Keynesian Beauty Contest, Accounting Disclosure, and Price Efficiency

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Overview

Research Question
Intuition
Related Literatures

Model and Equilibrium

Events, Utility, and Information
Equilibrium

Main Analysis

The KBC Effect
Price Efficiency
Comparison with Morris and Shin (2002 AER)

Extension and Conclusion

Extensions
Conclusion
Does more accounting disclosure result in less informative prices when investors have short horizons and private information?
Modern corporations and exchange trading contribute to investors’ short horizons;
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Short-horizon investors care about the interim price more than the fundamental value of a firm;
Motivation

- Modern corporations and exchange trading contribute to investors’ short horizons;
- Short-horizon investors care about the interim price more than the fundamental value of a firm;
- Public information has the dual role of information and coordination;
Modern corporations and exchange trading contribute to investors’ short horizons;
Short-horizon investors care about the interim price more than the fundamental value of a firm;
Public information has the dual role of information and coordination;
People are concerned about the value of public information in such a market.
Short horizons give rise to the Keynesian Beauty Contest effect;
Information and Coordination

- Short horizons give rise to the Keynesian Beauty Contest effect;
- the Keynesian Beauty Contest effect increases with the precision of public information;
Short horizons give rise to the Keynesian Beauty Contest effect;

the Keynesian Beauty Contest effect increases with the precision of public information;

the information role dominates the coordination role.
Two Related Literatures

- The coordination among investors

- Multi-period Noisy Rational Expectations Equilibrium
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- The coordination among investors

- Multi-period Noisy Rational Expectations Equilibrium
1. Overview
   - Research Question
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2. Model and Equilibrium
   - Events, Utility, and Information
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   - Price Efficiency
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4. Extension and Conclusion
   - Extensions
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Events, Utility, and Information

**Equilibrium**

**Time Line of Events and Utility Function**

- **t = 1**
  
  Discloses is made; 
  First generation receive private signals and buy stocks.

- **t = 2**
  
  First generation sell stocks to second generation.

- **t = 3**
  
  The firm is liquidated; 
  The fundamental value is revealed.

A typical investor $i$ has a CARA utility function.

$$U_i(C) = -e^{-\gamma C}$$
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$$U_i(C) = -e^{-\frac{C_i}{\tau}}$$
Information is a Garbling of the Fundamental Value.
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Public information

\[ \tilde{z} = \theta + \tilde{\varepsilon}_z, \tilde{\varepsilon}_z \sim N(0, \frac{1}{\alpha}) \]
Information is a Garbling of the Fundamental Value.

### Public information

\[
\tilde{z} = \theta + \tilde{\epsilon}_z, \quad \tilde{\epsilon}_z \sim N(0, \frac{1}{\alpha})
\]

### Private information

\[
\tilde{x}_{ti} = \theta + \tilde{\epsilon}_{ti}, \quad \tilde{\epsilon}_{ti} \sim N(0, \frac{1}{\beta})
\]
Short- and Long-horizon Equilibria

\[ p_1 = bz + c\theta - ds_1 \]
Short- and Long-horizon Equilibria

\[ p_1 = bz + c \theta - ds_1 \]

\[ \hat{p}_1 = \hat{b}z + \hat{c} \theta - \hat{d}s_1 \]
The Keynesian Beauty Contest Effect

\[ b > \hat{b} \]
The Keynesian Beauty Contest Effect

\[
\begin{align*}
    b & > \hat{b} \\
    b & = \frac{\alpha}{\alpha + \beta M + \rho_1 k} \\
    \hat{b} & = \frac{\alpha}{\alpha + \beta + \rho_1}
\end{align*}
\]
The Keynesian Beauty Contest Effect

\[
b > \hat{b} \\
b = \frac{\alpha}{\alpha + \beta M + \rho_1 k} \\
\hat{b} = \frac{\alpha}{\alpha + \beta + \rho_1}
\]

Measure of the KBC Effect

\[
R = 1 - \frac{1}{\frac{b}{c} / \hat{b}}
\]
The Keynesian Beauty Contest Effect

**KBC Effect**

- Public information: $z$
- Short Horizon price: $p_1 \neq \bar{E}_{1i}[\theta|I_{1i}]$
- Long Horizon price: $\hat{p}_1 = \bar{E}_{1i}[\theta|\hat{I}_{1i}]$
- First best price: $p_{fb} = \theta$

**Noise Effect**
The Breakdown of the Iteration Law for Average Expectation

\[ p_1 = \bar{E}_1 p_2 = \bar{E}_1 \bar{E}_2 \theta \neq \bar{E}_1 \theta \]
The Breakdown of the Iteration Law for Average Expectation

\[ p_1 = \bar{E}_1 p_2 = \bar{E}_1 \bar{E}_2 \theta \neq \bar{E}_1 \theta \]

\[ p = \bar{E}_i [\tilde{\mu} | I_i] - \frac{\text{Var}_i [\tilde{\mu} | I_i]}{\tau} s \]

\[ p_1 = \bar{E}_{1i} [p_2 | I_{1i}] - d_1 s_1 = a_2 p_1 + b_2 z + c_2 \bar{E}_{1i} [\tilde{\theta} | I_{1i}] - d_1 s_1 \]
Definition of Price Efficiency

\[ PE = \frac{1}{E_{s,z}[p - \theta]^2} \]
**Definition of Price Efficiency**

\[ PE = \frac{1}{E_{s,z}[p - \theta]^2} \]

**Proposition 2: Price Efficiency Effect of Accounting Disclosure**

More public information uniformly improves price efficiency, even in the presence of the Keynesian Beauty Contest effect.
Intuition: the Endogenous Link of the Dual Role of Public Information

- The information effect is determined by the precision of public information;
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- The information effect is determined by the precision of public information;

- The KBC effect is endogenously related to the precision of public information;
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- The information effect is determined by the precision of public information;
- The KBC effect is endogenously related to the precision of public information;

Proposition 3: The Determinant of the KBC Effect

The Keynesian Beauty Contest effect intensifies as public information becomes more precise.
Intuition: the Endogenous Link of the Dual Role of Public Information

- The information effect is determined by the precision of public information;
- The KBC effect is endogenously related to the precision of public information;

Proposition 3: The Determinant of the KBC Effect

The Keynesian Beauty Contest effect intensifies as public information becomes more precise.

- The information effect dominates the KBC effect.
The detrimental welfare impact of transparency is caused by the assumed Keynesian Beauty Contest preference.
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**Observation 1: Keynesian Beauty Contest**

When the Keynesian Beauty Contest effect is fixed at \( r \), provisions of public information decrease price efficiency if and only if \( r \) and \( \alpha \) are such that

\[
\alpha < (1 - r)(\beta + \rho_1)(1 - \frac{2(\beta + \rho_1)}{\rho}(1 - r))
\]  

(1)

and

\[
1 - \frac{\rho}{2(\beta + \rho_1)} < r < 1
\]

(2)
Public information may reduce price efficiency by discouraging private information acquisition;
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Rational arbitragers may destabilize the market when there is limit to arbitrage;
Public information may reduce price efficiency by discouraging private information acquisition;

Rational arbitragers may destabilize the market when there is limit to arbitrage;

Firms’ learning of information from prices interacts with firms’ disclosure.
Public disclosure may have unintended consequences of crowding out private information;
Conclusion

- Public disclosure may have unintended consequences of crowding out private information;

- Ex ante transparency policy improves market efficiency even in a KBC market;
Conclusion

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- Ex ante transparency policy improves market efficiency even in a KBC market;

- Dispersed ownership has ramifications for accounting disclosure beyond agency problems and differential information.