

Groupthink:
Collective Delusions in
Organizations and Markets

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Introduction

- Formation and persistence of collective beliefs, particularly those involving **reality distortion** / cognitive dissonance:
 - ▶ organizational overconfidence
 - ▶ contagious market exuberance
 - ▶ political ideologies
 - ▶ culture, religion,...
- **Groupthink**: “A pattern of thought characterized by self-deception, forced manufacture of consent, and conformity to group values and ethics”. Janis (1972)’s eight “symptoms”:
 - ▶ illusion of invulnerability; collective rationalization;
 - ▶ belief in inherent morality; stereotyped views of out-groups;
 - ▶ direct pressure on dissenters; self-censorship;
 - ▶ illusion of unanimity; self-appointed mindguards.

Wishful thinking in organizations

- Corporate, financial meltdowns: many red flags which people ignored / rationalized away, evidence which refused to see.

Culture of hubris: this time it is different, we are smarter and have better tools, old ways of thinking no longer apply...

- Bureaucracies, govt. Challenger (1986) and Columbia (2003) space shuttle investigations

- Market manias and crashes.

Latest episode: housing-mortgage crisis. Previous: Enron, Worldcom, internet bubble. Before...

Shiller (2005): “new economic era thinking”.

A sure thing

- "It is hard for us, without being flippant, to even see a scenario within any kind of realm of reason that would see us losing one dollar in any of those transactions..."
- "We're sitting on a great balance sheet, a strong investment portfolio and a global trading platform where we can take advantage of the market in any variety of places... The question for us is, where in the capital markets can we gain the best opportunity, the best execution for the business acumen that sits in our shop?" (Joseph J. Cassano, former A.I.G. executive, August 2007).

- An investor asked Lehman's chief financial officer why, with firms like Citigroup and Merrill raising capital, Lehman wasn't following suit? Glaring at her questioner, she said that Lehman didn't need more money at the time –after all, it had yet to post a loss during the credit crisis. The company had industry veterans in the executive suite who had perfected the science of risk management, she said. “This company's leadership has been here so long that they know the strengths and weaknesses... We know when we need to be worried, and when we don't.”
- Asked in 2007 whether he was “concerned.... that if one of these huge institutions fails, that it will have a horrendous impact on the national and global economy” ... Alan Greenspan replied: “No, I'm not,” “I believe that the general growth in large institutions have occurred in the context of an underlying structure of markets in which many of the larger risks are dramatically –I should say, fully–hedged.”

This time is different...

- “We have a wealth of information we didn’t have before,” Joe Anderson, then a senior Countrywide executive, said in a 2005 interview with BusinessWeek. “We understand the data and can price that risk.”
- “I don’t think it’s a bubble,” David M. Rubenstein of Carlyle Group told the Financial Times in an interview last December.
- “I think really what’s happening now is that people are beginning to use a different investment technique, and this investment technique, private equity, adds real value.”

Cognitive dissonance...

(BusinessWeek, Aug. 2007)

- “The consumer has to be an idiot to take on those loans,” John Devaney, chief executive of United Capital Asset Management, said in May, referring to dicey adjustable-rate mortgages.
- In March, Devaney bragged that mortgage-backed securities were one of his “best-performing investments.”
- In June, Devaney’s Horizon funds booked a loss of more than 30%. Shortly after, United Capital suspended redemption.

Information avoidance / selective attention

- “At every juncture of [the mission], the Shuttle Program’s structure and processes, and therefore *the managers in charge*, resisted new information. Early in the mission, it became clear that the Program was not going to authorize imaging of the Orbiter because, in the Program’s opinion, images were not needed. *Overwhelming evidence* indicates that Program leaders decided the foam strike was merely a maintenance problem long before any analysis had begun ” (CAIB).
- Enron: 2001 memo to Ken Lay from Sherron Watkins, warning of high likelihood that “we will implode in a wave of accounting scandals”. Asking that he and the CAO “sit down and take a good, hard, objective look at what is going to happen to Condor and Raptor in 2002 and 2003.”
- Far more individual investors look up the value of their portfolios online in days when the market is up than when it is down (Karlsson, Loewenstein and Seppi (2006))

Fannie Mae

- Between 2005 and 2007, the company's acquisitions of mortgages with down payments of less than 10% percent almost tripled.
- For two years, Mr. Mudd **operated without a permanent chief risk officer** to guard against unhealthy hazards
- When E. Dallavecchia was hired for that position in 2006, he told Mr. Mudd that the company should be charging more to handle risky loans. In the following months to come, Mr. Dallavecchia **warned that some markets were becoming overheated and argued that a housing bubble had formed... But many of the warnings were rebuffed.**
- Mr. Dallavecchia was among those whom Mr. Mudd forced out of the company during a reorganization in August

SEC

- “We have a good deal of comfort about the capital cushions at these firms at the moment.” — Christopher Cox, chairman of the Securities and Exchange Commission, March 11, 2008.
- The division of trading and markets “became aware of numerous potential red flags prior to Bear Stearns’s collapse, regarding its concentration of mortgage securities, high leverage, shortcomings of risk management in mortgage-backed securities and lack of compliance with the spirit of certain” capital standards, said an inspector general’s report issued last Friday. But the division “did not take actions to limit these risk factors.” (Inspector General’s Report)
- The commission assigned seven people to examine the parent companies — which last year controlled combined assets of more than \$4 trillion. Since March 2007, the office has not had a director. And as of last month, the office had not completed a single inspection since it was reshuffled by Mr. Cox more than a year and a half ago.

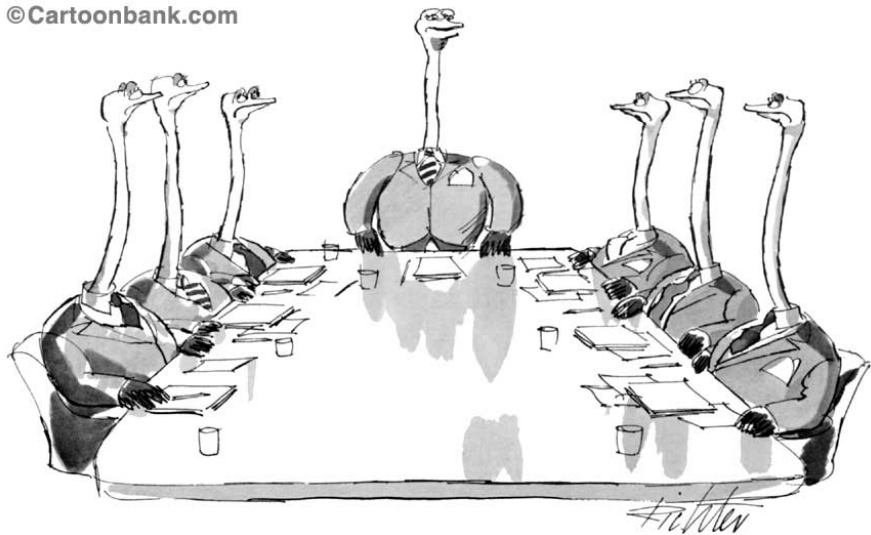
- “Edward M. Gramlich, a Federal Reserve governor... warned nearly seven years ago that a fast-growing new breed of lenders was luring many people into risky mortgages they could not afford. But when Mr. Gramlich privately urged Fed examiners to investigate mortgage lenders affiliated with national banks, he was rebuffed by Alan Greenspan...
- Mr. Greenspan and other Fed officials repeatedly dismissed warnings about a speculative bubble in housing prices. ... The Fed was hardly alone in not pressing to clean up the mortgage industry. When states like Georgia and North Carolina started to pass tougher laws against abusive lending practices, the Office of the Comptroller of the Currency successfully prohibited them from investigating local subsidiaries of nationally chartered banks”.
(Andrews, 2007).

Normalization of deviance

- “This section gives an insider perspective: how NASA defined risk and how those definitions changed over time for both foam debris hits and O-ring erosion. In both cases, engineers and managers conducting risk assessments continually “normalized” the technical deviations they found... Evidence that the design was not performing as expected was reinterpreted as acceptable and non-deviant, which diminished perceptions of risk throughout the agency... ”
- “Engineers and managers incorporated worsening anomalies into the engineering experience base, which functioned as an elastic waistband, expanding to hold larger deviations from the original design. Anomalies that did not lead to catastrophic failure were treated as a source of valid engineering data that justified further flight”

Changing standards / reversing burden of proof

- Reversing normal and official policy requiring engineers, technicians, risk analysts, to prove that product or project is safe, putting the burden on them to prove beyond doubt that it is unsafe
- “When managers... denied the team’s request for imagery, the Debris Assessment Team was put in the untenable position of having to prove that a safety-of-flight issue existed without the very images that would permit such a determination.... Organizations that deal with high-risk operations must always have a healthy fear of failure – operations must be proved safe, rather than the other way around. NASA inverted this burden of proof....”
- Beech-Nut: similar with adulterated apple juice concentrate



"The motion has been made and seconded that we stick our heads in the sand."

Some elements from psychology...

- Overoptimism, illusion of control, wishful thinking
- People “invest” in and protect their beliefs. Why?
 - ▶ Affective, emotional value: need to feel that the world is predictable, fair, their future not hopeless, etc.
 - ▶ Functional, instrumental value: helps to motivate oneself, (or one’s children) to work, persist, cooperate.
- How?
 - ▶ Self-deception, ex-post rationalization
 - ▶ Biased recall, selective attention

... seem worth taking into account

Outline

- 1 Realism and denial: individual \Rightarrow collective
- 2 Asymmetric roles and hierarchies
- 3 Welfare analysis, dissenting speech
- 4 Market “exuberance” and crashes
- 5 Conclusion

Model

□ Period 0: information and beliefs

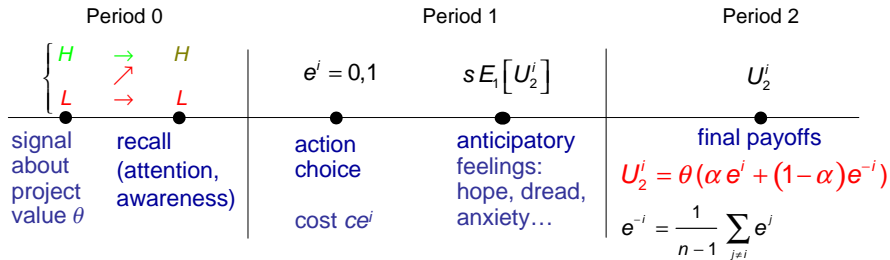
- Common signal about expected value of the project
- Process information: acknowledge/retain, or look away/misread/forget. (Could also avoid vs. acquire).

□ Period 1: actions... and emotions

- Invest or not in common project: firm, team, policy
- Anticipatory feelings: hope, fear, anxiety from future prospects

□ Period 2: final payoffs

- Depends (linearly) on own and others' actions
- Affected by overall project value: uncertain



- Period 1: chooses action to maximize

$$U_1^i = -ce^i + sE_1[U_2^i] + \delta E_1[U_2^i]$$

- ▶ acts if confident enough, $(s + \delta)\alpha E_1[\theta] > c$
 prior q sufficiently high to act

- Period 0: cognitive decisions, aiming to maximize

$$U_0^i = -\text{info costs} + \delta E_0 \left[-ce^i + sE_1[U_2^i] \right] + \delta^2 E_0 \left[U_2^i \right]$$

- ▶ tradeoff: more pleasant feelings vs. costs, mistakes

Information and beliefs

- Signal H or $L \Rightarrow$ how much attention to pay, how to interpret, whether to “keep it in mind” or “not think about it”.
- Intrapersonal game of strategic communication, via attention memory, awareness.
 - ▶ **Realism:** acknowledge - encode - recall $H \rightarrow H$ and $L \rightarrow L$
 - ▶ **Denial:** ignore - miscode - misremember $L \rightsquigarrow H$ (or $H \rightsquigarrow L$)
Self-deception, selective inattention, rationalization: cost $m \geq 0$
- Partial awareness, mixing: recall rate $\lambda \Leftrightarrow$ cost $m \cdot (1 - \lambda)$
- Equivalent (nearly): directed attention
 - ▶ Memory naturally imperfect, $\lambda < 1$. Can raise it by “paying attention”, keeping evidence... Will do for H more than L .
 - ▶ Same as selective inattention or forgetting, with $m < 0$.

Bayesian rationality

- Agents not free to “choose beliefs”. Process information, optimally (\neq objectively) at every stage
- At $t = 0$, aims to maximize

$$U_0^i = -m(1 - \lambda) + \delta E_0 \left[-ce^i + sE_1[U_2^i] \right] + \delta^2 E_0 \left[U_2^i \right]$$

- At $t = 1$,
 - ▷ Being aware of / recalling signal L means state is L for sure
 - ▷ Being unaware of L / aware of H only leads to posterior

$$\Pr [\text{state was } H \mid \text{recall } H] = \frac{q}{q + (1 - q)(1 - \lambda^i)} \equiv r(\lambda^i)$$

where λ^i is agent's equilibrium (habitual) rate of realism.

Dealing with unpleasant realities (state L)

▷ Respond as a realist \Rightarrow

$$U_{0,Realism}^i \equiv \delta(\delta + s) \left[\alpha \cdot 0 + \underbrace{(1 - \alpha)(1 - \lambda^{-i})\theta_L}_{\text{only deniers persist}} \right],$$

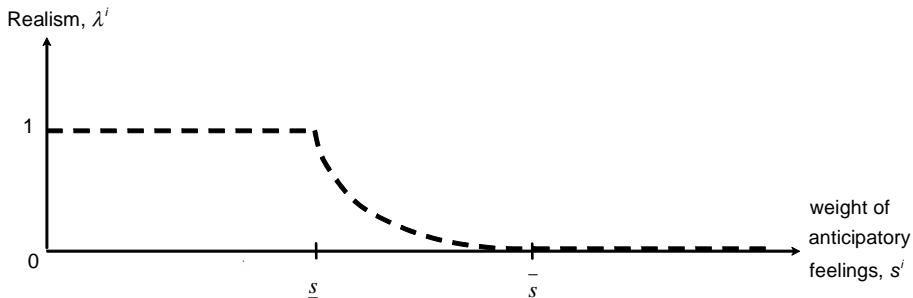
▷ Censor \Rightarrow posterior $r(\lambda^i)$ on state really being $H \Rightarrow$

$$U_{0,Denial}^i = -m + \delta(-c + \underbrace{\delta \left[\alpha + (1 - \alpha)(1 - \lambda^{-i}) \right] \theta_L}_{\text{actual payoff}}) \\ + \underbrace{\delta s [r(\lambda^i)\theta_H + (1 - r(\lambda^i)) \left[\alpha + (1 - \alpha)(1 - \lambda^{-i}) \right] \theta_L]}_{\text{anticipatory utility}}.$$

λ^i : i 's equilibrium realism (recall of L signals)

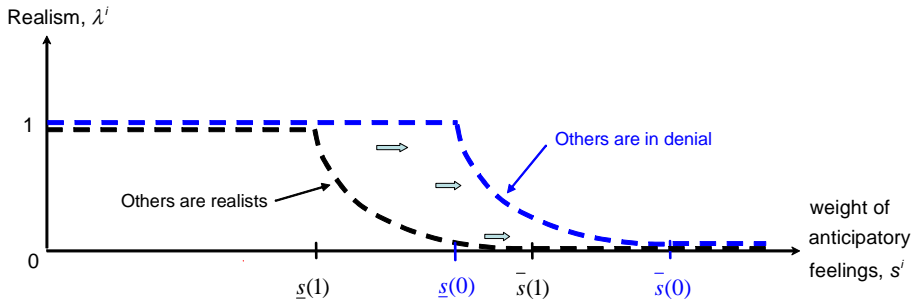
λ^{-i} : other agents' equilibrium degree of realism

◆ Optimal awareness

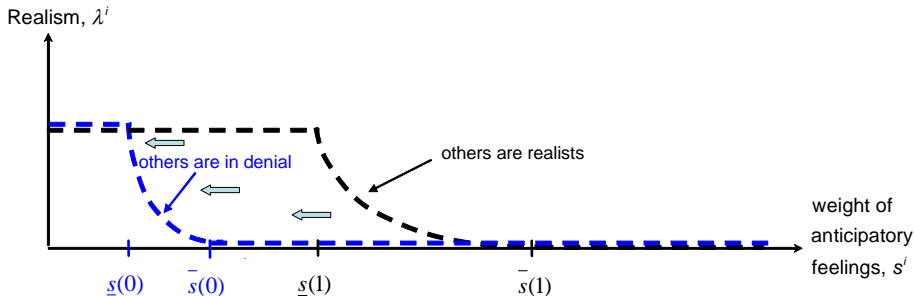


- Individual trades off costs vs. benefits of censoring, disregarding bad news. Fully rational at every stage.
- Behavior: decisions over information flows, as well as actions
- Key question: how does this tradeoff depend on other's degree of realism or denial?

- In low state, action still has positive expected social value, but below private cost (e.g., sports team, traditional finance)
- Others' disregard of bad news leads them to act in a way that is *better* for an agent than if they were realists \Rightarrow
 - ▶ makes those news less bad, easier to accept
 - ▶ **reduces** incentive to engage in denial



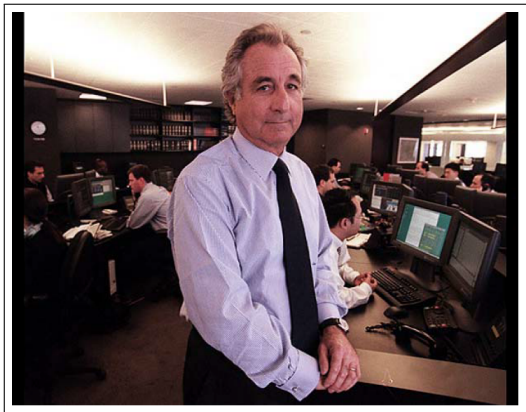
- In low state, action has negative expected value, both social and private (e.g, Enron, “creative” finance)
- Others’ reality denial leads them to make things *worse* for an agent than if they were realists \Rightarrow
 - ▶ future prospects become even more scary, harder to face
 - ▶ **increases** incentive to look the other way



◆ Mutually Assured Delusion (MAD) principle

- When reality avoidance by others is beneficial, individual cognitive strategies are strategic **substitutes**
- When reality avoidance by others is detrimental, individual cognitive strategies are strategic **complements**
- New mechanism: “psychological multiplier”
 - ⇒ interdependent beliefs and actions, although separable linear payoffs, no private information
- Look for **equilibrium**: corporate culture, social cognition

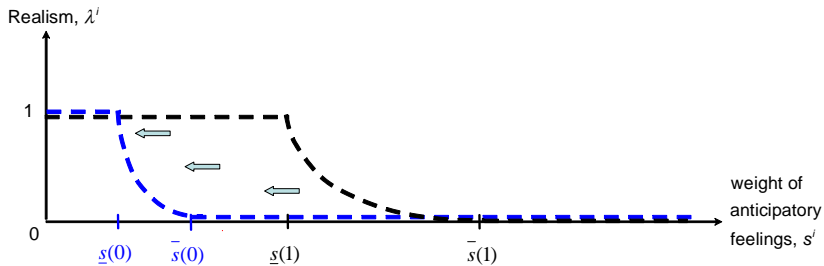
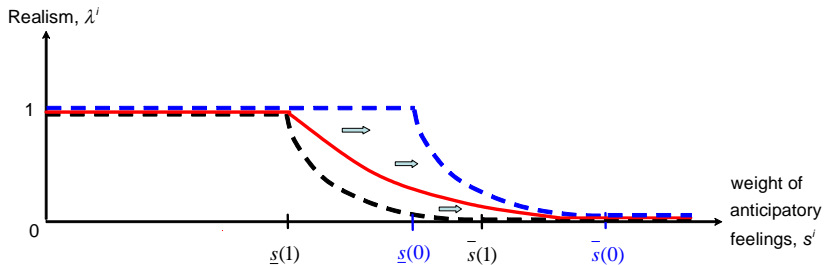
◆ MADoff Principle ?

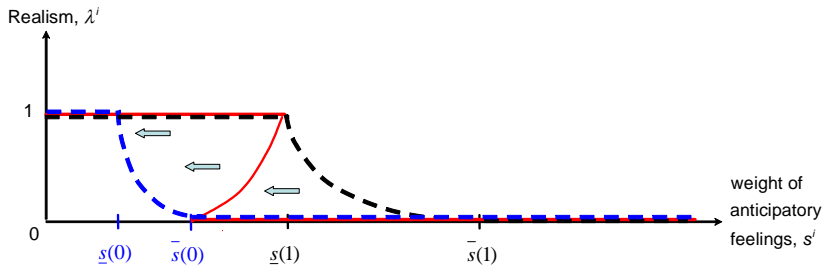
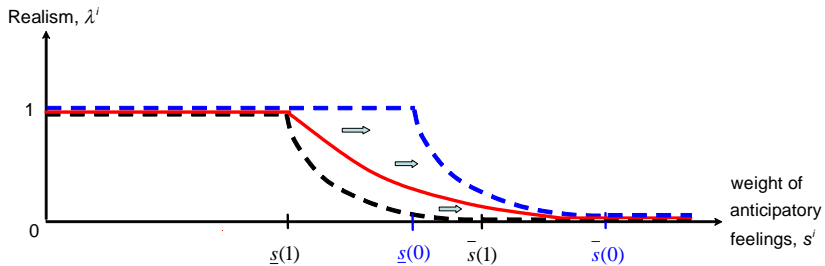


- 12-15% return on your money every year, rain or shine, secret no-risk strategy...

Group Morale...

$$(\theta_L > 0)$$



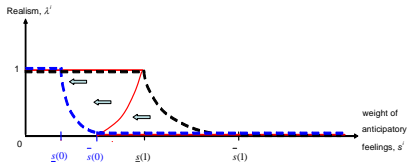
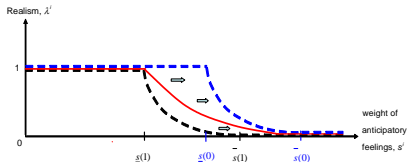


Proposition

- 1 Both realism ($\lambda = 1$) and collective denial ($\lambda = 0$) are equilibria, for s within some range, iff

$$\text{Prob}(\text{state } L) \times (\theta_H - \theta_L) < (1 - \alpha) (0 - \theta_L).$$

- 2 Groupthink more likely when more “common fate”, few exit options ($\alpha \downarrow$); more risky project, worse bad news ($\theta_L \downarrow$).



- Culture of denial: all persist in wrong course of action, ignoring the red flags –because others do
- Several testable implications

Asymmetric groups and corporate cultures

- Extend payoff structure to

$$U_2^i \equiv \sum_{j=1}^n \left(a_{\sigma}^{ji} e^j + b_{\sigma}^{ji} (1 - e^j) \right), \quad \sigma = H, L.$$

- Agents may also differ in their costs, preferences, priors

Proposition

Iff, for all i ,
$$\left(1 - q^i\right) \sum_{j=1}^n \left(a_H^{ji} - a_L^{ji}\right) < \sum_{j \neq i} \left(b_L^{ji} - a_L^{ji}\right),$$

both collective realism ($\lambda^j \equiv 1$) and collective denial ($\lambda^j \equiv 0$) are equilibria, for (s^1, \dots, s^n) within some range.

Hierarchies

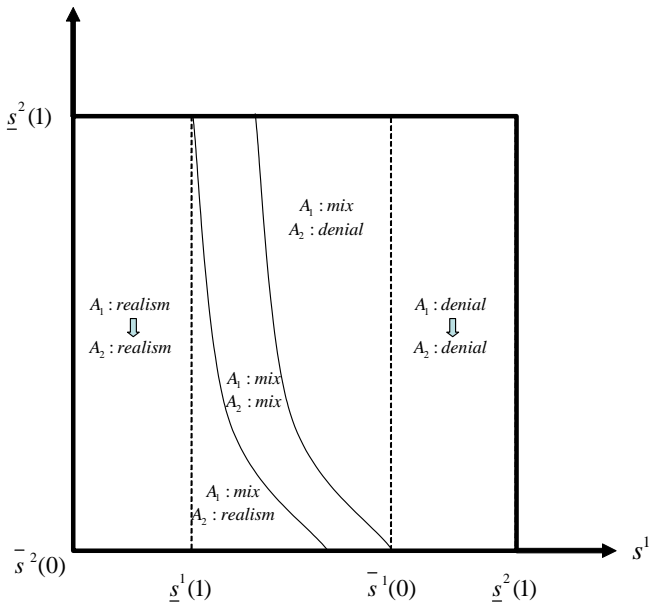
- Dependency: agents i 's realism, λ^i , influenced most by how key contributors to his welfare deal with L
- Simple hierarchy: agent 1 = manager, 2 = worker(s)

Manager delusions hurt workers \gg the reverse:

$$b_L^{12} - a_L^{12}, \text{ large, } b_L^{21} - a_L^{21} \text{ small} \Rightarrow$$

unique equilibrium, with (testable implications)...

◆ Follow the leader



“Trickle down” of beliefs in a hierarchy

Welfare, dissent and free speech

- Are agents under collective illusion worse or better off than facing the truth?

Group morale vs. groupthink

- Compare alternative equilibria, or outcomes achieved through collective commitment mechanism
 - Role and treatment of the bearers of bad news
- Same issues for small groups / firms and for societies / polities

Ex post and ex ante welfare

- State L (prob. $1 - q$):

$$U_{L,R}^* = 0 \geq -m/\delta + \delta\theta_L - c + s[q\theta_H + (1 - q)\theta_L] \sim U_{L,D}^*$$

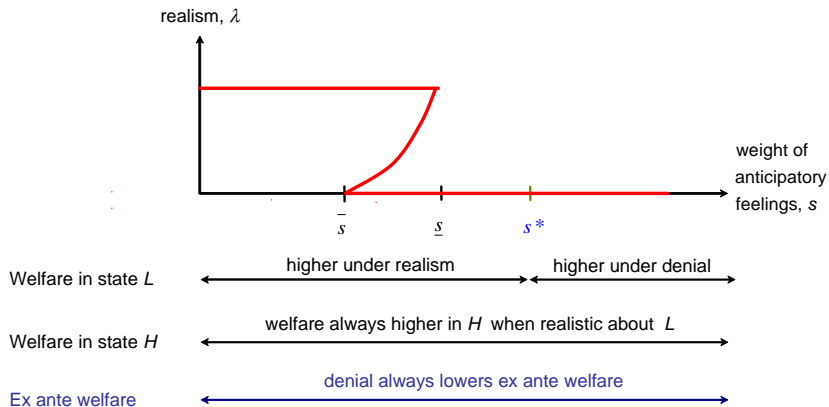
\Rightarrow groupthink harmful for s below some s^* , useful above

- State H (prob. q): $e^i \equiv 1$ in both equilibria, but under denial agents unsure of whether state is truly H , or was L and censored

\Rightarrow loss:

$$U_{H,R}^* \sim \delta\theta_H - c + s\theta_H > \delta\theta_H - c + s[q\theta_H + (1 - q)\theta_L] \sim U_{H,D}^*$$

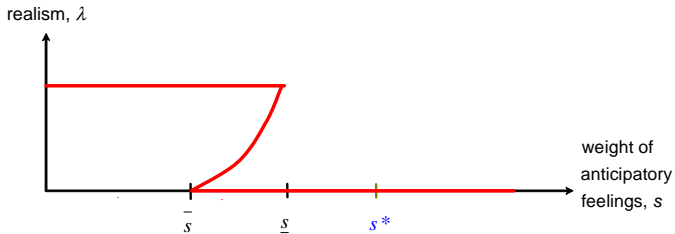
- Ex ante: $U_D^* - U_T^* = (1 - q)(-m/\delta + \delta\theta_L - c)$



- Denial may hurt or help in state L , but always “spoils” value of H
- Bayes: mean belief = prior \Rightarrow ex ante welfare impact of denial just $(\delta + s)\theta_L - c - m/\delta$, lost in state L

Social welfare and free speech

(groupthink case)



Welfare in state L higher under realism higher under denial

Welfare in state H welfare always higher in H when realistic about L

Ex ante welfare denial always lowers ex ante welfare

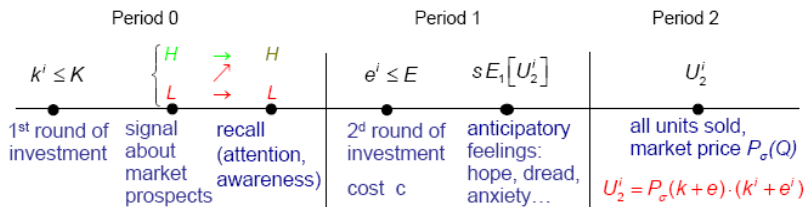
Dissenter in state L welcome before investment stage, unwelcome after unwelcome

Free-speech protections, devil's advocates may be needed always needed

◆ Welfare: main results

- Mean belief invariant (Bayes) \Rightarrow net welfare impact of wishful thinking is $\Delta W = (1 - q) [(\delta + s) \theta_L - c - m/\delta]$
- *Group morale*: $\Delta W > 0$. Effort socially optimal even in low state L , but not privately optimal. If all could ignore bad news, better off both *ex ante* and *ex post* (in state L)
 - ▶ Virtues of optimism in principal-agent or team models
- *Groupthink*: $\Delta W < 0$. Novel case: collective illusions may greatly damage welfare in state L , but be unavoidable. Even when they improve social welfare in state L , those gains are always dominated by the losses induced in state H
- *Curse of Cassandra*: strong tension between *ex-ante* and *ex-post* incentives to tolerate dissent.
 - ▶ Need for institutions to foster and protect speech

“Irrational exuberance” in markets



- Continuum of firms, investors. Can produce or invest $k^i \leq K$ at $t = 0$ with cost 0, and additional $e^i \leq E$ at $t = 1$ cost c .
- All units are sold at $t = 2$. Time to build, limited liquidity, no short sales (\sim limits to arbitrage),
- Market price $P_\sigma(\bar{k} + \bar{e})$, reflects
 - ▶ total supply: $\bar{k} + \bar{e} \in [0, K + E]$
 - ▶ variable market conditions: $\sigma = H, L$
- Unchanged information structure, preferences

Incomplete markets...

	Lehman Brothers	Bear Stearns	
Level 1	96 (35.6%)	39 (17.7%)	Trade in active markets with readily available prices
Level 2	152 (56.3%)	163 (74.1%)	"Mark to model"
Level 3	22 (8.2%)	18 (8.2%)	"Reflect management's best estimates of what market participants would use in pricing the assets"
Total (\$ billions)	270	220	

- Ex-ante, market sufficiently profitable that everyone will produce / invest $k^j = K$ at $t = 0$ (Could also be predetermined stock).
- Look at $t = 1$ subgame, following initial investment k^i and market signal H, L
- Assume

$$P_L(K) < \frac{c}{s + \delta} < \frac{c}{\delta} < qP_H(K + E) + (1 - q)P_L(K + E).$$

Conditional on aggregate investment $\bar{k} = K$ at $t = 0$, it is dominant strategy for a firm at $t = 1$ to:

- ▶ produce if its posterior is q or above
- ▶ not produce if it knows for sure that state is L

◆ Contagious exuberance

- Does other market participants' exuberance (denial of bad news) make each individual more or less likely to also be exuberant?/
- General obliviousness to weak fundamentals will further depress the (expected) final price: **glut, market collapse** \Rightarrow two effects:

- ▶ **Substitutability**: if i remains bullish, will lose even more money on the extra E units which will produce / invest at $t = 1$,

$$[c - P_L(K + E)] E \quad \text{vs.} \quad [c - P_L(K)] E$$

- ▶ **MAD**: if bearish, even greater capital losses to be immediately acknowledged on outstanding holdings k^i

$$[P_H(K + E) - P_L(K + E)] k^i \quad \text{vs.} \quad [P_H(K + E) - P_L(K)] k^i$$

- Intuitively, MAD dominates if K is large enough relative to E (in eqbm, $k^i = K$). Large outstanding positions.

With appropriate conditions:

- *Escalating commitment*: the more agent i has invested to date (k^i), the more likely he is to continue “blindly” / the less likely to be a realist
- *Market momentum*: the greater was *aggregate* prior investment (K), the more likely each agent is to continue investing “blindly”
- *Contagious beliefs*:

Proposition

If prior q is high enough and $P_H(K + E)(1 + E/K) < c/\delta$,

- 1 There is a range of s in which both realism and blind “exuberance” in the face of adverse news are equilibria.
- 2 Market mania leads to overinvestment and eventual crash.

◆ Five main results

- ① MAD principle: denial is contagious when it is socially harmful.
- ② Collective realism and collective wishful thinking as equilibrium cultures in firms, organizations. Group morale vs. groupthink.
- ③ Beliefs trickle down the hierarchy
- ④ Cassandra's curse: ex ante vs. ex post treatment of dissenting speech, implying need for “constitutional” guarantees
- ⑤ Market manias and crashes

◆ Other applications

- Collective apathy and fatalism: rather than face up to a crisis, everyone prefers to pretend things “could be worse” and /or “nothing can be done”
 - ▶ Looking away from humanitarian disasters, poverty
 - ▶ Oppressed or threatened ethnic group “acquiescing” to discrimination
- Ideology \Leftrightarrow institutions: statist and laissez-faire beliefs as collectively sustained wishful thinking and immunity to evidence about efficacy of governments or markets
- Open question: understanding delusional collective pessimism (mass panics and hysterias), rather than optimism.