

14.770-Fall 2017

Recitation 7 Notes

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(based on slides by B. Olken & M. Lowe)

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I Know What You Did Last Week

Ben's part will have five big chunks:

- ① Conflict (3 lectures)
- ② Collective Action (2 lectures)
- ③ Media (2 lectures)
- ④ Bureaucracy (2 lectures)
- ⑤ Corruption (4 lectures)

Almost done with the first big chunk...

Conflict, in general

We have covered one theoretical model of conflict (Jackson and Morelli (2007, AER)) and several empirical studies:

- Miguel et al. (2004, JPE) – rainfall
- Dube and Vargas (2013, REStud) – coffee and oil
- Blattman and Annan (2016, APSR) – RCT on economic opportunities
- Nunn and Qian (2014, AER) – US food aid
- Baliga et al. (2011, REStud) – regime type
- Jones and Olken (2009, AEJMacro) – assassinations

Rapidly growing empirical literature! Today we'll go back to theory...

“The Inefficient Use of Power: Costly Conflict with Complete Information”
Powell (2004, APSR).

Why are we covering this today?

Reason 1:

- It's really a continuation from where we left off with Daron.
- Remember our discussion on Recitation 6 about the dynamic vs repeated games.
 - In repeated games, forward-looking (patient) agents can cooperate easily.
 - In dynamic games, not so much.
 - Why? Because the strategic environment is changing, so a “slippery slope” argument applies.
 - Essentially a commitment problem!

Powell (2004) gives the “big picture” about commitment problems.

“The Inefficient Use of Power: Costly Conflict with Complete Information”
Powell (2004, APSR).

Reason 2:

- We've also seen a version of commitment problem this week.
- Jackson and Morelli (2007): transfers with commitment can prevent war more easily, compared to transfers without commitment.

Powell (2004) formalizes a general sufficiency condition for this type of inefficiency to emerge.

Intuition: inefficiency emerges if distribution of power changes rapidly from period-to-period (i.e. strategic environment is more unstable).

Changing power + non-commitment \Rightarrow inefficiency!

- If one party has more power now than it will have in the future, and cannot commit, it will take what it can while it has the power to do so.
- Also implicitly shows why repeated games are different than dynamic games: in repeated games, the distribution of power never changes!

- Formal setup:
 - Consider a dynamic game Γ , made up of a set of stage games $\{A_k\}_{k=1}^N$ with transition function q .
 - $q(n|k, s)$ is the probability that the next state will be A_n given that the current state is A_k and the actors played s in k .
 - So the contest success function in Jackson and Morelli is an example of a transition function q
 - δ is common discount factor
 - Define $M_j(k)$ to be j 's minmax payoff for the stochastic game starting in state A_k . This implies that j 's payoff in any subgame perfect equilibrium starting from A_k must be at least as large as $M_j(k)$.

Efficiency and inefficiency

- Efficient state

- Consider e to be some efficient profile, i.e. a pair of strategies (e_1, e_2) so that outcomes are Pareto optimal. $p(e)$ are the set of states that are reached with positive probability if players play e .
- Let $B_k(e)$ be the total sum of payoffs following e starting at state A_k . This is the "total pie" to be divided.
- Let \underline{a}_k^i be the lower bound of i 's payoff along e starting at k

- Inefficiency:

- A player will deviate at k if $M_j(k)$ is greater than it's payoff at k under e
- Inefficiency will arise if this always happens along $p(e)$

Efficiency and inefficiency

- What happens in A_k ?
 - Suppose i continues on e today. i will therefore get at least \underline{a}_k^i and $E_k(M_i(n))$ in the next period.
 - Thus player i will get at least

$$\underline{a}_k^i + \delta E_k(M_i(n))$$

if play continues along e .

- The maximum total amount that j can get is therefore

$$B_k - [\underline{a}_k^i + \delta E_k(M_i(n))]$$

- j will therefore deviate for sure if

$$M_j(k) > B_k - [\underline{a}_k^i + \delta E_k(M_i(n))]$$

- This is the inefficiency condition

- Inefficiency condition:

$$M_j(k) > B_k - [\underline{a}_k^i + \delta E_k(M_i(n))]$$

- Interpretation 1

- Normalize \underline{a}_k^i to 0 and rewrite. This yields:

$$M_j(k) + \delta E_k(M_i(n)) > B_k$$

Interpretation: if what I can "lock in" by deviating this period and what you can "lock in" from deviating next period exceed the total sum to be divided in the efficient outcome, efficiency breaks down.

- Inefficiency condition:

$$M_j(k) > B_k - [\underline{a}_k^i + \delta E_k(M_i(n))]$$

- Interpretation 2:

$$\delta E_k(M_i(n)) - M_i(k) > B_k - [M_j(k) + M_i(k)]$$

- Interpretation: Left side is expected shift in i 's minimax payoff, i.e., how much more "powerful" i will become. Right side is size of bargaining surplus, i.e., difference between what there is to be divided vs. what each side can assure itself. No efficient equilibria if expected shift in i 's power is greater than bargaining surplus.

Examples of inefficiency

- Fearon (2004, J. Peace Research): Rebels fight when government is weak because, with high probability, government will be strong in the future.
- de Figueiredo (2002, APSR): If political uncertainty is low, then at least one party engages in inefficient insulation of policies.
- Powell (1999): Declining state fights if it will be much weaker in the next period.

All three examples share the idea that if power is shifting around, and you cannot commit to transfers across periods, that can lead to inefficient outcomes (e.g., fighting)

An Application: Acemoglu and Robinson (2000, QJE; 2001, AER)

- Rich elite and poor majority vie for control
- One faction in power initially, and times are “normal” or “bad” with probabilities $1 - s$ and s
- Poor in power: set tax rate \Rightarrow rich accept or initiate coup (coup brings elite to power but destroys fraction of income)
- Rich in power: set tax rate and decide whether to extend franchise
 - If rich retain power, poor can accept tax rate or launch costly revolution (which destroys income)
- Poor/rich can buy off other party with tax rate, but sometimes can't offer enough
 - Then we can get oscillation between democratic and authoritarian regimes

An Application: Acemoglu and Robinson (2000, QJE; 2001, AER)

- Key point is that we either have good or bad times, and coups/revolutions only possible in bad times
 - Those in power may make promises but later want to renege (in good times, when coup/revolution threat is not credible)
 - This limits how much those in power can do to “buy off” the other group
 - Means we can get revolution/coup in equilibrium

Wait

Not done yet...

Baliga, Lucca, and Sjöström (2011, REStud): “Domestic Political Survival and International Conflict: Is Democracy Good for Peace?”

- This paper adds two elements:
 - Models a different approach to conflict; namely, I attack because I fear you may attack me first instead.
 - This is the strategic complementarity of conflict, and it comes up all the time in the conflict literature.
 - E.g., nuclear first strikes, the start of World War I, etc, etc.
 - This can arise if there is a first mover advantage to conflict
 - This paper also models the political process to give an example of where biases may come from

Conflict Game

Country i 's payoffs:

		Country j	
		A	P
Country i	A	$-c$	$\mu - c$
	P	$-d$	0

- Citizens and leader have private costs drawn from distribution F on $[0, \bar{c}]$. F is increasing and concave. Assume $0 < \mu < d$.
 - $c < \mu$: Player is a *hawkish* greedy type with a dominant strategy to be hawkish. (Fraction $F(\mu)$)
 - $c > d$: Player is a *dovish* pacifist type with a dominant strategy to be dovish. (Fraction $1 - F(d)$)
 - $\mu < c < d$: Player is a *coordination* type who wants to coordinate with the opponent.
- Assume the median voter is a coordination type, i.e.
 $0 < \mu < c^{med} < d < \bar{c}$.

Strategic Complementarity

Country i 's payoffs:

		Country j	
		A	P
Country i	A	$-c$	$\mu - c$
	P	$-d$	0

- Because $d > \mu$, each player's incentive to be aggressive is increasing in the other player's aggression. Aggressiveness are thus *strategic complements*:

$$-c - (-d) > \mu - c.$$

- Hence, reaction functions are increasing in the probability that the opponent is aggressive.
- The strategic complementarity assumption captures the idea of reciprocal fear of surprise attack: as the hawks always attack, types who are “almost” hawks also attack; then types who are “almost” almost-hawks attack etc.

Model: Leaders and Institutions

- Time 0: Leaders and citizens private costs are privately drawn
- Time 1: Leaders choose whether to play A or P .
- Time 2: Citizens decide whether to oust the leader or not.
- In country i , leader i needs support σ_i^* to survive. If he survives, he receives benefit R where $0 < R < \mu$.
 - They use this critical level of support to classify political institutions. The lower σ_i^* , the less "democratic" the country.
- Note that the other country sees the regime type of the other player (σ_j^*), but not the other leader's cost function (c_j)

Model: Support and Regimes

- Assume more hawks than doves, i.e. $1 - F(d) < F(\mu)$
- If the coordination types vote with one of the other two groups, the leader has at least 50% support.
- This leads to the following classification of regimes:
 - $\sigma_i^* < 1 - F(d)$: The leader can survive even if only pacifists support him. This means he can always survive and the country is an *dictatorship*.
 - $1 - F(d) < \sigma_i^* < F(\mu)$: The leader cannot survive even if only pacifists support him but can survive if the hawks types support him. In this case the country is a *limited democracy*.
 - $F(\mu) < \sigma_i^* \leq 1/2$: The leader can survive if and only if the median voter supports him. In this case, the country is a *full democracy*.

Conflict Game for Different Regime Types

		<i>Dictatorship</i>	
		Country j	
		A	P
Country i	A	$-c$	$\mu - c$
	P	$-d$	0

		<i>Limited Democracy</i>	
		Country j	
		A	P
Country i	A	$R - c$	$R + \mu - c$
	P	$-d$	R

- The leader of a *limited democracy* has an extra “*hawkish bias*” compared to an autocrat, as he does not survive if the action profile is (P, A) .

Conflict Game for Different Regime Types

Limited Democracy

		Country j	
		A	P
Country i	A	$R - c$	$R + \mu - c$
	P	$-d$	R

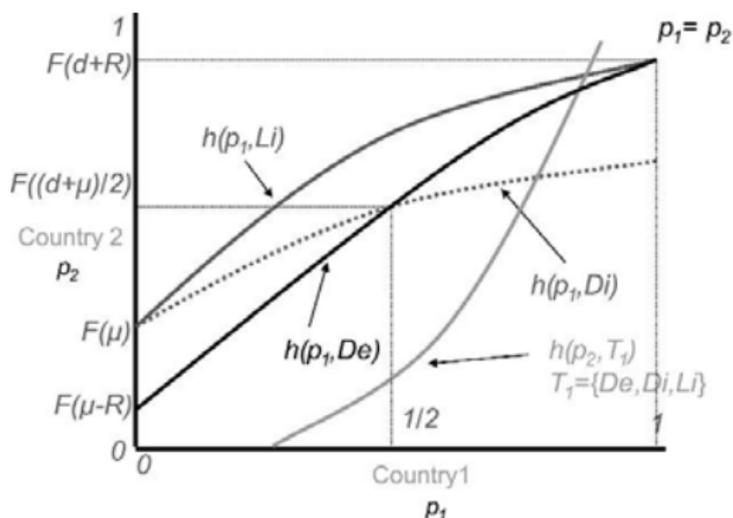
Full Democracy

		Country j	
		A	P
Country i	A	$R - c$	$\mu - c$
	P	$-d$	R

- The leader of a *full democracy* has extra “*dovish bias*” compared to a limited democracy as he does not survive is the action profile is (A, P) .

Strategic complementarity illustrated

- As player 2 shifts to more aggressive regime (DEmocracy vs Dictatorship vs Limited democracy), player 1 becomes more aggressive



- **Proposition 1:** *Warlike Limited Democracy:* Replacing any other regime type in country i with a limited democracy increases the equilibrium probability of conflict, whatever the regime type in country j .
- **Proposition 2:** *Dyadic Democratic Peace:* If $c^{med} > (d + \mu)/2$, a dyad of full democracies is more peaceful than any other pair of regime types.
- **Proposition 3:** *Hawkish Democracies:* Suppose $c^{med} > (d + \mu)/2$ (so the dyadic democratic peace hypothesis holds). As country j changes from a full democracy to any other regime type $T' \in \{Di, Li\}$, the equilibrium probability of conflict increases more if country i is a full democracy than if it is any other regime type $T \in \{Di, Li\}$.

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