



Chapter 8.1

Financial analyst access to company information

- Financial analysts rely on access to information provided by companies.
- With companies seeking positive analyst coverage, we will investigate how this affects the forecasts they published based on the information they have obtained
- We will take into account that companies will seek to influence the recommendations of financial analysts.

Companies prefer positive coverage

- ▶ Financial analysts should provide the best forecast possible, given their information
- ▶ Companies provide access to additional information to financial analysts
- ▶ Companies have an interest in positive coverage
- ▶ If financial analysts provide more positive coverage, companies provide more information

Companies prefer positive coverage

- Companies are affected by the analyst report as this in turn affects their share price. Hence companies have an interest in the contents of the analyst report.
 - ▶
 - The role of financial analysts is to provide information that would help investors in their decision-making and to this effect they should use the information they hold to provide a forecast of future performance of the company.
 - Of course this analysis and the forecast based on their analysis has to be based on the information they have access to.
 - ▶ To obtain information, beyond what is publicly available, financial analysts rely on the company they cover to provide this information. This can be in the form of documents, but also through personal interactions at analyst conferences.
 - ▶ Companies prefer positive recommendations as this usually boosts the share price and thereby the payment to senior managers which are commonly linked to the share price; hence a positive bias is preferred by companies.
 - ▶ As we will see, the more financial analysts accommodate the request by companies, the more precise information they provide.
- Companies seek to induce financial analysts to provide positive coverage.

Information and forecast

- ▶ Financial analysts obtain a signal of the current value $s = P + \varepsilon$
- ▶ The signal is imperfect
- ▶ The published forecast is \hat{P}
- ▶ Objective forecast is $E[P|s]$

- Investment banks use information obtained from companies and other sources to provide a forecast about the future performance of the security.
 - ▶
 - The financial analyst receives information about the future price of the shares of the company. This information is not perfect as it may have some error; we call this a signal.
 - The signal consists of the price and the error term, but we can only observe the signal, not its components. Given the signal, the best forecast the analyst could provide is to follow the signal.
 - ▶ Due to the error term, the information, the signal, is not perfect, but what is called a noisy signal; errors are possible.
 - ▶ Financial analysts publish a forecast of the future price, which is what we are looking at here.
 - ▶ Using their information, the forecast should be the expected price given this information, which will be their signal. The published forecast does not have to be identical with the true forecast. The difference between the two is the bias.
- Using information would give the best possible forecast, but we now will see if providing such a forecast is actually optimal.

Forecast error

- ▶ Financial analyst would minimize the forecast error $\Pi_B = E \left[\left(\hat{P} - P \right)^2 \middle| s \right]$
- ▶ $\Pi_B = E \left[\left(\hat{P} - E[P|s] \right)^2 \right] + Var[P|s]$
- ▶ Bayesian learning gives $Var[P|s] = \frac{1}{\frac{1}{\sigma_P^2} + \frac{1}{\sigma_\varepsilon^2}}$
- ▶ $\Pi_B = b^2 + \frac{1}{\frac{1}{\sigma_P^2} + \frac{1}{\sigma_\varepsilon^2}}$

- We first determine the forecast error, which is the difference between the published forecast and the actual price, given the information the financial analyst had.
- ▶ The forecast error is usually defined as the square of the difference between the published forecast and the actual price. Financial analysts seek to provide the best possible forecast, so seek to minimize their error.
- ▶ The variance of the price, given the signal, can be determined using Bayesian learning and we get this as a combination of the variance of the price without a signal, σ_P^2 and the uncertainty of the signal, σ_ε^2 .
- ▶ The bias is the difference between the published forecast and the objective forecast, and we can rewrite the forecast error as in the *formula*.
- We can now continue by minimizing the forecast error.

Minimal forecast error

- ▶ Forecast error is minimal if $\frac{\partial \Pi_B}{\partial b} = 0$, or $b = -\frac{1}{2} \frac{\partial \sigma_\varepsilon^2}{\partial b} \left(\frac{\sigma_P^2}{\sigma_P^2 + \sigma_\varepsilon^2} \right)^2 > 0$
- ▶ If companies give better access for positive coverage $\frac{\partial \sigma_\varepsilon^2}{\partial b} < 0$
- ▶ The bias will be positive
- ▶ The positive bias trades off the positive bias against the more precise information

Minimal forecast error

- We now seek the bias for which the forecast error is smallest.
- ▶
 - We apply the first order condition for a minimum for the forecast error for a given bias.
 - We can solve this first order condition for the optimal bias.
 - We will easily see that expression will be positive.
- ▶ Companies might be inclined to give access to more or better information if financial analysts bias their information. Hence the variance of the error term will reduce with the size of the bias.
- ▶ In this case the bias will be positive.
- ▶ On the one hand, the bias will increase the forecast error as it increases any deviations from the true value, but on the other hand a bias increases the amount of information, reducing the uncertainty and hence the forecast error. This trade-off will allow the forecast error to be smaller with a positive bias than with no bias.
- We can look at what determines the size of the positive bias.

Properties of the bias

- ▶ The more sensitive companies are to the bias $\frac{\partial \sigma_\varepsilon^2}{\partial b}$, the higher the bias is
- ▶ The more precise the signal is σ_ε , the lower the bias
- ▶ The more uncertainty in the market σ_P , the lower the bias

Properties of the bias

- Investment bias their published forecast and the extent of this bias will depend on the company's reaction to such a bias.
 - ▶ If companies are very sensitive to the bias and release significant more information for a small increase in the bias, the bias will increase. Financial analysts will seek to access more precise information by increasing the bias, which will reduce their forecast error as the information precision increases more.
 - ▶ If information provided is already precise, then the bias will be lower as the company cannot reduce the uncertainty much further.
 - ▶ A large general uncertainty in the market will reduce the bias as in this case the value of the information is low and the forecast error would not reduce much, even with more precise information.
- We can finally look at some implications of our results.

Summary

- ▶ Companies prefer positive analyst coverage and can encourage that by granting more access to information in return for more positive coverage
- ▶ Minimizing their forecast error trades off the biased prediction against access to better information
- ▶ This will result in a positive bias of the analyst forecast
- ▶ Such a bias is optimally minimizing forecast errors

- Investment banks provide biased analyst forecasts in order to gain access to information.
 - ▶
 - Companies benefit from positive analyst coverage through higher stock prices.
 - Given it is beneficial, they seek to encourage such positive coverage by releasing information only in exchange for overly positive reports.
 - ▶ Financial analysts seeking to provide the best possible forecast, the one with the lowest forecast error, will seek to balance the positive bias against the more precise information they have access to.
 - ▶ The result of this optimisation is that analysts provide reports that are overly positive.
 - ▶ This bias is optimal also for investors relying on this information as it provides the best possible forecast.
- A positively biased analyst report is optimal for investment banks and investors if companies are releasing additional information only to those financial analysts that are more positively inclined towards the company.



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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