Have Financial Markets Become More Informative?

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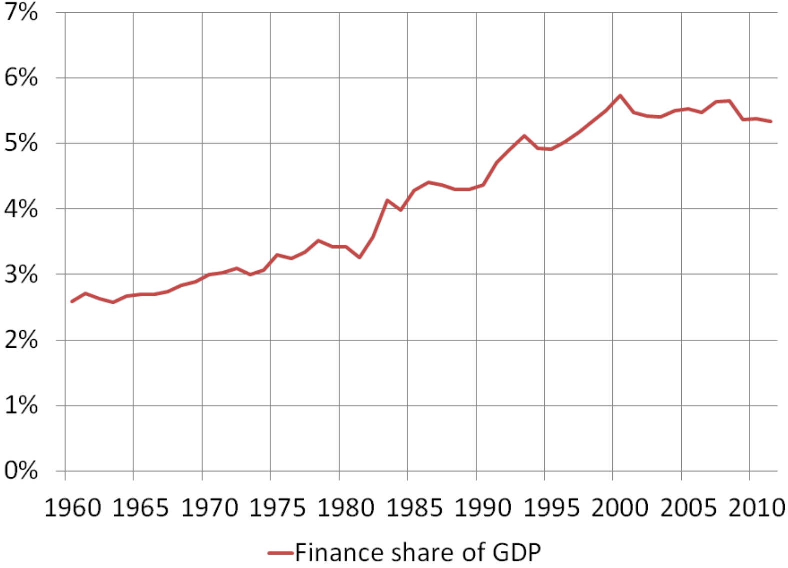
The growth of the financial sector



The role of the financial sector

The allocation of capital

Risk-sharing

Consumption-smoothing

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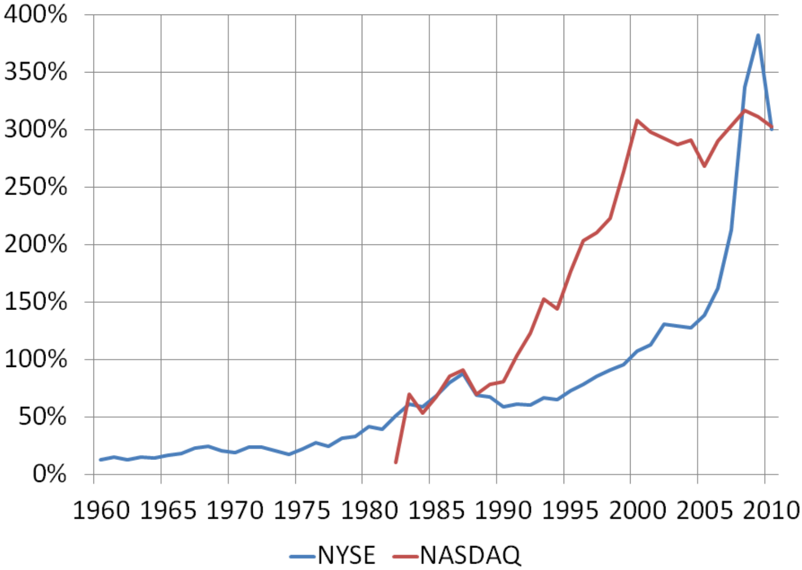
The allocation of capital

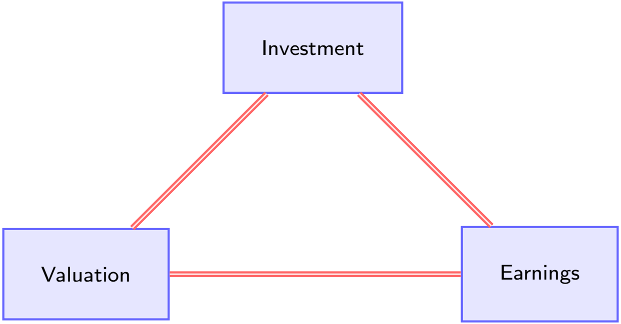
Risk-sharing

Consumption-smoothing

Trading volume (annual turnover)



The allocation of capital



Framework 1: Exogenous information ($q - theory$)

Two firms, A and B:

$$\boxed{i_A - i_B = \frac{q_A - q_B}{\gamma} = \frac{E\left[z_A\right] - E\left[z_B\right]}{\gamma\left(1 + r\right)}}$$

1. Tobin's q predicts future earnings z
2. Investment i is explained by q
3. Investment i predicts future earnings z

Framework 1: Welfare

- Wealth is increasing in the standard deviation of the predictable component of earnings $\sigma_{E[z]}$:

$$\boxed{V \equiv \int_i v_i = \frac{1}{2\gamma}\left[\left(\frac{\bar{z}}{1+r}-1\right)^2+\left(\frac{\sigma_{E[z]}}{1+r}\right)^2\right]}$$

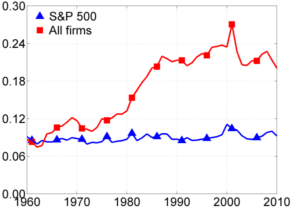
v_i: value of firm i
$\bar{z}$: average earnings

- Information $\Rightarrow$ the option to invest.
- Links price dispersion and welfare.

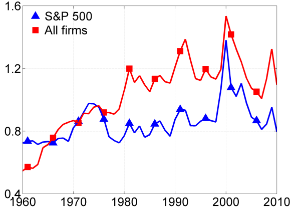
S&P 500 versus all firms

$$\frac{E_{i,t+3}}{A_{i,t}} = a_t \log\left(\frac{M_{i,t}}{A_{i,t}}\right) \times \mathbf{1}_t + b_t\left(\frac{E_{i,t}}{A_{i,t}}\right) \times \mathbf{1}_t + c_{s(i,t),t}\,(\mathbf{1}_{SIC1}) \times (\mathbf{1}_t) + \epsilon_{i,t}.$$

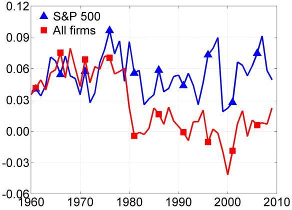
E/A dispersion



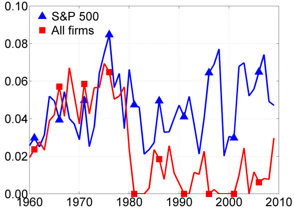
log M/A dispersion



Coefficients, a_t



Predicted variation, $a_t \times \sigma_t\,(M/A)$



Framework 2: Endogenous information (Kyle model)

- What is the link between financial development and the standard deviation of the predictable component?
- What does an increase in firm uncertainty imply about information production?
- What is the right measure of financial sector efficiency?

Regress future earnings on current prices

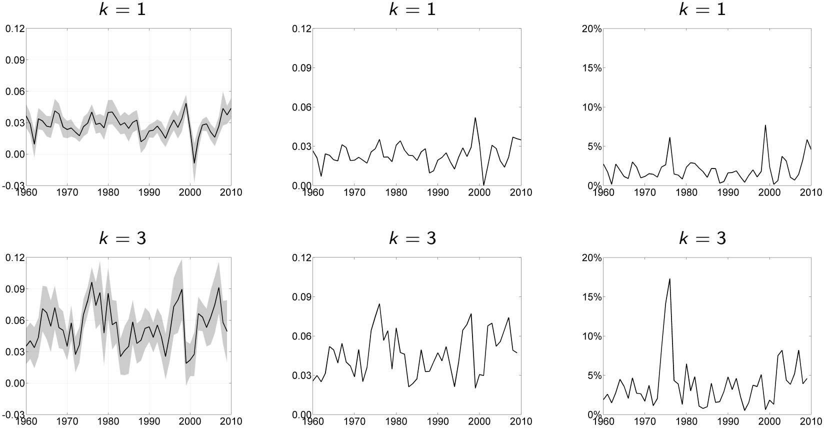
σ_s:	signal strength	σ_u:	noise trader demand
σ_v:	overall volatility	ψ:	cost of information

Linear regression	Exogenous information	Endogenous information	If $\sigma_v \uparrow$	If $\psi \downarrow$
Predicted variation	$\frac{1}{\sqrt{2}}\sigma_s$	$\frac{1}{\sqrt{2}}\sigma_v - \sqrt{\frac{\psi}{2}\left(\frac{\sigma_v}{\sigma_u}\right)}$	$\uparrow$	$\uparrow$
Price dispersion	$\frac{1}{\sqrt{2}}\sigma_s$	$\frac{1}{\sqrt{2}}\sigma_v - \sqrt{\frac{\psi}{2}\left(\frac{\sigma_v}{\sigma_u}\right)}$	$\uparrow$	$\uparrow$
R^2	$\frac{1}{2}\left(\frac{\sigma_s}{\sigma_v}\right)^2$	$\frac{1}{2}\left(1 - \sqrt{\frac{\psi}{\sigma_v \sigma_u}}\right)^2$	$\uparrow$	$\uparrow$
Info expenditure	N/A	$\sqrt{\psi \sigma_v \sigma_u} - \psi$	$\uparrow$	$\uparrow\downarrow$

S&P 500 firms: Forecasting earnings with equity prices

$$\frac{E_{i,t+3}}{A_{i,t}} = a_t \log\left(\frac{M_{i,t}}{A_{i,t}}\right) \times \mathbf{1}_t + b_t \left(\frac{E_{i,t}}{A_{i,t}}\right) \times \mathbf{1}_t + c_{s(i,t),t}\left(\mathbf{1}_{SIC1}\right) \times \left(\mathbf{1}_t\right) + \epsilon_{i,t}.$$

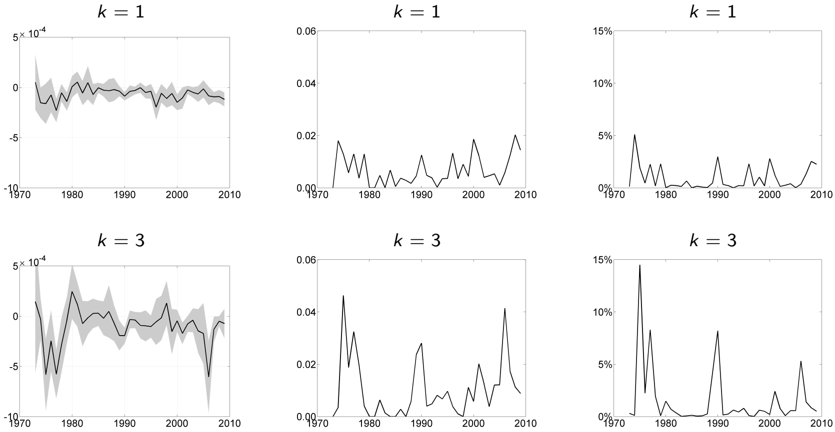
Coefficients, a_t | Predicted variation, $a_t \times \sigma_t(\log M/A)$ | Marginal R^2



S&P 500 firms: Forecasting earnings with bond spreads

$$\frac{E_{i,t+3}}{A_{i,t}} = a_t \log(y_{i,t} - y_{0,t}) \times \mathbf{1}_t + b_t \left(\frac{E_{i,t}}{A_{i,t}}\right) \times \mathbf{1}_t + c_{s(i,t),t}\,(\mathbf{1}_{SIC1}) \times (\mathbf{1}_t) + \epsilon_{i,t}.$$

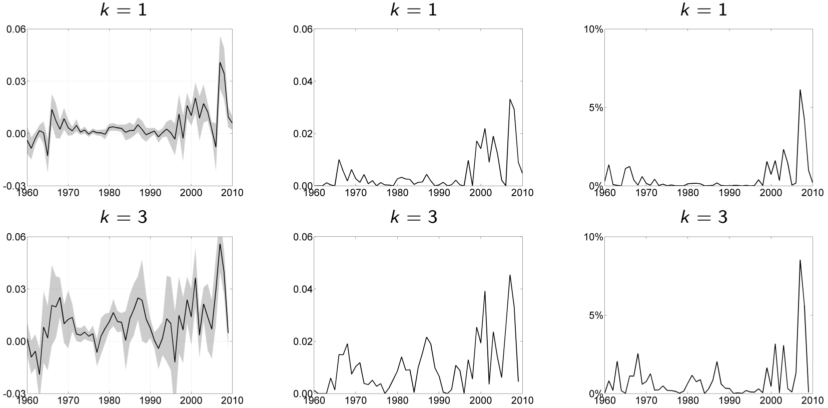
Coefficients, a_t | Predicted variation, $a_t \times \sigma_t(y_{i,t} - y_{0,t})$ | Marginal R^2



S&P 500 firms: Forecasting R&D with equity prices

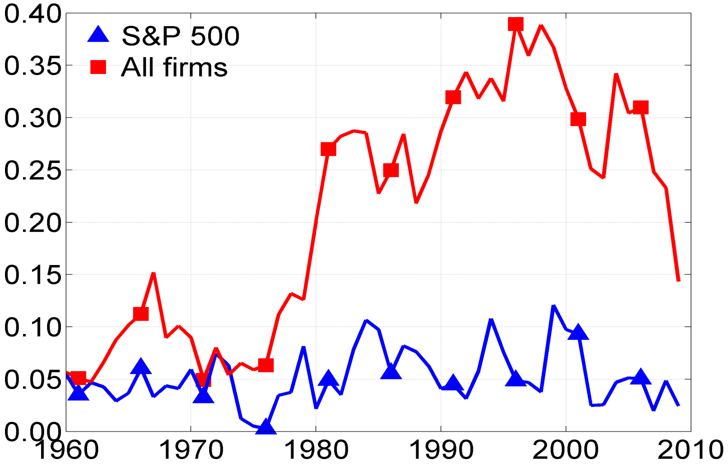
$$\frac{R\&D_{i,t+k}}{A_{i,t}} = a_t \log\left(\frac{M_{i,t}}{A_{i,t}}\right) \times \mathbf{1}_t + b_t \left(\frac{R\&D_{i,t}}{A_{i,t}}\right) \times \mathbf{1}_t + c_t \left(\frac{E_{i,t}}{A_{i,t}}\right) \times \mathbf{1}_t$$
$$+ d_{s(i,t),t} \left(\mathbf{1}_{SIC1}\right) \times \left(\mathbf{1}_t\right) + \epsilon_{i,t}.$$

Coefficients, a_t | Predicted variation, $a_t \times \sigma_t (\log M/A)$ | Marginal R^2



Financial sector efficiency

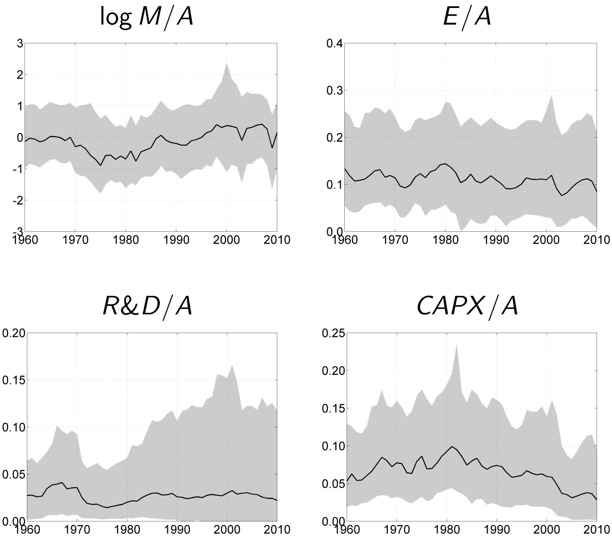
- Based on our model, back out the cost of information ψ assuming constant noise trader demand.



Conclusion

- The finance industry has grown.
- We find little evidence of increased predictability.

Dispersion


log M/A
E/A
R&D/A
CAPX/A
3
2
1
0
-1
-2
-3
0.4
0.3
0.2
0.1
0.0
0.20
0.15
0.10
0.05
0.00
0.25
1960
1970
1980
1990
2000
2010