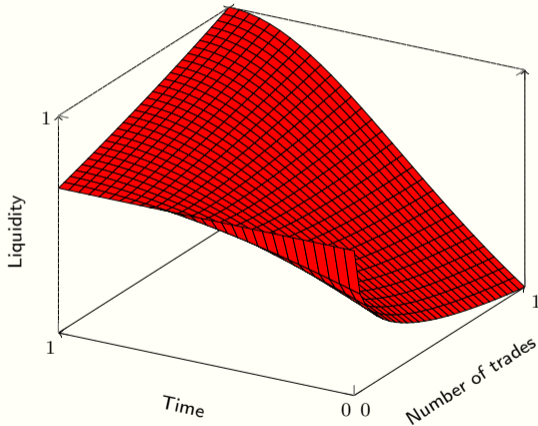- It measures how much the price changes per unit of demand by traders

Informed traders
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Market efficiency
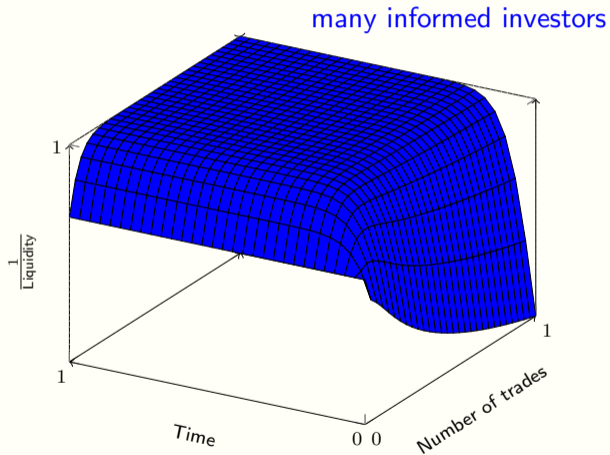ooooooo

Market liquidity
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Summary
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Market liquidity

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Market liquidity

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Market liquidity

Few informed investors

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Market liquidity

many informed investors

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Market liquidity

Few informed investors and many informed investors

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Markets become more liquid over time

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Markets become more liquid over time

▶ Market liquidity increases over time as λ_t reduces

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Markets become more liquid over time

▶ Market liquidity increases over time as λ_t reduces

▶ Potential losses from trading with informed traders are selling undervalued assets

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Markets become more liquid over time

- ▶ Market liquidity increases over time as λ_t reduces
- ▶ Potential losses from trading with informed traders are selling undervalued assets or purchasing overvalued assets

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Markets become more liquid over time

- Market liquidity increases over time as λ_t reduces
- Potential losses from trading with informed traders are selling undervalued assets or purchasing overvalued assets
- With more information being available and the market becoming more efficient, this risk reduces

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Markets become more liquid over time

- Market liquidity increases over time as λ_t reduces
- Potential losses from trading with informed traders are selling undervalued assets or purchasing overvalued assets
- With more information being available and the market becoming more efficient, this risk reduces
- Uninformed investors will adjust their expected value of the asset less

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Markets become more liquid over time

- Market liquidity increases over time as λ_t reduces
- Potential losses from trading with informed traders are selling undervalued assets or purchasing overvalued assets
- With more information being available and the market becoming more efficient, this risk reduces
- Uninformed investors will adjust their expected value of the asset less, and hence the price adjusts less

Markets become more liquid over time

- Market liquidity increases over time as λ_t reduces
- Potential losses from trading with informed traders are selling undervalued assets or purchasing overvalued assets
- With more information being available and the market becoming more efficient, this risk reduces
- Uninformed investors will adjust their expected value of the asset less, and hence the price adjusts less, as they must get closer to the value of the asset

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Markets become more liquid over time

▶ Market liquidity increases over time as λ_t reduces

▶ Potential losses from trading with informed traders are selling undervalued assets or purchasing overvalued assets

▶ With more information being available and the market becoming more efficient, this risk reduces

▶ Uninformed investors will adjust their expected value of the asset less, and hence the price adjusts less, as they must get closer to the value of the asset

▶ With prices adjusting less to demand, the market becomes more liquid

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Markets become more liquid over time

▶ Market liquidity increases over time as λ_t reduces

▶ Potential losses from trading with informed traders are selling undervalued assets or purchasing overvalued assets

▶ With more information being available and the market becoming more efficient, this risk reduces

▶ Uninformed investors will adjust their expected value of the asset less, and hence the price adjusts less, as they must get closer to the value of the asset

▶ With prices adjusting less to demand, the market becomes more liquid

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The effect of the number of trades

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The effect of the number of trades

▶ If informed traders can trade more frequently, this will initially reduce the liquidity of the market

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The effect of the number of trades

▶ If informed traders can trade more frequently, this will initially reduce the liquidity of the market

▶ Informed traders have more opportunities to obtain profits from trading

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The effect of the number of trades

▶ If informed traders can trade more frequently, this will initially reduce the liquidity of the market

▶ Informed traders have more opportunities to obtain profits from trading and will trade less aggressively

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The effect of the number of trades

▶ If informed traders can trade more frequently, this will initially reduce the liquidity of the market

▶ Informed traders have more opportunities to obtain profits from trading and will trade less aggressively

▶ This makes the market less efficient

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The effect of the number of trades

▶ If informed traders can trade more frequently, this will initially reduce the liquidity of the market

▶ Informed traders have more opportunities to obtain profits from trading and will trade less aggressively

▶ This makes the market less efficient and the higher asymmetric information will reduce the liquidity of the market

The effect of the number of trades

▶ If informed traders can trade more frequently, this will initially reduce the liquidity of the market

▶ Informed traders have more opportunities to obtain profits from trading and will trade less aggressively

▶ This makes the market less efficient and the higher asymmetric information will reduce the liquidity of the market

▶ Over time, more frequent trades accumulate more information

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The effect of the number of trades

▶ If informed traders can trade more frequently, this will initially reduce the liquidity of the market

▶ Informed traders have more opportunities to obtain profits from trading and will trade less aggressively

▶ This makes the market less efficient and the higher asymmetric information will reduce the liquidity of the market

▶ Over time, more frequent trades accumulate more information, market efficiency increases

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The effect of the number of trades

▶ If informed traders can trade more frequently, this will initially reduce the liquidity of the market

▶ Informed traders have more opportunities to obtain profits from trading and will trade less aggressively

▶ This makes the market less efficient and the higher asymmetric information will reduce the liquidity of the market

▶ Over time, more frequent trades accumulate more information, market efficiency increases and liquidity improves the more trades are conducted

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The effect of the number of trades

- ▶ If informed traders can trade more frequently, this will initially reduce the liquidity of the market
- ▶ Informed traders have more opportunities to obtain profits from trading and will trade less aggressively
- ▶ This makes the market less efficient and the higher asymmetric information will reduce the liquidity of the market
- ▶ Over time, more frequent trades accumulate more information, market efficiency increases and liquidity improves the more trades are conducted

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increase liquidity

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increase liquidity

▶ More competition between informed traders increases informed trading and reduces liquidity

Informed traders
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Market efficiency
ooooooo

Market liquidity
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Summary
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More informed traders increase liquidity

▶ More competition between informed traders increases informed trading and reduces liquidity

▶ With information being revealed quickly through competition, asymmetric information reduces quickly as well

More informed traders increase liquidity

- More competition between informed traders increases informed trading and reduces liquidity
- With information being revealed quickly through competition, asymmetric information reduces quickly as well
- This allows liquidity to increase much faster than with fewer informed traders

Informed traders
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Market efficiency
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Market liquidity
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Summary
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More informed traders increase liquidity

- ▶ More competition between informed traders increases informed trading and reduces liquidity
- ▶ With information being revealed quickly through competition, asymmetric information reduces quickly as well
- ▶ This allows liquidity to increase much faster than with fewer informed traders

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

Informed traders
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Market efficiency
ooooooo

Market liquidity
oooooo●

Summary
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The impact of noise trading and asymmetric information

▶ Markets with more noise trading are more liquid

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

▶ Markets with more noise trading are more liquid as informed traders are less dominating the market

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

▶ Markets with more noise trading are more liquid as informed traders are less dominating the market

▶ Even though they submit larger orders in consequence, this does not fully compensate for this effect

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

▶ Markets with more noise trading are more liquid as informed traders are less dominating the market

▶ Even though they submit larger orders in consequence, this does not fully compensate for this effect

▶ Markets with higher asymmetric information, a higher initial variance of the value, will be less liquid

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

▶ Markets with more noise trading are more liquid as informed traders are less dominating the market

▶ Even though they submit larger orders in consequence, this does not fully compensate for this effect

▶ Markets with higher asymmetric information, a higher initial variance of the value, will be less liquid

▶ The informational advantage of informed traders is higher

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

▶ Markets with more noise trading are more liquid as informed traders are less dominating the market

▶ Even though they submit larger orders in consequence, this does not fully compensate for this effect

▶ Markets with higher asymmetric information, a higher initial variance of the value, will be less liquid

▶ The informational advantage of informed traders is higher and they will submit larger orders

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

▶ Markets with more noise trading are more liquid as informed traders are less dominating the market

▶ Even though they submit larger orders in consequence, this does not fully compensate for this effect

▶ Markets with higher asymmetric information, a higher initial variance of the value, will be less liquid

▶ The informational advantage of informed traders is higher and they will submit larger orders

▶ With more informed trading, the likelihood of demand coming from them is increased

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

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▶ The informational advantage of informed traders is higher and they will submit larger orders

▶ With more informed trading, the likelihood of demand coming from them is increased and prices adjust more

Informed traders
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Market efficiency
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Market liquidity
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Summary
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The impact of noise trading and asymmetric information

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Informed traders
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Market efficiency
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Market liquidity
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Summary
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Informed traders

Market efficiency

Market liquidity

Summary

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Informational efficiency is not instant

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Informational efficiency is not instant

▶ Markets become efficient over time as information is included in the price trade-by-trade

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Informational efficiency is not instant

▶ Markets become efficient over time as information is included in the price trade-by-trade

▶ The more informed traders are present and the more they can trade, the more efficient markets are

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Informational efficiency is not instant

▶ Markets become efficient over time as information is included in the price trade-by-trade

▶ The more informed traders are present and the more they can trade, the more efficient markets are

▶ Informationally efficient markets are not possible instantly as informed investors will seek to exploit their informational advantage over time

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Informational efficiency is not instant

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Informed traders
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Market efficiency
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Market liquidity
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Summary
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Liquidity increases over time after an information event

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Liquidity increases over time after an information event

▶ The liquidity of a market can be used as a measure of the degree of informational asymmetry in the market

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Liquidity increases over time after an information event

- The liquidity of a market can be used as a measure of the degree of informational asymmetry in the market
- If prices react sensitively to orders, the liquidity is low and the market believes that informational asymmetry is high

Liquidity increases over time after an information event

▶ The liquidity of a market can be used as a measure of the degree of informational asymmetry in the market

▶ If prices react sensitively to orders, the liquidity is low and the market believes that informational asymmetry is high

▶ As information is included into the price over time, the liquidity of markets improves

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Liquidity increases over time after an information event

▶ The liquidity of a market can be used as a measure of the degree of informational asymmetry in the market

▶ If prices react sensitively to orders, the liquidity is low and the market believes that informational asymmetry is high

▶ As information is included into the price over time, the liquidity of markets improves

▶ Uninformed investors not wanting to adversely affect the price by their orders, might want to wait until market efficiency has improved before submitting any order

Informed traders
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Market efficiency
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Market liquidity
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Summary
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Liquidity increases over time after an information event

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