

The information content of trading volume

Information sources
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Fraction of informed traders
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Information precision
oooooo

Combined effect
oooooo

Summary
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Outline

- Information sources
- Fraction of informed traders
- Information precision
- Combined effect
- Summary

Information sources
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Fraction of informed traders
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Information precision
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Combined effect
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Summary
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■ Information sources

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Information sources
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Fraction of informed traders
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Information precision
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Combined effect
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Summary
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Uncertainties when trading

Information sources
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Fraction of informed traders
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Information precision
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Combined effect
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Summary
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Uncertainties when trading

- ▶ Traders face uncertainty about the **value** of the asset they are trading

Information sources
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Fraction of informed traders
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Information precision
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Combined effect
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Summary
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Uncertainties when trading

- ▶ Traders face uncertainty about the value of the asset they are trading and the amount of **noise trading**

Uncertainties when trading

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- ▶ **Some investors** will have obtained information about the value of the asset

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- ▶ Uninformed investors may also now know how **precise** the information is

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Trading volume as a source of information

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- ▶ It is common to use the **price** of an asset as an indication of the information some traders will have received

Trading volume as a source of information

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Signal and trading volume

Signal and trading volume

- ▶ The **further** the information that has been received **moves the value** of the asset from its current price, the larger the opportunities for profits by informed traders

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Increasing fraction of informed traders

Increasing fraction of informed traders

- ▶ If only **few traders are informed**, there will not be much informed trading

Increasing fraction of informed traders

- ▶ If only few traders are informed, there will not be much informed trading, but this will **increase** as more traders are informed

Increasing fraction of informed traders

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- ⇒ Trading volume will be **increasing** in the number of informed traders

Increasing fraction of informed traders

- ▶ If only few traders are informed, there will not be much informed trading, but this will increase as more traders are informed
- ⇒ Trading volume will be increasing in the number of informed traders
- ▶ As the number of informed traders **increases**, they will compete with each other

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- ⇒ Trading volume **initially increases** and **then decreases** as the number of informed traders increases

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Fraction of informed traders
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Information precision
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Combined effect
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Fraction of informed investors and trading volume

Information sources
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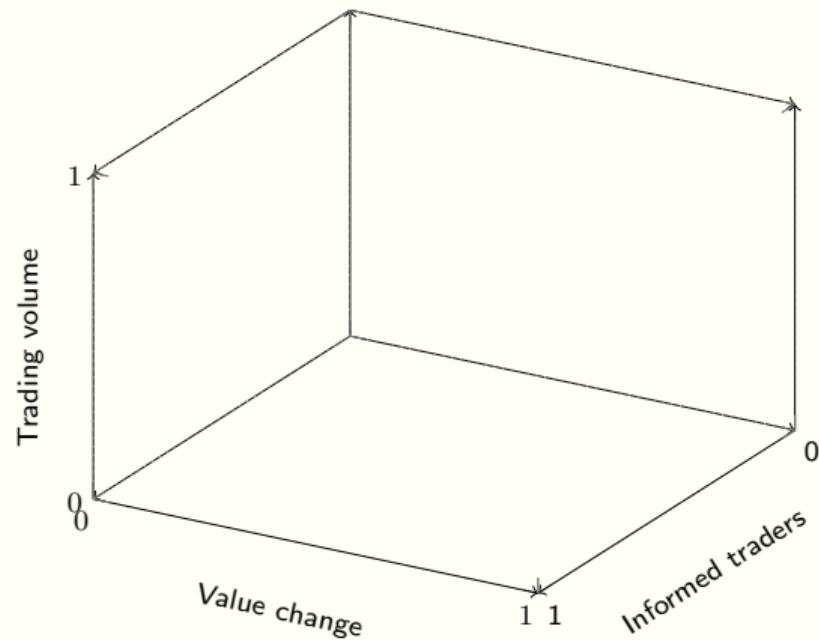
Fraction of informed traders
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Information precision
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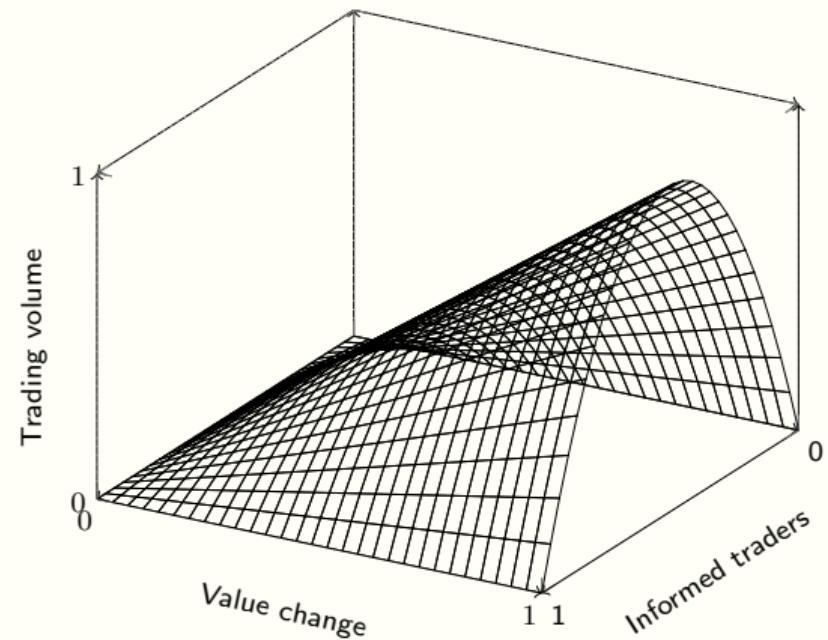
Combined effect
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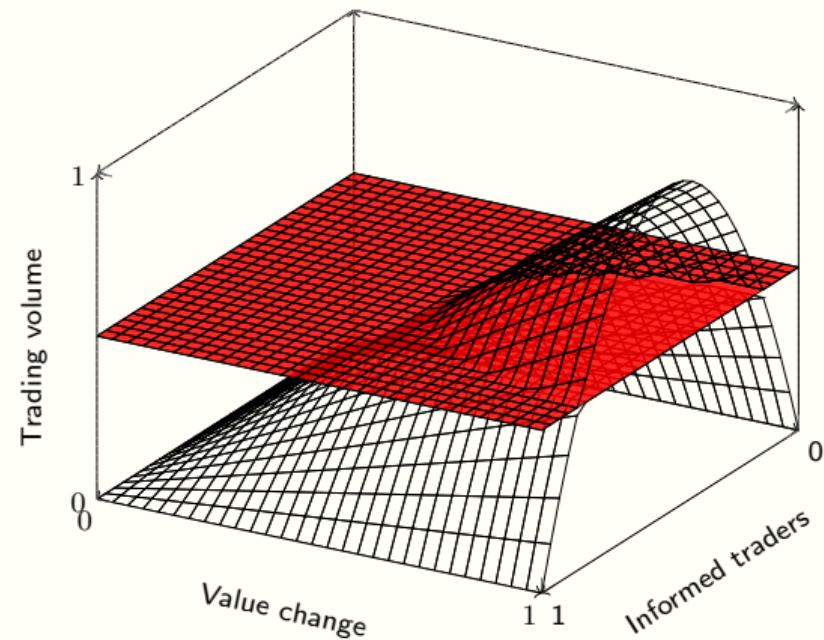
Fraction of informed investors and trading volume



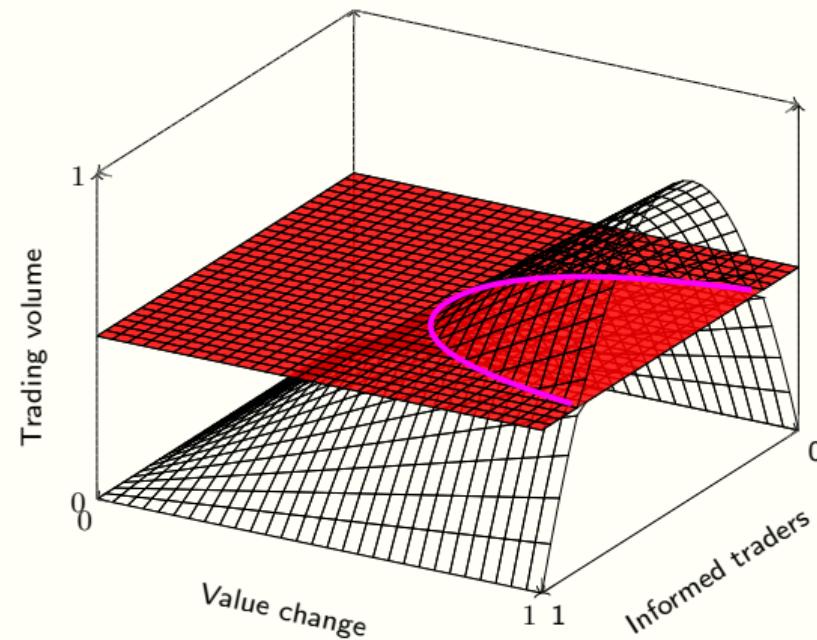
Fraction of informed investors and trading volume



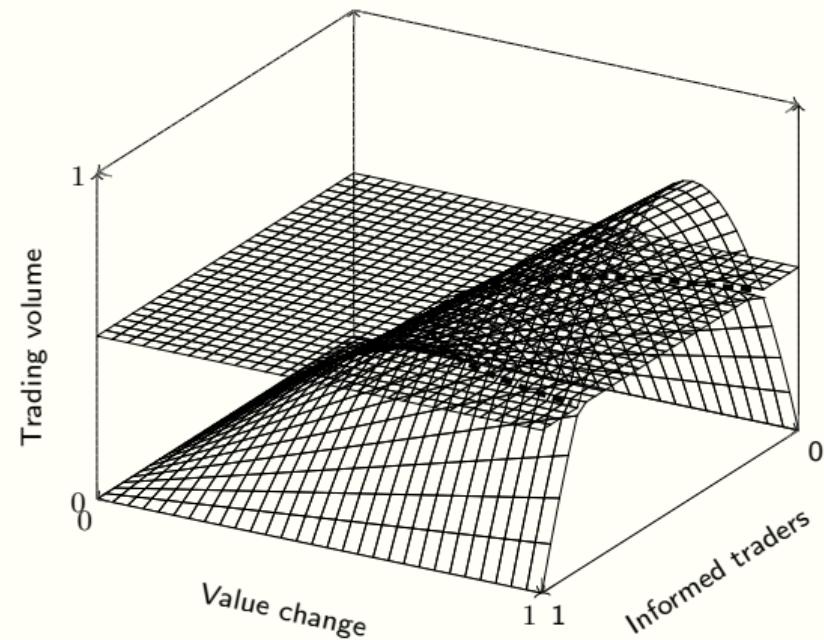
Fraction of informed investors and trading volume



Fraction of informed investors and trading volume



Fraction of informed investors and trading volume



Information sources
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Fraction of informed traders
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Information precision
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Combined effect
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Summary
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Inferring the fraction of informed investors

Information sources
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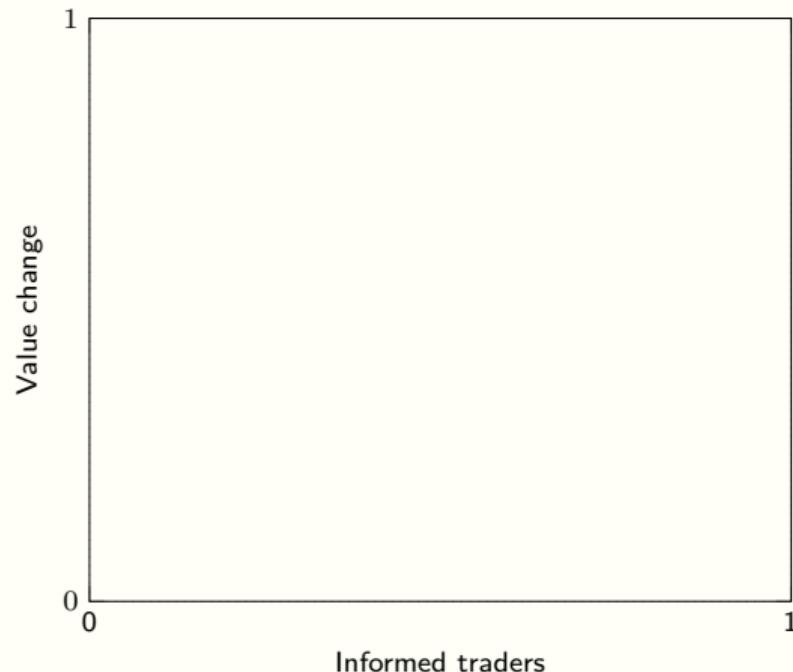
Fraction of informed traders
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Information precision
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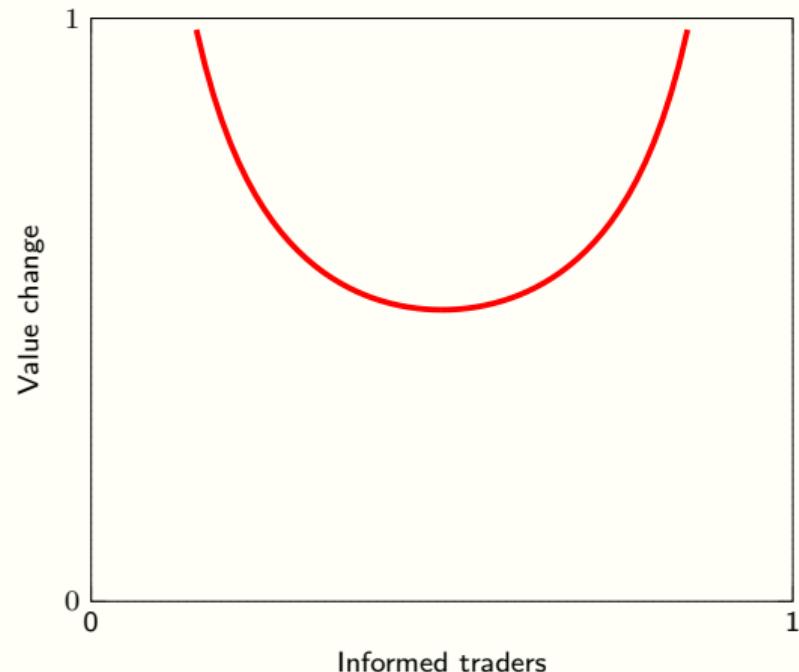
Combined effect
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Summary
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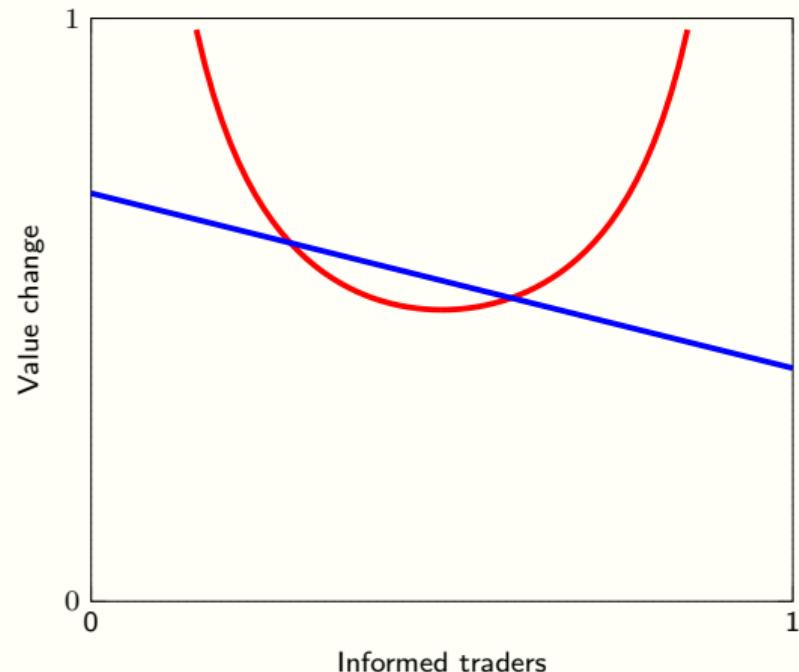
Inferring the fraction of informed investors



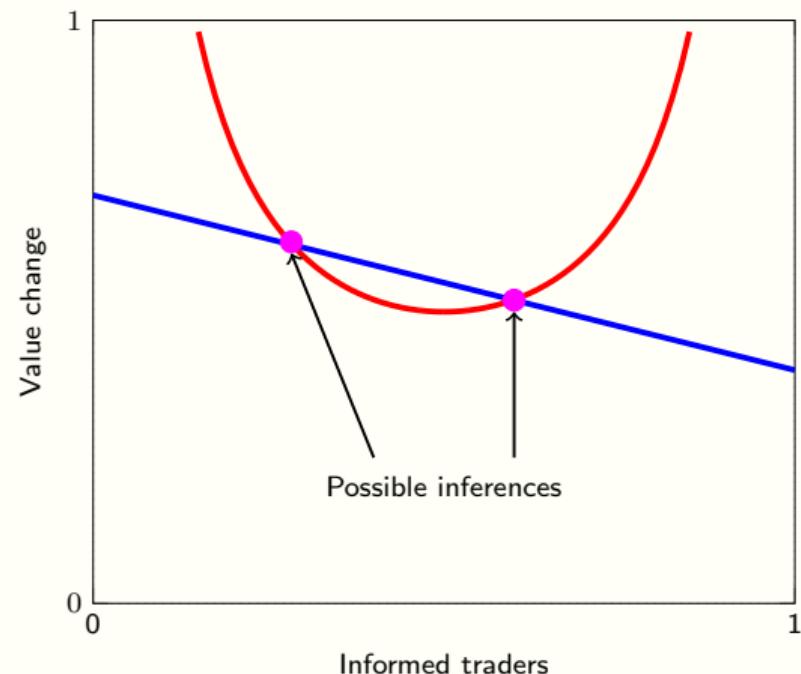
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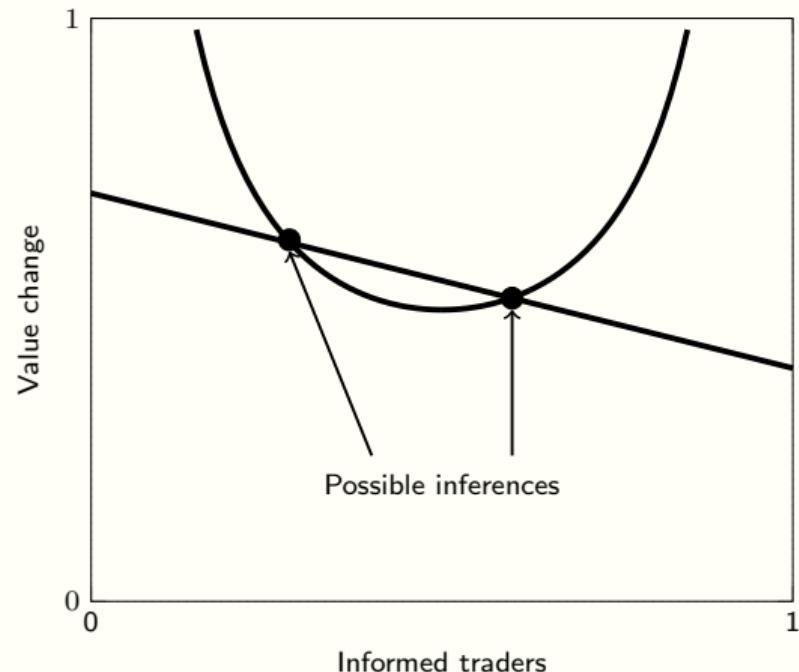
Inferring the fraction of informed investors



Inferring the fraction of informed investors



Inferring the fraction of informed investors



Information sources
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Fraction of informed traders
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Information precision
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Combined effect
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Summary
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Combining price and volume information

Combining price and volume information

- ▶ A given trading volume can be used to determine the possible fraction of informed traders **consistent with the change in the value** of the asset

Combining price and volume information

- ▶ A given trading volume can be used to determine the possible fraction of informed traders consistent with the change in the value of the asset
- ▶ Using the **price**, similar inferences can be made

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- ▶ Combining this information, inferences about the **fraction of informed traders** can be made

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Information sources
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Fraction of informed traders
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Information precision
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Combined effect
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Summary
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Increasing precision of information

Information sources
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Fraction of informed traders
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Information precision
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Combined effect
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Summary
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Increasing precision of information

- If information precision is **low**, informed traders will only be trading cautiously

Information sources
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Fraction of informed traders
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Information precision
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Combined effect
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Summary
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Increasing precision of information

- ▶ If information precision is low, informed traders will only be trading cautiously, there will **not** be **much informed trading**

Increasing precision of information

- ▶ If information precision is low, informed traders will only be trading cautiously, there will not be much informed trading, but this will **increase** as information precision increases

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- ▶ If information precision is low, informed traders will only be trading cautiously, there will not be much informed trading, but this will increase as information precision increases
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Increasing precision of information

- ▶ If information precision is low, informed traders will only be trading cautiously, there will not be much informed trading, but this will increase as information precision increases
- ⇒ Trading volume will be increasing in the information precision
- ▶ If information is imprecise, informed traders will **disagree** on the value

Increasing precision of information

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- ⇒ Trading volume will be increasing in the information precision
- ▶ If information is imprecise, informed traders will disagree on the value and will **trade with each other**

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- ⇒ Trading volume will be increasing in the information precision
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Information sources
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Fraction of informed traders
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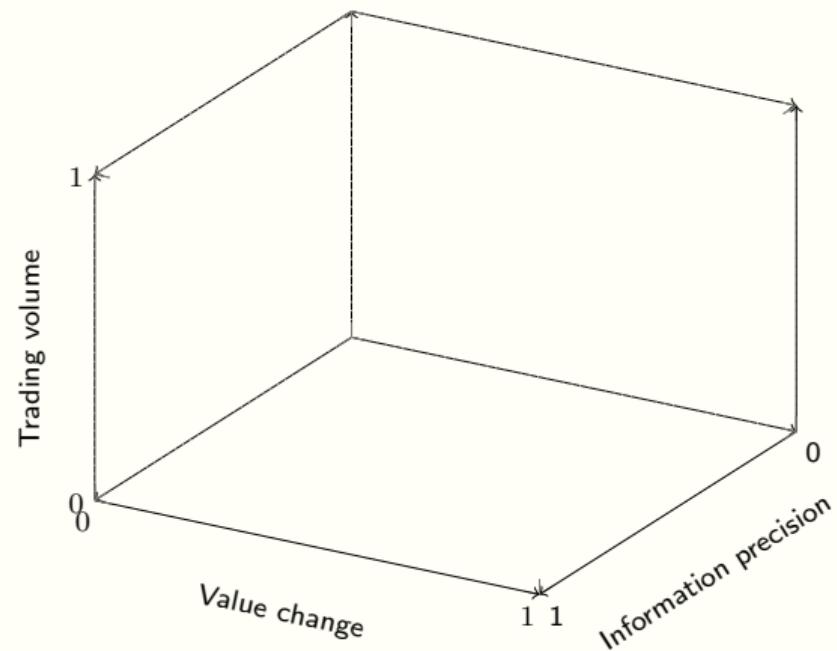
Information precision
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Combined effect
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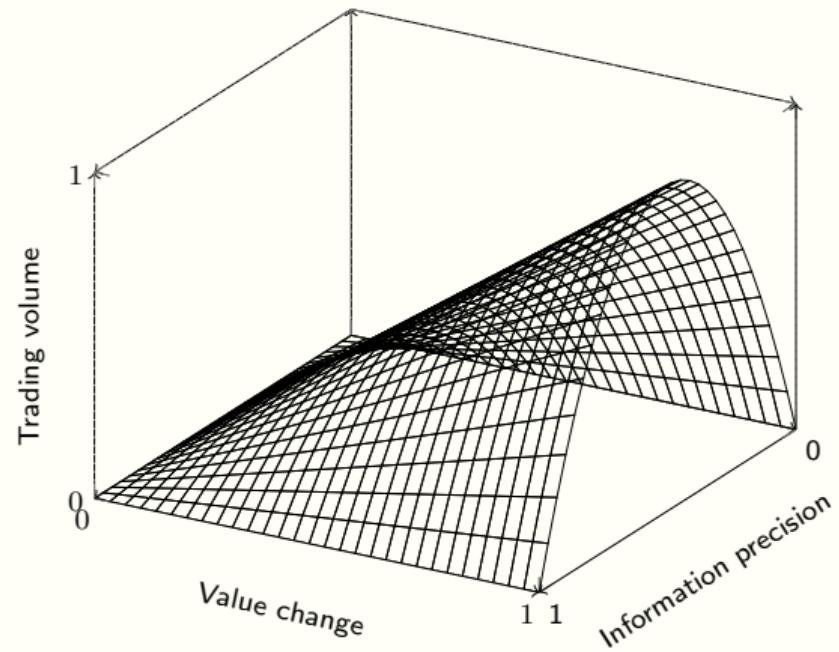
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Information precision and trading volume

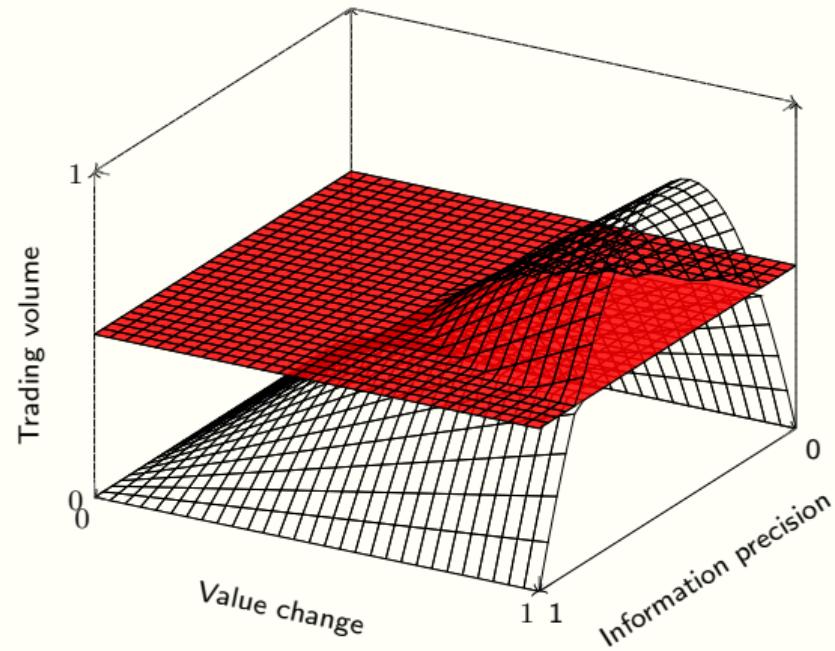
Information precision and trading volume



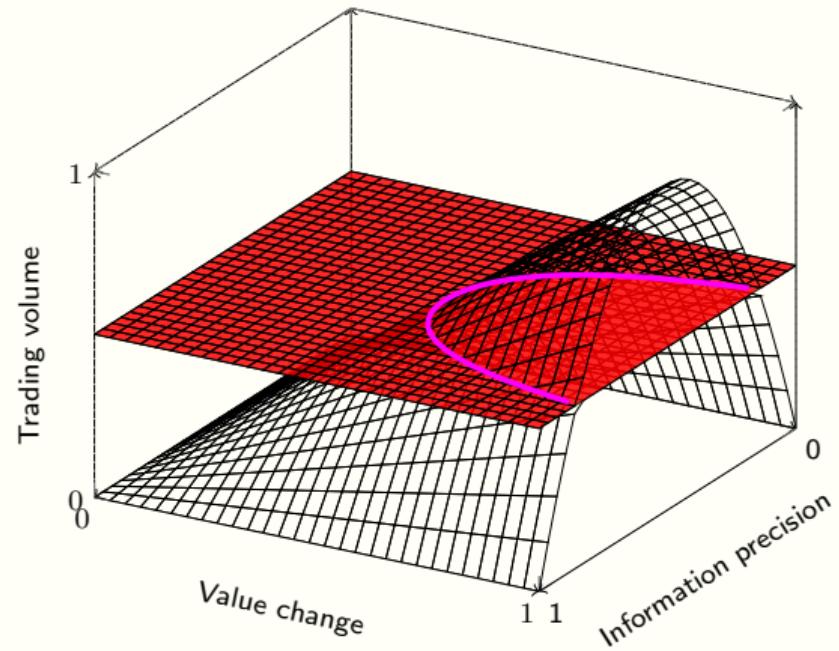
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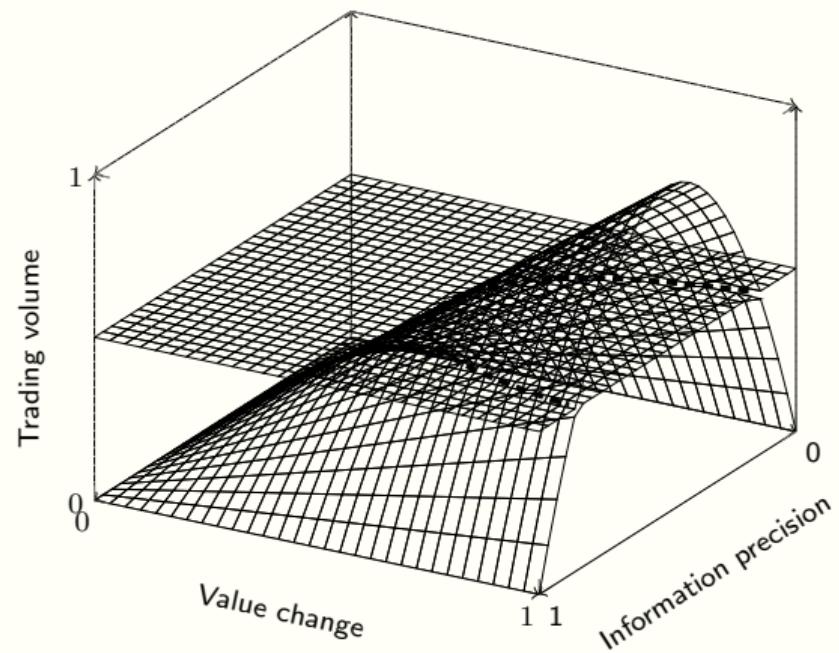
Information precision and trading volume



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Information sources
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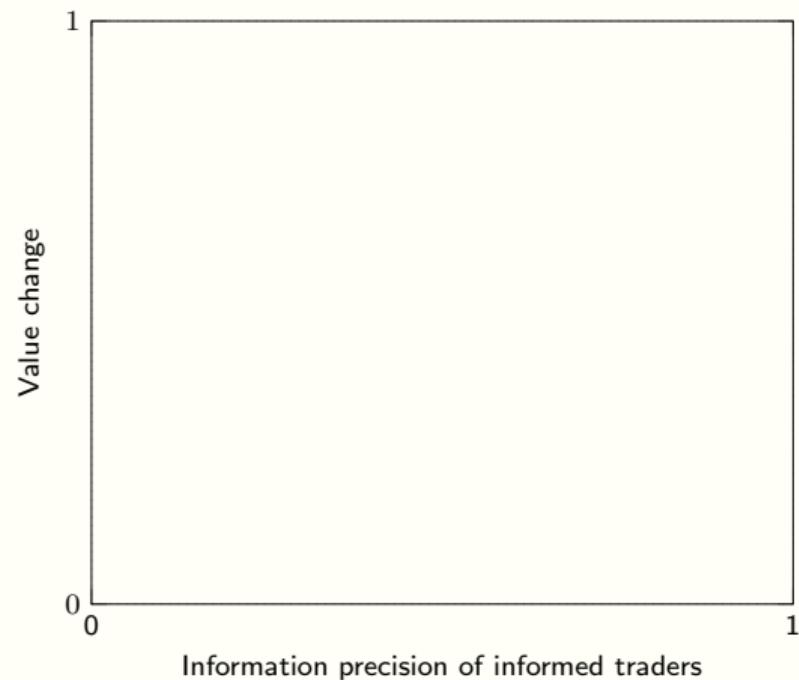
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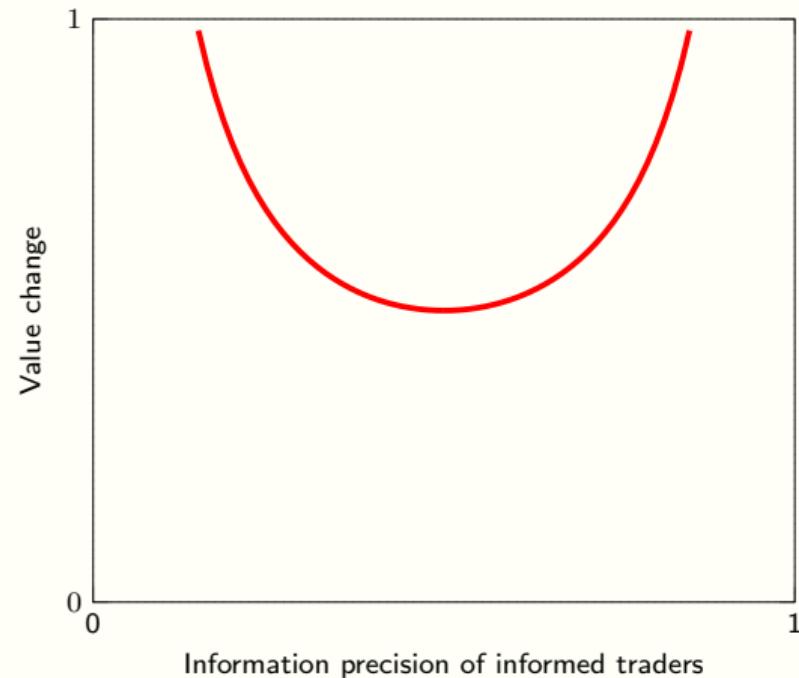
Summary
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Inferring the information precision of informed traders

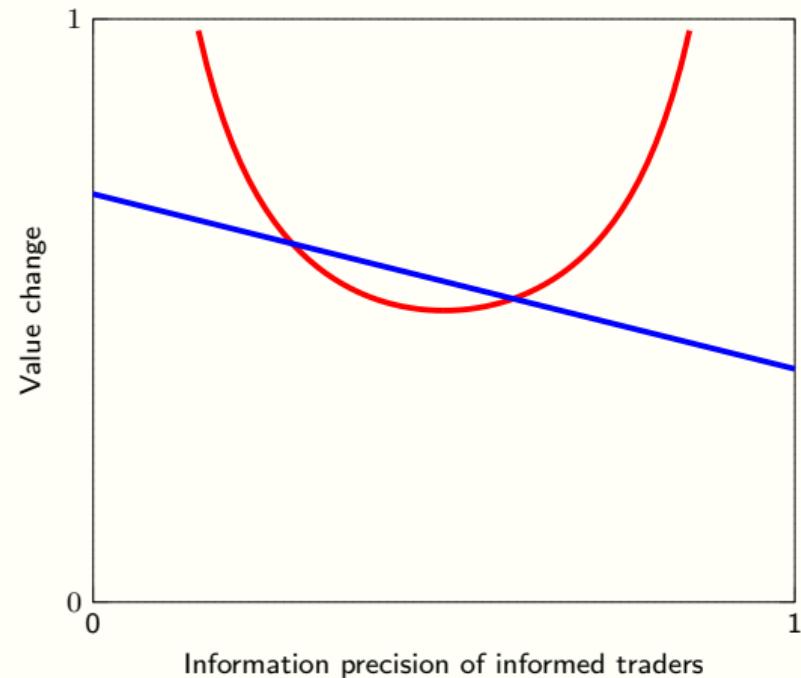
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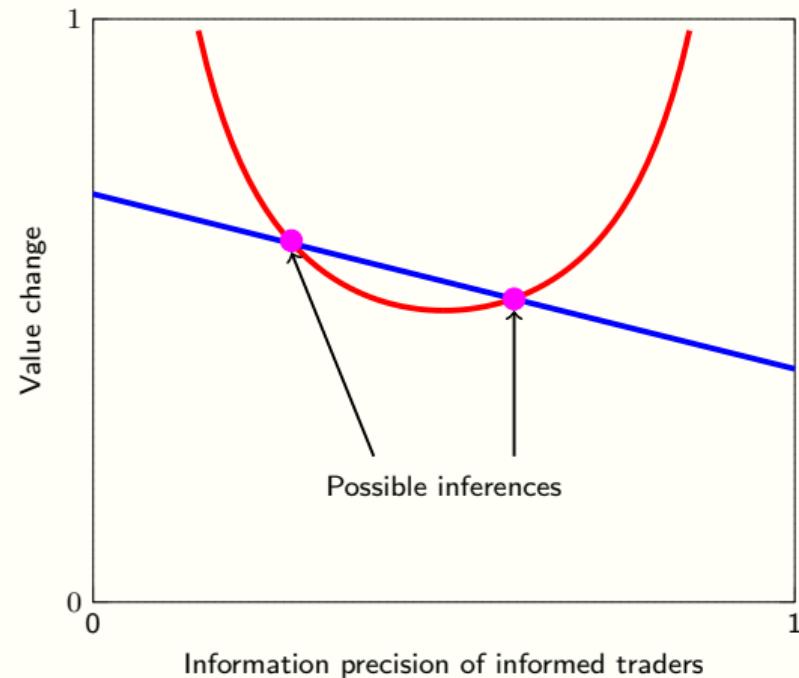
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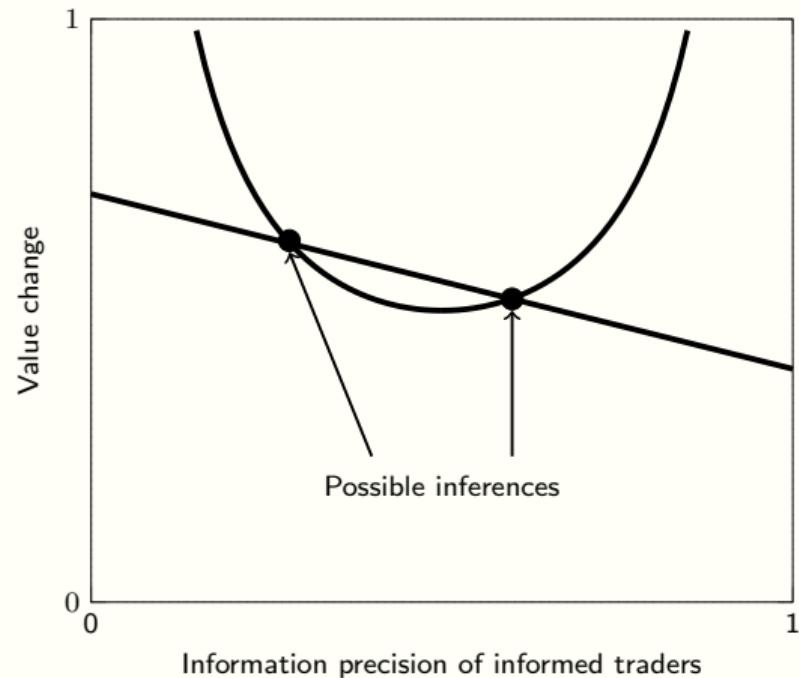
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Inferring the information precision of informed traders



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- ▶ Combining this information, inferences about the **information precision** can be made

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Persistence of price changes

Information sources
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Persistence of price changes

- We can interpret the fraction of informed traders and the information precision as the **amount of information** available in the market

Persistence of price changes

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- ▶ With a large amount of information, any observed price change is likely to be caused by **information** rather than noise trading

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- ⇒ Price changes accompanied by high trading volume are persistent
- ▶ With a small amount of information, any observed price change is likely to be caused by **noise trading** rather than information

Persistence of price changes

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- ▶ If trading volume is high, this indicates a large amount of information in the market
- ▶ With a large amount of information, any observed price change is likely to be caused by information rather than noise trading
- ⇒ Price changes accompanied by high trading volume are persistent
- ▶ With a small amount of information, any observed price change is likely to be caused by noise trading rather than information
- ⇒ Price changes accompanied by low trading volume are often **reversed**

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Information sources
oooo

Fraction of informed traders
ooooo

Information precision
oooooo

Combined effect
●ooooo

Summary
oooo

- Information sources
- Fraction of informed traders
- Information precision
- Combined effect
- Summary

Information sources
○○○○

Fraction of informed traders
○○○○○

Information precision
○○○○○○

Combined effect
○●○○○○

Summary
○○○○

Uncertainty about informed traders and information precision

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Information sources
○○○○

Fraction of informed traders
○○○○○

Information precision
○○○○○○

Combined effect
○○●○○○

Summary
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Information precision and number of informed investors

Information sources
○○○○

Fraction of informed traders
○○○○○

Information precision
○○○○○○

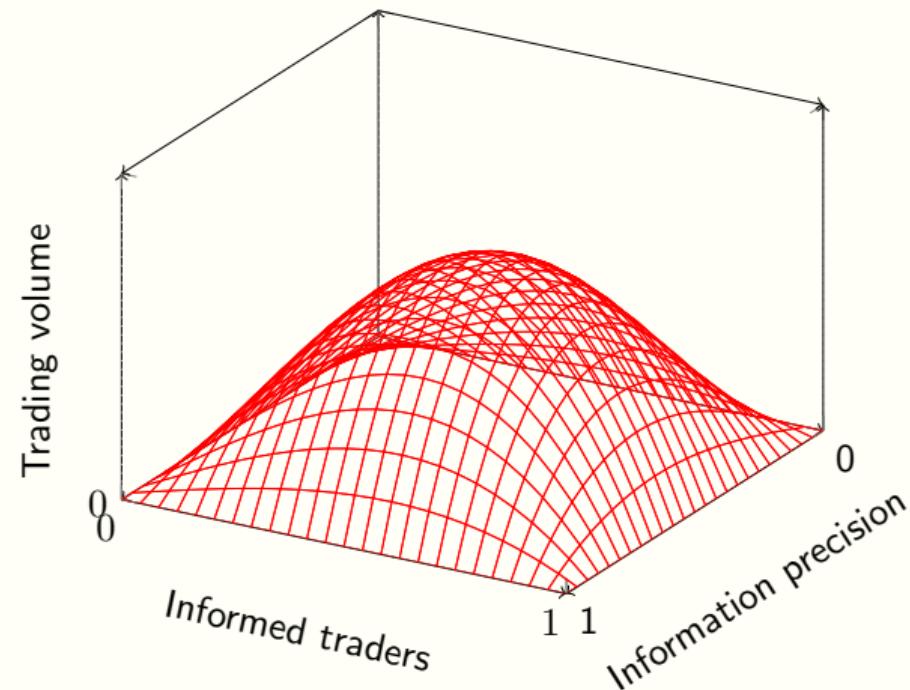
Combined effect
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Summary
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Information precision and number of informed investors

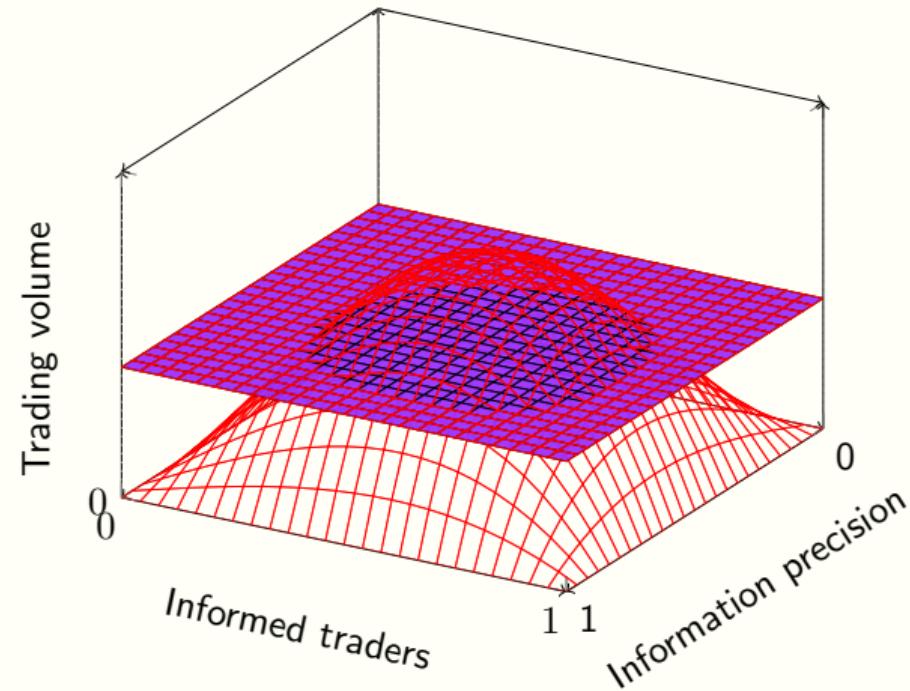
Information precision and number of informed investors

Few informed investors

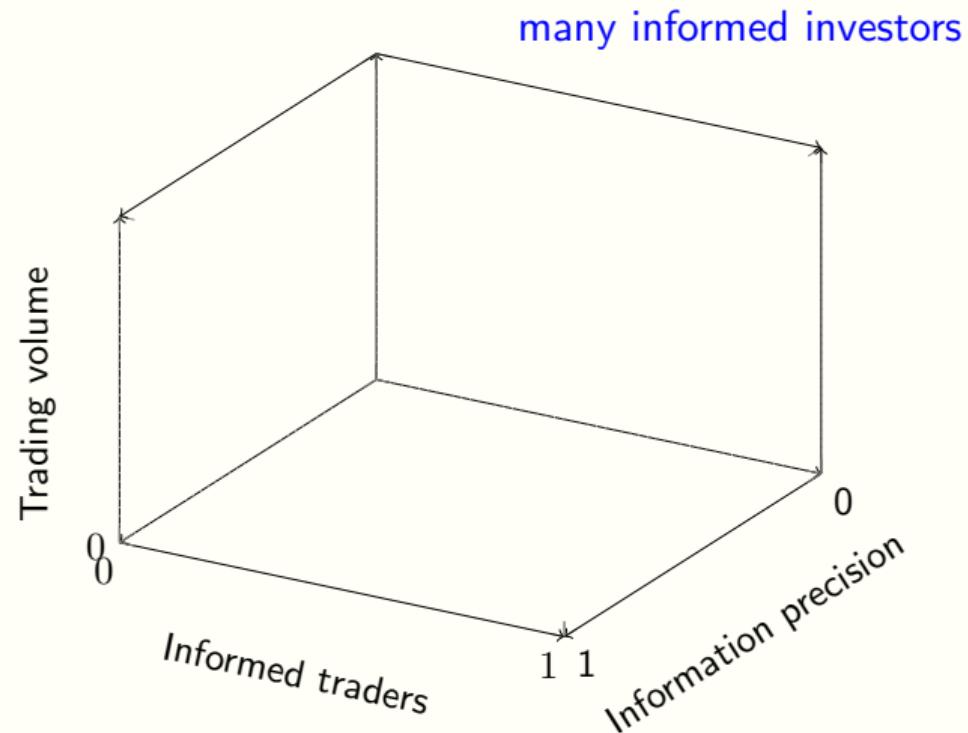


Information precision and number of informed investors

Few informed investors



Information precision and number of informed investors



Information sources
oooo

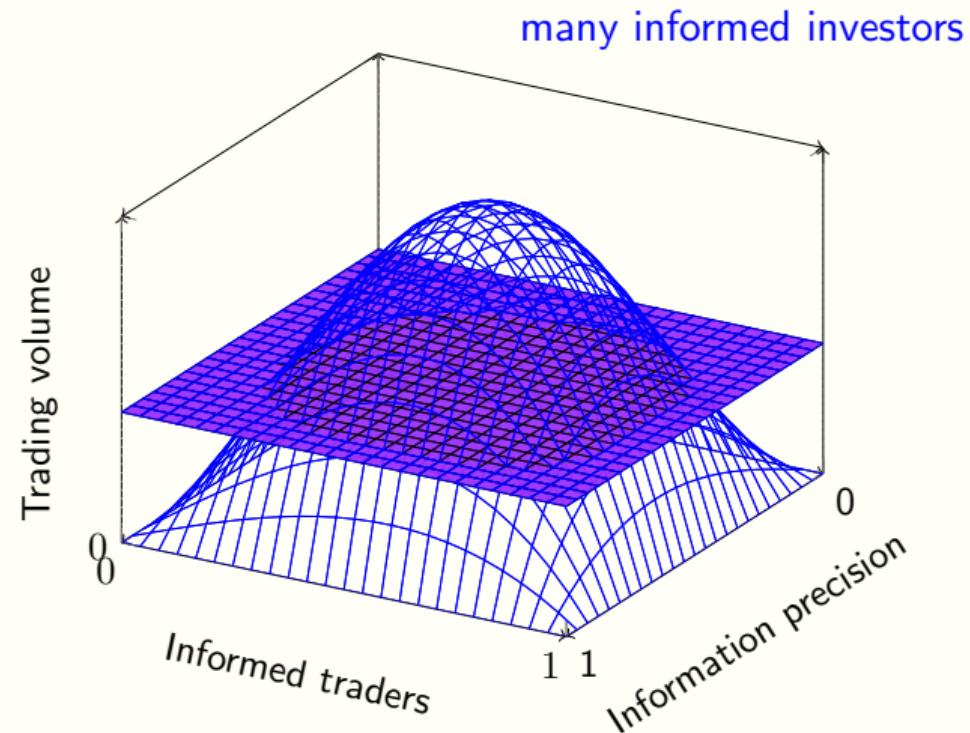
Fraction of informed traders
ooooo

Information precision
oooooo

Combined effect
oo•ooo

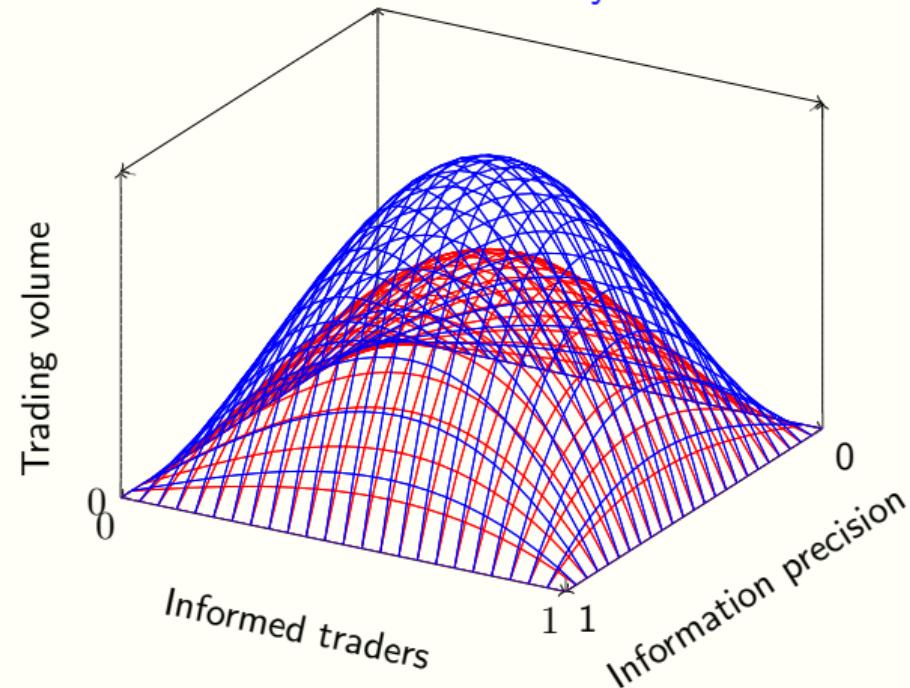
Summary
oooo

Information precision and number of informed investors



Information precision and number of informed investors

Few informed investors and many informed investors



Information sources
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Fraction of informed traders
○○○○○

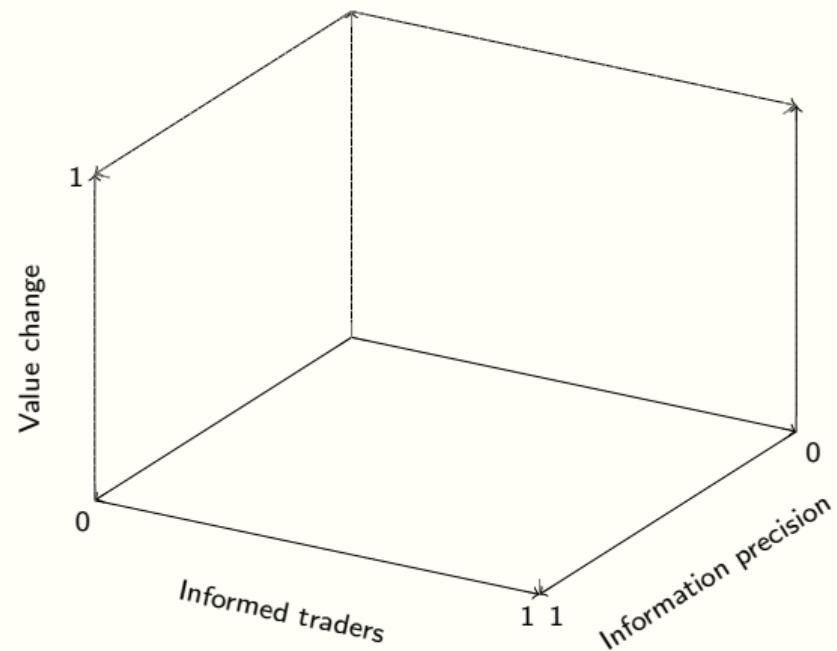
Information precision
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Combined effect
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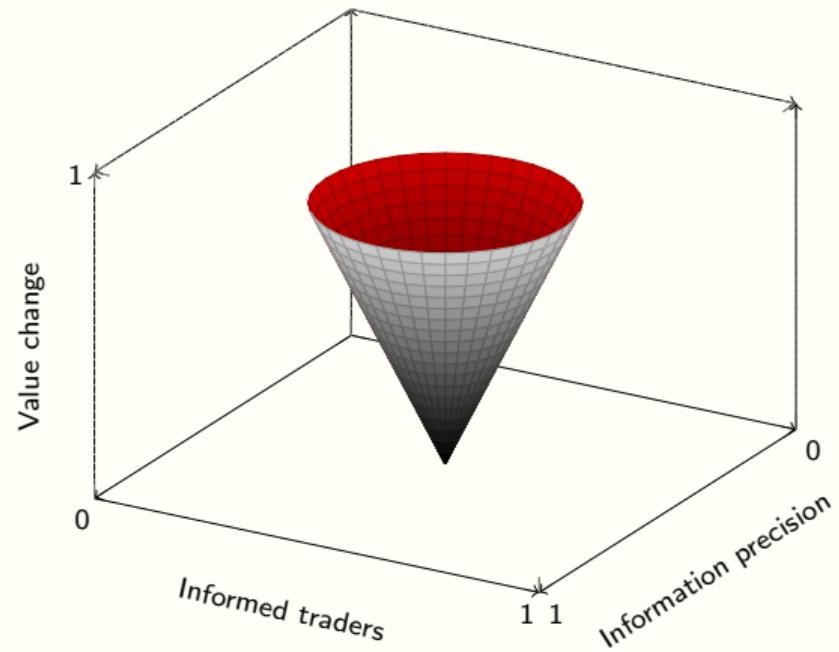
Summary
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Combining trading volume and price information

Combining trading volume and price information



Combining trading volume and price information



Information sources
oooo

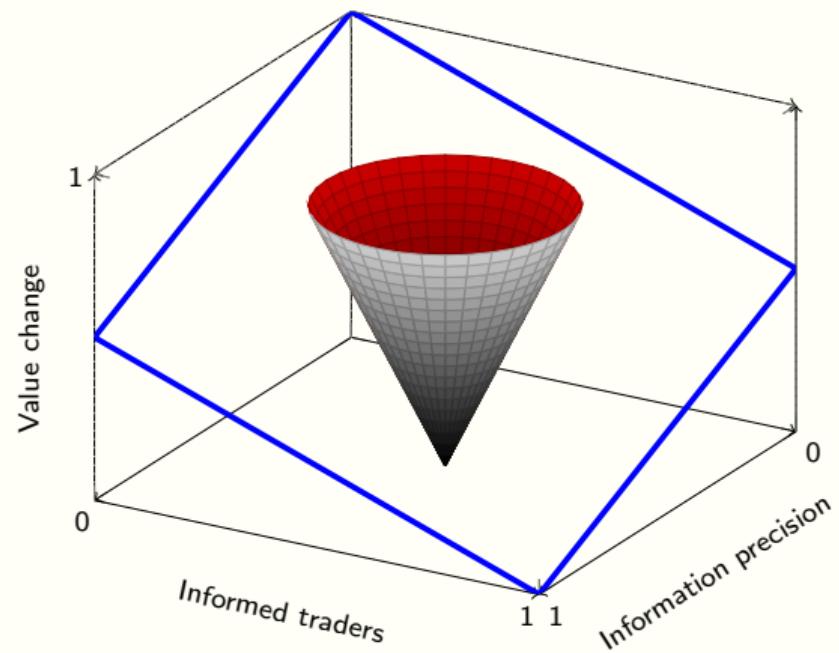
Fraction of informed traders
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Information precision
oooooo

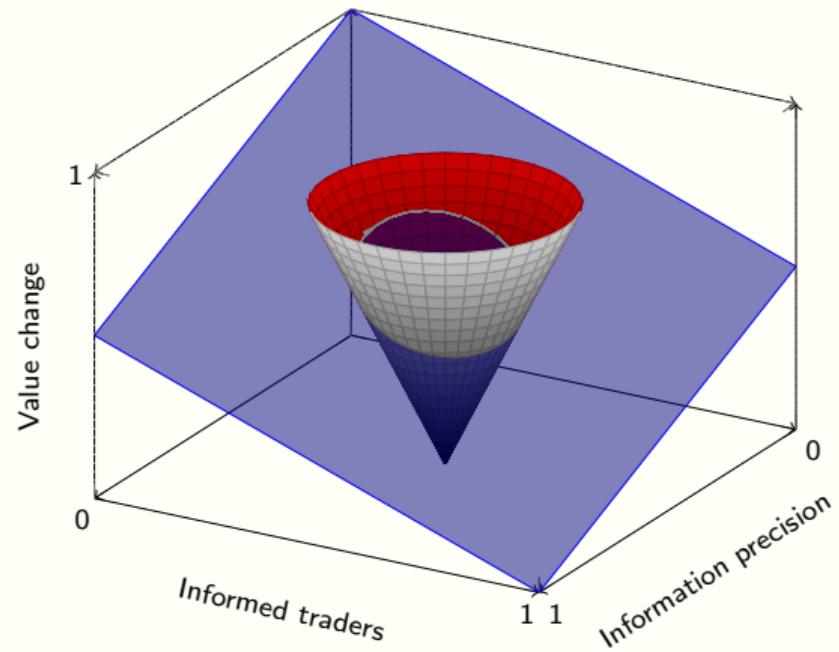
Combined effect
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Summary
oooo

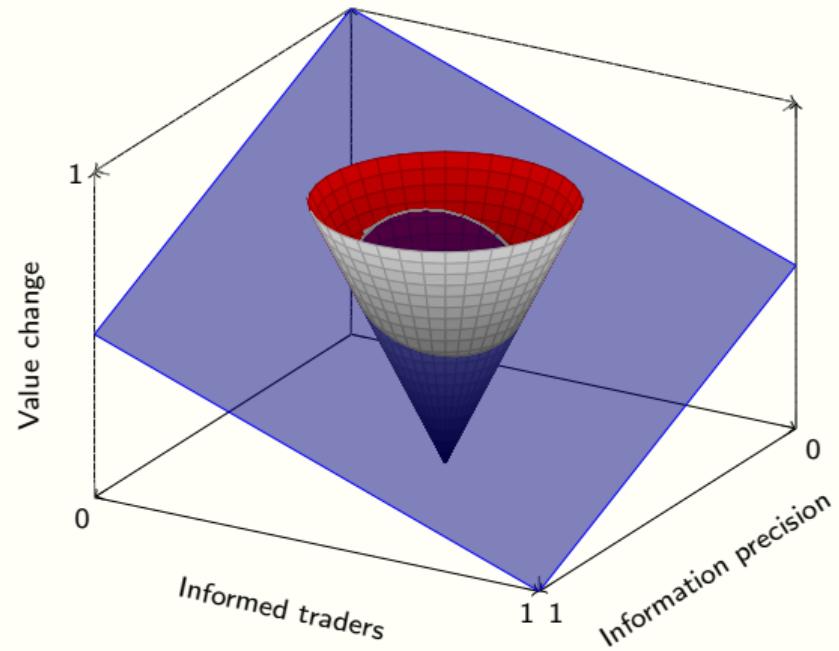
Combining trading volume and price information



Combining trading volume and price information



Combining trading volume and price information



Information sources
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Fraction of informed traders
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Information precision
○○○○○○

Combined effect
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Summary
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Inferring the information precision and number of informed traders

Information sources
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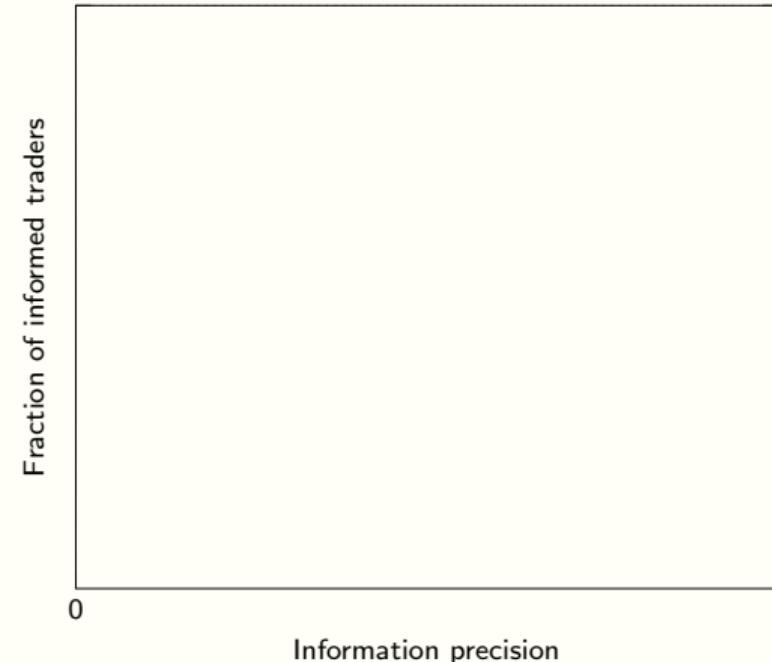
Fraction of informed traders
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Information precision
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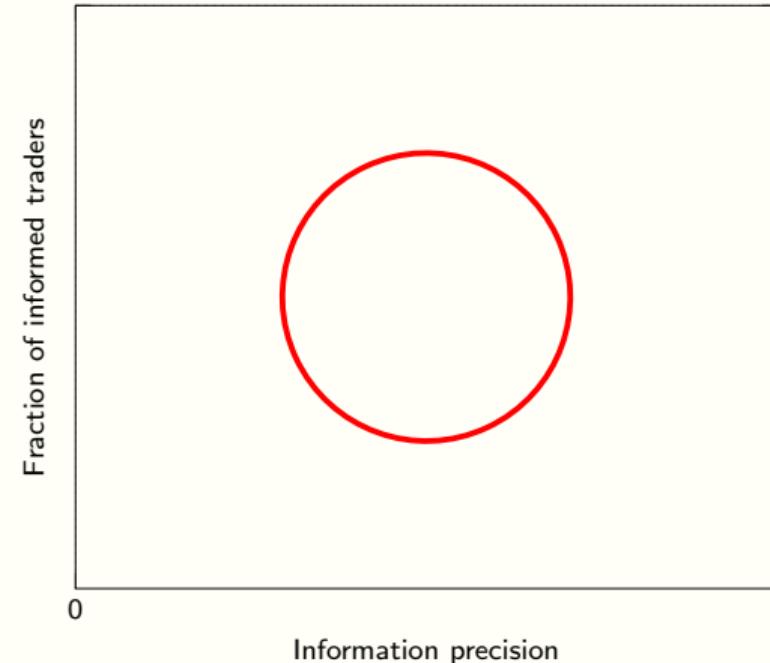
Combined effect
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Summary
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Inferring the information precision and number of informed traders



Inferring the information precision and number of informed traders



Information sources
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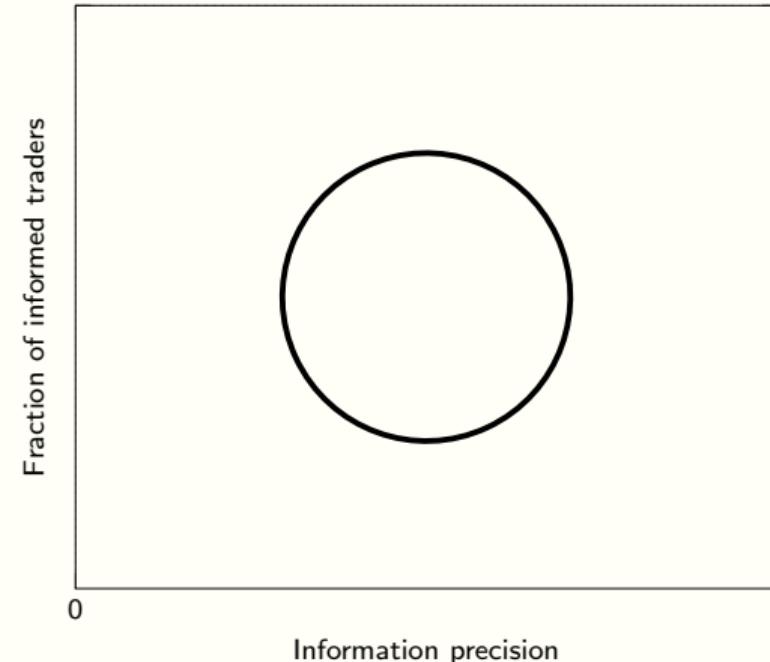
Fraction of informed traders
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Information precision
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Combined effect
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Summary
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Inferring the information precision and number of informed traders



Information sources
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Fraction of informed traders
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Information precision
○○○○○○

Combined effect
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Summary
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Combinations of information precision and informed traders

Combinations of information precision and informed traders

- We can **not** determine a single combination of informed traders and information precision for a given trading volume and price change

Combinations of information precision and informed traders

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Information sources
oooo

Fraction of informed traders
ooooo

Information precision
oooooo

Combined effect
oooooo

Summary
●ooo

■ Information sources

■ Fraction of informed traders

■ Information precision

■ Combined effect

■ Summary

Information sources
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Fraction of informed traders
○○○○○

Information precision
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Combined effect
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Summary
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Uncertainties and observations

Information sources
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Fraction of informed traders
○○○○○

Information precision
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Combined effect
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Summary
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Uncertainties and observations

- We have four sources of **uncertainty**

Information sources
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Fraction of informed traders
○○○○○

Information precision
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Combined effect
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Summary
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Uncertainties and observations

- We have four sources of uncertainty: **noise trading**

Information sources
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Fraction of informed traders
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Information precision
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Combined effect
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Summary
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Uncertainties and observations

- We have four sources of uncertainty: noise trading, **value of the asset**

Information sources
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Fraction of informed traders
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Information precision
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Combined effect
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Summary
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Uncertainties and observations

- We have four sources of uncertainty: noise trading, value of the asset, **fraction of informed traders**

Information sources
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Fraction of informed traders
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Information precision
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Combined effect
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Summary
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Uncertainties and observations

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Uncertainties and observations

- ▶ We have four sources of uncertainty: noise trading, value of the asset, fraction of informed traders, and information precision
- ▶ We have only two variables that are **observed**

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Uncertainties and observations

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Information sources
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Fraction of informed traders
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Information precision
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Combined effect
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Summary
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Using trading volume to assess market confidence in information

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- ▶ The price of an asset can be used to assess the **contents** of information

Using trading volume to assess market confidence in information

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