Political Economy - Voting and Lobbying in a Democracy

January 28, 2014

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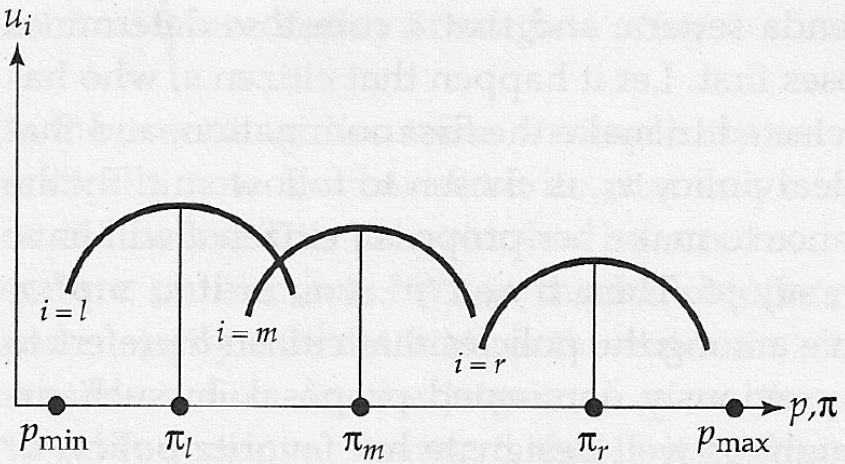

Figure 2.1
Pairwise Comparison

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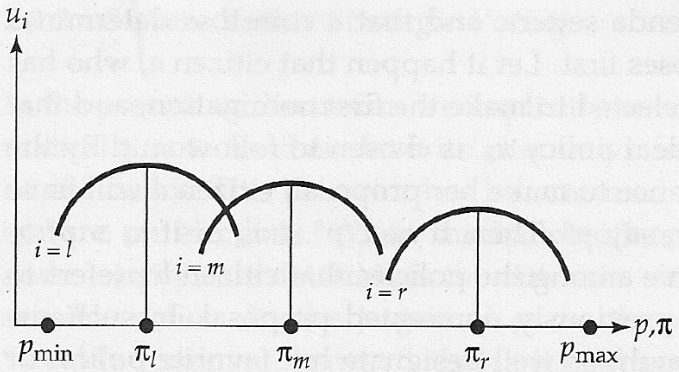

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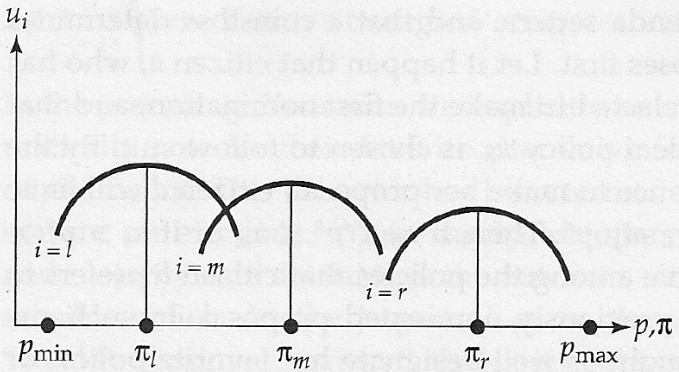

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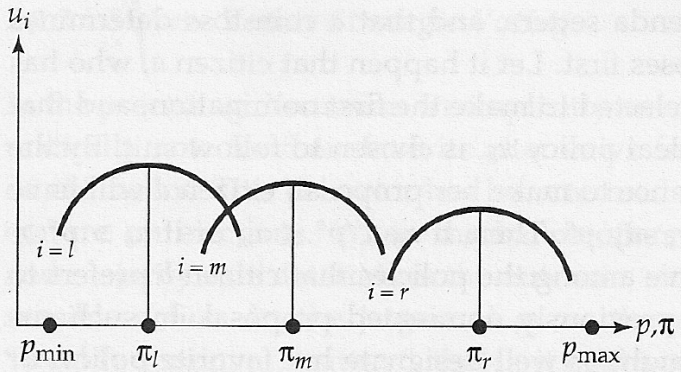

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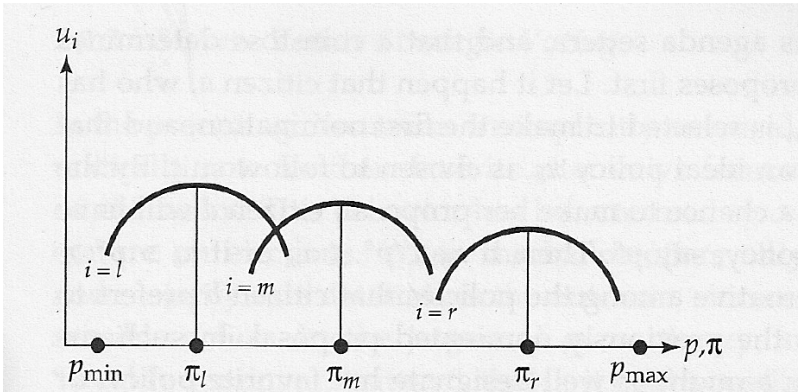

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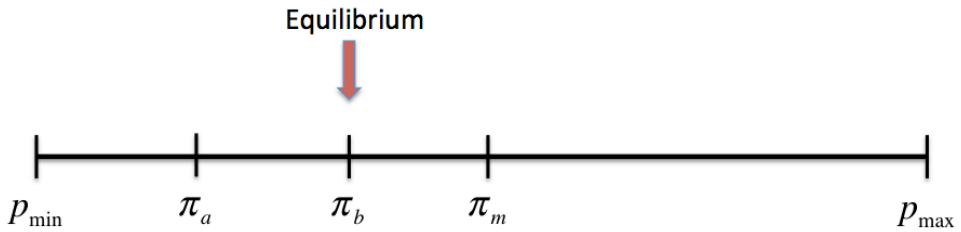

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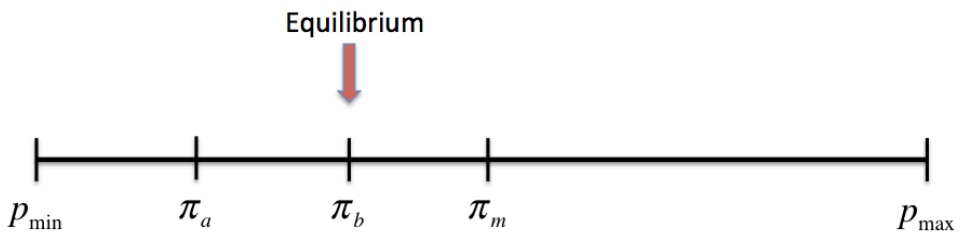
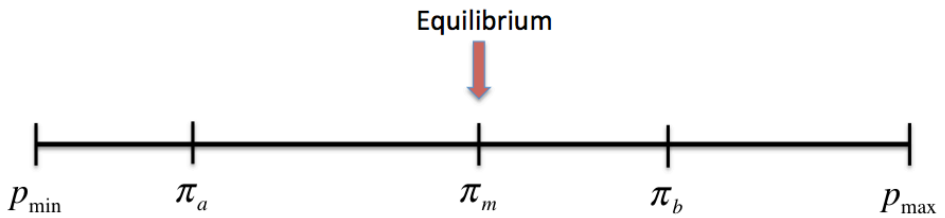


  - Case 2 - $\pi_a < \pi_m < \pi_b$



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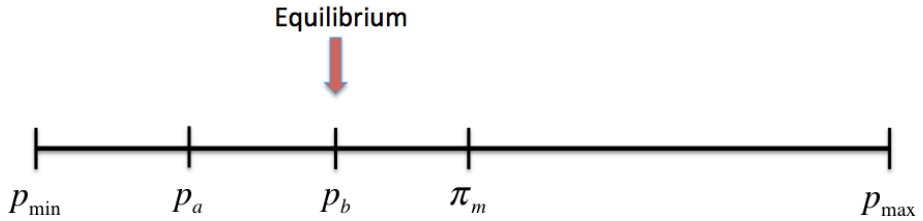

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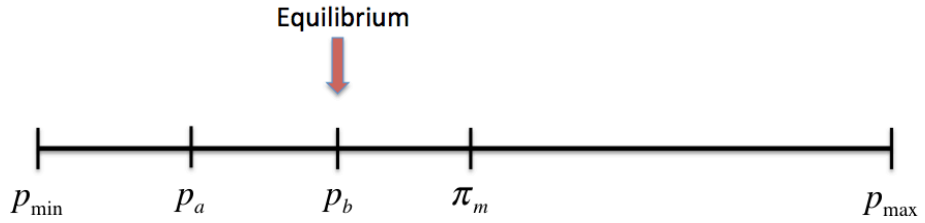

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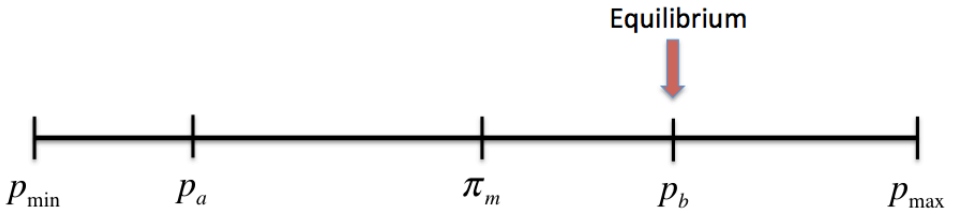

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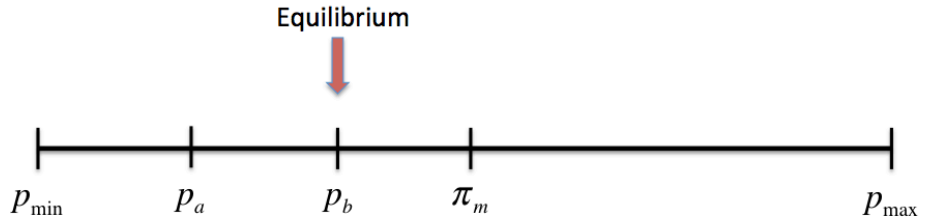

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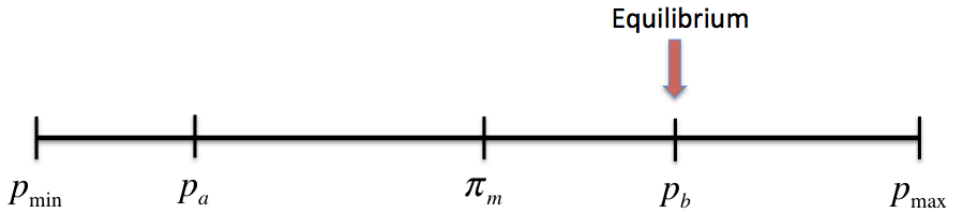

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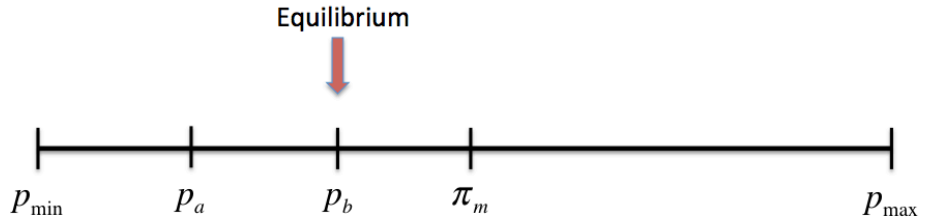

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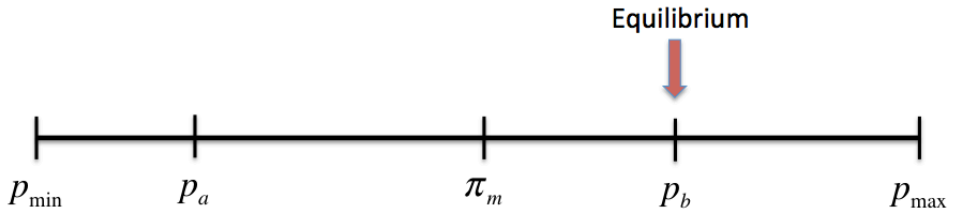

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  - **Any policy** can be a voting equilibrium!

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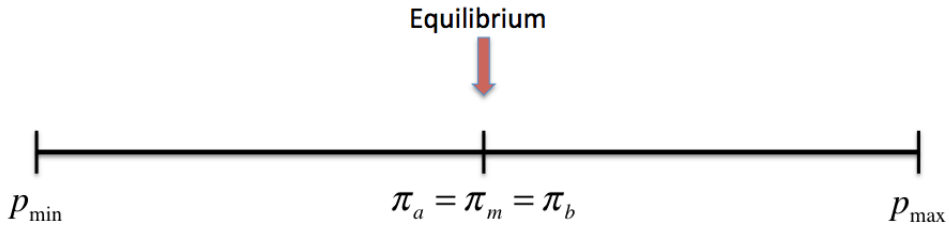

Each candidate promises the preferred policy of the median voter

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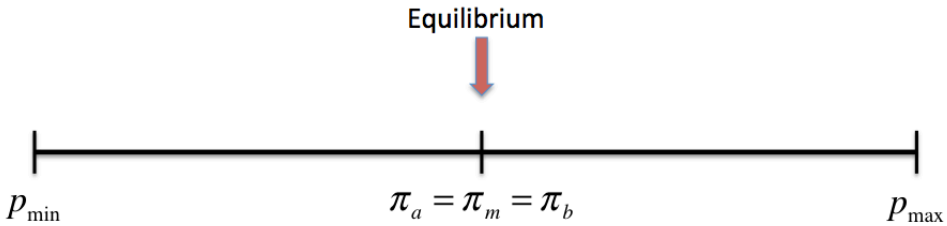

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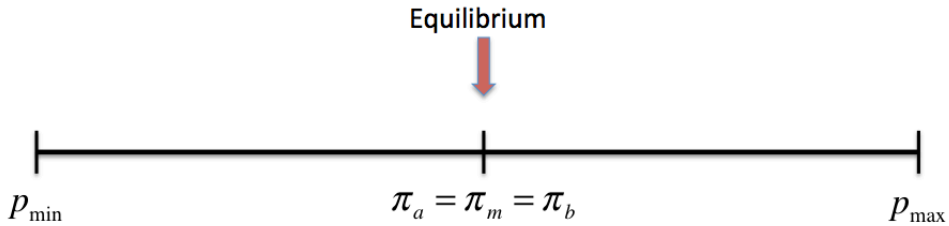

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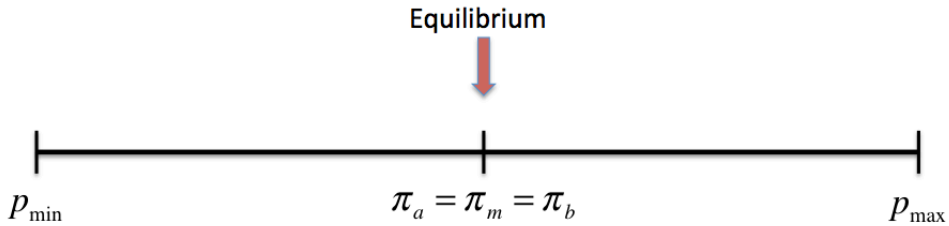

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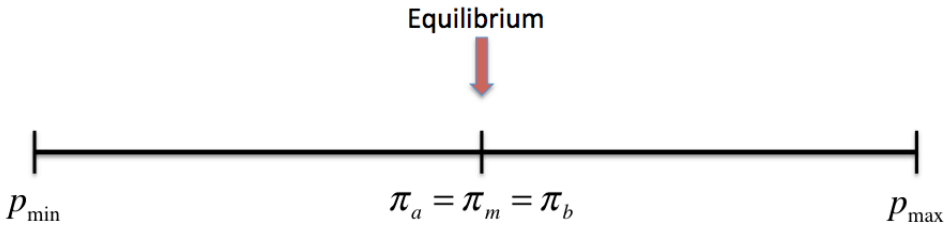

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- **Policy preferences make no difference!!**

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    - SIGs and policymakers policy interests must differ or there would be no need for influence activities
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    - Assume the SIG has superior information about the state of the world θ - this is what the SIG offers the policymaker

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$$U(p, \theta) = -(p - \theta - \delta)^2$$

$\delta > 0$ - SIG's policy bias

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  - **Big question:** When can the lobby be trusted to tell the truth?

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      Which is always true

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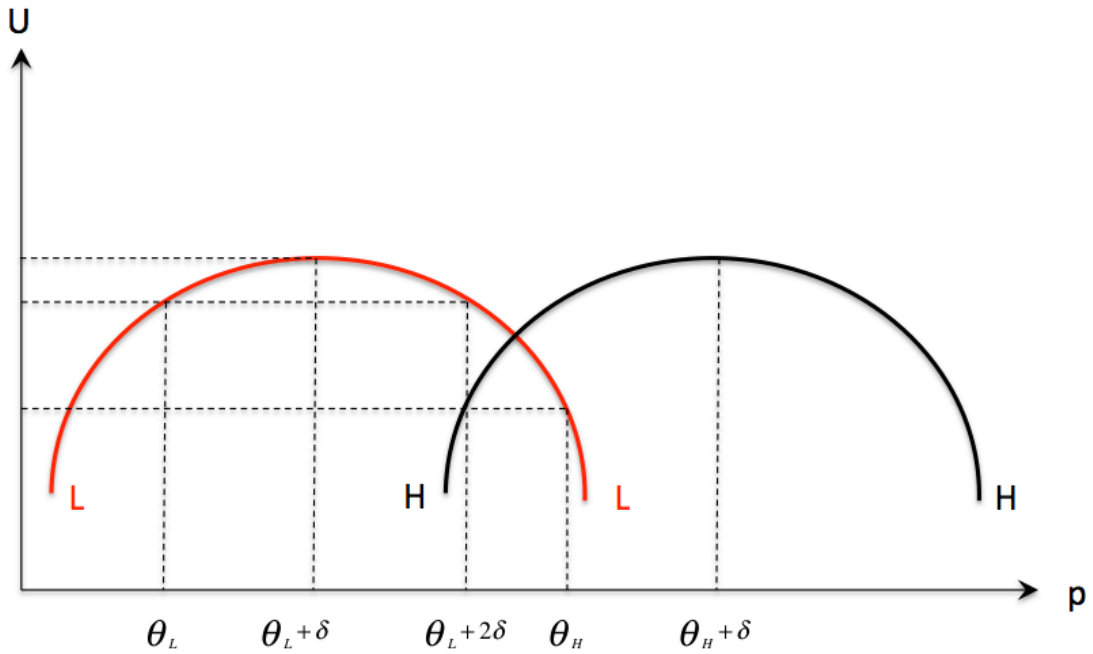

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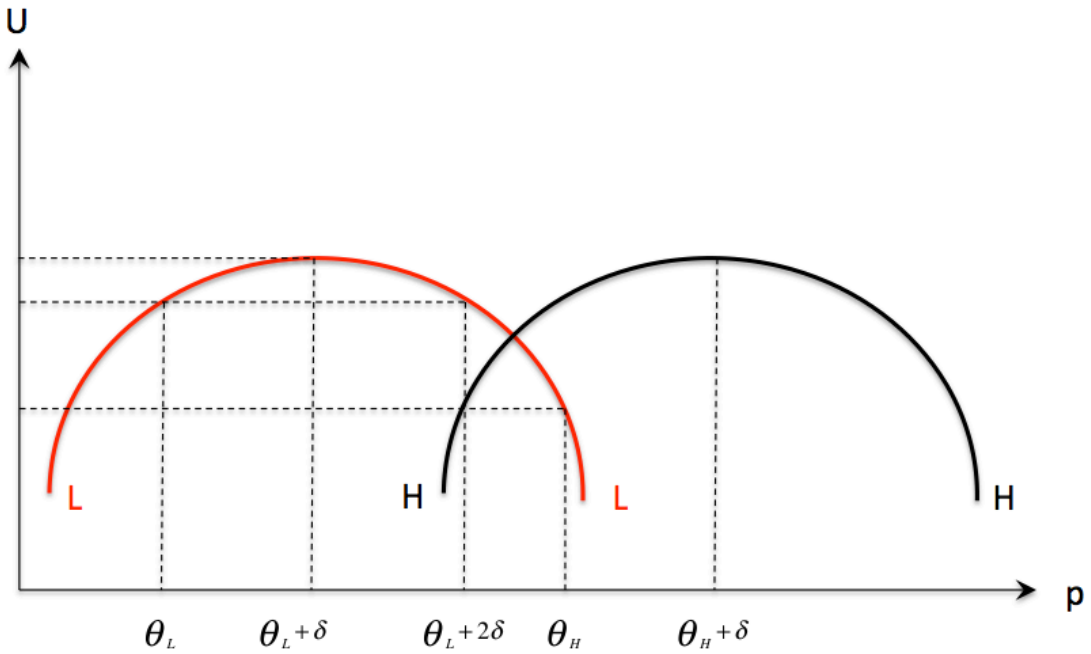

  - Lobbyist can credibly announce state

Lobbying

- Single Lobby
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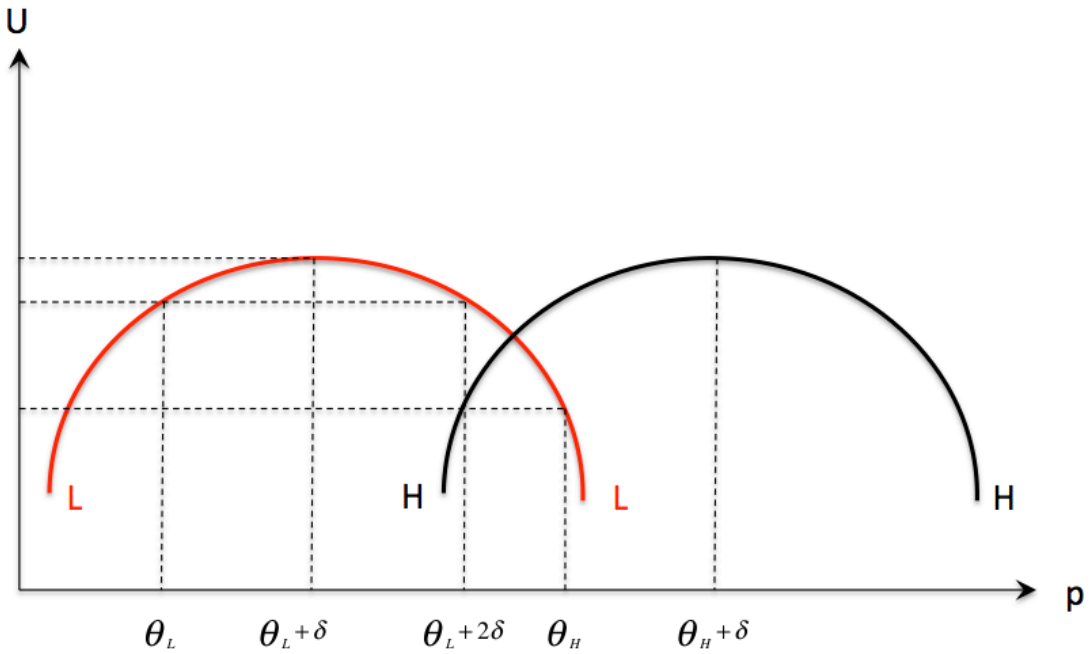


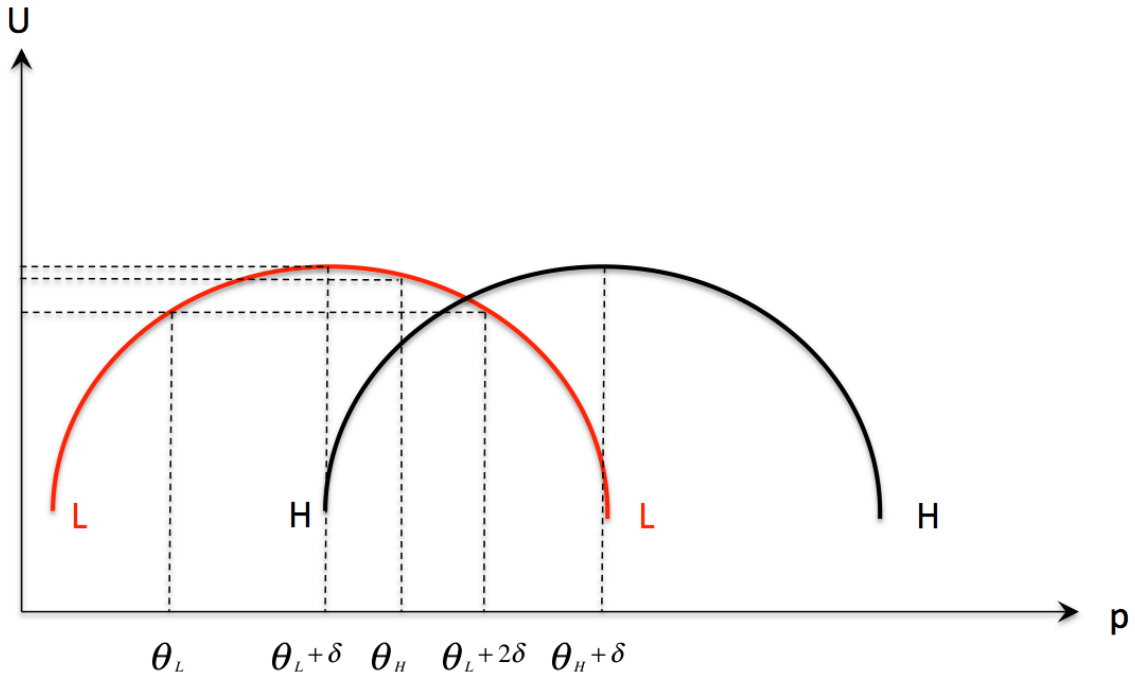
  - Lobbyist can credibly announce state
  - **Intuition** - announcing θ_H is just too much of an exaggeration

Lobbying

- Single Lobby

Lobbying

- Single Lobby
  - Lobbyist's incentive compatibility constraints fail



Lobbying

- Single Lobby
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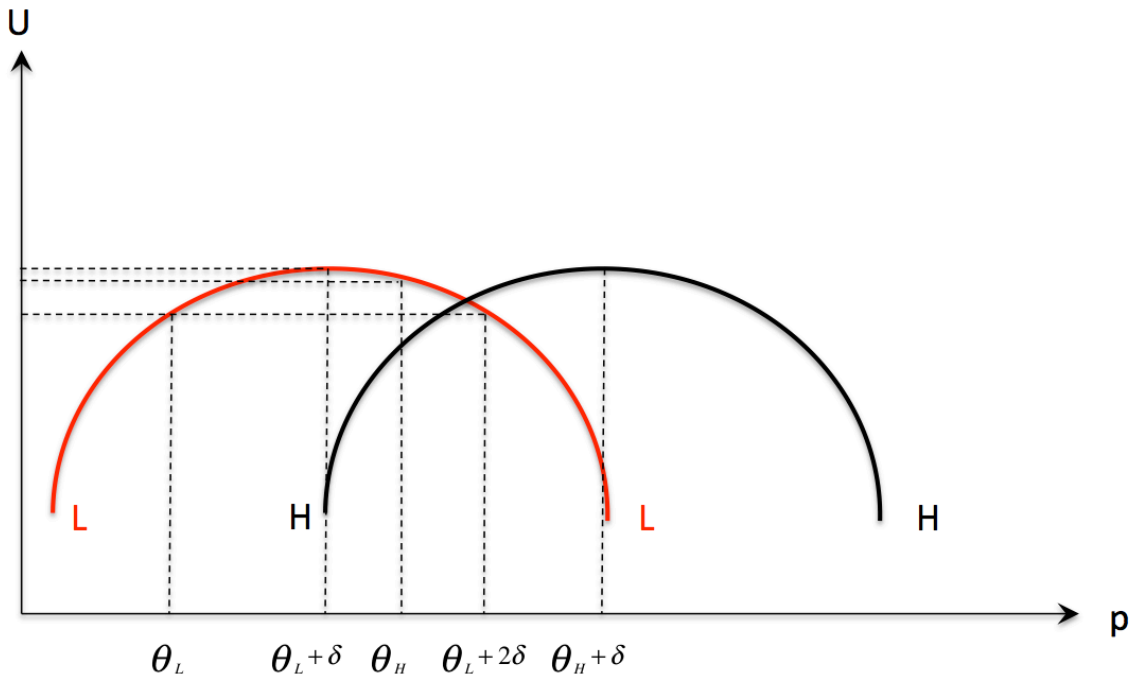

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Lobbying

- Single Lobby
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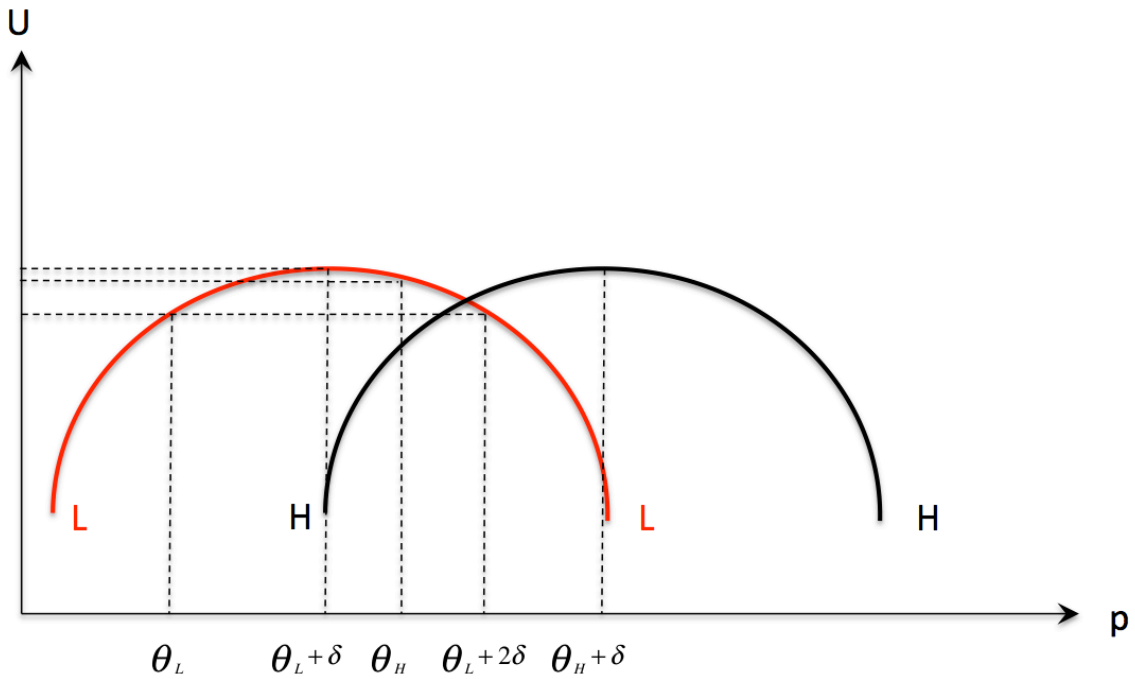

  - Lobbyist cannot credibly announce state
  - Babbling equilibrium - whatever the lobbyist says the policymaker remains uninformed

Lobbying

- Single Lobby

Lobbying

- Single Lobby
  - Three States, $\theta \in \{\theta_L, \theta_M, \theta_H\}$ low, medium and high with $\theta_L < \theta_M < \theta_H$

Lobbying

- Single Lobby
  - Three States, $\theta \in \{\theta_L, \theta_M, \theta_H\}$ low, medium and high with $\theta_L < \theta_M < \theta_H$
  - When can the lobby truthfully report all three states?

Lobbying

- Single Lobby
  - Three States, $\theta \in \{\theta_L, \theta_M, \theta_H\}$ low, medium and high with $\theta_L < \theta_M < \theta_H$
  - When can the lobby truthfully report all three states?
  - As we saw before, because of the direction of the lobby's bias, in the two state case there is only an inventive to overstate the state of the world not understate. The same is true here.

Lobbying

- Single Lobby

Lobbying

- Single Lobby
  - Full revelation

Lobbying

- Single Lobby
  - Full revelation
    - To prevent the lobby announcing θ_M when the truth is θ_L requires

$$\delta \leq \frac{\theta_M - \theta_L}{2}$$

and if they would not announce θ_M when the truth is θ_L then they certainly will not announce θ_H when the truth is θ_L

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    - To prevent the lobby announcing θ_M when the truth is θ_L requires

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      and if they would not announce θ_M when the truth is θ_L then they certainly will not announce θ_H when the truth is θ_L
    - To prevent the lobby announcing θ_H when the truth is θ_M requires

$$\delta \leq \frac{\theta_H - \theta_M}{2}$$

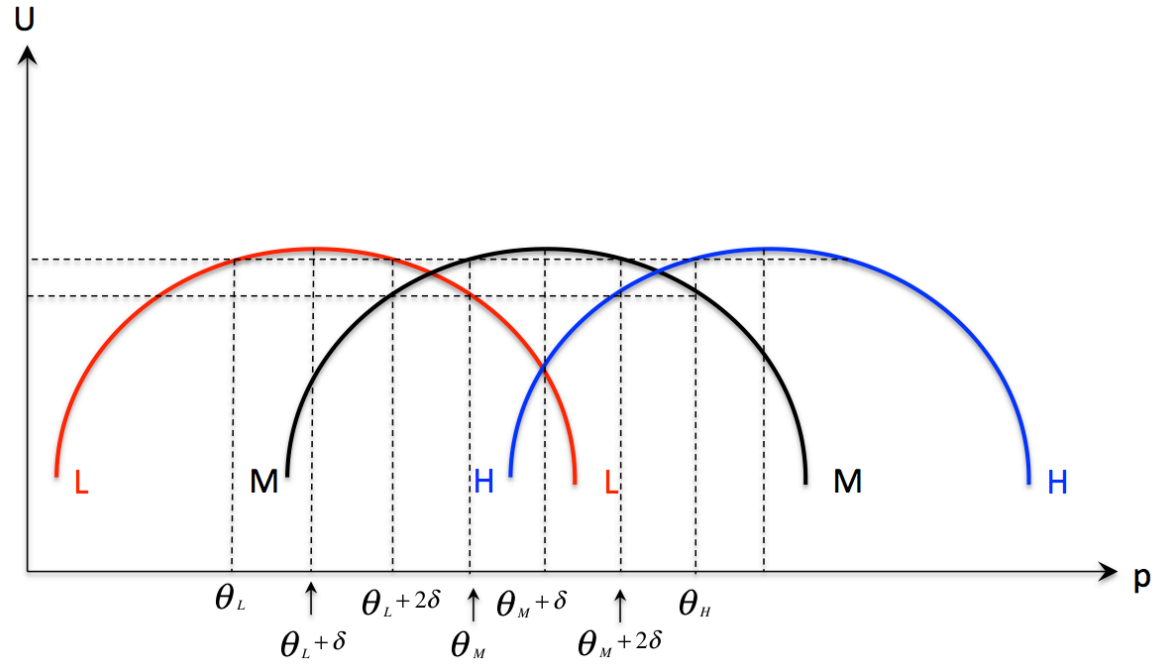
    - They always announce θ_H when the truth is θ_H as there is no higher state to use for exaggeration

Lobbying

- Single Lobby

Lobbying

- Single Lobby
  - Full revelation



Lobbying

- Single Lobby

Lobbying

- Single Lobby
  - Partial revelation

Lobbying

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  - Partial revelation
  - When the lobby cannot truthfully report all three states is there any information they might credibly transmit?

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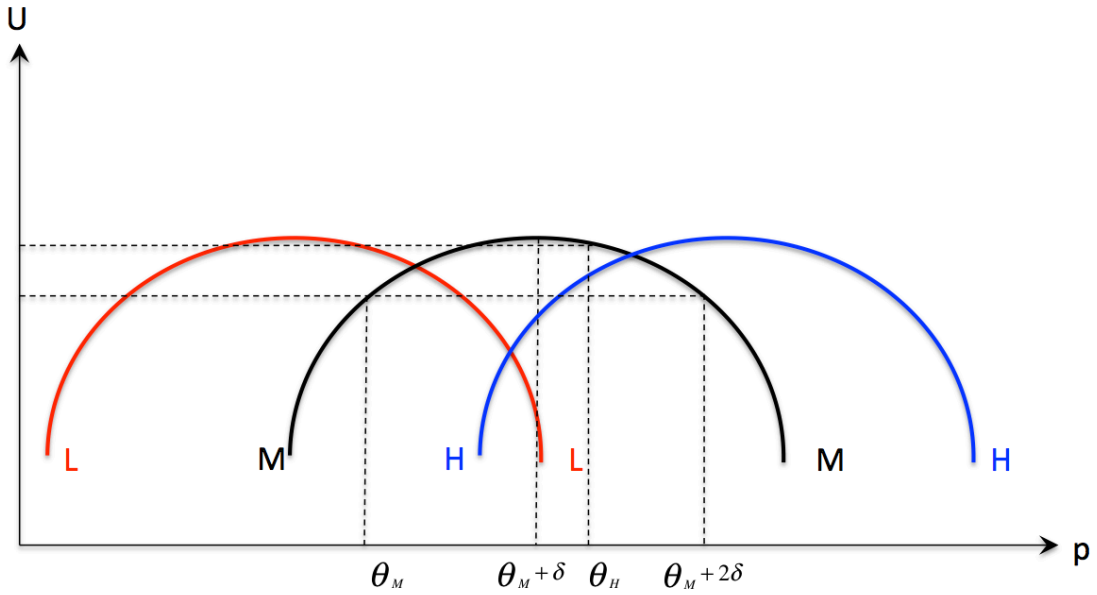
  - Partial revelation
  - When the lobby cannot truthfully report all three states is there any information they might credibly transmit?
  - Suppose the condition $\delta \leq \frac{\theta_H - \theta_M}{2}$ fails, so that the lobbyist cannot reveal if the state is medium or high



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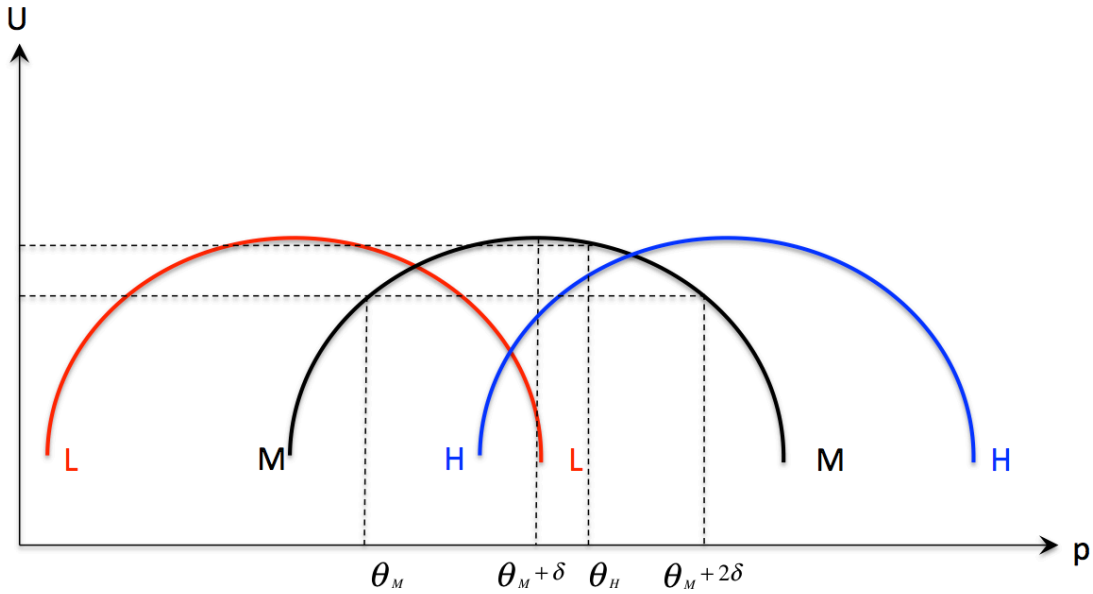

  - Can they at least tell the policymaker if the state is low or not-low?

Lobbying

- Single Lobby

Lobbying

- Single Lobby
  - Partial revelation

Lobbying

- Single Lobby
  - Partial revelation
  - Suppose that the beliefs of the policymaker are

Lobbying

- Single Lobby
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Lobbying

- Single Lobby
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  - Suppose that the beliefs of the policymaker are
    - $p = \theta_L$ if the lobby announces θ_L
    - $p = \frac{\theta_M + \theta_H}{2}$ if the lobby announces anything other than θ_L

Lobbying

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  - Partial revelation
  - Suppose that the beliefs of the policymaker are
    - $p = \theta_L$ if the lobby announces θ_L
    - $p = \frac{\theta_M + \theta_H}{2}$ if the lobby announces anything other than θ_L
  - Given these beliefs we need to check if the lobby then finds it in it's interests to tell the truth

Lobbying

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    - $p = \frac{\theta_M + \theta_H}{2}$ if the lobby announces anything other than θ_L
  - Given these beliefs we need to check if the lobby then finds it in it's interests to tell the truth
  - We shall work through the possibilities on-by-one

Lobbying

- Single Lobby

Lobbying

- Single Lobby
  - Partial revelation

Lobbying

- Single Lobby
  - Partial revelation
  - Case 1: Lobbyist announces low when the state is high

Lobbying

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  - Case 1: Lobbyist announces low when the state is high
    - Clearly $p = \frac{\theta_M + \theta_H}{2}$ is preferred by the lobbyist to $p = \theta_L$ so they have no incentive to announce low when the state is high

Lobbying

- Single Lobby
  - Partial revelation
  - Case 1: Lobbyist announces low when the state is high
    - Clearly $p = \frac{\theta_M + \theta_H}{2}$ is preferred by the lobbyist to $p = \theta_L$ so they have no incentive to announce low when the state is high
  - Case 2: Lobbyist announces low when the state is medium

Lobbying

- Single Lobby
  - Partial revelation
  - Case 1: Lobbyist announces low when the state is high
    - Clearly $p = \frac{\theta_M + \theta_H}{2}$ is preferred by the lobbyist to $p = \theta_L$ so they have no incentive to announce low when the state is high
  - Case 2: Lobbyist announces low when the state is medium
    - This is not so clear

Lobbying

- Single Lobby
  - Partial revelation
  - Case 1: Lobbyist announces low when the state is high
    - Clearly $p = \frac{\theta_M + \theta_H}{2}$ is preferred by the lobbyist to $p = \theta_L$ so they have no incentive to announce low when the state is high
  - Case 2: Lobbyist announces low when the state is medium
    - This is not so clear
    - If the lobbyist announces low the policy is $p = \theta_L$

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  - Partial revelation
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    - Clearly $p = \frac{\theta_M + \theta_H}{2}$ is preferred by the lobbyist to $p = \theta_L$ so they have no incentive to announce low when the state is high
  - Case 2: Lobbyist announces low when the state is medium
    - This is not so clear
    - If the lobbyist announces low the policy is $p = \theta_L$
    - If the lobbyist announces not-low the policy is $p = \frac{\theta_M + \theta_H}{2}$

Lobbying

- Single Lobby
  - Partial revelation
  - Case 1: Lobbyist announces low when the state is high
    - Clearly $p = \frac{\theta_M+\theta_H}{2}$ is preferred by the lobbyist to $p = \theta_L$ so they have no incentive to announce low when the state is high
  - Case 2: Lobbyist announces low when the state is medium
    - This is not so clear
    - If the lobbyist announces low the policy is $p = \theta_L$
    - If the lobbyist announces not-low the policy is $p = \frac{\theta_M+\theta_H}{2}$
    - They will tell the truth if $p = \frac{\theta_M+\theta_H}{2}$ is closer to $\theta_M + \delta$ than $p = \theta_L$, or

$$\theta_M + \delta - \theta_L \geq \frac{\theta_M + \theta_H}{2} - (\theta_M + \delta)$$

$$\implies \delta \geq \frac{\theta_H - \theta_M}{4} - \frac{\theta_M - \theta_L}{2}$$

Lobbying

- Single Lobby

Lobbying

- Single Lobby
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Lobbying

- Single Lobby
  - Partial revelation
  - Case 3: Lobbyist announces not-low when the state is low

Lobbying

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  - Case 3: Lobbyist announces not-low when the state is low
    - If the lobbyist announces not-low the policy is $p = \frac{\theta_M + \theta_H}{2}$

Lobbying

- Single Lobby
  - Partial revelation
  - Case 3: Lobbyist announces not-low when the state is low
    - If the lobbyist announces not-low the policy is $p = \frac{\theta_M+\theta_H}{2}$
    - We need to show that θ_L is closer to $\theta_L + \delta$ than is $\frac{\theta_M+\theta_H}{2}$

$$\theta_L + \delta - \theta_L \leq \frac{\theta_M + \theta_H}{2} - (\theta_L + \delta)$$
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    - If this condition holds the lobby will announce θ_L when the state is θ_L

Lobbying

- Single Lobby

Lobbying

- Single Lobby
  - Partial revelation

Lobbying

- Single Lobby
  - Partial revelation
  - Combining our previous cases we know that the lobbyist may credibly announce low and not-low when the following holds

$$\frac{\theta_H - \theta_M}{4} + \frac{\theta_M - \theta_L}{2} \geq \delta \geq \frac{\theta_H - \theta_M}{4} - \frac{\theta_M - \theta_L}{2}$$

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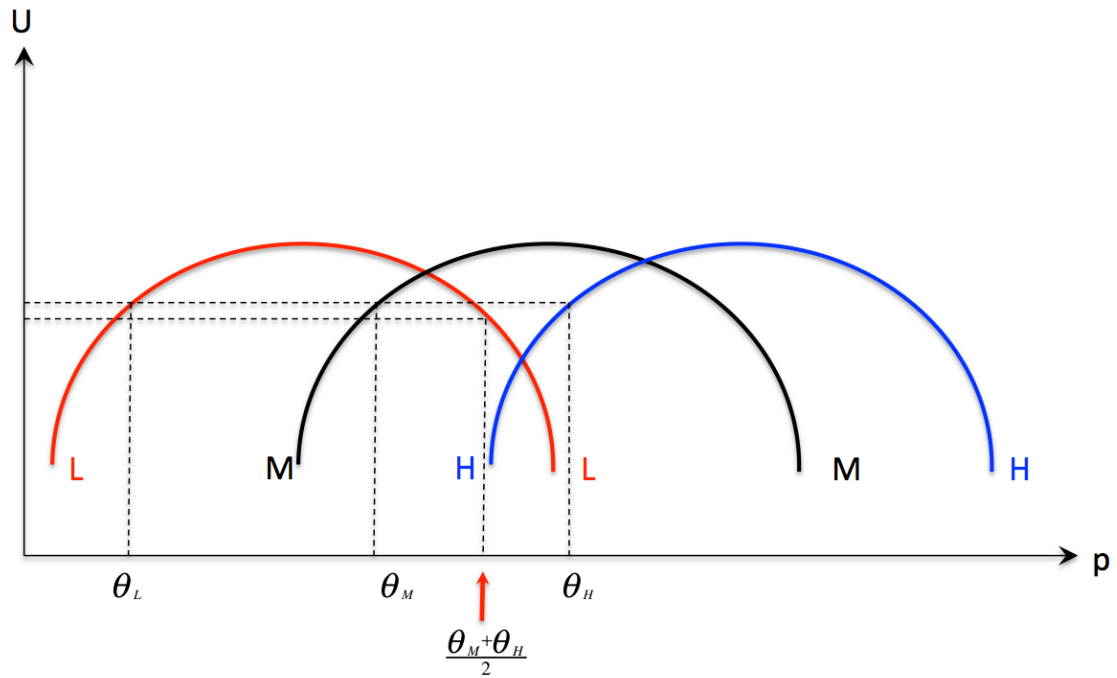
  - Key feature

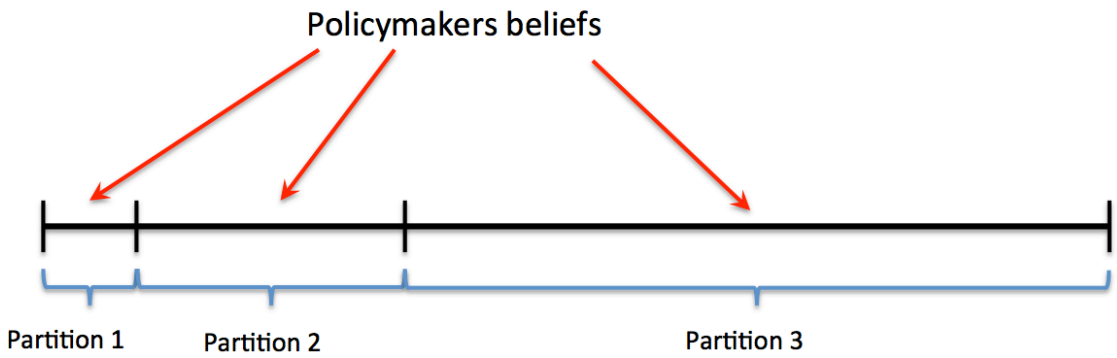


Lobbying

- Single Lobby

Lobbying

- Single Lobby
  - Continuous Information - Partition Equilibrium



Lobbying

- Two Lobbies

Lobbying

- Two Lobbies
  - Policymakers preferences

$$G(p, \theta) = -(p - \theta)^2$$

Lobbying

- Two Lobbies
  - Policymakers preferences

$$G(p, \theta) = -(p - \theta)^2$$

  - SIG's preferences

$$U_1(p, \theta) = -(p - \theta - \delta_1)^2$$

$$U_2(p, \theta) = -(p - \theta - \delta_2)^2$$

$\delta_2 \neq \delta_1 \neq 0$ - SIG's policy bias'

Lobbying

- Two Lobbies - Like Bias

Lobbying

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  - Both lobbies wish to influence the policymaker in the same direction - just by different orders of magnitude

Lobbying

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  - SIG 2 is "more extreme" than SIG 1

Lobbying

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  - Both lobbies wish to influence the policymaker in the same direction - just by different orders of magnitude
  - $\delta_2 \geq \delta_1 > 0$ - SIG's policy bias'
  - SIG 2 is "more extreme" than SIG 1
  - The effect of having two lobbies can be quite complicated and depends on the "information structure" as explained next.

Lobbying

- Two Lobbies - Like Bias

Lobbying

- Two Lobbies - Like Bias
  - Secret messages

Lobbying

- Two Lobbies - Like Bias
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    - Lobbies may send messages to the policymaker telling them the state of the world

Lobbying

- Two Lobbies - Like Bias
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    - Neither knows the other is doing this

Lobbying

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  - The answer is yes!!

Lobbying

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Lobbying

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Lobbying

- Two Lobbies - Like Bias
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    - Lobbies messages are m_1 and m_2 for lobby 1 and $\tilde{m}_1$ and $\tilde{m}_2$ for lobby 2

Lobbying

- Two Lobbies - Like Bias
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    - Lobbies messages are m_1 and m_2 for lobby 1 and $\tilde{m}_1$ and $\tilde{m}_2$ for lobby 2
    - Policymaker interprets m_1 to mean $\theta \leq \theta_1$ and m_2 to mean $\theta > \theta_1$

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    - Further suppose $\theta_1 < \tilde{\theta}_1$

Lobbying

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    - Policymaker interprets $\tilde{m}_1$ to mean $\theta \leq \tilde{\theta}_1$ and $\tilde{m}_2$ to mean $\theta > \tilde{\theta}_1$
    - Further suppose $\theta_1 < \tilde{\theta}_1$
  - Consider now the possible messages the policymaker might receive

Lobbying

- Two Lobbies - Like Bias - Secret Messages

Lobbying

- Two Lobbies - Like Bias - Secret Messages
  - Messages: m_1 and $\tilde{m}_1$

Lobbying

- Two Lobbies - Like Bias - Secret Messages
  - Messages: m_1 and $\tilde{m}_1$
    - Policymaker concludes $\theta_{min} \leq \theta \leq \theta_1$

Lobbying

- Two Lobbies - Like Bias - Secret Messages
  - Messages: m_1 and $\tilde{m}_1$
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  - Messages: m_2 and $\tilde{m}_1$

Lobbying

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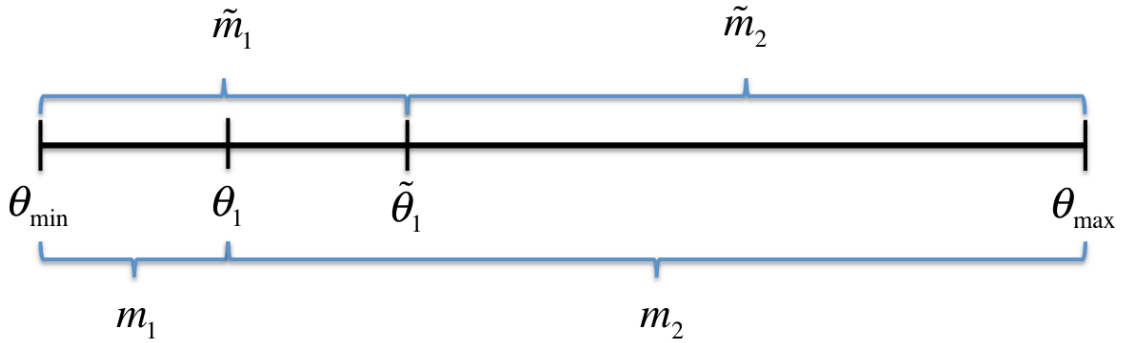
  - Messages: m_2 and $\tilde{m}_2$
    - Policymaker concludes $\tilde{\theta}_1 \leq \theta \leq \theta_{max}$
  - Hence



Lobbying

- Two Lobbies - Like Bias - Secret Messages
  - Messages: m_1 and $\tilde{m}_1$
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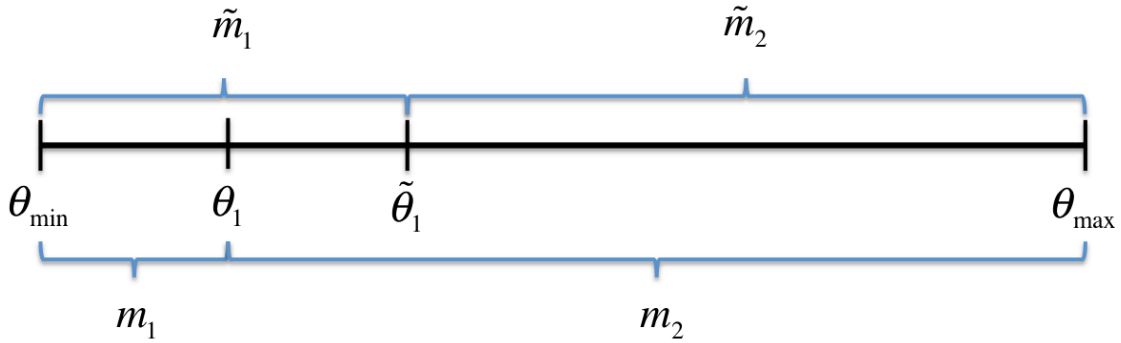

  - Clearly an improvement over listening to only one lobby

Lobbying

- Two Lobbies - Like Bias

Lobbying

- Two Lobbies - Like Bias
  - Private messages

Lobbying

- Two Lobbies - Like Bias
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Lobbying

- Two Lobbies - Like Bias
  - Private messages
    - Lobbies may send messages to the policymaker telling them the state of the world
    - Each knows the other is doing this
    - But cannot observe the message the other lobby sends

Lobbying

- Two Lobbies - Like Bias
  - Private messages
    - Lobbies may send messages to the policymaker telling them the state of the world
    - Each knows the other is doing this
    - But cannot observe the message the other lobby sends
  - The question now is can the policymaker learn the true state of the world

Lobbying

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  - The answer is possibly!!

Lobbying

- Two Lobbies - Like Bias
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    - Lobbies may send messages to the policymaker telling them the state of the world
    - Each knows the other is doing this
    - But cannot observe the message the other lobby sends
  - The question now is can the policymaker learn the true state of the world
  - The answer is possibly!!
  - Truth telling is an equilibrium in this game, but unfortunately not the only equilibrium

Lobbying

- Two Lobbies - Like Bias -Private Messages

Lobbying

- Two Lobbies - Like Bias -Private Messages
  - A truthful equilibrium

Lobbying

- Two Lobbies - Like Bias -Private Messages
  - A truthful equilibrium
    - Suppose the lobbies truthful send messages $\theta = \tilde{m} = m$

Lobbying

- Two Lobbies - Like Bias -Private Messages
  - A truthful equilibrium
    - Suppose the lobbies truthful send messages $\theta = \tilde{m} = m$
    - Further suppose the policymakers strategy is $p = min\{\tilde{m}, m\}$

Lobbying

- Two Lobbies - Like Bias -Private Messages
  - A truthful equilibrium
    - Suppose the lobbies truthful send messages $\theta = \tilde{m} = m$
    - Further suppose the policymakers strategy is $p = min\{\tilde{m}, m\}$
    - We need to show that the messages and the policymakers strategy are optimal

Lobbying

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  - Proof of optimality

Lobbying

- Two Lobbies - Like Bias -Private Messages
  - A truthful equilibrium
    - Suppose the lobbies truthful send messages $\theta = \tilde{m} = m$
    - Further suppose the policymakers strategy is $p = min\{\tilde{m}, m\}$
    - We need to show that the messages and the policymakers strategy are optimal
  - Proof of optimality
    - First recall that both lobbies have a positive bias so $\theta > \tilde{m}$ or $\theta > m$ can never be optimal

Lobbying

- Two Lobbies - Like Bias -Private Messages
  - A truthful equilibrium
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  - Proof of optimality
    - First recall that both lobbies have a positive bias so $\theta > \tilde{m}$ or $\theta > m$ can never be optimal
    - Next note that since $p = min\{\tilde{m}, m\}$ there is no gain to choosing $\tilde{m} > m = \theta$ or $m > \tilde{m} = \theta$ since this does not change p, hence $\theta < \tilde{m}$ or $\theta < m$ can never be optimal, leaving us with $\theta = \tilde{m} = m$

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    - Now $p = min\{\tilde{m}, m\} = \theta$ which is optimal for the policymaker

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  - Truth telling is an equilibrium in this game, but unfortunately it is not the only equilibrium and is quite fragile

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    - There cannot be truthful or full revelation of information in equilibrium with public messages

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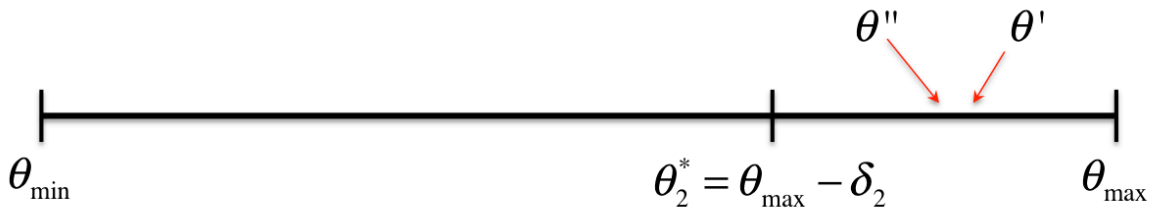

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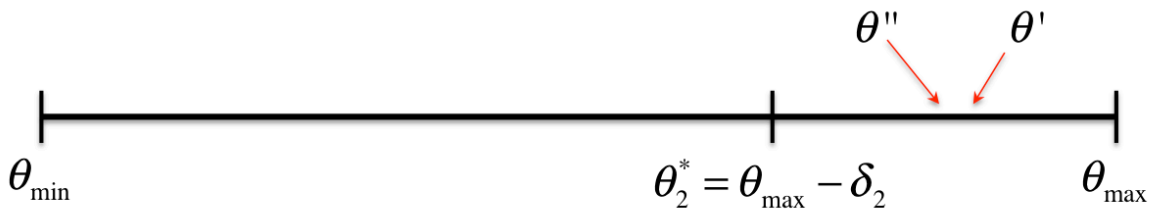

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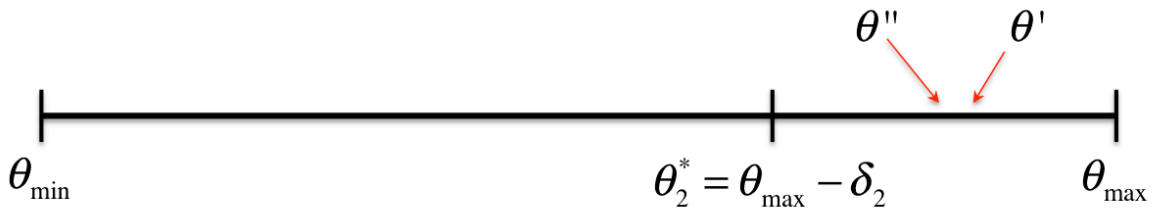

  - Let SIG 1 report first and anticipate SIG 2's response
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    - Let $\hat{m}(m|\theta)$ be SIG 2's optimal report in response to the message m sent by SIG 1 if the true state is θ

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  - So it must be the case that $p[m'', \hat{m}(m''|\theta')] > \theta''$, but this implies SIG 2 would benefit from reporting $\hat{m}(m''|\theta')$ this proves that there is something better than $\hat{m}''$ that can be reported in θ''. This implies truth telling is not optimal for SIG 2. Giving the necessary contradiction

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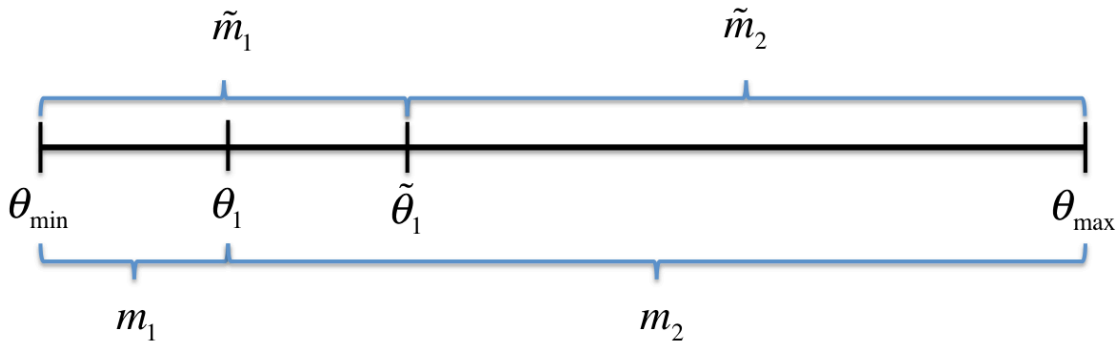

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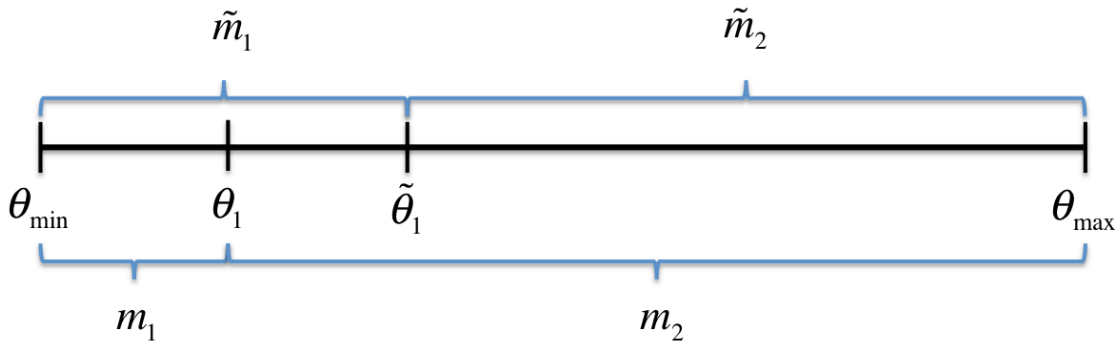

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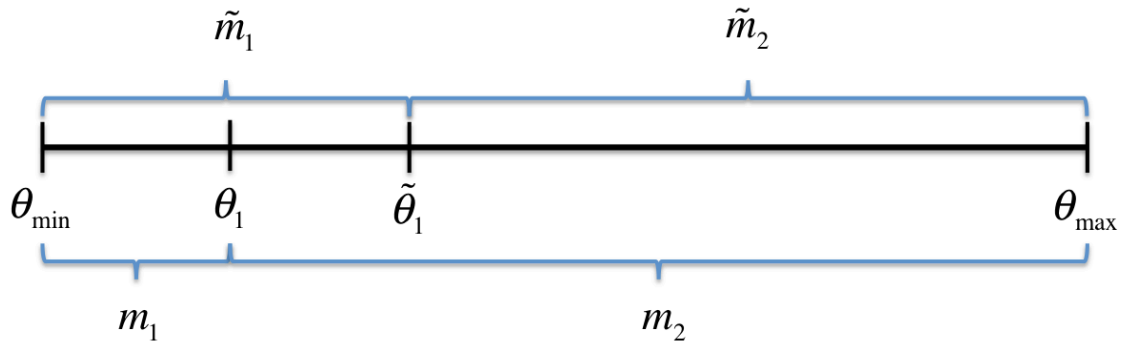

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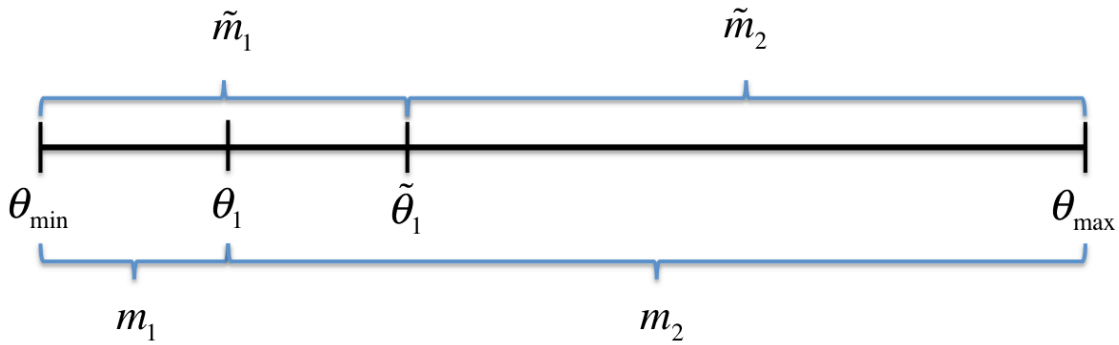

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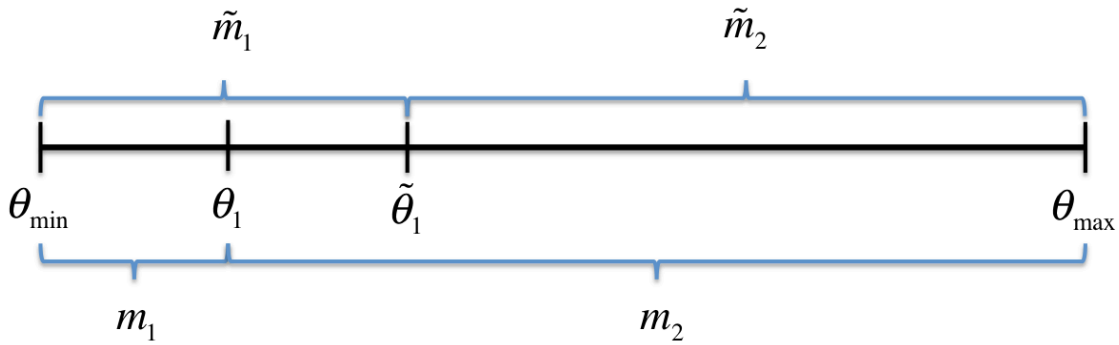

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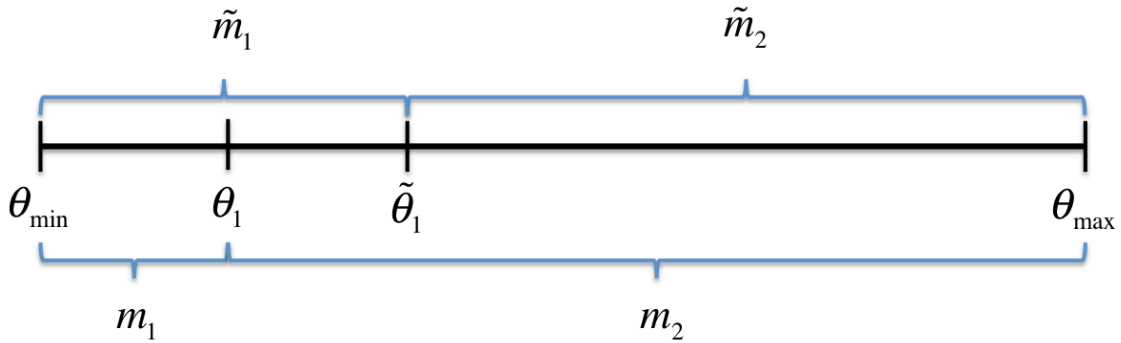

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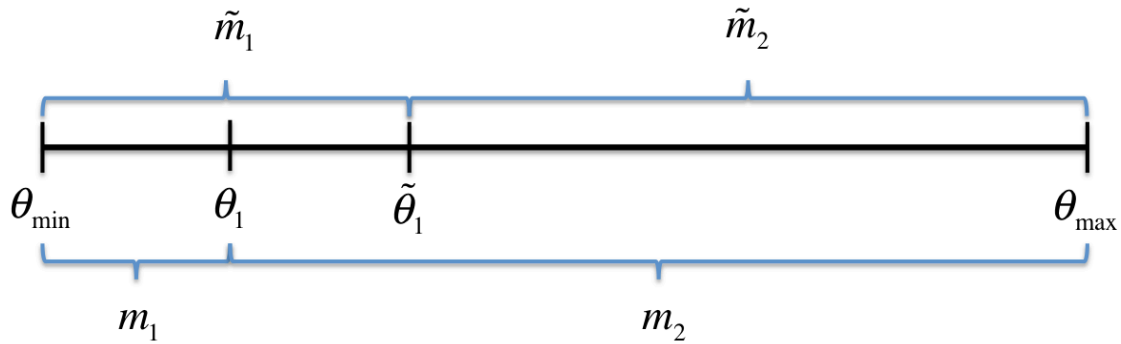

  - This 3 partition equilibrium is better than the 2 partition equilibrium that can be achieved by one SIG alone

Buying Influence

- Single SIG and Single Policymaker

Buying Influence

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$$Max\ U(p, c)$$
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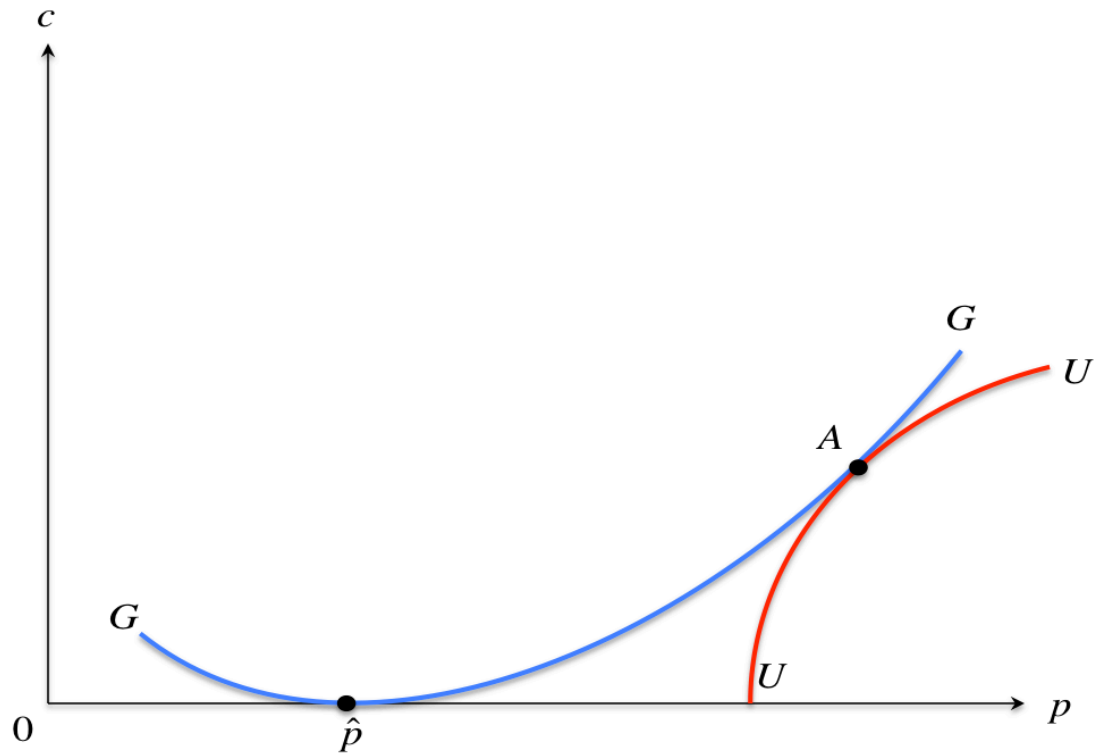

Buying Influence

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Buying Influence

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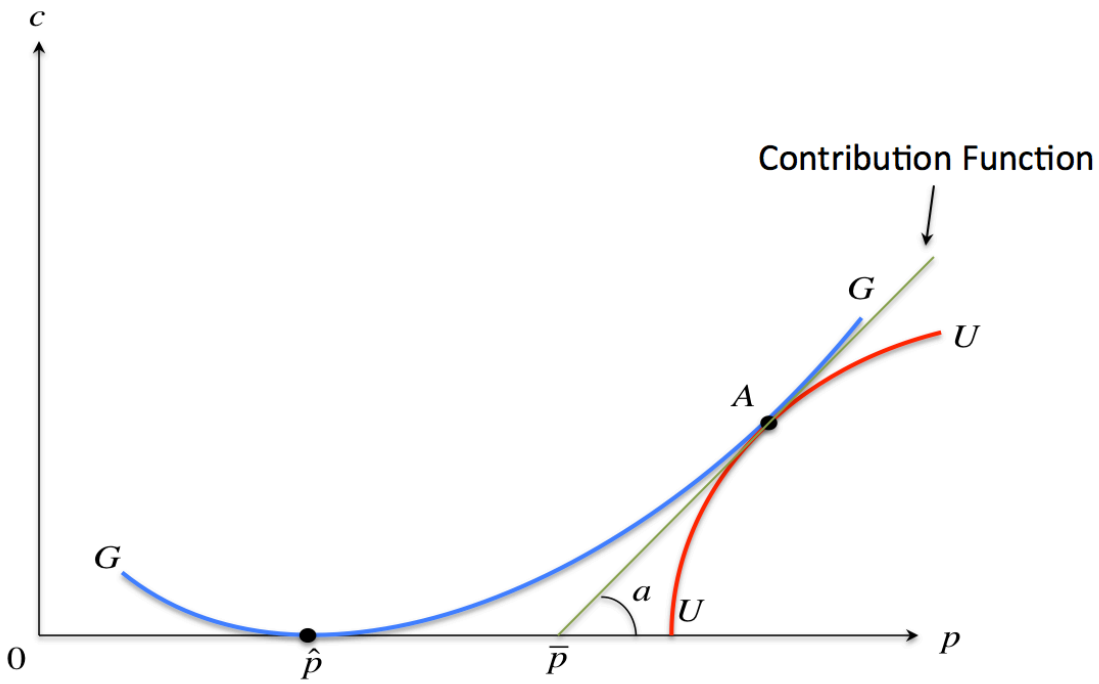

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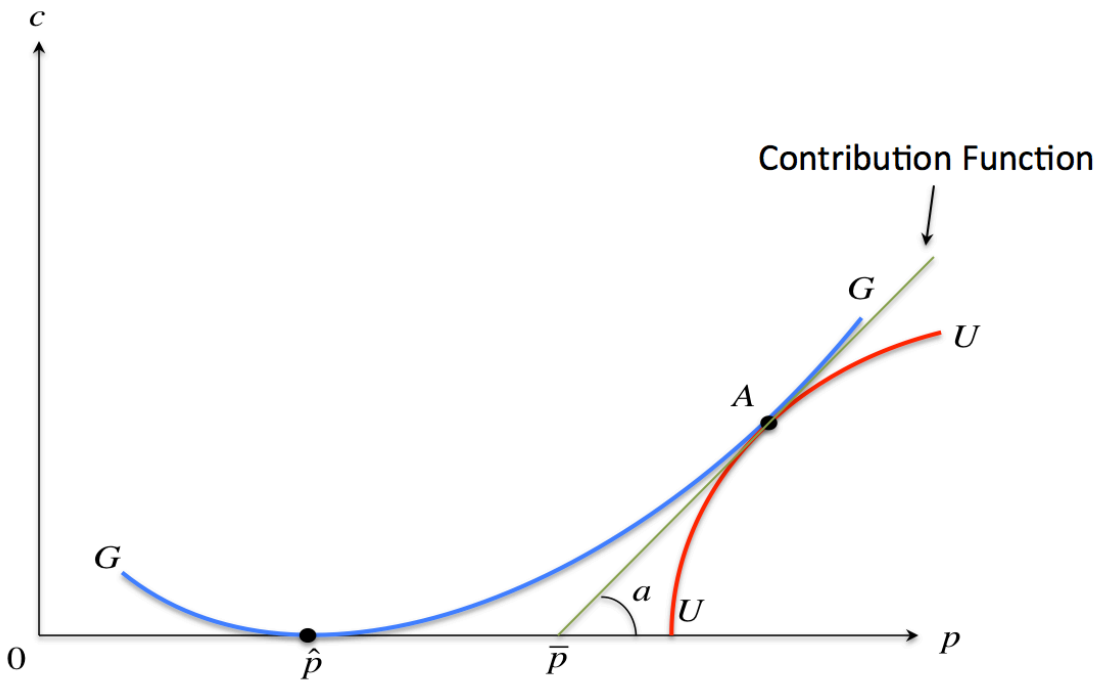

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