



## Chapter 8.2

# Obtaining future investment banking business

# Outline

- Problem and model assumptions
- Competitive investment banks
- Optimizing companies
- Summary

## ■ Problem and model assumptions

■ Competitive investment banks

■ Optimizing companies

■ Summary

# Accuracy and future business

- ▶ Financial analysts provide forecasts about the future performance of the securities of companies, mostly shares
- ▶ Precise forecasts increase reputation and income as this can attract investors to the investment bank
- ▶ The investment bank will also seek future business from the company, the more positive the coverage the more likely they gain this business
- ▶ Financial analysts have to balance forecast accuracy and the attraction of companies

# Competing investment banks

- ▶ A company is covered by  $N$  investment banks
- ▶ Future investment banking business from this company is worth  $V_B$  to the investment bank
- ▶ Each financial analyst receives a noisy signal about the true value:  $s_i = P + \varepsilon_i$
- ▶ Analysts publish a forecast  $\hat{P}_i$  which has a bias  $b_i = E \left[ \hat{P}_i - E[P|s_i] \right]$

# Forecast error

- ▶ Forecast error:  $E \left[ \left( \hat{P}_i - P \right)^2 \middle| s_i \right] = b_i^2 + Var [P|s_i]$
- ▶ Bayesian learning gives  $Var [P|s_i] = \frac{1}{\frac{1}{\sigma_P^2} + \frac{1}{\sigma_i^2}}$
- ▶ This gives  $E \left[ \left( \hat{P}_i - P \right)^2 \middle| s_i \right] = b_i^2 + \frac{1}{\frac{1}{\sigma_P^2} + \frac{1}{\sigma_i^2}}$

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■ Competitive investment banks

■ Optimizing companies

■ Summary

# Investment bank profits

- ▶ An investment bank obtains the future business  $V_B$  of the company with probability  $p_i$
- ▶ Banks loose income from investors if the forecast error increases
- ▶ The importance of investor income is  $\alpha_B$
- ▶ Profits:  $\Pi_B^i = p_i V_B - \alpha_B E \left[ \left( \hat{P}_i - P \right)^2 \middle| s_i \right]$

# Competitive bias

- ▶ If investment banks compete, then  $\Pi_B^i = 0$
- ▶ This gives a bias  $b_i = \sqrt{\frac{p_i V_B}{\alpha_B} - \frac{1}{\frac{1}{\sigma_P^2} + \frac{1}{\sigma_i^2}}} > 0$
- ▶ The more important future business is, the higher the bias
- ▶ The more important investor income is, the lower the bias

■ Problem and model assumptions

■ Competitive investment banks

■ **Optimizing companies**

■ Summary

# Company profits

- ▶ Companies prefer a positive bias and derive utility from the average bias, giving it importance  $\alpha_C$
- ▶ Costs of providing information to financial is increasing in the precision of the signal
- ▶  $\Pi_C = \alpha_C \frac{1}{N} \sum_{i=1}^N b_i - \sum_{i=1}^N C_i$
- ▶ Companies allocate the investment banking business to investment bank  $i$  with probability  $p_i$ , such that  $\sum_{i=1}^N p_i = 1$

# Optimal bias

- ▶ Companies maximize profits over the allocation of investment banking business and precision of information they provide
- ▶ Objective function:  $\mathcal{L} = \Pi_C - \zeta \left( \sum_{i=1}^N p_i - 1 \right)$
- ▶  $\frac{\partial \mathcal{L}}{\partial p_i} = \frac{\alpha_C V_B}{2N b_i} - \zeta = 0$
- $$\frac{\partial \mathcal{L}}{\partial \frac{1}{\sigma_i^2}} = \frac{\alpha_C}{2N b_i} \left( \frac{1}{\frac{1}{\sigma_P^2} + \frac{1}{\sigma_i^2}} \right)^2 - \frac{\partial C_i}{\partial \frac{1}{\sigma_i^2}} = 0$$
- ▶ This gives  $b_i = \frac{\alpha_C}{2N} \frac{1}{\frac{\partial C_i}{\partial \frac{1}{\sigma_i^2}} \left( \frac{1}{\sigma_P^2} + \frac{1}{\sigma_i^2} \right)^2} > 0$
- ▶ Setting this and the competitive bias of investment banks equal, we get the precision of information and the first condition solves for  $p_i$

# Properties of the bias

- ▶ The more important the bias is for the company  $\alpha_C$ , the higher it is
- ▶ More financial analysts reduce the bias as each investment bank has less influence and less likely to obtain the investment banking business
- ▶ Investment banks compete for a larger share of the investment banking business by biasing their forecasts
- ▶ They forego investor revenue to gain investment banking business

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## Seeking additional revenue

- ▶ Companies value positive analyst coverage and will reward investment banks with other additional revenue
- ▶ Investment banks compete for this revenue by biasing their forecast
- ▶ The extent of this bias will depend on the relative importance of the bias to companies and the importance of reputation to investment banks
- ▶ More financial analysts covering a company will reduce the bias

# Implications

- ▶ The focus of financial analysts on gaining investment banking business will cause upwardly biased recommendations
- ▶ Policies that limit the ability to financial analysts to attract additional revenue, higher  $\alpha_B$ , will reduce the bias
- ▶ If financial analysts are not profitable, there will be less financial analysts, increasing the bias



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Andreas Krause  
Department of Economics  
University of Bath  
Claverton Down  
Bath BA2 7AY  
United Kingdom

E-mail: [mnsak@bath.ac.uk](mailto:mnsak@bath.ac.uk)