

Why can't CEOs foresee a crisis?

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Motivation

- ▶ Financial crisis - Incentive story
- ▶ If agents are taking risk as rational response to incentives then they would know about the distortions created by those strategies
- ▶ Cheng et al. (2014) - Mid-level managers in mortgage securitization business were in denial of housing bubble
- ▶ Foote et al. (2012) - Investors and bankers did not even consider scenarios of house price decline that actually materialized
- ▶ Behavioral explanations - Gennaioli et al. (2012)- Neglected risks, Thakor (2015)-Availability Heuristic
- ▶ This paper- Alternative explanation for overconfident beliefs but with rational agents
- ▶ Informed agents (employees) in the firm may not disclose their information
- ▶ Disclosure frictions are particularly accentuated during *good* time (before the crisis)

Disclosure frictions within the bank

Paul Moore, ex-head of Group Regulatory Risk, HBOS (2009)

"I am quite sure that many many more people in internal control functions, non-executive positions, auditors, regulators who did realise that the Emperor was naked but knew if they spoke up they would be labelled "trouble makers" and "spoil sports" and would put themselves at personal risk."

Model Summary

- ▶ Banks
 - ▶ Safe and Risky investment opportunity
 - ▶ Risky- Good or bad
- ▶ CEO
 - ▶ Smart - accurate signals (low and high) when she sees it
 - ▶ If she does not see the signal - Relies on signal disclosed by the employees
- ▶ Employees - may observe signals and has to exert effort (or shirk) on the project
 - ▶ Smart or dumb
 - ▶ Dumb employees
 - ▶ Observe noisy signals (low and high)
 - ▶ Result in loss of value
 - ▶ May be fired by the CEO
- ▶ CEO needs to offers contracts so that employees work and also disclose signals (multitasking)

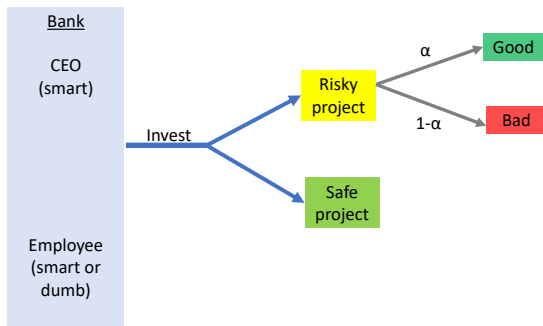
Results

- ▶ Conflict between incentivizing effort and disclosure of signals
- ▶ CEO may not offer contract to incentivize disclosure - Constrained by limited liability or rent extracted by the employee is too high
- ▶ Effort: Higher wage for higher outcome
- ▶ When employee discloses *low* signal
 - ▶ CEO does not see the signal, she takes the safe project
 - ▶ CEO observes high signal, she fires the employees and chooses the good project
 - ▶ Employee may miss out on wage from the good project which FOSD dominated the safe project

Result

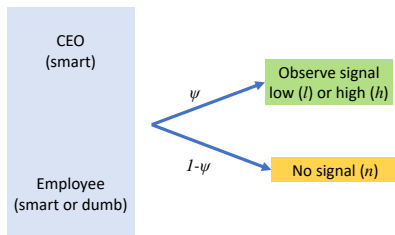
- ▶ Multiple employees- Coordination problem (Diamond & Dybvig, 1983)
- ▶ Strategic complementarities in disclosure strategy
- ▶ CEO and other employees remain unaware of the risks
- ▶ Key assumption- Cannot write contract based on the riskiness of the project
- ▶ Separating into risk manager and trader can be efficient (not always)

Model



- ▶ Investing 1 unit yields $\tilde{X} \in \{X_0, X_1, X_2\}$
- ▶ $0 = X_0 < X_1 < X_2$
- ▶ $V(G) > V(S) > 0 > V(B)$
- ▶ Good project FOSD dominates the safe project
- ▶ Employee and CEO may observe signals about the type of risky project

Signals

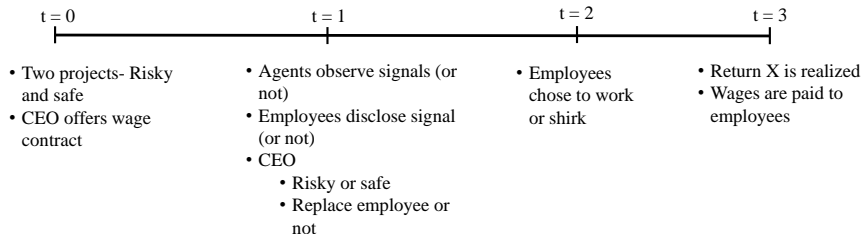


- ▶ Dumb agents- noisy signals

$$Pr(h|G; dumb) = Pr(l|B; dumb) = z$$

- ▶ Smart agents- perfectly accurate signals
- ▶ Dumb employee also result in loss of value L^d
- ▶ If employee signal opposite of CEO, then CEO knows employee is dumb and he is replaced else not (replacement cost)
- ▶ If CEO does not observe, she relies on signal disclosed by the employee

Timeline



Contract

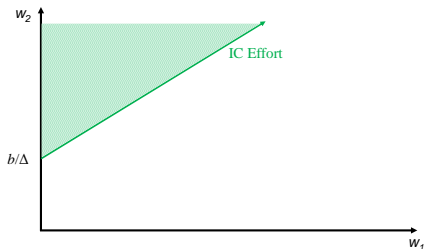
- ▶ CEO offers a wage contract w_1, w_2
- ▶ Contracts are offered to incentivize employees to disclose and exert effort (multitasking)
- ▶ Incomplete contract- Payment cannot be made contingent on what employee discloses and what type of project is taken
- ▶ $w_0 = 0$ (limited liability)

Incentive compatibility for effort

- ▶ Private benefit of shirking b
- ▶ Shirking: $Pr(X_2)$ reduces by Δ and $Pr(X_1)$ increases by Δ

$$w_2 - w_1 \geq \frac{b}{\Delta}$$

- ▶ $w_2 > w_1$ (high powered incentive)
- ▶ If no need for disclosure then contract is $w_1 = 0, w_2 = \frac{b}{\Delta}$



Disclosure of high signal

Assumption: α is high

- ▶ Optimal to discontinue the project if the employee has seen l
- ▶ Continue if employee has seen no signal or the high signal

Lemma

Employee will never disclose high signal

- ▶ CEO decision is same
- ▶ Only risks the chance of getting fired
- ▶ Contract provides incentive to disclose low signal and to work (not shirk)

Incentive for disclosing low signal

Employee discloses low signal then,

- ▶ If the CEO observes low signal or no signal, then safe project
- ▶ If the CEO observes the high signal then fired, and good project

	X_1	X_2
Safe	70%	30%
Good	30%	70%

- ▶ $w_2 > w_1$ - Incentive for effort
- ▶ Disincentivizes disclosure of low signal
- ▶ This effect is accentuated as α increases
 - ▶ Likelihood of CEO seeing the high signal is higher
- ▶ w_1/w_2 must be sufficiently large to incentivize disclosure

► IC constrains and impact of α ($Pr(Risky = Good)$)

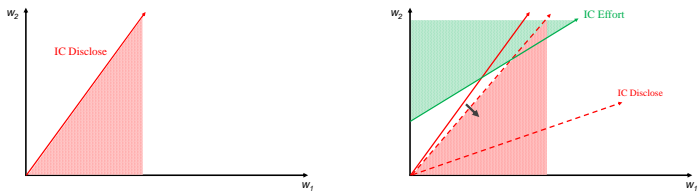
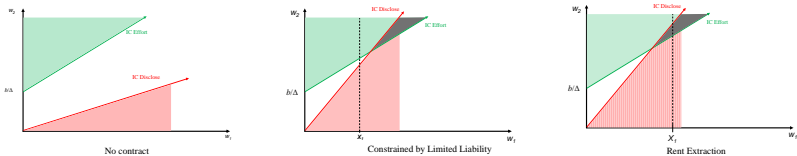


Figure: Impact of $\alpha \uparrow$



Result: CEO may not offer contract to disclose information because she is constrained by LL or rents extracted by employee is too large.

Multiple (two) employees

- ▶ Optimal to discontinue the project only when both employees have seen l
- ▶ Strategic complementarities in disclosure
- ▶ Employee will disclose only if he thinks other employee will also disclose
- ▶ Coordination problem and multiple equilibrium even with IC contracts (Diamond & Dybvig, 1983)

Proposition

Even when CEO is able to offer IC contracts, pooling LL and NN will always exist together.

Equilibrium	Nodes	Empl Disclosure	CEO action
Pooling LL	ll	ll	discontinue
	$lh/hl, ln/nl$	ln/nl	continue
	$hh, hn/nh, nn$	nn	continue
Pooling NN	all	nn	continue

Risk Manager and Trader

- ▶ Split the task: Disclosure- Risk Manager & Effort - Trader
- ▶ No need to offer the rent
- ▶ We can get disclosure irrespective of α
- ▶ More efficient outcome
- ▶ If risk managers signal is more noisy, and if α is high then she has to again rely on the employee

Continuous signals

- ▶ Cutoff equilibrium- Higher is α , lower is the cutoff
- ▶ Unique equilibrium with multiple employees

Conclusion

- ▶ Provide a model where a rational CEO who relies on the advice of his employees has more optimistic beliefs than is warranted by all the information within the firm
- ▶ Need for risk managers- Institution design