Words Speak Louder without Actions

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Publications:

- “Who’s Paying Attention? Measuring Common Ownership and Its Impact on Managerial Incentives” Levit, D., Gilje, E., & Gormley, T., (2020). Journal of Financial Economics, Vol. 137(1), pp. 152-178..
- “Corporate Control Activism” Levit, D., & Corum, A.,, (2019). Journal of Financial Economics, Vol. 133(1), pp. 1-17.
- “Freeze-out Mergers” Levit, D., Elif, D., & Dalkir, M., (2019). The Review of Financial Studies, Vol. 32(8), pp. 3266-3297..

1. Introduction

2. Analysis

3. Extensions

4. Applications and Empirical Implications

5. Conclusion

Abstract

- Information and control rights are central aspects of leadership, management, and corporate governance.
- This paper studies a principal-agent model that features both communication and intervention as alternative means to exert influence
- The main result shows that a principal's power to intervene in an agent's decision limits the ability of the principal to effectively communicate her private information.
- The perverse effect of intervention on communication can harm the principal, especially when the cost of intervention is low or the underlying agency problem is severe.
- These novel results are applied to managerial leadership, corporate boards, private equity, and shareholder activism.

1.Introduction

Actions speak louder than words, but not nearly as often.

—Mark Twain

Related Literature

incomplete contracts

Crémer (1995) ,the principal can benefit from Punishing agent (受益于惩罚代理人，知情代理),not to intervene,effect of intervention on the quality of communication, which is the main focus of my analysis

delegation

Chakraborty and Yilmaz (2017)，the trade-off between delegation and communication in organizations,informed agent ,communication reduce the value of control rights(沟通可降低干预的价值)

cheap-talk

Matthews(1989), the principal has the right to veto the agent's decision following cheap-talk communication, principal's private information is about her preferences, not the common value of the project/task，not to intervene

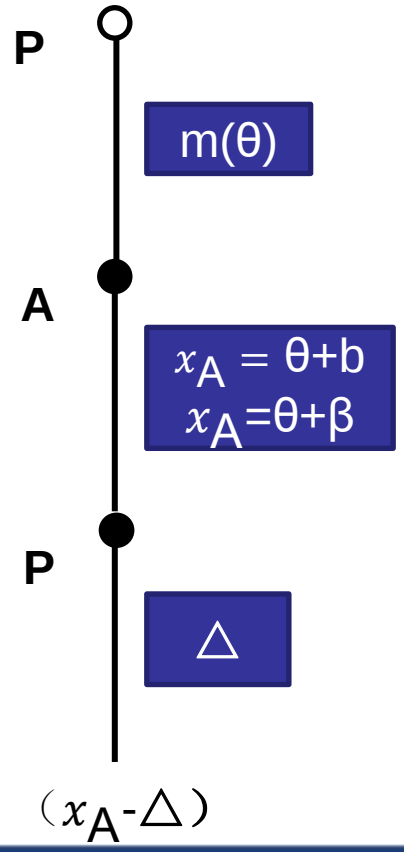
1.1 Research questions

1.communication of private information and intervention in the decision-making process are common remedies for information asymmetries and conflicts. (agent has a tendency to overinvest, principal has incentives to understate firm fundamentals to prevent overinvestment)

2.The interplay between communication and intervention, however, is little understood

1.2 Main research content

To study the interaction between communication and intervention, I consider a principal-agent model with incomplete contracts and a “top-down”information structure.



1.3 Main Result

1. I show that the power of a principal to intervene in an agent's decision exacerbates the underlying agency problem and as a result limits the ability of the principal to use her private information to influence the agent's decision(intervention hinders communication)

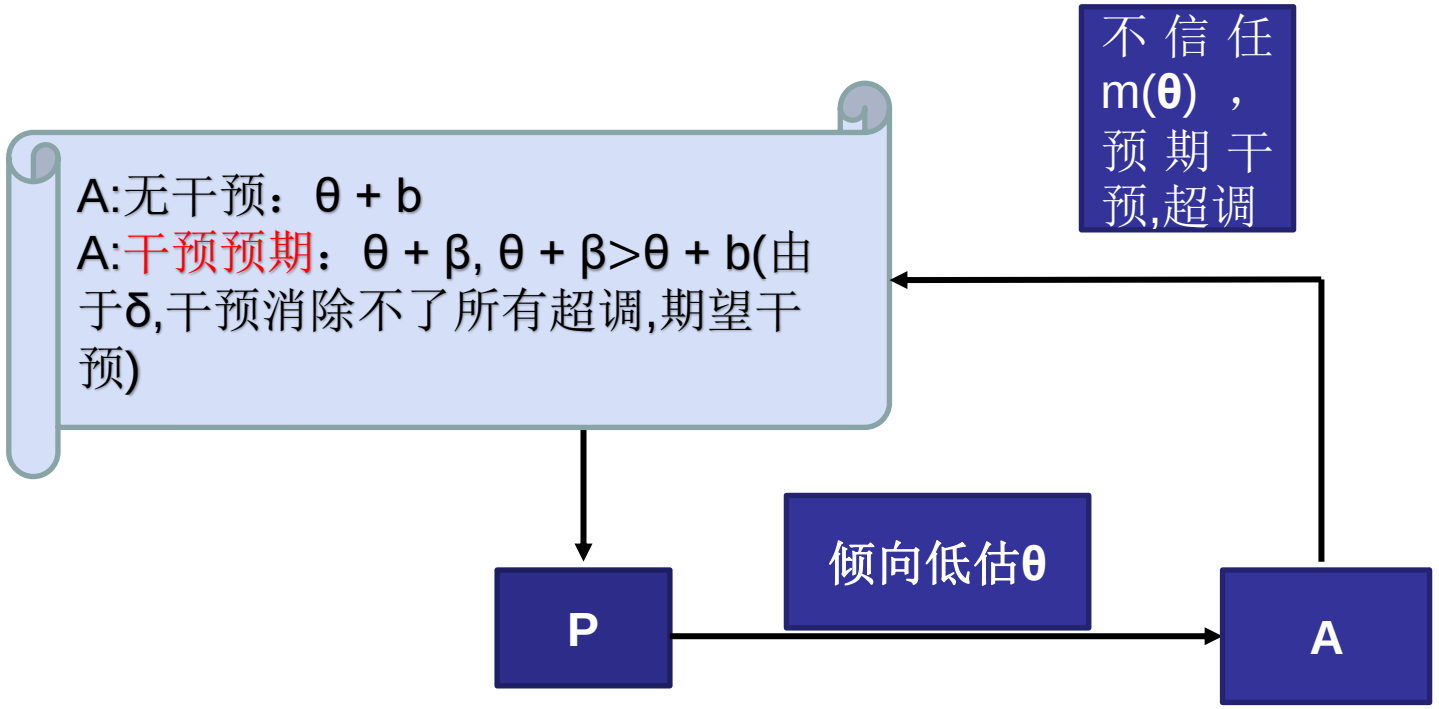
2. The power to intervene can be detrimental to the principal

3.The effect of intervention on communication is particularly strong when the cost of intervention is low or the underlying agency problem is severe

4. The perverse effect of intervention on communication is detrimental—it can offset the value of intervention as a correction device and reduce the principal's expected welfare

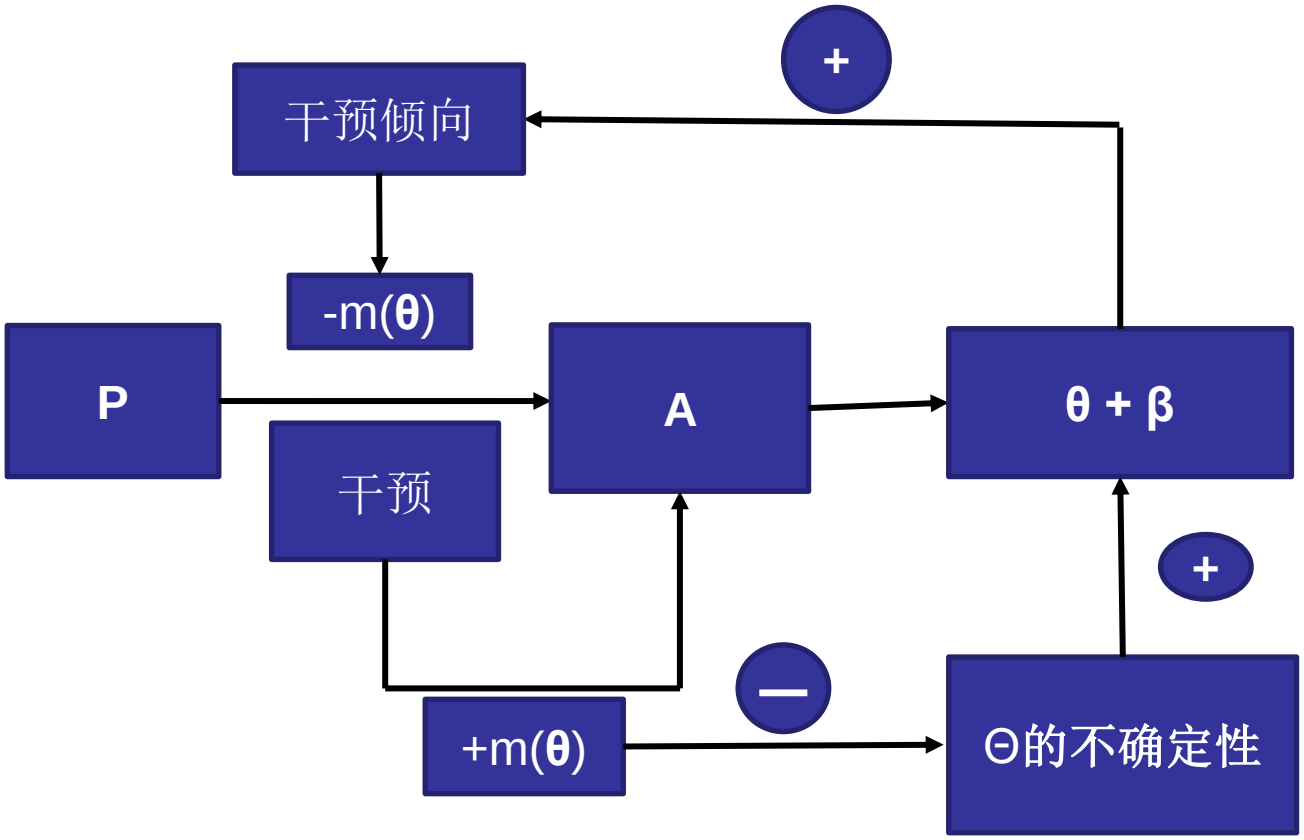
1.4 How can intervention hinder communication?

Path one：



1.4 How can intervention hinder communication?

Path two：



1.5 extensions to the baseline model

1. intervention hinders communication and decreases the principal's welfare

2.intervention has a weaker adverse effect on communication if it imposes a direct cost on the agent

3.the adverse effect of intervention on communication also holds when both the principal and the agent are privately informed about the fundamentals of the firm

1.7 Novel feature

Communication is modeled as cheap talk as in Crawford and Sobel (1982), the novel feature of the model is the possibility of intervention. (经济理论中经常会存在协调问题，比如寡头垄断者要达成共谋协议，必须在众多可能的子博弈完美纳什均衡结果中达成一致， 这就必须进行协调。 而与这种协调问题最密切相关的是“廉价交谈”（ cheap talk ）)

2. Analysis

2.1 the model

2.2 the equilibrium

2.3 effect of intervention on communication

2.4 welfare implications

2.1 the model

Principal's payoff:

$$U_P(x,\theta) = U_P(\theta,\theta) - L(|x-\theta|) \quad (1)$$

$L''(\cdot) > 0$ and $L(0) = L'(0) = 0$, unique maximum at $x = \theta$

Agent's payoff:

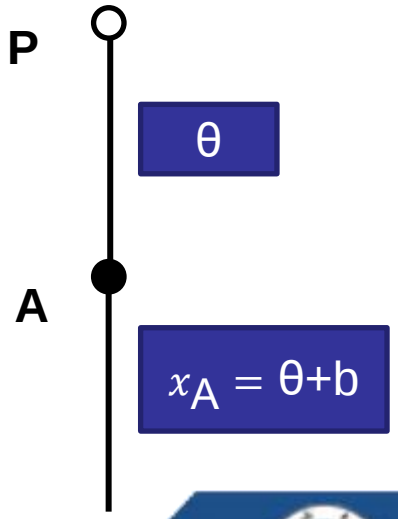
$$U_A(x,\theta;b) = U_A(\theta+b,\theta;b) - T(|x-\theta-b|) \quad (2)$$

$T''(\cdot) > 0\ and\ T(0) = T'(0) = 0$, unique maximum at $x = \theta + b$

x —scale of investment

θ — the fundamentals of the firm，$[\underline{\theta}, \overline{\theta}]$

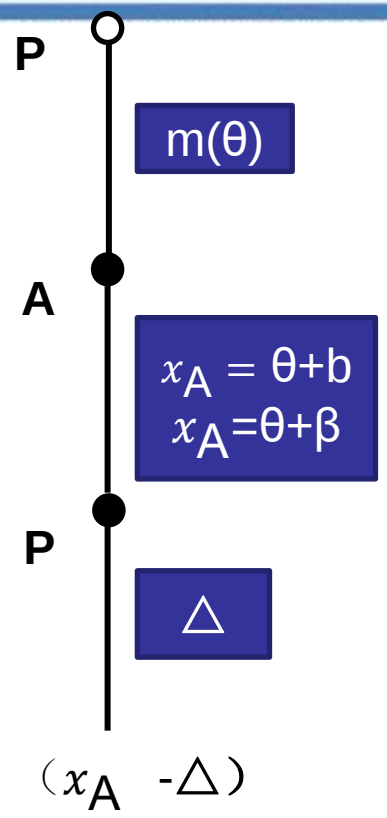
b —the intrinsic conflict of interest



with the possibility of intervention

Principal's payoff: $U_P(x - \triangle, \theta) - \delta C(|\triangle|)$

Agent's payoff: $U_A(x - \triangle, \theta; b)$



△ — the extent of intervention

△ = 0，principal does not intervene

△ ≠ 0，the principal intervenes and the final project $x_A - \triangle$

$C(|\triangle|)$ —a cost of intervention

$C''(\cdot) > 0 \; and \; C(0) = C'(0) = 0$

δ —the principal's aversion to confrontation, Cost factor, reflecting the cost

When x≠θ，uninformed about θ or because he is biased

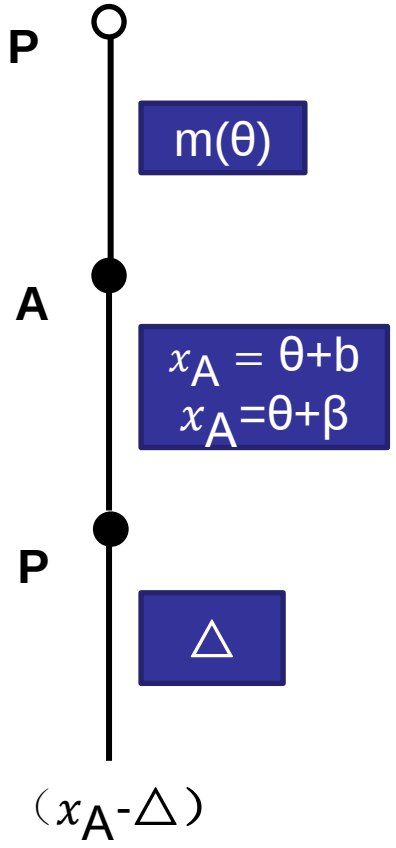
2.2 the equilibrium

Perfect Bayesian Equilibria of the game in pure strategies.three parts:

- m^* (θ), the principal's communication strategy
- x^* (m), the agent's decision rule
- $\triangle^*$ (x, θ), the principal's intervention policy

Equilibrium is defined as:即给定其他变量，主体会依据决策变量最大化其效用。

接下的分析依据逆推法求解的逻辑进行

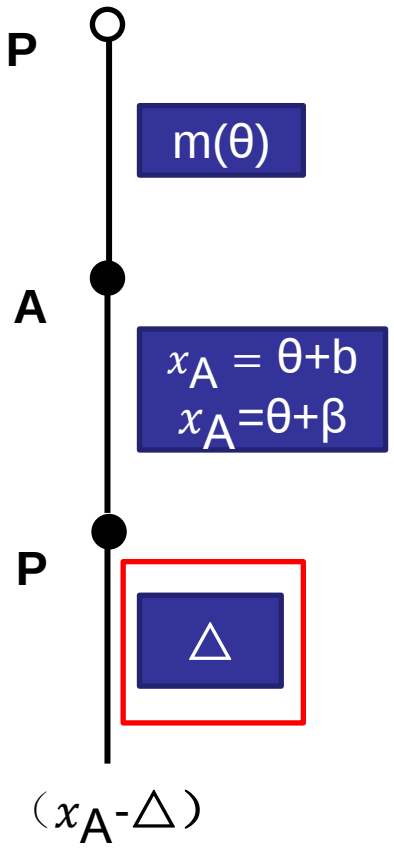


2.2.1 analysis with the principal's intervention

EXAMPLE1

Suppose $U_P = A - (x - \theta)^2$, $U_A = A - (x - \theta - b)^2$, $C = \triangle^2$, 可解得

$\triangle^*(x, \theta) = \frac{x - \theta}{1+\delta}$



- $|\triangle^{*}(x, \theta)|$ increases in $|x - \theta|$.the principal has stronger incentives to intervene when the agent's decision is more detrimental.
- $|x - \theta - \triangle^{*}(x, \theta)| < x - \theta$. the principal's intervention reduces the distance between the implemented project and θ.
- $|\triangle^{*}(x, \theta)|$ decreases in δ. the principal has stronger incentives to intervene when it is less costly to do.

2.2.2 Reaction of Agent

The principal and the agent have rational expectations about $\triangle^{*}(x, \theta)$,which they both take into account at the communication stage.

$$V_P(x,\theta) \equiv U_P(x - \triangle*(x-\theta),\theta) - \delta C(|\triangle^{*}(x-\theta)|) \quad (5)$$

$$V_A(x,\theta;b) \equiv UA(x - \triangle*(x-\theta),\theta;b) \quad (6)$$

initial project x_A satisfies

$$x_A - \triangle^* (x - \theta) = \theta + b \qquad (7)$$

$x_A = \theta + \beta$ ， agent's intervention-induced bias

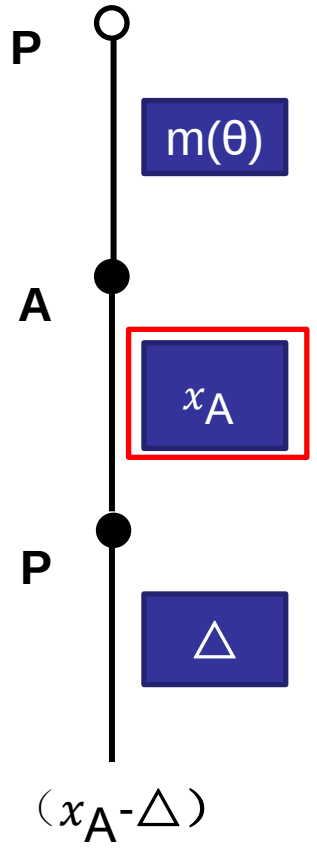
$$\beta \equiv b + (C')^{-1} \left(\frac{L'(b)}{\delta} \right) \qquad (8)$$

intervention changes the agent's ideal point.

Lemma1 The agent's indirect utility V_A (x, θ; b) obtains its unique maximum at x = θ + β.

$$\beta = b + \triangle^{*}(\beta) \qquad (9)$$

$\triangle^{*}(\beta)=(C')^{-1}\left(\frac{L'(b)}{\delta}\right)$, extent of overshooting， is decreasing in δ and increasing in b.



EXAMPLE 2: Under quadratic utility and cost functions,

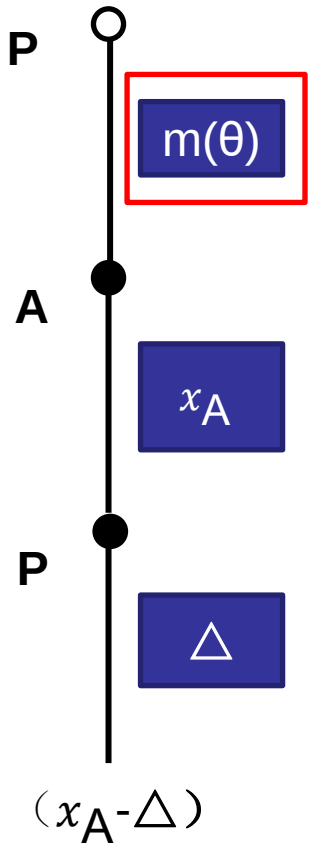
- $V_P = A - \frac{\delta}{1+\delta}(x - \theta)^2$
- $V_A = A - \frac{\delta^2}{(1+\delta)^2}(x - \theta - \beta)^2$
- $\beta = b + \delta^{-1}b$
- the quality of communication between the principal and the agent is determined by their conflict of interests as reflected by the differences in their indirect utility functions.

2.2.3 the quality of communication

- communication in equilibrium is characterized by a partition $(a_0, a_1, \ldots, a_n)$ of $[\underline{\theta}, \overline{\theta}]$。（平衡状态下，委托人的信息是有噪声的，它揭示了实现状态所属的部分元素，而不是实际状态）。
- If the principal's message indicates $\theta \in (\alpha_{i-1}, \alpha_i)$，then the agent chooses project x_i^* that maximizes

  $E[V_A(x, \theta; b) | \theta \in (\alpha_{i-1}, \alpha_i)]$.

(x_i^*,依据委托人揭示的不同区间下的投资规模)



- α_i has to be the midpoint x_i^* and x_{i+1}^*. Together with the agent's best response, these observations imply

$$\alpha_{i+1} - \alpha_i < \alpha_i - \alpha_{i-1} - 4b \qquad (10)$$

分区元素的大小至少比前一个小4b

- the principal has less credibility when her message states that θ is small.
- The reduced credibility is reflected by a larger interval, which means that less information is communicated by the principal.

- The constraint on the relative size of the partition elements restricts their number in equilibrium to be smaller than a positive integer, which I denote by N_{in}^{*}

（分隔符的大小受限于分隔符的数量，在均衡时需要小于一正整数，$\mathrm{N}_{in}^{*} \geq 2$既有信息上的均衡。$\mathrm{N}_{in}^{*}$越大，分区越精细，即委托人揭示了更多的信息。$(N(\beta) \equiv \left\lceil -\frac{1}{2}+\frac{1}{2}\sqrt{1+2\frac{\overline{\theta}-\underline{\theta}}{\beta}} \right\rceil$,表示$N(\beta) \geq -\frac{1}{2}+\frac{1}{2}\sqrt{1+2\frac{\overline{\theta}-\underline{\theta}}{\beta}}$的最小整数,越大即委托人传递的信息越多)

- a larger N_{in}^{*} implies that the partition is finer, and hence, more information is revealed in equilibrium by the message of the principal

- The quality of communication in equilibrium can also be measured by the residual uncertainty of θ following the principal's message.
- the residual variance of θ in the most informative equilibrium is defined as

$$\sum\nolimits_{in}^{*} \equiv E[(E[\theta|\mathrm{m}^{*}(\theta) - \theta)^2] \quad (11)$$

The residual variance of θ，$\sum\nolimits_{in}^{*} = \sum(\beta)$

$$\sum(\beta) \equiv \frac{\sigma^2}{N(\beta)^2} + \frac{\beta^2\left(N(\beta)^2 - 1\right)}{3} \quad (12)$$

the unconditional variance of θ.

$$\sigma^2 \equiv \frac{\left(\overline{\theta} - \underline{\theta}\right)^2}{12}$$

2.3 Does Intervention Hinder Communication? （effect of intervention on communication）

- Intervention hinders communication if the quality of communication in equilibrium with intervention is lower than it is without it
- the effect of intervention on communication is captured by comparing $\{N_{in}^{*}, \sum_{in}^{*}\}$ with $\{N_{no}^{*}, \sum_{no}^{*}\}$

2.3.1. intervention hinders communication path one

THEOREM 1

(i) The largest partition in equilibrium with intervention is coarser than the largest partition in equilibrium without intervention, that is, $\mathrm{N}_{in}^{*} < \mathrm{N}_{no}^{*}$

(ii) The residual uncertainty in the most informative equilibrium with intervention is larger than the residual uncertainty in the most informative equilibrium without intervention, with the inequality being strict if and only if the most informative equilibrium without intervention is not a babbling equilibrium, that is, if $\mathrm{N}_{no}^{*} = 1$，then $\sum_{no}^{*} = \sum_{in}^{*}$，and if $\mathrm{N}_{no}^{*} \geq 2$，then $\sum_{no}^{*} < \sum_{in}^{*}$。

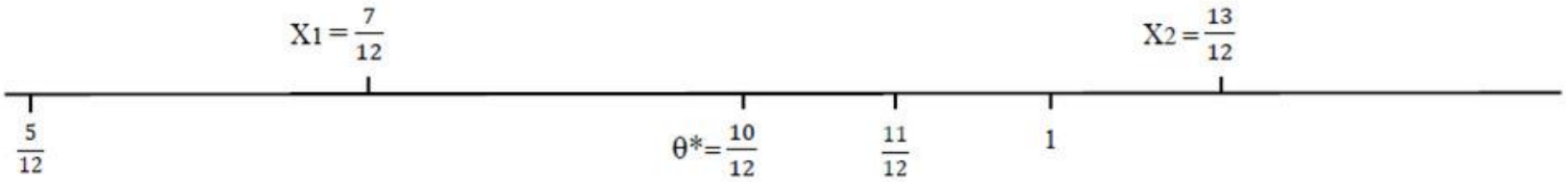
（babbling equilibrium：发送者的策略与类型无关，接收者的策略与信号无关的均衡）

EXAMPLE4：Suppose the utility and cost functions are quadratic with b =$\frac{1}{6}$,δ = 1, and $[\underline{\theta}, \overline{\theta}]$ = [0,1].

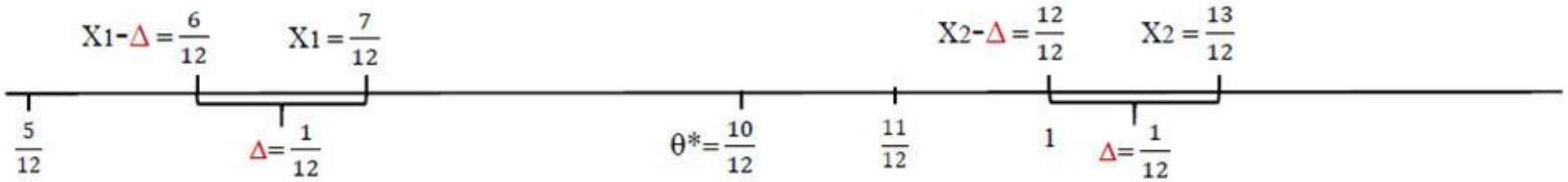
I. Communication without intervention

- $\theta^* = \frac{10}{12}$, the principal reveals the location of θ with respect to $\frac{10}{12}$
- If the principal reveals $[0, \frac{10}{12}]$,updates his beliefs about the expected value of θ from $\frac{1}{2}$ to $\frac{5}{12}$
- If the principal reveals $[\frac{10}{12}, 1]$, the expected value of θ is $\frac{11}{12}$
- due to his bias b =$\frac{1}{6}$, $x_1 = \frac{5}{12} + \frac{1}{6} = \frac{7}{12}, x_2 = \frac{11}{12} + \frac{1}{6} = \frac{13}{12}$
- Since $\theta^* = \frac{10}{12}$ is the midpoint between $\frac{7}{12}$ and $\frac{13}{12}$, the principal's communication strategy is indeed optimal

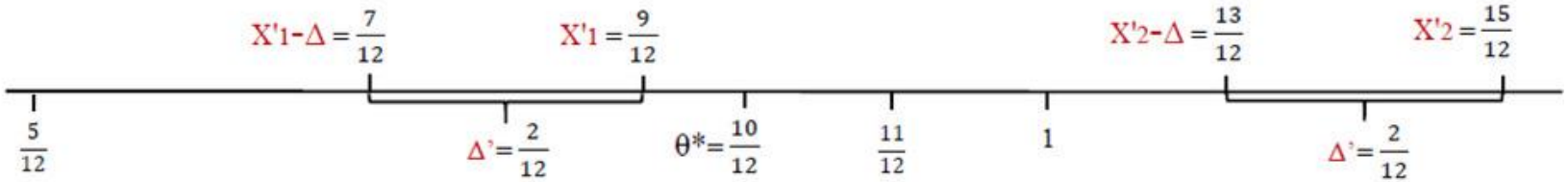
A Communication without intervention:



B Intervention:



C Overshooting:



D Communication with intervention:

II. intervention

the principal's intervention $\triangle^{*}=\frac{x-\theta}{2}$, the final project is $x-\triangle^{*}=\frac{1}{2}[x+\theta]$

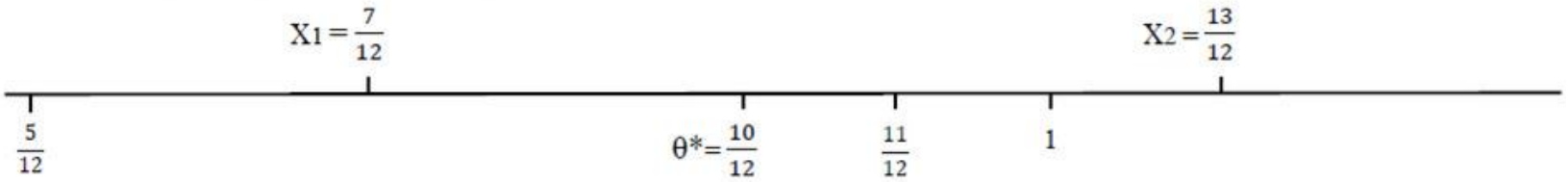
the final project is the midpoint between the agent's initial choice and the true state

$$x_1 = \frac{1}{2}\left(\frac{5}{12}+\frac{7}{12}\right) = \frac{6}{12}$$

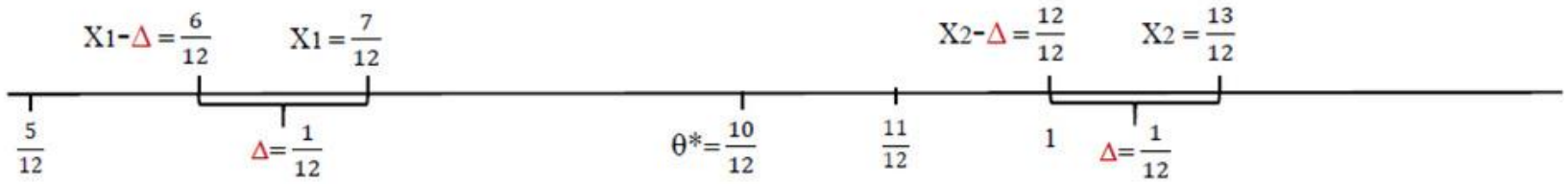
$$x_2 = \frac{1}{2}\left(\frac{13}{12}+\frac{11}{12}\right) = \frac{12}{12}$$

$$\triangle^{*}=\frac{13}{12}-\frac{12}{12}=\frac{7}{12}-\frac{6}{12}=\frac{1}{12}$$

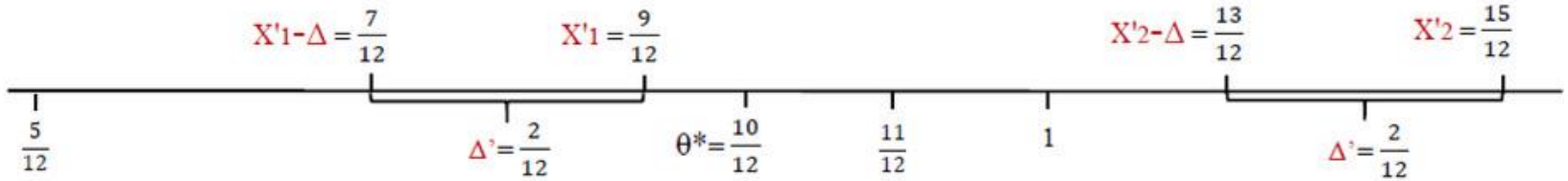
A Communication without intervention:



B Intervention:



C Overshooting:



D Communication with intervention:

III. *Overshoot*

to ensure that the final projects remain $\frac{7}{12}$or $\frac{13}{12}$,

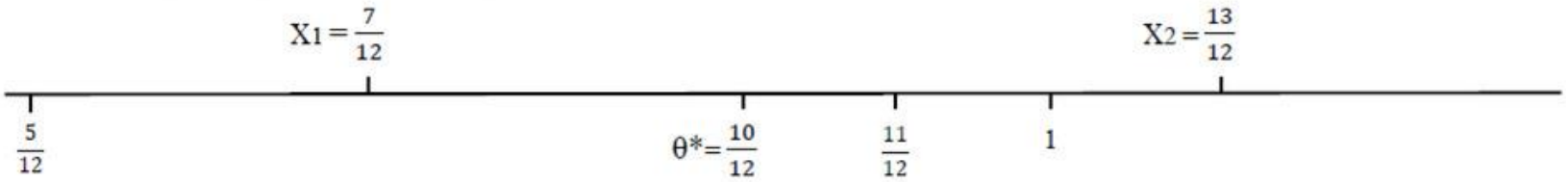
the agent must increase their initial size to $x_1' = \frac{9}{12}$, $x_2' = \frac{15}{12}$

Since x-$\triangle^*$=$\frac{1}{2}$[x+θ]

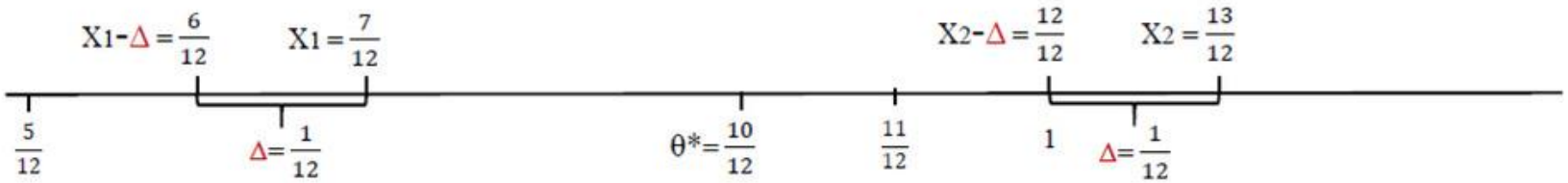
$x_1 = \frac{1}{2}(x_1' + \frac{5}{12})$, $x_2 = \frac{1}{2}(x_2' + \frac{11}{12})$

the intervention-induced bias is $\beta = \frac{1}{3}$（$\triangle$=$\frac{1}{6}$, b =$\frac{1}{6}$）

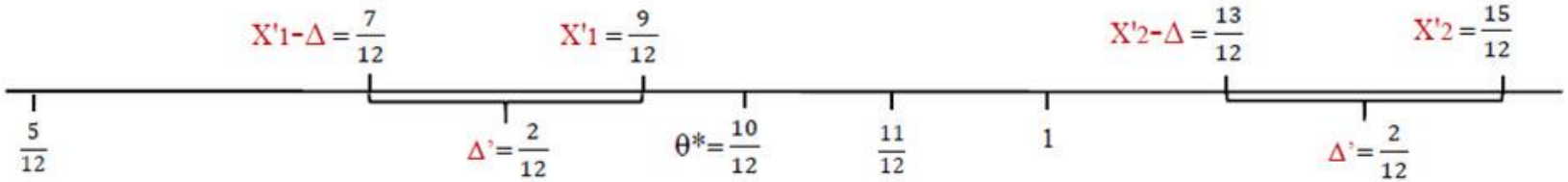
A Communication without intervention:



B Intervention:



C Overshooting:

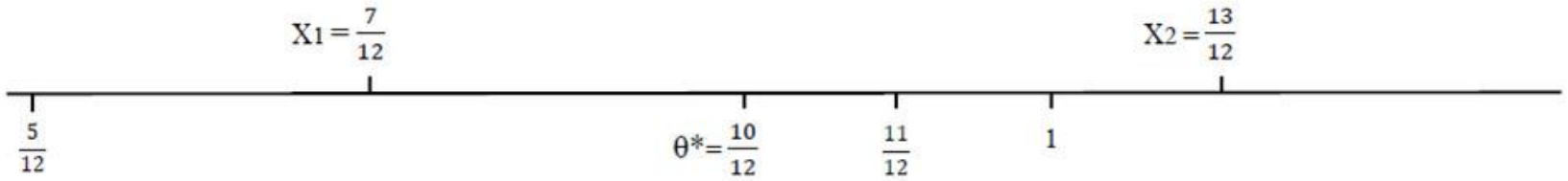


D Communication with intervention:

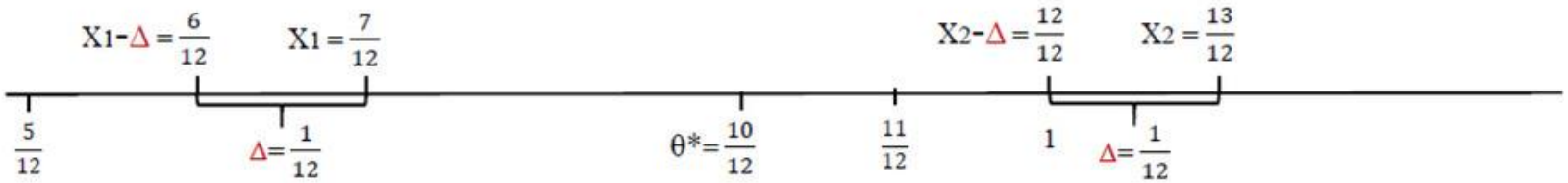
IV.Communication with intervention

- the principal, who anticipates the overshooting by the agent, prefers project $x_1' = \frac{9}{12}$ over $x_2' = \frac{15}{12}$ if and only if $\theta < \theta^{*\prime}$。（$\theta$,A推断的基本面信息）
- The shift of the communication cutoff from $\theta^* = \frac{10}{12}$ to $\theta^{*\prime} = 1$
- the principal prefers the smaller project for any realization of θ
- Therefore, principal understates the true value of θ by pretending that $\theta \in [0, \frac{10}{12}]$, even if $\theta \in [\frac{10}{12}, 1]$.
- The only equilibrium with intervention is an uninformative equilibrium, that is, $N_{in}^* = 1$.(只能揭示真实$\theta^{*\prime} = 1$的左半部分)
- Since $N_{no}^* = 2$, $N_{in}^* < N_{no}^*$, intervention hinders communication
- The discussion above shows that intervention hinders communication by providing the agent with perverse incentives to overshoot

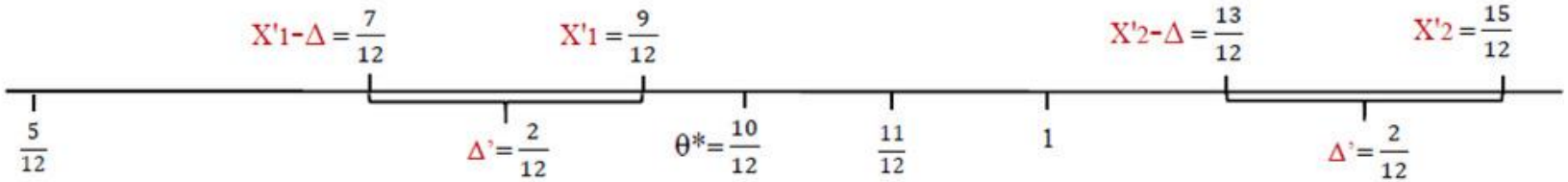
A Communication without intervention:



B Intervention:



C Overshooting:

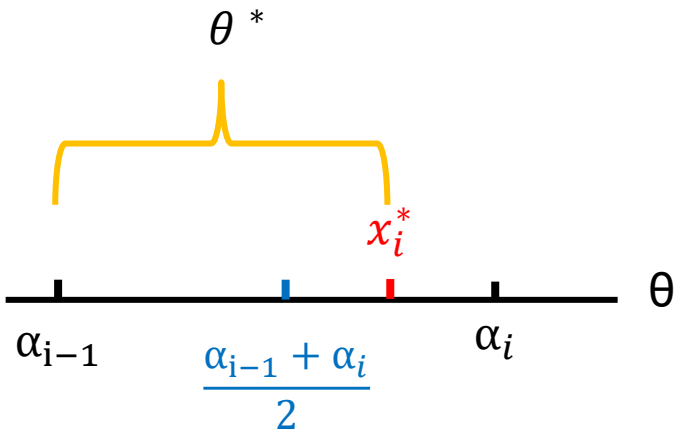


D Communication with intervention:

2.3.2 intervention hinders communication path two

intervention also hinders communication by providing the agent with an informational benefit

- 委托人向代理人揭示的θ是区间(α_{i-1}, α_i)，不会揭示具体位置。
- 沟通中的噪声是委托人防止过度投资的必然结果。
- 由于代理仍然不确定θ的值，因此他在均衡中的最佳选择会权衡两种风险，超出其理想点的风险与不足以抵消其理想点的风险。
- 然而，由于代理人对过度投资的偏见（b> 0）意味着他的最优行动x_i^*更接近信息区间的上限，即$x_i^* > \frac{\alpha_{i-1}+\alpha_i}{2}$。
- 由于委托人的干预程度会随代理人投资规模偏差的增加而增加，所以当$\theta \in (\alpha_{i-1}, x_i*)$委托人会更加积极的干预相比于$\theta \in (x_i*, \alpha_i*)$。特别是，委托人比增加项目规模更可能缩小项目规模。
- 这种不对称性揭示了关于(α_{i-1}, α_i)中θ位置的其他信息。在边界上，代理人知道委托人在x超调θ时会比低于θ时更积极地干预，这会鼓励代理人通过选择更大的项目来承担更多的“风险”。
- 代理人可通过委托人的干预获取关于θ的更多信息，减少了θ的不确定性，因此会有增加过度偏差的反应。总的来说，代理人对委托人首次提供的信息的接受程度较低，在平衡状态下披露的信息也较少。



EXAMPLE5：

- Consider Example 4，without intervention the agent's utility is

$$\mathrm{A}-(\mathrm{x}-\theta-\frac{1}{6})^2$$

- If the principal has the power to intervene, x is downsized by $\triangle^*=\frac{x-\theta}{2}$ with intervention, the agent's indirect utility is

$$\mathrm{A}-(\mathrm{x}-\theta-\frac{x-\theta}{2}-\frac{1}{6})^2=\mathrm{A}-(\frac{x-\theta}{2}-\frac{1}{6})^2=\mathrm{A}-\frac{1}{4}(\mathrm{x}-\theta-\frac{1}{3})^2$$

2.4 welfare implications

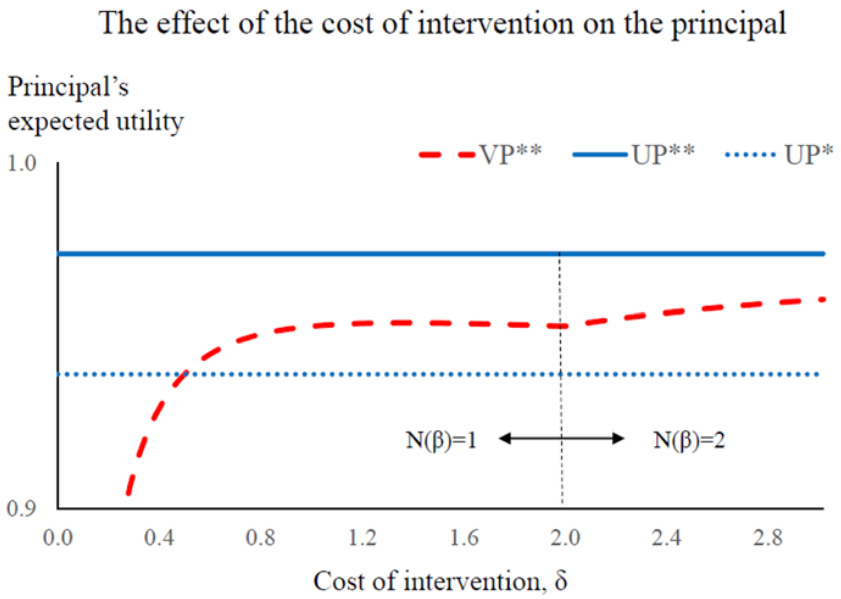
- V_P^{**}，U_P^{**}—the principal's expected utility in the most informative equilibrium, with and without intervention
- V_A^{**}，U_A^{**} —the agent's expected utility in the most informative equilibrium, with and without intervention
- V_P^{*}，U_P^{*}— the principal's expected utility in the babbling equilibrium（ babbling equilibrium：发送者的策略与类型无关，接收者的策略与信号无关的均衡）

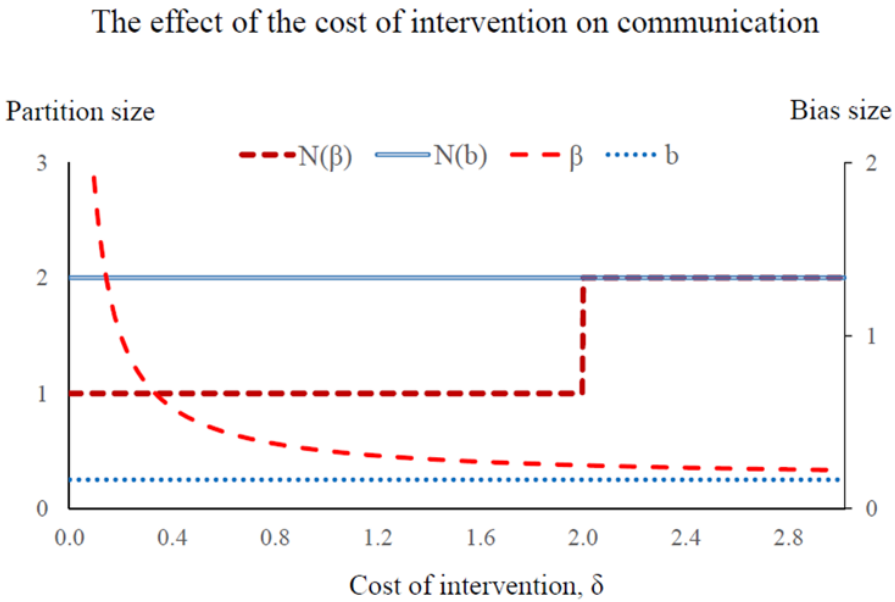
2.4.1 Does Intervention Benefit the Principal?

PROPOSITION 1

I. There exist $\bar{\delta} > 0$ and $\bar{b} > 0$ such that, all else equal,if $\delta < \bar{\delta}$ or $b > \bar{b}$, then $V_P^{**} < U_P^{**}$

II. There exist $\underline{b} > 0$ and $\underline{\delta} \in (0, \bar{\delta})$ such that if $b < \underline{b}$ and$\delta \in (\underline{\delta}, \bar{\delta})$,then $N_{no}^{*} \geq 2, N_{in}^{*} = 1$ and $V_P^{*} > U_P^{*}$



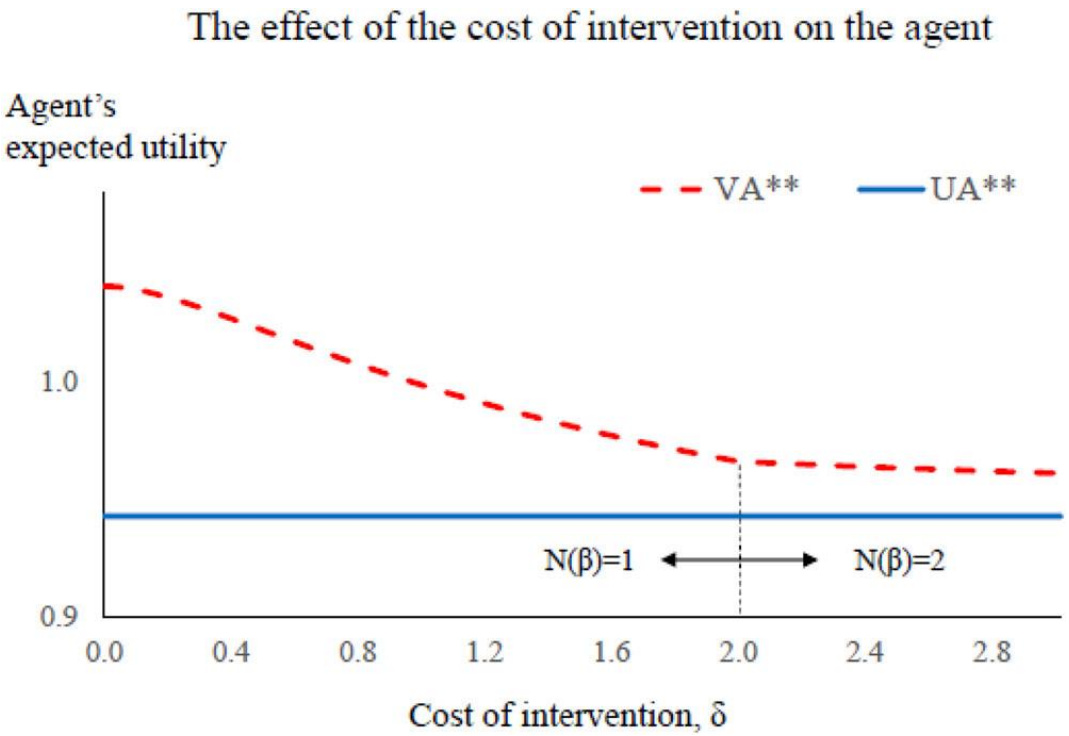


Notice that if δ < 2, then N(β) = 1, that is, the most informative equilibrium with intervention is the babbling equilibrium. Therefore, δ < 2 implies V_P^{*}=V_P^{**}

2.4.2 Does Intervention Benefit the Agent?

PROPOSITION 2

There exist $\bar{\delta} > 0$ and $\bar{b} > 0$ such that, all else equal, if $\delta < \bar{\delta}$ or $b > \bar{b}$, then $V_A^{**} > U_A^{**}$



3. Extensions

3.1 Pay For Performance

3.2 Agent’s Intervention Cost

3.3 Informed Agent

3.1 Pay For Performance

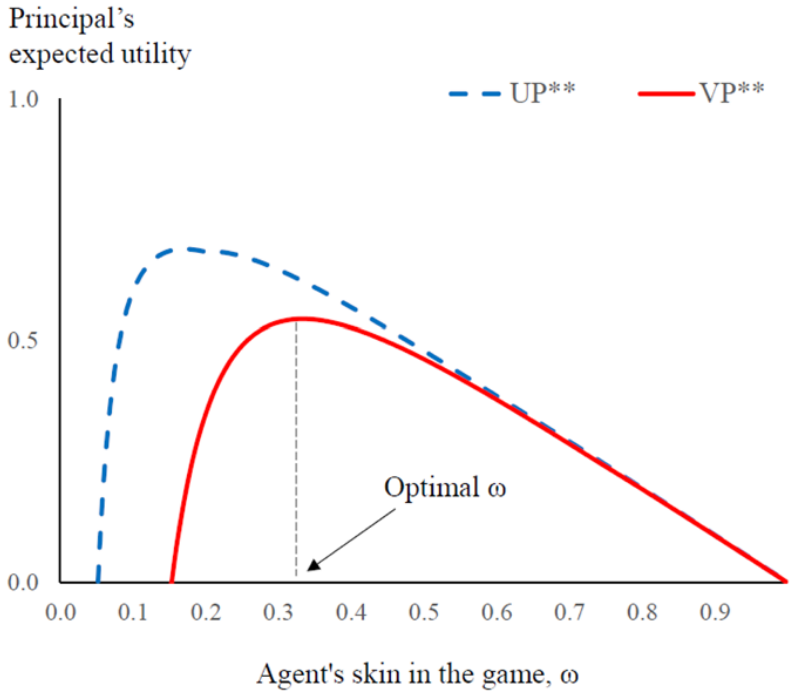
- The incompleteness of contracts plays a central role in the analysis as actions
- messages cannot be contracted on.However, the value of the project (e.g.,its terminal cash-flows) could in principle be contracted on.
- For example, the principal could offer the agent a fraction $\omega \in (0,1)$ of $U_P(x, \theta)$, the value of the project.
- **To illustrate the effect of ω on the analysis**

- Bx- the agent's intrinsic private benefit from investment, where $B > 0$
- Given ω， the principal's utility $(1-\omega)U_P\ (x,\theta)$

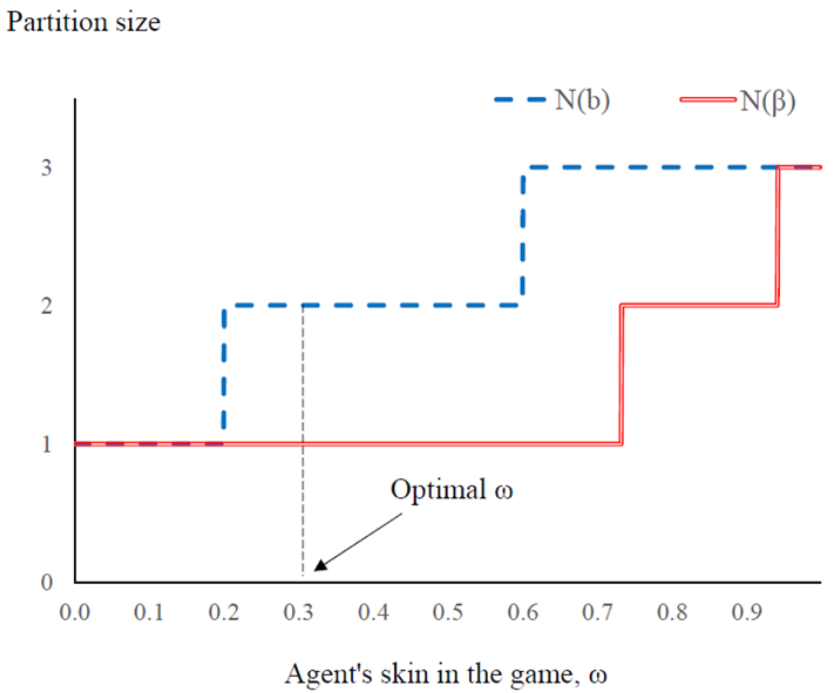
  the agent's utility $Bx + \omega U_P(x,\ \theta)$

EXAMPLE 8: Under quadratic utility and cost functions

The effect of the agent's compensation on the principal



The effect of the agent's compensation on communication



Therefore, intervention hinders communication and harms the principal's wealth even if the principal chooses ω optimally

3.2 Agent's Intervention Cost

- intervention may have a direct negative effect on the agent's reputation, ego, or compensation.
- imposes a cost $\tau K(|\triangle|)$ on the agent，$K''(\cdot) > 0$，$K(0) = K'(0) = 0$，$\tau > 0$。
- I show that β decreases with τ and there exists $\tau^* > 0$ such that $\beta > b$ if and only if $\tau < \tau^*$， For example, under the quadratic functional form（ $K(|\triangle| = \triangle^2$ ）

$$\beta = b\frac{1+\delta}{\frac{\tau}{\delta}+\delta}$$

- β > b if and only if τ < δ
- if $\tau < \tau^*$, then β > b， intervention hinders communication

  if $\tau > \tau^*$, then β < b，intervention facilitates communication

3.3 Informed Agent

- Agent may also have private information about θ，$\theta = \theta_P + \theta_A$，where θ_P is independent of θ_A。
- I show that under quadratic utility and cost functions, the informed agent's
- intervention-induced bias is $b + \delta^{-1}b$， which is the same as the uninformed
- agent's intervention-induced bias。
- This result demonstrates that intervention can also hinder communication in a setup with two-sided information asymmetries.

4. Applications and Empirical Implications

4.1 Managerial Leadership

4.2 Corporate Boards

4.3 Private Equity

4.4 Shareholder Activism

Two main predictions.

- First, it predicts that the frequency with which control rights are exercised should be negatively correlated with the quality and prevalence of communications.
- Second, the model predicts that the quality of communication increases with the cost of intervention(β decreases with δ)

4.1 Managerial Leadership

- the model suggests that managers who micromanage (adopt a hands off approach) are less (more) likely to be effective communicators.

4.2 Corporate Boards

- Applied to this context, the model predicts a negative association between the monitoring intensity and advisory role of corporate boards.
- The model suggests that these factors(coordination among directors) would be positively related to the effectiveness of the board's advisory role.

4.3 Private Equity

- The model predicts that PE investors would be able to advise and add value to their portfolio companies more effectively

4.4 Shareholder Activism

- Applied to this context, the model predicts a negative correlation between activists' interventions and behind-the-scenes communications.
- factors that facilitate coordination among shareholders are likely to reduce the cost of campaigning and thereby undermine the ability of activists to influence the policies of their target companies.

5. Conclusion

- the power of a principal to intervene in an agent's decision exacerbates the underlying agency problem and as a result limits the ability of the principal to use her private information to influence the agent's decision.
- communication in and of itself can reduce the value of control rights, and as such highlights a novel mechanism through which the allocation of control rights affects real outcomes

THANKS !