The paper in a nutshell

- More informed trading makes price more informative.
- When costly information acquisition is certain, this distorts risk-sharing, reduces risk and return trade-off and hence social welfare.
- However, when information acquisition is uncertain and traders make strategic choices about the probability of observing costly information, more informed trading generates a positive asymmetric-information-effect on the benefit of informed comparing to uninformed.

Information acquisition uncertainty provides traders an opportunity to improve their ex-ante welfare in more efficient markets.

Introduction

Information acquisition is certain:
- "The common theme of both channels is that disclosure harms investors through destroying trading opportunities" (Goldstein & Yang, 2017).
- The only Pareto-efficient equilibrium is the no-informed-trading equilibrium.

Information acquisition uncertainty:
- A trader may decide to purchase an analyst report, hoping to obtain some valuable information about the fundamental value of the firm.
- Ex-post, the report could turn out to be either informative or completely useless.
- Therefore information acquisition is uncertain and traders make a decision to increase the probability of observing the information.

Asymmetric-information-effect:
- Information acquisition uncertainty and probabilistic choices (Mattsoss & Weibull, 2002) in the standard REE model leads to a positive asymmetric information effect on welfare.
- It can overcome the negative risk-return and Hirshleifer effects and improve welfare.

Model and Equilibrium

A continuum of homogenous traders investing in a risk free asset and a risky asset with payoff \( D = d - \theta + \epsilon, \theta \in N(0, \theta_0), \epsilon \in N(0, \sigma_\epsilon) \).

Two stages of the model:
- Each trader chooses strategically a probability \( p_i^1 \) to become informed.
- Each trader forms an optimal portfolio conditional on his information.

\[
\max_{p_i} U(p_i, 3) = [p_i V_1(i) + (1 - p_i)V_0(i)]^{1/\gamma(\gamma - 1)};
\]

\[
V_1(i) = \max E\left( (1 - e^{-\gamma(\theta - \theta^*)})^{(\gamma - 1)}(\theta|D)|P| \right) = \frac{1}{1 + \zeta_0(i)};
\]

\[
\text{The equilibrium fraction of informed traders} \lambda \text{ is determined by a Nash equilibrium and the equilibrium price is determined by market clearing:}
\]

\[
\lambda = g^{-1}\left( \frac{1}{\gamma} \frac{\gamma(\theta)}{1 - \gamma(\theta)} \right); \quad \beta = d + b_i \theta - b_i \xi;
\]

\[
\gamma(\theta) = 1 - \frac{V_0(i)}{V_1(i)}; \quad b_i = \frac{\gamma_i}{\gamma} \frac{b_i}{n}; \quad \gamma(\theta) = 1 - \frac{V_0(i)}{V_1(i)};
\]

Welfare Analysis

\[
W(\lambda) = U(\lambda, 3) = V_1(\lambda, 3); \quad \tilde{V}(i) = \lambda V_1(i) + (1 - \lambda)V_0(i); \quad \Phi(\lambda) = \frac{\tilde{V}(i)}{\tilde{V}(\lambda)} = \frac{y(\lambda)}{y(\lambda)}.
\]

Welfare improvement decomposition:

- risk-return effect + asymmetric-information-effect + marginal cost:

\[
\frac{W(\lambda)}{W(\lambda)} = \frac{\tilde{V}(i)}{\tilde{V}(\lambda)} + \frac{(1 - \lambda)V_0(i)}{\tilde{V}(\lambda)} + \frac{V_0(i)}{\tilde{V}(\lambda)} + [-\Phi(\lambda)]
\]

In Nash equilibrium, when the asymmetric-information-effect dominates the Hirshleifer and risk-return effects, the ex-ante welfare can potentially be improved from the no-informed-trading equilibrium.

Policy Implications

- By levelling the playing field, i.e., reducing information asymmetry by making information acquisition more costly, is not always Pareto-optimal, especially for speculators who provide liquidity.
- No-informed-trading equilibrium is more likely to be Pareto-optimal in markets with relatively high Sharpe ratios (e.g., developing and emerging markets).
- Informed-trading equilibrium is more likely to be Pareto-optimal in markets with relatively low Sharpe ratios (e.g., developed markets).
- Information acquisition as a probabilistic choice can have a positive social value.

Conclusions

- Investors facing information acquisition uncertainty make strategic probabilistic choices about observing a costly private signal about the risky asset.
- More informed trading, by resolving payoff uncertainty, makes price more informative but reduces the Sharpe ratio and distorts risk-sharing.
- However, due to information acquisition uncertainty, traders who become informed receive a net benefit, which can dominate the aforementioned negative effects.
- Therefore, with information acquisition uncertainty, more informed trading can lead to an overall welfare improvement in the economy.

References