Discussion on:

*Relative Price Dispersion: Evidence and Theory*

by Kaplan, Menzio, Rudanko and Trachter

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The paper

- **Relative Price Dispersion**: persistent difference in prices for the same good across shops, which is not explained by shop-specific average price.

- **Evidence**: impressive dataset allows for detailed price decomposition.
$\log p_{jst} - \frac{1}{S} \sum_{s=1}^{S} \log p_{jst} = y^P_{st} + y^T_{st} + z^P_{jst} + z^T_{jst}$

Notes: The figure plots the empirical autocorrelation functions of the store and store-good components, $\hat{y}_{st}$ and $\hat{z}_{jst}$, together with their counterparts from the fitted statistical model.
Relative Price Dispersion: persistent difference in prices for the same good across shops, which is not explained by shop-specific average price.

Evidence: impressive dataset allows for detailed price decomposition.

Theory: extend a canonical model to account for relative price dispersion.
  - model: Burdett and Judd (1983)
  - addition: shops sell two goods and try to discriminate heterogeneous buyers.
Burdett and Judd (1983)

- BJ generate price dispersion with **ex-ante identical sellers and buyers of one homogeneous good**

\[
\Pi(\bar{p}) = \alpha + 2(1-\alpha)(1-G(p))
\]

where \(\bar{p}\) is the reservation price, \(\Pi(\bar{p}) \equiv \alpha \bar{p}\) and \(G(p)\) is the fraction of sellers with a price less than \(p\). If \(p\) is the average price of a basket of goods, then RPD (indet.) even with \(\alpha = 1\).
Burdett and Judd (1983)

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- Price dispersion can only originate from different markups ⇒ you need imperfect competition
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- Key assumption: $\alpha$ buyers receive only one offer, $1 - \alpha$ buyers receive two offers

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- Price dispersion can only originate from different markups $\Rightarrow$ you need imperfect competition
- **Key assumption**: $\alpha$ buyers receive only one offer, $1 - \alpha$ buyers receive two offers
- **Price dispersion** (typ. temporal) is an equilibrium object defined by

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- In principle, with two goods and heterogeneous buyers, there should be other ways to obtain price dispersion.
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- To understand the importance of each assumption, let us see how far I can go without relying on the BJ model.
Simple Game: setup

- Two homogeneous sellers sell two goods $n = \{1, 2\}$
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Two buyers:

- Busy: buys both goods if the sum of prices $p_b < 2$
- Cool: buys item $n$ at a maximal price of $p_c > p_b$

Mechanism: each seller matches one buyer randomly. Trade-off: attracting cool people on both goods does not allow exploiting all the surplus from the busy guys. If cool cannot buy the good then go to the other shop.
Simple Game: setup

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**H** Two buyers:

- **busy**: buys both goods if the sum of prices \(< 2p_b\)
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Two buyers:

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- $p_b > p_c$
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**C** If cool cannot buy the good then go to the other shop
Simpler Game: strategies

\[ B : (p_b, p_b) \rightarrow \underbrace{0.5 (0)}_{\text{revenues cool}} + \underbrace{0.5 (2p_b)}_{\text{revenues busy}} = p_b \]
Simpler Game: strategies

\[\mathcal{B} : (p_b, p_b) \rightarrow 0.5 \left( 0 \right) + 0.5 \left( 2p_b \right) = p_b\]

\[\mathcal{C} : (p_c, p_c) \rightarrow \psi_1 p_c + \psi_2 p_c + 0.5 \left( 2p_c \right) = (1 + \psi_1 + \psi_2) p_c\]

where \(\psi_n = \{0.5, 1\}\) is a competition externality
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\[ \mathcal{D}_1 : (p_c, p_d) \rightarrow \psi_1 p_c + 0.5(2p_b) = \psi_1 p_c + p_b \]

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where \( \psi_n = \{0.5, 1\} \) is a competition externality

and \( p_d = 2p_b - p_c \)
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and \( p_d = 2p_b - p_c \)

**crucial non-linearity**: Given ass. \( H \), \( \mathcal{B} \) is strictly dominated by \( \mathcal{D} \)!
### Payoff table

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<thead>
<tr>
<th></th>
<th>( \mathcal{C} )</th>
<th>( \mathcal{D}_1 )</th>
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With \( p_c < \frac{2}{3}p_b \) only \((\mathcal{D}_1, \mathcal{D}_2)\) and \((\mathcal{D}_2, \mathcal{D}_1)\) are Nash.

With \( p_b > p_c > \frac{2}{3}p_b \) also \((\mathcal{C}, \mathcal{C})\) is a Nash...as a dis-coord. failure!

Given ass. \( \mathcal{C} \), discordination has private (and social!) value!
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With $p_b > p_c > \frac{2}{3}p_b$ only ($C, C$) is Nash.
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With \( p_b > p_c > \frac{2}{3}p_b \) only \( (C,C) \) is Nash.

Given ass. \( C \), price dispersion has private (and social!) value!
Conclusion

- Important evidence on the persistence of price dispersion
- The new assumptions alone already buy the existence of equilibria with RPD
- BJ introduces indeterminacy without giving clear advantages
- Beautiful and challenging agenda!
  Huge literature on price discrimination in IO: how to properly incorporate these insights into the Macro literature?