Andreas Krause

Chapter 10

Regulation of financial analysts

Outline

Copyright © 2024 by Andreas Krause

Copyright © 2024 by Andreas Krause

Types of financial analysts

Copyright © 2024 by Andreas Krause

Types of financial analysts

- Buy-side financial analysts provide reports on companies aimed at investors

Copyright © 2024 by Andreas Krause

Types of financial analysts

- Buy-side financial analysts provide reports on companies aimed at investors
- Sell-side financial analysts work for companies on mergers and acquisitions and security offerings

Copyright © 2024 by Andreas Krause

Types of financial analysts

- Buy-side financial analysts provide reports on companies aimed at investors
- Sell-side financial analysts work for companies on mergers and acquisitions and security offerings
- Traditionally financial switched between these roles

Copyright © 2024 by Andreas Krause

Types of financial analysts

- Buy-side financial analysts provide reports on companies aimed at investors
- Sell-side financial analysts work for companies on mergers and acquisitions and security offerings
- Traditionally financial switched between these roles, but this has been abolished by regulation

Copyright © 2024 by Andreas Krause

Types of financial analysts

- Buy-side financial analysts provide reports on companies aimed at investors
- Sell-side financial analysts work for companies on mergers and acquisitions and security offerings
- Traditionally financial switched between these roles, but this has been abolished by regulation
- The aim was to reduce the conflict of interest between the roles

Copyright © 2024 by Andreas Krause

Types of financial analysts

- Buy-side financial analysts provide reports on companies aimed at investors
- Sell-side financial analysts work for companies on mergers and acquisitions and security offerings
- Traditionally financial switched between these roles, but this has been abolished by regulation
- The aim was to reduce the conflict of interest between the roles and improve the quality buy-side financial analyst reports

Copyright © 2024 by Andreas Krause

Types of financial analysts

- Buy-side financial analysts provide reports on companies aimed at investors
- Sell-side financial analysts work for companies on mergers and acquisitions and security offerings
- Traditionally financial switched between these roles, but this has been abolished by regulation
- The aim was to reduce the conflict of interest between the roles and improve the quality buy-side financial analyst reports

Copyright © 2024 by Andreas Krause

Regulatory aims

Copyright © 2024 by Andreas Krause

Regulatory aims

- Financial analysts are forecasting the future value of securities

Copyright © 2024 by Andreas Krause

Regulatory aims

- Financial analysts are forecasting the future value of securities, using information (signals) they receive

Copyright © 2024 by Andreas Krause

Regulatory aims

- Financial analysts are forecasting the future value of securities, using information (signals) they receive
- The more precise their signal, the better the forecast

Copyright © 2024 by Andreas Krause

Regulatory aims

- Financial analysts are forecasting the future value of securities, using information (signals) they receive
- The more precise their signal, the better the forecast
- The aim would be to maximize the quality of such forecasts

Copyright © 2024 by Andreas Krause

Regulatory aims

- Financial analysts are forecasting the future value of securities, using information (signals) they receive
- The more precise their signal, the better the forecast
- The aim would be to maximize the quality of such forecasts through regulation

Copyright © 2024 by Andreas Krause

Regulatory aims

- Financial analysts are forecasting the future value of securities, using information (signals) they receive
- The more precise their signal, the better the forecast
- The aim would be to maximize the quality of such forecasts through regulation
- Regulatory interventions affect the remuneration of financial analysts

Copyright © 2024 by Andreas Krause

Regulatory aims

- Financial analysts are forecasting the future value of securities, using information (signals) they receive
- The more precise their signal, the better the forecast
- The aim would be to maximize the quality of such forecasts through regulation
- Regulatory interventions affect the remuneration of financial analysts as an incentive to improve the quality

Copyright © 2024 by Andreas Krause

Regulatory aims

- Financial analysts are forecasting the future value of securities, using information (signals) they receive
- The more precise their signal, the better the forecast
- The aim would be to maximize the quality of such forecasts through regulation
- Regulatory interventions affect the remuneration of financial analysts as an incentive to improve the quality

Copyright © 2024 by Andreas Krause

Signals

Copyright © 2024 by Andreas Krause

Signals

- The true value of a stock is either high P_H with probability π or low $P_L < P_H$ otherwise

Copyright © 2024 by Andreas Krause

Signals

- The true value of a stock is either high P_H with probability π or low $P_L < P_H$ otherwise
- Analysts obtain a signal s_i on this value

Copyright © 2024 by Andreas Krause

Signals

- The true value of a stock is either high P_H with probability π or low $P_L < P_H$ otherwise
- Analysts obtain a signal s_i on this value
- The signal is correct with probability $Prob_i(H|P_H) = Prob_i(L|P_L) = \rho_i \geq \frac{1}{2}$

Copyright © 2024 by Andreas Krause

Signals

- The true value of a stock is either high P_H with probability π or low $P_L < P_H$ otherwise
- Analysts obtain a signal s_i on this value
- The signal is correct with probability $Prob_i(H|P_H) = Prob_i(L|P_L) = \rho_i \geq \frac{1}{2}$
- We have strong analysts and weak analysts with $\rho_S > \rho_W$

Copyright © 2024 by Andreas Krause

Signals

- The true value of a stock is either high P_H with probability π or low $P_L < P_H$ otherwise
- Analysts obtain a signal s_i on this value
- The signal is correct with probability $Prob_i(H|P_H) = Prob_i(L|P_L) = \rho_i \geq \frac{1}{2}$
- We have strong analysts and weak analysts with $\rho_S > \rho_W$
- An analyst is strong with probability γ

Copyright © 2024 by Andreas Krause

Signals

- The true value of a stock is either high P_H with probability π or low $P_L < P_H$ otherwise
- Analysts obtain a signal s_i on this value
- The signal is correct with probability $Prob_i\left(H|P_H\right) = Prob_i\left(L|P_L\right) = \rho_i \geq \frac{1}{2}$
- We have strong analysts and weak analysts with $\rho_S > \rho_W$
- An analyst is strong with probability γ

Copyright © 2024 by Andreas Krause

Forecast error

Copyright © 2024 by Andreas Krause

Forecast error

- Financial analysts make a prediction $\hat{P}$ based on their signal

Copyright © 2024 by Andreas Krause

Forecast error

- Financial analysts make a prediction $\hat{P}$ based on their signal and the forecast error is $E\left[\left(\hat{P}-P_j\right)^2\right]$

Copyright © 2024 by Andreas Krause

Forecast error

- Financial analysts make a prediction $\hat{P}$ based on their signal and the forecast error is $E\left[\left(\hat{P}-P_j\right)^2\right]$
- If the prediction is wrong we have $(\hat{P}-P_j)^2=(P_H-P_L)^2$

Copyright © 2024 by Andreas Krause

Forecast error

- Financial analysts make a prediction $\hat{P}$ based on their signal and the forecast error is $E\left[\left(\hat{P}-P_j\right)^2\right]$
- If the prediction is wrong we have $(\hat{P}-P_j)^2=(P_H-P_L)^2$ and $(\hat{P}-P_j)^2=0$ if the prediction is correct

Copyright © 2024 by Andreas Krause

Forecast error

- Financial analysts make a prediction $\hat{P}$ based on their signal and the forecast error is $E\left[\left(\hat{P}-P_j\right)^2\right]$
- If the prediction is wrong we have $(\hat{P}-P_j)^2=(P_H-P_L)^2$ and $(\hat{P}-P_j)^2=0$ if the prediction is correct
- A prediction is wrong if the signal is wrong, it has probability $1-\rho_i$

Copyright © 2024 by Andreas Krause

Forecast error

- Financial analysts make a prediction $\hat{P}$ based on their signal and the forecast error is $E\left[\left(\hat{P}-P_j\right)^2\right]$
- If the prediction is wrong we have $(\hat{P}-P_j)^2=(P_H-P_L)^2$ and $(\hat{P}-P_j)^2=0$ if the prediction is correct
- A prediction is wrong if the signal is wrong, it has probability $1-\rho_i$
- Forecast error of an analyst is $(1-\rho_i)\,(P_H-P_L)^2$

Copyright © 2024 by Andreas Krause

Forecast error

- Financial analysts make a prediction $\hat{P}$ based on their signal and the forecast error is $E\left[\left(\hat{P}-P_j\right)^2\right]$
- If the prediction is wrong we have $(\hat{P}-P_j)^2=(P_H-P_L)^2$ and $(\hat{P}-P_j)^2=0$ if the prediction is correct
- A prediction is wrong if the signal is wrong, it has probability $1-\rho_i$
- Forecast error of an analyst is $(1-\rho_i)\left(P_H-P_L\right)^2$
- Combining this for the strong and weak analyst we get $E\left[\left(\hat{P}-P_j\right)^2\right]=\left(\gamma(1-\rho_S)+(1-\gamma)\left(1-\rho_W\right)\right)\left(P_H-P_L\right)^2$

Copyright © 2024 by Andreas Krause

Forecast error

- Financial analysts make a prediction $\hat{P}$ based on their signal and the forecast error is $E\left[\left(\hat{P}-P_j\right)^2\right]$
- If the prediction is wrong we have $(\hat{P}-P_j)^2=(P_H-P_L)^2$ and $(\hat{P}-P_j)^2=0$ if the prediction is correct
- A prediction is wrong if the signal is wrong, it has probability $1-\rho_i$
- Forecast error of an analyst is $(1-\rho_i)\left(P_H-P_L\right)^2$
- Combining this for the strong and weak analyst we get $E\left[\left(\hat{P}-P_j\right)^2\right]=\left(\gamma(1-\rho_S)+(1-\gamma)\left(1-\rho_W\right)\right)\left(P_H-P_L\right)^2$

Copyright © 2024 by Andreas Krause

Analyst profits

Copyright © 2024 by Andreas Krause

Analyst profits

- Analyst is paid remuneration w_i
- Profits: $\Pi_A = \quad w_S + \qquad\qquad w_W$

Copyright © 2024 by Andreas Krause

Analyst profits

- Analyst is paid remuneration w_i, depending in its type
- Profits: $\Pi_A = \gamma w_S + (1 - \gamma) w_W$

Copyright © 2024 by Andreas Krause

Analyst profits

- Analyst is paid remuneration w_i, depending in its type
- Obtaining strong signals costs c_I

- Profits: $\Pi_A = \gamma w_S + (1-\gamma) w_W - \frac{1}{2} c_I \gamma^2$

Copyright © 2024 by Andreas Krause

Analyst profits

- Analyst is paid remuneration w_i, depending in its type
- Obtaining strong signals costs c_I
- Costs of forecast errors from loss of reputation are c_P
- Profits: $\Pi_A = \gamma w_S + (1-\gamma) w_W - \frac{1}{2} c_I \gamma^2 - c_P E\left[\left(\hat{P} - P_j\right)^2\right]$

Copyright © 2024 by Andreas Krause

Analyst profits

- Analyst is paid remuneration w_i, depending in its type
- Obtaining strong signals costs c_I
- Costs of forecast errors from loss of reputation are c_P
- Profits: $\Pi_A = \gamma w_S + (1-\gamma) w_W - \frac{1}{2} c_I \gamma^2 - c_P E\left[\left(\hat{P} - P_j\right)^2\right]$
- We assume financial analysts are competitive

Copyright © 2024 by Andreas Krause

Analyst profits

- Analyst is paid remuneration w_i, depending in its type
- Obtaining strong signals costs c_I
- Costs of forecast errors from loss of reputation are c_P
- Profits: $\Pi_A = \gamma w_S + (1-\gamma) w_W - \frac{1}{2} c_I \gamma^2 - c_P E\left[\left(\hat{P} - P_j\right)^2\right]$
- We assume financial analysts are competitive and $\Pi_A = 0$

Copyright © 2024 by Andreas Krause

Analyst profits

- Analyst is paid remuneration w_i, depending in its type
- Obtaining strong signals costs c_I
- Costs of forecast errors from loss of reputation are c_P
- Profits: $\Pi_A = \gamma w_S + (1-\gamma) w_W - \frac{1}{2} c_I \gamma^2 - c_P E\left[\left(\hat{P} - P_j\right)^2\right]$
- We assume financial analysts are competitive and $\Pi_A = 0$

Copyright © 2024 by Andreas Krause

Investment bank profits

Copyright © 2024 by Andreas Krause

Investment bank profits

- Investment banks obtain additional investment bank business V from the covered company

Copyright © 2024 by Andreas Krause

Investment bank profits

- Investment banks obtain additional investment bank business V from the covered company if they forecast a high value P_H

Copyright © 2024 by Andreas Krause

Investment bank profits

- Investment banks obtain additional investment bank business V from the covered company if they forecast a high value P_H
- The high value is predicted if the value is high and the signal is correct or the value is low and the signal wrong, for each type of analyst
- $$Prob\left(V_H\right) = \gamma\left(\rho_S\pi + \left(1-\rho_S\right)\left(1-\pi\right)\right) + \left(1-\gamma\right)\left(\rho_W\pi + \left(1-\rho_W\right)\left(1-\pi\right)\right)$$

Copyright © 2024 by Andreas Krause

Investment bank profits

- Investment banks obtain additional investment bank business V from the covered company if they forecast a high value P_H
- The high value is predicted if the value is high and the signal is correct or the value is low and the signal wrong, for each type of analyst
- $$Prob\left(V_H\right) = \gamma\left(\rho_S\pi + \left(1-\rho_S\right)\left(1-\pi\right)\right) + \left(1-\gamma\right)\left(\rho_W\pi + \left(1-\rho_W\right)\left(1-\pi\right)\right)$$
- Investment bank get this additional revenue if the forecast is high

- $\Pi_B = Prob\left(P_H\right)V$

Copyright © 2024 by Andreas Krause

Investment bank profits

- Investment banks obtain additional investment bank business V from the covered company if they forecast a high value P_H
- The high value is predicted if the value is high and the signal is correct or the value is low and the signal wrong, for each type of analyst
- $Prob\left(V_H\right) = \gamma\left(\rho_S\pi + \left(1-\rho_S\right)\left(1-\pi\right)\right) + \left(1-\gamma\right)\left(\rho_W\pi + \left(1-\rho_W\right)\left(1-\pi\right)\right)$
- Investment bank get this additional revenue if the forecast is high and pay the salaries of the analyst
- $\Pi_B = Prob\left(P_H\right)V - \left(\gamma w_S + \left(1-\gamma\right)w_W\right)$

Copyright © 2024 by Andreas Krause

Investment bank profits

- Investment banks obtain additional investment bank business V from the covered company if they forecast a high value P_H
- The high value is predicted if the value is high and the signal is correct or the value is low and the signal wrong, for each type of analyst
- $Prob\left(V_H\right) = \gamma\left(\rho_S\pi + \left(1-\rho_S\right)\left(1-\pi\right)\right) + \left(1-\gamma\right)\left(\rho_W\pi + \left(1-\rho_W\right)\left(1-\pi\right)\right)$
- Investment bank get this additional revenue if the forecast is high and pay the salaries of the analyst
- $\Pi_B = Prob\left(P_H\right)V - \left(\gamma w_S + \left(1-\gamma\right)w_W\right)$

Copyright © 2024 by Andreas Krause

Copyright © 2024 by Andreas Krause

Optimal fraction of strong analysts

Copyright © 2024 by Andreas Krause

Optimal fraction of strong analysts

- Analysts optimize over the likelihood of obtaining a precise signal

Copyright © 2024 by Andreas Krause

Optimal fraction of strong analysts

- Analysts optimize over the likelihood of obtaining a precise signal, solving $\frac{\partial \Pi_A}{\partial \gamma} = 0$

Copyright © 2024 by Andreas Krause

Optimal fraction of strong analysts

- Analysts optimize over the likelihood of obtaining a precise signal, solving $\frac{\partial \Pi_A}{\partial \gamma} = 0$
- This gives $\gamma = \frac{w_S - w_W}{c_I} + \frac{c_P}{c_I} (\rho_S - \rho_W) (P_H - P_L)^2$

Copyright © 2024 by Andreas Krause

Optimal fraction of strong analysts

- Analysts optimize over the likelihood of obtaining a precise signal, solving $\frac{\partial \Pi_A}{\partial \gamma} = 0$
- This gives $\gamma = \frac{w_S - w_W}{c_I} + \frac{c_P}{c_I} (\rho_S - \rho_W) (P_H - P_L)^2$
- Investment banks maximize their profits by setting wages w_i optimally

Copyright © 2024 by Andreas Krause

Optimal fraction of strong analysts

- Analysts optimize over the likelihood of obtaining a precise signal, solving $\frac{\partial \Pi_A}{\partial \gamma} = 0$
- This gives $\gamma = \frac{w_S - w_W}{c_I} + \frac{c_P}{c_I} (\rho_S - \rho_W) (P_H - P_L)^2$
- Investment banks maximize their profits by setting wages w_i optimally, solving $\frac{\partial \Pi_B}{\partial w_i} = 0$ with $\Pi_A = 0$

Copyright © 2024 by Andreas Krause

Optimal fraction of strong analysts

- Analysts optimize over the likelihood of obtaining a precise signal, solving $\frac{\partial \Pi_A}{\partial \gamma} = 0$
- This gives $\gamma = \frac{w_S - w_W}{c_I} + \frac{c_P}{c_I} (\rho_S - \rho_W) (P_H - P_L)^2$
- Investment banks maximize their profits by setting wages w_i optimally, solving $\frac{\partial \Pi_B}{\partial w_i} = 0$ with $\Pi_A = 0$
- This gives $\gamma = \frac{2\pi - 1}{c_I} (\rho_S - \rho_W) V + \frac{c_P}{c_I} (\rho_S - \rho_W) (P_H - P_L)^2$

Copyright © 2024 by Andreas Krause

Optimal fraction of strong analysts

- Analysts optimize over the likelihood of obtaining a precise signal, solving $\frac{\partial \Pi_A}{\partial \gamma} = 0$
- This gives $\gamma = \frac{w_S - w_W}{c_I} + \frac{c_P}{c_I} (\rho_S - \rho_W) (P_H - P_L)^2$
- Investment banks maximize their profits by setting wages w_i optimally, solving $\frac{\partial \Pi_B}{\partial w_i} = 0$ with $\Pi_A = 0$
- This gives $\gamma = \frac{2\pi - 1}{c_I} (\rho_S - \rho_W) V + \frac{c_P}{c_I} (\rho_S - \rho_W) (P_H - P_L)^2$
- Setting these equal, we get $w_S - w_W = (2\pi - 1) (\rho_S - \rho_W) V$

Copyright © 2024 by Andreas Krause

Optimal fraction of strong analysts

- Analysts optimize over the likelihood of obtaining a precise signal, solving $\frac{\partial \Pi_A}{\partial \gamma} = 0$
- This gives $\gamma = \frac{w_S - w_W}{c_I} + \frac{c_P}{c_I} (\rho_S - \rho_W) (P_H - P_L)^2$
- Investment banks maximize their profits by setting wages w_i optimally, solving $\frac{\partial \Pi_B}{\partial w_i} = 0$ with $\Pi_A = 0$
- This gives $\gamma = \frac{2\pi - 1}{c_I} (\rho_S - \rho_W) V + \frac{c_P}{c_I} (\rho_S - \rho_W) (P_H - P_L)^2$
- Setting these equal, we get $w_S - w_W = (2\pi - 1) (\rho_S - \rho_W) V$
- And then $\gamma^* = \frac{\rho_S - \rho_W}{c_I} \left((2\pi - 1) V + c_P (P_H - P_L)^2 \right)$

Copyright © 2024 by Andreas Krause

Optimal fraction of strong analysts

- Analysts optimize over the likelihood of obtaining a precise signal, solving $\frac{\partial \Pi_A}{\partial \gamma} = 0$
- This gives $\gamma = \frac{w_S - w_W}{c_I} + \frac{c_P}{c_I}(\rho_S - \rho_W)(P_H - P_L)^2$
- Investment banks maximize their profits by setting wages w_i optimally, solving $\frac{\partial \Pi_B}{\partial w_i} = 0$ with $\Pi_A = 0$
- This gives $\gamma = \frac{2\pi - 1}{c_I}(\rho_S - \rho_W)V + \frac{c_P}{c_I}(\rho_S - \rho_W)(P_H - P_L)^2$
- Setting these equal, we get $w_S - w_W = (2\pi - 1)(\rho_S - \rho_W)V$
- And then $\gamma^* = \frac{\rho_S - \rho_W}{c_I}\left((2\pi - 1)V + c_P(P_H - P_L)^2\right)$

Copyright © 2024 by Andreas Krause

Properties

Copyright © 2024 by Andreas Krause

Properties

- More uncertainty $P_H - P_L$ and loss to reputation c_P increases the strong analysts

Copyright © 2024 by Andreas Krause

Properties

- More uncertainty $P_H - P_L$ and loss to reputation c_P increases the strong analysts
- Larger difference in ability $\rho_S - \rho_W$ increases the strong analysts

Copyright © 2024 by Andreas Krause

Properties

- More uncertainty $P_H - P_L$ and loss to reputation c_P increases the strong analysts
- Larger difference in ability $\rho_S - \rho_W$ increases the strong analysts
- Larger additional business V increases the strong analysts

Copyright © 2024 by Andreas Krause

Properties

- More uncertainty $P_H - P_L$ and loss to reputation c_P increases the strong analysts
- Larger difference in ability $\rho_S - \rho_W$ increases the strong analysts
- Larger additional business V increases the strong analysts
- Higher costs of becoming strong, reduces the strong analysts

Copyright © 2024 by Andreas Krause

Properties

- More uncertainty $P_H - P_L$ and loss to reputation c_P increases the strong analysts
- Larger difference in ability $\rho_S - \rho_W$ increases the strong analysts
- Larger additional business V increases the strong analysts
- Higher costs of becoming strong, reduces the strong analysts

Copyright © 2024 by Andreas Krause

Copyright © 2024 by Andreas Krause

Remuneration

Copyright © 2024 by Andreas Krause

Remuneration

- Chinese walls refers to a situation where analysts cannot be rewarded for bringing in additional business

Copyright © 2024 by Andreas Krause

Remuneration

- Chinese walls refers to a situation where analysts cannot be rewarded for bringing in additional business, but only for the quality of their forecasts

Copyright © 2024 by Andreas Krause

Remuneration

- Chinese walls refers to a situation where analysts cannot be rewarded for bringing in additional business, but only for the quality of their forecasts
- Suppose the remuneration is a base wage
- $w_i = \overline{\qquad w_0 \qquad}$

Copyright © 2024 by Andreas Krause

Remuneration

- Chinese walls refers to a situation where analysts cannot be rewarded for bringing in additional business, but only for the quality of their forecasts
- Suppose the remuneration is a base wage, adjusted by the forecast error
- $w_i = \frac{w_0}{E_i\left[\left(\hat{P}-P_j\right)^2\right]}$

Copyright © 2024 by Andreas Krause

Remuneration

- Chinese walls refers to a situation where analysts cannot be rewarded for bringing in additional business, but only for the quality of their forecasts
- Suppose the remuneration is a base wage, adjusted by the forecast error
- $w_i = \frac{w_0}{E_i\left[\left(\hat{P}-P_j\right)^2\right]} = \frac{w_0}{(1-\rho_i)(P_H-P_L)^2}$

Copyright © 2024 by Andreas Krause

Remuneration

- Chinese walls refers to a situation where analysts cannot be rewarded for bringing in additional business, but only for the quality of their forecasts
- Suppose the remuneration is a base wage, adjusted by the forecast error
- $w_i = \frac{w_0}{E_i\left[\left(\hat{P}-P_j\right)^2\right]} = \frac{w_0}{(1-\rho_i)(P_H-P_L)^2}$
- This gives $w_S - w_W = \frac{w_0}{(P_H-P_L)^2}\left(\frac{1}{1-\rho_S} - \frac{1}{1-\rho_W}\right)$

Copyright © 2024 by Andreas Krause

Remuneration

- Chinese walls refers to a situation where analysts cannot be rewarded for bringing in additional business, but only for the quality of their forecasts
- Suppose the remuneration is a base wage, adjusted by the forecast error
- $w_i = \frac{w_0}{E_i\left[\left(\hat{P}-P_j\right)^2\right]} = \frac{w_0}{(1-\rho_i)(P_H-P_L)^2}$
- This gives $w_S - w_W = \frac{w_0}{(P_H-P_L)^2}\left(\frac{1}{1-\rho_S} - \frac{1}{1-\rho_W}\right)$
- Set $w_0 = (2\pi - 1)(1-\rho_S)(1-\rho_W)V(P_H - P_L)$

Copyright © 2024 by Andreas Krause

Remuneration

- Chinese walls refers to a situation where analysts cannot be rewarded for bringing in additional business, but only for the quality of their forecasts
- Suppose the remuneration is a base wage, adjusted by the forecast error
- $w_i = \frac{w_0}{E_i\left[\left(\hat{P}-P_j\right)^2\right]} = \frac{w_0}{(1-\rho_i)(P_H-P_L)^2}$
- This gives $w_S - w_W = \frac{w_0}{(P_H-P_L)^2}\left(\frac{1}{1-\rho_S} - \frac{1}{1-\rho_W}\right)$
- Set $w_0 = (2\pi-1)(1-\rho_S)(1-\rho_W)V(P_H-P_L)$, then $w_S - w_W = (2\pi-1)(\rho_S-\rho_W)V$

Copyright © 2024 by Andreas Krause

Remuneration

- Chinese walls refers to a situation where analysts cannot be rewarded for bringing in additional business, but only for the quality of their forecasts
- Suppose the remuneration is a base wage, adjusted by the forecast error
- $w_i = \frac{w_0}{E_i\left[\left(\hat{P}-P_j\right)^2\right]} = \frac{w_0}{(1-\rho_i)(P_H-P_L)^2}$
- This gives $w_S - w_W = \frac{w_0}{(P_H-P_L)^2}\left(\frac{1}{1-\rho_S} - \frac{1}{1-\rho_W}\right)$
- Set $w_0 = (2\pi-1)(1-\rho_S)(1-\rho_W)V(P_H-P_L)$, then $w_S - w_W = (2\pi-1)(\rho_S-\rho_W)V$
- This gives $\gamma^{**} = \gamma^*$

Copyright © 2024 by Andreas Krause

Remuneration

- Chinese walls refers to a situation where analysts cannot be rewarded for bringing in additional business, but only for the quality of their forecasts
- Suppose the remuneration is a base wage, adjusted by the forecast error
- $w_i = \frac{w_0}{E_i\left[\left(\hat{P}-P_j\right)^2\right]} = \frac{w_0}{(1-\rho_i)(P_H-P_L)^2}$
- This gives $w_S - w_W = \frac{w_0}{(P_H-P_L)^2}\left(\frac{1}{1-\rho_S} - \frac{1}{1-\rho_W}\right)$
- Set $w_0 = (2\pi - 1)(1-\rho_S)(1-\rho_W)V(P_H - P_L)$, then $w_S - w_W = (2\pi - 1)(\rho_S - \rho_W)V$
- This gives $\gamma^{**} = \gamma^*$

Copyright © 2024 by Andreas Krause

Ineffective Chinese Walls

Copyright © 2024 by Andreas Krause

Ineffective Chinese Walls

- With Chinese Walls the quality of analysts does not improve

Copyright © 2024 by Andreas Krause

Ineffective Chinese Walls

- With Chinese Walls the quality of analysts does not improve
- Investment banks recover their optimal solution by setting base wages accordingly

Copyright © 2024 by Andreas Krause

Ineffective Chinese Walls

- With Chinese Walls the quality of analysts does not improve
- Investment banks recover their optimal solution by setting base wages accordingly
- The remuneration differences are the same as before

Copyright © 2024 by Andreas Krause

Ineffective Chinese Walls

- With Chinese Walls the quality of analysts does not improve
- Investment banks recover their optimal solution by setting base wages accordingly
- The remuneration differences are the same as before and hence the incentives to analysts are identical

Copyright © 2024 by Andreas Krause

Ineffective Chinese Walls

- With Chinese Walls the quality of analysts does not improve
- Investment banks recover their optimal solution by setting base wages accordingly
- The remuneration differences are the same as before and hence the incentives to analysts are identical

Copyright © 2024 by Andreas Krause

Copyright © 2024 by Andreas Krause

Fraction of strong analysts

Copyright © 2024 by Andreas Krause

Fraction of strong analysts

- We assume that investment banks and analysts know if the analyst is strong

Copyright © 2024 by Andreas Krause

Fraction of strong analysts

- We assume that investment banks and analysts know if the analyst is strong
- We also assume that the additional business is only attracted if the high forecast is made by a strong analyst

Copyright © 2024 by Andreas Krause

Fraction of strong analysts

- We assume that investment banks and analysts know if the analyst is strong
- We also assume that the additional business is only attracted if the high forecast is made by a strong analyst
- As weak analysts do not add value, we set $w_W = 0$

Copyright © 2024 by Andreas Krause

Fraction of strong analysts

- We assume that investment banks and analysts know if the analyst is strong
- We also assume that the additional business is only attracted if the high forecast is made by a strong analyst
- As weak analysts do not add value, we set $w_W = 0$
- Analyst profits: $\Pi_A = \gamma w_S - \frac{1}{2} c_I \gamma^2 - c_P E\left[\left(\hat{P} - P_j\right)^2\right]$

Copyright © 2024 by Andreas Krause

Fraction of strong analysts

- We assume that investment banks and analysts know if the analyst is strong
- We also assume that the additional business is only attracted if the high forecast is made by a strong analyst
- As weak analysts do not add value, we set $w_W = 0$
- Analyst profits: $\Pi_A = \gamma w_S - \frac{1}{2} c_I \gamma^2 - c_P E\left[\left(\hat{P} - P_j\right)^2\right]$
- This is maximized at $\gamma = \frac{w_S}{c_I} + \frac{c_P}{c_I}\left(\rho_S - \rho_W\right)\left(P_H - P_L\right)^2$

Copyright © 2024 by Andreas Krause

Fraction of strong analysts

- We assume that investment banks and analysts know if the analyst is strong
- We also assume that the additional business is only attracted if the high forecast is made by a strong analyst
- As weak analysts do not add value, we set $w_W = 0$
- Analyst profits: $\Pi_A = \gamma w_S - \frac{1}{2} c_I \gamma^2 - c_P E\left[\left(\hat{P} - P_j\right)^2\right]$
- This is maximized at $\gamma = \frac{w_S}{c_I} + \frac{c_P}{c_I}\left(\rho_S - \rho_W\right)\left(P_H - P_L\right)^2$

Copyright © 2024 by Andreas Krause

Optimal wages

Copyright © 2024 by Andreas Krause

Optimal wages

- Investment bank only gets additional revenue if the analyst is strong
- $\Pi_B = \gamma$ V)

Copyright © 2024 by Andreas Krause

Optimal wages

- Investment bank only gets additional revenue if the analyst is strong and predicts the high value
- $\Pi_B = \gamma\left(\left(\rho_S\left(2\pi - 1\right) + \left(1 - \pi\right)\right)V \qquad\right)$

Copyright © 2024 by Andreas Krause

Optimal wages

- Investment bank only gets additional revenue if the analyst is strong and predicts the high value and wage is only paid to the strong analyst
- $\Pi_B = \gamma \left(\left(\rho_S \left(2\pi - 1 \right) + \left(1 - \pi \right) \right) V - w_S \right)$

Copyright © 2024 by Andreas Krause

Optimal wages

- Investment bank only gets additional revenue if the analyst is strong and predicts the high value and wage is only paid to the strong analyst
- $\Pi_B = \gamma\left(\left(\rho_S\left(2\pi - 1\right) + \left(1 - \pi\right)\right)V - w_S\right)$
- The optimal wage gives us $\gamma^{***} = \frac{\rho_S(2\pi-1)+(1-\pi)}{c_I}V + \frac{c_P}{c_I}\left(\rho_S - \rho_W\right)\left(P_H - P_L\right)^2$

Copyright © 2024 by Andreas Krause

Optimal wages

- Investment bank only gets additional revenue if the analyst is strong and predicts the high value and wage is only paid to the strong analyst
- $\Pi_B = \gamma\left(\left(\rho_S\left(2\pi - 1\right) + \left(1 - \pi\right)\right)V - w_S\right)$
- The optimal wage gives us $\gamma^{***} = \frac{\rho_S(2\pi-1)+(1-\pi)}{c_I}V + \frac{c_P}{c_I}\left(\rho_S - \rho_W\right)\left(P_H - P_L\right)^2$
- We easily see that $\gamma^{***} > \gamma^{**}$

Copyright © 2024 by Andreas Krause

Optimal wages

- Investment bank only gets additional revenue if the analyst is strong and predicts the high value and wage is only paid to the strong analyst
- $\Pi_B = \gamma\left(\left(\rho_S\left(2\pi - 1\right) + \left(1 - \pi\right)\right)V - w_S\right)$
- The optimal wage gives us $\gamma^{***} = \frac{\rho_S(2\pi-1)+(1-\pi)}{c_I}V + \frac{c_P}{c_I}\left(\rho_S - \rho_W\right)\left(P_H - P_L\right)^2$
- We easily see that $\gamma^{***} > \gamma^{**}$

Copyright © 2024 by Andreas Krause

Increasing analyst quality

Copyright © 2024 by Andreas Krause

Increasing analyst quality

- Wages are disclosed

Copyright © 2024 by Andreas Krause

Increasing analyst quality

- Wages are disclosed

$\Rightarrow$ Companies can identify the type of analyst

Copyright © 2024 by Andreas Krause

Increasing analyst quality

- Wages are disclosed

$\Rightarrow$ Companies can identify the type of analyst

$\Rightarrow$ Route additional business only to strong analysts

Copyright © 2024 by Andreas Krause

Increasing analyst quality

- Wages are disclosed

$\Rightarrow$ Companies can identify the type of analyst

$\Rightarrow$ Route additional business only to strong analysts

$\Rightarrow$ Erasing the value of weak analysts to the investment bank

Copyright © 2024 by Andreas Krause

Increasing analyst quality

- Wages are disclosed

$\Rightarrow$ Companies can identify the type of analyst

$\Rightarrow$ Route additional business only to strong analysts

$\Rightarrow$ Erasing the value of weak analysts to the investment bank

$\Rightarrow$ Allowing it to set their wages to zero

Copyright © 2024 by Andreas Krause

Increasing analyst quality

- Wages are disclosed

$\Rightarrow$ Companies can identify the type of analyst

$\Rightarrow$ Route additional business only to strong analysts

$\Rightarrow$ Erasing the value of weak analysts to the investment bank

$\Rightarrow$ Allowing it to set their wages to zero

$\Rightarrow$ Increasing the wage differential between weak and strong analysts

Copyright © 2024 by Andreas Krause

Increasing analyst quality

- Wages are disclosed

$\Rightarrow$ Companies can identify the type of analyst

$\Rightarrow$ Route additional business only to strong analysts

$\Rightarrow$ Erasing the value of weak analysts to the investment bank

$\Rightarrow$ Allowing it to set their wages to zero

$\Rightarrow$ Increasing the wage differential between weak and strong analysts

$\Rightarrow$ Increases the incentives to become strong

Copyright © 2024 by Andreas Krause

Increasing analyst quality

- Wages are disclosed

$\Rightarrow$ Companies can identify the type of analyst

$\Rightarrow$ Route additional business only to strong analysts

$\Rightarrow$ Erasing the value of weak analysts to the investment bank

$\Rightarrow$ Allowing it to set their wages to zero

$\Rightarrow$ Increasing the wage differential between weak and strong analysts

$\Rightarrow$ Increases the incentives to become strong

Copyright © 2024 by Andreas Krause

- Problem and model assumptions
- Unregulated analysts
- Chinese Walls
- Disclosure of wages
- Summary

Copyright © 2024 by Andreas Krause

Ineffectiveness of Chinese Walls

Copyright © 2024 by Andreas Krause

Ineffectiveness of Chinese Walls

- Financial analysts can help to gain additional investment banking business by providing positive assessments of companies

Copyright © 2024 by Andreas Krause

Ineffectiveness of Chinese Walls

- Financial analysts can help to gain additional investment banking business by providing positive assessments of companies
- Regulation seeks to improve the quality of these assessments by focussing remuneration only on these assessments

Copyright © 2024 by Andreas Krause

Ineffectiveness of Chinese Walls

- Financial analysts can help to gain additional investment banking business by providing positive assessments of companies
- Regulation seeks to improve the quality of these assessments by focussing remuneration only on these assessments
- Chinese Walls can be circumvented by investment banks setting pay structures that give the same incentives to financial analysts

Copyright © 2024 by Andreas Krause

Ineffectiveness of Chinese Walls

- Financial analysts can help to gain additional investment banking business by providing positive assessments of companies
- Regulation seeks to improve the quality of these assessments by focussing remuneration only on these assessments
- Chinese Walls can be circumvented by investment banks setting pay structures that give the same incentives to financial analysts
- Disclosing the wages and hence the quality of a financial analyst allows discrimination between them and can increase incentives to increase the quality

Copyright © 2024 by Andreas Krause

Ineffectiveness of Chinese Walls

- Financial analysts can help to gain additional investment banking business by providing positive assessments of companies
- Regulation seeks to improve the quality of these assessments by focussing remuneration only on these assessments
- Chinese Walls can be circumvented by investment banks setting pay structures that give the same incentives to financial analysts
- Disclosing the wages and hence the quality of a financial analyst allows discrimination between them and can increase incentives to increase the quality

Copyright © 2024 by Andreas Krause

Effectiveness of regulation

Copyright © 2024 by Andreas Krause

Effectiveness of regulation

- Measures to increase the quality of analyst coverage have focussed on the separation of analysts from other business lines

Copyright © 2024 by Andreas Krause

Effectiveness of regulation

- Measures to increase the quality of analyst coverage have focussed on the separation of analysts from other business lines
- These results suggest they are not effective as investment banks can adjust their remuneration schedules

Copyright © 2024 by Andreas Krause

Effectiveness of regulation

- Measures to increase the quality of analyst coverage have focussed on the separation of analysts from other business lines
- These results suggest they are not effective as investment banks can adjust their remuneration schedules
- Disclosure of remuneration might be a more effective policy tool

Copyright © 2024 by Andreas Krause

Effectiveness of regulation

- Measures to increase the quality of analyst coverage have focussed on the separation of analysts from other business lines
- These results suggest they are not effective as investment banks can adjust their remuneration schedules
- Disclosure of remuneration might be a more effective policy tool

Copyright © 2024 by Andreas Krause

This presentation is based on
Andreas Krause: Theoretical Foundations of Investment Banking, Springer Verlag 2024
Copyright © 2024 by Andreas Krause

Picture credits:
Cover: The wub, CC BY-SA 4.0 https://creativecommons.org/licenses/by-sa/4.0, via Wikimedia Commons, https://commons.wikimedia.org/wiki/File:Canary_Wharf_from_Greenwich_riverside_2022-03-18.jpg
Back: Seb Tyler, CC BY 3.0 https://creativecommons.org/licenses/by/3.0, via Wikimedia Commons, https://commons.wikimedia.org/wiki/File:Canary_Wharf_Panorama_Night.jpg

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

E-mail: mnsak@bath.ac.uk