United States National Debt versus Percent of Gross Domestic Product

- Debt
- % GDP

Ronald Reagan enters office

George W Bush enters office

US Gov Estimates 2007-10

- 0%
- 20%
- 40%
- 60%
- 80%
- 100%
- 120%
- 140%

- $0
- $2,000,000,000,000
- $4,000,000,000,000
- $6,000,000,000,000
- $8,000,000,000,000
- $10,000,000,000,000
- $12,000,000,000,000

Trend in Conflicts in Europe

\[ y = -0.0391x + 85.686 \]

\[ R^2 = 0.4058 \]
Can We (Just) Get Along?

Erik Gartzke
154A, Lecture 3
January 20, 2009
Recap: Conflict

• Conflict (war) requires three things:
  • Capability:
    • Must be able to fight (opportunity)
  • Incompatibility:
    • Must be difference of interests (willingness)
  • Diplomacy:
    • Must not prefer alternatives (bargaining)
Getting Along

• If conflict is natural, cooperation is even moreso

• Getting along is what most of us want to do

• Human beings have always cooperated

• Must do so to survive, prosper (compare to the realist argument that conflict is inherent)

• Yet, “phantom menace” often interferes
Getting Along

• Three dimensions of cooperation:
  • Continuum of cooperation and conflict
  Harmony - Affinity - Coexistence - Tension - War
  • Range of values (important/valuable, or not)
  • Level of interdependence
The Continuum

• Def:

• Harmony: the unanimity of interests among two or more separate individuals or groups

• Harmony does not require politics:

• Individuals acting in their own interests can cooperate more-or-less spontaneously
The Continuum, cont.

• Def:
  • Affinity: similar but not identical interests
    • Politics required to smooth over differences
      • Degrees of affinity:
        • Coordination
        • Cooperation
The Continuum, cont. 2

- Def:
  - Co-existence: the independence of interests among two or individuals or groups
    - Co-existence may or may not require politics
      - Individuals or groups can co-exist as long as their interests do not overlap or collide
        - Very hard to do in a world full of people
      - One of the things government does is to facilitate co-existence among individuals
The Phantom Menace

• Co-existence is tricky because it requires that we not be affected by others (pos. or negative)
• Some “force” interferes ("Phantom Menace")
  • The nature of politics (collective, conflictual)
    • Makes cooperation appealing BUT ALSO makes it hard for people to “just get along”
Interdependence

• Def:
  • Interdependence: joint productive effort of two or more individuals or groups exceeds the sum of their separate productive efforts

• Def:
  • Autarchy: production in isolation (i.e. no trade)
The Ricardian Model

- Units of good per units of labor

<table>
<thead>
<tr>
<th></th>
<th>Airplane</th>
<th>Automobile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>United States</td>
<td>1</td>
<td>2</td>
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The Ricardian Model, cont.

- Autarchy (50%, 50%)

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<tr>
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<td>600</td>
</tr>
<tr>
<td>United States (100,100)</td>
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<td>200</td>
</tr>
<tr>
<td>World</td>
<td>300</td>
<td>800</td>
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The Ricardian Model, cont. 2

- Trade (interdependence)

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</tr>
<tr>
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<td>0</td>
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<td></td>
<td></td>
</tr>
<tr>
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The Ricardian Model, cont. 3

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The Ricardian Model, cont. 3

- Trade (interdependence)

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“Invisible Hands” of Conflict

• Government can address disputes over surplus
  • Remember definition of politics ("authoritative allocation of goods and services")
• This is the normative rationale for government.
  • But government must “span” the actors
  • Must continue to provide producers incentive to produce
• What if “surplus” is negative? (same story)
Summary

- PD Game is story of Collective Action among egoistic actors
  - Summarizes main normative problem addressed by liberalism – How to get states to cooperate?
- Tension between individual incentives to compete, collective incentives to cooperate
  - Individual incentives lead to socially non-optimal outcomes
- Solve the game using Nash EQ
  - Strictly dominating strategies
- Way(s) out: Iterate the game
  - Cooperation can “Evolve” out of individual self-interest
Prisoner's Dilemma

<table>
<thead>
<tr>
<th>Player A</th>
<th>Player B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cooperate</strong></td>
<td><strong>Defect</strong></td>
</tr>
<tr>
<td>A: &quot;Reward&quot; 2 years</td>
<td>A: &quot;Sucker&quot; 10 years</td>
</tr>
<tr>
<td>B: &quot;Reward&quot; 2 years</td>
<td>B: &quot;Tempt&quot; 1 year</td>
</tr>
<tr>
<td>A: &quot;Tempt&quot; 1 year</td>
<td>A: &quot;Punish&quot; 8 years</td>
</tr>
<tr>
<td>B: &quot;Sucker&quot; 10 years</td>
<td>B: &quot;Punish&quot; 8 years</td>
</tr>
</tbody>
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Preference Ordering: Tempt > Reward; Punish > Sucker
Prisoner's Dilemma: Dominant Strategy for A

### Player A

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### Player B

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Preference Ordering: Tempt > Reward; Punish > Sucker
### Prisoner's Dilemma: Dominant Strategy for B

<table>
<thead>
<tr>
<th>Player B</th>
<th>Cooperate</th>
<th>Defect</th>
</tr>
</thead>
</table>
| **Cooperate** | A: "Reward" 2 years  
B: "Reward" 2 years | A: "Sucker" 10 years  
B: "Tempt" 1 year |
| **Defect** | A: "Tempt" 1 year  
B: "Sucker" 10 years | A: "Punish" 8 years  
B: "Punish" 8 years |

Preference Ordering: T眄empt > Reward; Punish > Sucker
### Prisoner's Dilemma: Nash Solution to the Game

#### Player A

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</table>
| Cooperate| A: "Reward" 2 years  
            B: "Reward" 2 years | A: "Sucker" 10 years  
            B: "Tempt" 1 year |
| Defect   | A: "Tempt" 1 year  
            B: "Sucker" 10 years | A: "Punish" 8 years  
            B: "Punish" 8 years |

Preference Ordering: T empt > Reward; Punish > Sucker
Prisoner's Dilemma: A Way Out--Iterated Games

Player A

Cooperate

Defect

A: "Tempt" 1 year
B: "Sucker" 3 years

A: "Punish" 8 years
B: "Punish" 8 years

Player B

Cooperate

Defect

A: "Reward" 2 years
B: "Reward" 2 years

A: "Sucker" 10 years
B: "Tempt" 3 years

Preference Ordering: Reward > Tempt; Punish > Sucker
Return of the “Phantom Menace”

• Human productivity and security depend on collective action
• Different kinds of challenges to cooperation
  • Collective action problems
    • Prisoners’ dilemma game
  • Externalities
  • Club goods
  • Private goods
The Ricardian Model

- Nature of good

<table>
<thead>
<tr>
<th>Nature of Good</th>
<th>Rival</th>
<th>Non-Rival</th>
</tr>
</thead>
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<tr>
<td>Excludable</td>
<td>Private Good</td>
<td>Club Good</td>
</tr>
<tr>
<td>Non-Excludable</td>
<td>Externality</td>
<td>“Pure” Public Good</td>
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</tbody>
</table>

Solutions:

• Leviathan (Hobbes): force people to cooperate
• Shadow of the Future
• Compromise
  • Problem of the commons has technical solutions but not technological solutions
  • Challenges are durable, continue