How Competitive is the Stock Market?

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discussed by Johan Hombert (HEC Paris)

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Summary

- Traditional asset pricing
  - Micro-founded demand + mkt clearing $\Rightarrow$ price
- Demand-based asset pricing (Koijen-Yogo 2019)
  - Reduced-form demand + mkt clearing $\Rightarrow$ price
  - $d_{ik} = -\mathcal{E}_i \, p_k + \beta_i \, StockCharac_k$
  - $\mathcal{E}_i$ estimated from variation in $p_k \perp$ fundamental: elasticity of demand to mispricing

Summary

- This paper
  - Lucas critique: $\mathcal{E}_i$ depends on market environment

    e.g., Grossman-Stiglitz: other investors more informed $\Rightarrow$ my $\mathcal{E}_i \downarrow$
  - $\mathcal{E}_{ik} = \underline{\mathcal{E}}_i - \chi \mathcal{E}_k^{agg}$

Outline of discussion

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1. Identification
2. Identification
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1. Identification of $\mathcal{E}_i$'s
2. Identification
3. Identification

Estimate $\mathcal{E}_i$'s (Koijen-Yogo 2019)

- General idea: demand shock for one investor $\Rightarrow$ price pressure $\Rightarrow$ identify demand curve of other investors

- Implementation: investment mandates generate variation in demand across stocks

$$\text{Instrument for } P_k = \sum_{i \text{ hold } k} \frac{AUM_i}{\#\text{stocks}_i}$$

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- Example

	Mkt cap	Fund 1's holdings	Fund 2's holdings	Instrument for mkt cap
Stock A	120	40	80	
Stock B	100		100	

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$$\Rightarrow \widehat{\mathcal{E}}_2 = -\frac{\log\left(\frac{80}{120}\right) - \log\left(\frac{100}{100}\right)}{\log(120) - \log(100)} = 2.2$$

Estimate $\mathcal{E}_i$'s (Koijen-Yogo 2019)

- Identifying assumption: investment mandates and AUM in each mandate $\perp$ fundamental value

- Potential violation: fund 1 holds stock A because stock A has higher fundamental value

  $\Rightarrow$ Upward bias in the denominator of the elasticity

  $\Rightarrow$ Downward bias in estimated elasticity

Comments & Suggestions

1. The relevance condition is mechanical because large stocks are held by a larger number of investors (?)

   - If instead of instrumenting ME, you do a placebo instrumenting BE (or an earnings multiple; or another proxy for ME that doesn't include the actual price)

     do you expect the first stage to be significant?

     the second stage?

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2. Does demand pressure predict price reversal?

   e.g., cross-sectional regression of $R_{k,t\to t+h}$ on $\widehat{p}_{k,t}$

   - It should at the horizon on investors' holdings, otherwise why would investors adjust their portfolio?

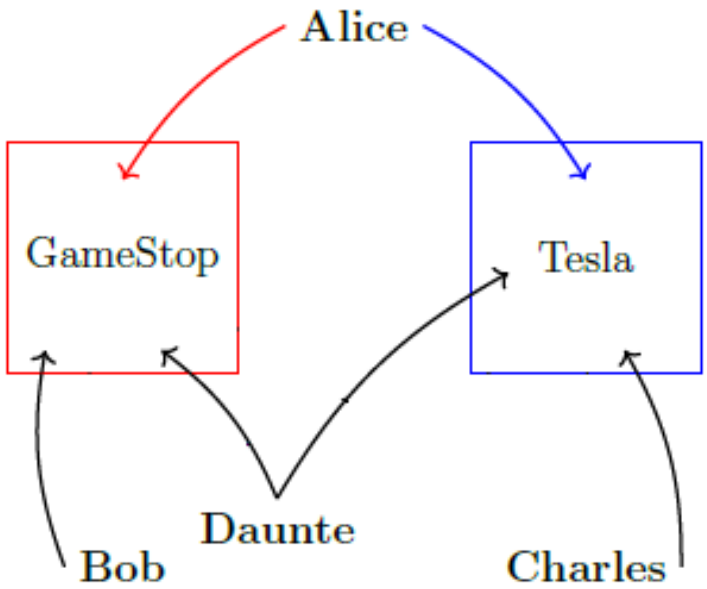
   - You could convert $\mathcal{E}_i$ into an elasticity to predictable return

1. Identification of $\mathcal{E}_i$'s
2. Identification of χ
3. Identification

Estimate χ

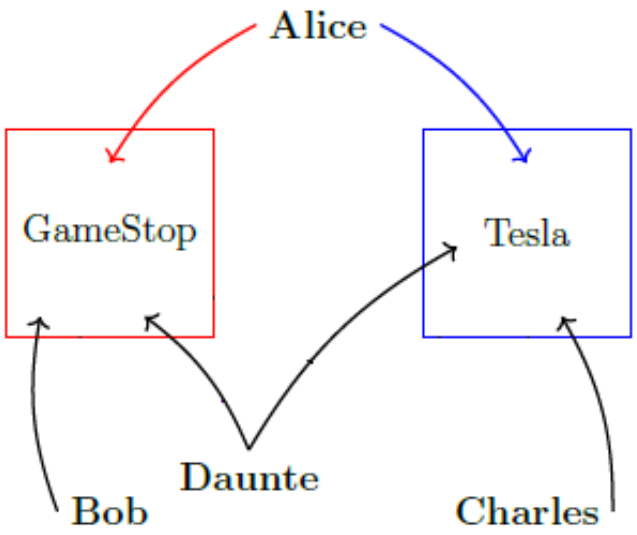
- $\mathcal{E}_{ik} = \underline{\mathcal{E}}_i - \chi \mathcal{E}_k^{agg}$ $\qquad$ $\mathcal{E}_k^{agg} = \sum_j \mathcal{E}_{jk} \times (\%$ mkt cap of k held by $i)$

- Unique solution under appropriate condition on investor-stock graph



- Intuition: Suppose $\mathcal{E}_{\text{Bob}} > \mathcal{E}_{\text{Charles}}$. Compare Alice's elasticity in each stock $\Rightarrow$ identify χ

Estimate χ: Comments



- Suppose $\mathcal{E}_{\text{Bob}} > \mathcal{E}_{\text{Charles}}$
- Alice's elasticity in each stock is identified off a shock to Daunte's AUM $\perp$ to fundamental values
- Should Alice's portfolio react stronger to a given price change in GameStop than in Tesla?

  NO if Alice knows the price change is due to Daunte

  YES if Alice believes the price change may come from Bob or Charles

Estimate χ: Comments

- Identifying assumptions:

  A1. Demand shifter is $\perp$ to fundamental (as in Koijen-Yogo 2019)

  A2. Investors <u>don't know</u> that the price variation induced by the demand shifter is $\perp$ to fundamental

  A3. Investors <u>know</u> other investors' elasticity for each stock

- A1+A2 is satisfied if investors don't know other investors' investment mandates and/or AUM in each mandate

- Tension between A2 and A3

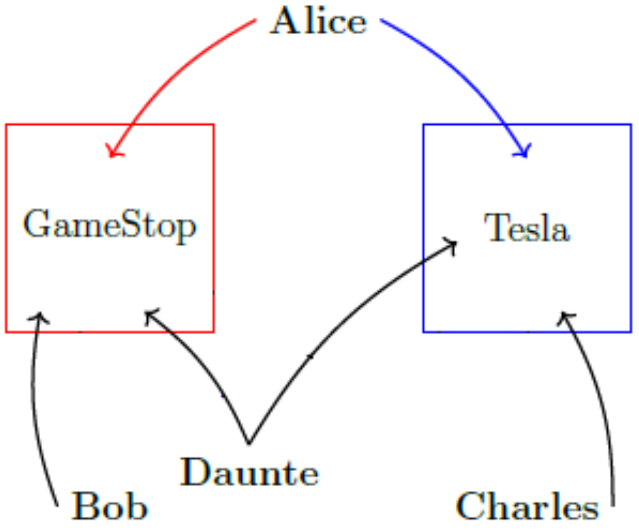
1. Identification of $\mathcal{E}_i$'s
2. Identification of χ (I)
3. Identification of χ (II)

Estimate χ: Comments

Suppose:

- A1+A2+A3 is satisfied
- Holdings in GS and Tesla are symmetric
- $\mathcal{E}_{\text{Bob}} > \mathcal{E}_{\text{Charles}}$
- True $\chi = 0$ i.e. $\mathcal{E}_{Alice,GS} = \mathcal{E}_{Alice,Tesla}$

Daunte's AUM $\downarrow$ leads to:



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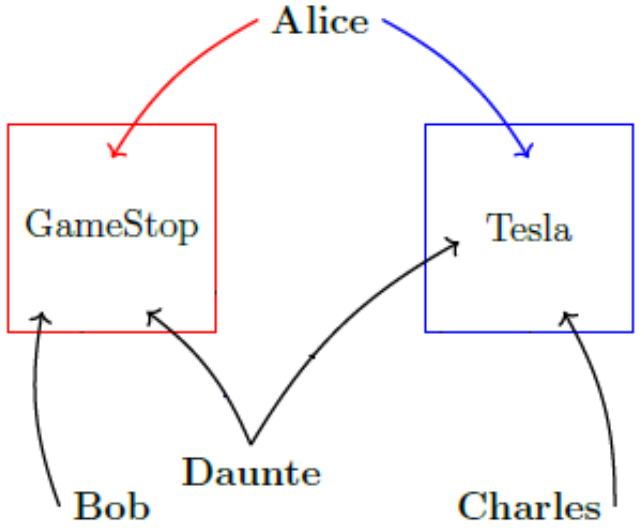

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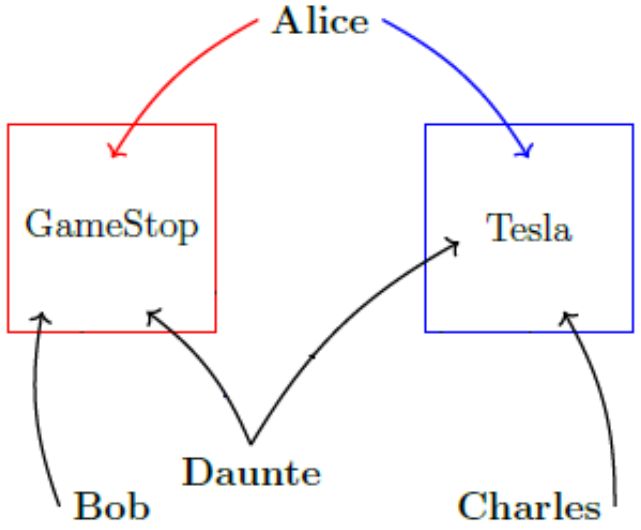

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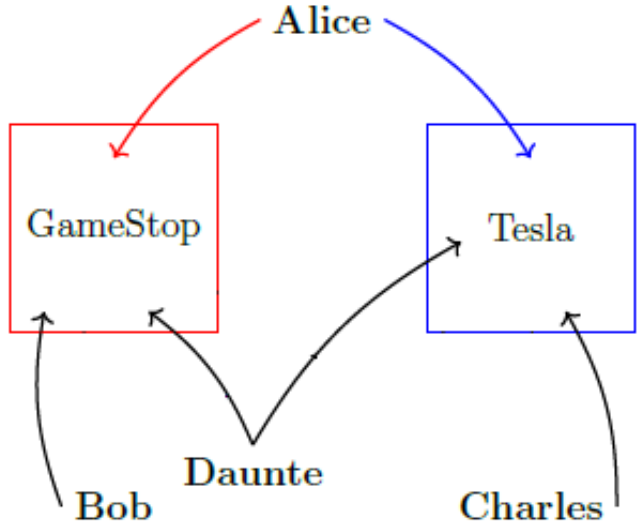

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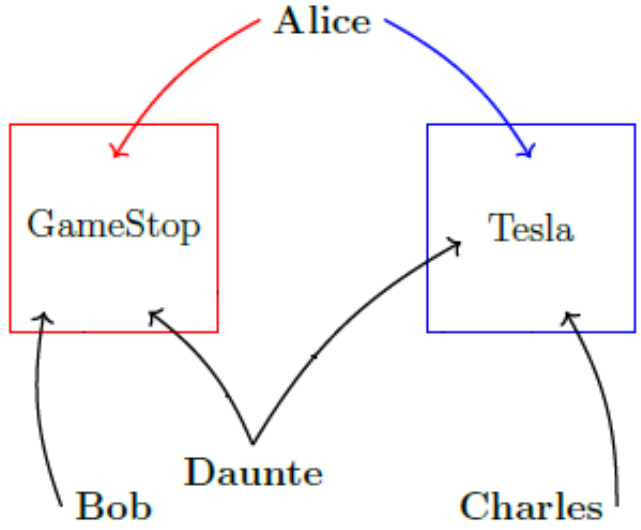

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- $\widehat{\mathcal{E}}_{Alice,k} = -\frac{\Delta \text{Holding}_{\text{Alice},k}}{\Delta \text{Instrumented price}_k}$ is lower in GS than in Tesla $\Rightarrow \widehat{\chi} > 0$

A suggestion

- The first stage should account for $\mathcal{E}_k^{agg}$

- The model may provide a restriction on the exogenous variation in the price induced by a given demand shock as a function of $\mathcal{E}_k^{agg}$

Summary

- Ambitious paper: make "demand-based" AP less reduced-form, important for credible counterfactual analysis
- More discussion of identifying assumptions
- Go more structural to construct the instrument?