Moore - Repullo (EMA '88)

- Subgame Perfect Implementation
  - Truthful revelation is the unique equilibrium of an appriately defined mechanism.

Distinction between observability and verifiability doesn't make sense in light of the Moore-Repullo paper. (Maskin-Tirole Restud '99)

- B(uyer), S(eller)
- $U_B = v - p$

  $U_S = p - \psi = p$ ∘ normalize $\psi = 0$

- Suppose $v \in \{\underline{v}, \bar{v}\} = \{10, 14\}$

1] B makes announcement "High" or "Low"
- If high, B pays S 14, and we stop
- If low, S can challenge or not challenge

2] If S does not challenge B pays 10

3] If S challenges,

a) B pays a fine $F = 9$ to third party T

b) B is offered the good for 6

c) If B accepts, then S gets $F = 9$ from T and they trade for 6

d) If B rejects then S pays $F=9$ to T

e) Nash bargain over good and then stop

(*) The whole time, they both know what v is.

It turns out that this mechanism yields truthful revelation.

Is this result robust to adding an arbitrarily small amount of incomplete information?

Aghion-Fudenberg-Holden (2006)

Prior: ◦ $\Pr[v=14]=p$

◦ $\Pr[v=10]=1-p$

θ' – corresponds to $v=14$

◦ $\theta \in \{\theta', \theta''\}$ independently drawn θ. θ'' – corresponds to $v=10$

	$\theta_B'\ \theta_S'$	$\theta_B'\ \theta_S''$	$\theta_B''\ \theta_S'$	$\theta_B''\ \theta_S''$
$v=14$	$p(1-\varepsilon)^2$	$p(1-\varepsilon)\varepsilon$	$p\varepsilon(1-\varepsilon)$	$p\varepsilon^2$
$v=10$	$(1-p)\varepsilon^2$	$(1-p)(1-\varepsilon)\varepsilon$	$(1-p)\varepsilon(1-\varepsilon)$	$(1-p)(1-\varepsilon)^2$

common p-belief (Monderer-Samet, '89)

(ie: $\Pr[\theta_B=\theta_B', \theta_S=\theta_S'; v=14]$

$=\Pr[\theta_B=\theta_B', \theta_S=\theta_S' \mid v=14]\Pr[v=14]$

$=\Pr[\theta_B=\theta_B' \mid v=14]\Pr[\theta_S=\theta_S' \mid v=14]\Pr[v=14]$

$=(1-\varepsilon)(1-\varepsilon)\cdot p = p(1-\varepsilon)^2$)

announce / signal	H High	L Low
θ_B'	$1-\sigma_B'$	σ_B'
θ_B''	σ_B''	$1-\sigma_B''$

action / signal	C Challenge	NC Not Challenge
θ_S'	$1-\sigma_S'$	σ_S
θ_S''	σ_S''	$1-\sigma_S''$

- B will condition information on signal
- S will condition information on signal and B's action

- $$\Pr[\theta_S=\theta_S' \mid \theta_B=\theta_B'] = \frac{p(1-\varepsilon)^2+(1-p)\varepsilon^2}{p(1-\varepsilon)^2+(1-p)\varepsilon^2+\varepsilon(1-\varepsilon)}$$

$$\Pr[\theta_S=\theta_S'' \mid \theta_B=\theta_B'] = \frac{\varepsilon(1-\varepsilon)}{p(1-\varepsilon)^2+(1-p)\varepsilon^2+\varepsilon(1-\varepsilon)}$$

- $$\Pr[\theta_B=\theta_B' \mid \theta_S=\theta_S', L] = \frac{\sigma_B[p(1-\varepsilon)^2+(1-p)\varepsilon^2]}{\sigma_B[p(1-\varepsilon)^2+(1-p)\varepsilon^2]+(1-\sigma_B'')\varepsilon(1-\varepsilon)}$$

- $$V_B(L \mid \theta_B=\theta_B') = \Pr[\theta_S=\theta_S' \mid \theta_B=\theta_B'] \cdot$$

$$[(1-\sigma_S')(\Pr[v=14 \mid \theta_B',\theta_S'](14-9-6)+\Pr[v=10 \mid \theta_B',\theta_S'](10-9-5))$$

$$+\sigma_S'(E[v \mid \theta_B',\theta_S']-10)]$$

$$+\Pr[\theta_S=\theta_S'' \mid \theta_B=\theta_B'] \cdot$$

$$[\sigma_S''(\Pr[v=14 \mid \theta_B',\theta_S''](14-9-6)+\Pr[v=10 \mid \theta_B',\theta_S''](10-9-5))$$

$$+(1-\sigma_S'')(E[v \mid \theta_B',\theta_S'']-10)]$$

Proposition 1: Suppose that $p < \frac{14}{19}$. Then there is no sequence of equilibrium strategies σ_B, σ_S such that $\sigma_B' \to 0, \sigma_B'' \to 0$ as $\varepsilon \to 0$.