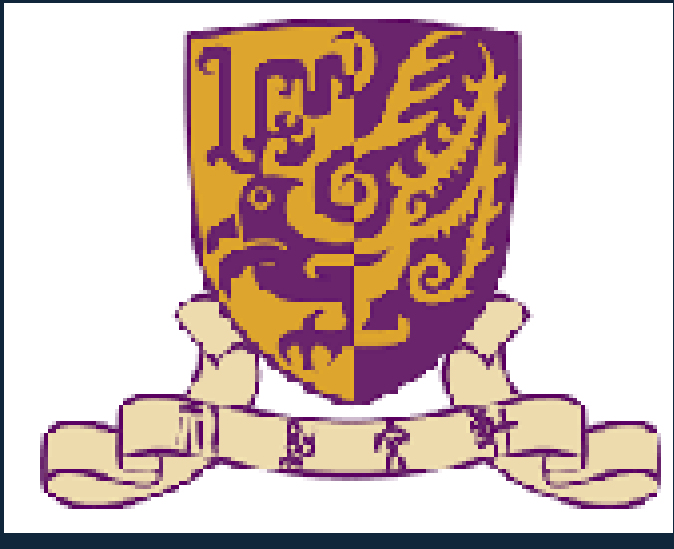




Information Product Differentiation: Competition Over Variety and Quality



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Highlights

We study the welfare implications of **financial production differentiation**. Financial intermediaries invest strategically along two dimensions: quality (portfolio characteristics) and non-quality attributes. Our analysis shows

- **As competition intensifies**—either through lower costs of enhancing quality or diminished investor preference for non-quality features—**information quality improves**, and disagreement across investors declines.
- Market equilibrium is **not socially optimal**.
- Producers engage in **excessive differentiation along non-quality dimensions** to secure market power, which leads to underinvestment in information quality.

This distortion generates an **oversupply of variety** but a suboptimal level of high-quality information.

Backgrounds

The proliferation of financial products and services is a salient pattern

- Pros: heterogeneous tastes (Foerster et al., 2017)
- Cons: Lack of competition (Hortaçsu and Syverson, 2004)
- Research question
 1. Does the market achieve the socially optimal number of financial products?
 2. If not, what are the potential frictions causing this market inefficiency?

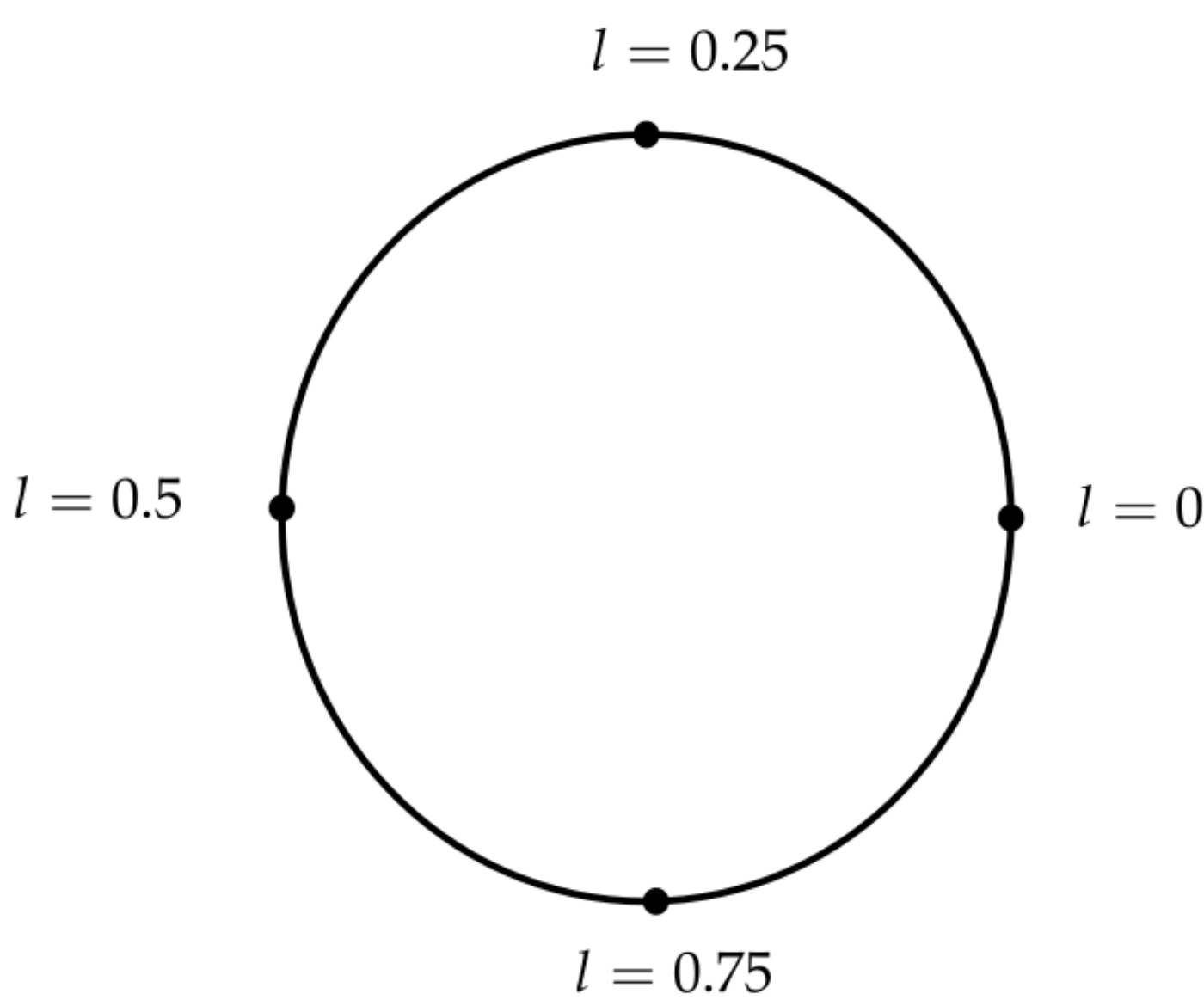
Model Setup

- Dividend:

$$\frac{d\delta_t}{\delta_t} = \underbrace{\mu_\delta}_{\text{Unobservable growth rate}} dt + \sigma_\delta dZ_t, \quad (1)$$

- Household preference:

$$U(\{c_{j,t}\}_{t=0}^\infty, l; l^*(j)) = \underbrace{\int_0^\infty \exp(-\rho t) \log(c_{j,t}) dt}_{\text{Consumption utility}} \underbrace{-\kappa |l^* - l|}_{\text{Non-quality utility}} \quad (2)$$



- Financial product design:

$$\max_{\underbrace{l_i}_{\text{Non-quality feature}}} \max_{\underbrace{k_i}_{\text{Quality feature}}} p_0 * s(k_i, l_i; k_{-i}, l_{-i}) - \phi k_i \quad (3)$$

Nature: Information materialized

Game 1: Information market

Game 2: Financial Market

Stage 1. Producers choose non-quality characteristics

Portfolios are managed

Stage 2. Producers choose quality

Markets (security and goods) clear

Stage 3. Households choose producers

Results

Competition and Industry Structure

The symmetric equilibrium consists of the following components:

1. the total number of producers, $N^* = \rho \sqrt{\frac{2\kappa}{\phi}}$;
2. the equilibrium information quality each producer chooses, $k^* = \frac{1}{\rho \sqrt{2\kappa\phi}}$;
3. the information market share each producer captures, $s^* = \frac{1}{N^*}$;
4. The expected disagreement is $E[D] = \frac{1}{k^*} = \rho \sqrt{2\kappa\phi}$.

Social Welfare

When the socially optimal number of producers N^s is large, the social welfare function can be approximated by:

$$U_s(N) \approx -\frac{\kappa}{4N} - \frac{\phi N}{2\rho^2} - \frac{1}{\rho} \left[\log(N) + \frac{1}{2} \right] + \frac{1}{2} e^{\frac{\rho}{\phi N}} E_1 \left(\frac{\rho}{\phi N} \right) \left(\frac{1}{\rho} + \frac{1}{\phi N} \right), \quad (4)$$

where $E_1(x) = \int_x^\infty \frac{e^{-t}}{t} dt$ is the exponential integral function. Under this approximation, the socially optimal number of information producers N^s admits the following closed-form expression:

$$N^s \approx \tilde{N}^s := \rho \left(\sqrt{\frac{1}{4\phi^2} + \frac{\kappa}{2\phi}} - \frac{1}{2\phi} \right),$$

with the corresponding information quality given by $\tilde{k}^s = \frac{1}{N^s}$.

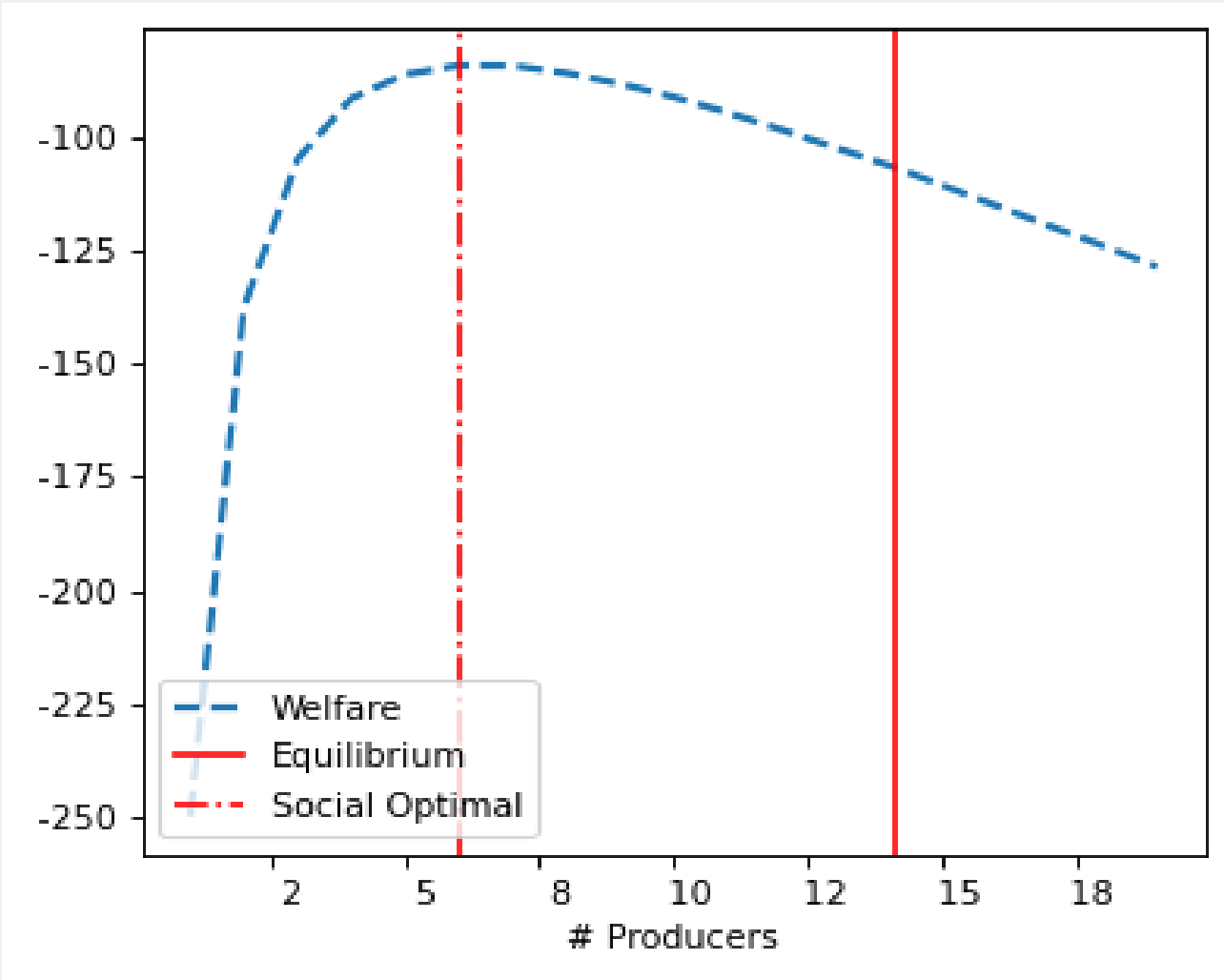


Figure 1. Social Welfare Analysis

Discussion

1. **Key intuition:** Preference heterogeneity means the non-quality feature gives rise to market power while the quality feature cannot.
2. **Supply-side theory:** Market power reduces financial intermediaries' incentives to improve quality
3. **Technology:** Technology improvement mitigates consumption distortion
4. **Policy implication:** Regulators should be alert about the launch of financial products marketing features irrelevant to portfolio performance.

References

- Foerster, S., J. T. Linnainmaa, B. T. Melzer, and A. Previtero (2017). Retail financial advice: does one size fit all? *The Journal of Finance* 72(4), 1441–1482.
- Hortaçsu, A. and C. Syverson (2004). Product differentiation, search costs, and competition in the mutual fund industry: A case study of s&p 500 index funds. *Quarterly Journal of Economics* 119(2), 403–456.